ROCKY MOUNTAIN POWER
A DIVISION OF PACIFICORP

1407 West North Temple
Salt Lake City, Utah 84116

Water Source Potential Impacts and Mitigations

Potential Impact: Well and/or spring flow decrease due to vibrations produced by construction activities.

Perceived potential impacts to groundwater flows, as associated with transmission line construction, are related, primarily, to the potential for densification of soils and rock through which the water flows. Vibrations caused by construction technique or use of heavy equipment can cause localized disturbance and densification of soils. This disturbance may be considered shallow when compared to the depth of most aquifers on which wells rely. Springs are surface locations of flowing groundwater. It is important to avoid sources of soil densification at springs to ensure the flow is not adversely impacted.

Mitigations: Avoid where possible and remediate actual damages.

Standard transmission line engineering practice for siting and permitting transmission lines includes research of all available sources of information with respect to location, ownership and use of water sources including wells and springs. The Company participated in the preparation of an extensive Environmental Impact Statement (EIS) document for the project. The EIS identifies known wells and springs within 600 feet of the proposed transmission line. For the southeast bench area of Tooele County, extensive research, beyond that carried out for the EIS, was conducted in an attempt to identify known wells and springs in this sensitive area (see exhibit X). Water resource locations were identified utilizing information from the U.S. Geological Survey (USGS) along with the Utah Division of Water Rights, which is associated with the Utah Geological Survey (UGS). The USGS provides general information including the type of water resource and latitude/longitude coordinates for each location. The UGS also provides general information including the type of water resource and provides approximate distance offsets from section corners to identify locations. In addition, this research identifies depths of the wells and delineated protection zones determined by local, state, and federal regulations. The Company was denied accesses to privately owned properties in this area to field verify the research findings and perform other surveys. Actual source locations have not been field verified by survey. The recorded source location information was deemed adequate for planning purposes.

All applicable laws and regulations are followed with respect to uses within each zone of protection for drinking water sources. Specifically, with respect the Tooele City wells located in Middle Canyon, the structures are planned within Zone 2 of the Drinking Water Source Protection Zones (DWSP) for each well. The proposed use complies with Tooele City's Zoning Ordinance, Chapter 5 for uses within this zone of the DWSP. Additionally, transmission line engineering practice for canyon crossings of this type requires that the structures be placed as high on the canyon ridges as possible to permit spanning the canyon. Therefore the proposed structures are located at extreme horizontal and vertical distances from the wells near the limits of the DWSP (see exhibit y). Construction of these structures will have no impact on the wells in Middle Canyon.

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The Company's experience with typical transmission line construction shows that particle velocities associated with vibrations produced by typical construction equipment decrease rapidly with distance. As such, structures are typically spotted as far away as possible from water sources. When structure spotting produces locations that are perceived to be too close, either by the Company or the Land/Water Source Owner, the Company engages the services of a licensed Professional Engineering Geologist (PG). The PG must have demonstrated through training and experience, capability in hydrogeologic assessment. A report is prepared detailing all pertinent information about the source including recorded flow rates. The initial report of the PG also presents best management practices (BMP's) for avoiding damage to the source, considering the type and schedule of construction. These BMP's are subsequently incorporated into the construction contractor's plan for working around the spring. Before, during and after construction flow rate measurements are taken to demonstrate the effectiveness of the BMP's. The results of all measurements and the PG's conclusion with respect the impacts, if any, are presented in a final report to the Company and the Land/Water Source Owner.

In our experience, with appropriate mitigation, wells and springs have not been damaged by this type construction. However, the Company recognizes the potential for damage. As such, if damage is attributed to our construction we will remediate the damage on a case by case basis. Remediation of densified or compacted soils that effect spring flows may take many forms. However, typically they include excavation of the effected soils and replacement with free draining soils and restoration of the disturbed area.