

## **APPENDIX F**

### **RIGHT-OF-WAY PREPARATION, REHABILITATION AND RESTORATION**

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## 1.0 INTRODUCTION

This Right-of-Way Preparation, Rehabilitation and Restoration Plan (Plan) has been developed based on the principals and procedures established by the BLM, and includes the practices as outlined in the *Restoration Plan for Energy Projects in the Las Vegas Field Office, BLM, September 2001*. It also includes relevant procedures and stipulations established for the Falcon to Gonder 345kV Transmission Line (Construction, Operation and Maintenance Plan, May 2002), and the Harry Allen to Mead, 500kV Transmission Line (Restoration Plan, July 2005).

This Plan is applicable to the construction of transmission structures, permanent and temporary access roads, staging areas, tension and pulling stages, and other extra work areas associated with the projects. The intent of this plan is to prevent unnecessary degradation of the environment during construction, restore temporary use areas, and reclaim disturbed areas such that these areas are ecologically functional and visually compatible with the surrounding environment to the greatest extent practicable.

### 1.1 Organization of the Plan

In order to facilitate the review and understanding of this plan, the contents have been organized into the following eight major sections:

**Section 1.0 Introduction** – Section 1 (this section) introduces the Plan and provides a general overview of the organization and contents of the Plan.

**Section 2.0 Regulatory Requirements and Authorities** – Section 2 presents a listing and description of applicable regulatory requirements and agencies having authority with regards to the Plan.

**Section 3.0 Purpose of the Plan** – Section 3 provides an overview of the purpose of the plan, BLM objectives for restoration practices, and Project Proponent and Construction Contractor responsibilities.

**Section 4.0 Overview of Existing Environments** – Section 4 presents a brief description of the vegetation communities that will be affected during construction and post-construction activities.

**Section 5.0 Restoration Plan Methodology** – Section 5 presents the process used to develop the levels of restoration associated with the plan.

**Section 6.0 Restoration Plan** – Section 6 outlines the right-of-way preparation, pre- and post-construction actions that will be implemented by the Project Proponent and/or Construction Contractor.

**Section 7.0 Restoration Success Standard, Monitoring, and Maintenance** – Section 7 describes the monitoring procedures that will be implemented for the project.

**Section 8.0 References** – Section 8 lists the specific information that has been used in the development of the Plan.

**Attachment A** – Provides a list of potential Contractors for implementation of restoration activities.

## 2.0 REGULATORY REQUIREMENTS AND AUTHORITY

Authority for the restoration practices defined in this plan is provided under the following regulations, Resource Management Plans (RMPs), initiatives, and general guidelines:

BLM Terms and Conditions of Right-of-Way Grants and Temporary Use Permits 43CFR 2881.2  
*“The authorized officer shall impose stipulations which shall include, but not be limited to requirements for restoration, revegetation, and curtailment of erosion of the surface of the land [and] requirements designed to control or prevent damage to the environment (including damage to fish and wildlife habitat)...”*

FLPMA Sec. 101(a)(8)  
*Requires that “public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition...”*

Endangered Species Act of 1973, as amended Section 7(a)(2)  
*Requires that federal agencies insure that any authorized action “will not result in the adverse modification” of critical habitat.*

Las Vegas Field Office RMP, Record of Decision, VG2.  
*“Restore plant productivity on disturbed areas of the public lands.”*

Las Vegas RMP  
*VS-1 Limit future impacts on the visual and aesthetic character of the public lands.*

Ely District Proposed RMP  
*The restoration and maintenance of healthy ecological systems within watersheds is a primary focus for the future management of the Ely District.*

Clark County Multiple Species Habitat Conservation Plan  
*No net unmitigated loss or fragmentation of habitat for covered species.*

Desert Tortoise Recovery Plan  
*Restoration of surface disturbance identified for all Desert Tortoise Recovery Units to pre-disturbance conditions.*

In addition, the following initiatives and guidelines also support the requirements and restoration practices identified in this Plan.

## **2.1 Great Basin Restoration Initiative**

The Bureau of Land Management's (BLM's) Great Basin Restoration Initiative was launched in 1999 in response to major changes taking place in the Great basin landscape. These changes were attributed to major wildfires in 1999, invasive weed and annual grass invasions, and deteriorating rangeland and wildlife habitat conditions. There is a growing realization of the enormous economic and ecological consequences of these interconnected landscape changes. In response, the Great Basin Restoration Initiative was created to try to restore functional native plant communities, stabilize watersheds and soils, improve wildlife habitat, improve rangeland quality for wild horses and livestock, protect areas with high resource values, improve recreational opportunities, reduce invasive weeds and annual grasses (e.g., cheatgrass), and reduce risks and costs of wildfires.

## **2.2 Nevada Guidelines for Revegetation**

The Nevada Guidelines for Revegetation (Nevada State Clearinghouse 1998) represent the combined efforts of numerous Nevada state agencies and the Nevada Seedbank Coordinating Committee, all of whom are involved in land use, transportation, research, and/or natural resource management activities. The Guidelines assist in the preliminary planning process for projects involving revegetation. The purpose of revegetation, supported by the State of Nevada, is to return the land to conditions and productive uses similar to pre-disturbance conditions, or to a desired site-specific plant community.

When revegetation selections or practices less preferred by the State of Nevada are proposed for a particular project, the State of Nevada requests that the reasons supporting such choices be detailed in accompanying environmental documentation. The state requests that the impacts to existing native vegetation be minimized, topsoil be stockpiled and replaced, and measures be implemented to avoid weed invasions. The Guidelines call for use of native or non-persistent exotic plant species in the revegetation process to help promote the long-term maintenance of Nevada's remaining native vegetation, as well as to improve and restore degraded habitat.

## **3.0 PURPOSE**

The purpose of this plan is to describe and recommend construction and restoration treatment actions that will meet BLM goals and objectives under the Las Vegas RMP and the Ely PRMP for land health standards, to recover habitat for federally listed and sensitive species, and to provide protocols and/or requirements for implementing and monitoring required restoration. Additionally, the BLM is a signatory to the Clark County Multiple Species Habitat Conservation Plan (MSHCP), which was approved in November 2000. The biological goal of the MSHCP is to have no net unmitigated loss or fragmentation of habitat for all species covered under the MSHCP, which occur in all areas of Clark County, including those areas identified as utility corridors in the BLM's respective RMPs.

Important actions in mitigating the effects associated with the projects include (1) minimizing to the greatest degree practicable, the effects associated with right-of-way preparation and the construction of facilities, and (2) stabilizing temporarily disturbed construction areas resulting from construction to an acceptable condition in order to speed up natural recovery. The

procedures outlined in this plan will assist in restoring plant communities to near pre-construction conditions and associated wildlife habitat and range, preventing substantial increases in noxious weeds in the project area, minimizing project-related soil erosion, and reducing visual impacts of sensitive areas caused by construction activities. To achieve these goals, this plan outlines actions to be applied during the pre-construction and post-construction phases of the project.

### **3.1 Responsible Parties**

The Project Proponent will have the overall responsibility of directing and monitoring the restoration and reclamation efforts for the projects. The Construction Contractor may retain the services of a Subcontractor who specializes in reclamation to implement the protocols identified in this plan during and following construction (see Attachment A for a preliminary list of Potential third party Contractors for Implementation of Restoration activities). It is anticipated that post-construction reclamation monitoring would occur concurrent with the practices as outlined in the Appendix B3 – Noxious Weed Management Plan (as appropriate).

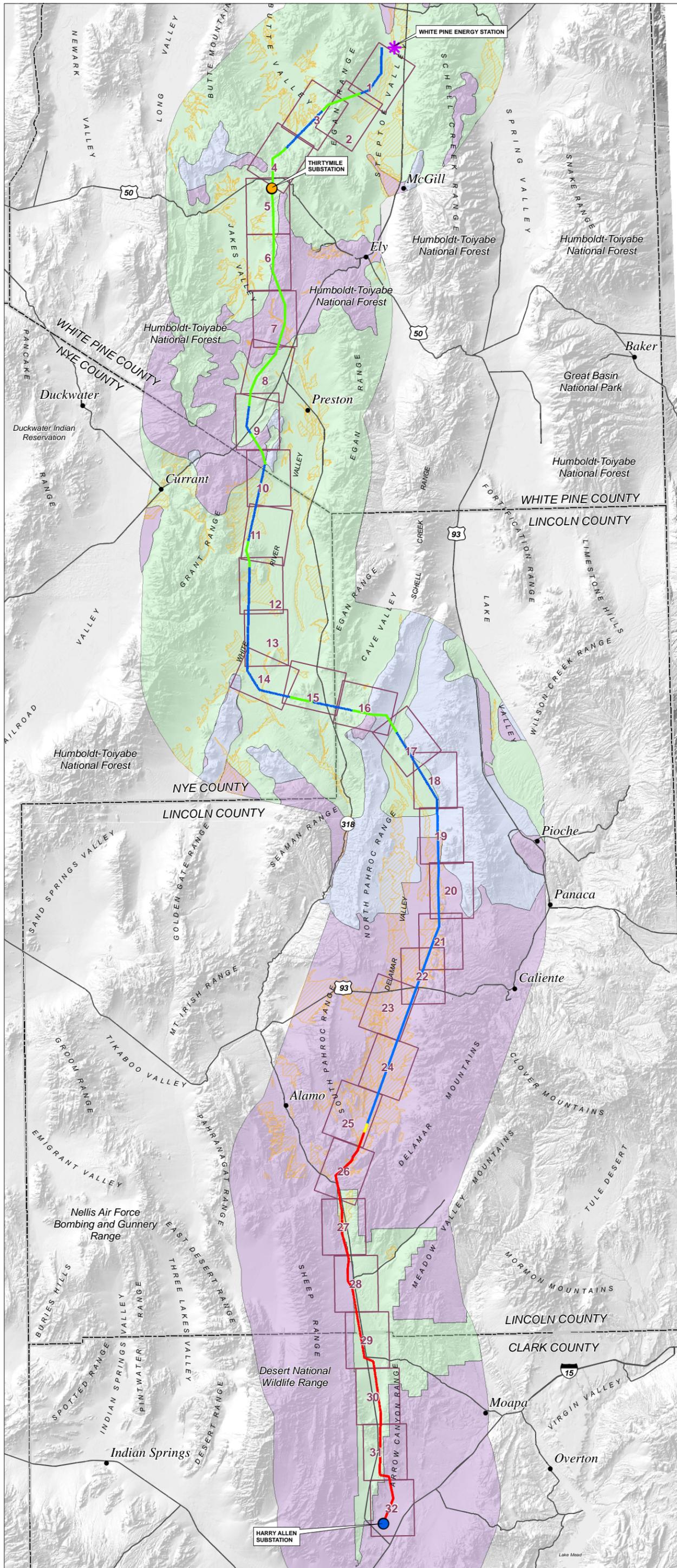
Additional linear facilities have been proposed for the utility corridor to be occupied by the projects. Consolidation of access within the corridor may result in an overall reduction of access-related concerns and/or impacts to the environmental resources within and near the utility corridor. At the appropriate time the BLM, in coordination with the Proponent and other potential users of the utility corridor, will determine which of the newly constructed access roads will be closed, restored, or retained for operation and maintenance activity. New access roads not required for operation and maintenance of the projects and/or other planned facilities may be closed using the most effective and least environmentally damaging methods appropriate to that area. Where access is to be restored, the practices identified in this COM Plan will be implemented accordingly.

## **4.0 OVERVIEW OF THE EXISTING PROJECT SETTING**

Restoration actions will be specific to the setting of the project, and the vegetation communities potentially affected during pre-construction and post-construction activities. In particular, seeding and alternative seeding actions require information to develop appropriate seed mixes that will incorporate the dominant plant species of the existing vegetation communities, where applicable. In addition, vegetation clearing practices may vary based on dominant plant communities (e.g. creosote bush, sagebrush, piñon-juniper).

Vegetation communities have been incorporated into five broad categories for right-of-way preparation, rehabilitation, and restoration purposes which include: (1) Great Basin Woodlands/Shrubs and Grasses, (2) Great Basin Scrublands, (3) Mojave Desert Scrublands, (4) Riparian/Wetland areas, and (5) Playas. These categories and the subsequent descriptions provided below were derived from plant communities as described by Brown and Lowe (1974).

These communities are also illustrated in Figure F-1 and identified in the COM Plan Volume II Map Set 2, and should be directly referenced during right-of-way preparation, restoration, and reclamation activities.



REGIONAL LOCATION



Vegetation Communities

- Great Basin Woodland/Shrubs and Grasses
- Great Basin Scrublands
- Mohave Desert Scrublands
- Playa

Restoration Zones

- Zone 2 - High Priority Recovery Areas (Z2)
- Zone 3 - Medium Priority Recovery Areas (Z3)
- Zone 4 - Multiple Use Areas (Z4)
- Subzone 1 - See Figure F-2

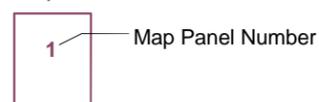
Electrical Transmission Facilities

- SWIP 500kV Transmission Line
- Proposed White Pine Energy Station
- Proposed Thirtymile Substation
- Harry Allen Substation

General Reference Features

- County Boundary
- Major Transportation

COM Plan Volume II  
Map Set 1 - Index



Sources

- USGS, 30 meter Digital Elevation Models
- Ely RMP July 2005
- Nevada Department of Wildlife 2005
- BLM - Las Vegas Field Office 2005



SOUTHWEST INTERTIE PROJECT  
500kV Transmission Line  
Southern & Central Portions

Great Basin Transmission, LLC

Restoration Plan Map

August 2008

Figure F-1



#### **4.1 Great Basin Woodland/Shrubs and Grasses**

In areas (5,000 to 8,000 feet) with steep slopes, piñon-juniper woodlands dominate the upper foothill landscape in the project area. These woodlands or “pygmy forests” intermingle with grasslands and sage scrub and are limited primarily to the Egan Mountains and foothills at higher elevations. Annual precipitation at these sites varies greatly. Soils are often rocky, shallow, and poorly defined. The most common woody plant is singleleaf piñon (*Pinus monophylla*) in piñon-dominated areas and Utah juniper (*Juniperus osteosperma*) in Juniper-dominated areas. Plant cover is often less than 15 percent with most of that existing as upper canopy cover in tree dominated areas. Grasses, forbs, and woody plants are limited in tree dominated areas; however, there are several transition zones between grasslands, scrublands, and woodlands. Within these transitional areas species mentioned in the Great Basin Scrublands that occur at higher elevations (see below) are often encountered. Great Basin Woodland areas generally occur between Structures 33-57, 86-242, 259-279, 320-334, 420-432, 463-484, and 712-761.

#### **4.2 Great Basin Scrublands**

The Great Basin Desertscrub is dominated by cold-temperate vegetation that can withstand cold, harsh winters, low precipitation throughout the year, and great extremes in daily and seasonal temperatures. This community is found at elevations between 4,000 and 7,200 feet with some overlap with piñon-juniper woodlands. These lands exhibit 3 major series of shrub dominated communities (1) sagebrush, (2) shadscale, and (3) blackbrush. Within each of these communities other subdominant shrubs that are distinguished by soil conditions rather than by climate may appear including winterfat (*Krascheninnikovia lanata*), greasewood (*Sarcobatus vermiculatus*), or rabbitbrush (*Chrysothamnus*). Descriptions of these communities have been provided for reference and will be a key consideration while creating seed mixes. Great Basin Scrubland communities generally occur between Structures 1-32, 58-85, 243-258, 280-319, 335-419, 433-462, and 485-706.

*Sagebrush Community* - On low foothills at somewhat higher elevations, big sagebrush extends down making contact with playa chenopods, and upward along ridges and in valley bottoms to mingle with piñon-juniper woodlands. In addition, portions of this community extend well above piñon-juniper to cover rocky ridges and valleys at elevations as high as 10,000 feet. At higher elevations, soils are rocky and less dense, the water table is lower, and soils are free of salts. Vegetation cover is between 20 and 50 percent. Within this community, mountain mahogany (*Cercocarpus ledifolius*) occurs locally on south-facing slopes in dense stands.

*Shadscale Community* - Shadscale (*Atriplex confertifolia*) occurs in low elevation, often saline basins typified by low precipitation, heavy soils, and water tables too deep to support stands of greasewood. This shrub-dominated community normally has cover values less than 12 to 15 percent and plants that are often less than 1 meter in height.

*Blackbrush Community* - Blackbrush (*Coleogyne ramosissima*) is often perceived as the transitional species between the Mojave desertscrub (see below) and Great Basin desertscrub communities. It is widespread across the southernmost limits of the Great Basin biome where temperatures are warmer and the northern limits of the Mojave biome where precipitation is greater.

### **4.3 Mojave Desert Scrublands**

Mojave Desertscrub is dominated by warm-temperate vegetation that receives limited precipitation and is found on basin floors and some bajadas below 4,000 feet. South of the Pahranaagat Mountains and at the north end of Kane Springs Valley in Nevada, a transition to Mojave desertscrub vegetation occurs. Creosote bush (*Larrea tridentata*) is the most abundant plant, with white bursage (*Ambrosia dumosa*) as a codominant. Joshua trees (*Yucca brevifolia*), all-scale (*Atriplex polycarpa*), desert holly (*A.hymenelytra*) and brittlebush (*Encelia farinosa*) occur locally. Blackbrush is common at higher elevations and demonstrates the transition zone between the Mojave and Great Basin Desertscrub (as previously described). Co-dominant species that occur within the creosote bush community will likely occur with Blackbrush and should be an indicator to delineate community types. Mojave Desert Scrublands generally occur between Structures 762-983.

### **4.4 Wetlands/Riparian**

Riparian areas are encountered in small, isolated areas along the SWIP – Southern Portion in the vicinity of the White River. Typical riparian vegetation along these waterways is comprised of cottonwoods (*Populus* Sp.), willows (*Salix* Sp.), dogwood (*Cornus*), wild rose (*Rosa* Sp.), birch (*Betula* Sp.), chokecherry (*Prunus* Sp.), and alder (*Alnus* Sp.). However, only limited communities dominated by these species are present within the SWIP – Southern Portion corridor. A unique variety of swamp cedar (*Juniperus scopulorum*) exists in three known locations, including the White River Valley. Climate and elevation are the determining factors of which species are present. Wetlands are also present in the form of marshes and wet meadows within portions of the project study areas, primarily at lower elevations. Perennial wetland areas that are crossed (spanned) are located between Structures 245 and 246 and 404 and 405 in the area of the SWIP – Southern Portion.

### **4.5 Playas**

Another category of vegetation communities not identified by Brown and Lowe as a unique vegetation community are playas which are crossed in two areas by the SWIP – Southern Portion. Playas are topographic depressions, typically the lowest part of an intermountain basin or bolson, that function as ephemeral ponds which are frequently flooded by run-off from adjacent highlands or local rainfall. The surface is generally flat, with mud flats and locally small dunes. Playa vegetation communities are characterized by bands or zones of vegetation similar to other riparian areas. Plant composition will vary due to local variances in hydrology, soils, and geographic location (personal communication E. Bartz 2007)

## **5.0 RESTORATION PLAN METHODOLOGY**

This section of the Plan describes the process used to identify restoration actions that will be required for the project. As previously described in Section 1, the *Restoration Plan for Energy Projects in the Las Vegas Field Office BLM, 2001* has served as the primary framework to identify the appropriate restoration levels and actions for the project. The following discussion focuses on two key components (1) Identification of Restoration Zones, and (2) Identification of

Restoration Levels that have been used to designate or prescribe the required pre and post-construction actions for each Restoration Zone (described in detail in Section 6). The implementation of the restoration actions described in Section 6 varies based on these two components as well as the vegetation communities potentially affected (e.g., seed mixtures).

## **5.1 Identification of Restoration Zones**

This Plan identifies four restoration zones (Z1-Z4) and one subzone, which describe an appropriate range of restoration actions that will be implemented during pre- and post-construction activities. These zones are based on the Las Vegas BLM restoration zones and are further defined specifically with respect to the projects. The restoration zones have also been mapped on Figure F-1 and in the COM Plan Volume II, Map Set 2. Subzone 1 includes vegetative communities associated with sensitive soils which are described later in this section and illustrated in Figure F-2.

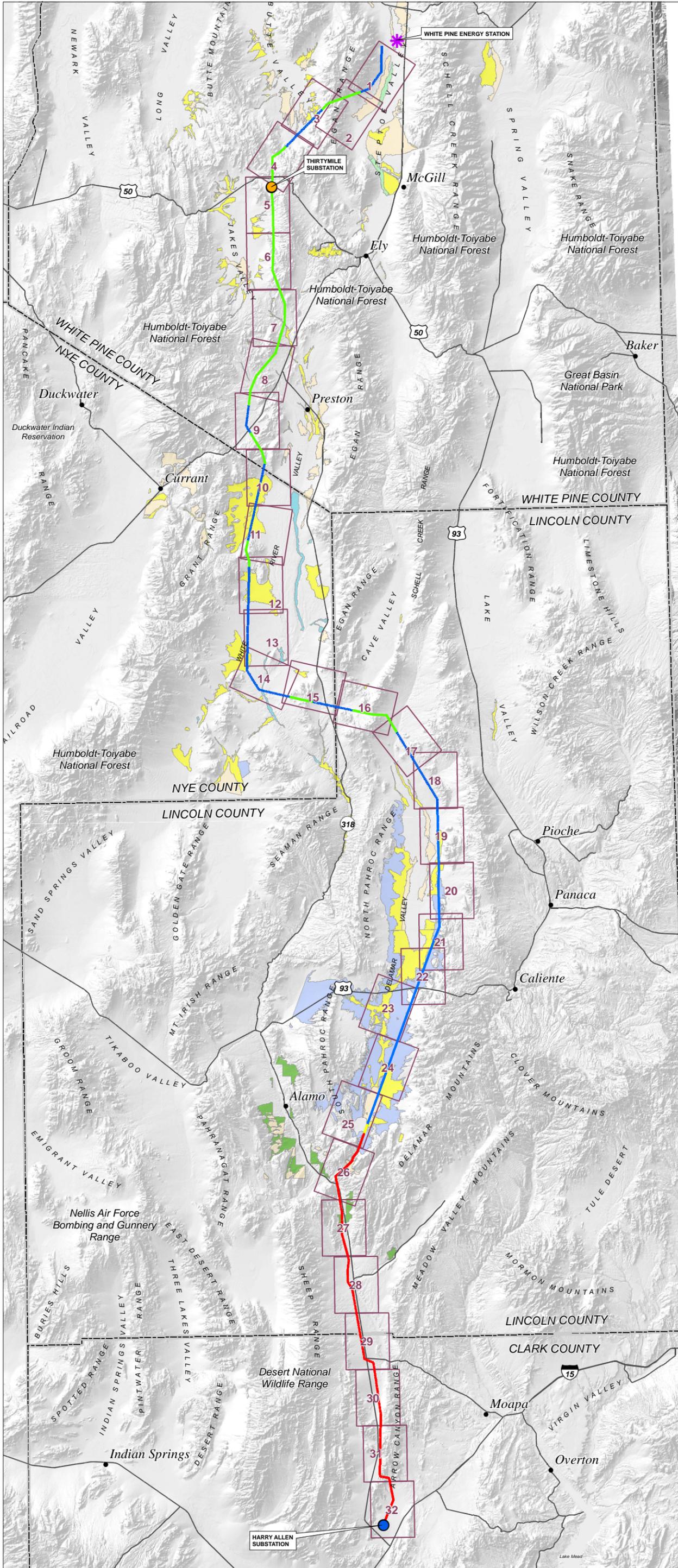
The BLM has defined restoration zones based on land management objectives which incorporate resources of concern or designated special management areas. Resources of concern may include sensitive animal habitat, rare plants, visual resources, or other sensitive environmental features. Projects affecting these resources may require additional mitigation measures. Following is a description of each restoration zone, including those zones applicable to the SWIP – Southern Portion and SWIP – Central Portion..

### **Restoration Zone 1 – Highest Priority Recovery Areas (Z1)**

Restoration Zone 1 (Z1) includes areas of highest priority, and management of these areas is oriented toward actions which promote scenic, cultural, and biodiversity values. Examples of these areas could include National Conservation Areas, Wilderness Study Areas, or Visual Resource Management (VRM) Class I areas. These areas require state-of-the-art restoration techniques and methodologies available to achieve a “no residual impact” level for projects. In these areas, replanting would involve 100 percent cover and diversity of shrubs and perennial grasses. While it has been determined that the projects will not affect any Zone 1 areas, this description has been provided for reference.

### **Restoration Zone 2 – High Priority Recovery Areas (Z2)**

Restoration Zone 2 (Z2) areas are considered high priority restoration zones. Management on these lands is oriented toward actions which reduce human impacts to the landscape for the purposes of recovery of federally listed or special status species, preservation of scenic values, or protection of cultural property. Examples of Z2 areas associated with the projects include (1) Desert Tortoise Critical Habitat (including the Coyote Springs ACEC), (2) key Sage Grouse habitat areas, and (3) areas in the vicinity of Visual Resource Management (VRM) Class II including areas associated with the crossing of the Egan Range and in the Silver King Pass. Additional information specifically addressing mitigation measures associated with the Desert Tortoise and the Sage Grouse are provided in Appendix B2 – Biological Protection Plan, and mitigation measures associated with visual resources are described in Appendix D – Other



REGIONAL LOCATION



Vegetation Communities

- Great Basin Woodland/Shrubs and Grasses
- Great Basin Scrublands
- Mohave Desert Scrublands
- Playa

Restoration Subzone 1 - Sensitive Soils

- Alkali Sacaton
- Shadscale
- Shadscale/White Bursage
- Spiny Hopsage
- Wet Meadow
- Winterfat

Electrical Transmission Facilities

- SWIP 500kV Transmission Line
- Proposed White Pine Energy Station
- Proposed Thirtymile Substation
- Harry Allen Substation

General Reference Features

- County Boundary
- Major Transportation

COM Plan Volume II  
Map Set 1 - Index

- Map Panel Number

Sources

- USGS, 30 meter Digital Elevation Models
- Ely RMP July 2005
- Nevada Department of Wildlife 2005
- BLM - Las Vegas Field Office 2005



SOUTHWEST INTERTIE PROJECT  
500kV Transmission Line  
Southern & Central Portions

Great Basin Transmission, LLC

Sensitive Soils Map

August 2008

Figure F-2



Resource Considerations and Mitigation Measures in the COM Plan. In these zones, restoration actions that provide additional support to standard actions (see Zone 4, below) will be applied to achieve land management and restoration objectives for the projects.

### **Restoration Zone 3 – Medium Priority Recovery Areas (Z3)**

Management on these lands limits, either spatially or temporally, the range of uses to protect sensitive resources. Examples of these areas that are applicable to the projects include the Triple B and Silver King herd management areas (HMAs) for wild horses, and Crucial Winter Mule Deer Range. Additional information regarding mitigation measures that address HMAs are provided in Appendix D – Other Resource Considerations and Mitigation Measures. Crucial Winter Mule Deer Range is further discussed in Appendix B2 – Biological Protection Plan of the COM Plan.

### **Restoration Zone 4 – Multiple Use Areas/Standard Recovery (Z4)**

Standard Recovery areas are lands on which human activities have not been precluded and are designated as Restoration Zone 4 (Z4), a standard restoration zone. Nonetheless, these lands may support significant areas of undisturbed natural vegetation and provide important connectivity with more intensively managed areas. Restoration actions recommended are considered “standard” and would be applied on a “generic” basis for the projects outside of Z2 and Z3 zones.

### **Restoration Subzone 1 – Sensitive Soils**

In some sensitive areas, restoration actions associated with Zones 2-4 may not be applicable due to site specific conditions requiring modification from standard actions or agency requested actions. These special management areas will be referred to as a “Subzone” in Table F-4 where associated restoration actions apply only to the designated area.

The transmission line will traverse the following vegetation communities with sensitive soils; alkali sacaton, shadscale, shadscale/white bursage, spiny hopsage, and additionally in areas of winterfat. As requested by the BLM, these sensitive soil areas will require detailed restoration actions to encourage rehabilitation success. Construction disturbance will be limited, where possible, to prevent soil and vegetation loss. Existing roads will be utilized to access construction work areas to limit new access roads and overland crushing. Seed mixes will be determined by soil type and vegetation community in cooperation with the restoration Subcontractor and a BLM specialist (e.g., botanist, range management specialist, or soil scientist designated by the BLM Authorized Officer). Alternative seed mixes containing adaptive or sterile species may be considered if competition from noxious or invasive species could affect restoration success. Prevention of soil erosion and loss are discussed in detail in Appendix A3 – Erosion, Dust Control and Air Quality Plan.

## 5.2 Identification of Restoration Levels

Restoration levels that prescribe the types of required pre- and post-construction actions were determined based on (1) the type(s) of construction activity, facility features and the area of associated disturbance, (2) the duration of disturbance (temporary or permanent) associated with these features, and (3) the type of disturbance associated with each activity as described below.

### Types of Construction Activities and Facility Features

As presented in Appendix A1 – Construction Plan and Program of the COM Plan, the activities associated with the construction of the major and ancillary facilities of the projects will include the following tasks:

- Surveying the transmission centerline, other project features, and work areas
- Upgrading or construction of temporary and permanent access roads
- Clearing and grading activities for the right-of-way, tower sites, staging areas and batch plants
- Excavating and installing foundations
- Assembling and erecting towers with temporary and permanent pad sites
- Stringing conductors and ground wires
- Installing counterpoise (tower grounds) where needed
- Cleanup and reclamation of affected areas

The area affected by construction of the major facility features will vary as presented in Table F-1. This table identifies major project features and describes the area of potential temporary or permanent disturbance and affect. The location of key construction activities and project features (e.g., access roads, tower sites, pulling and tensioning sites, staging areas) are also identified in the COM Plan Volume II, Map Sets 1 and 2 for reference by the Construction Contractor during pre- and post construction restoration activities.

<b>TABLE F-1 CHARACTERISTICS OF THE 500KV TRANSMISSION LINE</b>	
<b>FEATURE</b>	<b>DESCRIPTION</b>
<b>Land Temporarily Disturbed</b>	
<b>Structure Work Area</b>	Right-of-way width x 200 feet length per structure (assembly, erection and crane pads typically require 200 x 200 feet per structure)
<b>Wire-Pulling and Tensioning Sites</b>	Right-of-way width x 600 feet for dead-end structure conductor and shield wire sites (at all dead end structures) Right-of-way width x 400 feet for mid-span conductor and shield wire setup sites (approximately every 9,000 feet) 100 feet width x 400 feet for fiber optic cable setup sites (approximately every 18,000 feet)
<b>Batch Plants</b>	16 total locations expected for both the SWIP – Southern and SWIP – Central Portions (estimated size approximately 2-3 acres)
<b>Wire-Splicing Sites</b>	Right-of-way width x 600 feet per conductor and shield wire setup site (approximately every 9,000 feet) Right-of-way width x 600 feet each for fiber optic cable setup site (approximately every 18,000 feet)

**TABLE F-1  
CHARACTERISTICS OF THE 500KV TRANSMISSION LINE**

FEATURE	DESCRIPTION
<b>Construction Yards</b>	12 to 14 total locations expected for both projects collectively (10-12 for the SWIP – Southern Portion and 2 for the SWIP – Central Portion), but not yet determined (possible locations: Ely/McGill area; Preston/Lund area; Sunnyside area; Hiko/Alamo area; Moapa/Apex area)
<b>Guard Structures</b>	100 x 100 feet at road and existing electrical line crossings
<b>Land Permanently Disturbed/Required</b>	
<b>Structure Base</b>	Lattice Tower (tangent) - 28.56 square feet (4 x 3 feet diameter foundations) Lattice Tower (angle) - 50.24 square feet (4 x 4 feet diameter foundations) Lattice Tower (deadend) - 113.04 square feet (4 x 6 feet diameter foundations) H-Frame Structure (tangent) - 76.93 square feet (2 x 7 feet diameter poles) H-Frame Structure (deadend/angle) - 235 square feet (3 x 10 feet diameter poles)
<b>Regen Sites</b>	Regen Site 1 – in area west of Tower 110 – within or near Thirtymile Substation Regen Site 2 – in area south of Tower 254, near power line - north of Highway No. 6 and south of White River Regen Site 3 – in area north of Tower 394, near power line crossing - west of Tule Field Reservoir Regen Site 4 – in area east or south of Tower 596, near power line crossing - west of Burnt Springs Range Regen Site 5 – in area near Tower 751, near existing substation and power line - east of Pahrangat National Refuge Regen Site 6 – in area south of Tower 892, near power line crossing - southeast of intersection of Highway 93 and Highway 168
<b>Access Roads *</b>	
<b>Paved Roads</b>	These roads are typically highways and state routes and will be used for travel to existing and new dirt roads to access the right-of-way (e.g., US 93, US 50, US 6 , and SR 318)
<b>Dirt Roads (no improvement)</b>	Requires no improvement to dirt/gravel road
<b>Dirt Road (with improvements)</b>	Improvement of existing dirt road up to a 20-foot-wide access road, with a 2-foot berm on either side
<b>New Access Road (bladed)</b>	Construction of up to a 20-foot-wide dirt access road, with a 2-foot berm on either side
<b>Overland Access</b>	Drive and Crush
<b>Overland Access</b>	Clear and Cut
<p>* At the appropriate time the BLM, in coordination with the Proponent and other potential users of the utility corridor, will determine which of the newly constructed access roads will be closed, restored, or retained for operation and maintenance activity. New access roads not required for operation and maintenance of the projects and/or other planned facilities may be closed using the most effective and least environmentally damaging methods appropriate to that area. Where access is to be restored, the practices identified in this COM Plan will be implemented accordingly.</p>	

**Disturbance Duration**

This plan defines two broad types of disturbance durations. These are described below, and summarized by construction activity or project feature in Table F-1.

*Long-term/Permanent Use Areas* – the use of these areas is long-term and the landscape is permanently altered through removing vegetation, site leveling, modifying natural drainages, fencing, and constructing facilities, towers, and other structures. Permanent disturbance also includes constructing access roads needed for regularly scheduled maintenance of facilities and structures.

*Short-Term/Temporary Use Areas* – these areas are used only for the amount of time it takes to construct the project. Examples include work areas where heavy equipment is used to move and install towers, pulling and tensioning sites, and driving across public land to gain access to the project area and parking vehicles, and designated staging areas for equipment and materials.

## **Disturbance Type**

This plan defines four broad disturbance types based on activities associated with the construction of project facilities that have been considered in the identification of restoration levels and practices. These include the following:

### Disturbance Type 1 (D1) – No new disturbance

These areas include existing access roads and pre-disturbed locations that do not require improvement (vegetation removal or grading) that will remain permanent (in place) after project construction is complete.

### Disturbance Type 2 (D2) – Overland Drive and Crush

In these areas disturbance is caused by accessing a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Examples may include tensioning and pulling areas, tower pad sites, overland access to regeneration sites and spur roads to towers. Even though vegetation may be damaged and even destroyed, the surface soil and seed bank remains in place. Some crushed vegetation will likely resprout after disturbance ceases. These activities would result in minimal to moderate disturbance.

### Disturbance Type 3 (D3) – Clear and Cut

In these areas disturbance is caused by access to the project site which requires the brushing off all vegetation in order to improve or provide suitable access for equipment and vehicles. All vegetation is removed, soils are compacted, but no surface soil is removed (i.e., no blading of topsoil). Examples include temporary access roads where overland access may be used in the construction of facilities, or in areas where roads may be improved for access (selective tree and brush clearing). In general, Clear and Cut activities will result in moderate amounts of disturbance.

### Disturbance Type 4 (D4) – Clear and Cut with Soil Removal

Disturbance in these areas is caused by removing all vegetation in the affected zone, the soils are compacted and the surface soil is displaced (i.e., blading of topsoil). These activities result in heavier disturbance and examples include new access roads that require grading and filling,

clearing and grading that may be associated with tower sites, and in some locations improvements to existing access.

## Restoration Levels

Five levels of restoration (RL1-RL5) have been identified based on the potential type of disturbance and the duration of disturbance associated with the construction of the project features as previously described. These restoration levels are identified in Table F-2 and briefly described below.

<b>TABLE F-2 RESTORATION LEVELS</b>			
<b>Disturbance Level</b>		<b>Disturbance Duration</b>	
		<b>Permanent</b>	<b>Temporary</b>
<b>D1</b>	No new disturbance	RL 1	-
<b>D2</b>	Overland Drive and Crush	-	RL 2
<b>D3</b>	Overland: Clear and Cut	-	RL 3
<b>D4</b>	Clear and Cut with Soil Removal	RL 4	RL 5

### Restoration Level 1 (RL1) – Minimal level of disturbance, minimal actions - permanent

Construction in these areas does not result in new disturbance, requires minimal pre-construction treatment, and will normally require no post-construction actions (outside of routine maintenance). As described in Section 6, pre-treatment of existing weeds is one action that will be required in selected areas to protect from the infestation and the spreading of noxious weeds.

### Restoration Level 2 (RL2) – Low level of disturbance, few actions - temporary

Construction and activities in these areas are temporary and will result in disturbance that is confined to overland construction which will include vegetation crushing requiring limited restoration actions. As presented in Section 6, restoration actions focus on noxious weed control and decompaction of affected soils. In addition selective plants may require salvaging and replacement as required by the BLM (e.g., Joshua trees, cactus, and yucca).

### Restoration Level 3 (RL3) – Moderate level of disturbance, several actions - temporary

Construction and activities in these areas will result in moderate temporary disturbance, limited to clearing and require cutting of vegetation, and several restoration actions as described in Section 6. In addition to the actions described under RL2, cleared vegetation will be used as vertical mulch and supplemental mulch such as straw may be used to protect cleared areas. Areas of restoration will be flagged or signage provided for protection in areas as appropriate.

Restoration Level 4 (RL4) – High level of disturbance, few actions - permanent

Construction of project facilities in these areas results in a high level of disturbance (e.g., clearing, cutting and soil removal) however, few restoration actions will be required because these areas are permanent. This applies most specifically to new access roads that will serve for long-term maintenance and operation of the transmission line. In these locations, vegetation will not be replanted and replacement of soils and mulch will be limited, if required at all.

Restoration Level 5 (RL5) – High level of Disturbance, maximum actions -temporary

These are the construction areas that will result in a high level of disturbance due to vegetation and soil removal, but are planned for long term restoration. In these areas, as presented in Section 6, actions pertaining to soil salvage and seeding will be necessary to restore the disturbed seedbank.

Table F-3 identifies the various restoration levels to be specifically applied for each of the construction components and associated disturbance levels/durations. In general, the order of preference on the associated disturbance levels is “overland drive and crush” in areas of new temporary disturbance (e.g. structure work areas, pulling and tensioning sites, etc.), otherwise, “clear and cut” where practical, and finally, if necessary “clear and cut with soil removal.”

<b>TABLE F-3 CONSTRUCTION COMPONENT - RESTORATION LEVELS</b>				
<b>Construction Component</b>	<b>Disturbance Level</b>	<b>Disturbance Duration</b>		<b>Restoration Level</b>
		<b>Permanent</b>	<b>Temporary</b>	
<b>Structure Work Area</b>	D2: Overland Drive and Crush		●	RL 2
	D3: Overland Clear and Cut		●	RL 3
	D4: Clear and Cut with Soil Removal		●	RL 5
<b>Wire-Pulling and Tensioning Sites, Wire-Splicing Sites, Construction Yards, and Guard Structures.</b>	D2: Overland Drive and Crush		●	RL 2
	D3: Overland Clear and Cut		●	RL 3
<b>Structure Base Regen Sites</b>	D4: Clear and Cut with Soil Removal	●		RL 4
<b>Existing Paved Roads, Access Roads (no improvement)</b>	D1: No New Disturbance	●		RL 1
<b>Existing Access Road (with improvements)</b>	D4: Clear and Cut with Soil Removal	●		RL 4
<b>Overland Access</b>	D2: Overland Drive and Crush		●	RL 2
<b>Overland Access</b>	D3: Overland Clear and Cut		●	RL 3
<b>New Access Road</b>	D4: Clear and Cut with Soil Removal	●	●	RL 1/RL 5

## 6.0 RESTORATION PLAN

The actions required specifically for each level of restoration (RL1-RL5) with respect to the restoration zones previously discussed (Z2 – Z4 and Subzone 1) are presented in this section of the Plan.

Restoration actions are physical treatments and activities that will occur throughout each phase of the project and are specific to the levels of restoration as previously discussed and illustrated in the Restoration Action Identification Table (Table F-4). These actions will facilitate resource protection during construction, recovery for areas temporarily disturbed by project construction, and promote the re-establishment of vegetation similar in species composition cover and diversity to pre-construction conditions in predetermined areas.

All restoration actions described in this Plan are consistent with the relevant mitigation measures as defined in the COM Plan Section 6.0 and the other applicable Appendices in the COM Plan. The Restoration Action Identification Table (Table F-4) was created to illustrate appropriate restoration actions for each restoration zone and level as they would occur during pre-construction and post-construction activities. Restoration Zones, facility features, disturbance types, and vegetation communities have been identified in the COM Plan Volume II, Map Set 2. Table F-3 is to be used to discern restoration levels presented in Table F-4 for each construction component as they occur in the restoration zone. If a project variance is required due to unforeseen environmental or engineering constraints, Table F-3 provides direction for restoration actions in areas where modifications are required.

As described below, pre-construction actions are those that occur before construction of the project is initiated to preserve resources or features of interest, and include activities associated with right-of-way preparation for restoration and pre-construction activities. Post-construction actions focus on activities that will occur after project construction has terminated, and generally include restoration and maintenance activities.

### **6.1 Right-of-Way Preparation and Pre-Construction Actions**

Right-of-way preparation includes general site preparation involving flagging of the rights-of-way boundaries and construction areas. It also includes identification of plants to preserve in place, weed infested areas, salvage plants, and identification of storage areas for windrowed plant and soil materials. Monitoring sites will also be established during pre-construction activities, as described in Section 7.0. Pre-construction actions focus on protection of sensitive areas and resources identified for preservation. Disturbance related to project construction may begin after all right-of-way preparation and pre-construction actions have been completed. Pre-construction actions identified for the project include:

***Weed Plan Implementation*** - Refer to Appendix B3 – Noxious Weed Management Plan for specific mitigation measures to implement where noxious weeds have been identified as well as preventative measures to be implemented to prevent the spread of noxious weeds during construction. When control measures have been implemented for the pre-construction phase, subsequent actions for rights-of-way preparation may proceed.

**TABLE F-4  
RESTORATION ACTION IDENTIFICATION TABLE**

Restoration Zones	Restoration Zone 2					Restoration Zone 3					Restoration Zone 4					Subzone 1				
Zone Definition	High Priority Recovery Areas					Medium Priority Recovery Areas					Multiple Use/Standard Recovery Areas					Sensitive Soils				
Restoration Level	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5
<b>Pre-construction Actions</b>																				
Weed plan implementation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Preserve in place					●															●
Plant salvage (succulents)		●	●	●	●		●	●	●	●		●	●	●	●					
Selective Clearing/Feathering			●	●	●															
Topsoil segregation					●					●					●					●
<b>Post-construction Actions</b>																				
Earthworks		●	●	●	●		●	●	●	●		●	●	●	●					●
Topsoil replacement					●					●					●					●
Seeding					●					●					●					●
Alternative seeding					●															●
Replant salvage		●	●	●*	●		●	●	●*	●		●	●	●*	●					
Vertical mulch replacement			●		●			●		●			●		●					
Permeon™			●	●	●															
Supplemental mulch			●		●															
OHV deterrent			●		●			●		●					●			●		●
Signage		●	●		●		●	●		●			●		●		●	●		●
Monitoring		●	●		●		●	●		●		●	●		●		●	●		●
* Replacement of salvaged plants will occur as specified by Construction Contractor or Subcontractor, and approved by the CIC																				

**Preserve in Place** – This activity includes the preservation of existing vegetation to the degree possible when screening of the proposed projects is desired to reduce visual impacts and/or mature plant specimens are present to enhance habitat recovery and quality. Preservation of specimens may be requested by the BLM or recommended by the Construction Contractor on a case-by-case basis. Eligible specimens would include mature trees, succulents, or diverse vegetation groupings that would provide seed and a microclimate for seedling germination. Flagging or fencing of specimens to be preserved should be done before ground is disturbed (e.g. Joshua trees). The Construction Contractor will ensure construction activities will not disturb the specimens. If it is determined that construction activity would be detrimental to the plant then salvage should be considered if the specimen meets the qualifications defined in plant salvage.

**Plant Salvage** – Succulent plants with potential to be impacted by construction will be considered for salvage if the following criteria are satisfied: (1) the plant is currently in a healthy condition as determined by the Restoration Contractor, (2) yucca and Joshua trees must be over 1 foot but less than 6 feet tall, and (3) cacti must be over 1-foot tall or 1-foot wide (including prickly pear). Cholla 3 feet tall and 3 feet wide will not be salvaged nor will any succulent that cannot be accessed safely due to steep slopes or rocky areas. Succulents that will not be salvaged will be broken up and windrowed as vertical mulch.

The Construction Contractor shall identify with flagging tape all succulents that qualify for salvage, marking the north orientation for barrel cactus only. A list describing quantity and species of plants to be salvaged will be forwarded by the Construction Contractor to the BLM upon completion of restoration activities. Salvaged plants will be transplanted out of harm's way, in designated areas within the rights-of-way, by the Construction Contractor (or Restoration Contractor) and approved by the CIC as described below.

Plants salvaged from areas of permanent disturbance will only be moved once, and replanted as described under Post-Construction Actions. In areas of temporary disturbance, salvaged plants will be replanted in temporary plant storage sites. Location of these temporary plant storage sites shall be provided by the Construction Contractor on a site-specific basis. These areas shall provide ease of care and maintenance for the plant material as well as provide protection from construction activities until final planting. Plant storage areas will be near the project sites and within the rights-of-way close to watering truck routes, if possible. In these areas salvaged plants will be replanted in vertical trenches that have a depth of 18 inches or greater. Yucca will be planted with 1-foot spacing. All succulents, approved by the CIC for salvage, will be dug bare root and replanted within 24 hours. All barrel cacti will be planted with the same north orientation as they originally grew. Small cacti will be stockpiled separately from larger plants/clusters and watered thoroughly one time upon being transplanted in a stockpile area. All yucca stems will be thoroughly watered initially and DriWater® applied (completely buried) at a quantity of one quart for every foot of height. A one-time watering of stockpiled plants approximately 15 days after transplanting will occur to remove or minimize any air pockets in the soil and assure proper soil stabilization. Care will be taken to properly stabilize all soil around roots of plants that are directly transplanted in the field. Stockpiled plants will be moved back as close to their original location as possible as described under Post-Construction Actions.

**Selective Clearing/Feathering** – Selective clearing and feathering is the normal practice for mitigating impacts in areas where trees or brush of high densities have been cleared due to

project activities or in order to meet safety standards and is to be specifically considered in the piñon-juniper dominated woodlands associated with the Egan Mountains and foothills. Guiding principles used in the clearing of vegetation during construction, are described below.

Where tree removal is necessary within the right-of-way, only trees within the conductor clearance zone or those trees which pose a hazard or impede the passage of equipment for stringing will be cut. Tree and shrub removal will only occur within authorized areas and selection of danger and hazard trees, or trees to be removed, will be coordinated with the CIC. Trees to be thinned, or selectively cleared will be identified (flagged) by the Construction Contractor and approved by the CIC.

The Project Proponent/Construction Contractor shall trim trees in preference to cutting trees, and shall cut trees in preference to bulldozing them, as directed by the CIC. Cut material may be placed in slash piles and/or used as vertical mulch as approved by BLM. Trimming will be accomplished by use of pruning saws, power saws, nippers, bow saws, or cross-cuts. Limbs will be pruned flush with the trunk of the tree, except for portions of overhanging limbs. Use of axes for trimming will be prohibited.

Where necessary, tree removal will be accomplished by cutting as near to the surrounding grade wherever possible, and will not exceed 8 inches above grade when measured on the downhill side of the tree, and 2 inches on the uphill side of the tree. Where tree removal is necessary through dense stands of timber, “feathering” of the edge may occur in selective areas to visually soften the edge between the cleared and remaining trees as approved by BLM.

Where the rights-of-way crosses sensitive roads and trails, selective clearing shall allow natural vegetation to be left in the right-of-way on each side (as possible). Also, cutting or pruning of trees will occur such that the fresh cut is oriented away from these areas where possible. Trimming should occur around the entire tree, so as not to create a flat side facing facilities.

Removal of “snags” also will be avoided where possible. Snag trees are large, often dead trees that provide wildlife habitat created by voids in the trunk. Raptors, particularly, can be found nesting in these trees (see Appendix B2 – Section 3.2.4).

**Topsoil Segregation** – This activity includes the separation of topsoil from subsoils (if subsoils are disturbed), which contains organic material including the seeds of plants growing on the site, to be set aside for post-construction replacement following plant salvage. After required plants have been salvaged from the site, the Construction Contractor is to conduct topsoil salvage, including all rocks and smaller vegetation that was not salvaged or to be used as vertical mulch. The depth at which topsoil separation should occur will be dependant on the soil type within which the restoration activity will occur and will be discussed and approved by the Restoration Contractor and a BLM Specialist. This topsoil should be labeled as such and protected from erosion and inadvertent use as fill. Topsoil shall never be mixed with subsoil. When stockpiled, topsoil shall be tackified with water to a 2-inch wetting depth to minimize erosion. If bedrock close to surface will not allow for full salvage, salvage what is available. Overall handling should be kept to a minimum. Separation between salvaged topsoil and subsoils will always be maintained.

**Windrow Vertical Mulch** - Materials including dead plants, cut plants and rocks are to be temporarily set aside during right-of-way preparation so that they may be shredded or otherwise

placed on the soil surface (post-construction) to increase fertility, provide microclimates for seed to germinate and stabilize soil. This will include any succulents that did not meet salvage requirements previously discussed. Large rocks and boulders shall also be removed to the side. Care should be taken to prevent the disturbance of the natural patina or desert varnish of these rocks. Rocks over 6 inches can be removed and stockpiled outside the disturbance areas (within the rights-of-way). If an outcrop of boulders will be disturbed, some specimens may be windrowed as recommended by the CIC and Construction Contractor. In some vegetation communities where mulch density would be very high, removal of excess mulch off site should be arranged after replacement quantities have been determined. Vertical mulch temporary storage areas should be located near the project areas within the right-of-way. Project locations near sensitive viewers should locate windrowed mulch in a less visible area, where possible.

## **6.2 Post-Construction Actions**

Post-construction actions occur after project construction has terminated and primarily focus on stabilizing permanent use areas and restoring temporary areas to allow reoccupation of vegetation. Construction Restoration actions that may be used are defined below and are organized by their sequence of implementation.

**Earthworks** – These activities may include (1) recontouring, (2) soil decompaction, and (3) applying appropriate soil erosion measures as needed. Earthmoving equipment replaces the removed material as close to the pre-construction contour as possible to restore the visual quality and provide stability to the slope. Soil decompaction may include ripping or scarifying to allow permeation of water into the ground. Erosion control measures such as water bars may be installed as recommended by the Construction Contractor or CIC, used in conformance with the SWPPP, as described in Appendix E – Storm Water Pollution and Prevention Plan of the COM Plan.

Recontouring includes burying subsurface soils (backfilling holes) excavated during construction activities so that the natural terrain contours are maintained to the extent practicable. The Construction Contractor is instructed that excess subsoil from excavated or graded areas (around transmission tower bases) will be evenly spread over disturbed areas moistened and compacted to a relative average density comparable to undisturbed adjacent material before respreading topsoil. Subsoils will not be spread outside of these flagged construction areas and will be restricted to areas of permanent disturbance, if possible. Excessive subsoils that can not be reasonably spread will be removed off site to a BLM approved disposal site.

Where any compaction exists, the surface will be ripped or scarified to a depth of 6 inches, as appropriate (e.g. not applicable to rock faces, severe slopes, or cliff areas) and will retain a 12 inch buffer from existing vegetation or plants designated as preserve in place. Depth and area of compaction relief will depend on site-specific conditions. Decompaction or ripping will be conducted to avoid “corn rows.” Cross-ripping is preferable and care should be taken to prevent inverting the soil layers and preserving any vegetation in place. Deep sandy soils do not need to be decompacted and will not be ripped.

Installation of water bars or other erosion control measures will be recommended by the Construction Contractor or CIC and detailed to site specific conditions.

**Topsoil Replacement** – Topsoil will be replaced without mixing with subsoil. The purpose of this practice is to prevent mixing fertile, shallow soils with deeper soils that may be less productive because of rock, gravel, sand, calcareous layers, salinity, or other chemical characteristics that would adversely affect desired vegetation. Topsoils shall be dispersed evenly across the disturbed site. Additional erosion control and soil stabilization may be required to minimize soil movement, especially for heavily sloped areas or for fine-textured soils. Surface soil will not be handled excessively during windy conditions. Soil will be wet to a depth of 2 inches to prevent further erosion. The site will be left adequately rough after surface soil placement to provide micro sites for seed germination and to reduce soil movement.

**Seeding** – Reseeding involves planting new seed of indigenous native species to establish vegetation within affected vegetation communities. However, in some cases, as determined by the BLM, non-native species may be recommended in seeding mixes as a tool to improve chances of restoration success when ecological site(s) have large quantities of invasive species such as cheat grass or red brome. A BLM specialist (e.g., botanist, range management specialist, or soil scientist designated by the BLM Authorized Officer) will provide the list of; approved type and quantity of seed mixtures, seeding method, and seeding locations. In this regard mixtures that discourage the establishment of invasive and noxious weeds will be considered as described under Alternative Seeding below. Seed mixtures will be based on vegetation communities described in Section 4 of this Plan and should be developed close to the time of restoration to ensure seed availability. Seeding shall be repeated if a satisfactory stand is not established as determined by the authorizing agency officer upon evaluation after the second growing season.

**Alternative Seeding** – Alternative seeding is employed to establish ground cover in disturbed or weed infested areas by seeding of annual grasses and/or forbs. The annual grasses are usually sterile rye or oats, since the regeneration of non-natives is not desirable. Annuals provide short-term soil cover, stabilization, and a source of organic litter until other vegetation can become established. Similar to regular seeding, alternative seeding mix compositions and methods dispersing seeds will be determined through coordination with a BLM botanist, range management specialist, or soil scientist (as determined by the BLM Authorized Officer).

**Replant Salvage** – Succulent plants that were removed from temporary use areas and stored during construction will be replanted in the same general location (as possible) at the proper compass orientation during pre-construction activities. Succulent plants removed from permanent use areas will also be located in pre-approved locations as close as possible to original conditions and similarly oriented. All salvaged plant material will be replanted in natural patterns. Large yucca will be carefully removed from the ground, taking care to not damage stems, roots, or the base of the plant, and be re-planted in groups of three or more for a natural effect. A hole at least 2 feet deep and 3 feet wide will be prepared for each single stem yucca. Multiple stem plantings will be accordingly larger to accommodate the stem size. The hole will be filled with water and allowed to drain once. The hole will then be filled with water again and then back-filled with soil to form a muddy matrix to about 18 inches from the surface. DriWater® will be applied (completely buried) at a quantity of one quart for every foot in height. The yucca will then be planted and the soil tamped around the plant so that there are no air pockets. At the surface, a “watering well” will be formed around the plant. Afterward, the plant will be watered thoroughly again. Yuccas will be rewatered approximately 3 to 4 weeks after transplanting. All small cacti will be watered thoroughly one time upon being transplanted in the field.

Salvaged plants will require the installation of temporary protective measures to minimize herbivory, and/or disturbance from off-highway vehicle users. Plants desirable to herbivores will need a protective sleeve secured around the plant until they are fully established. Every effort will be made to transplant the material at the time of year (early spring or fall) when the plants are the least likely to experience environmental stress. The plants will be adequately maintained for one full year to ensure protective measures are intact. If salvaged plants are located in an area susceptible to off-highway vehicle access, the closure of access roads may be recommended in specific areas, as approved by BLM. Replacement of salvaged succulents may be strategically placed or concentrated in certain areas to deter access. A combination of plants, snags, or rocks may be used in these areas, where appropriate, as directed by the BLM. Transplanting and maintenance of plant material will be done such that an agreed upon percent survivorship as described in Section 7.1.

**Vertical Mulch** – Vertical mulch is not entirely in contact with the soil surface, rather, parts of the mulch rise above the surface. Removed and stored trees and shrubs are the sources of vertical mulch. For areas that have been cleared, vegetation that was windrowed to the outside of the disturbance boundary shall be replaced back onto the site. Mulch should be placed randomly.

Large rocks and boulders removed to the side of the disturbance shall be placed back with the darkened side facing up in a natural appearing pattern. Permeon™ may be applied to rocks to enhance the desert varnish when necessary by the Construction Contractor and approved by BLM based on site conditions and will be installed according to the manufacturer's specifications. Boulder outcrops that were windrowed shall be replaced by the Construction Contractor in a manner that is similar to pre-construction conditions where possible.

**Permeon™** – Permeon™ is an artificial desert varnish that reproduces natural colors similar in appearance to aged desert varnish, in a short period of time. It is non-toxic to plants and animals. Depending upon the soil type, Permeon™ may be required if the soil surface contrast is high, due to cut slopes and aged rocks. Application rates and color tint will be site specific and may require both a blanket application and spot treatments depending on the adjacent natural landscape. The product is applied via backpacks or a truck-mounted sprayer, if access to the area adjacent to the restoration sites remain open. Product application may be necessary for large boulders that have been windrowed and application would occur after they have been replaced as recommended by the Construction Contractor and CIC. Application rates and techniques will be determined by the Construction Contractor and/or BLM Visual Resource Specialist.

**Supplemental Mulch** – Mulch usually consists of shredded plant material or straw but also includes wood fiber, paper mulch, or biodegradable erosion mats. Straw mulch may be utilized as an alternative to vertical mulch when vertical mulch is not available or will not provide adequate coverage in areas that will not be seeded. Hydroseeding, wood fiber, use of tacifiers or erosion blankets may be a less expensive alternative to straw mulch in areas that require seeding as well. The quantity of mulch to be used shall be recommended by the Construction Contractor and approved by BLM based on site conditions and it will be installed according to the manufacturer's specifications. Straw mulch and other alternative mulches shall be weed-free as specified in Appendix B3 – Noxious Weed Management Plan.

**Off-Highway Vehicle Deterrents** – Operation of off-highway vehicles can cause mechanical damage to stabilization structures and soils and mortality to plants. Access by such vehicles will be limited in areas of restoration. Measures to control off-highway vehicles and other unauthorized vehicle use of the rights-of-way will be determined in consultation with the BLM at the appropriate time. Specific areas of potential access to the right-of-way by off-highway vehicles will be identified and measures to minimize or eliminate access will be developed as appropriate. These measures may include the installation of signs, fences with locking gates, selectively placed boulders, and/or vertical mulch of heavy woody material. Development of off-highway vehicle deterrents will be determined on a case-by-case basis based on BLM requirements and Construction Contractor recommendations.

**Signage** – Restoration areas will require informational signs pertaining to restoration efforts in order to prevent further disturbance by humans within these recovering areas. All restoration areas will have signs installed at appropriate intervals to deter vehicular damage to the site. The Project Proponent will provide the restoration signs and t-posts. Sign locations will be provided by the Project Proponent to the BLM following completion of post-construction restoration procedures and prior to the initiation of restoration monitoring.

**Restoration Monitoring** – Monitoring will be conducted prior to construction and continue through post-construction phases for the projects. Evaluation of restoration success will be based on criteria as described in Section 7.1 .

### **6.3 Modifications and Field Changes**

The restoration actions described in this plan shall be implemented by the Construction Contractor or assigned Subcontractor under the guidance of the BLM and the CIC. Adjustments to restoration levels or actions by the Construction Contractor may be necessary if project conditions change. However, any changes to these levels of restoration, and the associated actions will be reviewed and approved by the BLM. This plan is intended to provide flexibility with respect to construction and unknown constraints that may be encountered in the field. Changes to the original disturbance level or duration, previously described, will be documented by the Construction Contractor and restoration level will be reassessed using Tables F-3 and F-4 to ensure that appropriate restoration actions will be implemented.

As described in Section 3.1, additional linear facilities have been proposed for the utility corridor to be occupied by the projects. Consolidation of access within the corridor may result in an overall reduction of access related concerns and/or impacts to the environmental resources within and near the utility corridor. At the appropriate time the BLM, in coordination with the Proponent and other potential users of the utility corridor, will determine which of the newly constructed access roads will be closed, restored, or retained for operation and maintenance activity. New access roads not required for operation and maintenance of the projects and/or other planned facilities may be closed using the most effective and least environmentally damaging methods appropriate to that area. Where access is to be restored, the practices identified in this COM Plan will be implemented accordingly.

## **7.0 MONITORING**

The Right-of-Way Preparation, Rehabilitation, and Restoration Plan for the projects requires post-construction restoration monitoring to evaluate restoration success of restored areas associated with the construction of project facilities, identify the need for adaptive management measures, and to make a final determination regarding restoration success to release the Project Proponent from further monitoring and restoration actions. In accordance with the BLM Restoration Success Standards and Monitoring Plan, the purpose of the monitoring plan is to (1) present restoration goals and success standards, (2) describe the monitoring practices to be implemented, and (3) discuss adaptive management and site release from monitoring.

Restoration success standards will be used by the BLM to determine if the implemented restoration actions have adequately achieved the goals and objectives outlined in the restoration plan, with consideration for the local site conditions. The monitoring practices include standard techniques for monitoring sites, data collection, as well as the quantitative (numerical) and qualitative (descriptive) measures to be used in monitoring restoration success. Specific monitoring requirements including the site specific data analysis protocol, will be developed by the Restoration Contractor in cooperation with the BLM prior to start of pre-construction activities. This will allow the BLM to make more accurate conclusions pertaining to restoration success based on site specific conditions, such as biotic community and climatic conditions, once construction has been completed. Adaptive management may be necessary to determine appropriate remedial actions, based on monitoring observations, for sites that have not demonstrated a trend toward restoration success. If required, implementation of remedial actions will be determined by the BLM based on the monitoring data and annual report to be submitted for up to 7 years following completion of construction. After 7 years of post-construction monitoring, a final report will be submitted to the BLM summarizing monitoring data, observations, and the overall trend toward restoration for each vegetation community. The Project Proponent will be released from further restoration and monitoring after the report and annual monitoring data are submitted to the BLM.

### **7.1 Restoration Goals and Success Standards**

Consistent with restoration plan statement in Section 1.0, “the intent of this plan is to prevent unnecessary degradation of the environment during construction, restore temporary use areas, and reclaim disturbed areas such that these areas are functionally and visually compatible....” Restoration success, as presented in this Monitoring Plan, is defined by the progression of vegetation and soils toward pre-construction disturbance conditions, to the extent practicable.

As presented in Section 3.1 of the Right-of-Way Preparation, Rehabilitation, and Restoration Plan, the Project Proponent will be responsible for monitoring restoration efforts for the projects. Restoration success will be evaluated by the BLM by comparing project-affected treatment sites with control site conditions in terms of native species density and cover. Restoration of treatment sites will be considered successful if they are within a specified percentage of the mean native species density and cover of the control site. Control sites will be representative areas that exhibit the same target plant community that is located adjacent to or near the project-affected treatment sites. The establishment of control sites within undisturbed communities will allow the monitor to compare the restoration progress of the treatment site against the control site, which has not been affected by construction of the projects.

The Right-of-Way Preparation, Rehabilitation, and Restoration Plan, identifies restoration zones and restoration levels that identify specific restoration actions. This plan presents three restoration zones, which have been identified by the BLM based upon land management objectives that incorporate resources of concern or designated special management areas. These zones that are applicable to the projects include Zone 2 – High Priority Recovery Areas, Zone 3 – Moderate Priority Recovery Areas, Zone 4 – Multiple Use/Standard Recovery Areas, and Subzone 1 – Sensitive Soils (see Figures F-1 and F-2). In particular, as described in Section 5.1, sensitive environmental features in Zone 2 areas will require additional restoration actions to mitigate disturbance issues associated with the projects and maximize the prospect for restoration success.

Restoration success is highly dependent on vegetation community type, environmental conditions (e.g., annual precipitation), proper implementation of restoration actions, and avoidance of future disturbance. Recommended success standards will be monitored within each of the previously described restoration zones specific to the setting of the projects, including topography and the vegetation communities as identified in the Right-of-Way Preparation, Rehabilitation, and Restoration Plan. If the final monitoring report concludes that typical environmental conditions, proper implementation of restoration actions, and lack of disturbance is evident, restoration success will be based on the trend toward native vegetation cover and density for each community type, as presented in Table F-5 and illustrated on Figures F-1 and F-2. Percent cover (amount of vegetation canopy per unit) and density (number of plant species per unit) will be based on the quantitative data (see Section 7.3) collected from the control plot for each monitoring site. For example, if a control plot in Mojave scrubland exhibits an average of 30 percent native vegetation cover, a treatment plot with 18 percent native cover would indicate a trend toward restoration success. These standards have been established by the BLM Restoration Success Standards and Monitoring Plan and may be modified, if appropriate, by the BLM prior to pre-construction activities for the projects.

<b>TABLE F-5 RESTORATION MONITORING SUCCESS STANDARDS</b>		
<b>Vegetation Community</b>	<b>Percent Vegetation Cover*</b>	<b>Percent Species Density</b>
Great Basin Woodland/Shrubs and Grasses	60	50
Great Basin Scrubland	60	50
Mojave Scrubland	60	50
Riparian/Wetland Areas	80	70

*\*In Zone 2 – High Priority Recovery Areas, success standards will be 70 percent for vegetation cover and density.*

## **7.2 Monitoring Practices (Methodology)**

All monitoring sites will be delineated during pre-construction activities and will include the collection of baseline data for subsequent post-construction monitoring. Post-construction annual monitoring and collection of data will be conducted during spring or fall after construction and restoration actions are completed. An annual summary of monitoring information will be provided to the BLM for review and discussion of restoration conditions. As currently anticipated, construction activities will result in varying disturbance levels that will require two types of monitoring:

- 1) General route monitoring – general field reconnaissance (windshield survey) and reporting of conditions in treated areas along the entire length of the transmission line right-of-way
- 2) Site monitoring – detailed field reconnaissance and reporting at designated restoration monitoring sites and control areas along the transmission line right-of-way

A description of the activities associated with these two monitoring methods (practices), and how these practices will be assigned to areas affected by construction of the 500kV transmission line and associated facilities, is presented below.

The contractor hired to perform restoration monitoring will consult with the BLM (Ely and Southern Nevada District offices) to adapt these protocols, as needed, to meet localized conditions and concerns (e.g., Great Basin or Mohave Desert biomes).

### **Route Monitoring**

A general field review of the entire transmission line route, where accessible by vehicle, will be conducted in conjunction with annual site monitoring. The intent of this review is to document overall recovery conditions associated with the construction of the transmission line and substation additions and improvements as appropriate for each project. Conditions to be observed may include areas of dead salvage or preserved plants, establishment of noxious weed populations within the rights-of-way, and/or significantly eroded soils. In lieu of establishing transects, documentation may include establishing single photopoints at agreed-upon locations with the BLM, estimating area or plant populations affected, and/or recording the apparent cause or remediation efforts required. Site locations may be documented by the transmission line tower number or global positioning system coordinates. Adaptive management actions may be implemented based on findings from the route monitoring as recommended by the BLM and described in Section 7.4. Each annual visit should assess designated route monitoring locations and document new locations where appropriate. Areas that will be considered through route monitoring are illustrated in Table F-6.

### **Site Monitoring**

Preliminary site monitoring locations will be established along the rights-of-way based on project engineering data provided in the COM Plan Map Volumes during pre-construction surveys. Sites will be selected for each of the restoration zones and vegetation communities traversed by the projects, as illustrated in Figure F-1. Site selection will be prioritized to include areas in the vicinity of sensitive plant species, Critical Habitat areas, and locations with high visual resource values. Where possible, site monitoring locations will meet more than one of these selection criteria, and the number of sites will be determined by the BLM based on criteria needs. An average of five paired (treatment and control) monitoring sites per vegetation community is recommended (not to exceed a total of 20 paired monitoring sites for both projects) based on the type of vegetation community and the size of its affected area. Larger areas affected may require more than the recommended average of five paired monitoring sites while smaller areas may require less. Final determination of monitoring sites will be approved by the BLM prior to construction. Cooperation with the Contractor may be necessary immediately prior to

construction if changes to construction work area(s) affect the location of the preliminary monitoring site. Once monitoring site locations are finalized, photographs will be taken (1) prior to any construction-related disturbance, (2) when initial restoration efforts have been completed, and (3) during each yearly monitoring visit.

For each monitoring site, paired vegetation transects will be installed and documented as treatment or control for quantitative monitoring. In general, the treatment transect will be placed within an affected area (normally within the immediate right-of-way), and the control transect will be placed immediately adjacent to the right-of-way, on undisturbed ground. Transect size and quantity will be determined based on the final footprint of disturbed areas, in cooperation with the BLM. Transect pairs should be sized and oriented in a similar manner, for consistency, if terrain or construction conditions require deviation. In addition, the location of transect sites should avoid areas susceptible to future human disturbance (off-highway vehicle, transmission line maintenance, planned future utilities), where possible, to preserve the integrity of each transect for the duration of the monitoring period.

Plots will be examined annually, and a variety of vegetation data will be collected, including quantitative and descriptive information. Parameters that will be used to measure restoration success are presented in detail in Section 7.3 of this Monitoring Plan. Restoration monitoring sites will also assess noxious and invasive weed establishment that may require remedial actions such as removal or treatment. However, it should be noted that monitoring for known noxious weed locations may occur independently of restoration monitoring, as outlined in Appendix B3 – Noxious Weed Management Plan. Restoration monitoring will also include the consideration of erosion control as a key indicator to measure the trend toward restoration success (where applicable), and remedial actions may be taken in conjunction with monitoring efforts to control erosion, as recommended by the BLM. These remedial actions will also follow requirements as stipulated in Appendix A3 – Erosion, Dust Control, and Air Quality Plan of the COM Plan.

## **Monitoring Requirements**

In order to address the various construction activities (components) associated with the transmission line and the disturbance types and duration of disturbance associated with these construction activities, restoration monitoring will occur according to the restoration levels (RL 1-RL 5) and their associated construction components as described in Section 5.2. Categories RL 1 and RL 4 (e.g., at structure bases, existing and long-term access) are permanent disturbance areas that will not require restoration monitoring. However, all restoration level areas will follow guidelines for noxious weed monitoring as specified in Appendix B3. RL 2, RL 3, and RL 5 are temporary disturbance areas that will require restoration actions and post-construction monitoring in selected locations to evaluate restoration success. The highest disturbance level for construction activities is associated with RL 5 areas that occur in temporary structure work areas and are associated with new access roads. A summary of restoration monitoring requirements for these construction components (activity areas) is presented in Table F-6.

TABLE F-6 RESTORATION MONITORING REQUIREMENTS					
Construction Component (activity areas)	Disturbance Level	Disturbance Duration		Restoration Level	Monitoring
		Perm	Temp		
Structure Work Area	D2		●	RL 2	Route
	D3		●	RL 3	Route
	D4		●	RL 5	Route, Site
Wire-Pulling and Tensioning Sites, Wire-Splicing Sites, Construction Yards, and Guard Structures	D2		●	RL 2	Route
	D3		●	RL 3	Route
Structure Base Regeneration Sites	D4	●		RL 4	None
Existing Paved Roads, Access Roads (no improvement)	D1	●		RL 1	None
Existing Access Roads (with improvements)	D4	●		RL 4	None
Overland Access	D2		●	RL 2	Route
Overland Access	D3		●	RL 3	Route
New Access Roads	D4	●	●	RL 1/RL 5	None/Route, Site

The specific location of monitoring sites associated with these different activities in key areas (e.g., Critical Habitat, sensitive plant locations, visually sensitive areas, and areas of sensitive soils) will be identified, reviewed and approved by the BLM prior to initiation of pre-construction activities. Once monitoring sites have been approved, a Subcontractor will establish the sites in the field and baseline data (i.e., photographs, biometrics, soil conditions) will be collected for subsequent monitoring up to 7 years following post-construction activities.

### 7.3 Data Collection

Restoration monitoring will include both quantitative (numerical) and qualitative (descriptive) data collection at the designated monitoring sites approved by BLM. Quantitative monitoring will document the trend and degree of change at each site, and qualitative monitoring will detect the initiation of change and changes resulting from environmental conditions, such as precipitation, allowing for a record of change over time.

Restoration monitoring for the projects will use vegetation as the main indicator of recovery, but observations on soil conditions will also be collected and considered when assessing progress toward functionality. Measurements and descriptions will be accompanied by photographs that will be used to help document the status of recovery at all monitoring sites. Sampling points will be located and mapped according to global positioning system coordinates. Photographic reference points will be the primary method of qualitative monitoring for the projects. A protocol for taking photographs and a standardized data-recording form will be developed to ensure consistency of monitoring by the BLM. Qualitative (descriptive) and quantitative (numerical) information that will be gathered during general route monitoring and site monitoring are described in detail below.

## **Qualitative (Descriptive) Information**

Qualitative data collection will occur annually for both route and site monitoring. The goal of qualitative monitoring is to document site conditions and assess the need for remedial actions to ensure that sites are progressing toward the success standard established by BLM. The Southwest typically has unpredictable weather patterns that may affect restoration success within the allotted 7-year post-construction monitoring timeframe currently established by the BLM. Qualitative evaluations that are conducted at predetermined monitoring sites during monitoring will serve as representative indicators for similarly disturbed areas in the same vegetation community. These site evaluations will then serve as a baseline when conducting general overall route survey's for the remainder of the treated areas within that vegetation community. Any outstanding or non-project-related disturbances that could affect restoration would also be generally described during the general route monitoring. Recovery from construction-disturbance activities, such as clearing and grading in the semi-arid and arid climactic zones, typically does not occur in a short amount of time, and it is for this reason that the monitoring plan will assess the trend toward restoration success standards outlined in Section 7.1 and presented in Table F-5.

Restoration success may be assessed by the presence or condition of certain site characteristics that encourage recruitment of native vegetation. Restoration actions of a given site, if implemented successfully, are anticipated to contribute to the stabilization of soils, seedling or seedbank recruitment, and avoidance of noxious weeds. Lack of erosion at a site provides evidence that soils have been adequately stabilized, while natural recruitment and/or reproduction indicate that important functional processes are in place that initiate regeneration, such as pollination and seed dispersal. Noxious weeds could potentially compete with native perennial species, and relatively high abundances can have negative effects on site conditions. Evidence of animal use is also used as an indicator that habitat conditions have been restored; however, grazing can negatively affect restoration success if unmanaged. Patterns of established vegetation help to determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of surrounding vegetation. Each of these site characteristics will help determine trends that relate to restoration success. Once recruitment conditions have been met, established vegetation is anticipated to contribute to the maintenance and functionality of the community to ensure continued success after monitoring has concluded.

## **Quantitative (Numerical) Information**

Success parameters will be numerically measured on those treatment sites, as identified with the BLM (see Section 7.2), during the fifth and seventh growing seasons (or sooner if deemed appropriate) to determine if there is a trend toward restoration success based on comparison of the control transect for each site. Quantitative assessment during the fifth year will provide enough time for vegetation establishment of the affected areas based on climatic trends for the area. Trends toward restoration success as well as remedial actions (if necessary) will be identified during the fifth year. Quantitative monitoring in year seven will allow any remedial actions or climatic events to discernibly affect treated areas. Density monitoring records the number of plants per unit of area. This technique is sensitive to changes in the vegetation community caused by climatic conditions; resource uses and provides useful information on seedling emergence, survival, and mortality. Not all plant species present will be monitored.

Monitoring will focus on dominant or indicator perennial species as determined by control-site observations of the adjacent plant community. Species density will be evaluated by comparing the total number of indicator species in the treatment site to that of the control site. Other plant species will be inventoried, but densities will not be evaluated. Vegetation cover monitoring records the coverage of vegetation canopy per unit of area. Density and cover data, along with other biometrics, will be recorded on standard field data sheets.

Monitoring sites that include salvaged plants or plants that have been preserved in place will also be counted and assessed for mortality, where present. The preservation or salvage of plants is primarily a visual mitigation measure and structural contribution to the long-term maintenance and functionality of the vegetation community. Salvage-plant mortality should not be considered a principal indicator of overall restoration failure.

#### **7.4 Adaptive Management and Site Release**

The BLM requires that an adaptive management approach designed to allow frequent review and feedback on the progress of restoration be implemented as a part of monitoring activities for the SWIP Southern Portion and SWIP Central Portion projects. Adaptive management greatly increases the potential for restoration success by providing early detection of problems and the opportunity to implement remedial actions to address these problems. Effective monitoring is an essential element of adaptive management because it provides reliable feedback on the effects of restoration actions. Adaptive management actions may be recommended on a case-by-case basis where feasible, and as determined by the BLM, during the 7-year monitoring timeframe.

If it has been determined that adaptive measures are necessary, monitoring data will provide information on restoration components that are deficient, such as native vegetation cover, soil compaction, or lack of natural surface material. Based on this information, appropriate restoration actions may include measures such as supplemental seeding, mulching, and additional weed and/or erosion control measures. Recommendations could also include waiting a few years prior to taking remedial action to determine if favorable germination/establishment conditions are affected. All adaptive management actions will be subject to the review and approval of the BLM. Again, the Contractor will use all reasonable methods to help the Project Proponent ensure that restoration is progressing toward the success standards identified in Section 7.1 and Table F-5 of this monitoring plan. It is possible that some sites will be incapable of supporting adequate vegetation to progress towards the success standards due to conflicting land management, project-caused conditions, and environmental limitations not associated with the projects. For instance, restoration may fail in areas with unmanaged off-highway vehicle access, grazing of domestic livestock, natural disasters such as fire or flooding, and construction of other utility projects. If restoration failure is determined to be caused by these conditions, neither the Project Proponent, nor any of its construction/reclamation primary Contractors or Subcontractors, will be held responsible for continued restoration and monitoring of these sites.

## 8.0 REFERENCES

- Brown, D.E. and C.H. Lowe. 1974. The Arizona System for Natural and Potential Vegetation-Illustrated Summary Through the Fifth Digit for the North American Southwest. Arizona Academy of Science Vol., Supplement 3. 56pp.
- U.S. Bureau of Land Management (BLM). 2002. Final Falcon to Gonder 345kV Transmission Project, Construction, Operation and Maintenance Plan. Prepared for Sierra Pacific Power Company by EDAW with assistance from Stantec Inc., TetraTech EM Inc., Summit Envirosolutions Inc., and Black Eagle Consultant Inc. May 2002.
- U.S. Bureau of Land Management (BLM) 2005. Restoration Plan for Nevada Power Company's Harry Allen to Mead 500kV Transmission Line Project. Prepared by Nevada Power Company. July 2005.

**ATTACHMENT A**  
**LIST OF POTENTIAL RESTORATION CONTRACTORS**

## ATTACHMENT A

### LIST OF POTENTIAL RESTORATION CONTRACTORS

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The BLM must approve the selected Restoration Contractor/collector to be used by the applicant to implement the actions contained in the Restoration Plan. Other Restoration Contractors may be used subject to submittal of documentation of relevant experience with these techniques and approval by the BLM. Following is a listing of Restoration Contractors approved for implementation/oversight of restoration activities, and approved seed and salvage Contractors. This list may be updated and revised as required by BLM.

#### Approved Contractors for Restoration Techniques

##### **Bitterroot Restoration**

3702 Via De La Valle Suite 202A  
Del Mar, California 92014  
(858) 481-5865  
Fax: (858) 481-5870

##### **Southern Nevada Environmental, Inc.**

6295 McLeod Drive Suite #1  
Las Vegas, Nevada 89120  
(702) 248-5370  
Fax: (702) 248-8036

##### **CH2M Hill**

2000 E. Flamingo Road  
Las Vegas, Nevada 89119  
(702) 369-6175  
Fax: (702) 369-1107

##### **Environmental Planning Group (EPG)**

9550 West Sahara #2141  
Las Vegas, Nevada 89117  
(702) 242-4525

##### **Native Resources**

Bryan Vellinga  
5375 Cameron Drive, Suite L  
Las Vegas, Nevada 89118  
(702) 873-2023  
Fax: (702) 873-0915

##### **Ecological Solutions Group LLC (ESG)**

J. Gant Massey  
115 West Third Street, Suite 210  
Stevensville, Montana 59870  
(406) 777-1881 (voice)  
(406) 396-9675 (cell)

##### **EcoSystems Restoration Associates**

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