BLM

Elko Field Office, Nevada

ENVIRONMENTAL ASSESSMENT

T G Power LLC
Hot Sulphur Springs Transmission Line

120 kV Electric Power Line
Northern Independence Valley
Elko County, Nevada

March 2008
2800/Case File No. N-83204
BLM/EK/PL-2008/010

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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ENVIRONMENTAL ASSESSMENT
T G POWER LLC HOT SULPHUR SPRINGS TRANSMISSION LINE

1.0 INTRODUCTION/PURPOSE AND NEED

1.1 INTRODUCTION

T G Power LLC (TG Power) has submitted a Right-of-Way (ROW) application to the Bureau of Land Management (BLM), Elko Field Office, for the construction of an approximate 24.5-mile, 120 kilovolt (kV) electric power transmission line in Independence Valley, Elko County, Nevada. Approximately 16 miles of the proposed transmission line would be located on private lands. The remaining 8.5 miles would be located on public land administered by the BLM. TG Power proposes to construct the transmission line to connect a 32 net megawatt geothermal power plant, which would be located approximately 70 miles northwest of the city of Elko, to Sierra Pacific Power Company's (SPPCo) Humboldt Substation located approximately 7 miles west of the intersection of State Route (SR) 226 and SR 225 (Figure 1).[1]

Figures 2a and 2b show the proposed transmission line route and the respective property owners along the designated route. Figure 2a shows that the transmission line would travel from the proposed geothermal power plant approximately 2.5 miles to SR 226, across both public land and private land owned by Ellison Ranching Company. The transmission line would parallel SR 226 on the west side for approximately 7.5 miles and on the east side of SR 226 for approximately 2.5 miles. At this point, the transmission line would turn east-southeast, over SR 226 and over the south end of the Independence Range, north of Taylor Canyon. The transmission line would continue east to the Humboldt Substation. The section from SR 226 to the Humboldt Substation includes a mix of both private and public lands. A 150-foot corridor width has been established for the transmission line. The total amount of area within the 150-foot wide corridor is approximately 445 acres. Approximately 152 acres would be public lands, 13 acres would be land owned by Wright Ranches, 82 acres would be land owned by Van Norman Quarter Horses, and 198 acres would be land owned by Ellison Ranching Company. However, the actual total surface disturbance would be approximately 107.5 acres.

The transmission line ROW (Proposed Action) includes:

- Constructing an approximate 24.5-mile transmission line between TG Power's geothermal power plant in Section 8, Township 41 North (T41N), Range 52 East (R52E) to the SPPCo Humboldt Substation in Section 31, T39N, R54E;

- Constructing a 2.5-mile access road. This road would serve as access for maintenance of portions the transmission line and as the main access road from SR 226 to the power plant;

[1] All figures are compiled separately in an attachment to this Environmental Assessment.

- Upgrading the Humboldt Substation to accommodate the new 120 kV transmission line;
- Crossing the SPPCo 345 kV line at 41º13'37.9085" and 115º56'36.8623" and one other SPPCo transmission line prior to entering the Humboldt Substation; and
- Monitoring and treatment of the transmission line and associated facilities, such as access roads, to prevent undue environmental degradation such as invasion by noxious weeds.

This Environmental Assessment (EA) has been prepared to comply with the National Environmental Policy Act of 1969 (NEPA), in accordance with applicable regulations and laws including the President's Council on Environmental Quality regulations (40 CFR parts 1500-1509) and agency policy. The BLM is the lead agency for this EA. As the state agency responsible for managing wildlife, the Nevada Department of Wildlife (NDOW) cooperated in its preparation.

1.2 AUTHORIZING ACTIONS

The federal action under consideration is granting a ROW to TG Power for the 120 kV transmission line. The official responsible for granting the ROW is the BLM Elko District Manager. Implementing the Proposed Action or the alternatives would require authorizing actions from other federal, state, and local agencies with jurisdiction over certain aspects of the proposed project. BLM's ROW grant would be subject to TG Power applying for and acquiring the following permits for the proposed transmission line.

- Utility Line Activities 404/401 Permit (Nationwide Permit 12) – U.S. Army Corps of Engineers (COE);
- Linear Transportation Projects 404 Permit (Nationwide Permit 14) -- COE
- Temporary Working in Waterways Permit – Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control;
- ROW for Transmission Line over Roadway – Nevada Department of Transportation (NDOT);
- Occupancy or Encroachment Permit – NDOT;
- Surface Area Disturbance Permit – NDEP; and
- Stormwater General Permit for Construction – NDEP

Future development of the Hot Sulphur Springs Geothermal Power Plant is closely related to the proposed transmission line, but because it is on private land authorization for the power plant is

provide from the Public Utility Commission of Nevada and NDEP. TG Power would also be responsible for acquiring all necessary permits for its construction.

1.3 PURPOSE OF AND NEED FOR ACTION

The Federal Land Policy and Management Act of 1976 (FLPMA; 43 USC 1761-1770) directs the BLM to grant and manage ROWs on public land managed by the BLM. As defined in 43 CFR 2800, a ROW grant is required to use specific areas of public land for certain projects including roads, pipelines, transmission lines, and communication sites. ROWs are granted to any qualified individual, business, or government entity, and it is the BLM's purpose to direct use of ROWs in a manner that protects natural resources and prevents unnecessary or undue degradation to public lands and promotes the use of ROWs in common, in coordination with state and local governments and interested individuals.

The Energy Policy Act of 2005 (Public Law 109-58), identifies the need for greater energy security and is directed towards a reduced dependence on foreign energy sources. It provides Production Tax Credits to encourage the development of alternative energy, and it also emphasizes the need to upgrade the energy infrastructure by upgrading and modernizing the energy grid to meet the needs of a growing economy and population. The Advanced Energy Initiative, derived from the Act, is directed towards increasing the generation and use of alternative fuels and clean energy technology, including solar, wind, and geothermal energy sources.

Purposes of the Hot Sulphur Springs Geothermal Power Plant and this proposed transmission line is to:

- Increase the amount of electrical power available from northern Elko County;
- Augment SPPCo's electric power supply with renewable energy from a non-polluting, sustainable energy source;
- Ensure BLM can grant and administer use of the ROW in a manner that protects natural resources and prevents unnecessary or undue degradation of public lands, while allowing multiple use of public lands; and
- Stimulate non-mining related economic growth in Elko County, by increasing long-term, high paying employment opportunities, adding to the tax base, and increasing revenues.

The underlying need for the proposed transmission line is to:

- Provide a means to convey electrical power generated at the future Hot Sulphur Springs Geothermal Power Plant to the Humboldt Substation;

- Provide a sustainable, extremely low emission electrical power generation facility in Elko County;

- Reduce dependence on energy production based on the consumption of non-renewable fossil fuels; and

- Supply electricity from a renewable energy source by the year 2013, as mandated by the State of Nevada.

1.4 LAND USE PLAN CONFORMANCE

The Elko Resource Management Plan, as approved March 11, 1987, is silent on the Proposed Action. However it is consistent with the objectives for the management of lands, ROW corridors, access, recreation livestock management, wildlife and minerals as prescribed and identified in the Record of Decision for the Resource Management Plan (BLM, 1987). As described above for authorizing actions and the purpose and need statement, the proposed is further consistent with other federal, state, and local laws, regulations, and plans to the maximum extent possible.

2.0 ALTERNATIVES

TG Power proposes to construct a 24.5-mile 120 kV electrical transmission line from the Hot Sulphur Springs Geothermal Power Plant, which is currently under construction on private land, to the SPPCo Humboldt Substation. The proposed transmission line route would be from the northern end of Independence Valley along SR 226, over the southern end of the Independence Mountain Range, and end at the Humboldt Substation approximately 7 miles west of the intersection of SR 226 and SR 225.

Alternatives described in this chapter include TG Power's Proposed Action (Section 2.1) and the No Action alternative (Section 2.2). Two alternative routes for the transmission line were considered but eliminated from detailed analysis, as described in Section 2.3.

2.1 PROPOSED ACTION ALTERNATIVE

2.1.1 Overview

Approximately 8.5 miles of the proposed transmission line would be on public lands while the remaining 16 miles would be on private land owned by Ellison Ranching Company, Van Norman Quarter Horses, and the Wright Ranches (Figures 2a and 2b). The transmission line, extending from the geothermal power plant to the Humboldt Substation, would provide the first long-term supply of renewable, extremely low emission, electricity to Nevada customers. It would also meet federal and state mandates to increase the generation and transmission of sustainable energy produced by low emission processes, thus reducing the reliance on combustion of fossil fuels for energy production.

Construction of the transmission line is scheduled to begin in early spring 2008, and be completed by late fall 2008. This would coincide with the construction of the power plant on private land in Section 8, Township 41 North, Range 52 East, Mount Diablo Meridian.

Figures 2a and 2b show the land status in the project area, and Table 1 lists the legal descriptions (township, range, section, and aliquot part) of the proposed transmission line alignment as it crosses public and private land. From the power plant, the transmission line runs east across approximately 2.5 miles of public and private land to SR 226. Prior to intersecting SR 226, the transmission line would turn south and parallel SR 226 for approximately 10 miles. In order to avoid congestion with other power lines, roads, and the South Fork of the Owyhee River in Taylor Canyon, the route would turn to the southeast, north of Taylor Canyon, and cross the southern end of the Independence Mountains. Once over the mountains, the route would trend east for approximately 5 miles, terminating at the Humboldt Substation. The transmission line would cross two existing SPPCo power transmission lines. Adjacent to the Humboldt

Substation, the route would cross beneath a SPPCo low voltage line while farther north it would cross and then parallel a low voltage SPPCo distribution line along SR 226. The sections of public land for which granting of a ROW is requested are indicated in **bold** type in Table 1.

Table 1 Legal Description of the Proposed Transmission Line[2]

Township and Range	Section	Public Land	Private Land
T41N, R52E	**8**	**NE SE**	W2 SE (Power Plant)
	9	**SW**	S2 SE
	10		N2 S2
	11		SW SW
	14		E2 W2 NW, E2 W2 SW
	23		E2 W2 NW, E2 W2 SW
	26		E2 W2 NW, NW SW, SE SW
	35		E2 NW, W2 SW
T40N, R52E	2		W2 W2
	3		SE SE
	10		SE SE, E2 SE
	11		W2 NW
	15	**NE NE**	SE NE, E2 SE
	22	**W2 SE, NW NE**	E2 NE, NE SE
	27		W2 E2
	34		W2 NE, SE
	35		SW SW
T39N, R52E	1		SW SW
	2		NW, E2
	12		NW, SW NE, SE
	13		NE NE
T39N, R52 1/2E	**13**	**All Lots (4)**	
	24	**Lot 1**	
T39N, R53E	**19**	**NW NW, SE NW, NE SW, SE SE**	NE NE, W2 SE
	20	**SW SW**	
	28	**S2 SW**	
	29	**N2 NW**	SE NW, N2 SE, SE SE
	33	**N2 NE, NE NW**	
	34	**N2, NE SE**	
	35	**N2 S2**	
	36	**N2 SW, SE NW, SE NE**	SW NE
T39N, R54E	**31**	**Lots 9, 15, 16 (Substation)**	

2.1.2 Facility Design Factors

The power transmission line would be aligned within a 150-foot wide corridor and have a total of approximately 315 pole structures supporting the transmission line. Approximate pole locations are shown in Figures 3a through 3d. The 150-foot wide corridor provides potential for pole and line location adjustments, if needed. There is a total of approximately 451 acres within the 150-foot corridor, of which about 158 acres would be public land and 293 acres would be privately owned land. Approximately 107.5 acres of the 445 acres would be disturbed by construction of the transmission line and access road. Approximately 43.4 acres of the disturbance would be on

[2] See Figures 2a and 2b for ownership.

public land and approximately 64.1 acres would be on private land. The current location reflects the best-fit compromise route as requested and approved by affected and neighboring landowners. The disturbance would be a result of installation of the power poles, construction of the 2.5-mile access road, overland access to each pole location, equipment storage and staging areas, and a long-term two-track maintenance road along the transmission line.

The following considerations were taken into account during the transmission line location and design:

- Line adjustments were made to avoid encroaching on SPPCo's ROW corridor through Taylor Canyon and to minimize the number of crossings with other SPPCo transmission or distribution lines;
- Line adjustments were made at the requests of the private land owners;
- In response to a request from NDOW, the transmission line route was relocated to avoid encroachment on a known sage grouse lek; and
- Line adjustments were also made to minimize crossings over SR 226.

2.1.3 Site Preparation

During transmission line construction, short-term surface disturbances would be created at each pole location, at equipment staging areas, and along the corridor for a two-track access/maintenance road. Vegetation would only be removed where necessary to complete the proposed work. The area disturbed at each structure/pole location would be up to 0.18-acres for single pole installation; up to 0.5-acre area for double pole installation; and up to 1-acre for triple pole installation. Site clearing would primarily consist of removing dense vegetation. At steep sites, a permanent, level pad would be created for the safe installation of double and triple pole structures. This level pad would not create any more disturbance than discussed above.

Existing roads and two-track roads would be used, to the extent possible, to access each pole location. For areas not currently accessible by existing roads, cross country travel would be used to access pole locations. In the event a pole location is not accessible by vehicle, a helicopter may be used to assist in setting the structures. A total of three material staging areas would be needed to construct the transmission line, two of which will create new disturbance and would be on public land administered by the BLM. Each staging area would be 2.1 acres and would also serve as turn-around areas for construction equipment. Any cross-country roads that are no longer used as maintenance roads after completion of the project would be rehabilitated. Signs would be installed to help deter use of rehabilitated roads. Table 2 provides a breakdown of the disturbance by property ownership category.

Table 2 Summary of Disturbance

Description	BLM (acres)	Private (acres)	Total (acres)
Temporary Disturbance			
Transmission Line Construction	30.5	51.1	81.6
Material Staging/Turn-Around Areas	4.2	0.0	4.2
Temporary Disturbance Subtotal	**34.7**	**51.1**	**85.8**
Permanent Disturbance			
Power Plant Road (Right-of-Way)	4.4	9.5	13.9
Maintenance Road (overland travel*)	4.3	3.5	7.8
Permanent Disturbance Subtotal	**8.7**	**13.0**	**21.7**
Grand Total	**43.4**	**64.1**	**107.5**

*Overland travel assumes disturbance width of six feet

2.1.4 Structure Construction

In order to support the transmission line, TG Power proposes installing approximately 315 power poles: 275 wood single pole structures, 15 steel double pole H-frame structures, and 25 wood triple pole structures. The average distance between structures would be approximately 400 feet, but spans as long as 1,500 feet would be possible for crossing steep canyons and avoiding areas of significant environmental concern. Single pole structures would primarily be used, but multiple poles would also be necessary when stronger pole structures are required, such as for long spans, at angles, and significant elevation change locations. When a double pole configuration would be installed, it would be perpendicular to the transmission line and the individual poles would be spaced 14.5 feet apart. Triple pole structures would also be installed perpendicular to the line and would be spaced 36 feet apart. Topography would be the main criteria for determining the most advantageous and safe configuration for the power pole installations. Some of the pole locations would require the use of anchors and guy wires.

All transmission line structures/poles would be constructed from Pacific Coast Douglas fir, manufactured to SPPCo's Specification PTF 02X. The pole designs were selected to satisfy SPPCo requirements for the specific voltage and class of transmission line. The average height of the transmission line poles would be 61 feet above ground level but could vary, depending on terrain in order to maintain a 22-foot minimum line to ground clearance. Poles would be buried a minimum of 8 feet below ground surface. The transmission line would be designed and constructed to withstand the weather and elements in the Independence Valley and Independence Range, including extreme wind, ice, freezing rain, and snow, and would be constructed to meet or exceed SPPCo specifications, standards, and clearances.

Anti-perching devices would be used where appropriate to avoid increasing perching opportunities for raptors that may prey on sage grouse and other wildlife species (ALPIC, 2006). These anti-perching deterrents would be installed in a manner that would not allow for a base for predatory bird nests. Visual collision deterrent devices (bird flight diverters) would be installed on the transmission line where the proposed ROW runs near sage grouse leks and within or near

riparian and wetland areas to reduce potential for collisions associated with sage grouse and other bird species flying into the line. Anti-perching and collision deterrent devices would be tailored to site-specific conditions, such as average wind speed and line height, and would conform to SPPCo's specifications. These devices would be maintained on the structures and line for the life of the project.

2.1.5 Site Access and Road Improvements

Principle access to the site is from numerous side roads along SR 226. Vehicular access to each structure location would be via existing dirt or gravel roads and two-track roads from SR 226, to the extent possible. For pole locations not readily accessible using existing roads, overland travel would be used to access the sites. Where necessary, trees and brush would be removed using hand tools to allow overland travel to pole locations. Use of equipment (grader or bulldozer) for road construction to pole locations is not planned. A helicopter may be used to assist in setting structures in areas with difficult access, thus eliminating the need for creating roads with a grader or bulldozer.

The transmission line would cross several drainages including Harrington Creek, Niagara Creek, Thomas Jose Canyon, Snow Canyon, Bull Creek, Badger Creek, Starvation Canyon, and Water Pipe Canyon, as well as meadows and riparian/wetland areas that are associated with several unnamed drainages and springs in both Independence Valley and the Independence Mountains. In order to minimize impact to these drainages, power poles would be located on opposite sides of the drainages and the drainage would be spanned by the transmission wires. Helicopters could be used to string and tension the line between structures on opposite sides of major drainages and to place certain poles at locations. For aircraft safety, aerial marker spheres will be used when required by Federal Aviation Administration regulations.

2.1.6 Road Construction

Existing leases and ROW agreements between Ellison Ranching Company and TG Power specify that a new road be constructed to minimize traffic through the Spanish Ranch during construction and operation of the power plant. The new road would also be used for construction and maintenance of the transmission line. East from the power plant site, the access road would be diverted from the transmission line route and generally follow an elevation of 5,900 feet for the 1.5 miles between the power plant and Harrington Creek, then the transmission line and the access road would join and remain together to SR 226. The divergence from the transmission line is to allow the road to follow contours, thus reducing the amount of disturbance and allow for easier (less steep) transportation of supplies to the site. Baseline surveys for this divergence from the transmission line on public land would be completed and approved by the BLM prior to disturbance.

This new road would be approximately 2.5 miles long, have a 25-foot running width, and a 45-foot disturbance width. The road would cross approximately 4,300 feet of public land, equating to 4.4 acres of disturbance, and 9,150 feet of land owned by Ellison Ranching Company, equating to 9.5 acres of disturbance. The road bed would be 25 feet wide and would be topped with up to 12 inches of clean gravel. Gravel for the road would be obtained from a nearby NDOT-approved gravel quarry owned by the Ellison Ranching Company.

The intersection of the new road with SR 226 would be constructed in accordance with NDOT requirements and permit specifications. TG Power would apply to the U.S. Army Corps of Engineers to cross Harrington Creek under Nationwide Permit 14, which regulate linear transportation projects. A Temporary Working in Waterways permit from the NDEP, Bureau of Water Pollution Control would also be obtained.

2.1.7 Maintenance Plan

A regular maintenance program would be initiated once the transmission line becomes operational. Regular maintenance would consist of an annual visual inspection performed using a rubber-tired all-terrain vehicle, on foot, or by air. Additional maintenance would be performed in response to any problems reported with the line. Existing roads would be used to the extent possible to perform transmission line maintenance; approximately 1.08 miles of existing roads are on public lands and 0.49 miles are on private lands. Approximately 5.94 miles of overland travel on public land and 4.88 miles on private land, would be required to perform maintenance. No maintenance road is planned along the transmission line where it would parallel SR 226. Overland travel once per year would likely form a two-track road. Assuming a 6-foot disturbance width for a two-track road, the maximum new disturbance on public land resulting from the maintenance would be 4.32 acres with 3.55 acres on private land. Any new two-track road resulting from the maintenance program would be inspected for weeds and treated accordingly, which could include using BLM-approved herbicide(s).

2.1.8 Environmental Protection Measures

TG Power has incorporated several environmental protection measures into the Proposed Action to reduce the environmental effects, ensure protection of cultural resources, and comply with regulatory protective and monitoring requirements of applicable permits and plan approvals. The following sections describe the environmental protection measures incorporated into the Proposed Action.

Air Quality

TG Power would implement the following measures to protect air quality:

- Fugitive dust is specifically addressed as a condition in the Fugitive Dust Control Plan

portion of the NDEP Surface Disturbance Permit Application. TG Power would implement an ongoing program to control fugitive dust from disturbed areas using Best Management Practices (BMPs). It is anticipated that TG Power would control fugitive dust emissions primarily by having gravel surfaces on the roads and using water on roads. Additional BMPs may be used if watering is not sufficient in controlling fugitive dust emissions;

- The transmission line and power plant access road to be built from SR 226 to the power plant would be maintained on a regular basis to minimize dust and provide for safe travel conditions; and

- Disturbance associated with the installation of the poles for the transmission line would be revegetated as soon as possible following completion.

Cultural Resources

The following cultural resource protection measures would be implemented during construction and maintenance activities:

- TG Power would inventory and avoid, to the extent possible, eligible and potentially eligible cultural resource sites through design, construction, and operation of the transmission line and access routes;

- A 30-meter buffer zone would be established around eligible and potentially eligible cultural resource sites near the transmission line corridor, including where it connects to the Hot Sulphur Springs Geothermal Power Plant and along access routes, to protect the sites during construction. Construction activities would not encroach into the buffer zone;

- The construction and maintenance of the transmission line and power plant would be conducted in an appropriate manner and in accordance with all permits to prevent problems associated with runoff that could affect adjacent cultural sites. This includes the use of BMPs to minimize off-site erosion and sedimentation;

- Prior to construction, TG Power would train workers regarding the potential to encounter historic or prehistoric sites and objects, the proper procedures in the event that cultural items are encountered, prohibitions on artifact collection, and prohibitions on disclosing the location of culturally sensitive areas; and

- Any suspected cultural object, site, Native American funerary item, sacred object, or human remains discovered during construction would be reported immediately to the BLM Authorized Officer by telephone and with written confirmation. Work would be suspended in the immediate area of such a discovery until it is evaluated by the BLM, and until the BLM gives authorization to recommence work in the area.

Vegetation

TG Power would implement the following measures to minimize impacts to vegetation and wildlife habitat in the transmission line corridor:

- Minimize disturbance to the extent possible during construction through use of existing roads and overland travel to access transmission line sites;

- Disturbed areas will be seeded with the mix shown in Table 3, to return areas to a productive land use; and

- Monitor the seeded areas to identify those that may need additional seed application or treatment for noxious weeds would be conducted annually for three years or until successful revegetation has been achieved.

Table 3 Seed Mix

Species		Pounds Pure Live Seed Per Acre
Common Name	**Scientific Name**	
Sandberg's bluegrass	*Poa secunda*	2.0
Thickspike wheatgrass*	*Elymus lanceolatus spp. lanceolatus*	10.0
	Total	**12.0**

* Streambank wheatgrass (*Elymus lanceolatus*) to replace thickspike wheatgrass on wetter sites.

Wildlife

TG Power would implement the following measures to minimize impacts to wildlife:

- To avoid destruction of birds, nests, eggs, or young, TG Power would avoid land clearing of native vegetation during the avian breeding season (April 1 to August 15). If it becomes necessary to clear any area during the breeding season, a survey for active nests would be conducted by a qualified biologist within areas to be cleared of vegetation. If active nests are located, a protective buffer zone will be established. The size of the buffer zone would be based on the species identified and would be approved by the relevant agency. The buffer zone would remain in place until it is confirmed that the young have fledged;

- Single pole structures with no cross bars would be used wherever possible to prevent perching and nesting opportunities for raptors, ravens, and crows;

- TG Power would install anti-perching devices on the transmission line poles to discourage the perching and nesting of raptors, ravens, and crows;

- TG Power would avoid construction of the transmission line in areas within two miles of sage grouse leks during the mating season and brood rearing, when possible; and

- Visual collision deterrent devices (bird flight diverters) would be installed on the transmission line, where the proposed ROW is located near sage grouse leks and on or near riparian and wetland areas, to reduce potential collisions associated with birds flying into the line. Flight diverter devices and predatory bird perching and nesting deterrents would be tailored to site-specific conditions, such as average wind speed and line height, and would conform to SPPCo's specifications. These devices would be maintained, or replaced as necessary, for the life of the project.

Livestock Grazing

Any potential damage to livestock fences from construction activities would be repaired immediately. TG Power employees and contractors would close livestock and property boundary gates when traveling through the transmission line corridor for public safety and to ensure livestock are confined to the appropriate allotment/or pasture and property rights are respected.

Noxious Weeds

To minimize the introduction and establishment of noxious weeds in the disturbed areas, the following measures would be incorporated into the Proposed Action:

- TG Power would implement a monitoring and weed control program along the transmission line corridor and maintenance roads. The occurrence of noxious weeds would be reported to the BLM. Weed control, if necessary, would include application of BLM-approved herbicides by a certified contractor; and

- TG Power would use a certified weed-free seed mix during revegetation of disturbed areas around each transmission line pole. The proposed seed mix for the project area is shown in Table 3 (see Vegetation, Section 2.1.8.4).

Water Resources

Water management measures would be implemented for the protection of surface water resources as follows:

- The portion of the new road and transmission line that would cross Harrington Creek would be constructed under a U.S. Army Corps of Engineers 404 permit, and a Temporary Working in Waterways permit from the NDEP, Bureau of Water Pollution Control.

- TG Power would develop a stormwater management plan pursuant to Nevada Administrative Code (NAC) 445A.236, Stormwater General Permit NVR10000. Activities covered under the stormwater General Permit would include construction and maintenance of all culverts installed on the access road and would identify the proper BMPs to be used at the disturbance sites along the transmission line; and

- Travel across drainages would be limited to existing roads, to the extent possible.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the BLM would deny the ROW for the transmission line. Because there is no way to avoid crossing public lands, this would result in TG Power's inability to transmit power from the Hot Sulphur Springs Geothermal Power Plant, which would likely affect the feasibility of the geothermal resources being developed in the near future. Not

building the power plant would cause Nevada Power Company to fail to meet its state mandate for renewable energy production. No change would result in the existing resource conditions as characterized in the description of the affected environment in Chapter 3 and other reasonably foreseeable future actions anticipated in Chapter 4 of this EA. Potential impacts predicted to result from the Proposed Action would not be realized, and there would be no concerns for cumulative impacts to any resource or use in Independence Valley and surrounding areas.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The following sections discuss two alternatives to the Proposed Action that were eliminated from further analysis in the next chapters, for the reasons discussed.

2.3.1 Taylor Canyon Route

An alternative to route the transmission line through Taylor Canyon was identified. It was determined that there was no advantage to constructing the line through Taylor Canyon due to the steepness of the canyon, the presence of a distribution line already in the canyon, and the additional length that would result from this route. In addition, the potential for impacts to water resources and wetlands were greater due to the perennial flow in the South Fork of the Owyhee River that flows through Taylor Canyon.

2.3.2 Jerritt Canyon Mine Route

Initially the proposed transmission line alignment traveled east from the geothermal power plant to the western foothills of the Independence Mountain Range, and over the Independence Mountains to a substation located near the Jerritt Canyon Mine. This route would have traversed BLM-managed land, U.S. Forest Service-managed land, and private land. Following analysis of this Alternative route by a transmission line construction contractor, it was determined that the Alternative would be difficult to construct due to the steepness of the terrain, potential conflicts with areas associated with the Jerritt Canyon Mine, and potential high maintenance costs due to severe winter weather associated with the high elevations and the potential of not being able to maintain the line during severe winter weather.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the general setting, identifies the critical elements and other affected resources and uses of concern in the vicinity of the Proposed Action, and describes the affected environment and the predicted environmental consequences of the Proposed Action.

3.1 GENERAL SETTING

The Proposed Action would be located on the northern edge of the Great Basin, within the Basin and Range physiographic province. The Basin and Range physiographic province is characterized by short mountain ranges of moderate to high relief, separated by broad, alluvial-filled valleys or basins. The Proposed Action is located within the Independence Valley and the Independence Mountains, east of Tuscarora, Nevada and approximately 70 miles north of Elko, Nevada. Elevations along the transmission line route range from approximately 5,700 to 7,600 feet above mean sea level. The majority of the transmission line route (16 of the 24.5 miles) would be on private land that is primarily used for pasture and the production of animal feed crops (hay). Several thousand acres in Independence Valley naturally or artificially flood during the spring and summer periods as part of livestock pastures and irrigated hay lands. Upland areas are comprised of big sagebrush and low sagebrush communities. In 2006, some of the route in the northern portion was burned by the Snow Canyon fire, and much of the route that crosses the Independence Mountains in the southern portion was burned by the Taylor Canyon fire. BLM monitoring has shown that perennial native grasses such as Great Basin wildrye and bluebunch wheatgrass are common on south slopes in Taylor Canyon in the burned area.

Climatic conditions in the project area are generally arid, but vary due to the topographic changes. Based on records from 1957 to May 2007 at the Tuscarora Meteorological Station, the mean annual precipitation is 12.61 inches, the majority of which falls in the form of snow between November and March and rain during April and May. It is anticipated that annual precipitation would be greater than 12.61 inches in the higher elevations of the proposed project area. Mean monthly temperatures, as recorded at the Tuscarora Meteorological Station, range from 27 degrees Fahrenheit (˚F) to 67˚F. Temperatures in the area are moderate with maximum daytime summer temperatures generally under 100˚F and summer nighttime temperatures generally above 40˚F. Winter temperature extremes vary between highs in the 50s to lows of 25˚F below zero. High elevations in parts of the proposed project area contribute to a wide range of temperatures. Average wind speed in the area is approximately 7 miles per hour and southwesterly winds are generally the strongest. A portion of the proposed project is located in hilly terrain where winds are likely to be affected by topographic influences.

The higher elevations of the transmission line route are currently under heavy mineral exploration with numerous roads and drill pads. The remaining public land on the route is predominately used for cattle grazing and dispersed recreation.

The Independence Valley and surrounding areas are sparsely populated with large scale ranching operations being the dominant land use. Mining occurs on the east side and near the top of the Independence Mountains with mineral exploration activities present on the west side of the southern Independence Mountains. Isolated ranch enclaves, out-buildings, a small school, a NDOT field office, and a volunteer fire station are present in the valley proper. Taylor Canyon, close to the southern section of the Proposed Action, contains a small restaurant, several residences, and a camping area that generally contains several travel trailers and campers. The portions of the proposed project area that are around and west of the Humboldt Substation contain no structures and consist of undeveloped grazing land covered with predominantly native vegetation.

Several studies were completed to characterize the affected environment. A survey for wetland and riparian areas (JBR, 2007a) and pedestrian surveys of the transmission line route were completed for special status species and to identify the baseline vegetation and wildlife along the route (JBR, 2007b); and Class III cultural resource surveys were completed along the entire length of the transmission line route (P-III, 2007a).

3.2 CRITICAL ELEMENTS AND RESOURCES OF CONCERN

Critical elements of the human environment are subject to requirements specified in statute, regulation, or executive order. Table 4 identifies the 15 critical elements that must be addressed, and identifies other resources and uses of concern that have the potential to be affected and are evaluated in Section 3.3.

Table 4 Critical Elements and Other Resources

Critical Element/Resource	Present Yes/No	Affected Yes/No	Further Analysis Yes/No	Remarks
Critical Elements				
Air Quality	Yes	Yes	Yes	Discussed in Section 3.3.1
Water Resources	Yes	Yes	Yes	Discussed in Section 3.3.2
Wetlands and Riparian Zones	Yes	Yes	Yes	Discussed in Section 3.3.5
Noxious Weeds	Yes	Yes	Yes	Discussed in Section 3.3.6 and 4.2.2
Threatened or Endangered Species	No	No	No	Discussed with other "Special Status Species" in Section 3.3.9 and 4.2.5
Migratory Birds	Yes	Yes	Yes	Discussed in Section 3.3.8 and 4.2.4
Cultural Resources	Yes	Yes	Yes	Discussed in section 3.3.13
Native American Religious Concerns	Yes	*	Yes	* Consultation is ongoing, as discussed in Section 3.3.12
Areas of Critical Environmental Concern	No	No	No	None within project area

Critical Element/Resource	Present Yes/No	Affected Yes/No	Further Analysis Yes/No	Remarks
Environmental Justice	No	No	No	No concerns for disproportionate effects to a minority or low income population identified by local communities or tribal governments.
Floodplains	No	No	No	None within project area
Prime or Unique Farmlands	No	No	No	None within project area
Wastes, Hazardous or Solid	No	No	No	See discussion below
Wild & Scenic Rivers	No	No	No	None within project area
Wilderness	No	No	No	None within project area
Other Resources/Uses				
Soil	Yes	Yes	Yes	Discussed in Section 3.3.3
Forestry	No	No	No	None present in project area
Vegetation	Yes	Yes	Yes	Discussed in Section 3.3.4 and 4.2.1
Invasive, Non-Native Species	Yes	Yes	Yes	Discussed with Noxious Weeds in Section 3.3.6 and 4.2.2
Wildlife	Yes	Yes	Yes	Discussed in Section 3.2.7 and 4.2.3
Special Status Species	Yes	Yes	Yes	Discussed in Section 3.3. See also discussion below.
Wild Horses and Burros	No	No	No	None present in project area
Rangeland Resources	Yes	Yes	Yes	Discussed with Grazing in Section 3.3.10 and 4.2.6
Land Use/Access	Yes	Yes	Yes	Discussed in Section 2.1.5 and 3.3.11
Visual Resources	Yes	Yes	Yes	Discussed in Section 3.3.12
Socio-Economics	Yes	Yes	Yes	See discussion below

Based on internal scoping, BLM determined that the following critical elements or resources/use of concern, although present in the proposed project area, would not be affected by the Proposed Action for the following reasons.

- Geology and Minerals: Surface geology along most of the transmission line route consists of Quaternary alluvial deposits shed from the Independence and Tuscarora mountains. In general, the proposed project area lies in close proximity to the boundary between the Western Assemblage and the Eastern Assemblage. According to the *Geology of Elko County, Nevada* (Coats, 1987), the Western Assemblage generally consist of thick sequences of tectonically deformed, carbonate-rich, metamorphosed Paleozoic marine sediments that are overlain by Tertiary volcanic materials. The volcanic deposits occur as flows, bedded volcanic materials, and welded tuffs. Detritus from the volcanics are abundant in the Quaternary alluvial valley-fill deposits. The Eastern Assemblage consists primarily of partially metamorphosed, severely deformed, Paleozoic marine sediments, identical to those in the Western Assemblage. These are overlain by interbedded Tertiary terrestrial gravels and conglomerates that are interbedded with volcanic deposits. Construction of the transmission line would not impact the geology of the area.

- Recreation: There are no designated public recreation trails, campgrounds, or parks in the vicinity of the proposed project. No existing recreational uses or developments would be affected by the Proposed Action. Recreation use is already limited on the large amounts of private land associated with the transmission line route. Recreation use in the vicinity of the

project area is dispersed, and consists primarily of hunting, sight seeing, rock hounding, and off-highway vehicle use.

- Wastes (Hazardous or Solid): No chemicals subject to the Superfund Amendments and Reauthorization Act Title III would be used. Trash receptacles would be place on-site for the full duration of the project. All wastes would be disposed off-site at a licensed facility. Diesel fuel used during construction of the transmission line would be stored in up to two 1,000-gallon tanks at each staging area. Tanks would be placed within a synthetically-lined area that would be bermed to contain 110 percent of the tank's capacity. The area provided for fueling of vehicles would also be bermed to prevent the spread of fuel that may potentially spill during fueling. Any spill or release of fuel or oil would be immediately cleaned up and contaminated material would be disposed properly.

3.3 ANALYSIS OF AFFECTED RESOURCES

As identified in Table 4, the resources and uses that are present and have the potential to be affected by the Proposed Action are brought forward for analysis in the following subsections. Providing the analysis within the same subsections provides a format to allow the reader to understand the affected environment and the environmental consequences of the Proposed Action on each resource of concern.

3.3.1 Air Quality

Affected Environment

Generally, air quality in the proposed project area is good. The proposed project area is located in an unclassified area, and thus is considered to be in attainment for all criteria air pollutants. The proposed project area is also within a designated Prevention of Significant Deterioration Class II area, which allows for moderate incremental increases in emission concentrations as long as the concentrations do not exceed standards set by the State of Nevada and the Environmental Protection Agency.

Environmental Consequences of the Proposed Action

Surface disturbance related to construction would result in a short-term increase in particulate emissions from generation of fugitive dust. Dust would also be generated by traffic on roads. Environmental protection measures incorporated into the Proposed Action (Section 2.1.7.1) include measures to minimize and control fugitive emissions. A Surface Area Disturbance permit application would be submitted to the NDEP for surface disturbance associated with the transmission line. The permit application would include a dust control plan. Fugitive dust emissions are expected to be minimal with implementation of the environmental protection measures.

3.3.2 Water Resources

Affected Environment

The Proposed Action would not affect groundwater. The proposed transmission line route crosses several tributaries of the South Fork Owyhee River including Harrington Creek, Niagara Creek, Thomas Jose Canyon, and Water Pipe Canyon, Snow Canyon, Bull Creek, Badger Creek, and Starvation Canyon. Harrington Creek carries runoff from mountains in the north end of Independence Valley to the more open irrigated pastures and hay meadows around Spanish Ranch. Meadows and riparian/wetland areas are associated with the creeks and several unnamed drainages and springs in the Independence Valley and mountains. It appears that flow in these drainages is perennial during most years. The South Fork Owyhee River flows north into the Owyhee River and eventually into the Snake River.

Section 303(d) of the Clean Water Act requires states to compile a list of water bodies needing work beyond existing controls to obtain or maintain water quality standards consistent with designated beneficial uses. This list is referred to as the Section 303(d) list and provides prioritization for Total Maximum Daily Load analyses. Total Maximum Daily Load is a process that identifies sources of water pollution and provides the framework for addressing water quality pollution in a given reach of a body of water. The South Fork Owyhee River is listed in the Nevada Section 303(d) List of Impaired Waters. The South Fork Owyhee River is on the list for temperature impairment and is a Total Maximum Daily Load priority 3 water body. Priority 3 is the lowest Total Maximum Daily Load priority, with a timeline for developing a TMDL beyond five years (NDEP, 2005).

Environmental Consequences of the Proposed Action

Construction of the transmission line and power plant access road would impact Harrington Creek. The access road would cross Harrington Creek, thus requiring installation culverts in the stream channel. This would result in a short-term increase in sediments in the stream. As noted in section 2.1.6, the portion of the new road that would be constructed in waterways require that TG Power obtain permits from the U.S. Army Corps of Engineers and the NDEP, Bureau of Water Pollution Control. The new road would affect the spread of water from what has historically occurred, including modifications made to irrigate native hay lands or pasture lands. Culverts could restrict flow and cause water to spread, especially during high runoff events. The increase in velocities through culverts could cause erosion and channeling on the downstream side of the culverts. With review of designs and implementation of BMPs required by the permits and other environmental protection measures discussed in Section 2.1.7, sediment loading to Harrington Creek and channelization would be minimized. Minor, if any, increase in sediment is expected to the other streams, as the transmission line would span all other streams and no additional roads would be constructed across the drainages.

3.3.3 Soil Resources

Affected Environment

The Soil Survey of Northwest Elko County, Nevada (NRCS, 2002), identified seven soil types along the proposed transmission line route. These are the Donna-Stampede association (Donna), the Gochea series, the Upville-Kleckner association (Upville), the Crooked Creek series, the Chen-Cotant-Graley association (Chen), the Cotant-Quartz-Nine Mile association (Cotant), and the Sumine series. Figure 4 shows the National Resources Conservation Service locations for these soils types.

Low lying areas along the transmission line route, with slopes ranging from 0 to 15 degrees, contain soils from the Donna, the Upville, and the Gochea series. These soils tend to be deep to very deep and generally consist of moderately well-drained gravelly to pebbly loams derived from alluvium and colluvium from volcanic materials and mixed rocks. Soils in these series typically support vegetation suitable for rangeland, wildlife habitat, and hay production. The soils experience a slow to medium runoff and low permeability.

Soils belonging to the Crooked Creek series are found in the proposed project area associated with streams leading to and including the South Fork of the Owyhee River. These soils consist of very deep, poorly-drained soils that formed in alluvium derived from mixed sediments and igneous rocks. These soils are found on valley floors, stream terraces, and stream floodplains. They are present around riparian areas and in irrigated crop lands, and are generally poorly drained with slow runoff and low permeability.

The Chen and the Cotant associations consist of shallow well-drained residuum and colluvium derived from volcanic rocks, chert, and sedimentary rocks. The Chen generally consists of a cobbly loam that is slightly acidic to slightly alkaline while the Cotant consists of very gravelly to cobbly loam that is slightly alkaline. Both soil types are found on hills and mountain slopes ranging from 2 to 50 degrees. Vegetation on these soils generally support rangeland grazing and wildlife habitat. They generally experience a high surface runoff with a moderate to high rate of erosion during the rainy season. Along the proposed transmission line alignment, these soils are present in the foothills of the Independence Mountains to the Humboldt Substation.

Soils in the Sumine series are encountered at higher elevations along the transmission line route in the southern flanks of the Independence Mountains. These soils consist of moderately deep, well-drained, very cobbly loam that support rangeland and wildlife habitat. Soils in this series are typically found on hills, mountains and plateaus on slopes ranging from 10 to 65 degrees and are derived from residuum and colluvium from mixed rock types. These soils tend to be neutral

to slightly alkaline, contain variable clay content, and have high to very high surface runoff, making them very susceptible to erosion by wind and precipitation.

Environmental Consequences of the Proposed Action

The Proposed Action would result in disturbance of approximately 107.5 acres to existing soils as a result of clearing and construction activities at each transmission line pole location and the planned access road. Most of the disturbance to soils would be to the top one-foot during clearing of vegetation. Disturbance to the lower horizons of soil would typically occur as a result of drilling holes for the transmission line poles. The removal or disturbance of soil would result in a permanent modification to the soil structure. Due to clearing of vegetation, erosion of soils may occur at transmission line locations. Implementation of environmental protection measures, as identified in Section 2.1.7, would minimize loss of soil from erosion due to wind and water.

3.3.4 Vegetation

Affected Environment

Sagebrush steppe communities dominate the proposed project area. The higher elevations of the proposed project area consist primarily of the low sagebrush (*Artemisia arbuscula*) community type, including common associates such as Hood's phlox (*Phlox hoodii*), arrowleaf balsamroot (*Balsamorhiza sagittata*), and bottlebrush squirreltail (*Elymus elymoides*). The lower elevations of the proposed project area exhibit big sagebrush (*Artemisia tridentata* ssp.) communities typical to the Owyhee watershed. These communities commonly include such plants as Saskatoon serviceberry (*Amelanchier alnifolia*), antelope bitterbrush (*Purshia tridentata*), Nevada biscuitroot (*Lomatium nevadense*), silvery lupine (*Lupinus argenteus* var. *heteranthus*), and annuals including blue-eyed Mary (*Collinsia parviflora*), and cryptantha (*Cryptantha* sp.). Spring flooded cultivated vegetation community types exist mainly in fields adjacent SR 226 along the western section of the project area and the proposed access road leading to the plant site. This plant community type consists primarily of Sandbar willow (*Salix exigua*), Wild rose (*Rosa woodsii*), Arroyo willow (*Salix lasiolepis*), Bulbous bluegrass (*Poa bulbosa*), Baltic rush (*Juncus balticus*), Great Basin wildrye (*Leymus cinerus*), and yarrow (*Achillea millefolium*). Vegetation communities surveyed along the proposed project area are shown in Figure 5.

Lands along the proposed transmission line route in Independence Valley are generally used for domestic cattle grazing and feed crop production. Feed crop areas are typically artificially flooded with runoff water from mountain streams during the spring and early summer periods. When combined with naturally-flooded areas, where water is not diverted for irrigation, there are areas surrounding the project area that are inundated with water during the spring and early summer periods this community type is shown as the spring flooded/cultivated community on

Figure 5. Vegetation in underdeveloped areas in the valley is predominately sagebrush steppe communities. Rangeland utilized for domestic cattle and mineral exploration and development were affected by wildland fires in 2006. Existing vegetation in these areas is sparse due to removal of brush following wildfire. Dominant lifeforms are herbaceous species. As shown by Figure 5, vegetation along approximately 6.4 miles of the proposed transmission line route was burned in 2006 by the Snow Canyon Fire (northern portion) and Taylor Canyon Fire (southern portion).

Environmental Consequences of the Proposed Action

Effects of the Proposed Action would be restricted to the actual footprint of transmission line structures, constructed access road from the geothermal power plant to SR 226, and areas containing a two-track maintenance road for the transmission line. Approximately 107.5 acres of vegetation would be removed during construction of the proposed transmission line, access road, and maintenance two-track. Of the approximately 107.5 acres proposed for disturbance, approximately 19.4 acres of disturbance would occur in cultivated areas (hay or other feed crop), on private land in Independence Valley. The remaining disturbance acreage would occur in low sagebrush community (approximately 11.8 acres), big sagebrush community (approximately 41.9 acres), and burned areas (approximately 33.3 acres) that were dominated by sagebrush (BLM, 2006). Approximately 1.1 acres of disturbance would occur next to the riparian community of Water Pipe Canyon. The environmental protection measures for vegetation include the reseeding of disturbance associated with construction activities with the seed mix provided in Table 3, which was provided by the BLM. No long-term effects, other than a minimal loss of vegetation at each pole location and for the access road, are anticipated.

3.3.5 Wetlands and Riparian Zones

Affected Environment

In the northern portion of the valley, riparian zones are present along Harrington Creek in the meadow area where it flows south on Ellison Ranching Company property. Three other riparian areas are present in the project area: Niagara Creek, Thomas Jose Canyon, and Water Pipe Canyon. Flow in Niagara Creek, Tomas Jose Canyon, and Water Pipe Canyon is perennial.

The proposed transmission line would pass through several spring flooded/cultivated areas that are flooded when the Ellison Ranching Company and Wright Ranching divert Harrington Creek and other creeks on the Independence Range to provide flood irrigation for ranch pasturelands. Overall, thousands of acres surrounding the project area are flooded, particularly, during years with average to above average precipitation. The wet meadows consist primarily of bulbous bluegrass, Baltic rush, sedges (*Carex sp.*), cinquefoil and yarrow.

Environmental Consequences of the Proposed Action

The Proposed Action would avoid impacts to wetlands by adjusting the pole locations to span any wetlands located in the path of the transmission line. The access road would not pass through any wetland areas.

The proposed access road from the geothermal power plant to SR 226 would cross Harrington Creek. Culverts would be placed in Harrington Creek to maintain unimpeded flow of Harrington Creek. Direct impacts to riparian zones as a result of construction and use of the access road would include removal of riparian vegetation and alterations to the Harrington Creek channel by placement of culverts. Approximately 0.04 acres of riparian habitat would be permanently impacted by construction of the access road. The road and culverts could restrict flow and cause water to spread. Increased velocity through the culvert could result in erosion and channeling on the downstream side of the culverts. TG Power is responsible for obtaining permits from the U.S. Army Corps of Engineers and NDEP for the installation of the culverts, and installing erosion and sedimentation controls to reduce effects to the riparian zone and water quality.

The proposed transmission line would span Niagara Creek, Thomas Jose Canyon, Water Pipe Canyon, other unnamed ephemeral and intermittent drainages, and springs with associated meadow or riparian/wetland complexes. Thus no effects are anticipated in these riparian zones.

3.3.6 Noxious Weeds and Invasive, Non-Native Species

Affected Environment

Invasive and non-native plant species may spread from infested areas by people, equipment, livestock, wildlife, and winds. They often exhibit aggressive growth and have the potential to seriously degrade the economic and ecological values of natural resources. Under Executive Order 13112, it is the policy of the land management agencies to prevent introduction of noxious weeds and invasive non-native species and to control their impact (E.O. 13112, 1999). Nevada Revised Statute 555.005 defines noxious weeds as plants which are likely to be "detrimental or destructive and difficult to control or eradicate." Vegetation surveys conducted along the transmission line route documented occurrences of two non-native species: hoary cress (*Carderia draba*) and cheatgrass (*Bromus tectorum*). Hoary cress is a Category C noxious weed in Nevada. Category C weeds are noxious weeds that are currently established and widespread in many counties of the state with abatement at the discretion of the state quarantine officer under NAC 555.010. Hoary cress was noted along the corridor of the proposed transmission line access road from the geothermal power plant to SR 226. This portion is on land owned by Ellison Ranching Company (Figure 2a). The invasive species cheatgrass was located throughout the survey corridor and was especially dense in previously burned areas and along bulldozer lines used for firefighting. Common fiddleneck (*Amsinckia micrantha*) was observed throughout

the proposed project area. No other noxious or invasive non-native species were observed during the pedestrian survey. Hoary cress locations are shown in Figure 5.

Environmental Consequences of the Proposed Action

The Proposed Action would create approximately 43.4 acres of disturbance on public lands and approximately 64.1 acres of disturbance on private lands. Vegetation removal and soil disturbance during construction of the proposed transmission line would expose areas for establishment of noxious weeds and invasive non-native species. Vehicles used for regular maintenance of the transmission line could also increase the spread of weeds and non-native species along the transmission line corridor.

TG Power has incorporated measures in the Proposed Action to control and monitor noxious weeds. These measures would be employed throughout the life of the project to ensure establishment of desirable species in disturbed areas.

3.3.7 Wildlife

Affected Environment

The project lies within the Columbia Plateau ecoregion and is comprised primarily of sagebrush habitat. Sagebrush has been identified by the NDOW Wildlife Action Plan as a key habitat for wildlife conservation (WAPT, 2006). Approximately 100 bird species, 70 mammal species, and many reptile and a few amphibian species occur on the various habitat types provided in the sagebrush-steppe of northeastern Nevada. In addition, approximately 70 aquatic birds species could utilize habitat provided by seasonally-flooded agricultural areas, perennial streams and associated riparian areas, wet meadows, and wetlands on a seasonal or yearlong basis that are directly within, or in close proximity to, the proposed project. A number of passerine bird and mammalian species, including those that are considered as obligates to riparian or wetland habitats, also inhabit the areas on a seasonal basis. Many of the bird species are included in the "Migratory Birds by Habitat Type" list from the 1999 Nevada Partners in Flight Bird Conservation Plan (discussed in the next section), and some of the species are also designated as a BLM-Sensitive species (Special Status Species section 3.3.9). Many of these species would occur as seasonal residents in the proposed project area. Habitat in the area is suitable for mule deer, pronghorn antelope, coyotes, mountain lions, badgers, rabbits and hares, and small animals (rodents, reptiles, and amphibians). In addition to migratory birds, several resident game birds do or may inhabit the proposed project area, including greater sage grouse, Hungarian partridge, and chukar partridge. A variety of raptors also use the area including golden eagles and red-tailed hawks. Table 5 provides a list of wildlife species that have the potential to occur within and or around the project area.

Table 5 Wildlife Species with the Potential to occur in the Project Area

Common Name	Scientific Name	Common Name	Scientific Name
Birds			
Turkey vulture	*Cathartes aura*	Horned bark	*Eremophila alpestris*
Bald eagle	*Haliaetus leucocephalus*	Barn swallow	*Hirundo rustica*
Northern harrier	*Circus cyaneus*	Black-billed magpie	*Pica pica*
Swainson's hawk	*Buteo swainsoni*	American crow	*Corvus brachyrhynchos*
Red-tailed hawk	*Buteo jamaicensis*	Common raven	*Corvus corax*
Ferruginous hawk	*Buteo regalis*	Rock wren	*Salpinctes obsoletus*
Rough-legged hawk	*Buteo lagopus*	Mountain bluebird	*Sialia currucoides*
Golden eagle	*Aquila chrysaetos*	American robin	*Turdus migratorius*
American kestrel	*Falco sparverius*	Sage thrasher	*Oreoscoptes montanus*
Merlin	*Falco columbarius*	Loggerhead shrike	*Lanius ludovicianus*
Prairie falcon	*Falco mexicanus*	Northern shrike	*Lanius excubitor*
Cray partridge	*Perdix perdix*	European starling	*Sturnus vulgaris*
Chukar	*Alectoris chukar*	Brewer's sparrow	*Pooecetes gramineus*
Sage grouse	*Centrocercus urophasianus*	Vesper sparrow	*Chondestes grammacus*
Mourning dove	*Zenaida macroura*	Lark sparrow	*Amphispiza belli*
Great Horned owl	*Bubo virginianus*	White-crowned sparrow	*Zonotrichia leucophrys*
Burrowing owl	*Athene cunicularia*	Lapland longspur	*Calcarius lapponicus*
Short-eared owl	*Asio flammeus*	Red-winged blackbird	*Agelaius phoeniceus*
Common nighthawk	*Chordeiles minor*	Western meadowlark	*Sturnella neglecta*
Broad-tailed hummingbird	*Selasphorus platycercus*	Brewer's blackbird	*Euphagus cyanocephalus*
Northern flicker	*Colaptes auratus*	Brown-headed cowbird	*Molothrus ater*
Gray flycatcher	*Epidonax wrightii*	Black rosy finch	*Leucosticte atrata*
Ash-throated flycatcher	*Myiarchus cinerascens*	Gray-crowned rosy finch	*Leucosticte tephrocotis*
Say's phoebe	*Sayornis saya*	House sparrow	*Passer domesticus*
Western kingbird	*Tyrannus verticalis*		
Mammals			
Little brown bat	*Myotis lucifugus*	Great Basin pocket mouse	*Perognathus parvus*
Long-eared myotis	*Myotis evotis*	Dark kangaroo mouse	*Microdipodops megacephalus*
Long-legged myotis	*Myotis volans*	Ord kangaroo rat	*Dipodomys ordii*
Small-footed myotis	*Myotis ciliolabrum*	Chisel-toothed kangaroo rat	*Dipodomys microps*
Silver-haired bat	*Lasionycteris noctivagan*	Deer mouse	*Peromyscus maniculatus*
Western pipistrelle	*Pipistrellus hesperus*	Northern grasshopper mouse	*Onychomys leucogaster*
Big brown bat	*Eptesicus fuscus*	Desert woodrat	*Neotoma lepida*
Townsend's big-eared bat	*Plecotus townsendii*	Sagebrush vole	*Lemmiscus curtatus*
Brazilian free-tailed bat	*Tadarida brasiliensis*	House mouse	*Mus musculus*
Black-tailed jackrabbit	*Lepus californicus*	Kit fox	*Vulpes macrotis*
Mountain cottontail	*Sylvilagus nuttal1ii*	Coyote	*Canis latrans*
Pygmy rabbit	*Sylvilagus idahoensis*	Long-tailed weasel	*Mustela frenata*
Townsend's ground squirrel	*Spermophilus townsendii*	Badger	*Taxidea taxus*
Belding ground squirrel	*Spermophilus be1dingi*	Striped skunk	*Mephitis mephitis*
Least chipmunk	*Tamias minimus*	Mountain lion	*Felix concolor*
Botta's pocket gopher	*Thomomys bottae*	Bobcat	*Lynx rufus*
Northern pocket gopher	*Thomomys talpoides*	Mule deer	*Odocoileus hemionus*
Little pocket mouse	*Perognathus longimembris*	Pronghorn	*Antilocapra americana*
Reptiles			

Common Name	Scientific Name	Common Name	Scientific Name
Western skink	*Eumeces skiltonianus*	Short-horned lizard	*Phrynosorna douglassii*
Western whiptail	*Cnemidophorus tigrus*	Long-nosed snake	*Rhinocheilus lecontei*
Desert collared lizard	*Crotaphytus insularis*	Ground snake	*Sonora semiannulata*
Long-nosed leopard lizard	*Gambelia wislizenii*	Night snake	*Hypsiglena torquata*
Desert spiny lizard	*Sceloporus magister*	Gopher snake	*Pituophis melanoleucus*
Sagebrush lizard	*Sceloporus graciosus*	Racer	*Coluber constrictor*
Western fence lizard	*Sceloporus cccidentalis*	Striped whipsnake	*Masticophis taeniatus*
Side-blotched lizard	*Uta stansburiana*	Western rattlesnake	*Crotalus viridis*
Desert horned lizard	*Phrynosorna platyrhinos*		

Big game mammal species in the proposed project area include mule deer, pronghorn antelope, Rocky Mountain elk and mountain lions. The proposed project is located in the NDOW Big Game Management Units 062 and 067 of Management Area 6. Within the proposed project area is a mule deer migration corridor, and parts of the proposed project area have been designated as crucial winter habitat for mule deer (BLM, 1987). Pronghorn antelope would also be likely to use migration corridors in the vicinity of the proposed project area.

Aquatic wildlife resources, including sensitive fish, amphibian and invertebrate species) within the proposed project area are limited primarily along Harrington Creek, as the major perennial drainage. Other perennial aquatic and riparian areas include Thomas Jose Canyon, Niagara Creek and Water Pipe Canyon. The riparian areas associated with these streams are very important wildlife habitat and many of the bird species observed during the wildlife survey occurred within these areas.

Environmental Consequences of the Proposed Action

The Proposed Action would create approximately 107.5 acres of surface disturbance, 43.4 acres of which are on public land. Disturbance on public land would be to the sagebrush-steppe habitat. This habitat is widespread and abundant in and around the proposed project area. Wildlife displaced as a result of project disturbance would likely relocate to adjacent habitat. Loss of habitat resulting from project activities would be relatively small and restricted to power pole footprints. Disturbance associated with constructing the transmission line, such as roads and human presence, would be temporary and wildlife habitat would be restored following reclamation of these areas.

Effects of the proposed project on the mule deer migration corridor in the proposed project vicinity would be mainly from noise and human presence during construction of the transmission line. This activity would be phased and temporary. Furthermore, much of the construction activity would take place during times when deer are not migrating. Once constructed, the transmission line would pose no significant obstruction, either physical or from noise and

activity, to deer migration. Other effects on mule deer migration, such as increased human access and vehicle collisions, are not anticipated to result from the Proposed Action.

Impacts to wildlife from the Proposed Action would occur during construction of the transmission line. Construction activities could disrupt daily or seasonal animal movements. Long-term loss of riparian habitat would be significantly reduced by spanning the transmission line over riparian zones. Impacts to nesting birds would be reduced by conducting construction activities outside of the bird nesting period, to the extent possible, and by performing bird clearance surveys ahead of construction, when construction during the nesting period cannot be avoided.

Due to the relatively small area of habitat disturbance, the temporary and phased nature of construction, the abundance of habitat in the immediate area, and the protection measures built into the Proposed Action, impact to terrestrial wildlife species resulting from the proposed project is expected to be minimal.

The new access road across Harrington Creek to the proposed geothermal plant could affect the the condition of the channel and the spread of water that occurs naturally or to irrigate native hay lands or pasture lands. Resulting changes in the functionality of the creek and irrigation ditches above and below the road and culvert could affect the variety of migratory birds (next section) and sensitive terrestrial and aquatic species (Special Status Species, section 3.3.9) that use this habitat.

3.3.8 Migratory Birds

Affected Environment

Migratory birds are found in the vicinity of the proposed project area as either seasonal residents or as migrants. Provisions of the Migratory Bird Treaty Act (16 USC 701-718h) prohibit the taking, killing, or possession of any migratory birds, including the taking of any nest or egg. All native birds commonly found in the United States are protected under the Migratory Bird Treaty Act, except for resident native and introduced game birds and some corvids (crows, jays, and their relatives). There are numerous species of migratory birds that have the potential to use habitat in area. Table 6 lists the species of concern from the Nevada Partners in Flight Bird Conservation Plan[3] that are a priority for management and are associated with habitat types in the area. The species in bold type are also designated as "BLM-Sensitive" (see next section on Special Status Species). Table 6 also shows species that were observed during the pedestrian survey of the transmission line route.

[3] References to 'species of concern' in the 2001Executive Order pertain to those migratory bird species listed in 50 CFR 17.11, and in established plans such as for Partners in Flight physiographic areas.

Table 6 Migratory Birds Potentially Present and Observed Along the Transmission Line Route by Habitat Type

Common Name	Scientific Name	Obligate Species	Other Species	Associated Species	Observed During June 2007 Survey
Montane Riparian					
Wilson's warbler	*Wilsonia pusilla*	X			
MacGillivray's warbler	*Oporornis tolmiei*	X			
Cooper's hawk	*Accipiter cooperii*		X		
Northern goshawk	***Accipiter gentiles***		X		
Calliope hummingbird	*Stellula calliope*		X		
Lewis's woodpecker	***Melanerpes lewis***		X		
Red-naped sapsucker	***Sphyrapicus nuchalis***		X		
Orange-crowned warbler	*Vermivora celata*		X		
Virginia's warbler	*Vermivora virginiae*		X		
Yellow-breasted chat	***Icteria virens***		X		
Warbling vireo	*Vireo gilvus*			X	
Broad-tailed hummingbird	*Selasphorus platycercus*			X	
Fox sparrow	*Passerella iliaca*			X	
Blue grouse	*Dendragapus obscurus*			X	
Montane Shrub					
Black rosy-finch	***Leucosticte atrata***		X		
Black-throated gray warbler	*Dendroica nigrescens*		X		
Calliope hummingbird	*Stellula calliope*		X		
Cooper's hawk	*Accipiter cooperii*		X		
Loggerhead shrike	***Lanius ludovicianus***		X		
Blue grosbeak	*Passerina caerulea*		X		
Vesper sparrow	***Pooecetes gramineus***		X		X
MacGillivray's warbler	*Oporornis tolmiei*		X		
Orange-crowned warbler	*Vermivora celata*		X		
Swainson's hawk	***Buteo swainsoni***		X		
Western bluebird	*Sialia mexicana*		X		
Sagebrush					
Greater sage grouse	***Centrocercus urophasianus***	X			
Black rosy-finch	***Leucosticte atrata***		X		
Ferruginous hawk	***Buteo regalis***		X		
Gray's flycatcher	*Epidonax wrightii*		X		X
Loggerhead shrike	***Lanius ludovicianus***		X		
Vesper sparrow	***Pooecetes gramineus***		X		X
Prairie falcon	***Falco mexicanus***		X		X
Sage sparrow	*Amphispiza belli*		X		
Swainson's hawk	***Buteo swainsoni***		X		
Burrowing owl	***Athene cunicularia***		X		
Calliope hummingbird	*Stellula calliope*		X		
Brewer's sparrow	*Spizella passerine*			X	X
Western meadowlark	*Sturnella neglecta*			X	X
Black-throated sparrow	*Amphispiza bileneata*			X	
Lark sparrow	*Chondestes grammacus*			X	
Green-tailed towhee	*Pipilo chlorurus*			X	
Brewer's blackbird	*Euphagus cyanocephalus*			X	X
Horned lark	*Eremophila alpestris*			X	

Common Name	Scientific Name	Obligate Species	Other Species	Associated Species	Observed During June 2007 Survey
Cliffs and Talus					
Prairie falcon	***Falco mexicanus***	X			X
Black rosy-finch	***Leucosticte atrata***	X			
Ferruginous hawk	***Buteo regalis***		X		
Golden eagle	***Aquila chrysaetos***			X	
White-throated swift	*Aeronautes saxatalis*			X	
Say's phoebe	*Sayornis saya*			X	X
Common raven	*Corvus corax*			X	
Cliff swallow	*Petrochelidon pyrrhonota*			X	
Violet-green swallow	*Tachycineta thalassina*			X	
Canyon wren	*Catherpes mexicanus*			X	
Rock wren	*Salpinctes obsoletus*			X	X
Wetlands and Lakes					
White-faced ibis	*Plegadis chihi*	X			
Snowy plover	***Charadrius alexandrinus***	X			
American avocet	*Recurvirostra Americana*	X			
Black tern	***Chlidonia niger***	X			
Sandhill crane	***Grus Canadensis***		X		
Long-billed curlew	***Numenius americanus***		X		
Short-eared owl	***Asio flammeus***		X		
American bittern	*Botaurus lentiginosus*			X	
Great egret	*Ardea alba*			X	
Snowy egret	*Egretta thula*			X	
Cattle egret	*Bubulcus ibis*			X	
Black-crowned night heron	*Nycticorax nycticorax*			X	
Marsh wren	*Cistothorus palustris*			X	
Common yellowthroat	*Geothlypis trichas*			X	
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*			X	
Agricultrual Lands					
Sandhill crane	***Grus Canadensis***		X		
Long-billed curlew	***Numenius americanus***		X		
Short-eared owl	***Asio flammeus***		X		

Environmental Consequences of the Proposed Action

Construction of the pole structures and access road would disturb approximately 107.5 acres of the cultivated and native habitat types. The riparian, wetland and pasture habitat would be affected by the new power plant access road and transmission line as they cross Harrington Creek.

Construction of the proposed transmission line and road could potentially affect nesting birds, depending on the time of year that construction occurs. TG Power has incorporated measures in the Proposed Action to address potential impacts to migratory birds. This includes limiting, to the extent possible, construction of the transmission line and access road to times outside of the nesting period. When construction has to occur within the nesting period, a qualified biologist would conduct a nesting bird survey in areas of planned disturbance. For areas with identified

nests, a buffer zone would be established around these areas until the young birds have fledged. This limitation would apply to construction of the road and transmission line on the private land across Harrington Creek as well as in upland areas.

Predatory bird perching and nesting deterrent devices are also included as part of the Proposed Action. Raven populations have increased dramatically in recent times throughout the West. Transmission and power lines provide perching and nesting structures where previously absent or limited, which favors territory-based expansion and increase of predatory bird populations. Ravens are very aggressive predators and will readily prey on eggs or young birds in bird nests. Small mammals and the young of larger mammals are also susceptible to predatory bird predation. Anti-perching devices would be placed on power poles, where appropriate to reduce or eliminate predatory bird perching on migratory and game birds.

There is a potential for bird collisions with the transmission line. Flight diverters would be placed on the top wire in order to reduce this potential in drainages and other appropriate areas. These devices include plastic coils and swinging metal roundels (medallions) permanently attached to the wire to allow birds to see the outline of the line during flight and modify their flight altitude to avoid potential collisions. Behavioral factors such as, hurried flight away from predators or aerial courtship displays could distract birds from the presence of the line and increase the risk for collisions. Studies have reported up to 86-89% reduction in collisions with the use of flight diverter devices (APLIC 1994).

3.3.9 Special Status Species

Affected Environment

A threatened, endangered, sensitive, and candidate species record search and consultation was completed by obtaining information from the Nevada Natural Heritage Program (NNHP) (NNHP, 2006) U.S. Fish and Wildlife Service (USFWS, 2006), and NDOW. No species listed as threatened or endangered occur in the area. Sensitive plant, animal and aquatic species of concern having the potential to occur within the proposed project area are listed in Table 7.

Table 7 Special Status Species

Common Name	Scientific Name	Status
Plants		
Broad fleabane	*Erigeron latus*	BLM Sensitive
Least phacelia	*Phacelia minutissima*	BLM Sensitive
Lewis' buckwheat	*Eriogonum lewisii*	BLM Sensitive
Mammals		
Pygmy rabbit	*Brachylagus idahoensis*	BLM Sensitive
Preble's shrew	*Sorex pleblei*	BLM Sensitive
Small-footed myotis	*Myotis ciliolabrum*	BLM Sensitive
Yuma myotis	Myotis yumanensis	BLM Sensitive
Long-eared myotis	*Myotis evotis*	BLM Sensitive
Long-legged myotis	*Myotis volans*	BLM Sensitive
Fringed myotis	*Myotis thysanodes*	BLM Sensitive, State Protected
Townsend's big-eared bat	*Plecotis townsendii*	BLM Sensitive, State Sensitive

Common Name	Scientific Name	Status
Spotted bat	*Euderma maculatum*	BLM Sensitive, State Threatened
Birds		
Peregrine falcon	*Falco peregrinus*	BLM Sensitive, State Endangered
Golden eagle	*Aquila chrysaetos*	BLM Sensitive, State Protected
Bald eagle	*Haliaeetus leucocephalus*	BLM Sensitive, State Protected
Prairie falcon	*Falco mexicanus*	BLM Sensitive, State Protected
Swainson's hawk	*Buteo swainsoni*	BLM Sensitive, State Protected
Ferruginous hawk	*Buteo regalis*	BLM Sensitive, State Protected
Burrowing owl	*Athene cunicularia*	BLM Sensitive, State Protected
Short-eared owl	*Asio flammeus*	BLM Sensitive, State Protected
Long-eared owl	*Asio otus*	BLM Sensitive, State Protected
Northern goshawk	*Accipiter gentiles*	BLM Sensitive, State Protected
Loggerhead shrike	*Lanius ludovicianus*	BLM Sensitive
Vesper sparrow	*Poocetes gramineus*	BLM Sensitive
Black rosy-finch	*Leucosticte atrata*	BLM Sensitive
Lewis's woodpecker	*Melanerpes lewis*	BLM Sensitive
Yellow-breasted chat	*Icteria virens*	BLM Sensitive
Long-billed curlew	*Numenius americanus*	BLM Sensitive
Greater sage grouse	*Centrocercus urophasianus*	BLM Sensitive
Sandhill crane	*Grus Canadensis*	BLM Sensitive
White-faced ibis	*Plegadis chihi*	State of Nevada Protected
Aquatic Species		
Interior redband trout	*Onchorhynchus mykiss gibbi*	BLM Sensitive
Columbia spotted frog (Great Basin Population)	*Rana luteiventris*	USFWS Candidate

A survey of the transmission line corridor was conducted in 2007. The transmission line traverses several habitat types used or occupied by the species designated as sensitive by Nevada BLM. Habitat types in the project area include sagebrush, montane shrub, cliffs and talus, and limited montane riparian habitats. Each species listed in Table 7 and their habitat use/requirements is discussed below.

Plants

Broad Fleabane

Broad fleabane occurs in Elko County and adjacent counties in Idaho and Oregon. It is known to occur in the Independence Mountains between 6,200 and 6,450 feet elevation. Broad fleabane generally occurs on shallow, dry, and barren soils of volcanic origin. Its common associates include sagebrush species. Habitat for broad fleabane occurs in the sagebrush and montane shrub type habitats in the central and southern portions of the transmission line route. Limited habitat is available in the northern part of the transmission line route. Broad fleabane was not observed during the pedestrian survey of the transmission line corridor.

Least Phacelia

Least phacelia occurs in Nevada within Elko and Eureka counties. In Nevada, it is aquatic or wetland dependent. Least phacelia commonly occurs at the margins of corn lily (*Veratrum*

californicum) patches, in quaking aspen (*Populus tremuloides*) stands, and in sagebrush swales. Habitat is available for least phacelia in the sagebrush and wetland habitat types in the central and northern portions of the project area. Limited habitat is available in sagebrush swales near the southern portion of the transmission line route. Least phacelia was not observed during the pedestrian survey.

Lewis' Buckwheat

Lewis' buckwheat is endemic to Nevada and occurs in Elko and Eureka counties. It usually occurs on rocky barren slopes of carbonate rock soils. The 2007 survey of the transmission line corridor located a small population of Lewis' buckwheat south of the proposed route near the Humboldt Substation (Figure 5). A two-track road, most likely used to access an existing SPPCo transmission line adjacent to the proposed transmission line route, was located south of the Lewis' buckwheat population. The extent of the population was marked in the field and the location recorded using a GPS. The GPS location was recorded and provided to NNHP for the state database.

Small Mammals

Pygmy Rabbit

Pygmy rabbits are found in a variety of vegetation types that include big sagebrush that are suitable for creating their burrow system. Pygmy rabbits forage on sagebrush and construct underground burrow systems. Typically, pygmy rabbits occur in habitats dominated by mature, dense stands of big sagebrush and green rabbitbrush found in relatively level areas of deep, soft soil (Katzner and Parker, 1997). This habitat is available in the lower elevations of the transmission line route. No pygmy rabbits or active burrows were observed during the pedestrian survey of the transmission line corridor.

Preble's Shrew

Although little is known of the habits of the Preble's shrew, this species is known to occur primarily in sagebrush habitats, but may also occur in montane shrub type habitat and sometimes in riparian areas. Sagebrush habitat is widely available in the area surrounding the Proposed Action. No shrews were observed during the surveys of the transmission line corridor; however, small mammal trapping was not conducted.

Bats

Small-footed Myotis

The small-footed myotis occurs in deserts, chaparral, riparian zones and forests, but is most common in pinyon-juniper habitat. Small-footed myotis often roost in caves, abandoned mine workings, or in rock fissures on cliff faces. Cliff/talus habitat in the project area is limited and available only in the highest elevations of the transmission line route, near the top of Starvation

Canyon. Caves and abandoned mine workings are absent in the project area, making it unlikely that small-footed myotis would inhabit the project area. No bats were observed during the transmission line survey.

Yuma Myotis

The Yuma myotis is often associated with water, including small ponds, lakes, and streams. Yuma myotis may roost in buildings, caves, trees and under bridges (Bogen et al., 1998a). Yuma myotis lack adaptations to arid environments shown by some other myotis species (Wilson and Ruff, 1999). No adequate roosting habitat is present within the transmission line corridor.

Long-eared Myotis

The long-eared myotis occurs in a variety of habitats, but is most often associated with coniferous forest. This species utilizes a variety of roost locations (Bogan et al., 1998a), such as buildings, tree cavities, or under tree bark. Its association with forest habitats makes this species an unlikely inhabitant in the transmission line corridor or adjacent areas.

Long-legged Myotis

The long-legged myotis usually occurs in forested habitats throughout the western United States, but may be found in drier areas, including desert habitat. The species uses a variety of roost sites during the warmer season, and hibernates in caves and underground mines (Bogen et al., 1998b). It is possible that the long-legged myotis would occur in the high, open woodlands surrounding the project area.

Fringed Myotis

The fringed myotis (*Myotis thysanodes*) occurs throughout much of the western United States in a variety of habitats. Oak and pinyon-juniper woodland seem to be favored habitats (Bradley and Ports, 1998). Fringed myotis are colonial, and may roost in caves, underground mines, buildings, under bridges and in trees. Hibernation occurs in buildings and underground mines (Bradley and Ports, 1998). According to the Revised Nevada Bat Conservation Plan (Bradley et al., 2006), the fringed myotis is considered to be at high risk in the state. Habitat for the fringed myotis is very limited in the project area.

Townsend's Big-eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is generally a cave dweller. This species often roosts in abandoned mine shafts and adits. This species is generally found in desert scrub and pinyon-juniper habitats (Jameson and Peeters, 1988). The species hibernates in cold (but above freezing), well ventilated places in caves, mine adits, and similar locations (Pierson et al., 1991; Kunz and Martin, 1982). The Revised Nevada Bat Conservation Plan indicates that

Townsend's big-eared bat occurrence in Nevada is highly correlated with available cave and abandoned underground mine sites, and that the species is at high risk in Nevada (Bradley et al., 2006). There are no cave or underground mine sites within the transmission line corridor and are limited in the area surrounding the Proposed Action.

Spotted Bat

The spotted bat (*Euderma maculatum*) is widespread but evidently occurs in very low numbers. The spotted bat roosts in crevices on cliffs, and has been reported from a variety of elevations and habitats, including ponderosa pine forest, desert scrub, pinyon-juniper, and open pasture (Leonard and Fenton, 1983). Most often, they are found in dry, rough desert terrain (Watkins, 1977). Spotted bat populations may be limited by the availability of suitable roosting sites. The Revised Nevada Bat Conservation Plan indicates the spotted bat is a species at moderate risk in Nevada (Bradley et al., 2006). Large cliffs are limited in the transmission line corridor, suggesting the presence of spotted bats is unlikely.

Birds

Peregrine Falcon

The peregrine falcon was once a cosmopolitan species, but has declined over the last 60 years to very low populations. Peregrine falcons prefer to nest on cliffs or talus slopes. They feed on other birds, preferring pigeons, waterfowl, jays, crows, robins, and other small to medium birds. The lack of tall cliffs (potential peregrine falcon nesting sites) in the immediate area suggests nesting by peregrine falcons within the transmission line corridor is unlikely. One unidentified falcon was observed soaring during the transmission line corridor survey, but it was believed to be a prairie falcon.

Bald Eagle

Bald eagles are found throughout North America in a range of habitats. They were recently delisted as a threatened species. They usually nest in trees 10 to 150 feet above ground, or on cliff faces near water. They are generally found near water where they can prey and scavenge upon fish and waterfowl (Terres, 1991). Riparian and aquatic habitat is available at the north end of the Proposed Action near Harrington Creek. Nesting habitat is very limited in the area. No bald eagles were observed during the transmission line survey.

Golden Eagle

Golden eagles are found throughout western North America is a variety of habitats. Their nesting and feeding requirements are much more general than bald eagles. Golden eagles will nest on cliffs, in trees, or on earthen mounds. Their diet is highly variable, but usually consists of small mammals and grouse (Terres, 1991). Golden eagle habitat is available within the transmission line corridor and is widely available in the areas surrounding the transmission line corridor. No golden eagles were observed during the transmission line survey.

Prairie Falcon

The prairie falcon is widespread throughout the arid plains, hills, and mountains of western North America. The prairie falcon forages and nests in a variety of habitats, but prefers cliffs for nesting. Abundant foraging habitat for the prairie falcon is found in the transmission line corridor, as well as the surrounding areas. Nesting habitat is very limited in the transmission line corridor, but available in nearby canyons. One unidentified soaring falcon, most likely a prairie falcon, was observed during the pedestrian survey.

Swainson's Hawk

Swainson's hawks are widespread throughout North America during the spring and summer months, after which they migrate to South America for the winter. In Nevada, Swainson's hawks are usually associated with sagebrush and montane shrub habitats where they search for rodent prey. They often nest in lone big cottonwood trees in fields and sometimes on low cliffs or talus slopes. Swainson's hawks will often perch on power poles to search for prey. Habitat for the Swainson's hawk is widely available in and around the transmission line corridor. No Swainson's hawks were observed during the transmission line survey.

Ferruginous Hawk

In pinyon-juniper habitats of the Great Basin, ferruginous hawks typically nest in juniper trees along the forest-shrubland edge. Their nests are often located on the furthest extension of trees into the adjacent shrubland habitats (Howard and Wolfe, 1976; Smith and Murphy, 1982). Ferruginous hawks prey heavily on ground squirrels. Because their principal prey (ground squirrels) enters aestivation by late July or early August, ferruginous hawks typically fledge young and leave the area by early August. Foraging habitat for ferruginous hawks is widely available in the project area. Nesting habitat is available in the woodlands to the north of the transmission line corridor in the Independence Mountains and in Taylor Canyon. No ferruginous hawks were observed during the transmission line corridor survey.

Western Burrowing Owl

Western burrowing owls generally inhabit open areas with low vegetation. The owls utilize underground burrows for nesting and shelter. Nesting areas characteristically include an

elevated perch site or sites, such as fence posts, utility poles, or mounds of earth. Burrowing owls may be active throughout the day, with activity peaks near dawn and into the early morning, and near dusk. The burrowing owl is a migratory species in the northern portion of its range and a year-round resident in the south and is federally protected under the Migratory Bird Treaty Act. Ryser (1985) states that most burrowing owls in the Great Basin are migratory. Potential burrowing owl habitat is located in the valleys surrounding the transmission line corridor. No burrowing owl nests were identified within the corridor and no owls were observed.

Short-eared Owl

Short-eared owls occur on every continent except Australia. They utilize a variety of habitats, but in the western United States are often associated with marshland habitats, including irrigated agricultural lands and wetlands. Short-eared owls prey on rodents, rabbits, and grasshoppers and often hunt in the day. Foraging and nesting habitat for short-eared owls is widely available in the project area and surrounding areas. No short-eared owls were observed during the transmission line survey.

Long-eared Owl

The long-eared owl is a nocturnal species, hunting almost exclusively at night over open land. They often use sagebrush and montane shrub type habitats for foraging where they will catch mice, shrews, squirrels, and young rabbits. Long-eared owls will occasionally take grouse, meadowlarks, blackbirds, warblers, and similar sized birds. In the western United States, they will usually nest in dense pine or juniper stands. Nesting habitat is available to the north of the project area in the wooded areas of the Independence Mountains. No long-eared owls were observed during the transmission line survey.

Northern Goshawk

Northern goshawks are primarily a forest species. They will occasionally nest in pinyon pine or junipers. They are often associated with montane riparian habitats where they will nest in larger aspen or cottonwood trees. Goshawks will also utilize adjacent montane shrub or sagebrush habitats where they will forage for rabbits, hares, squirrels, and smaller birds, such as grouse, blackbirds, and crows. Goshawks are known to occur in the wooded areas of the Independence Mountains, primarily to the north of the transmission line corridor in aspen stands and other wooded areas. No goshawks were observed during the transmission line survey.

Loggerhead Shrike

In the Great Basin, loggerhead shrikes are typically associated with greasewood (Grant et al., 1991), and sagebrush communities (McAdoo et al., 1989). They also frequent open country in valleys and foothills, juniper or pinyon-juniper woodlands, mahogany stands, and the edges of

ranches and towns (Ryser, 1985). Dense stands of trees and shrubs are used for nesting and roosting sites, as well as for hunting perches (Ryser, 1985). Nests are usually built between 3 and 30 feet above the ground in a tree crotch or on top of an old nest, often in dense twigs or foliage (Fraser and Luukkonen, 1986). Shrikes hunt where tall vegetation is scattered and there is much bare ground or ground covered with short vegetation. They often hunt from telephone wires and fences (Ryser, 1985). These small predators are known to prey on rodents, insects, and even on other small birds, often impaling their victims on thorns of trees or shrubs or on barbed wire fences. Habitat is available for loggerhead shrikes in the northern portion of the transmission line corridor. No loggerhead shrikes were observed during the transmission line corridor survey.

Vesper Sparrow

Vesper sparrows live on the ground on dry fields, pastures, meadows, and sagebrush steppe habitats. Their nests are commonly found between sagebrush openings. Habitat is widely available throughout the transmission line corridor and surrounding areas. Vesper sparrows were the most commonly observed species during the pedestrian survey of the transmission line route. They were observed nesting in the grass and sagebrush of dry slopes.

Black Rosy-Finch

Black rosy-finches nest and spend summers in mountains, nesting in boulders and rock crevices. In summer, they move down into valleys and roost in caves, mine shafts, and barns. Black rosy-finch nesting habitat is potentially available in the higher elevations of the Independence Mountains and potential summer habitat is widely available in the areas surrounding the Proposed Action. No black rosy-finches were observed during the transmission line corridor survey.

Lewis' Woodpecker

Lewis' woodpecker is widespread throughout the western United States. It nests in the cavities of trees, including pinyon pine and juniper. It feeds aerially on insects and also eats fruits, including juniper berries. Lewis' woodpecker often perches on fence posts while foraging. It is often associated with montane riparian habitats where it will nest in cottonwood trees. Limited habitat is available for Lewis' woodpecker in the project area and no woodpeckers were observed during the transmission line corridor survey.

Yellow-breasted Chat

The yellow-breasted chat is generally found in montane riparian habitat, often in dense forest or thickets. Montane riparian habitat is limited in the transmission line corridor, with small pockets found mainly in Water Pipe Canyon. No yellow-breasted chats were observed during the transmission line corridor survey.

Long-billed Curlew

Long-billed curlews nest in prairies and meadows and visit wetlands and rivers during migration. Irrigated pastures, wetlands, and open grasslands provide feeding and nesting habitat for the long-billed curlew. Suitable habitat for the long-billed curlew can be found along the north half of the transmission line corridor in the irrigated fields. No long-billed curlews were observed during the transmission line corridor survey.

Greater Sage Grouse

Greater sage grouse occur in sagebrush habitats in the Great Basin and in similar habitats in the western United States. During the winter season, the birds subsist almost entirely on sagebrush. During the spring season, males gather to display or "strut" on communal strutting grounds, or leks. Most sage grouse leks are situated on level ground or on gently-sloping hillsides. Most are located in open areas away from trees and other potential raptor perches. Females come onto strutting grounds to mate then subsequently nest, usually within two miles of the lek. Wet meadow and riparian areas are utilized as brood-rearing habitats. These mesic areas, including seep and spring sites, provide a crucial source of insects and succulent forage for young birds. Together, the strutting grounds and nesting and brood-rearing areas form a sage grouse habitat complex that may encompass areas from valley floors or benches up into the mountains, to include mountain meadow habitats. Habitat for sage grouse is widely available throughout the project area and surrounding areas. No sage grouse were observed during the survey, however there are known leks near the transmission line corridor.

Several sage grouse leks have been identified through consultation with NDOW and during a survey of the transmission line corridor in 2007. Figure 6 shows the locations of these leks in relation to the proposed transmission line. One potential lek was identified during the field survey that was not identified by NDOW. This possible lek is located in Section 25, T39N, R53E. Evidence observed during the survey indicated a high probability of it being a lek.

Sandhill Crane

In northern Nevada, sandhill cranes are associated with wetlands and irrigated pastures and hay fields. They often feed in newly planted or harvested fields, marshes, or dry hillsides. Sandhill cranes will nest in irrigated pastures, wetlands, or in grasslands. Sandhill cranes are abundant in the Independence Valley in the areas within and surrounding the transmission line corridor, but were not observed during the transmission line corridor survey.

White-faced Ibis

The white-face ibis is a wetland-dependent species. They feed on aquatic insects, crustaceans, snails, and worms and nests in bulrushes or reeds. Feeding habitat may be potentially available

in the irrigated pastures within and surrounding the transmission line corridor. Nesting habitat, however, is not available in the project area. No white-faced ibis were observed during the survey of the transmission line corridor.

Aquatic Species

Interior Redband Trout

Interior redband trout are a native fish of the Columbia River basin. The steelhead of the Snake River basin are a variety of this trout which migrate from the Pacific Ocean to the upper Snake River in Idaho. Redband trout prefer cool, clear water in mild gradient streams, but can tolerate a wider temperature range than most trout. They have been observed in Harrington Creek as it flows south through the northern portion of the project area into the South Fork Owyhee River and ultimately into the Snake River. Harrington Creek provides seasonally suitable spawning habitat for redband trout.

Columbia Spotted Frog

The Columbia spotted frog (*Rana luteiventris*), Great Basin Distinct Population Segment, a candidate for listing as threatened or endangered, is known to occur in streams in the Ruby Mountains approximately 25 miles from the Proposed Action area. In eastern Nevada, the Columbia spotted frog occurs in clear, slow-moving or ponded surface waters with little canopy cover, in habitats that include springs, lakes, oxbows, beaver ponds, and seeps in wet meadows (Reaser, 1997). A deep silt or muck substrate may be required for hibernation and torpor (Morris and Tanner, 1969). Available habitat is available in the Thomas Jose Canyon and Water Pipe Canyon, but no Columbia spotted frogs were observed during the transmission line corridor survey.

Environmental Consequences of the Proposed Action

Approximately 107.5 acres of vegetation and wildlife habitat would be disturbed with approval of the Proposed Action. This includes approximately 41.9 acres of big sage community, which provides suitable habitat for pygmy rabbits and sage grouse, and 11.8 acres of low sage community, which provides habitat for Lewis' buckwheat. Known locations of sensitive plant species would be avoided during construction and operation of the transmission line. Due to the abundance of habitat in the vicinity of the Proposed Action and the minimal amount of habitat loss, adverse effects are expected to be limited and would not measurably affect sage grouse or pygmy rabbit populations. Measures from section 2.1.8 to minimize or eliminate impacts to sensitive terrestrial species are discussed in the previous sections wildlife and migratory birds.

The new road to the power plant with culverts has the potential to affect native redband trout in Harrison Creek, especially if the culverts affect functionality of the habitat and restrict flows or fish passage. As noted for water resources (section 3.2), the road and culverts could cause water

to spread, and an increase in flow velocities through culverts could cause channeling. The potential for degradation is expected to be minimized through appropriate designs as part of the permitting process, and implementation of BMPs required by the construction permits and other environmental protection measures discussed in Section 2.1.7.

3.3.10 Rangeland Resources

Affected Environment

The majority of land along the proposed transmission line route is private land used for ranching, grazing, and feed crop production. The affected ranchers have approved the transmission line location and are in the process of being presented easement agreements with TG Power for use of that land. Approximately 30 percent of the Proposed Action corridor is public land managed by the BLM. This land is used for grazing. There are three grazing allotments that in the area: Spanish Ranch, Taylor Canyon, and Eagle Rock.

Environmental Consequences of the Proposed Action

The anticipated disturbance of 107.5 acres would not result in a reduction of the permitted use in the affected grazing allotments. In addition, the disturbance on private land would have insignificant impacts to hay or other crop production, or grazing during the life of the proposed project. There would be a short-term loss of approximately 107.5 acres of productive rangeland and cultivated habitat. The long-term loss of productive grazing or crop land would be approximately 13.9 acres associated with the access road from the geothermal power plant to SR 226, and a small accumulated acreage (total of 8.76 acres for the project) associated with each pole location after reseeding of the disturbed area.

3.3.11 Land Use and Access

Affected Environment

The proposed project area is located in Elko County and consists of public lands administered by the BLM and private land owned by the Ellison Ranching Company, Van Norman Quarter Horses, and the Wright Ranches. The proposed project is accessed via SR 225 heading north from Elko then heading west on SR 226. From SR 226, the proposed project area can be accessed in several locations by existing dirt and gravel roads. The Proposed Action would cross SR 226 at one location (Figure 1).

The major land uses within the area surrounding, including the proposed project area are irrigated cropland, pastureland, rangeland, wildlife habitat, mineral exploration, and dispersed recreation such as off-highway vehicle use, hunting, and camping.

There are no BLM wilderness study areas, herd management areas, Christmas tree harvest areas, or fuel and post-harvest areas within the proposed project area (BLM, 1987). A review of the master title plats for the proposed project area indicate that there are two power line corridors, a telephone line corridor, and several fences Figures 7a and 7b. Two short pipelines also appear on the master title plats between water trough locations.

Environmental Consequences of the Proposed Action

The Proposed Action would add an additional transmission line ROW, a gravel road, and a two-track road to the land uses within the proposed project area. It is likely that over time the two track road would create additional disturbance as additional parallel roads are created by public when the original two-track road is impassable. These activities would not interfere with other land uses or prevent existing access to public lands within the proposed project area.

3.3.12 Visual Resources

Affected Environment

The Proposed Action falls within two Visual Resource Management (VRM) classes. The approximate one-mile section of public land in Sections 8 and 9, T41N, R52E lies with a VRM Class IV area. All other public land transected by the proposed transmission line is within a VRM Class III. Definitions for these VRM classes are provided from BLM Manual 8431 Visual Resource Contrast Rating (BLM, 1986a).

- Class III – "The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape."

- Class IV – "The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements."

Existing structures in the area of the Proposed Action include three SPPCo power transmission/distribution lines that parallel a portion of SR 226 east of Taylor Canyon. All of these power lines share space at the Humboldt Substation. A 13 kV power distribution line extends west from the Humboldt Substation, through Taylor Canyon, and north through Independence Valley, running parallel to SR 226. This line supplies power to Taylor Canyon, Tuscarora, and nearby ranches. All of the power poles used on these lines are predominately

single pole wood structures with cross arms. SPPCo also has 345 kV high voltage transmission lines mounted on large metal towers in the vicinity of the southern end of the proposed project area. The 345 kV high voltage lines trend west-southwest from the Humboldt Substation and crosses SR 226 west of the substation. The transmission line also continues east-northeast of the Humboldt Substation toward Idaho. Figures 7a and 7b show the locations of the other transmission lines in the area of the Proposed Action as well as the location of major roads through the project area.

Other existing visual modifications include surface disturbances due to mineral exploration activities including drill pads and exploration roads. The exploration activities are occurring in the southern Independence Mountains. Wildland fires in the past few years have also burned much of the vegetation in portions of the Independence Range and Independence Valley within the project analysis area, which have temporarily affected the scenic value.

Environmental Consequences of the Proposed Action

Construction of the transmission line would add a linear feature to the landscape, which would be most visible along SR 226 east and north of the Taylor Canyon area. The proposed transmission line would parallel existing transmission lines and a portion of SR 226. The Proposed Action would result in small changes in color contrast at each pole location from the removal of vegetation. These color changes will be minimal as the disturbance at each pole location is anticipated to be 0.18 acres, with a total disturbance of approximately 107.5 acres. Following seeding of disturbed areas, this visual color contrast would be eliminated.

Modifications to the landscape anticipated from the Proposed Action are consistent with BLM management objectives for both Class III and Class IV VRM areas allowing for a moderate to strong degree of contrast. A moderate degree of contrast allows for the element to begin to attract attention and dominate the characteristic landscape while an element of strong degree of contrast demands attention and dominates the landscape and would not be overlooked (BLM, 1986b). The transmission line would only add a moderate degree of contrast to the viewshed.

3.3.13 Cultural Resources

Affected Environment

The proposed 150 foot wide transmission line corridor has been inventoried at the Class III level for cultural resources (Schroedl, 2007). Associated project facilities including, a 1.5-mile segment of the access road that diverges from the transmission line, a gravel pit, equipment storage areas, staging areas, turnarounds, access routes to poles and long-term maintenance roads have not yet been inventoried for cultural resources. Nor have any historic ranches or other historic structures along the project route been identified. Additionally, BLM has yet to receive the inventory report for the geothermal power plant location, which is determined to be a federal

undertaking for purposes of review under Section 106 of the National Historic Preservation Act (NHPA) (P.L. 89-665). As specified below, review of the inventories and development of a plan to mitigate any adverse effects to sites listed, or eligible for listing, on the National Register of Historic Places, must be completed prior to initiation of actions that could adversely affect the cultural resources in the affected areas.

Eighteen archaeological sites and five isolated artifacts were recorded within the transmission line corridor. These are a mixture of historic and prehistoric sites. One of the sites was previously determined to qualify for listing on the National Register of Historic Places and the cultural resource consultant recommends that another seven are eligible for listing. The inventory report is currently being revised and new data collected.

Private lands around the proposed power plant were inventoried in 2007 for cultural resources. Inventory results have not been provided to the BLM but site density apparently is very high. Twenty-four archaeological sites were also previously recorded in a one mile radius of the proposed geothermal power plant location prior to geothermal seismic exploration in 2003. Six of these would be located in the vicinity of the power plant and supply pipelines. The BLM in consultation the Nevada State Historic Preservation Officer (SHPO) determined that four of these qualify for listing on the National Register of Historic Places, one does not qualify for listing and insufficient information is available to evaluate the sixth site.

Environmental Consequences of the Proposed Action

The proposed transmission line could impact cultural resources directly as the result of damage incurred by construction activities, and by the introduction of elements out of character with the setting, feeling and association of historic properties eligible under National Register Criterion A, B, or C. Indirect effects can result from improved access to areas currently with restricted public access. Creation of new or improved access can have substantial and long lasting adverse effects if cultural resources are present. A number of studies (Williams, 1978; Lyneis et al., 1980; Nickens et al., 1981) have shown that that increased access leads to both intentional and incidental deterioration of nearby cultural resources. Nickens et al. (1981) found that most archaeological sites within 100 meters of improved roads exhibited evidence of vandalism and/or illegal collection. Sites at considerably greater distances also suffered damage but with less frequency as distance increased (Desjean and Wilson, 1990; Ison et al., 1981; Nickens et al., 1981). With the advent of widespread all-terrain vehicle use in the last couple of decades, we might anticipate that the spread of damage beyond new access roads may now be even greater.

As long as the mitigation measures outlined below are brought forth into the decision record, impacts to cultural resources would be eliminated or reduced. The transmission line and associated activities would avoid impacts to the identified cultural resource sites by adjusting the

transmission line location or by spanning sites. If these measures are insufficient for protection of historic properties whose sole significance is their research potential (applicable to all properties recorded to date), data recovery in the form of archaeological excavation would be completed.

No information is currently available concerning historic resources where viewshed may be a concern. Options for mitigating effects to setting, feeling and association are limited other than totally rerouting the project. Adjusting pole spacing and selecting pole types that are least visually impacting can lessen impacts. Viewshed issues may be relatively limited for the current project given that the new line would parallel an existing line along much of the project route.

Indirect impacts to cultural resources resulting from increased human activity would be mitigated through limiting public use of the new transmission line/power plant access road. Review of the project to include development of the geothermal resources is continuing.

3.3.14 Native American Concerns

Affected Environment

Located within the traditional territory of the Western Shoshone, the BLM Elko District administrative boundary contains spiritual/traditional/cultural resources, sites, and social practices that aid in maintaining and strengthening social, cultural, and spiritual integrity. Recognized tribes with known interests within the Elko BLM administrative boundary are: the Te-Moak Tribe of Western Shoshone (Elko, South Fork, Wells, and Battle Mountain bands), Duck Valley Sho-Pai Tribes of Idaho and Nevada, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Yomba Shoshone, Ibapah Goshute, and various other groups, community members, and individuals.

Though archaeological data and theory states that the Western Shoshone (Newe) began to inhabit the great basin area around 600 years ago, contemporary Western Shoshone contend they were here since "time immemorial." Social activities that define the culture took place across the great basin. Pine nut gathering, edible and medical plant gathering, hunting and fishing, spiritual/ceremonial practices, and trade occurred as the native peoples practiced a mobile hunting and gathering lifestyle. As with the delicate and sensitive nature of the fragile resources of the Great Basin, the native cultures appeared to be heavily impacted by social, cultural, and environmental change, which rapidly accompanied the non-native migration from east to west. Confined to reservations and "encouraged" to participate in a more sedentary lifestyle (farming and cattle ranching), the Western Shoshone and other great basin tribes continued to practice certain cultural/spiritual/traditional activities, visited their sacred sites, and hunted and gathered the available game, medicinal, and edible plants. Due to the practice of handing down

knowledge from the elders to the younger generations (oral history), some Western Shoshone continue to maintain a world view not unlike that of their ancestors.

Cultural, traditional, and spiritual sites and activities of importance to tribes include, but are not limited to: existing antelope traps; certain mountain tops used for prayer; medicinal and edible plant gathering locations; prehistoric and historic village sites and gravesites; sites associated with creation stories; hot and cold springs; material used for basketry and cradle board making; locations of stone tools such as points and grinding stones (mono and matate); chert and obsidian quarries; hunting sites; sweat lodge locations; locations of pine nut ceremonies, traditional gathering, and camping; rocks used for offerings and medicine gathering; tribally identified Traditional Cultural Properties (TCPs); TCPs found eligible to the National Register of Historic Places; rock shelters; "rock art" locations; lands or resources that are near, within, or bordering current reservation boundaries, actions that conflict with tribal land acquisition efforts; and water sources in general, which are considered the "life blood of the Earth and all who dwell upon it."

To integrate NEPA and FLPMA compliance with the NHPA, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act and Executive Order 13007 (Sacred Sites), the BLM must provide affected tribes an opportunity to comment and consult on a Proposed Action. BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional, cultural, and/or spiritual sites, activities, and resources. Tribal consultation is required in all steps of the NEPA and NHPA Section 106 process when a federal agency undertaking may affect historic properties that are either (1) located on tribal lands, or (2) when any Indian tribe attaches religious or cultural significance to the historic property, regardless of the property's location.

Through informal discussions between BLM and Tribal members, it has been stated that the Independence Valley was used as a travel corridor for trade, hunting and gathering, and seasonal use, as the winters were very harsh. Few families stayed in the area during the colder months. Those people who lived in the pine nut rich areas of central Nevada would travel this corridor to reach the Snake River/Bruneau River areas, where salmon was abundant. Cultural resources inventory and survey (archaeological sites and artifacts) appear to support past use of the valley by native peoples. Most discussions have focused on the major hot springs of northern Independence Valley, located on private land where the Hot Sulphur Springs Geothermal Power Plant is proposed for construction and this transmission line would originate.

Letters informing and inviting the local tribes to consult were mailed from the BLM Elko Field Office on August 17, 2007. Tribal members have asked to tour the hot spring areas; however, weather, road conditions, and conflicting schedules have limited site visit opportunities. Currently, Duck Valley Tribal members have been the most involved, along with the Tribe's

Cultural Resources Department requesting cultural resources inventory data. At the time of this writing, BLM is still in the process of reviewing the cultural inventory report and arranging a field visit with the tribe.

Environmental Consequences of the Proposed Action

Due to ongoing Native American consultation, BLM cannot determine specific impacts to specific tribal resources, activities, or sites. Generally, vehicles, equipment, and personnel used for power plant and transmission line construction can have negative impacts to areas utilized by native peoples and those associated artifacts. Long- and short-term noise and visual impacts can have a detrimental impact to existing cultural/traditional/spiritual activities that may occur in certain areas. Sacred sites such as mountain top prayer locations, sweat lodge locations, and hot water sources, along with edible/medicinal plant gathering sites and activities, must remain quiet and undisturbed.

The physical remains of past cultural and subsistence practices and activities (antelope traps, points, flakes, stone tools, grinding stones, etc.) are also considered to be extremely important and sacred due to such artifacts having been made by the ancestors and considered the evidence of thousands of years of native inhabitance. Power plant and transmission line construction and personnel working in close proximity to cultural sites can destroy artifacts, thus eliminating not only the physical evidence of native occupation, but also archaeological data, which can produce a better understanding of past and present cultures. Archaeological data along with native oral history can reveal information pertaining to past cultural activities and associated social practices, trade routes, subsistence activities, environmental changes, etc.

Newly created access routes often experience use by members of the public to access formerly inaccessible locations. If members of the general public increasingly utilize newly created access and maintenance roads and two-tracks, the cultural, traditional and/or spiritual integrity of any adjacent Native use site may be compromised.

As identified in Section 2.1.18 of this EA, TG Power has agreed to measures to avoid adverse impacts to inventoried sites. Where physical avoidance is an issue for any National Register eligible and/or traditional cultural properties within or in close proximity to the proposed transmission line actions, a protective "buffer zone" would be agreed upon by the BLM, SHPO, proponent and/or affected Tribe. Cultural and archaeological resources and activities are also protected under the Archaeological Resources Protection Act, FLPMA, and Native American Religious Freedom Act. Wherever facility construction and operation activities are located within an area deemed culturally or spiritually sensitive and regardless of land ownership, the proponent would be responsible for formally educating workers of the importance of the unmolested existence of Native American historic and pre-historic physical remains (artifacts).

During the project activities, if any cultural properties, items, or artifacts (stone tools, projectile points, etc.) are encountered, it must be stressed to those involved in the proposed project activities that such items are not to be collected.

Also, though the possibility of disturbing Native American gravesites within most project areas is extremely low, inadvertent discovery procedures are noted in Section 3.1.18 of this EA. The Native American Graves Protection and Repatriation Act, section (3)(d)(1), states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity that caused the discovery must cease and the materials protected until the BLM can respond to the situation.

This analysis will be updated if any new information results as communication and coordination with local Native American tribes for the proposed action continues. This may include more specific identification of adverse impacts and mitigation and monitoring measures to any properties of traditional or religious importance to the tribes.

3.3.15 Social and Economic Concerns

Affected Environment

The project area is in Elko County, which ranks second largest among Nevada's 17 counties with almost 11 million acres, of which about 61.7 percent is public land administered by BLM. Approximately 70 percent of the proposed project area is privately owned and used for irrigated cropland, pasture land, and open rangeland. The remaining land within the proposed project area is public land that is managed for grazing, mining and other multiple uses. The closest community along the proposed transmission line route is Tuscarora. The reported permanent resident population of Tuscarora is five. There are also several full-time residents and a trailer park at Taylor Canyon. Elko, Nevada is the county seat, and the largest community in the area with a reported population of 16,708. The population of Elko County in 2005 was 47,586.

Environmental Consequences of the Proposed Action

Completion of the geothermal power plant and 120 kV electric power transmission line would stimulate non-mining related economic growth in Elko County by increasing long-term, high paying employment opportunities, adding to the tax base, and increasing revenues. Construction of the transmission line would employ 15 to 25 workers for approximately five to seven months. The workers would likely be housed in Elko, or at trailer parks located in Taylor Canyon and Lone Mountain Station (Junction of SR 225 and SR 226). This temporary influx of workers would not have a negative impact to local services but would provide a temporary income to the local establishments for services provided (trailer space rental, restaurant, groceries, etc.).

3.4 MITIGATION AND MONITORING

3.4.1 Construction Permits

The proposed transmission line is closely related to the Hot Sulphur Springs Geothermal Power Plant on private land. Section 1.2 of this EA lists authorizations from other agencies that would be required for the transmission line. BLM's approval of construction in the ROW should be conditioned upon TG Power obtaining all necessary permits for construction of the power plant, new road and transmission line on private lands from the permitting authority, as listed below.

Army Corps of Engineers (transmission line, access road and power plant)

- 404/401 Permit (Utility Line Activities, Linear Transportation Projects)

Nevada Division of Environmental Protection (transmission line, access road and power plant)

- Surface Area Disturbance Permit
- Stormwater General Permit for Construction
- Temporary Working in Waterways Permit

Nevada Department of Transportation (transmission line)

- ROW over Roadway Permit
- Occupancy or Encroachment Permit

Nevada Division of Environmental Protection (power plant)

- Injection Well Testing Permit
- Underground Injection Control Permits
- Temporary Surface Discharge Permits
- Air Quality Determination of Insignificant Activity
- Chemical Accident Prevention Program (construction and operation permits)

Elko County (power plant)

- Conditional Use Permit
- Zoning Change
- Construction Permits
- Hazardous Materials Permit

Nevada Division of Mineral (power plant)

- Industrial Production and Monitoring Well Permits
- Project Area Permit

Nevada Department of Water Resources (power plant)

- Water Appropriations Permits

Nevada Public Utilities Commission (power plant)

- Permit to Construct Utility Facilities

3.4.2 Migratory Birds and Sensitive Avian and Fish Species

The portion of the new access road to the power plant on land owned by Ellison Ranching Company has the potential to affect the riparian, wetland, meadow and pasture habitat used by sensitive migratory birds. Installation of culvert(s) in Harrington Creek will affect red band trout passage and habitat. Options for the design of the road and stream crossing should be considered as T G Power applies to the Army Corps of Engineers for a construction permit.

3.4.3 Cultural Resources Protection and Native American Concerns

For the protection of cultural resources, Section 2.1.8.2 of this EA describes measures agreed to by TG Power to mitigate potential impacts of the proposed transmission line to cultural resources on both public and private land. Indirect impacts to cultural resources resulting from increased human activity would be mitigated through limiting public use of the new transmission line/power plant access road.

Because the proposed transmission line is closely related to the Hot Sulphur Springs Geothermal Power Plant, compliance with NEPA, FLPMA, NHPA, and Native American consultation must also include consideration of activities associated with future geothermal exploration/testing, and construction and operation of the power plant (the "project") regardless of ownership. To mitigate the potential for adverse impacts to cultural resources as consultation continues with the Nevada SHPO and affected tribes, permission to commence with ground disturbing activities should be conditioned upon the proponent's implementation of the following mitigation and monitoring measures to protect cultural resources and traditional cultural properties of concern, as identified through completion of the NHPA Section 106 and Native American consultation process.

- Cultural resource protection measures from Section 2.1.8 of this EA should be extended to the entire federal undertaking including construction of the power plant, access road, transmission line, and other associated facilities on private land.

- Prior to commencement of earth disturbing activities in the project area deemed to be part of the federal undertakings for the project under the NHPA, TG Power would insure that all project areas have been inventoried for cultural resources. Measures stipulated by the BLM in consultation with SHPO and, as appropriate, Indian tribes, must also have been put in place to mitigate or lessen adverse effects to historic properties or unevaluated properties, and cultural, traditional, spiritual and/or sacred resources and sacred sites in compliance with Section 106 of the NHPA, NAGPRA, AIRFA and E.O.13007. Effects to be considered in addition to physical impacts would include those that might be adverse to the setting, feeling and association of ranch complexes and other historic structures within the project viewshed;

- TG Power would not disturb, alter, injure or destroy any scientifically important paleontological remains; or any historical or archaeological site, structure, building, object

or artifact within the project area, cumulative effects areas or on surrounding public lands. The proponent would be responsible for ensuring that its employees, contractors or any others associated with the project do not collect artifacts, or damage or vandalize archaeological, historical or paleontological sites or the artifacts within them. Should damage to cultural resources occur during the period of construction, operation, maintenance or rehabilitation due to the unauthorized, inadvertent or negligent actions of the proponent or any other project personnel, the proponent shall be responsible for costs of rehabilitation or mitigation. Individuals involved in illegal activities may be subject to penalties under the Archaeological Resources Protection Act, Federal Land Management Policy Act , Native American Graves and Repatriation Act and other applicable statutes;

- If human remains or other items of importance to Native Americans specified in Section 2.1.8, or any previously unidentified cultural (archaeological or historical) resources or vertebrate paleontological resources are discovered during the conduct of activities under the approved plan, the proponent would immediately cease all activities within 300 feet of the discovery, insure that the discovery is appropriately protected and immediately notify the BLM by telephone, followed by written confirmation. Work would not resume within the avoidance area and the discovery shall be protected until the BLM Authorized Officer issues a notice to proceed.

- An archaeological monitor, funded by TG Power, would be present during active construction at eligible or unevaluated cultural resource sites located within 300 feet of the project;

- TG Power or its successors and assigns would fund an archaeological monitor to inspect historic properties within the project cultural resource cumulative effect area between State Route 226 and Hot Creek for the duration of the power plant's operating life. Inspections would be on an annual basis for the first four years after completion of the power plant. After the first four years inspections would be biennial. The monitor would be required to hold a Nevada BLM cultural resource use permit and submit an annual/biennial report of the findings. Conditions of each property would be reported and any changes documented both in narrative form and with maps and photographs. Written notification to the BLM of the results would be required within 7 days of completion of the fieldwork. The full report would follow in 50 days.

- If avoidance is not practical or adverse effects cannot be effectively mitigated through avoidance, TG Power would conduct data recovery in conformance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716) or undertake other appropriate mitigation agreed to by BLM and the SHPO; and

- BLM cultural resource specialists, accompanied by designated tribal observers when appropriate, may periodically visit sensitive cultural locations within or near the construction boundaries. Native American consultation and monitoring by BLM and Tribal Cultural Resource Specialists would occur when deemed necessary throughout the life of a project to ensure that any identified traditional cultural properties are not deteriorating.

4.0 CUMULATIVE IMPACTS

This chapter analyzes the potential cumulative impacts that would result from the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

All resource values analyzed in Chapter 3 of this EA have been evaluated for cumulative impacts. BLM has determined that cumulative impacts would be negligible for most resources. As discussed in Section 4.2 of this EA, the proposed transmission line, in combination with future development of the Hot Sulphur Springs Geothermal Power Plant and other past, present and reasonably foreseeable actions, would result in an incremental impact to vegetation resources, noxious weeds/invasive non-native species, wildlife/habitat, migratory birds, special status species, livestock grazing, cultural resources including traditional cultural properties of concern to Native Americans, and visual resources.

Cumulative effects study areas (CESA) have been defined for each of the resources evaluated, and are shown in Figures 8 through 11. For most resources, the CESA was defined as extending approximately 1.5 miles on both sides of the proposed corridor, which encompasses approximately 52,000 acres. Resources with CESAs other than the 1.5 miles either side of the proposed corridor are range resources, water resources, cultural resources, and Native American concerns. The water resources CESA include portions of the three hydrographic basins that the project area lies within (Figure 8). The range resource CESA (Figure 9) includes all of the Eagle Rock and Taylor Canyon allotment as well as a portion of the Spanish Ranch allotment. The entire Spanish Ranch allotment was not included due to the large size and distance from the project area. Figure 11 shows the CESA for cultural resources and Native American concerns; it includes the parcels of public land and subsurface mineral estate that are leased for geothermal resources. The time frame for the cumulative assessment assumes 20 years, which is the estimated life of the Hot Sulphur Springs Geothermal Power Plant that would generate the electricity to be transmitted by this project.

4.1 DESCRIPTION OF PROJECTS

The primary activities that would contribute to cumulative effects include past, present, and reasonably foreseeable future actions in the exploration and development of geothermal resources in the area recreation, livestock grazing, wildfires and burned area rehabilitation, drilling activities for geothermal resources and locatable mineral exploration activities, ranch development, and other ROW activities (power lines, roads, and other utilities). Past, present, and reasonably foreseeable future projects are described in this section, with respect to the CESA

4.1.1 Past and Present Activities

Historic activities in the CESA areas have included mineral and geothermal and locatable mineral exploration and development activities, other ROW activities (roads, power lines, and other utilities), grazing, and wildfire suppression and burned area rehabilitation activities. Mineral exploration activities have included exploration drilling directly west of the start of the proposed transmission line at the geothermal power plant and/or geophysical exploration drilling on leased and private land that preceded the current plan for development of the power plant. Exploration drilling for locatable minerals (gold) has also been completed by Queenstake Resources USA, Inc. near Starvation Canyon on the southern end of the Independence Mountain range. Geothermal exploration, including drilling and seismic studies have occurred in the area since the early 1980s.

Grazing in Independence Valley has occurred since the mid 1850s with the establishment of many of the ranches in the area including the Spanish Ranch. Prior to the Taylor Grazing Act of 1934, upward of 18,000 head of cattle and 12,000 head of sheep were run on the Spanish Ranch. Similar operations were run in the area. After the Taylor Grazing Act, the number of both cattle and sheep were reduced. Grazing and hay production are the two largest land uses in the area of the proposed project.

Wildland fires have affected grazing and wildlife habitat use in much of the CESA area. The most recent fires included the Snow Canyon fire, and the Taylor Canyon fire, both occurring in 2006 (Figure 5). The Snow Canyon fire burned approximately 22,319 acres in the northern part of Independence Valley including, 5,206 acres within the vegetation CESA. The Taylor Canyon fire burned approximately 4,467 acres in the south end of the Independence Valley and Independence Mountains in portions of the Taylor Canyon and the Eagle Rock allotments. The Taylor Canyon fire burned entirely within the Vegetation and Range Resources CESA. Emergency stabilization and rehabilitation actions that BLM has taken over the three years since these fires occurred include seeding, and closing the burned areas to grazing until revegetation objectives are met.

The main ROW corridor established in Independence Valley and Taylor Canyon is SR 226. In addition to this paved road, several overhead power distribution and transmission lines parallel different sections of the road from its beginning at SR 225. Approximately 45 miles of transmission and distribution lines run through the visual resources CESA. Assuming a pole every 500 feet with a disturbance of 0.5 acres this amounts to 237.6 acres of disturbance. There are also numerous secondary dirt, gravel, and two-track roads that connect to SR 226. These roads total approximately 150 miles within the CESA area. The disturbance associated with SR 226 has a road disturbance width of 50 feet creating approximately 136.4 acres of disturbance.

The existing power and transmission line facilities include: Humboldt Substation; Humboldt 120 kV line; Oreana to Hunt Idaho 345 kV Transmission Line; Anglo Gold 120 kV line; Tuscarora Buried Power Line; existing power line east of SR 226 in Independence Valley; existing power line and associated single phase lines from Taylor Canyon area to Tuscarora; and individual variable phase power lines to home/business structures in Independence Valley.

Other present activities within the CESA area include exploration drilling in the Starvation Canyon, grazing, crop production (primarily hay), geothermal exploration drilling, road maintenance activities, and recreation. Queenstake Resources USA, Inc. is continuing to conduct exploration drilling near Starvation Canyon to identify a mineral resource. This activity includes the construction of exploration roads and drill pads (approximate 137 acres). Grazing and crop production on public and private lands is an ongoing activity by the ranching operations in Independence Valley.

TG Power is continuing to conduct geothermal exploration drilling on private lands to identify and delineate existing geothermal resource in conjunction with their development of the Hot Sulplur Springs Geothermal Power Plant. Four wells have recently been drilled, one well was drilled to over 3,000 feet, and the other three wells were drilled to over 5,000 feet below ground surface. These activities resulted in approximately nine acres of surface disturbance.

Road maintenance activities on SR 226 and adjacent roads are conducted on an as-needed basis. This includes surface maintenance and snow removal on SR 226 and grading on secondary roads. Many of the roads leading from SR 226 are on private land and are thus maintained by the land owner. Recreation use is likely to occur during all seasons including hunting, fishing, camping, four-wheel use, snowmobile use, sightseeing, and rock hounding.

4.1.2 Reasonably Foreseeable Future Actions

The reasonably foreseeable future actions include TG Power's closely related development and expansion of the geothermal power plant. Development of the geothermal power plant is entirely on private land and would disturb approximately 15 acres, nine acres of which have already been disturbed through exploration activity. This development would include construction of the power plant, wellheads, and piping. Once this power plant is producing power, it is a reasonable assumption that the power plant would be expanded to produce additional power. This would likely include drilling additional production and injection wells on public and private land, and construction of roads. This is estimated to disturb an additional five acres. The proposed transmission line would not need to be upgraded as the 120 kV line would be sufficient to transmit the increased power production.

On December 5, 2007, TG Power submitted a "Notice of Intent to Conduct Geothermal Resource Exploration Operations" (Form 3200-9) on lands for which they hold leases in the vicinity of the location for Hot Sulphur Springs Geothermal Power Plant (Lease Nos. N74915, N76151 and N74916). The notice proposes six seismic lines on public and private lands that total about 10 miles in portions of Sections 7, 8, 9, 16, 17, and 18, T41N, R52E.

Queenstake Resources USA, Inc. is currently in the planning stages for developing an underground precious metal operation in the area of their Starvation Canyon exploration area. This operation is anticipated to include a small facilities area, underground operations, waste rock facility, and an access road to SR 226. This operation would be located on private land except for a short section of BLM land along the access road. Operations are expected to disturb approximately 65 acres (Queenstake, 2006).

Wildland fires are likely to continue to occur within the Independence Valley, areas to the west, and the Independence Mountains. It is impossible to predict the location and size of future fires, but within the next 20 years, one or more large fires will likely occur within the CESA. Similar to the 2006 fires, BLM would take actions as necessary to suppress fires and stabilize and rehabilitate the burned areas, in cooperation with other federal, state and local agencies and affected landowners.

Current livestock grazing, ranching, and recreation activities would continue to occur in the reasonably foreseeable future within the CESA area. Grazing on public lands would be subject to multiple use management strategies, terms and conditions of permits and fire closures by BLM.

Table 8 summarizes the area disturbed by the proposed transmission line and the other activities described in this section.

Table 8 Summary of Disturbance

Activity Description	BLM (acres)	Private (acres)	Total (acres)
Transmission Line (Proposed Action)	43.4	64.11	107.5
Power Plant Facility / Geothermal Wells	0.0	15.0	15.0
Geothermal Exploration (Seismic Study)	9.7	0.5	10.2
Starvation Canyon Exploration	0.0	137.0	137.0
Starvation Canyon Underground Mine	0.0	65	65
Existing Rights-of-Way (Transmission and Distribution Lines)	73.9	163.7	237.6
Existing Right-of-Way (SR 226)	38.2	98.2	136.4
Total	**165.2**	**543.51**	**708.7**

4.2 CUMULATIVE EFFECTS

The following sections discuss the cumulative effects of the Proposed Action when combined with impacts from the activities described above (i.e., exploration development, livestock grazing, ranching, administrative land uses, etc.) within the respective CESAs. The CESAs are shown in Figures 8 through 11. The following affected resources are analyzed:

- Vegetation
- Noxious Weeds and Invasive, Non-Native Species
- Wildlife
- Migratory Birds
- Special Status Species
- Rangeland
- Cultural Resources
- Native American Concerns
- Visual Resources.

4.2.1 Vegetation

As noted in Chapter 3 of this EA (Table 2), the disturbance associated with construction of the proposed transmission line would total about 108 acres (including both public and private), which would include the placement of approximately 315 poles, construction of a 2.5-mile access road, and overland travel during construction and maintenance of the transmission line. Following reclamation, long-term disturbance would be about 23 acres, with less than one acre associated with the pole locations, fourteen acres for the access road and eight acres for the maintenance two-track. Some areas may remain barren until vegetation becomes established, thus having a minor short-term impact to wildlife and livestock forage.

The short-term loss of vegetation of an estimated 108 acres and long-term loss of approximately 23 acres represents less than 0.002 of 1 percent of the CESA area. This is negligible when combined with the 9,673 acres recently burned within the CESA and the 601.2 acres disturbed by other actions in the area. If a major fire were to occur in the CESA area, BLM would assess impacts of the loss of vegetation and wildlife habitat, and propose measures needed to stabilize and rehabilitate the burned area.

4.2.2 Noxious Weeds and Invasive, Non-Native Species

The combined past, present, and reasonably foreseeable surface disturbance within the CESA area has the potential to create conditions favorable for the establishment/invasion of invasive non-native species and noxious weeds, and other undesirable plants. Future occurrence of a large wildland fire poses the greatest risk for invasion of weeds in the area. Consistent with BLM policy, use of suitable seed mixes with only certified and tested seed, combined with

implementation of prompt and appropriate revegetation techniques would reduce the potential for undesired weeds to invade burned areas. The potential for the establishment of noxious and/or invasive non-native weeds within the CESA area may be greater if the fire burns on private lands where federal involvement is limited.

The environmental protection measures discussed in Section 2.1.7.5 are standard operating procedures that that are applied to all BLM actions to prevent weed species from spreading and dominating disturbed sites (i.e., cleaning the undercarriage of vehicles prior to entering the project area).

4.2.3 Wildlife

The cumulative loss of habitat in the CESA area has the potential to adversely impact wildlife. Fires have affected the largest amount of habitat compared to impacts resulting from other projects within the CESA area, although burned vegetation would not result in the long-term loss of habitat. Of the 9,673 acres burned in the last two years in the wildlife CESA, the majority is expected to return to suitable wildlife habitat. The 108 acres of short-term disturbance and 23 acres of long-term disturbance represent a minor loss (approximately 0.2 percent and approximately 0.04 percent of the total CESA area, respectively). This loss of wildlife habitat associated with the Proposed Action is negligible.

4.2.4 Migratory Birds

The cumulative loss of habitat in the CESA has the potential to impact migratory birds by increasing the loss of additional nesting and foraging habitat; and loss of individual birds, young birds, and nests due to ground disturbing activities or other activities in the CESA, such as grazing and ranching activities. The incremental loss of migratory bird habitat would be negligible compared to amount of available habitat in the surrounding areas. Mitigation measures (anti-perching devices) to be employed during construction and operation of the power line would reduce or eliminate additional cumulative impact associated with perching opportunities for birds of prey on the power lines that exist in the CESA.

4.2.5 Special Status Species

Wildfires have had, and are likely to have, the greatest impacts to sage grouse and pygmy rabbit habitat. Over 130,000 acres have burned in the last two years in the proposed project and surrounding area. Much of this burned area has been in sagebrush habitat, and post fire rehabilitation activities including seeding of shrub, forbs and grasses are completed to help restore lost habitat. Due to the small amount of suitable sagebrush habitat that would be affected by the transmission line, the cumulative impacts from it are negligible. The addition of perch deterrents on the proposed power poles along the transmission line is expected to reduce use by

raptors, and predation on other sensitive birds and mammals associated with the sagebrush communities.

Past and current agricultural practices have maintained habitat used by migratory and sensitive birds in the Independence Valley. Construction and use of the transmission line and new access road to the power plant across Harrington Creek would disrupt s use of the habitat provided by the privately owned hay meadows and riparian areas. The road embankment and installation of culverts in Harrington Creek could affect functions of the existing flood irrigation structures and changes in upstream and downstream stream function from that which currently exists from past water spreading activities and impact redband trout. Completion of the permitting process to include practical measures to address these issues would reduce adverse cumulative impacts to the sensitive species.

4.2.6 Livestock Grazing

Minimal cumulative impacts on grazing use would occur with the implementation of the proposed project. The permittee for the Spanish Ranch grazing allotment (Ellison Ranching Company) also owns lands where the Hot Sulphur Springs Geothermal Power Plant and the proposed transmission line would be developed (Figure 2a). TG Power has obtained permission of the other ranchers that own lands crossed by the transmission line. Grazing use in portions the CESA area has been temporarily impacted, primarily by recent wildfires followed by grazing closures on the portions of the allotments that burned. Approximately 107.5 acres of short-term disturbance will occur during implementation of the proposed transmission line project, with approximately 23 acres of long-term disturbance realized. These losses would not result in reduction in permitted use (animal unit months) to any of the allotments within the CESA area. No measurable adverse cumulative impacts to grazing use are anticipated as a result of constructing and maintaining the proposed transmission line.

4.2.7 Cultural Resources

Most cultural properties tend to degrade over time due to natural forces but many survive for thousands and even millions of years. Modern human activity tends to exacerbate the damage and as a consequence cultural resources are disappearing at an ever increasing rate. Most of the recorded cultural resources in the CESA exhibit impacts resulting from modern use of the land. Many of the impacts of the proposed transmission line and geothermal plant would be mitigated through implementing protective measures described in the cultural resource mitigation section. Similar measures would be implemented for other types of federal undertakings and would also limit cultural resource impacts.

Not all damages attributable to these actions are well understood or can be controlled. Grazing damage is found at virtually all sites and damage by roads fences and agriculture is common.

Several archaeological sites near the project area were damaged within the last five years by an earlier operator during geothermal exploration activities even though protective measures were in place at the time for most of them. Five of these were on public lands and were impacted by seismic exploration equipment. A drill pad and staging area was built on top of one of the eligible properties on private land. Although harder to quantify, the paucity of artifacts at some sites is probably due to removal by artifact collectors. Both the current inventory and one of the earlier inventories (report BLM1367) reported possible evidence of illicit artifact removal.

Taken together with other uses of the public lands, the development of Hot Sulphur Springs Geothermal Power Plant, seismic exploration and the 120 kV electric transmission line projects would likely contribute to an overall decline in cultural resources.

The Hot Sulphur Springs Geothermal Power Plant would be located within an area of high archaeological site density and potentially could adversely affect historic properties, given the tight working spaces. Measures such as archaeological monitoring during construction and post construction; and placing responsibility for the actions of project personnel on the proponent should lessen cumulative impacts.

TG Power's December 2007 geophysical exploration proposal includes up to 10 miles of seismic lines on private and public leased lands. As with the proposed transmission line and power plant, BLM's Section 106 review of the inventory report and monitoring of the seismic operations is expected to avoid adverse impacts to any cultural properties that may be identified in the exploration area by either avoidance or other appropriate mitigation measures.

Grazing is likely to have had major impacts on cultural resources in the past due to the large number of livestock grazed in the CESA. Because much of the damage has already been done, estimated future impacts would be limited. Many of the most sensitive sites are on private land and outside of federal jurisdiction.

Queenstake's mining activity is primarily on private land outside of federal jurisdiction. It is in an area with low cultural resources sensitivity and impacts to historic properties are unlikely. If the proposed mine comes under BLM review, effects to cultural resources would be considered in accordance with Section 106 of NHPA.

4.2.8 Native American Concerns

The act of drilling exploration holes (regardless of the data being sought) and any subsequent development plan for a geothermal power plant is often viewed by traditional Native American practitioners and believers as being harmful to "mother earth" due to impacts to underground and surface waters, which are considered the "life blood of the Earth and all who dwell upon it."

Other than consumption by people, wildlife, and plant species, certain hot and cold spring locations are also used for healing and spiritual purposes. Early indications are that the northern Independence Valley hot springs were heavily utilized by Native peoples for various purposes. BLM continues to consult with the tribes to address specific concerns with this and related actions. This includes exploration and future proposals for development of geothermal resources on leased lands within the cultural resource CESA that are received by the BLM.

4.2.9 Visual Resources

Surface disturbance within the CESA area has the potential to result in short- and long-term visual impacts, principally affecting the elements of line and color. The CESA area on public land has either a VRM class of III or IV (Figure 10). There have been and would be several projects that would have an impact on the visual resources of the area including the Proposed Action and the activity associated with the Queenstake Resources USA, Inc. exploration and future mining activity near Starvation Canyon. The Proposed Action is expected to add long-term cumulative effects to visual resources of the area, but the level of impact when combined with past, present, proposed, and reasonable foreseeable future projects are in line with allowed changes for the VRM classes.

5.0 CONSULTATION AND COORDINATION

This EA was prepared by JBR Environmental Consultants, Inc. under the direction of the BLM Elko Field Office, Elko, Nevada. Assistance was provided by BLM resource specialists; consultation with other local, state, and federal agency resource personnel; review of company and agency files; field reconnaissance; and review of supporting documentation.

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5.3 PUBLIC NOTICE AND AVAILABILITY

Notice of preparation of this EA was provided in July 2007, when the Elko "Project and Planning Schedule" was updated and posted on the public NEPA webpage. In February 2008, the EA was posted for a public and agency review period that ended March 10. Corrections to the analysis were made based on this review, and this finalized EA, with a Finding of No Significant Impact, will be posted throughout a 30-day appeal period for issuance of a decision to grant the ROW, subject to mitigation requirements. The BLM Elko NEPA webpage address is:

http://www.blm.gov/nv/st/en/fo/elko_field_office/blm_information/nepa.html

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FIGURES (ATTACHMENT)

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Figure 2b	Land Status (South Half)
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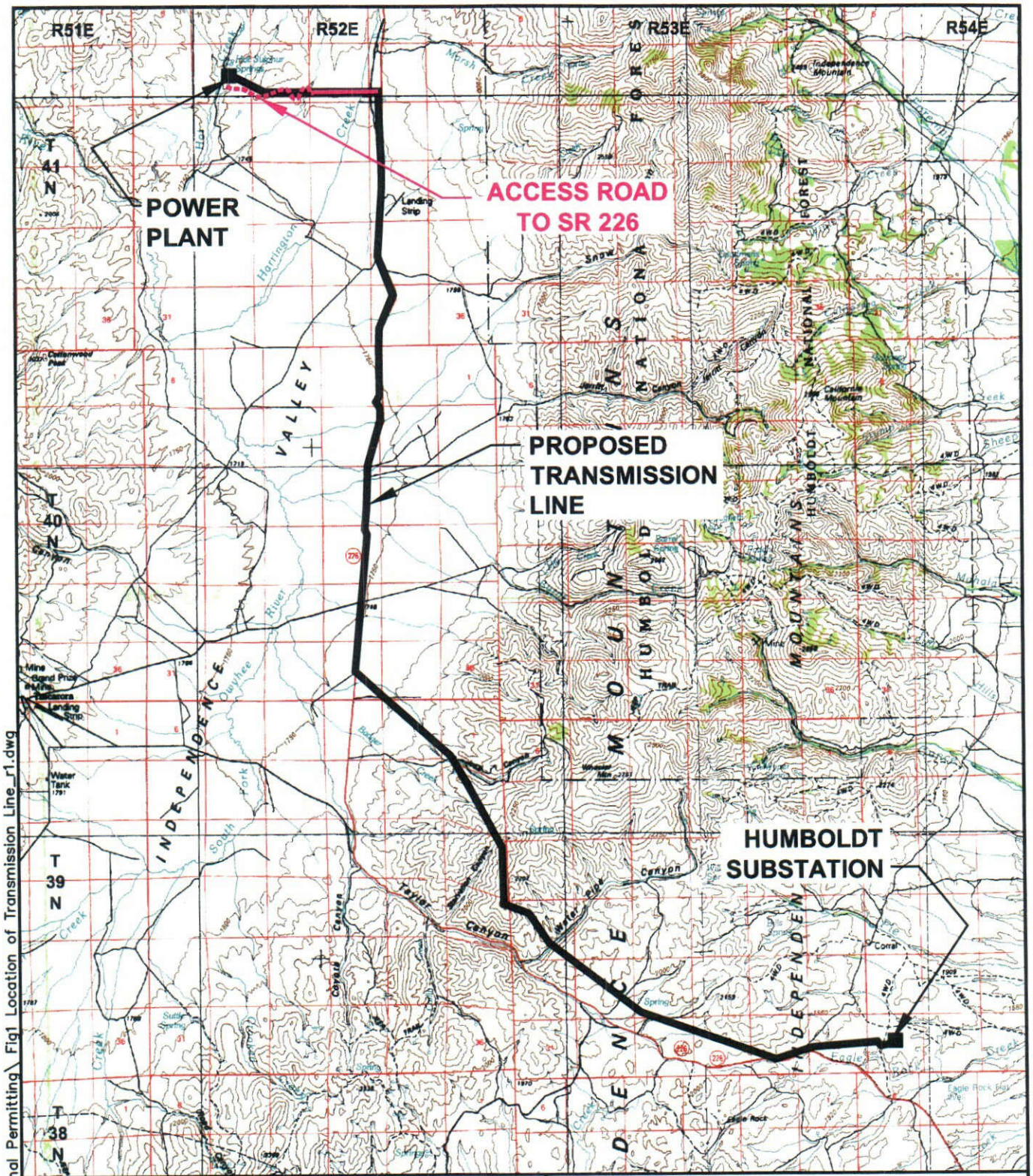


drawings\TG Power – Geothermal Permitting\ Fig1 Location of Transmission Line_r1.dwg

TOPOGRAHIC BASE FROM USGS 1:100,000-SCALE METRIC TOPOGRAPHIC MAPS: TUSCARORA, NEVADA, 1982 AND DOUBLE MTN, NEVADA, 1981.

1 0 1 2 3 4 5 6 7 KILOMETERS
1 0 1 2 3 4 MILES

N

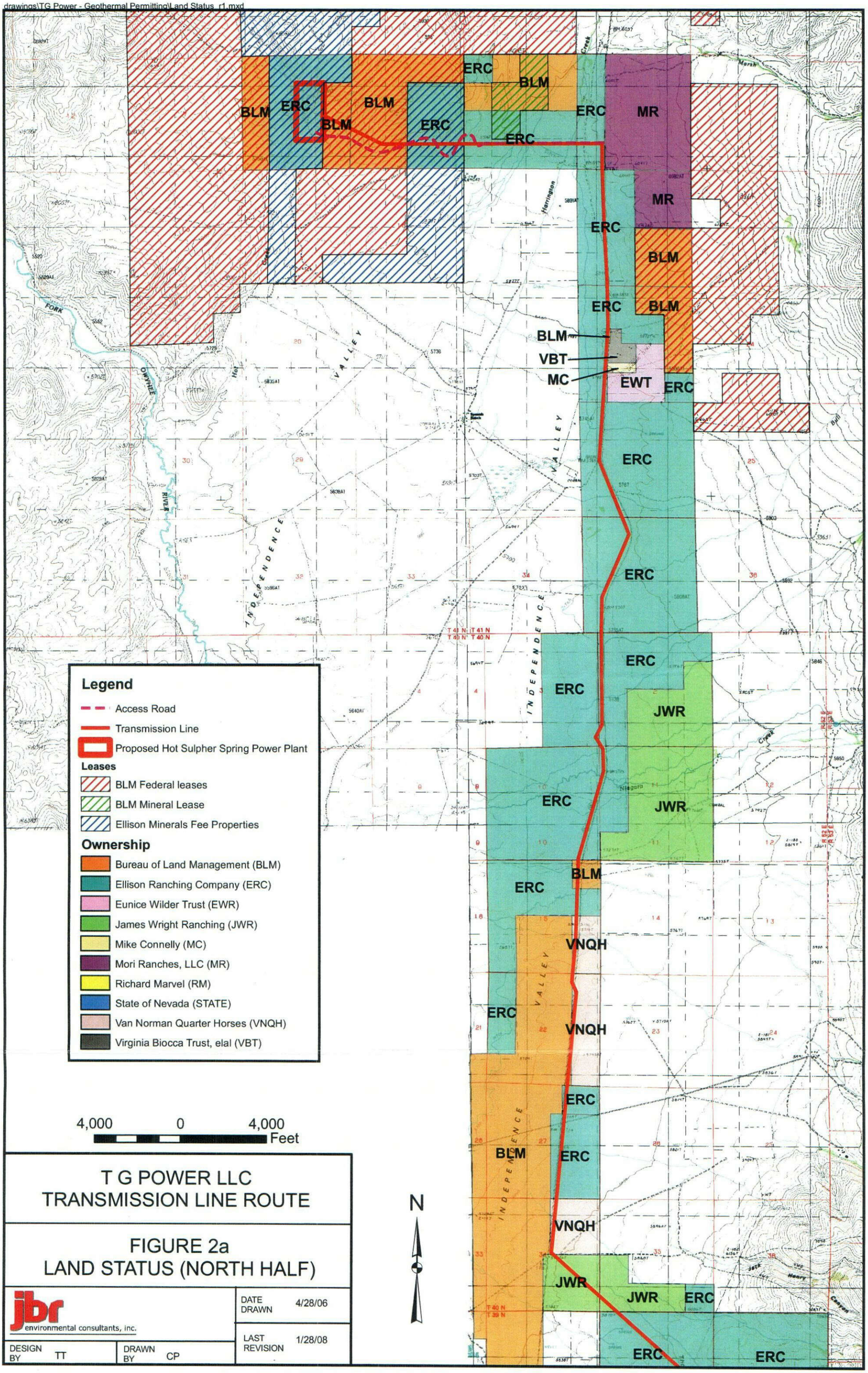
T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 1
LOCATION OF TRANSMISSION LINE

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1:150,000	8/18/04	12/6/07

drawings\TG Power - Geothermal Permitting\Land Status_r1.mxd



Legend

- Access Road
- Transmission Line
- Proposed Hot Sulpher Spring Power Plant

Leases

- BLM Federal leases
- BLM Mineral Lease
- Ellison Minerals Fee Properties

Ownership

- Bureau of Land Management (BLM)
- Ellison Ranching Company (ERC)
- Eunice Wilder Trust (EWR)
- James Wright Ranching (JWR)
- Mike Connelly (MC)
- Mori Ranches, LLC (MR)
- Richard Marvel (RM)
- State of Nevada (STATE)
- Van Norman Quarter Horses (VNQH)
- Virginia Biocca Trust, elal (VBT)

4,000 0 4,000 Feet

N

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 2a
LAND STATUS (NORTH HALF)

jbr environmental consultants, inc.

DESIGN BY	TT
DRAWN BY	CP
DATE DRAWN	4/28/06
LAST REVISION	1/28/08

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 2b
LAND STATUS (SOUTH HALF)

jbr environmental consultants, inc.

DESIGN BY	TT	DRAWN BY	CP

DATE DRAWN 4/28/06

LAST REVISION 12/6/06

Legend

Transmission Line

ownership

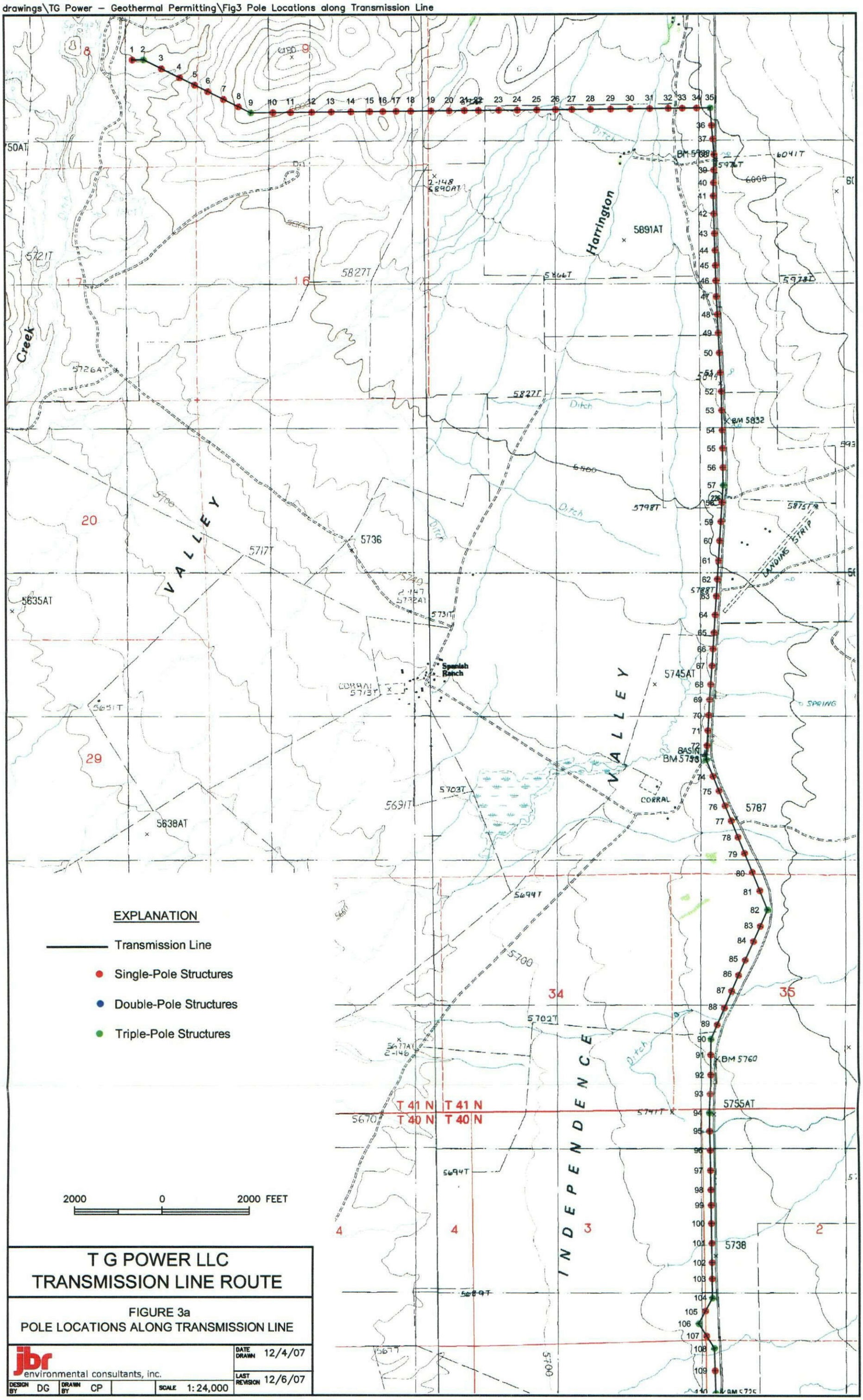
- Bureau of Land Management (BLM)
- Ellison Ranching Company (ERC)
- Eunice Wilder Trust (EWR)
- James Wright Ranching (JWR)
- Mike Connelly (MC)
- Mori Ranches, LLC (MR)
- Richard Marvel (RM)
- State of Nevada (STATE)
- Van Norman Quarter Horses (VNQH)
- Virginia Biocca Trust, elal (VBT)

N

4,000 0 4,000 Feet

drawings\TG Power - Geothermal Permitting\Fig 2b Land Status - south.mxd

drawings\TG Power – Geothermal Permitting\Fig3 Pole Locations along Transmission Line



EXPLANATION

- Transmission Line
- Single-Pole Structures
- Double-Pole Structures
- Triple-Pole Structures

2000 0 2000 FEET

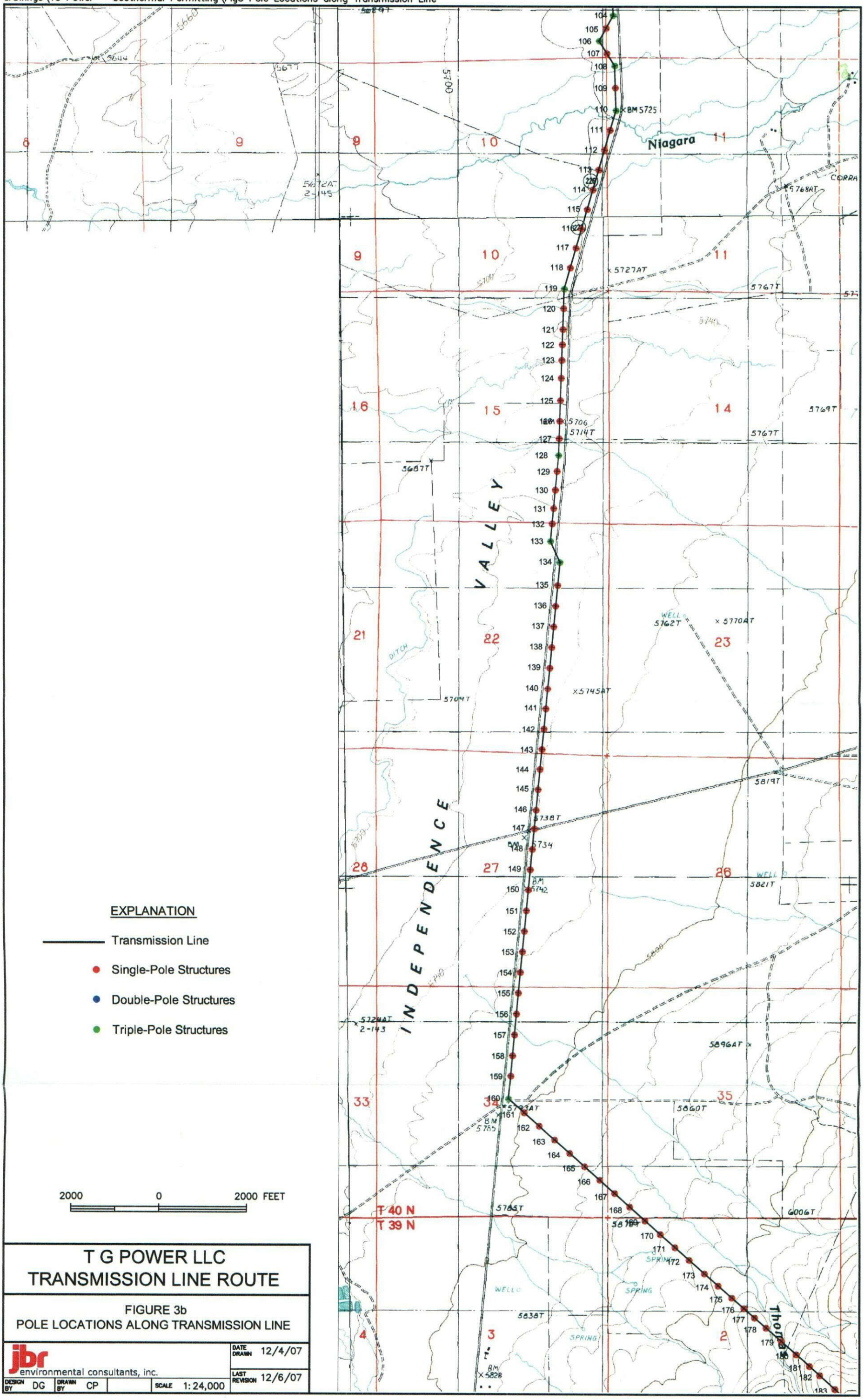
T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 3a
POLE LOCATIONS ALONG TRANSMISSION LINE

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY		SCALE	DATE DRAWN	LAST REVISION
DG	CP		1:24,000	12/4/07	12/6/07

drawings\TG Power – Geothermal Permitting\Fig3 Pole Locations along Transmission Line



EXPLANATION

- Transmission Line
- Single-Pole Structures
- Double-Pole Structures
- Triple-Pole Structures

2000 0 2000 FEET

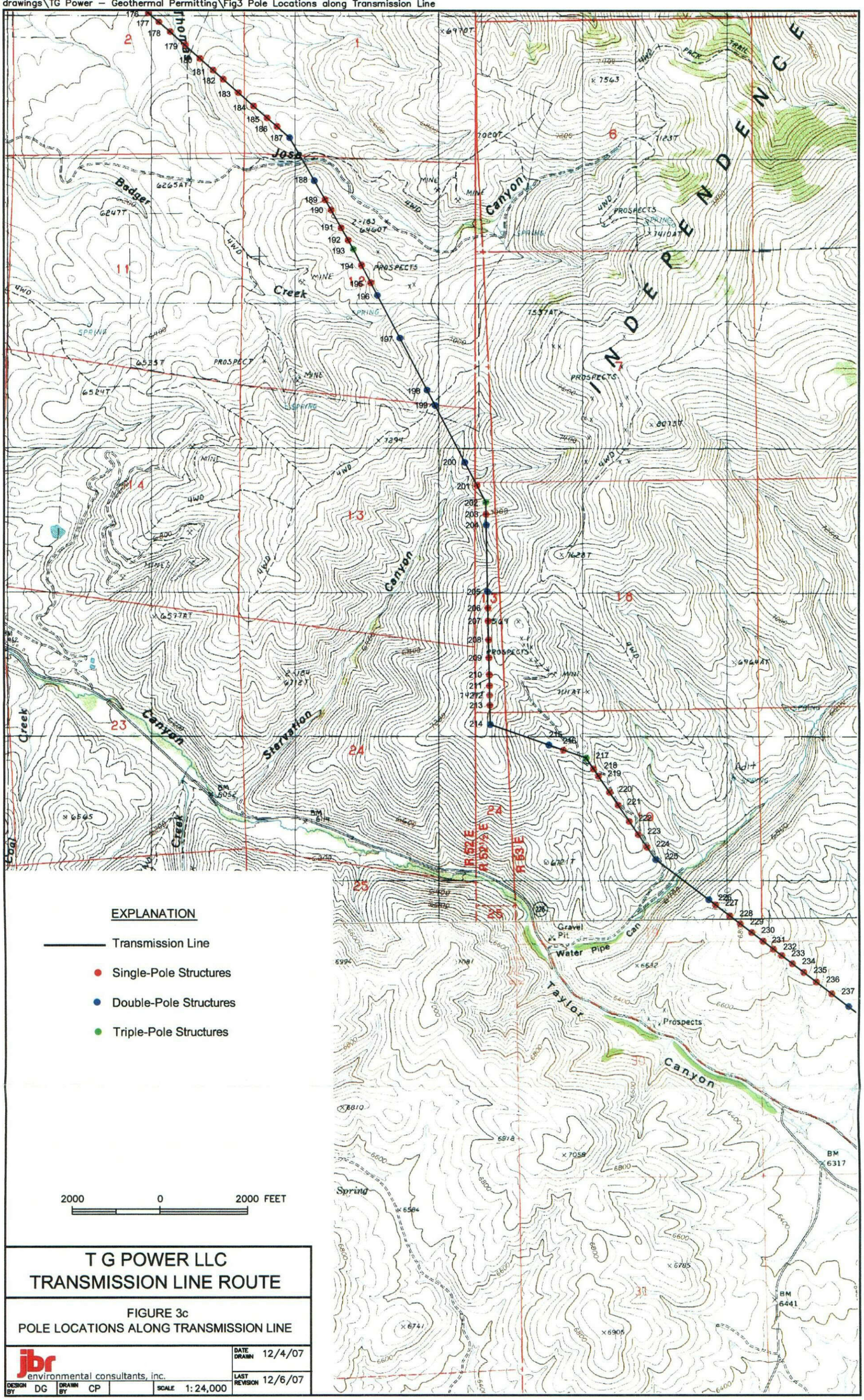
T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 3b
POLE LOCATIONS ALONG TRANSMISSION LINE

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY		SCALE	DATE DRAWN	LAST REVISION
DG	CP		1:24,000	12/4/07	12/6/07

drawings\TG Power – Geothermal Permitting\Fig3 Pole Locations along Transmission Line



EXPLANATION

- Transmission Line
- Single-Pole Structures
- Double-Pole Structures
- Triple-Pole Structures

2000 0 2000 FEET

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 3c
POLE LOCATIONS ALONG TRANSMISSION LINE

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY		SCALE	DATE DRAWN	LAST REVISION
DG	CP		1:24,000	12/4/07	12/6/07

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 3d
POLE LOCATIONS ALONG TRANSMISSION LINE

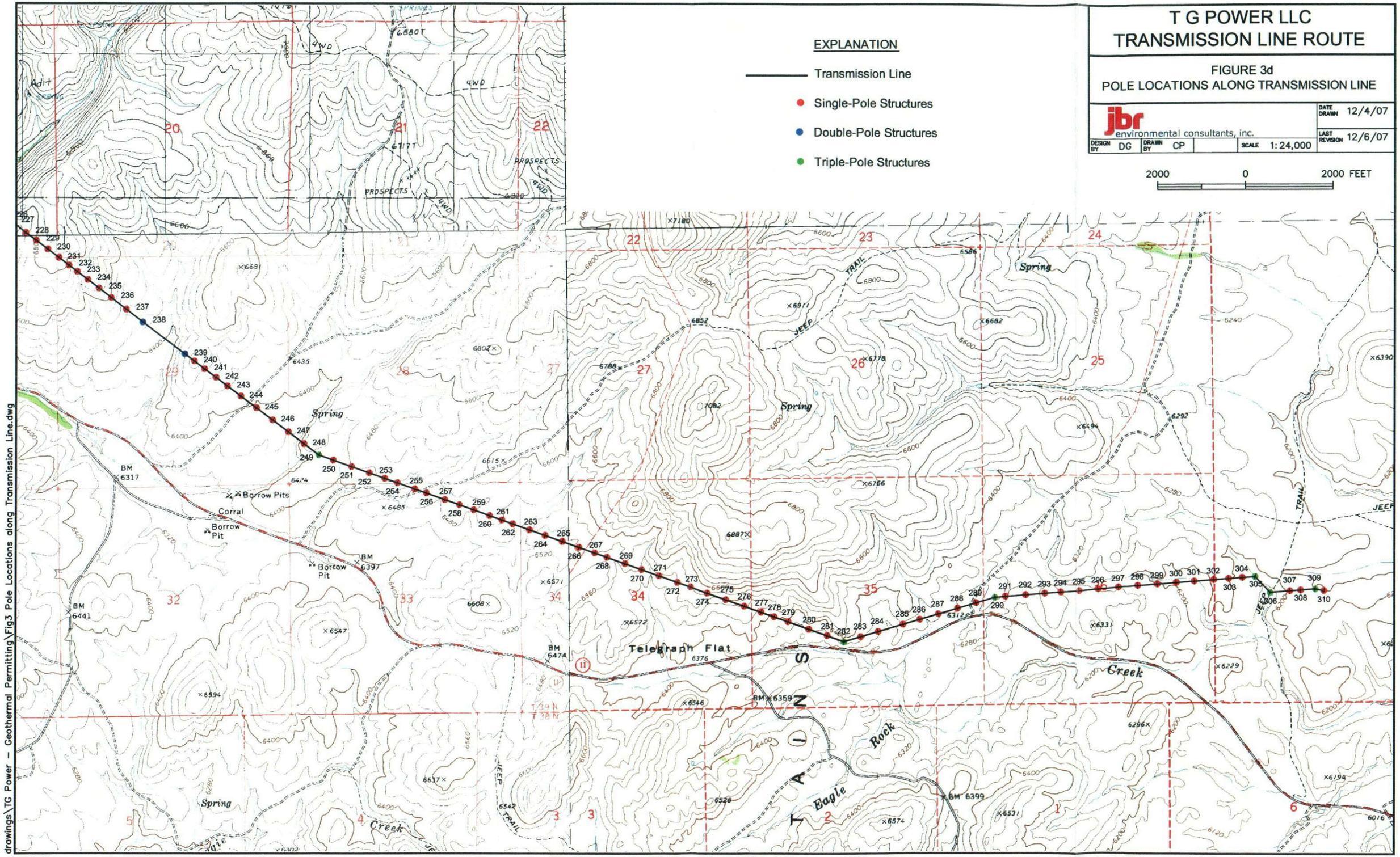
jbr environmental consultants, inc.

DESIGN BY	DRAWN BY		SCALE	DATE DRAWN	LAST REVISION
DG	CP		1:24,000	12/4/07	12/6/07

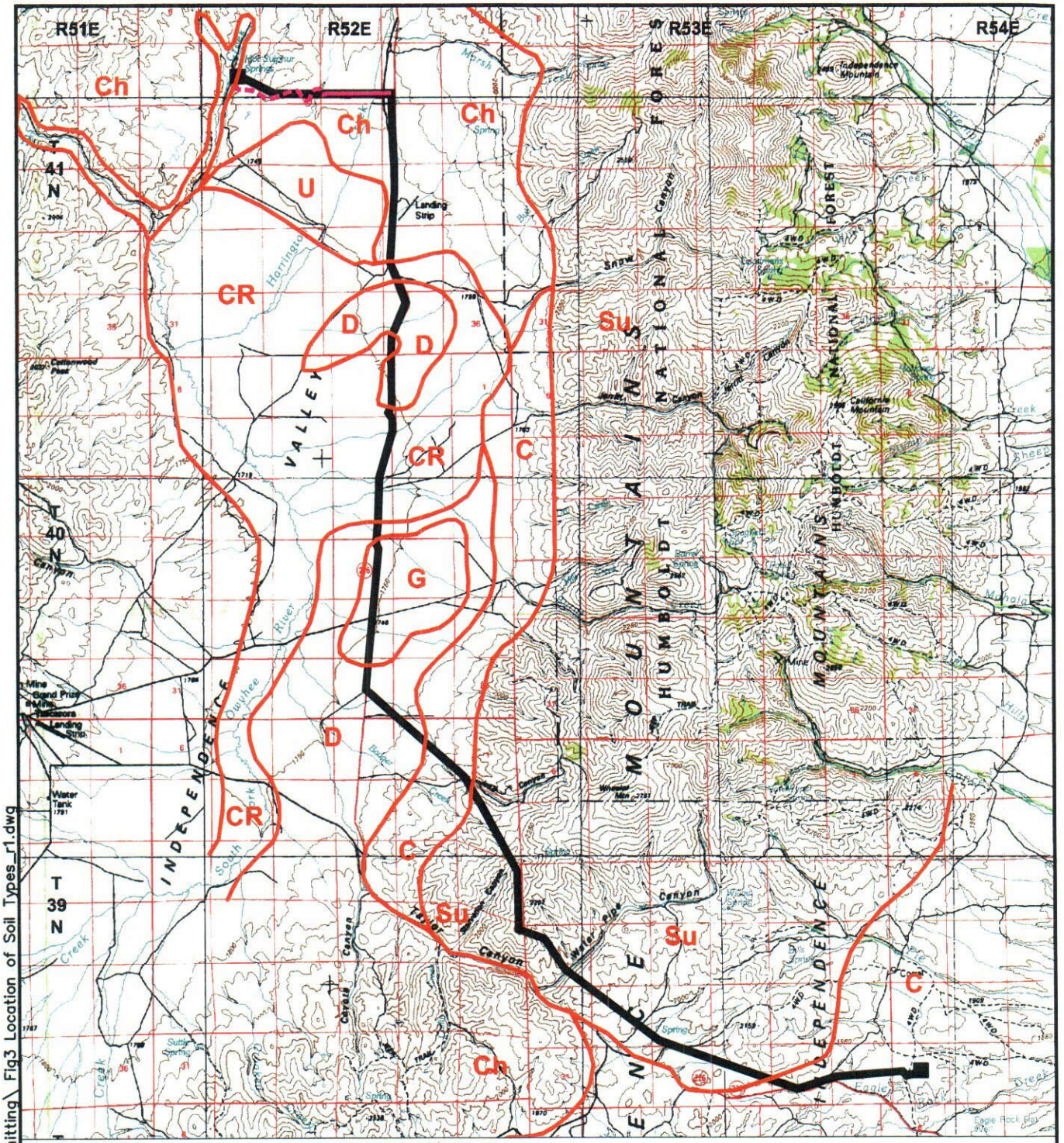
2000 0 2000 FEET

EXPLANATION

- Transmission Line
- Single-Pole Structures
- Double-Pole Structures
- Triple-Pole Structures



drawings\TG Power – Geothermal Permitting\Fig3 Pole Locations along Transmission Line.dwg



TOPOGRAHIC BASE FROM USGS 1:100,000-SCALE METRIC TOPOGRAPHIC MAPS:
TUSCARORA, NEVADA, 1982 AND DOUBLE MTN, NEVADA, 1981.

1 0 1 2 3 4 5 6 7 KILOMETERS
1 0 1 2 3 4 MILES

EXPLANATION
- Transmission Line
- Access Road to SR 226

SOIL TYPES
- C Cotant
- Ch Chen
- CR Crooked Creek
- D Donna
- G Gochea
- Su Sumine
- U Upville

N

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 4
SOILS IN THE PROJECT AREA

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1:150,000	8/24/04	12/6/07

drawings\TG Power – Geothermal Permitting\ Fig3 Location of Soil Types_r1.dwg

drawings\TG Power - Geothermal Permitting\Fig5 Vegetation Communites,mxd

2006 SNOW CANYON FIRE

2006 TAYLOR CANYON FIRE

Base from USGS 1:100,000-scale metric topographic maps: Tuscarora, Nevada,1982 and Double Mtn., Nevada, 1981

Legend

- Transmission Line
- Access Road to SR 226
- Sage Grouse Leks
- Big Sagebrush
- Low Sagebrush
- Riparian
- Spring Flooded/Cultivated Community
- Hoary Cress Occurrences
- Lewis Buckwheat Populations
- 2006 Fire Areas

N

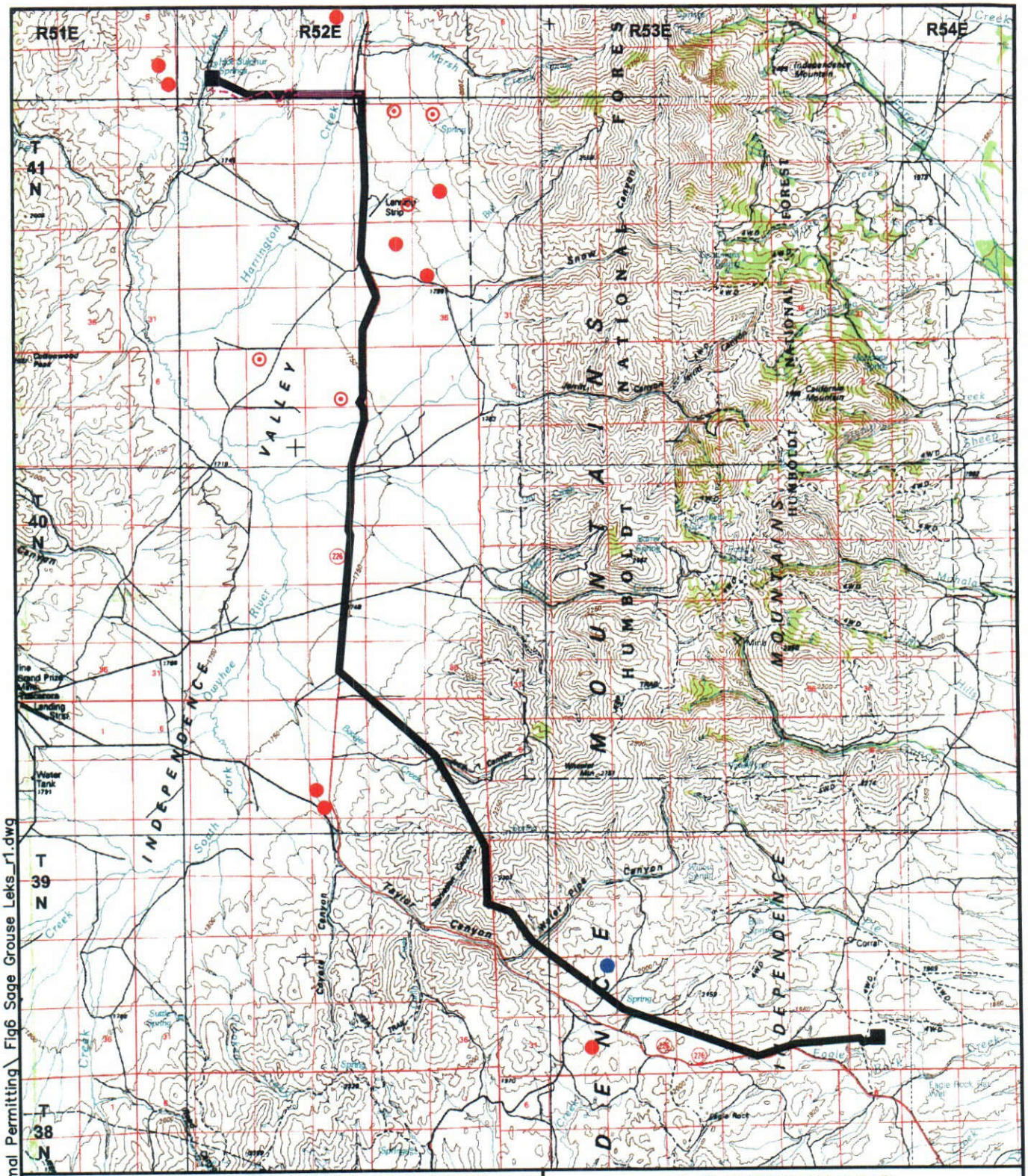
1 0 1:100,000 3 Miles

TG POWER, LLC
TRANSMISSION LINE ROUTE

FIGURE 5
VEGETATION COMMUNITIES

jbr environmental consultants, inc.

DESIGN BY	TT/KW	DRAWN BY	CP
DATE DRAWN	8/22/07		
LAST REVISION	1/31/08		



TOPOGRAHIC BASE FROM USGS 1:100,000-SCALE METRIC TOPOGRAPHIC MAPS: TUSCARORA, NEVADA, 1982 AND DOUBLE MTN, NEVADA, 1981.

EXPLANATION

- Transmission Line
- Access Road to SR 226
- Reported Lek Sites
- JBR Reported Lek Site
- Former Lek Site, Status Unknown

1 0 1 2 3 4 5 6 7 KILOMETERS

1 0 1 2 3 4 MILES

N

T G POWER LLC
TRANSMISSION LINE ROUTE

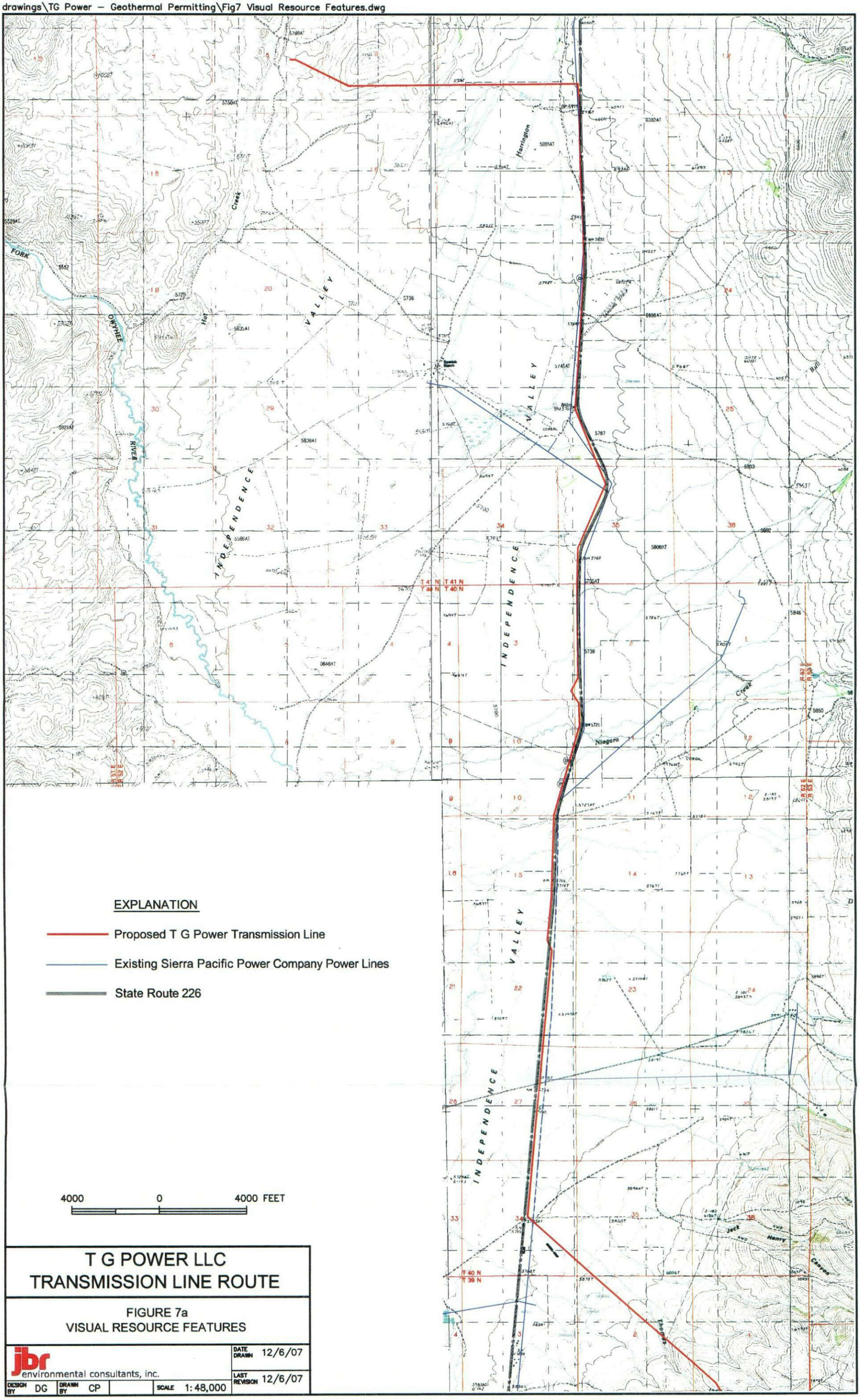
FIGURE 6
SAGE GROUSE LEKS SITES

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1:150,000	8/24/04	12/6/07

drawings\TG Power – Geothermal Permitting\ Fig6 Sage Grouse Leks_r1.dwg

drawings\TG Power – Geothermal Permitting\Fig7 Visual Resource Features.dwg



EXPLANATION

Proposed T G Power Transmission Line

Existing Sierra Pacific Power Company Power Lines

State Route 226

4000 0 4000 FEET

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 7a
VISUAL RESOURCE FEATURES

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY		SCALE	DATE DRAWN	LAST REVISION
DG	CP		1: 48,000	12/6/07	12/6/07

T G POWER LLC
TRANSMISSION LINE ROUTE

FIGURE 7b
VISUAL RESOURCE REATURES

jbr environmental consultants, inc.

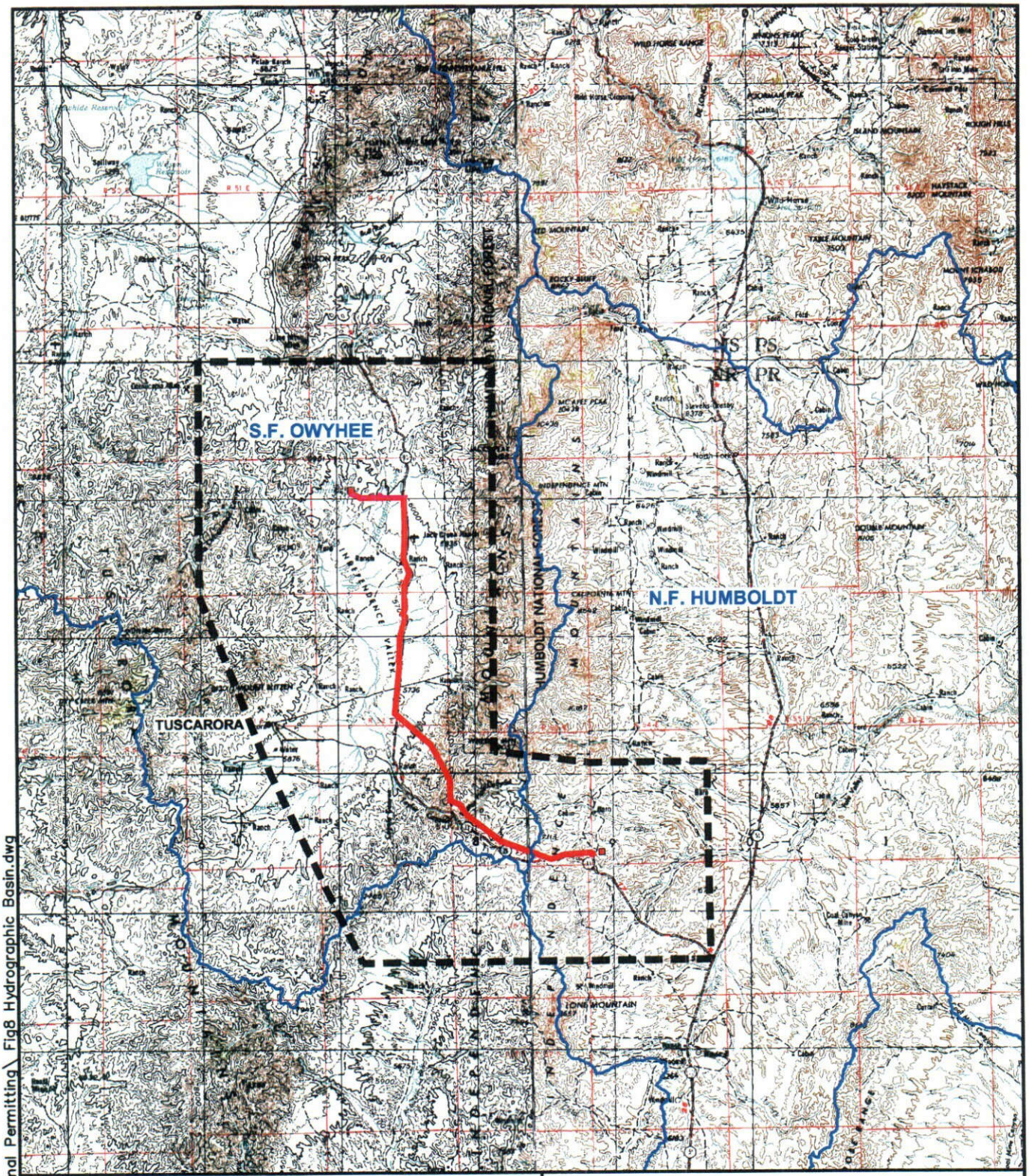
DESIGN BY	DRAWN BY		SCALE	DATE DRAWN	LAST REVISION
DG	CP		1: 48,000	12/6/07	12/10/07

4000 0 4000 FEET

EXPLANATION

- Proposed T G Power Transmission Line
- Existing Sierra Pacific Power Company Power Lines
- State Route 226

drawings\TG Power – Geothermal Permitting\Fig7 Visual Resource Features.dwg



drawings\TG Power – Geothermal Permitting\ Fig8 Hydrographic Basin.dwg

EXPLANATION

- Transmission Line
- Access Road to SR 226
- Hydrographic Basin
- Cumulative Assessment Area

4 0 4 8 12 16 KILOMETERS

4 0 4 8 MILES

N

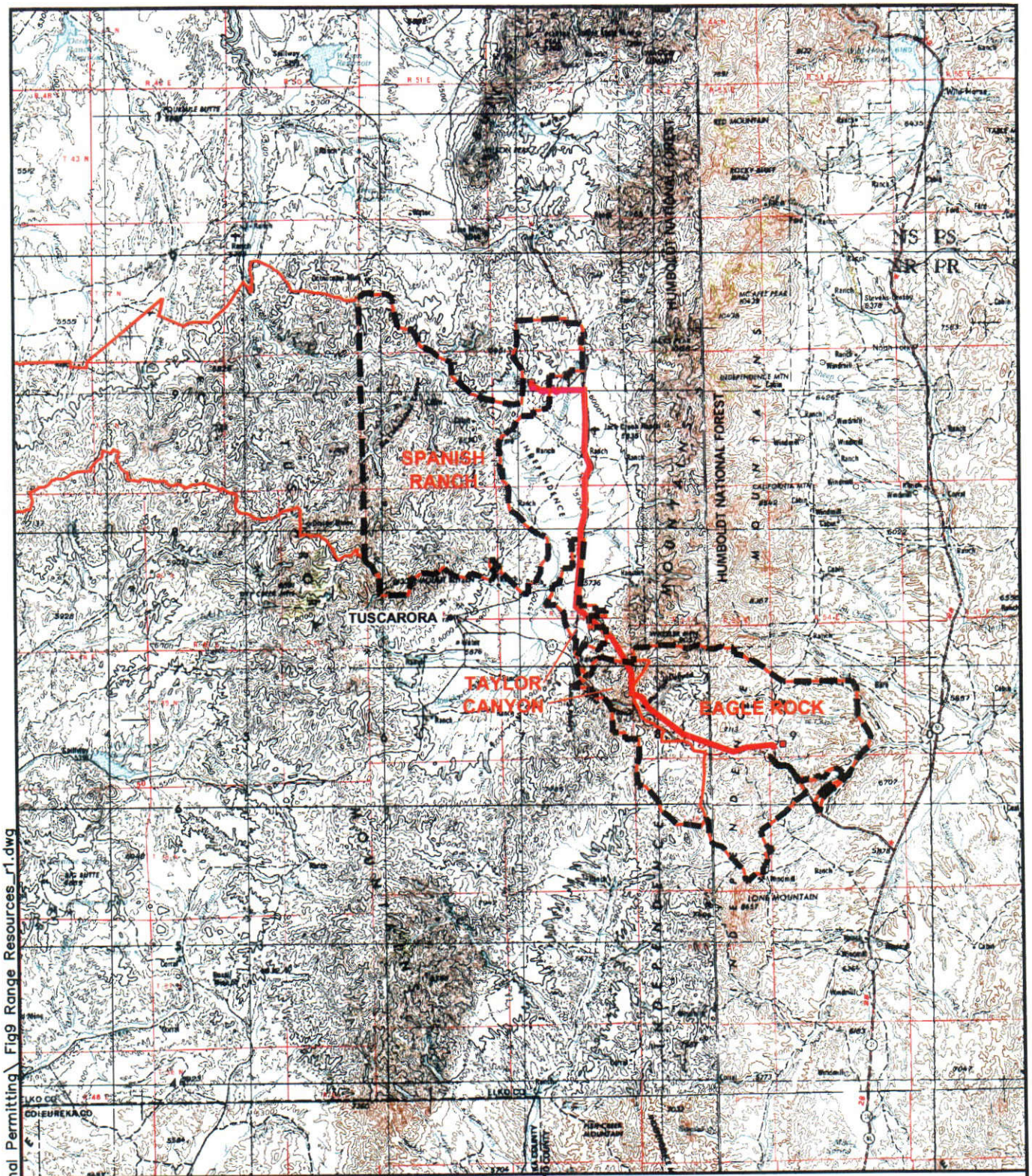
T G POWER LLC

TRANSMISSION LINE ROUTE

FIGURE 8
HYDROGRAPHIC BASIN

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1: 400,000	8/27/04	1/28/08



drawings\TG Power – Geothermal Permitting\ Fig9 Range Resources_r1.dwg

EXPLANATION

- Transmission Line
- Access Road to SR 226
- Allotment Bounday
- Cumulative Assessment Area

4 0 4 8 12 16 KILOMETERS

4 0 4 8 MILES

N

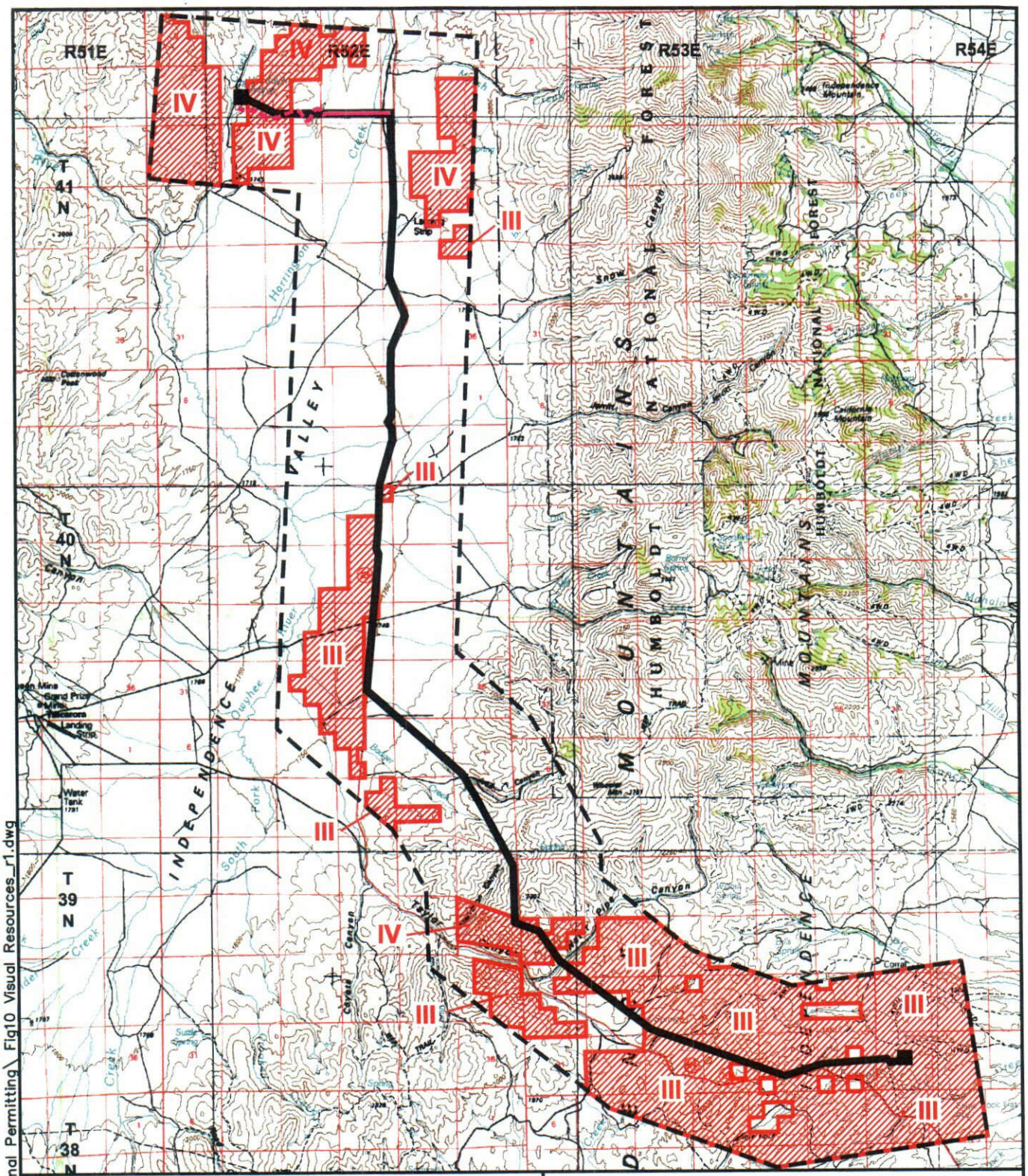
T G POWER LLC

TRANSMISSION LINE ROUTE

FIGURE 9
RANGE RESOURCES

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1: 400,000	8/27/04	1/28/08



TOPOGRAPHIC BASE FROM USGS 1:100,000-SCALE METRIC TOPOGRAPHIC MAPS: TUSCARORA, NEVADA, 1982 AND DOUBLE MTN, NEVADA, 1981.

EXPLANATION

- Transmission Line
- Access Road to SR 226
- Cumulative Assessment Area
- BLM Administered Public Land
- III & IV VRM Classification

1 0 1 2 3 4 5 6 7 KILOMETERS

1 0 1 2 3 4 MILES

N

T G POWER LLC

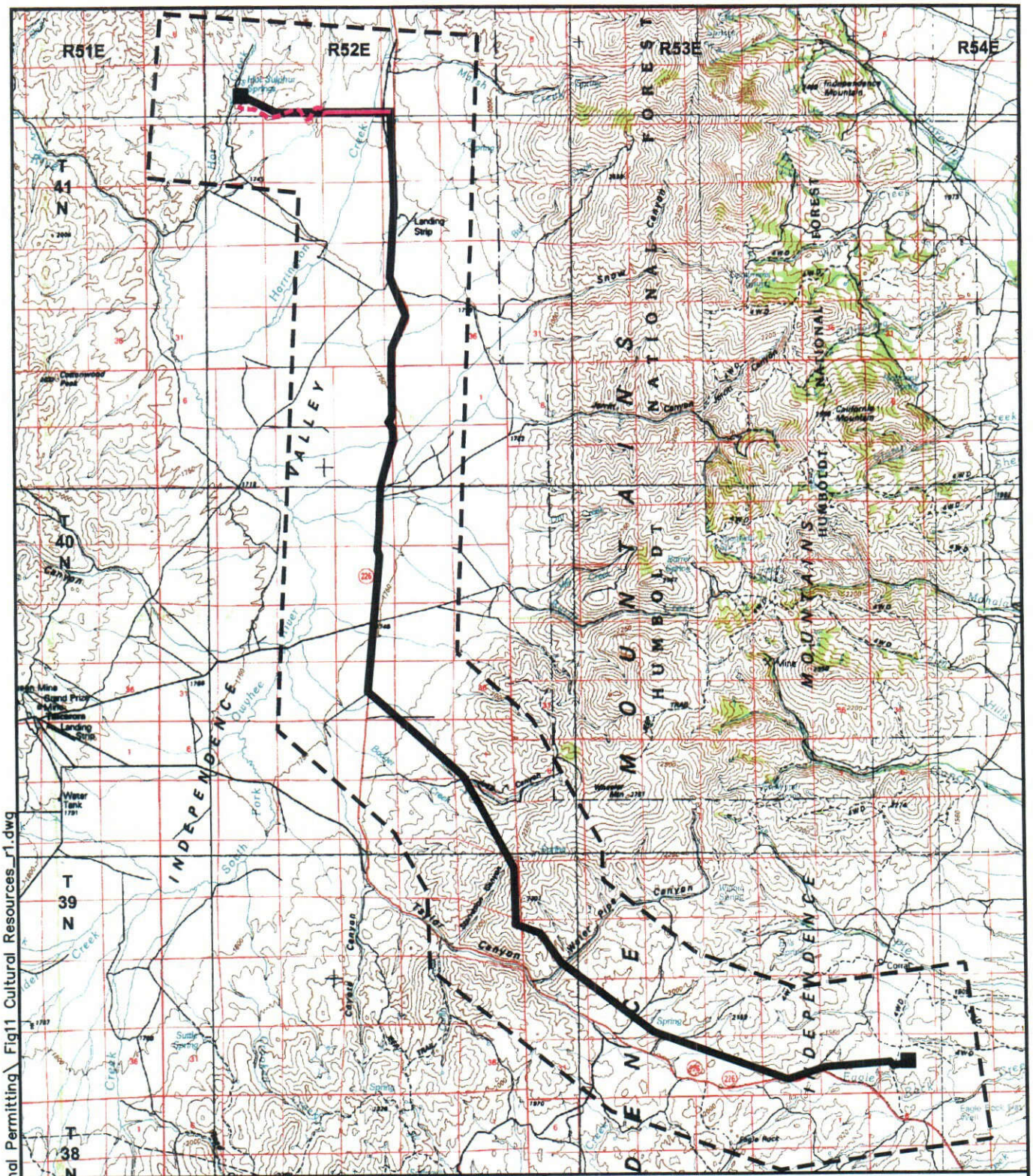
TRANSMISSION LINE ROUTE

FIGURE 10
VISUAL RESOURCES

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1:150,000	8/24/04	1/28/08

drawings\TG Power – Geothermal Permitting\ Fig10 Visual Resources_r1.dwg



drawings\TG Power – Geothermal Permitting\Fig11 Cultural Resources_r1.dwg

TOPOGRAPHIC BASE FROM USGS 1:100,000-SCALE METRIC TOPOGRAPHIC MAPS: TUSCARORA, NEVADA, 1982 AND DOUBLE MTN, NEVADA, 1981.

EXPLANATION

- Transmission Line
- Access Road to SR 226
- Cumulative Assessment Area

1 0 1 2 3 4 5 6 7 KILOMETERS

1 0 1 2 3 4 MILES

N

T G POWER LLC

TRANSMISSION LINE ROUTE

FIGURE 11
CULTURAL RESOURCES

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CHK'D BY	SCALE	DATE DRAWN	DATE LAST REVISION
TT	CP		1:150,000	8/24/04	1/28/08