8.11 Soils and Agriculture

This section describes the potential effects of the construction and operation of the SVEP on soils and agricultural land. Section 8.11.1 describes the existing environment that could be affected, including agricultural use and soil types. Section 8.11.2 identifies potential environmental effects, if any, from project development. Section 8.11.3 discusses cumulative effects. Section 8.11.4 presents mitigation measures. Section 8.11.5 presents the LORS applicable to agriculture and soils. Section 8.11.6 describes the required permits and provides agency contacts. Section 8.11.7 provides the references used to develop this section.

8.11.1 Environmental Setting

The proposed SVEP site is situated in a current rural area southeast of the unincorporated community of Romoland in Riverside County. The project site lies within the Sun Valley-Menifee Community Plan Area. The property consists of 5 parcels (Numbers 8, 14, 18, 19, and 20 in Riverside County Assessors Bk. 331, Pg. 25); however, only 2 of those parcels (Numbers 19 and 20) will be developed for the proposed SVEP. The two parcels cover an area that is 22.89 acres in size. Approximately 3 acres within this area will be used as a material laydown area during construction. Parcels 8, 24, and 18 will not be included in the area defined as part of the SVEP and will be available for future development.

The entire subject property is currently used for commercial wheat production; however, as part of the Sun Valley-Menifee Community Plan Area, the parcels proposed for the SVEP development are zoned for manufacturing – service and commercial. The subject site is bounded on the north side by a Burlington Northern Santa Fe (BSNF) railroad alignment, on the west by Junipero Road, on the south by Rouse Road, and on the east by Menifee Road. Adjacent parcels to the west of the subject site are also used for commercial wheat production, as are parcels adjacent to the northeast and southeast corners of the property. A parcel adjacent to the south corner of the proposed SVEP parcel contains a lot that is currently used for storage of farm and construction material and several trailers.

To the east of Menifee Road, the land had been graded for residential development. North of the site across the BNSF railroad alignment is a wood chipping (recycling) facility and the Southern California Edison (SCE) Substation, to which the proposed SVEC will tie in for electrical transmission. East and north of the SCE Substation are fields used for commercial watermelon production or are disked for an undetermined crop. Moving westward from the SVEP site, there are several fields in current wheat production or in fallow. Developed properties to the east and northeast of the SVEP property, but south of the BNSF railroad alignment, are either used for industrial/commercial activities or urban residential.

There is no evidence of wetland areas or watercourses on the SVEP site or in the immediate site vicinity. Culverts for conveying surface water runoff flows were observed at the intersection of Matthews Road and Menifee Road; however, those culverts connect to minor roadside drainage ditches with ephemeral flows and upland vegetation. To the south/southeast of the proposed SVEP property and to the east across the BNSF railroad alignment, the relatively flat alluvial agricultural fields give way to the more steep outcrops of intrusive (igneous) hills (Morton, 2003) *Soil Survey, Western Riverside Area, California*

(NRCS, 1971). Descriptions of the soil mapping units were developed from the soil mapping publication and from Official Series Descriptions downloaded from the NRCS website.

The SVEP project site and off-site linear facilities includes: a natural gas supply pipeline, a non-reclaimable water (brine) pipeline, and an overhead electrical transmission line. The gas pipeline will follow the southern margin of the BNSF railroad approximately 750 feet southeast to Menifee Road. The brine pipeline will follow the southern margin of the BNSF railroad northeast approximately 360 feet and then westward within the unpaved McLaughlin Road right-of-way to Antelope Road where it will turn to the north to where it joins the Inland Empire Energy Center brine line for a total length of approximately 0.75 mile (3,960 feet). For the electrical transmission line, two alternatives are being considered for the connection to the SCE Substation: the first alternative is a 600-foot span across the BSNF railroad alignment with one tower; the second alternative is a 2,400-foot alignment to the northern corner of the SCE Substation with an estimated 5 towers. Project impacts will be estimated based on the second alternative.

Soil types for the project area are depicted in Figure 8.11-1 and the characteristics of soil mapping units in the vicinity of the proposed SVEP are summarized in Table 8.11-1. The table summarizes depth, texture, drainage, permeability, water runoff, and inherent fertility as an indicator of its revegetation potential. Actual soil conditions in the project area could differ from what is described in the generalized soil descriptions because of the potential for local grading and imported fill in roadway areas.

8.11.1.1 Agricultural Use and Important Farmlands

The proposed SVEP site is currently used for commercial production of wheat. The areas through which the proposed linear features (gas line, brine line, and electrical transmission line) would pass are not used for agricultural production. The gas line and brine lines would be located entirely within railroad and roadway rights-of-way. The electrical transmission line would pass over land that is developed for the SCE Substation, which is immediately adjacent to land on the east that is currently used for commercial production of watermelons. While the proposed SVEP site is currently used for wheat production, it is zoned for manufacturing – service and commercial and is part of the Sun Valley-Menifee Community Plan Area. Former agricultural lands to the east of Menifee Road are currently being developed for a residential housing community.

As shown on Figure 8.11-2, the proposed SVEP site and most of the immediate area within 1-mile of the site is currently mapped as a Farmland of Local Importance [L] (CDC, 2004). There are Prime Farmlands [P] mapped to the north (approximately 2,200 feet) and to the southeast (approximately 3,600 feet) of the proposed SVEP site. A single area mapped as Farmland of Statewide Importance [S] is located approximately 2,300 feet northwest of the proposed SVEP site on the northern side of the BNSF railroad alignment. Other important farmlands within the 1-mile buffer area around the SVEP is a single area of Unique Farmland [U] associated with a remnant portion of orange grove approximately 4,000 feet southwest of the SVEP site on the south side of the outcrop hills. All other lands within the 1-mile buffer are mapped as either Urban and Built-Up Land [D] or Other Land [X].

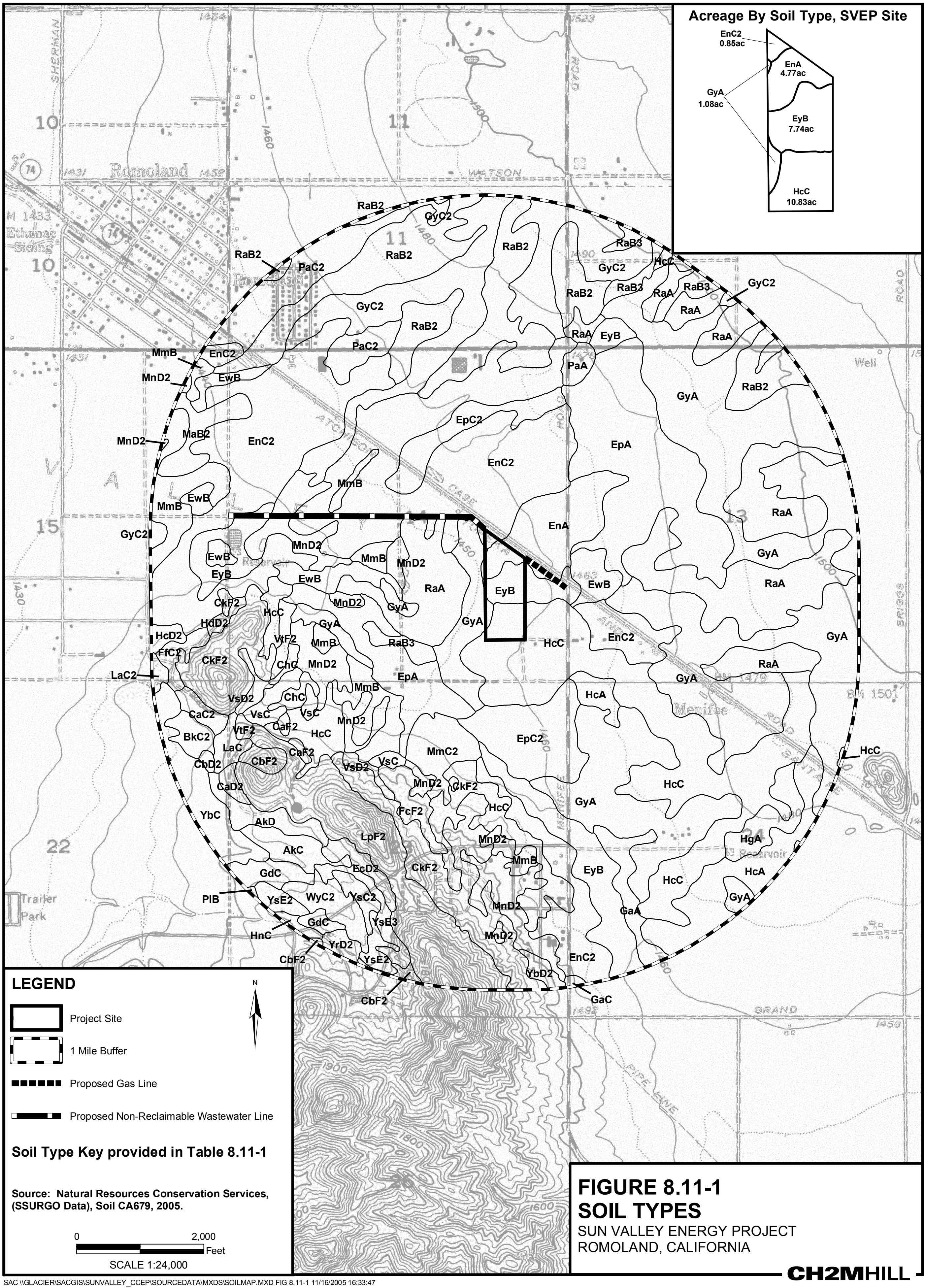

FIGURE 8.11-1
SOIL TYPES
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

CH2MHILL

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TABLE 8.11-1
Soil Mapping Unit Descriptions and Characteristics

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
AkC	Arbuckle loam. Deep to very deep, well-drained, on alluvial fans and in alluvium metasedimentary rocks.	2 to 8	> 5	Slight to moderate	IIe-1 (irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
AkD	Arbuckle loam. Deep to very deep, well-drained, on alluvial fans and in alluvium metasedimentary rocks.	8 to 15	> 5	Moderate	IIe-1 (irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
BkC2	Buchenau silt loam. Moderately deep to very deep, moderately well-drained, on alluvial fans.	2 to 8	2 to 4.5	Moderate	IIIe-1 (irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
CaC2	Cajalco fine sandy loam, eroded. Moderately deep to very deep, well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	2 to 8	1.5 to 2	Slight to moderate	IIIe-1 (irrigated)	Permeability is moderate and the shrink-swell potential is low.
CaD2	Cajalco fine sandy loam, eroded. Deep, well-drained soils developed in decomposing gabbro and other basic igneous rocks.	8 to 15	1.5 to 2	Moderate	IVe-1 (irrigated)	Permeability of this soil is moderate and the shrink-swell potential is low.
CaF2	Cajalco fine sandy loam, eroded. Moderately deep to very deep, well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	15 to 35	1.5 to 2	High	VIe-1 (non-irrigated)	Permeability is moderate and the shrink-swell potential is low.
CbD2	Cajalco rocky fine sandy loam, eroded. Moderately deep to very deep, moderately well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	5 to 15	1.5 to 4	Slight to moderate	VIe-7 (non-irrigated)	Permeability is moderate and shrink-swell potential is low.
CbF2	Cajalco rocky fine sandy loam, eroded. Moderately deep to very deep, moderately well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	15 to 50	1.5 to 4	High	VIe-7 (non-irrigated)	Permeability is moderate and the shrink-swell potential is low.
ChC	Cieneba sandy loam. Shallow, somewhat excessively drained, in coarse-grained igneous rock on uplands.	5 to 8	1 to 2	Slight	IVe-1 (irrigated)	Permeability is rapid to slow and the shrink-swell potential is low.

TABLE 8.11-1
Soil Mapping Unit Descriptions and Characteristics

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
CkF2	Cieneba rocky sandy loam, eroded. Shallow, somewhat excessively drained, in coarse-grained igneous rock on uplands.	15 to 50	1 to 2	High	VIIe-1 (non-irrigated)	Permeability is rapid and the shrink-swell potential is low.
Ds2	Domino fine sandy loam, eroded. Moderately deep to deep, moderately well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 3.5	Slight to moderate	IIIe-8 (irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
EnA	Exeter sandy loam. Moderately deep, well-drained, in basins.	0 to 2	1.5 to 4.5	Slight	IIIs-8 (irrigated)	Permeability is moderate and the shrink-swell potential is low.
EnC2	Exeter sandy loam, eroded. Moderately deep to deep, well-drained, in basins and on alluvial fans.	2 to 8	1.5 to 4.5	Slight to moderate	IIIe-8 (irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
EpA	Exeter sandy loam. Deep, well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 4.5	Slight	IIs-8 (irrigated)	The shrink-swell potential is low.
EpC2	Exeter sandy loam, eroded. Deep to very deep, well-drained, in basins and on alluvial fans.	2 to 8	1.5 to 4.5	Slight to moderate	IIe-1 (irrigated)	The shrink-swell potential is low.
EwB	Exeter very fine sandy loam. Moderately deep to deep, well-drained, in basins and on alluvial fans.	0 to 5	1.5 to 4.5	Slight to moderate	IIIe-8 (irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
EyB	Exeter very fine sandy loam. Deep to very deep, well-drained, in basins and on alluvial fans.	0 to 5	1.5 to 4.5	Slight to moderate	IIe-1 (irrigated)	The shrink-swell potential is low.
FcF2	Fallbrook rocky sandy loam. Shallow, well-drained, on granodiorite and tonalite, on uplands.	15 to 50	1 to 3	High	VIIe-1 (non-irrigated)	Permeability is rapid to moderately slow and the shrink-swell potential is low.
FfC2	Fallbrook fine sandy loam, eroded. Moderately deep to very deep, well-drained, on granodiorite and tonalite, on uplands.	2 to 8	1 to 3	Slight	IIIe-1 (irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.

TABLE 8.11-1
Soil Mapping Unit Descriptions and Characteristics

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
GaA	Garretson very fine sandy loam. Deep, well drained soils on alluvial fans.	0 to 2	> 5	Slight	IIe-1 (irrigated)	Permeability of this soil is moderate.
GyA	Greenfield sandy loam. Very deep, well-drained, on alluvial fans consisting mainly of granitic materials.	0 to 2	5	Slight	I-1 (irrigated)	The shrink-swell potential is low.
GyC2	Greenfield sandy loam, eroded. Very deep, well-drained, on alluvial fans and terraces.	2 to 8	5	Slight to moderate	IIe-1 (irrigated)	Permeability is moderate and the shrink-swell potential is low
HcA	Hanford coarse sandy loam. Very deep, well to somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	0 to 2	> 5	Slight	IIs-4 (irrigated)	Permeability is rapid to moderately rapid and the shrink-swell potential is low.
HcC	Hanford coarse sandy loam. Deep to very deep, well to somewhat excessively drained, on alluvial fans.	2 to 8	> 5	Slight to moderate	IIe-1 (irrigated), IVec-1 (non-irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
HcD2	Hanford coarse sandy loam, eroded. Moderately deep to very deep, well to somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	8 to 15	> 5	Moderate	IIIe-1 (irrigated), IVec-1 (non-irrigated)	The shrink-swell potential is low.
HdD2	Hanford cobbly coarse sandy loam, eroded. Moderately deep to very deep, somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	2 to 15	> 5	Slight to moderate	VIe-7 (non-irrigated)	Permeability is rapid to slow and the shrink-swell potential is low.
HgA	Hanford fine sandy loam. Moderately deep to very deep, well to somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	0 to 2	> 5	Slight	I-1 (irrigated)	Permeability is moderately rapid and the shrink-swell potential is low
LaC	Las Posas loam. Moderately deep to very deep, well-drained, on gabbro and other intrusive basic igneous rocks, on uplands.	2 to 8	1 to 4	Slight to moderate	IIIe-1 (irrigated)	Permeability is slow and the shrink-swell potential is high.
LpF2	Lodo rocky loam. Shallow, somewhat excessively drained soils that formed in material weathered from hard shale and fine grained sandstone.	25 to 50	< 1	Very high	VIIe-1 (non-irrigated)	Permeability is moderate and the shrink-swell potential is moderate

TABLE 8.11-1
Soil Mapping Unit Descriptions and Characteristics

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
MaB2	Madera fine sandy loam, eroded. Moderately deep, moderately well drained, on dissected terraces and old alluvial fans.	2 to 5	1 to 3	Slight to moderate	IIIe-3 (irrigated)	Permeability is slow to very slow and the shrink-swell potential is low.
MmB	Monserate sandy loam. Moderately deep to deep, well-drained, on alluvial fans consisting mainly of granitic materials.	0 to 5	1 to 3	Slight	IIIe-8 (irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
MmC2	Monserate sandy loam, eroded. Moderately deep to deep, well-drained, on alluvial fans consisting mainly of granitic materials.	5 to 8	1 to 3	Moderate	IIIe-8 (irrigated)	Permeability is moderately slow and the shrink-swell potential is low.
MnD2	Monserate sandy loam, eroded. Shallow, well-drained, on alluvial fans consisting mainly of granitic materials.	5 to 15	1 to 3	High	VIe-8 (non-irrigated)	Permeability is moderately rapid to slow and the shrink-swell potential is low.
PaA	Pachappa fine sandy loam. Very deep, well-drained, on alluvial fans consisting mainly of granitic material.	0 to 2	> 5	Slight	I-1 (irrigated)	The shrink-swell potential is low.
PaC2	Pachappa fine sandy loam, eroded. Deep to very deep, well-drained, on alluvial fans consisting mainly of granitic materials.	2 to 8	> 5	Moderate	IIe-1 (irrigated)	Permeability is moderate and the shrink-swell potential is low.
RaA	Ramona sandy loam, severely eroded. Very deep, well-drained, on alluvial fans and terraces.	0 to 2	> 5	Slight	I-1 (irrigated)	The shrink-swell potential is low.
RaB2	Ramona sandy loam, eroded Deep to very deep, well-drained, on alluvial fans and terraces.	2 to 5	> 5	Moderate	IIe-1 (irrigated)	Permeability is moderately slow and the shrink-swell potential is low.
RaB3	Ramona sandy loam, severely eroded. Moderately deep to very deep, well-drained, on alluvial fans and terraces.	0 to 5	> 5	Moderate	IIIe-1 (irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
VsC	Vista coarse sandy loam. Moderately deep to very deep, well-drained, on weathered granite and granodiorite, on uplands.	2 to 8	1.5 to 3	Slight	IIIe-1 (irrigated)	The shrink-swell potential is low.

TABLE 8.11-1
Soil Mapping Unit Descriptions and Characteristics

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
VsD2	Vista coarse sandy loam, eroded. Shallow to very deep, well-drained, on weathered granite and granodiorite, on uplands.	9 to 15	1.5 to 3	Moderate	IVe-1 (irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
VtF2	Vista rocky coarse sandy loam, eroded. Moderately deep to very deep, well-drained, on weathered granite and granodiorite, on uplands.	2 to 35	1.5 to 3	Moderate	VIe-7 (non-irrigated)	Permeability is rapid to slow and the shrink-swell potential is low.
WyC2	Wyman loam, eroded. Deep to very deep, well-drained, on alluvial fans consisting mainly of basic sedimentary materials.	2 to 8	> 5	Moderate	IIe-1 (irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
YsC2	Ysidora gravelly very fine sandy loam. Shallow, moderately well-drained, on strongly to gently sloping alluvial fans and terraces or in small valley fills.	2 to 8	2.5 to 3	Moderate	IIIe-8 (irrigated)	Permeability is very slow and the shrink-swell potential is low
YsE3	Ysidora gravelly very fine sandy loam, severely eroded. Shallow, moderately well-drained, on old alluvial fans consisting mainly of metasedimentary materials.	8 to 25	1 to 3	High	VIIe-1 (non-irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.

Notes:
Map Symbols in **Bold** are listed as Prime Farmland soils in Western Riverside County (CDC, 1995).
Map Symbols in *Italics* are listed as Farmlands of Statewide Importance soils in Western Riverside County (CDC, 1995).

Statistics from inventories of important farmlands in Riverside counties in 2002 indicate that there were 469, 482 total acres of land classified as Prime Farmland, Farmlands of Statewide Importance, Unique Farmlands, or Farmlands of Local Importance (CDC, 2005). There was a net decline in important farmlands from the year 2000 to 2002 with a 3.3 percent decline (15,339 acres) in Riverside County. Land increases of Urban and Built-up Land and Other Land classifications were roughly equal to net losses in all agricultural lands (important farmlands plus grazing lands) during the 2000 to 2002 period. Statistics for the 2000 to 2004 changes in Important Farmland acreages for Riverside counties were not available at the time of this report. The proposed SVEP will result in the permanent conversion of 22.9 acres of Farmlands of Local Importance, of which 240,672 acres were mapped in Riverside County in 2002 (or less than 1/1,000th of a percent of that total).

8.11.1.2 Soil Types

Table 8.11-1 describes the properties of the soil mapping units that are found at the SVEP site and within 1-mile of the site which encompasses all the proposed linear facilities (gas and brine pipelines and electrical transmission line. As indicated, the soil mapping units in the project area are developed on alluvial deposits (fans and valley bottoms). These soils are all well drained. There were no locations identified within the project area that could have ponded water or hydric soils. Along the proposed linear facilities that follow the BNSF railroad and roadway rights-of-way, there is a possibility that soil conditions could vary significantly from those mapped. Those conditions could include mixed local soils from grading and the potential for imported soils beneath roadways where existing soils may have been unsuitable for support.

In Figure 8.11-1, the project site (including the laydown area) consists of several soil mapping units as follows:

- **[EyB] Exeter very fine sandy loam, deep, 0 to 5 percent slopes**—approximately 26 percent in the central portion
- **[HcC] Hanford coarse sandy loam, 2 to 8 percent slopes**—approximately 25 percent in the southern portion
- **[EnA] Exeter sandy loam, 0 to 2 percent slopes**—approximately 24 percent in the northern portion
- **[GyA] Greenfield sandy loam, 0 to 2 percent slopes**—approximately 15 percent total near the northwestern and southern corners
- **[EnC2] Exeter sandy loam, 2 to 6 percent slopes**—approximately 9 percent in northwestern corner

The 750-foot gas pipeline travels southeast along the BNSF railroad through the **[EnA]** mapping unit (approximately 625 feet) and the **[EyB]** mapping unit (approximately 125 feet). The brine line follows the BNSF alignment to the northwest and then westward along McLaughlin Road and then north along Antelope Road. This 0.75-mile (approximately 3,960-foot) brine pipeline passes primarily through the **[EnC2]** mapping unit (approximately 3,020 feet). Other soil mapping units crossed by the brine line alignment include **[EyB]** (approximately 310 feet); **[MaB2] Madera fine sandy loam, 2 to 5 percent slopes** and **[MnD2] Monserate sandy loam, shallow, 5 to 15 percent slopes** (approximately 210 feet

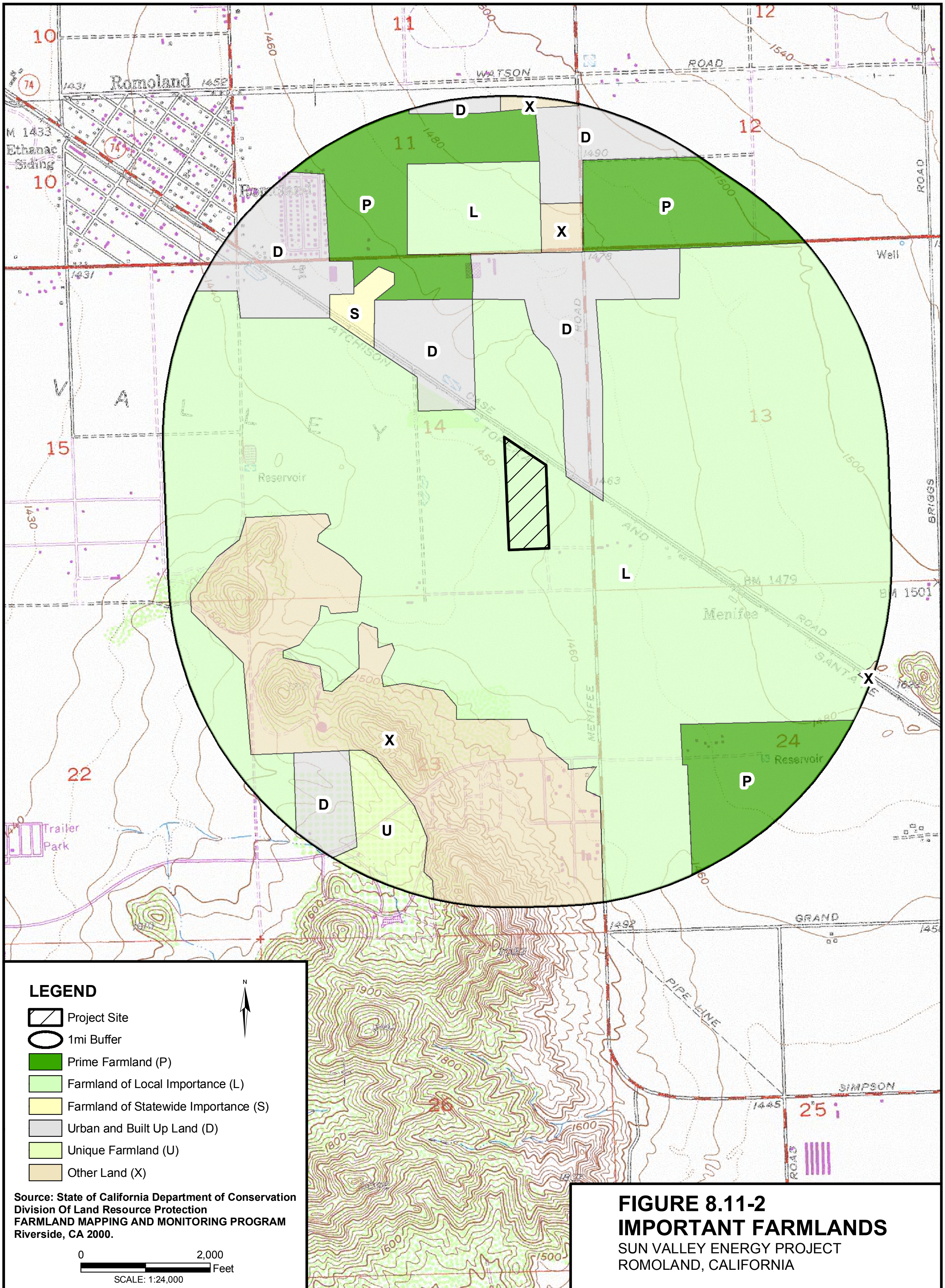

FIGURE 8.11-2
IMPORTANT FARMLANDS
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

SAC \\GLACIER\SACGIS\SUNVALLEY_CCEP\SOURCEDATA\MXDS\FMMP_MAP.MXD FIG8.11-2_FMMP 11/14/2005 15:07:30

each); and **[GyA]** and **[EwB] Exeter very fine sandy loam, 0 to 5 percent slopes** (approximately 105 feet each). The electrical transmission line will follow northward from the SVEP site to the north side of the SCE Substation (Alternative 2) for a distance of 2,400 feet. The alignment is all within the **[EnC2]** soil mapping unit.

8.11.1.3 Potential for Soil Loss and Erosion

The factors that have the largest effect on soil loss include steep slopes, lack of vegetation, and erodible soils composed of large proportions of fine sands. The SVEP site is nearly level and the soil mapping units that comprise the majority of the site are in slope class (0 to 2) or (0 to 5) percent. As previously indicated, the current cover crop is wheat. The predominant surface soil condition is sandy loam (or very fine sandy loam) (NRCS, 1971) with water erosion potentials indicated to be slight to moderate. However, these surface textures could have a somewhat higher potential for wind erosion. An estimate of soils losses by water and wind erosion is provided in Section 8.11.2.4.

8.11.1.4 Other Significant Soil Characteristics

Based on the available soil mapping information and from site-specific information determined during field visits, there does not appear to be a potential for hydric soils or shallow water tables, or for soils with a high shrink/swell capacity. It is possible (though unlikely) that fill soils could be encountered during the excavation of the brine line within McLaughlin Road or Antelope Road that have soil properties different from those mapped, which could have properties that are unsuitable for backfilling along the pipeline. Should unsuitable soils be uncovered during excavation, a contingency plan to remove and replace those soils with imported fill with suitable compaction and bearing properties will be implemented.

8.11.2 Environmental Consequences

The following sections describe the potential environmental effects on agricultural production and soils during the construction and operation phases of the project.

8.11.2.1 Significance Criteria

The potential for impacts to agricultural and soils resources were evaluated with respect to the criteria described in the Appendix G checklist of CEQA. An impact is considered potentially significant if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps for the Farmland Mapping and Monitoring Program by the California Resources Agency, to non-agricultural use
- Conflict with existing zoning for agricultural use or a Williamson Act contract
- Involve other changes in the existing environment which, because of their location or nature, could result in conversion of Farmland to non-agricultural use
- Impact jurisdictional wetlands
- Result in substantial soil erosion
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (International Code Council, 1997), creating substantial risks to life or property

The following sections describe the anticipated environmental impacts on agricultural production and soils during plant construction and operation.

8.11.2.2 Prime and Unique Farmland

The SVEP is not located on prime or unique farmland, although it is within an area that is mapped as a Farmland of Local Importance (CDC, 2004). While mapped prime and unique farmlands are found within 1-mile of the proposed SVEP site, the proposed activities will not affect current agricultural operations at those locations that are a minimum of 2,200 feet away from the site. The SVEP is located in an area that is currently zoned for manufacturing–service and commercial use. The SVEP site is not under a Williamson Act contract (LaFontaine, 2005). Conversion of Farmland of Local Importance to manufacturing uses in an area zoned for manufacturing is not an adverse impact.

8.11.2.3 Jurisdictional Wetlands

Based on field visits, there was no evidence of ponding water or jurisdictional wetlands at the SVEP site or along the linear features. For this reason, the SVEP would not impact jurisdictional wetlands.

8.11.2.4 Soil Erosion During Construction

Construction impacts on soil resources can include increased soil erosion and soil compaction. Soil erosion causes the loss of topsoil and can increase the sediment load in surface receiving waters downstream of the construction site. The magnitude, extent, and duration of construction-related impact depends on the erodibility of the soil; the proximity of the construction activity to the receiving water; and the construction methods, duration, and season.

Since the conditions that could lead to excessive soil erosion are not present at the site and laydown area, little soil erosion is expected during the construction period. In addition, best management practices (BMPs) will be implemented during construction. The California Energy Commission (CEC) also requires that project owners develop and implement an erosion and sediment control plan to reduce the impact of runoff from the construction site. Therefore, impacts from soil erosion are expected to be less than significant. Monitoring will involve inspections to ensure that the BMPs described in the erosion and sediment control plan are properly implemented and effective.

Despite the relatively low potential for soil erosion in the SVEP project area, estimates of erosion by water and wind are provided in the following sections.

8.11.2.4.1 Water Erosion

An estimate of soil loss during construction by water erosion is found below in Table 8.11-2. This estimate was developed using the Revised Universal Soil Loss Equation (RUSLE2) program using the following assumptions:

- The SVEP site is a total 22.89 acres of which approximately 3 acres will be used as a construction laydown area. Given the nearly level site conditions, active soil grading is expected to occur over a two-month period within the project site and laydown area. The soil in the laydown area would then be covered with protective gravel along the access roadways or with construction material on dunnage in the material storage areas so that soil losses from that point would be negligible. Approximately half of the rest of the site (half of 19.89 acres or 9.945 acres) would then be exposed for an additional 10-month construction period. The total off-site area for five-foot-wide linear trenches would be is 0.541 acres within existing roadway or railroad rights-of-way. Active grading and exposed soils were estimated for 250-foot (gas line) or 200-foot (brine line) segments or total 500 square foot footing area for the electrical transmission line. It is expected that each open segment and the transmission tower footings will be actively graded during a two-week period before they are completed and re-surfaced (McLaughlin Road or Antelope Road) or regravelled (railroad). It was further assumed that during construction of the transmission line, vehicle traffic would occur during a two-month period over a 2,000 foot by 20 foot wide construction corridor.

- Estimates of soil loss (in tons) were made for sandy loam (subsoil, substratum) soil type which resulted in the highest (most conservative) estimate of erosion using the Revised Universal Soil Loss Equation (RUSLE2) when compared to other similar soil types (sandy loam [low to medium OM]; or silt loam [low to medium OM]).
- RUSLE2 rainfall erosivity conditions were estimated for the site using the nearest profile location, San Diego.
- Assumes a 100-foot slope length with a 3.0 percent average slope.
- Soil losses are estimated for construction conditions (approximated using 'bare ground, smooth surface' soil conditions); for active grading conditions (approximated using 'bare ground, rough surface' soil conditions); and for implementation of construction BMPs (approximated using 'tall fescue, not harvested' ground cover conditions). No contouring or other surface management conditions are assumed. Wheat, heavy, no till, fall harvest conditions were used to estimate annual soil losses from the SVEP under a "No Project" alternative.

With the implementation of appropriate BMPs that will be required under the National Pollution Discharge Elimination System permits, the total project soil loss of 0.0245 tons is a negligible amount and would not constitute a significant impact. It should also be recognized that the estimate of accelerated soil loss by water is conservative (overestimate of soil loss) because of the worst-case assumptions noted above.

8.11.2.4.2 Wind Erosion

The potential for wind erosion of surface material was estimated by calculating the total suspended particulates that could be emitted as a result of grading and the wind erosion of exposed soil. The total site area and grading duration were multiplied by emission factors to estimate the total suspended particulate (TSP) matter emitted from the site. Fugitive dust from site grading was calculated using the default particulate matter less than 10 microns in equivalent diameter (PM_{10}) emission factor used in URBEMIS2002 and the ratio of fugitive TSP to PM_{10} published by the Bay Area Air Quality Management District (BAAQMD, 2005). Fugitive dust resulting from the wind erosion of exposed soil was calculated using the emission factor in AP-42 (EPA, 1995; and in Table 11.9-4 in BAAQMD, 2005).

TABLE 8.11-2
Estimated Soil Loss by Water Erosion Using RUSLE2 Model for the Project Construction Phase

Soil Loss Conditions (sandy loam)	Soil Loss (tons/acre/year)	Duration in Months (Site/Linears)	Estimated Soil Loss (tons)			
			Site (19.89 ac)	Laydown (3.0 ac)	Linears (0.541 ac)	Total
During Construction	1.3	10/0.5 to 2	10.774	---	**G**: 0 **B**: 0 **TL**: 0.1989	10.973
During Active Grading	3.4	2/0.5	11.271	1.700	**G**: 0.0123 **B**:0.0645 **TL**:0.0016	13.049
With Implementation of Construction BMPs	0.0012	12/0.5 to 2	0.0239	0.0006	**G**:4.35x10-6 **B**: 2.28x10-5 **TL**: 5.75x10-7	0.0245
No Project	0.022	NA	0.438 tons/year	0.066 tons/year	NA	NA

RUSLE2 Model Assumptions:

Slope length = 100 ft. ; Average slope = 3 percent

Soil disturbance for linear installation was estimated as the off-site areas for following tie-ins: 750-foot gas line (**G**) as three 250-foot by 5 foot segments; 0.75 mile (3,960-foot) brine line (**B**) as 19.8 200-foot by 5 foot segment; one 2,400-foot overhead transmission line (**TL**) with five towers with four 5-foot by 5-foot footings each. Each segment would be graded within a two-week period and then covered so no further erosion during construction is anticipated. Construction activities for the transmission line would continue within a 2,00-foot by 20-foot construction corridor for a two-month period after completion of the tower footings. All other linears are immediately adjacent to the SVEP site so no impacts are calculated.

The final site conditions during operations will be completely paved or otherwise covered so soil erosion loss at that point would be considered negligible.

It was assumed that the on-site laydown area would be covered after grading with gravel or material on dunnage so soil losses after grading would be negligible

Soil losses during construction are estimated using ‘bare ground, smooth surface’ soil conditions; soil losses during grading are estimated using ‘bare-ground, rough surface’ soil conditions; and soil losses for fully implemented BMPs are estimated using ‘tall fescue, not harvested’ soil cover conditions. The “No Project” alternative soil losses are estimated for site only from current property conditions: wheat crop, heavy no till management, fall harvest in RUSLE2.

Table 8.11-3 summarizes the mitigated TSP predicted to be emitted from the site from grading and the wind erosion of exposed soil. Without mitigation, the maximum predicted erosion of material from the site is estimated at 11.643 tons over the course of the project construction cycle. This estimate is reduced to approximately 5.822 tons by implementing basic mitigation measures such as water application (see mitigation measures, below). These estimates are relatively conservative because these estimates make use of emission rates for a generalized soil rather than for specific soil properties.

TABLE 8.11-3
Total Suspended Particulate Emitted from Grading and Wind Erosion With and Without Mitigation

Emission Source	Duration (months)	Unmitigated TSP (tons) [a]	Mitigated TSP (tons)[b]
Grading Dust:			
Site Area (19.89 acres)	2	7.293	3.6465
Laydown Area (3 acres)	0.5	1.100	0.550
Linear Trench Areas (0.541 total acre)	0.5	0.1002	0.0501

TABLE 8.11-3
Total Suspended Particulate Emitted from Grading and Wind Erosion With and Without Mitigation

Emission Source	Duration (months)	Unmitigated TSP (tons) [a]	Mitigated TSP (tons)[b]
Wind-Blown Dust:			
Site Area (half of 19.89 acres or 9.945 acres)	10	3.15	1.575
Total		**11.643**	**5.822**

Notes:
[a] Emission Factor Source: URBEMIS2002 User's Guide (Jones and Stokes, 2003). The PM_{10} emission factor for grading dust is 0.11 tons/acre/month and the TSP emission factor for wind-blown dust is 0.38 tons/acre/year.

It is assumed that active site grading will last approximately two months for the project site and the laydown area. All linear segments (and transmission tower footings) will be completed within a two week period. It is assumed that the gas and brine pipeline trench width will be 5 ft. and that completed segments will be paved or otherwise covered after the 2-week period to prevent further erosion. It is assumed that the area disturbed for the construction of the electrical transmission line will be affected for a 2 week period.

The assumptions for wind erosion on bare soil surfaces are that erosion would occur on half of the project site (minus the laydown area) for the duration of plant construction (estimated at 10 months). It was further assumed that exposed soil conditions for the linear segments would last for 2 week duration times the number of segments in the linears (i.e., three 250-foot segments for the gas line and 19.8 200-foot segments for the brine line).

[b] According to the South Coast Air Quality Management District (SCAQMD) CEQA Handbook, Table 11-4 (1993), the range in reduction of PM_{10} with standard mitigation measures (water spraying, etc.) applied is 30 to 74 percent. This analysis assumes an average efficiency of 50 percent, applied to TSP.

8.11.2.5 Expansive Soils

None of the mapped soils that would be potentially affected by the proposed SVEP are known to contain expansive clays. Therefore, the project would not be subject to hazards posed by expansive soils. The geotechnical report prepared for the project (Appendix 10G) involves a detailed examination of the soil and geological conditions and will be the basis for project design.

8.11.2.6 Compaction During Construction and Operation

Construction of the proposed project would result in soil compaction during the construction of foundations and paved roadway and parking areas. Soil compaction would also result from vehicle traffic along temporary access roads and in equipment staging (laydown) areas. Soil compaction increases soil density by reducing soil pore space. This, in turn, reduces the ability of the soil to absorb precipitation and transmit gases for respiration of soil microfauna. Soil compaction can result in increased runoff, erosion, and sedimentation. The incorporation of BMPs during project construction will result in less-than-significant impacts from soil compaction during construction.

Prior to use as the construction laydown area, minimal grading is expected since the site is flat. After grading, runoff from the site and laydown area will either occur as overland flow or percolate to groundwater. However, the laydown area will likely be graveled (at lest on roadways) to provide all weather use and further minimize soil erosion potential. Heavy equipment stored onsite will be placed on dunnage to protect it from ground moisture. Once construction is completed, the gravel will either be removed from the site or incorporated into the site paving.

The SVEP site will be mostly covered or paved after construction, except for minor landscaped areas. The project linears will be constructed in previously developed areas (roadway or railroad rights-of-way) that will be repaved or otherwise protected after construction. Soils will be suitable prepared (loosened or amended) in any areas required to establish vegetation for visual screens or landscaping after project construction. For this reason, the overall anticipated effects of compaction during construction are considered to be less than significant.

Operation of the SVEP plant would not result in impacts to the soil from erosion or compaction. Routine vehicle traffic during plant operation will be limited to existing roads, all of which will be graveled or paved, and standard operational activities should not involve the disruption of soil. Therefore, impacts to soil from project operations would be less than significant.

8.11.2.7 Effects of Emissions on Soil-Vegetation Systems

There is a concern in some areas that emissions from a generating facility, principally nitrogen (NO_x) from the combustors or drift from the cooling towers, would have an adverse effect on soil-vegetation systems in the project vicinity. This is principally a concern where environments that are highly sensitive to nutrients or salts, such as serpentine habitats, are downwind of the project.

In this case, the dominant land use immediately around the project will be developed for urban uses (industrial, commercial, or residential). The local geologic maps do not indicate the presence of ultramafic (serpentine) bedrock in the project area. The addition of small amounts of nitrogen to the industrial and commercial areas would be insignificant because of the paucity of vegetation in these areas. Within the more vegetated residential or commercial agriculture areas, the addition of small amounts of nitrogen would be insignificant within the context of fertilizers, herbicides, and pesticides typically used by homeowners or farmers.

8.11.3 Cumulative Effects

As previously described, the project would relatively minor effects on agriculture because the area is already zoned for manufacturing uses and is part of a planned development area (Sun Valley- Menifee Community Plan Area. The site is currently mapped as a Farmland of Local Impotence. While the site (22.89 acres) would be permanently converted from agriculture to industrial use, this conversion will not affect any Prime Farmland or Farmland of Statewide Importance, or Unique Farmlands. The project’s effects on soil erosion, sedimentation, and compaction would be minor to negligible and insignificant, particularly with the application of BMPs. The site area is currently under commercial production of wheat which likely already results in some water and wind erosion so that construction of the SVEP is not likely to significantly add to soil loss and erosion. Therefore, the potential for cumulative impacts of the proposed SVEP combined with other project would be insignificant.

8.11.4 Mitigation Measures

BMPs will be used to minimize water and wind erosion at the site during construction. These measures typically include mulching, physical stabilization, dust suppression, berms, ditches, and sediment barriers. Water erosion will be mitigated through the use of sediment barriers and wind erosion potential will be reduced significantly by keeping soil moist or by covering soil piles with mulch or other wind protection barriers. These temporary measures would be removed from the site after the completion of construction and the site will paved or completely covered and therefore, soil erosion loss at that point should be negligible.

Erosion control measures would be required during construction to help maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation that destroys soil productivity and soil capacity.

8.11.4.1 Temporary Erosion Control Measures

Temporary erosion control measures would be implemented before construction begins, and would be evaluated and maintained during construction. These measures typically include revegetation, mulching, physical stabilization, dust suppression, berms, ditches, and sediment barriers. These measures would be removed from the site after the completion of construction.

Physical stabilization, such as temporary erosion control matting, may be required depending on the time of year revegetation is performed. If required, revegetation of non-landscaped areas disturbed by construction of the linear facilities would be accomplished using locally prevalent, fast-growing plant species compatible with adjacent existing plant species.

The project linear features (gas and brine lines) will be constructed within the rights-of-way associated with the BNSF railroad and McLaughlin Road and Antelope Road. Temporary erosion control might include compacting and resurfacing the currently unpaved McLaughlin Road or asphalt patching in Antelope Road until permanent paving can be completed. On non-paved areas in the railroad right-of-way disturbed by the pipeline construction, protection would be accomplished using either gravel cover or locally prevalent, fast-growing plant species compatible with adjacent existing plant species, depending on the requirements of BNSF.

During construction of the project and the related linear facilities, dust erosion control measures would be implemented to minimize the wind-blown loss of soil from the site. Water of a quality equal to or better than existing surface runoff would be sprayed on the soil in construction areas to control dust during revegetation.

Sediment barriers slow runoff and trap sediment. Sediment barriers include straw bales, sand bags, straw wattles, and silt levees. They are generally placed below disturbed areas, at the base of exposed slopes, and along streets and property lines below the disturbed area. Sediment barriers are often placed around sensitive areas; such as wetlands, creeks, or storm drains; to prevent contamination by sediment-laden water.

The site will be constructed on relatively level ground; therefore, it is not considered necessary to place barriers around the property boundary. However, some barriers would be placed in locations where offsite drainage could occur to prevent sediment from leaving the site. If used, sediment barriers would be properly installed (staked and keyed), then removed or used as mulch after construction. Runoff detention basins, drainage diversions, and other large-scale sediment traps are not considered necessary due to the level topography and surrounding paved areas. Any soil stockpiles, including sediment barriers around the base of the stockpiles, would be stabilized and covered. These methods can also be employed during trenching operations for the recycled water supply line.

Mitigation measures, such as watering exposed surfaces, are used to reduce PM_{10} emissions during construction activities. The PM_{10} reduction efficiencies are taken from the South Coast Air Quality Management District (SCAQMD) CEQA Handbook (1993) and were used to estimate the effectiveness of the mitigation measures. Table 8.11-4 summarizes the mitigation measures and PM_{10} reduction efficiencies.

8.11.4.2 Permanent Erosion Control Measures

Permanent erosion control measures on the site will include graveling, paving, and drainage systems.

Vegetation is the most efficient form of erosion control because it keeps the soil in place and maintains the landscape over the long-term. Vegetation reduces erosion by absorbing raindrop impact energy and holding soil in place with fibrous roots. It also reduces runoff volume by decreasing erosive velocities and increasing infiltration into the soil.

If the pipeline alignments follows along the edge of the roadways instead of within the roadway itself, disturbed areas would be revegetated with rapidly growing restoration groundcover or landscaping materials as soon as possible after construction, with vehicle traffic kept out of revegetated areas.

TABLE 8.11-4
Mitigation Measures for Fugitive Dust Emissions

Mitigation Measure	PM_{10} Emission Reduction Efficiency
Water active sites at least twice daily	34-68%
Enclose, cover, water twice daily, or apply non-toxic soil binders, according to manufacturer's specifications, to exposed piles (i.e., gravel, sand, dirt) with 5 percent or greater silt content	30-74%

Source: SCAQMD CEQA Handbook, Table 11-4 (1993)

Note: Given the range for the Emission Reduction Efficiency, a conservative reduction factor of 50% was assumed for the application of mitigation measures (i.e., Construction Best Management Practices).

8.11.5 Applicable Laws, Ordinances, Regulations, and Standards

Federal, state, county, and local LORS applicable to agriculture and soils are discussed below and summarized in Table 8.11-5.

8.11.5.1 Federal LORS

8.11.5.1.1 Federal Water Pollution Control Act of 1972 and the Clean Water Act of 1977

The Federal Water Pollution Control Act of 1972, commonly referred to as the Clean Water Act (CWA) following an amendment in 1977, establishes requirements for discharges of storm water or wastewater from any point source that would affect the beneficial uses of waters of the United States. The Clean Water Act effectively prohibits discharges of storm water from construction sites unless the discharge is in compliance with a National Pollution Discharge Elimination System (NPDES) permit. The State Water Resources Control Board (SWRCB) is the permitting authority in California and has adopted a statewide general permit for storm water discharges associated with construction activity

(General Construction Permit; SWRCB, 1999) that applies to projects resulting in one or more acres of soil disturbance. The proposed project would result in disturbance of more than one acre of soil. Therefore, the project will require the preparation of a storm water management plan. The requirements are described in greater detail in Section 8.15, Water Resources.

The CWA's primary effect on agriculture and soils within the project area consist of control of soil erosion and sedimentation during construction, including the preparation and execution of erosion and sedimentation control plans and measures for any soil disturbance during construction.

8.11.5.1.2 U.S. Department of Agriculture Engineering Standards

The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), *National Engineering Handbook*, 1983, Sections 2 and 3, provide standards for soil conservation during planning, design, and construction activities. The project would need to conform to these standards during grading and construction to limit soil erosion.

8.11.5.2 State LORS

8.11.5.2.1 California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1972 is the state equivalent of the federal CWA, and its effect on the SVEP would be similar. The California Water Code requires protection of water quality by appropriate design, sizing, and construction of erosion and sediment controls. The discharge of soil into surface waters resulting from land disturbance may require filing a report of waste discharge (see Water Code Section 13260a). The Regional Water Quality Control Board (RWQCB), which controls surface water discharges, may become involved indirectly if soil erosion threatens water quality.

TABLE 8.11-5
Laws, Ordinances, Regulations, and Standards for Agricultural and Soil Resources

Jurisdiction	LORS	Purpose	Regulating Agency	Applicability (AFC Section Explaining Conformance)
Federal	Federal Water Pollution Control Act of 1972: Clean Water Act of 1977 (including 1987 amendments)	Regulates storm water discharge from construction and industrial activities	RWQCB Santa Ana Region, Region 4 under State Water Resources Control Board. USEPA may retain jurisdiction at its discretion.	Section 8.11.2.4
	Natural Resources Conservation Service (1983), *National Engineering Handbook*, Sections 2 and 3	Standards for soil conservation	Natural Resources Conservation Commission	Section 8.11.2.4
State	Porter-Cologne Water Quality Control Act of 1972; Cal. Water Code 13260-13269: 23 CCR Chapter 9	Regulates storm water discharge	CEC and the Santa Ana Region, under State Water Resources Control Board	Section 8.11.2.4

TABLE 8.11-5
Laws, Ordinances, Regulations, and Standards for Agricultural and Soil Resources

Jurisdiction	LORS	Purpose	Regulating Agency	Applicability (AFC Section Explaining Conformance)
Local	Grading Permit	Grading and excavation on private lands	Riverside County Building and Safety Department	Sections 8.11.2.4 and 8.11.4.5.3
	Encroachment Permit	Permit for all work within public rights-of-way	Riverside County Transportation and Land Management Department	Sections 8.11.2.4 and 8.11.4.5.3

8.11.5.3 Local LORS

The Riverside County Building and Safety department is the lead agency for grading permits and for encroachment permits. For work in the Romoland Area, the Riverside County Murrieta office is the place where plans and applications should be submitted (Yamasaki; Deprato, personal communication, 2005). Project plans are reviewed within the Building and Safety Department for approval of the grading permit (Yonos; Chan personal communication, 2005). When the projects may affect public rights-of-way, the project plans are forwarded to the Transportation and Land Management Department for review and approval of the encroachment permit (Yonos, Fletcher personal communication, 2005).

8.11.6 Permits and Agency Contacts

Permits required for the project, the responsible agencies, and proposed schedule are shown in Table 8.11-6. A grading permit, will be obtained from the Riverside County Building and Safety Department before construction begins. Other required permits include an encroachment permit from the Riverside County Transportation and Land Management Agency. Federal/State permits include construction and industrial wastewater discharge Permits, as discussed in Section 8.15, Water Resources.

TABLE 8.11-6
Permits and Agency Contacts for SVEP Agriculture and Soils

Permit or Approval	Schedule	Agency Contact	Applicability
Riverside County Grading Plan Approval and Permit	1 month prior to construction	Anita Yamasaki, Administration Riverside County Building and Safety Department 39493 Los Alamos Road, Suite A Murrieta, CA 92563 951-600-6120	Grading for projects in unincorporated parts of Riverside County
Plan review and encroachment permit	1 month prior to construction	Eric Fletcher, Riverside County Transportation and Land Management Department 4080 Lemon Street, 9th Floor Riverside, CA 92501 951-955-6761	Grading or trenching in a public rights-of- way in unincorporated parts of Riverside County

TABLE 8.11-6
Permits and Agency Contacts for SVEP Agriculture and Soils

Construction Activity, Stormwater and NPDES Permit	Prior to construction	Michelle Beckwith Santa Ana Regional Water Quality Control Board 3737 Main Street Suite 500 Riverside, CA 92501-3339 951-320-6396	Regulation of stormwater discharge from site and linear facilities during construction

8.11.7 References

Bay Area Air Quality Management District (BAAQMD). 2005. http://www.baaqmd.gov/pmt/handbook/s12c03fr.htm.

California Department of Conservation (CDC). 2005. Farmland Mapping and Monitoring Program Statistics web page at http://www.consrv.ca.gov/dlrp/FMMP/fmmp_stats.htm.

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Yonos, Patty. 2005. Personal communication between CH2M HILL staff and Ms. Yonos, Receptionist, Building and Safety Department, Riverside County Office, Riverside, California. September 8, 2005.