WildLands Inc: Post-Construction Habitat Restoration Monitoring Year 1
Puget Sound Energy Wild Horse Wind Power Project

Introduction

WildLands conducted field assessments at the Wild Horse Wind Power Project to monitor and evaluate the success of post-construction habitat restoration in accordance with the Post Construction Restoration Plan, as required by Article IV.F.9 of the Wild Horse Site Certification Agreement. Restoration of disturbed areas took place during the Fall of 2006 and Spring of 2007. Objectives for the first year of monitoring were described in the Restoration Plan, and include analysis of site condition to determine erosion activity and level of weed infestation.

Monitoring plots were established prior to the commencement of the restoration project, as specified in the Restoration Plan. *Reference Site* plots were recorded at the time of establishment. *Restored Site* plots were recorded in June, 2008, following the first full year of recovery of the project site. This report documents the condition of restored areas during the first year post-construction. In accordance with the approved plan, annual monitoring of these plots will continue through the third year post-construction. Information gathered by WildLands will be reported annually over the next 3 years in the form of written reports which will be issued to TAC members for review. The first report will be submitted to PSE before the end of June.

Methods

Study Plot Site Location

Three soil types were identified within the areas temporarily disturbed by construction of the Wild Horse Wind Power Project – 1) Lithosol Sites – very shallow soils, 2) Loamy Soil Sites – deep soils, and 3) Stony/Shallow Soil Sites. Three reference sites per soil type for a total of 9 study plots were selected and established on existing vegetation, in coordination with WDFW, in September of 2006. These 9 reference sites were paired with 9 parallel comparison plots located on adjacent reseeded areas (*restored sites*) for use in evaluating the success of restoration, which will inform future restoration efforts at other wind projects.

Study Plot Design

WildLands established nine paired 15-meter long study transects marked by rebar at either end (9 transects in *reference sites* and 9 parallel transects in *restored sites*). Transects in restored sites were located in the following types of disturbed areas: 6 transects along underground cable trenches (L1, L2, L3, D2, D3, and S1); 2 transects along road shoulders (D1 and S2); and 1 transect along a restored overhead powerline access road (S3). Location of monitoring transects was restricted to areas which were of a similar slope and aspect to adjacent undisturbed areas (to be used as reference sites). See Appendix 3 for plot locations.

For each transect, we collected data from 1-meter square plots on alternating sides of a tape stretched between the two end-points, for a total of 15 square meters of vegetation recorded along each study transect. Data collection included identification of native, perennial plant species and non-native species

present in each 1-meter square plot, along with percent cover for each plant species, bare ground, litter, and rock. Percent cover was determined by visual estimation, with the same person estimating each plot in order to maintain consistency between plots. Plants were identified to the lowest taxonomic level feasible, given the size and phenology of vegetation at the time of the survey.

General Site Review

An inspection of overall site condition was performed by driving all roads and spot-checking disturbed areas for evidence of erosion, weed infestation, and vegetation growth patterns. Observations were recorded by photographing the area.

Results and Discussion.

During the first year post-construction the monitoring goal is to determine whether the site is eroding or not and is not becoming infested with weeds. The second year we will determine whether all the species in the seed mix are represented in the stands established in the seeded areas. The third year we will make comparisons of plant density of the revegetated areas with the reference sites

Survey results from the monitoring plots are largely preliminary, following only one year of vegetative growth. Raw plot data is included as Appendix 1 of this report, and a chart displaying this data is included as Appendix 2. Average percent vegetative cover was comparable throughout the 9 restored transects, regardless of soil type. Transects in Lithosol soils varied between 12% and 16.5%, with an average of 5.5% non-native weed species included. Deep-Loamy soils contained between 9% and 24.4% overall vegetative cover. The proportion of this cover that was comprised of non-native weed species varied widely, with no weed components in two transects and 17% weed cover in the third transect. Shallow-stony soils were the least vegetated, with one transect containing a combination of bare ground and rock, with 0% vegetative cover. Of the other 2 transects, one had 9.7% vegetative cover of all native species, and the other had over 24% total cover but only 6.3% cover of native plants.

Lithosols

Reference areas for lithosols vary from 26.6% to 33.5% cover of native plants with no non-native component. Restored areas for these soils vary from 12.1% to 16.5% cover with between a quarter and a half of the cover provided by non-native plants.

Deep loamy soils

Reference areas for deep loamy soils vary from 39.9% to 53.9% cover of native plants with no non-native component in two of the 3 sites. Restored areas for these soils vary from 9.3% to 24.4% cover with non-native species present in only one pair of plots. Sites D-1 and D-2 have no non-native component and D-3 has 17.1% cover of non-native in the reference plot and 7.7% in the restored plot.

Shallow, stony soils

Reference areas for shallow, stony soils vary from 33.3% to 34.6% cover of native plants with no non-native component. Restored areas for these soils vary from 0% to 24.1% plant cover with 17.8% non-native cover in plot S-1.

General Condition of the Site

General inspection of the project site produced a number of interesting observations. On some cut slopes, wind has eroded away most of the mulch and tackifier applied during the hydroseeding process. In these areas, there is some evidence of slow but persistent sloughing of material down the steep cut slopes and into the inside ditch. No rill or gully erosion was noted. Fill slopes, flat road shoulders, and underground cable trenches appear to have retained the majority of mulch and tackifier that was applied, and no erosion is evident in these areas.

Weeds

Overall, weed presence appears to be sporadic. Cheatgrass and tumble mustard are the most prevalent weeds throughout the site. No knapweed or thistle was noted at the time of the survey. Treatment during the winter of 2007 with glyphosate and Plateau to control cheatgrass infestations appeared to be effective. We observed large areas of dead cheatgrass stands, with very few newly germinated seedlings. This observation was confirmed by our monitoring plots, which contained surprisingly few cheatgrass seedlings. Timing of winter treatments with glyphosate is difficult, however. A better strategy may be to use a pre-emergent treatment of Plateau during winter dormancy, followed by a later treatment of glyphosate, targeted at areas where the pre-emergent treatment has not achieved full control.

Topsoil Conditions

Vegetation growth patterns are variable throughout the site. On areas such as cut slopes, where little or no topsoil was present at the time of seeding, vegetation growth is thin and patchy to non-existent. Wind erosion depleting the seed supply may account for some of this. However, we suspect that lack of available nutrients and water holding capacity in the soil are likelier suspects. Observations of greater vegetation density at the tops of these cut slopes, where thin layers of topsoil have drifted over the edge of the cut, disappearing to nothing where the topsoil fades out, support this conclusion.

Other areas, such as flat road shoulders and cable trenches, where some topsoil was present in the fill material or where soil was merely disturbed and not actually removed, displayed much higher levels of vegetation density and diversity. In fact, areas of mere soil disturbance exhibited large populations of shrub and forb seedlings that were not present in the seed mix. These plants have volunteered on the site, due to the presence of an existing seed bank in the soil combined with seed drift from adjacent vegetated areas. These volunteers are fast-growing and healthy in appearance. Again, we believe the success of these areas is largely due to the presence of good quality topsoil, which is lacking in many other areas of the project.

Conclusions

Overall the results from the monitoring plots and site overview are largely preliminary. The broad patterns present restored sites as having native species established partly seeded and partly volunteer in origin. Areas seeded in the Fall of 2007 had not germinated at time of monitoring. Germination is expected to take place in the Fall of 2008.

The areas with best seeding establishment are those where topsoil is present and soils were not compacted. Steep slopes (cut banks and road shoulders) and highly compacted soils have not established stands of seeded grass and many of these areas have little or no vegetation.

Our overall site review led us to the conclusion that the site is free of any significant erosion control problems.

The weed control program certainly seems to be effective. There is very little cheatgrass in construction-disturbed areas and although we were a little early to effectively survey for broadleaf weeds (thistles and knapweeds particularly) the program appears to be controlling these as well.

The purpose of this assessment was to monitor and evaluate the success of revegetation efforts following construction of the Wild Horse Wind Power Project. As stated earlier, however, the results discussed in this report are largely preliminary. Due to the variability of seeding times during the project (i.e. from Fall 2006 to Fall 2007), some areas have had more time for seed to germinate and develop than other areas. More recently seeded areas have not yet germinated. Therefore, overall success of the project cannot be evaluated at this time. However, as discussed above, preliminary results do indicate that revegetation efforts are proving successful in controlling erosion and populations of non-native weed species, which satisfies the monitoring goals for the first year following revegetation activities.

APPENDIX 1

PLOT DATA TABLE

Wild Horse Wind Power Project Post-Construction Monitoring Report

Appendix 1: Plot Data

	L1-Restored	L1-Reference	L2-Restored	L2-Reference	L3-Restored	L3-Reference
BARE GROUND	**47.2%**	**33.9%**	**18.4%**	**44.9%**	**55.5%**	**29.2%**
LITTER						
ROCK	**36.3%**	**32.5%**	**66.4%**	**27.8%**	**32.3%**	**36.1%**
Achillea millefolium	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Antennaria dimorpha	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Artemisia rigida	0.1%	0.0%	0.9%	0.0%	0.0%	12.2%
Artemisia tridentata	5.1%	10.9%	0.0%	1.6%	0.4%	0.0%
Astragalus tweedii	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%
Balsamorrhiza hookeri	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%
Chenactis douglasii	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Chrysothamnus nauseosus	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%
Chrysothamnus viscidiflorus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Collinsia parviflora	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Crepis sp.	0.3%	0.0%	1.5%	0.0%	0.0%	0.0%
Cryptantha sp.	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
Elymus elymoides	0.8%	0.0%	0.0%	0.0%	1.0%	0.0%
Erigeron linearis	0.0%	0.0%	0.1%	0.0%	0.3%	0.0%
Erigeron poliospermis	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Erigeron sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eriogonum douglasii	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%
Eriogonum sp.	0.0%	1.2%	0.0%	6.1%	0.0%	4.1%
Eriogonum heracleoides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Erysimum occidentalis	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Festuca idahoensis	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Lithospermum ruderale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lomatium sp.	1.2%	0.0%	2.3%	0.0%	0.0%	0.0%
Lomatium triternatum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lupinus sp.	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Nothocalais troximoides	0.4%	0.0%	0.2%	0.0%	0.0%	0.0%
Phacelia sp.	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Phlox hoodii	0.2%	0.3%	0.1%	4.4%	0.0%	0.5%
Phlox longifolia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Phlox sp.	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
Phoenicaulis sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pseudoroegneria spicata	0.0%	0.0%	0.0%	4.6%	0.0%	0.0%
Purshia tridentata	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Poa sandbergii	2.1%	19.1%	0.4%	9.9%	2.8%	17.2%
Stenotus stenophyllus	0.1%	1.9%	0.2%	0.0%	0.0%	0.5%
Stipa occidentale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trifolium macrocephalum	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Viola trinervata	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wheatgrass sp.	0.3%	0.0%	0.4%	0.0%	0.8%	0.0%
NATIVE SPECIES	**12.6%**	**33.5%**	**8.8%**	**26.6%**	**5.5%**	**34.6%**
Bromus tectorum	3.8%	0.0%	0.2%	0.0%	0.6%	0.0%
Chenopodium sp.	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Descurania pinnata	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%
Lactuca serriola	0.1%	0.0%	3.1%	0.0%	6.0%	0.0%
Medicago sativa	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%
Poa bulbosa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Senecio sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tragopogon dubius	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Vulpia octaflora	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NON-NATIVE SPECIES	**3.9%**		**6.2%**		**6.6%**	

Wild Horse Wind Power Project Post-Construction Monitoring Report

Appendix 1: Plot Data

	D1-Restored	D1-Reference	D2-Restored	D2-Reference	D3-Restored	D3-Reference
BARE GROUND	**90.3%**	**60.1%**	**58.7%**	**57.3%**	**71.5%**	**32.0%**
LITTER						**14.1%**
ROCK			**29.7%**		**2.9%**	
Achillea millefolium	0.0%	0.0%	0.9%	0.0%	0.0%	3.0%
Antennaria dimorpha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Artemisia rigida	0.0%	0.0%	0.0%	2.1%	0.1%	17.2%
Artemisia tridentata	5.8%	29.6%	1.3%	0.0%	1.1%	2.0%
Astragalus tweedii	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Balsamorrhiza hookeri	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Chenactis douglasii	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
Chrysothamnus nauseosus	0.0%	0.3%	3.1%	0.5%	0.4%	0.4%
Chrysothamnus viscidiflorus	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Collinsia parviflora	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crepis sp.	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%
Cryptantha sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
Elymus elymoides	1.4%	0.0%	1.5%	0.0%	1.1%	5.5%
Erigeron linearis	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Erigeron poliospermis	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Erigeron sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eriogonum douglasii	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eriogonum sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eriogonum heracleoides	0.0%	0.0%	0.6%	6.9%	0.2%	1.4%
Erysimum occidentalis	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Festuca idahoensis	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%
Lithospermum ruderale	0.2%	0.0%	0.0%	0.0%	0.7%	0.0%
Lomatium sp.	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Lomatium triternatum	0.0%	0.0%	0.0%	0.0%	0.6%	6.3%
Lupinus sp.	0.2%	0.0%	0.2%	0.0%	1.1%	0.3%
Nothocalais troximoides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Phacelia sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Phlox hoodii	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Phlox longifolia	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
Phlox sp.	0.0%	0.0%	0.2%	0.0%	0.5%	0.0%
Phoenicaulis sp.	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Pseudoroegneria spicata	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%
Purshia tridentata	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Poa sandbergii	1.1%	10.0%	1.4%	32.7%	0.1%	6.7%
Stenotus stenophyllus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stipa occidentale	0.0%	0.0%	0.0%	0.0%	0.2%	2.7%
Trifolium macrocephalum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Viola trinervata	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wheatgrass sp.	0.2%	0.0%	1.3%	0.0%	0.3%	0.0%
NATIVE SPECIES	**9.3%**	**39.9%**	**11.2%**	**42.7%**	**7.3%**	**46.2%**
Bromus tectorum	0.4%	0.0%	0.0%	0.0%	0.0%	7.6%
Chenopodium sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Descurania pinnata	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lactuca serriola	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medicago sativa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Poa bulbosa	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%
Senecio sp.	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
Tragopogon dubius	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Vulpia octaflora	0.0%	0.0%	0.2%	0.0%	16.4%	0.0%
NON-NATIVE SPECIES					**17.1%**	**7.7%**

Wild Horse Wind Power Project Post-Construction Monitoring Report

Appendix 1: Plot Data

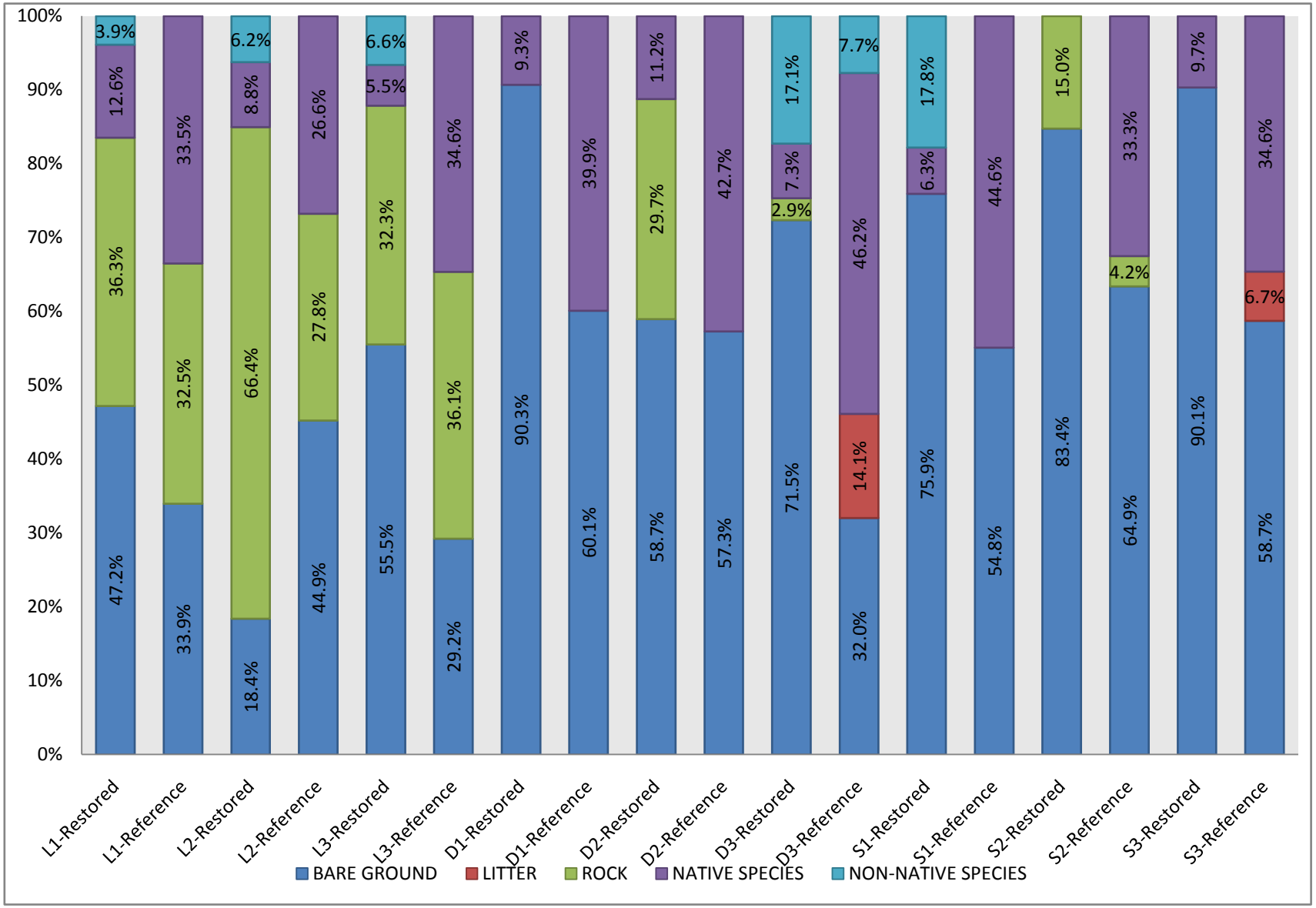
	S1-Restored	S1-Reference	S2-Restored	S2-Reference	S3-Restored	S3-Reference
BARE GROUND	**75.9%**	**54.8%**	**83.4%**	**64.9%**	**90.1%**	**58.7%**
LITTER						**6.7%**
ROCK			**15.0%**	**4.2%**		
Achillea millefolium	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
Antennaria dimorpha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Artemisia rigida	0.0%	3.2%	0.0%	4.1%	0.8%	7.5%
Artemisia tridentata	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Astragalus tweedii	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Balsamorrhiza hookeri	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chenactis douglasii	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chrysothamnus nauseosus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chrysothamnus viscidiflorus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Collinsia parviflora	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crepis sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cryptantha sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Elymus elymoides	0.4%	0.7%	0.2%	0.1%	0.8%	1.7%
Erigeron linearis	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Erigeron poliospermis	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
Erigeron sp.	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Eriogonum douglasii	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eriogonum sp.	0.0%	1.1%	0.0%	1.9%	0.0%	0.0%
Eriogonum heracleoides	0.7%	6.5%	0.0%	2.3%	0.0%	0.0%
Erysimum occidentalis	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Festuca idahoensis	0.0%	13.5%	0.0%	0.3%	0.0%	0.0%
Lithospermum ruderale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lomatium sp.	0.2%	0.0%	0.0%	0.0%	0.0%	0.9%
Lomatium triternatum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lupinus sp.	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Nothocalais troximoides	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%
Phacelia sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Phlox hoodii	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Phlox longifolia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Phlox sp.	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Phoenicaulis sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pseudoroegneria spicata	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%
Purshia tridentata	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%
Poa sandbergii	3.0%	19.3%	0.2%	17.5%	1.9%	7.6%
Stenotus stenophyllus	0.0%	0.3%	0.0%	0.0%	1.2%	13.0%
Stipa occidentale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trifolium macrocephalum	0.0%	0.0%	0.0%	0.0%	0.5%	1.1%
Viola trinervata	0.4%	0.0%	0.0%	0.0%	0.0%	2.6%
Wheatgrass sp.	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%
NATIVE SPECIES	**6.3%**	**44.6%**		**33.3%**	**9.7%**	**34.6%**
Bromus tectorum	1.2%	0.0%	0.4%	0.0%	0.0%	0.0%
Chenopodium sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Descurania pinnata	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lactuca serriola	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medicago sativa	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Poa bulbosa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Senecio sp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tragopogon dubius	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Vulpia octaflora	13.2%	0.0%	0.0%	0.0%	0.2%	0.0%
NON-NATIVE SPECIES	**17.8%**					

APPENDIX 2

CHART SHOWING

PERCENT COVER IN MONITORING PLOTS

Appendix 2:
Percent Cover of Monitoring Plots in Lithosol (L), Stony/Shallow (S) and Deep/Loamy (D) Soil Types



APPENDIX 3

PLOT LOCATION DESCRIPTIONS

Appendix 3: Plot Locations

Transect D1: **Coordinates -** 10 0712353 E, 5206704 N. **Description -** On the north side of Main Line road, just past a sharp eastward bend in the road. The *Restored Site* transect is on the road shoulder. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect D2: **Coordinates** – 10 0710624 E, 5212987 N. **Description** – On the west side of Jeep Line road, across from The Pines. The *Restored Site* transect is along the underground cable trench. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect D3: **Coordinates** – 10 0714078 E, 5213945 N. **Description** – On the east side of I-Line road, past the intersection with the WHS-Line and just before an eastward bend in the road. The *Restored Site* transect is along the underground cable trench. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect S1: **Coordinates** – 10 0711519 E, 5213622 N. **Description** – On the north side of the WC-Line road, about midway between the M-Line and E-Line intersections. The *Restored Site* transect is along the underground cable trench. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect S2: **Coordinates** – 10 0712250 E, 5211748 N. **Description** – On the south side of L-Line road, past the P-Line intersection but before the road curves back northward; in a patch of Bitterbrush. The *Restored Site* transect is on the road shoulder. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect S3: **Coordinates** – 10 0712592 E, 5208328 N. **Description** – On the east side of Main Line road, south of the intersection with the Q-Line. The *Restored Site* transect is on the northernmost restored overhead power line access road that crosses the Main Line road. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

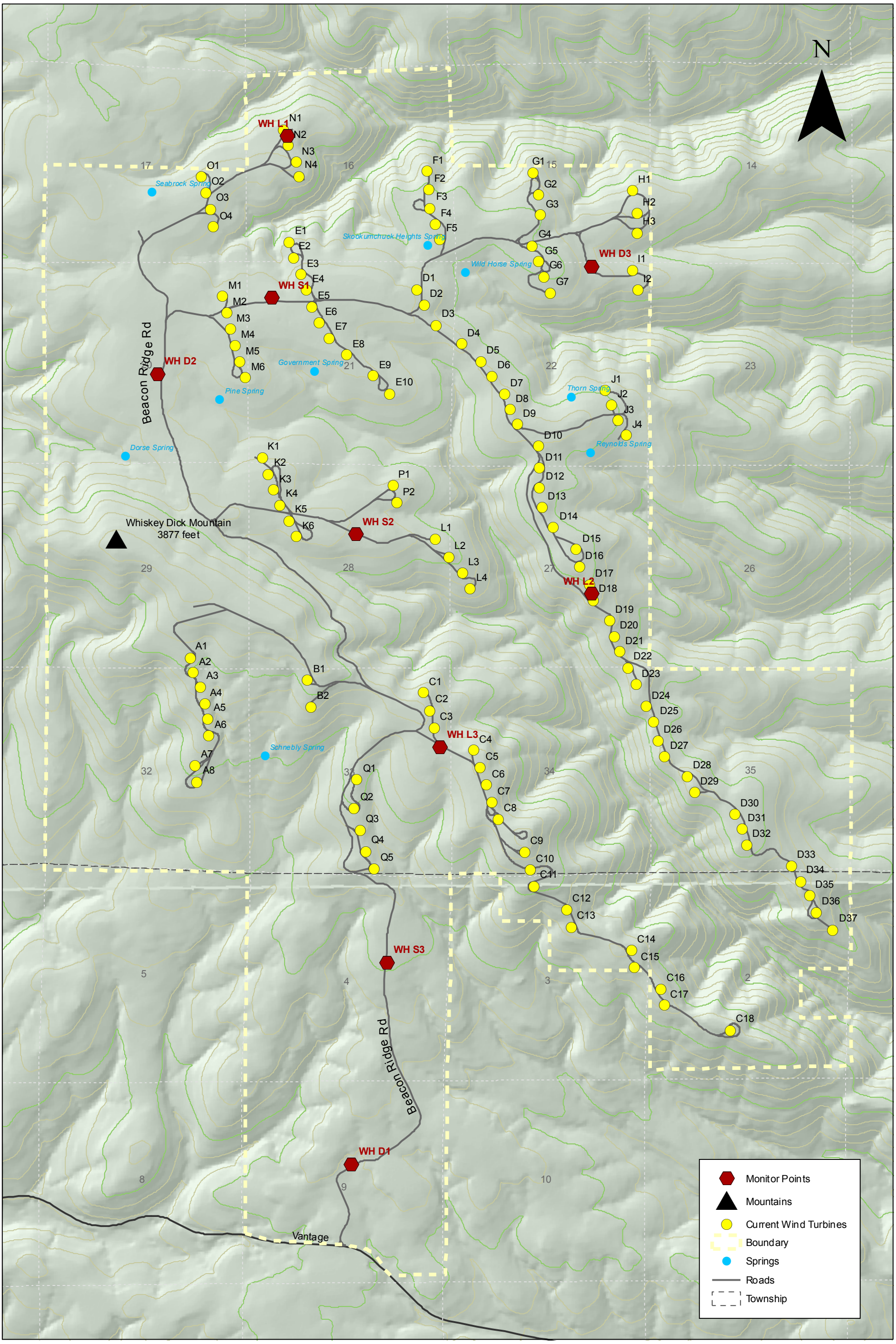
Transect L1: **Coordinates** – 10 0711608 E, 5214922 N. **Description** – Northeast of the loop road that connects N2 and N3 with the rest of N-Line road. The *Restored Site* transect is along the underground cable trench connecting turbines N3 and N4. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect L2: **Coordinates** – 10 0714144 E, 5211325 N. **Description** – East of the D-Line road, between turbines D17 and D18. The *Restored Site* transect is along the underground cable trench that connects turbine D17 to turbine D18. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

Transect L3: **Coordinates** – 10 0712965 E, 5210063 N. **Description** – On the south side of C-Line road, across from the where the spur to C1, C2, and C3 intersects. The *Restored Site* transect is along the underground cable trench that runs parallel to the road. The *Reference Site* transect is parallel to it, offset ~5 meters into undisturbed vegetation.

APPENDIX 4

PLOT LOCATION MAP



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