

## **MASTER RESPONSE NO. 2 - ALIGNMENT ALTERNATIVES**

Several commentors have suggested that the alignment for the Cadiz Project pipeline should utilize existing utility and/or transportation corridors and avoid lands that have been designated for limited use pursuant to the California Desert Conservation Area (CDCA) Plan.

The CDCA Plan was developed by the Bureau of Land Management as a comprehensive land use management plan for BLM-managed lands in the Mojave Desert. The Plan includes classifications for allowable uses and levels of resource conservation. The Plan also identifies planning corridors for meeting the future needs for utility, communications and energy transmission lines crossing the Mojave Desert.

The CDCA Plan classifications that are pertinent to the Cadiz Project include Multiple Use Classes L and M. “Multiple-Use Class L (Limited Use) protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.” Within Class L areas, “New gas, electric, and water transmission and trans-desert telecommunications facilities may be allowed only within designated corridors.... New distribution systems may be allowed and would be placed underground where feasible except where this would have a more detrimental effect on the environment than a surface alignment. In addition, new distribution facilities shall be placed within existing rights-of-way where they are reasonably available.”

Class M (Moderate Use) is based upon “a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources that permitted uses may cause.” The CDCA Plan land use classifications and designated utility corridors in the project area are shown in Figure 5.2-2 in Volume I of the Final EIR/EIS.

In response to the comments received regarding use of existing designated utility corridors, BLM and Metropolitan have considered a potential alignment that maximizes the use of such corridors. A discussion of this potential alignment has been added to Section 3.6 of Volume I of the Final EIR/EIS. There is not a CDCA Plan utility corridor that directly connects the Iron Mountain Pumping Plant with the project spreading basins or wellfield, nor is one proposed. (Final EIR/EIS, Volume I, Figure 5.2-2) For this reason the project would, under all cases, require an amendment to the California Desert Conservation Area Plan for an exception to the utility corridor requirement regardless of the route selected. However, there is a designated utility corridor for the above-ground utility lines (two 230kV power lines and telephone lines) that connect the Iron Mountain Pumping Plant with Hoover Dam. This utility corridor runs northeast from the Iron Mountain Pumping Plant across Danby Dry Lake, and eventually crosses another designated utility corridor northeast of the Old Woman Mountains Wilderness Area. This second utility corridor is used by natural gas pipelines that roughly parallel Route 66. Use of these two designated utility corridors would minimize the length of the Cadiz Project facilities that would be located outside of an existing designated utility corridor.

This potential alignment was rejected from further detailed analysis based on a review under the three technical objectives (total length, operations and maintenance, and environmental impact) used for screening alternative alignments (Final EIR/EIS, Volume I, Section 3.6.3). The length required to utilize the two utility corridors is 73 miles, compared to approximately 35 miles for the other alignments considered. The increased length would contribute to operational and maintenance impacts and costs, as well as the impacts due to construction. A portion of this potential alignment crosses the Danby Dry

Lake, which poses construction and maintenance problems that are further discussed below. Furthermore, this potential alignment creates potential environmental impacts not shared with the other alignments. It crosses approximately twice the length of Class L designated lands as the preferred Eastern Alternative alignment, and approximately 60 miles of this potential alignment falls within designated critical habitat for the desert tortoise. Each of the alternative alignments analyzed in detail in the Final EIR/EIS are outside of desert tortoise critical habitat. For these reasons, the potential alignment making maximum use of designated utility corridors was eliminated from further consideration.

Several commentors have suggested that the Cadiz Project alignment should follow the utility corridor that runs from the Iron Mountain Pumping Plant to the Arizona and California Railroad line and Cadiz-Rice Road, both of which travel to the project wellfield and spreading basin areas. The railroad and road are not located within a utility corridor designated in the CDCA Plan, so that an amendment to the Plan for an exception to the utility corridor requirement would still be necessary if the suggested route were followed.

The north half of the Eastern Alternative does follow an alignment within or adjacent to Cadiz-Rice Road and the Arizona and California Railroad line. The southern half of the Eastern Alternative follows the southern side of the Danby Valley rather than cross the Danby Dry Lake. (Final EIR/EIS, Volume I, Figure 4-2). Several alternatives were initially considered for crossing the Danby Dry Lake, but these potential alignments were eliminated from detailed consideration for both engineering and environmental reasons.

As part of the alternatives screening process, three separate pipeline design alternatives were considered for crossing Danby Dry Lake. The three design alternatives were: (1) a buried coated-steel pipeline; (2) an above-ground, coated-steel pipeline at ground level on concrete pylons; and (3) an above-ground, coated-steel pipeline constructed within a berm. As discussed below, each of these alternatives was eliminated from further consideration due to identified fatal flaws.

The underground pipeline alternative would encounter environmental and engineering problems due to high groundwater levels and de-watering requirements, extreme salinity and corrosion potential of the dry lake. Corrosive salts, as measured by total dissolved solids (TDS), reach levels in shallow groundwater under the dry lake as high as 298,000 mg/L. For comparison, TDS in seawater is generally 35,000-40,000 mg/L. This corrosive environment coupled with the higher internal pressure in the pipeline due to the lower elevation within the lakebed could lead to catastrophic failure of the pipeline. In addition, excavations would require discharging highly saline groundwater and soils during construction, which could require treatment to remove corrosive and hazardous materials. For these reasons, the buried pipeline across Danby Dry Lake alternative was eliminated from consideration.

Both of the above-ground alternatives across Danby Dry Lake would have operational and maintenance problems due to exposure to temperature extremes, inaccessibility during periods that the lakebed is covered with surface water, and disruption of surface drainage. In addition, these alternatives would create significant, permanent impacts to aesthetics in the area, would impact wildlife movement, would increase the potential for vandalism, would increase construction costs, operations costs and energy costs. For these reasons, the above-ground Danby Dry Lake crossing alternatives were eliminated from consideration.

The preferred Eastern Alternative alignment follows the existing railroad and road to the extent that is reasonably possible. Section 11 of the Final EIR/EIS, Volume I, sets forth the conclusion that the Eastern Alternative is the preferred alternative based on its lower level of impact to critical environmental criteria.

A related concern raised by certain commentors involves the undergrounding of the electric power lines that parallel the pipeline. This was considered and rejected as fatally flawed for technical reasons. Underground electric lines develop a reactive charging load that is not present in overhead lines. This phenomenon affects voltage stability and could cause system failure. Construction impacts would increase significantly due to the need to separate the underground power line from the water pipeline. The trench for the electric line would be separately constructed causing additional disturbance. Maintenance and repair of underground lines would also be difficult and cause substantial disturbance due to excavation that is not required to maintain aboveground electric lines. For these reasons, the undergrounding of power lines for the project was rejected.

Use of natural gas to power project facilities was also evaluated for potential implementation. The use of natural gas as a power source was rejected. Operation of the Cadiz Project using natural gas would require construction of a new natural gas transmission line to an existing line six miles from the project area, and a new distribution system to deliver the natural gas to each well. (Final EIR/EIS, Volume I, Section 5.9.4) The environmental impacts and increased costs of these facilities did not justify pursuing this alternative power source.