

4.4 AIR QUALITY

4.4.1 Summary of Environmental Consequences

- The major air quality issues associated with the various alternatives include:
- The potential for windblown dust from areas exposed by lowered water levels;
- Fugitive dust and vehicle exhaust emissions from construction activities;
- The potential for windblown salt spray from salt concentration ponds and enhanced evaporation systems; and
- Emissions from various facilities and equipment associated with fish harvesting and shoreline cleanup operations.

If Salton Sea inflows remain at current values, Salton Sea water levels would rise slightly under the No Action Alternative, remain relatively stable under Alternative 1, and decline slightly under the other restoration alternatives. Water levels in the Salton Sea would decline under all alternatives if inflows fall below current amounts.

During Phase 1, Alternatives 1, 2, 3, 4, and 5 would result in more exposure of currently submerged land than would the No Action Alternative. This situation would arise because of the south shore displacement dike feature common to all restoration alternatives. The greatest Phase 1 exposure of currently submerged lands would occur with Alternatives 2 and 3. By the end of the Phase 2 period in 2060, the greatest exposure of currently submerged lands would occur under the No Action Alternative.

Because salinity levels in the Salton Sea would remain well below saturation concentrations for all major salts, lowered water levels would not result in salt precipitation on the exposed sediments. The only compounds likely to precipitate in meaningful quantities are lime (calcium carbonate) and gypsum (hydrated calcium sulfate). These compounds do not pose any wind erosion hazard. On the contrary, precipitation of these compounds would reduce wind erosion hazards by cementing sediment particles together.

The land areas that would be exposed were dry land prior to the 1905 filling of the Salton Sea, and most of these areas also became dry land between about 1917 and 1950. These lands are expected to revegetate to a condition similar to historical conditions and adjacent upland areas. In the absence of active surface disturbance, the wind erosion potential of these areas would be similar to that of surrounding undisturbed lands. Consequently, the air quality impacts of lowered Salton Sea water levels would be less than significant.

All of the restoration alternatives would generate significant quantities of ozone precursor and PM₁₀ emissions during their construction. Alternative 1 would have minimal air quality impacts during facility operation. Alternatives 2, 3, and 4 have the potential for generating significant salt drift to areas downwind of the EES during facility operation. Alternative 5 has an undetermined potential for generating salt drift

to downwind areas, but differences in EES designs indicate that potential salt drift problems from the Alternative 5 EES would be significantly less than that from Alternatives 2, 3, and 4.

All restoration alternatives would require a formal Clean Air Act conformity determination to address construction-related emissions. The conformity demonstration may require state and local air quality agencies to develop SIP amendments that accommodate the selected alternative. Alternatives 2, 3, 4, and 5 would require stationary source permits from the Imperial County APCD. Alternative 3 would require additional stationary source permits from the South Coast AQMD.

4.4.2 Significance Criteria

Significant air quality impacts would occur if a project alternative would directly or indirectly:

- Produce emissions that would cause or measurably contribute to a violation of state or federal ambient air quality standards;
- Cause a net increase in pollutant emissions that exceed Clean Air Act conformity *de minimis* thresholds for ozone precursors (25 tons per year in Riverside County, 100 tons per year in Imperial County) or PM₁₀ (70 tons per year in Riverside County, 100 tons per year in Imperial County);
- Establish land uses that would expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- Conflict with specific air quality management plan policies or programs; or
- Foster or accommodate development in excess of levels assumed by applicable air quality management plans.

4.4.3 Assessment Methods

Potential air quality impacts have been evaluated by evaluating the chemistry of the Salton Sea and the physical condition of areas exposed by lowered water levels, by evaluating regulatory compliance issues, by estimating emissions from construction activities, and by performing screening-level dispersion modeling analyses to evaluate fugitive dust from haul road traffic and salt spray drift from enhanced evaporation systems.

To the extent that construction emissions can be quantified, those emissions have been compared to the *de minimis* thresholds in the EPA general conformity rule to determine impact significance. Other regulatory compliance issues are discussed qualitatively.

Dispersion modeling analyses have been performed using the CALINE4 model (Benson 1989). Dispersion modeling was performed to estimate the distances at which construction period haul road traffic might generate violations of PM₁₀ standards or cause hazardous visibility impairment on nearby public roadways.

Dispersion modeling to evaluate salt drift from enhanced evaporations systems is very preliminary. There is insufficient design information available on facility alternatives to allow accurate estimates of operational emissions or to perform modeling analyses with sufficient refinement to rigorously determine ambient air quality impacts from EES operation. Only generalized screening-level dispersion modeling analyses of operational impacts from EES facilities are possible at this time, and results of those analyses are subject to considerable uncertainty.

Windblown Dust From Exposed Areas

The potential for air quality problems associated with areas exposed by lowered Salton Sea water levels was evaluated in a qualitative manner based on general factors important to wind erosion processes plus specific factors that have generated windblown dust problems at Mono Lake, Owens Lake, and other locations. Critical considerations include the types of dissolved salts identifiable from water quality data, the potential for salinity levels to reach saturation conditions as water levels decline, the mineralogy and wind erosion potential of important salts, the rate of water level reductions, the nature of groundwater conditions and flows, the nature of area soils, the presence of other factors that might impede revegetation of exposed sediments. Added to these considerations is the absence of evidence for significant windblown dust problems originating from existing Salton Sea shoreline areas.

Table 4.4-1 summarizes the water level changes, net exposed acreages, and nominal Salton Sea salinities for Phase 1 and Phase 2 conditions under the various alternatives and inflow scenarios. The highest salinity level predicted under any of the alternatives is the 2060 condition for the No Action Alternative with 800,000 acre-feet per year of inflow. That salinity value (17.8%) represents a mixture of several salts. Water quality data presented in Section 3.1 indicates that chlorides and sulfates are the dominant salts in the Salton Sea. At a water temperature of 20 degrees C (68 degrees F), the saturation concentration for sodium chloride is about 25.7%, and the saturation concentration for sodium sulfate is about 16.4% (Saint-Amand et al., 1986). If all the dissolved chloride in the Salton Sea were sodium chloride and all the dissolved sulfate were sodium sulfate, sodium chloride would be present at about 41% of saturation and sodium sulfate would be present at about 44% of saturation.

Table 4.4-1
Summary of Water Levels, Exposed Areas, and Nominal Salinities for Salton Sea Alternatives

Alternative	Inflow Scenario	Change in Water Surface Level (ft)				Net Area Exposed (acres)				Nominal Salton Sea Salinity			
		2000	2015	2030	2060	2000	2015	2030	2060	2000	2015	2030	2060
No Action	1.36 maf/yr	0	2	3	4	0	(5,057)	(7,538)	(9,678)	4.4%	4.8%	5.3%	6.4%
	1.08 maf/yr	0	-1	-7	-14	0	918	15,527	35,631	4.4%	5.2%	7.5%	12.3%
	0.80 maf/yr	0	-1	-7	-22	0	920	15,530	64,463	4.4%	5.2%	7.5%	17.8%
Alternative 1	1.36 maf/yr	0	3	-2	0	0	(9,089)	0	(3,761)	4.4%	4.3%	3.7%	2.7%
	1.08 maf/yr	0	2	-10	-5	0	8,294	27,311	18,981	4.4%	4.6%	4.6%	3.5%
	0.80 maf/yr	0	2	-10	-7	0	9,657	27,321	21,708	4.4%	4.6%	4.6%	3.8%
Alternative 2	1.36 maf/yr	0	-2	-5	-7	0	2,258	10,017	13,643	4.4%	4.7%	4.6%	3.7%
	1.08 maf/yr	0	-3	-10	-5	0	19,896	35,953	24,527	4.4%	5.1%	5.4%	3.8%
	0.80 maf/yr	0	-3	-10	-11	0	19,898	35,866	48,739	4.4%	5.1%	5.4%	4.5%
Alternative 3	1.36 maf/yr	0	-2	-5	-7	0	2,258	10,017	13,643	4.4%	4.7%	4.6%	3.7%
	1.08 maf/yr	0	-3	-10	-5	0	19,896	35,953	24,527	4.4%	5.1%	5.4%	3.8%
	0.80 maf/yr	0	-3	-10	-11	0	19,898	35,866	48,739	4.4%	5.1%	5.4%	4.5%
Alternative 4	1.36 maf/yr	0	0	-2	-2	0	(2,686)	731	1,804	4.4%	4.4%	4.0%	3.1%
	1.08 maf/yr	0	-1	-8	-5	0	13,796	25,172	20,053	4.4%	4.8%	4.7%	4.0%
	0.80 maf/yr	0	-1	-8	-7	0	15,155	25,213	24,393	4.4%	4.8%	4.8%	4.4%
Alternative 5	1.36 maf/yr	0	-2	-5	-4	0	(6,060)	(708)	(1,520)	4.4%	4.5%	4.1%	3.4%
	1.08 maf/yr	0	-3	-9	-4	0	11,498	21,550	14,445	4.4%	4.9%	4.6%	3.7%
	0.80 maf/yr	0	-3	-9	-9	0	11,506	21,512	21,843	4.4%	4.9%	4.6%	4.1%

Notes: Net exposed area calculated as the change in surface area less the size of salt concentration ponds, the North Wetlands Area, the Southwest Pupfish Pond, and the footprint of the displacement pond dikes.

Net exposed area estimates are based on data in Table 2.4-2, Table 2.4-3, and approximate sizes for the North Wetlands Area (364 acres) and the Southwest Pupfish Pond (1,368 acres).

Values shown in parentheses () under Net Area Exposed represent currently dry areas inundated by changing Salton Sea water levels.

Nominal salinity percent calculations do not account for water displaced by dissolved salts or water density differences at fluctuating water temperatures.

The review of saturation concentrations for major salts makes it clear that no salt deposition would occur as water levels drop over the foreseeable future. The average rate of water level reductions is only a few inches per year under all of the various alternatives and inflow scenarios. This rate of water level reduction provides would minimize any lag in the drainage of interstitial water from the exposed sediments. Drainage of exposed soils should allow revegetation to occur at densities typical of historical conditions or surrounding upland areas.

If perched water tables formed, that might inhibit revegetation rates. But capillary action would also encourage soil crusting, which would minimize the potential for wind erosion. When converted into chemical equivalents, the dissolved salt content of Salton Sea water is clearly dominated by chloride salts; the chloride-to-sulfate salt ratio is 3.94 to 1. Thus, any salts formed by evaporation of saline water brought to the surface by capillary action would be strongly dominated by sodium chloride. As noted by Saint-Amand et al. (1986), it has long been recognized that salt deposits dominated by chloride salts have a low potential for wind erosion.

Salts dominated by sodium sulfate, sodium carbonate, and sodium bicarbonate salts are the source of most windblown dust associated with salt deposits. The sulfate, carbonate, and bicarbonate salts undergo mineralogical phase changes in response to moisture, temperature, and carbon dioxide levels. The phase changes can convert cemented crystalline salt deposits into amorphous powders with a high potential for wind erosion (Saint-Amand, 1986; Smith et al., 1987; Alderman, 1985).

Haul Road Dust Modeling

Dispersion modeling of dust generated by haul road traffic used the CALINE4 dispersion model. PM₁₀ concentrations were modeled to evaluate compliance with state and federal ambient air quality standards. Total suspended particulate matter (TSP) was modeled to assess the potential for dust-related visibility impairment near public highways. PM₁₀ and TSP emission rates (767 grams per vehicle-mile for PM₁₀ and 2,130 grams per vehicle-mile for TSP) were based on EPA unpaved roadway emission equations (EPA 1995) assuming typical 100-ton capacity off-road haul truck characteristics (Orelman 1998), a roadway silt plus clay fraction of 5%, and a 65% control effectiveness for dust control measures. No settling or deposition rates were used for PM₁₀ modeling. TSP modeling assumed an average TSP settling rate of 7.25 centimeters per second and an average TSP deposition rate of 3.14 centimeters per second. The assumed TSP settling and deposition rates are representative of particles in the size range of 30-40 microns aerodynamic equivalent diameter. All modeling assumed neutral stability conditions, a wind fluctuation parameter of 20 degrees, and wind speeds of 1 meter per second (2.2 mph) and 3 meters per second (6.7 mph).

Maximum 10-hour workday concentrations for PM₁₀ and TSP were estimated as 85% of the modeled maximum 1-hour concentrations. Maximum 24-hour average concentration increments were estimated by assuming no haul road traffic outside the 10-hour work day. The background 24-hour PM₁₀ concentration was assumed to be 50 micrograms per cubic meter (a typical PM₁₀ concentration for Brawley and

Westmorland). The background 24-hour TSP concentration was assumed to be 100 micrograms per cubic meter (twice the background PM₁₀ concentration). The threshold for significant visibility impairment was assumed to be a 24-hour TSP concentration above 1,000 micrograms per cubic meter.

Modeling of Spray Drift from EES Modules

Screening level dispersion modeling has been performed for a single EES module of the type considered in Alternatives 2, 3, and 4. The modeling analysis was limited to spray drift from a typical second pass module, with a receptor array extending perpendicular to the spray line arrays. Modeled receptors were spaced in rows at 300-foot intervals. Receptor rows were placed at distances of 300, 600, 1200, 2400, and 3000 feet downwind of the nearest EES facility dike. Wind speeds of 5 mph, 10 mph, 15 mph, and 20 mph were modeled, assuming neutral (D) stability for 5 mph and 10 mph winds, and slightly unstable (C) stability for stronger winds. A spray droplet size distribution covering 25 -450 microns aerodynamic diameter was used to determine a mean droplet size category of 175-200 microns. Droplet settling and deposition rates were set at 116 centimeters per second, assuming a droplet density of 1.129 grams per cubic centimeter (about 18.5% salinity).

4.4.4 No Action Alternative

Under the No Action Alternative with a continuation of current inflow conditions there would be no direct or indirect impacts on air quality conditions. Water levels would rise, inundating shoreline areas that are at most minor contributors to windblown dust.

Predicted future Salton Sea salinity levels, dissolved salt compositions, water temperatures, and saturation concentrations for major salts indicate that there would be no significant salt precipitation associated with the No Action Alternative under any of the reduced inflow scenarios. Even with Salton Sea inflows reduced to about 800,000 acre-feet per year, salinity levels at 2060 would be only about 40-45 percent of saturation concentrations.

As can be seen from Table 2.4-2, the drop in water levels would average only a few inches per year under even the lowest inflow scenario. Consequently, exposed sediments are expected to drain in concert with the reduction in Salton Sea water levels. As can be seen from a comparison of Figure 3.1-2 and Table 2.4-2, the land areas that would be exposed were dry land prior to the 1905 filling of the Salton Sea, and most of these areas also became dry land between about 1917 and 1950. There are no recognizable constraints to the revegetation of these lands. Consequently, the exposed areas are expected to revegetate to a condition similar to historical conditions and adjacent upland areas. In the absence of active surface disturbance, the wind erosion potential of these areas would be similar to the low wind erosion hazard of surrounding undisturbed lands. Consequently, the air quality impacts of lowered Salton Sea water levels would be less than significant.

Effect of No Action with Continuation of Current Inflow Conditions

No significant air quality impacts would occur under the No Action Alternative with a continuation of existing inflow conditions. The level of the Salton Sea would remain relatively constant under these conditions. Although salinity levels in the Salton Sea would continue to rise, maximum salinity levels would remain well below the saturation concentrations of major salts such as sodium chloride, magnesium chloride, sodium carbonate, sodium bicarbonate, and sodium sulfate. Thus, there would be no significant change in the nature or distribution of the limited salt deposits currently found in the immediate shoreline zone.

Effect of No Action with Reduced Inflows

If Salton Sea inflows were reduced to about 1 million acre-feet per year, the level of the Salton Sea would decline over time, exposing currently submerged areas. Salinity levels in the Salton Sea would rise, but the major dissolved chloride and sulfate salts would be unlikely to reach saturation concentrations within the next 100 years. Consequently, the decline in water levels would not be expected to produce significant new salt deposits around the shoreline of the Salton Sea. Sediments exposed by lowered water levels would generally be expected to revegetate in a manner consistent with adjacent shoreline conditions. Wind erosion of exposed shoreline areas would not be expected to significantly alter current wind erosion conditions for the Salton Sea air basin.

If Salton Sea inflows were reduced to about 800,000 acre-feet per year, the level of the Salton Sea would decline more rapidly than under the 1 million acre-foot per year inflow scenario. Salinity levels in the Salton Sea would rise noticeably. Some of the major dissolved sulfate and chloride salts might reach saturation concentrations after a period of about 50 years, resulting in precipitation of various types of salt deposits. Some of these salt deposits might be exposed by receding water levels. Deposits with significant chloride salt content generally would be resistant to wind erosion. Any salt deposits dominated by sodium sulfate or sodium bicarbonate salts might be subject to wind erosion problems. The extent to which such erodible salt deposits would be formed and exposed is uncertain. Exposed sediments unaffected by salt deposits would be expected to revegetate in a manner consistent with adjacent shoreline areas. Consequently, the potential for a significant increase in wind erosion in the Salton Sea air basin is uncertain under the 800,000 acre-foot per year inflow scenario.

4.4.5 Alternative 1

Construction of salt concentration ponds under Alternative 1 would result in significant fugitive dust and vehicle emissions during the four-year construction period. Exhaust emissions from construction vehicle traffic would significantly exceed conformity rule *de minimis* levels applicable to Imperial County. In addition, fugitive dust emissions from construction vehicle travel on unpaved haul roads would substantially exceed conformity rule *de minimis* levels. Fugitive dust emissions along haul roads and at equipment staging areas could be reduced by various dust control practices and by limiting vehicle speeds on haul roads. Paving of the haul road is considered infeasible due to the size and weight of the haul trucks that would use the road. Even with

aggressive application of feasible dust control methods, fugitive dust emissions would remain substantially above conformity rule *de minimis* levels.

Preliminary dispersion modeling of fugitive PM₁₀ emissions along the proposed haul road indicates that the federal 24-hour PM₁₀ standard might be exceeded within 2,500 feet of the haul road during periods when daytime wind speeds average about 2 mph, and within 600 feet of the haul road when daytime wind speeds average about 7 mph. As long as the haul road alignment is kept more than 1,000 feet from State Route 86, there should be minimal potential for visibility hazards due to fugitive dust generated on the haul road. The area where the haul road crosses State Route 86 will require special attention for dust control.

Under Alternative 1, options for achieving compliance with the Clean Air Act conformity rule are limited. There are no obvious sources of emission offsets available to compensate for added ozone precursor or fugitive dust emissions. Because ozone problems in Imperial County appear to be dominated by pollutant transport rather than by in-basin ozone formation, it may be possible for the Imperial County APCD and CARB to develop an ozone SIP amendment that accounts for emissions associated with Alternative 1 without any delay to attainment of the federal ozone standard.

As noted in Chapter 3, annual average PM₁₀ concentrations in the Salton Sea air basin have shown little change since 1992. The absence of any discernable trend in PM₁₀ concentrations suggests that the federal PM₁₀ standards will not be attained in the near future. Consequently, a four-year period of significant construction-related PM₁₀ may not alter the realistic prospects for achieving the federal PM₁₀ standard. Although localized violations of the federal PM₁₀ standard would be expected from any significant construction project, there is limited public access to the construction site or haul road vicinity. Consequently, public exposure to high PM₁₀ concentrations associated with construction of Alternative 1 would be limited. The construction work force would be the major affected population. Existing PM₁₀ monitoring stations are sufficiently far from the construction area that it is unlikely that data from existing monitoring stations will demonstrate impact from project-related construction activities. It is unclear if these considerations could be used to support either a Clean Air Act conformity determination or an amendment to the PM₁₀ SIP that accommodates Alternative 1.

Operation of the salt concentration ponds would have no significant air quality impacts. While the salt concentration within the ponds would become significantly greater than the salt concentration of the remainder of the Salton Sea, wave action in the ponds would be somewhat less than in the more open portions of the Salton Sea. Consequently, there would be little if any change in the overall salt content of whitecap spray generated over the Salton Sea.

Effect of Alternative 1 with Continuation of Current Inflow Conditions

Construction of salt concentration ponds under Alternative 1 would occur over a four-year period. Borrow sites, construction haul roads, equipment staging areas, and salt

pond construction sites are all within the portion of Imperial County which is designated as nonattainment for two federal air quality standards: ozone and PM₁₀.

The volume of heavy truck traffic over the haul road would generate large quantities of fugitive dust emissions throughout the four-year construction period, and would require a Clean Air Act conformity review. During the four-year construction period, approximately 21.5 million cubic yards of aggregate and rip-rap material would need to be excavated from two borrow sites and transported to the concentration pond construction sites. Approximately 8 million tons of aggregate material would need to be hauled each year from the quarry site to the construction site. Assuming 250 work days per year and the use of 100-ton capacity off-road haulers, a four year construction period would require an average of 323 truck loads of aggregate each working day. Empty trucks returning to the quarry site also would use the haul road. For a 10-hour work day, this would average 65 truck trips along the road each hour. Paving of the haul road to reduce fugitive dust emissions is considered infeasible due to the size and weight of haul trucks. Sprinkler trucks used for dust control would add a few additional truck trips per hour. The two-mile haul road segment between State Highway 86 and the construction site would experience additional vehicle traffic from the construction work force and heavy equipment transporters.

Construction vehicle emissions (exhaust emissions plus fugitive dust from unpaved roads) would average 172 tons per year of reactive organic compounds, 1,885 tons per year of nitrogen oxides, and 2,738 tons per year of PM₁₀. All of these quantities exceed the conformity rule *de minimis* thresholds applicable in Imperial County (100 tons per year for reactive organic compounds, 100 tons per year for nitrogen oxides, and 100 tons per year for PM₁₀). Additional emissions would occur from operation of the quarry used for construction aggregate.

Preliminary dispersion modeling of fugitive PM₁₀ emissions along the proposed haul road indicates that the federal 24-hour PM₁₀ standard might be exceeded within 2,500 feet of the haul road during periods when daytime wind speeds average about 2 mph, and within 600 feet of the haul road when daytime wind speeds average about 7 mph. There is limited public access to the construction site or haul road vicinity. Consequently, public exposure to high PM₁₀ concentrations associated with construction of Alternative 1 would be limited. The construction work force would be the major affected population.

An additional concern regarding fugitive dust from the haul road is the potential for visibility impairment along State Route 86. Significant visibility impairment is unlikely when total particulate matter concentrations are less than 1,000 micrograms per cubic meter. A screening level dispersion modeling analysis indicates that maximum 1-hour average total particulate matter concentrations should drop below 1,000 micrograms per cubic meter at distances of more than 650 feet from the haul road. As long as the haul road alignment is kept more than 1,000 feet from State Route 86, there should be minimal potential for visibility hazards due to fugitive dust generated on the haul road.

The area where the haul road crosses State Route 86 would require special attention for dust control.

Operation of the salt concentration ponds under Alternative 1 would require pumping of Salton Sea water into the ponds. If pumps powered by diesel engines were used, the pumps probably would require permits from the Imperial County APCD. Electrically powered pumps would avoid permit requirements and minimize air pollutant emissions.

While the salt concentration within the ponds would become significantly greater than the salt concentration of the remainder of the Salton Sea, wave action in the ponds would be less than in the more open portions of the Salton Sea. Whitecap formation and resulting salt spray generation should be less in the salt concentration ponds than in the open portions of the Salton Sea. Consequently, there would be little if any change in the overall salt content of air around the Salton Sea.

Effect of Alternative 1 with Reduced Inflows

Under the reduced inflow scenarios, construction impacts and Clean Air Act conformity issues associated with construction and operations of salt concentration ponds would be the same as discussed above. Air quality impacts associated with operation of the concentration ponds would be the same as discussed above.

4.4.6 Alternative 2

Construction of an enhanced evaporation system under Alternative 2 would result in fugitive dust and vehicle emissions during the construction period. A Clean Air Act conformity review would be required for ozone precursor emissions generated during construction activities. Because the EES is expected to require stationary source permits, operation of the EES would be excluded from separate Clean Air Act conformity reviews. Generalized screening analyses indicate the potential for significant salt drift downwind of the EES during periods of strong winds. Permit conditions for the EES would probably include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 2 with Continuation of Current Inflow Conditions

The Phase 1 system of 75 enhanced evaporation system modules would occupy approximately 5,000 acres. Additional areas would be used for access roads, pipelines, and buffer areas. About 70 percent of the system modules under Alternative 2 would be located in Imperial County, with the remaining 30 percent located in Riverside County. Construction of enhanced evaporation system facilities would require significant amounts of excavation, grading, and construction of berms around the pond modules. Material for pond levees would probably be generated on-site from excavation or grading of pond modules. Spray towers, spray lines, water supply pipelines, and pumps would have to be trucked to the site and erected or installed. The existing powerline through the proposed site would have to be relocated.

The EPA general conformity rule excludes the operational emissions of stationary sources from the conformity analysis if the stationary source is subject to new source review (NSR) or prevention of significant deterioration (PSD) permits (40 CFR 93.153(d)(1)). EPA Region 9 considers local APCD permits to be the equivalent of federal NSR or PSD permits for purposes of the general conformity rule because APCD permit regulations are included as control measures in SIPs (Moyer, 1999). Because the EES is expected to require air quality permits, operation of the system would be excluded from Clean Air Act conformity review requirements. But because stationary source permits do not regulate construction activities, construction activities for the EES are subject to the EPA general conformity rule.

Construction vehicle emissions (exhaust emissions plus fugitive dust from unpaved roads) would average 18.9 tons per year of reactive organic compounds, 295 tons per year of nitrogen oxides, and 145 tons per year of PM₁₀. These emissions would be split between areas with different nonattainment designations and different conformity rule *de minimis* thresholds. Emissions in Riverside County would be about 6.3 tons per year of reactive organic compounds, 98.3 tons per year of nitrogen oxides, and 48.2 tons per year of PM₁₀. Emissions in Imperial County would be about 12.6 tons per year of reactive organic compounds, 196.6 tons per year of nitrogen oxides, and 96.3 tons per year of PM₁₀. Estimated construction activity emissions for the portion of the EES built in Riverside County would exceed the applicable conformity rule *de minimis* threshold for nitrogen oxide emissions (25 tons per year). Estimated construction activity emissions for the portion of the EES built in Imperial County would exceed the applicable conformity rule *de minimis* threshold for nitrogen oxide emissions (100 tons per year). Consequently, construction activities associated with the EES for Alternative 2 would require a Clean Air Act conformity determination for both the Riverside County AQMA ozone nonattainment area and the Imperial County ozone nonattainment area.

Operation of the EES would result in the potential for significant salt spray drift downwind of the site. Generalized screening level analyses suggest that high drift concentrations would occur within 300-600 feet of the modules during low wind speed conditions (5 mph), within 1,200 feet of the modules under moderate wind speed conditions (10 mph), and within 1/2 mile of the modules under strong wind speed conditions (15-20 mph). If buffer areas around the system were limited, spray drift to offsite areas might exceed impact significance levels.

The EES would require air quality permits from the relevant air pollution control agency (South Coast Air Quality Management District for the Riverside County portion, and Imperial County Air Pollution Control District for the Imperial County portion). Siting of EES modules would require some caution to avoid salt drift impacts on public roadways, power lines and other utility systems, and sensitive downwind habitat areas. Predominant wind patterns at the Bombay Beach site are expected to be from the southeast, northwest, and northeast. Permit conditions probably would include restrictions on operations during periods of strong winds, and possibly

minimum buffer area requirements. Other likely permit conditions would include various reporting requirements and possibly some drift monitoring studies.

Pumps used for the EES would probably be electrically powered. Any pumps run by diesel engines or generators would require permits from the appropriate local air quality management agency.

Effect of Alternative 2 with Reduced Inflows

Air quality issues for the EES under reduced inflow scenarios would be the same as discussed above. Salinity levels for the inflow to the pond modules would be somewhat higher than under the current inflow scenario, resulting in somewhat higher salt content in spray drift from the system.

4.4.7 Alternative 3

Construction of an enhanced evaporation system under Alternative 3 would result in significant fugitive dust and vehicle emissions during the construction period. A Clean Air Act conformity review would be required ozone precursor and PM₁₀ emissions from construction activities. Because the EES is expected to require stationary source permits, operation of the EES would be excluded from Clean Air Act conformity reviews. Preliminary dispersion modeling indicates the potential for significant salt drift downwind of the EES during periods of strong winds. Permit conditions for the EES probably would include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 3 with Continuation of Current Inflow Conditions

Construction and operation of an EES under Alternative 3 would have the same types of impacts as discussed for Alternative 2. Construction vehicle emissions (exhaust emissions plus fugitive dust from unpaved roads) would average 18.9 tons per year of reactive organic compounds, 295 tons per year of nitrogen oxides, and 145 tons per year of PM₁₀. Nitrogen oxide emissions and PM₁₀ emissions would exceed the relevant conformity rule *de minimis* thresholds for Imperial County (100 tons per year of nitrogen oxide emissions and 100 tons per year of PM₁₀ emissions). Consequently, construction activities associated with the EES for Alternative 3 would require a Clean Air Act conformity determination for both the Imperial County ozone nonattainment area and the Imperial Valley PM₁₀ nonattainment area.

Operation of the EES under Alternative 3 would pose the same kinds of salt drift impacts as discussed for Alternative 2. Because the EES would be entirely within Imperial County, all air quality permits would be obtained from the Imperial County Air Pollution Control District. Siting of EES modules would require some caution to avoid salt drift impacts on public roadways, power lines and other utility systems, and sensitive downwind habitat areas. Predominant wind direction patterns at the Navy test base site are expected to be from the northwest, west, and southeast. Permit conditions for the EES probably would include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 3 with Reduced Inflows

Air quality issues for the Alternative 3 EES under reduced inflow scenarios would be the same as discussed for Alternative 2. Salinity levels for the inflow to the pond modules would be somewhat higher than under the current inflow scenario, resulting in somewhat higher salt content in spray drift from the system.

4.4.8 Alternative 4

Construction of salt concentration ponds and EES modules under Alternative 4 would result in significant fugitive dust and vehicle emissions during the three-year construction period. Fugitive dust emissions from construction vehicle travel on unpaved haul roads would substantially exceed Clean Air Act *de minimis* levels, requiring a Clean Air Act conformity review. Fugitive dust emissions along haul roads and at equipment staging areas could be reduced by various dust control practices and by limiting vehicle speeds on haul roads.

Because the EES is expected to require stationary source permits, operation of the EES would be excluded from separate Clean Air Act conformity reviews. Preliminary dispersion modeling indicates the potential for significant salt drift downwind of the EES during periods of strong winds. Permit conditions for the EES probably would include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 4 with Continuation of Current Inflow Conditions

Construction of the northern salt concentration pond under Alternative 4 would have impacts similar to those discussed for Alternative 1. The high volume of heavy truck traffic over the haul road from the borrow sites would generate large quantities of fugitive dust emissions throughout the four year construction period. Construction of EES modules would be an additional source of fugitive dust and vehicle emissions during the construction stage. The EES for Alternative 4 would require approximately 50 modules (as compared to 75 modules for Alternative 3).

Assuming a three-year construction period, emissions would average 132 tons per year of reactive organic compounds, 1,506 tons per year of nitrogen oxides, and 1,997 tons per year of PM₁₀. All of these quantities exceed the conformity rule *de minimis* thresholds applicable in Imperial County (100 tons per year for reactive organic compounds, 100 tons per year for nitrogen oxides, and 100 tons per year for PM₁₀). Additional emissions would occur from operation of the quarry used for construction aggregate. Consequently, construction activities associated with Alternative 4 would require a Clean Air Act conformity determination for both the Imperial County ozone nonattainment area and the Imperial Valley PM₁₀ nonattainment area.

Because the EES is expected to require stationary source permits, operation of the EES would be excluded from Clean Air Act conformity reviews. As noted in the discussion of Alternative 2, preliminary dispersion modeling indicates the potential for significant salt drift downwind of the EES during periods of strong winds. Siting of EES modules would require some caution to avoid salt drift impacts on public roadways, power lines

and other utility systems, and sensitive downwind habitat areas. Predominant wind direction patterns at the Navy test base site are expected to be from the northwest, west, and southeast. Permit conditions for the EES probably would include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 4 with Reduced Inflows

Air quality issues for Alternative 4 under reduced inflow scenarios would be the same as discussed above. Salinity levels for the inflow to the EES modules would be somewhat higher than under the current inflow scenario, resulting in somewhat higher salt content in spray drift from the system.

4.4.9 Alternative 5

Construction of the southern salt concentration pond and an in-pond EES under Alternative 5 would result in significant fugitive dust and vehicle emissions during the four-year construction period. Fugitive dust emissions from construction vehicle travel on unpaved haul roads would substantially exceed Clean Air Act *de minimis* levels, requiring a Clean Air Act conformity review. Fugitive dust emissions along haul roads and at equipment staging areas could be reduced by various dust control practices and by limiting vehicle speeds on haul roads.

Because the EES for Alternative 5 is expected to require stationary source permits, operation of the EES would be excluded from Clean Air Act conformity reviews. Because of its lower spray height, the in-pond EES for Alternative 5 is expected to have significantly less potential for downwind salt drift impacts than the EES design considered for Alternatives 2, 3, and 4. Permit conditions for the EES probably would include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 5 with Continuation of Current Inflow Conditions

Construction of the southern salt concentration pond under Alternative 5 would have impacts similar to those discussed for Alternative 1. The high volume of heavy truck traffic over the haul road from the borrow sites would generate large quantities of fugitive dust emissions throughout the four year construction period. Installation of EES equipment would require less site disturbance than the EES modules for Alternatives 2, 3, and 4.

Assuming a three-year construction period, emissions would average 111 tons per year of reactive organic compounds, 1,217 tons per year of nitrogen oxides, and 1,769 tons per year of PM₁₀. All of these quantities exceed the conformity rule *de minimis* thresholds applicable in Imperial County (100 tons per year for reactive organic compounds, 100 tons per year for nitrogen oxides, and 100 tons per year for PM₁₀). Additional emissions would occur from operation of the quarry used for construction aggregate. Consequently, construction activities associated with Alternative 5 would require a Clean Air Act conformity determination for both the Imperial County ozone nonattainment area and the Imperial Valley PM₁₀ nonattainment area.

Because the EES is expected to require stationary source permits, operation of the EES would be excluded from Clean Air Act conformity reviews. Maximum spray droplet height for the in-pond EES proposed under Alternative 5 would be substantially less than the spray release heights for the EES considered in Alternatives 2, 3, and 4. Consequently, Alternative 5 would have a lower potential for off-site salt drift impacts than the other EES alternatives. Permit conditions for the EES probably would include restrictions on system operation during high winds, minimum buffer area requirement, and various reporting or monitoring requirements.

Effect of Alternative 5 with Reduced Inflows

Air quality issues for Alternative 5 under reduced inflow scenarios would be the same as discussed above. Salinity levels for the inflow to the EES modules would be somewhat higher than under the current inflow scenario, resulting in somewhat higher salt content in spray drift from the system.

4.4.10 Cumulative Effects

The various cumulative projects identified in Chapter 2 are primarily water management and habitat improvement projects or programs that have few direct air quality impacts. Water management programs will have some effect on water levels and salinity levels in the Salton Sea, but these effects will be within the range of conditions considered under the three generalized inflow scenarios.

The Mesquite Regional Landfill project discussed in Section 2.11.12 would have minor cumulative air quality impacts on the Salton Sea Air Basin from train operations and landfill management practices. Although the rail line runs near the EES site for Alternative 2, emissions from a few trains per day would not have any measurable effect on ambient air quality at the EES site. The expansion of the Mesquite Gold Mine (discussed in Section 2.11.14) would have some additional minor cumulative air quality impacts on the Salton Sea Air Basin. Both of these projects, however, are sufficiently separated from the Salton Sea restoration project alternatives to avoid any measurable cumulative impacts at the restoration project sites.

4.4.11 Mitigation Measures

Alternative 1

Develop and implement a dust control plan for construction haul roads and construction equipment staging areas. The dust control plan should be coordinated with the Imperial County Air Pollution Control District. Components of the dust control plan might include measures such as frequent sprinkling or application of other dust suppressants on construction haul roads and equipment staging area; controlling vehicle speeds on construction haul roads; and sprinkling soil stockpiles to minimize wind erosion.

Except where road crossings are required, keep haul road alignments at least 1,000 feet away from public highways. Haul road alignments should be kept at least 1,000 feet away from public highways to avoid potential visibility problems associated

with fugitive dust generated by haul road traffic. Locations where haul roads must cross other roadways should receive special attention in terms of dust control activities.

Use electrically powered pumps instead of diesel-fueled pumps for facility operations. Wherever possible, electrically powered pumps should be used in preference to pumps powered by diesel engines or generators.

Coordinate with the Imperial County APCD, CARB, and EPA Region 9 to identify elements of ozone and PM₁₀ SIP amendments that would accommodate construction of the selected alternative. Approval of Alternative 1 would require a demonstration of conformity for both ozone precursor and PM₁₀ emissions. The most practical method for demonstrating conformity appears to be the development of SIP amendments that explicitly account for Alternative 1 while meeting EPA requirements and attainment deadlines.

Alternative 2

Develop and implement a dust control plan for construction haul roads and construction equipment staging areas. The dust control plan should be coordinated with the Imperial County Air Pollution Control District and the South Coast Air Quality Management District. Components of the dust control plan might include measures such as frequent sprinkling or application of other dust suppressants on construction haul roads and equipment staging area; controlling vehicle speeds on construction haul roads; and sprinkling soil stockpiles to minimize wind erosion.

Site EES modules and incorporate buffer zones around the EES to reduce potential public exposure to salt drift and to minimize salt drift impacts on surrounding land uses, public roadways, and biologically sensitive areas. Permit applications for EES modules will probably require some dispersion modeling studies to identify buffer zone requirements and site layout options for minimizing off-site salt drift.

Use automated controls to shut down some or all EES modules when hourly average wind speeds exceed 14-16 mph. Restrictions on the operation of EES modules during periods of strong winds will probably be included in air quality permits for the system.

Use electrically powered pumps instead of diesel-fueled pumps for facility operations. Wherever possible, electrically powered pumps should be used in preference to pumps powered by diesel engines or generators.

Coordinate with the Imperial County APCD, South Coast AQMD, CARB, and EPA Region 9 to identify elements of ozone and PM₁₀ SIP amendments that would accommodate construction of the selected alternative. Approval of Alternative 2 would require a demonstration of conformity for ozone precursor emissions in Riverside and Imperial counties. The most practical method for demonstrating conformity appears to be the development of SIP amendments that

explicitly account for Alternative 2 while meeting EPA requirements and attainment deadlines.

Alternative 3

Develop and implement a dust control plan for construction haul roads and construction equipment staging areas. The dust control plan should be coordinated with the Imperial County Air Pollution Control District. Components of the dust control plan might include measures such as frequent sprinkling or application of other dust suppressants on construction haul roads and equipment staging area; controlling vehicle speeds on construction haul roads; and sprinkling soil stockpiles to minimize wind erosion.

Site EES modules and incorporate buffer zones around the EES to reduce potential public exposure to salt drift and to minimize salt drift impacts on surrounding land uses, public roadways, and biologically sensitive areas. Permit applications for EES modules will probably require some dispersion modeling studies to identify buffer zone requirements and site layout options for minimizing off-site salt drift.

Use automated controls to shut down some or all EES modules when hourly average wind speeds exceed 14-16 mph. Restrictions on the operation of EES modules during periods of strong winds will probably be included in air quality permits for the system.

Use electrically powered pumps instead of diesel-fueled pumps for facility operations. Wherever possible, electrically powered pumps should be used in preference to pumps powered by diesel engines or generators.

Coordinate with the Imperial County APCD, CARB, and EPA Region 9 to identify elements of ozone and PM₁₀ SIP amendments that would accommodate construction of the selected alternative. Approval of Alternative 3 would require a demonstration of conformity for both ozone precursor and PM₁₀ emissions in Imperial County. The most practical method for demonstrating conformity appears to be the development of SIP amendments that explicitly account for Alternative 3 while meeting EPA requirements and attainment deadlines.

Alternative 4

Develop and implement a dust control plan for construction haul roads and construction equipment staging areas. The dust control plan should be coordinated with the Imperial County Air Pollution Control District. Components of the dust control plan might include measures such as frequent sprinkling or application of other dust suppressants on construction haul roads and equipment staging area; controlling vehicle speeds on construction haul roads; and sprinkling soil stockpiles to minimize wind erosion.

Site EES modules and incorporate buffer zones around the EES to reduce potential public exposure to salt drift and to minimize salt drift impacts on surrounding land uses, public roadways, and biologically sensitive areas. Permit applications for EES modules will probably require some dispersion modeling studies to identify buffer zone requirements and site layout options for minimizing off-site salt drift.

Use automated controls to shut down some or all EES modules when hourly average wind speeds exceed 14-16 mph. Restrictions on the operation of EES modules during periods of strong winds will probably be included in air quality permits for the system.

Use electrically powered pumps instead of diesel-fueled pumps for facility operations. Wherever possible, electrically powered pumps should be used in preference to pumps powered by diesel engines or generators.

Coordinate with the Imperial County APCD, CARB, and EPA Region 9 to identify elements of ozone and PM₁₀ SIP amendments that would accommodate construction of the selected alternative. Approval of Alternative 4 would require a demonstration of conformity for both ozone precursor and PM₁₀ emissions in Imperial County. The most practical method for demonstrating conformity appears to be the development of SIP amendments that explicitly account for Alternative 4 while meeting EPA requirements and attainment deadlines.

Alternative 5

Develop and implement a dust control plan for construction haul roads and construction equipment staging areas. The dust control plan should be coordinated with the Imperial County Air Pollution Control District. Components of the dust control plan might include measures such as frequent sprinkling or application of other dust suppressants on construction haul roads and equipment staging area; controlling vehicle speeds on construction haul roads; and sprinkling soil stockpiles to minimize wind erosion.

Use automated controls to shut down some or all EES equipment during periods of strong winds. Restrictions on the operation of EES modules during periods of strong winds will probably be included in air quality permits for the system. The maximum wind speed allowed for EES operation might be higher for Alternative 5 than for the other EES designs.

Use electrically powered pumps instead of diesel-fueled pumps for facility operations. Wherever possible, electrically powered pumps should be used in preference to pumps powered by diesel engines or generators.

Coordinate with the Imperial County APCD, CARB, and EPA Region 9 to identify elements of ozone and PM₁₀ SIP amendments that would accommodate construction of the selected alternative. Approval of Alternative 5 would require a

demonstration of conformity for both ozone precursor and PM₁₀ emissions in Imperial County. The most practical method for demonstrating conformity appears to be the development of SIP amendments that explicitly account for Alternative 5 while meeting EPA requirements and attainment deadlines.

4.4.12 Potentially Significant Unavoidable Impacts

Potentially significant air quality impacts would occur from ozone precursor and fugitive dust emissions during construction of Alternatives 1, 3, 4, or 5. Alternative 2 would have significant ozone precursor emissions during the construction stage. There does not appear to be any feasible way to reduced construction-related fugitive dust emissions to a less than significant level. As presently written, the EPA general conformity rule would preclude adoption of any of these alternatives unless state and local agencies can prepare a PM₁₀ SIP amendment that accounts for the selected alternative while still meeting Clean Air Act deadlines and requirements.