SECTION 4
AIR QUALITY ANALYSES RELATED TO MOBILIZATION OF LAKEBED DUST

4.1 AIR QUALITY MONITORING AT BRISTOL AND CADIZ DRY LAKES

The water resources models discussed in Section 3 will be integrated to interpret groundwater level data at locations between the project area and dry lakes, dry lake margins and beneath the dry lakebeds gathered by the monitoring wells. This modeling allows evaluations to be made so that, if necessary, appropriate modifications can be made to the Cadiz Project operations so that the project does not cause groundwater level declines beneath the surface of the dry lakes which could contribute to or cause an increase in the mobilization of dust from the surface of the dry lakebeds.

Well clusters on the dry lakes will be aligned with well clusters at the dry lake margins and monitoring wells closer to the immediate project area. This configuration of observation wells will provide a series of early warning monitoring locations. This information, together with the monitoring and analysis of other groundwater and meteorological information will be used to manage project operations to ensure that any water level changes beneath the surface of the dry lakes attributable to project operations will not cause an increase in the mobilization of dust from the surface of the dry lakes. Groundwater flow models, including density dependent models at the dry lakes, will also be used to predict potential impacts to groundwater levels and potential for dust mobilization due to project operations.

Additionally, lakebed surface soil moisture and evapotranspiration will be monitored. Air quality instrumentation (open-air nephelometers) and weather stations will be installed on each dry lakebed to obtain continuous data on dust mobilization and wind speed and direction. Analysis of mobilization and wind data will indicate whether there is any changing relationship between these two factors (reduced wind speed required for dust mobilization). This dust/wind speed relationship will also be compared with any changes in surface soil moisture of the dry lakebeds and groundwater levels beneath the dry lakebeds.

Monitoring features 4, 6, and 13 through 17 discussed in Section 5 will be used in the groundwater models to provide predictive analysis and avoidance of potential increased dust mobilization from Bristol and Cadiz dry lakes as a result of the Cadiz Project.

Meteorological data (Final EIR/EIS main volume Section 5.5.1 and Figure 5.5-8) indicates that the highest wind speeds are associated with winds from the west-northwest, west and southeast. Therefore, open-air nephelometers will be located at the western and eastern edges of Bristol Dry Lake, and are expected to be at upwind and downwind locations of the lakebed during high-wind periods. The downwind open-air nephelometer would detect high concentrations of wind-mobilized particulate matter from the lakebed, while the upwind open-air nephelometer would identify region-wide dust storms. Solar-powered open-air nephelometers will be used. The open-air nephelometers will measure large increases in light scattering associated with dust storms. Additionally, an automated digital camera will be located to provide periodic photographs of the lakebed as further documentation of the occurrence of dust mobilization from the lake.

Meteorological data in the vicinity of Cadiz Dry Lake are not available. However, it is believed likely that the mountains that lie to the east and the west of the dry lake channel wind flow, leading to predominantly northwesterly and southeasterly winds. Therefore, open-air nephelometers will be located at the northwestern end of the lakebed, in the vicinity of the new cluster wells to be installed there, and at

the southeastern end of the lake. An automated digital camera will also be located to provide periodic photographs of the lakebed as further documentation of the occurrence of high concentrations of wind-mobilized particulate matter from the lake. Data from the open-air nephelometers will be analyzed in tandem with wind velocity and direction information obtained from the weather stations on Bristol and Cadiz dry lakes included as part of Feature 16.

Placement of the open-air nephelometers at Bristol and Cadiz dry lakes will be reviewed, and adjustments made should the meteorological data indicate that they are not located at appropriate upwind or downwind locations.

4.2 REGIONAL METEOROLOGICAL MONITORING

Beginning in the pre-operational phase of the project and extending into the initial years of the project operational phase, three meteorological towers will be installed in the region for a period of five years to establish patterns of regional wind speed and direction (see Section 6.4). Data collection from any or all of the meteorological towers may be extended if determined by Metropolitan to be necessary or required by the BLM Authorized Officer in accordance with the decision-making process described in Section 10.

This baseline information will be used in conjunction with lakebed data for groundwater levels and soil moisture to determine whether (a) the project could contribute to lakebed dust mobilization and (b) if any project-mobilized lakebed dust could be transported throughout the Mojave Desert region. This review will consider whether existing dust storms on the dry lakebeds occur simultaneously with regional winds that are capable of transporting lakebed dust beyond the localized lakebed areas.