

APPENDIX G

SOILS

Appendix G contains the following tables referenced in **Section 3.5**, Soils.

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Table G-1

Soil Map Units in Proposed Areas of Disturbance - SPPC Project Area - Proposed Action

| Map unit symbol | Map unit name | Landform | Parent Material | Surface Texture | Saline and/or Sodic? | Groundwater Depth | Whole Soil Erodibility Factor (Kw) | Wind Erodibility Group (WEG) |
|-----------------|--|-----------------|---|--|----------------------|---------------------------------------|------------------------------------|------------------------------|
| I02 | Appian, clay substratum complex, 0 to 2 percent slopes | Lake terraces | Mixed alluvium over lacustrine deposits | Fine sand over clay loam, or clay loam at surface | Saline | >80 inches | 0.24 | 1 |
| I19 | Bunejug sandy loam, slightly saline, 0 to 1 percent slopes | Flood plains | Lacustrine deposits | Sandy loam | Saline | 36 to 60 inches | 0.28 | 3 |
| I20 | Bunejug sandy loam, strongly saline, 0 to 1 percent slopes | Flood plains | Lacustrine deposits | Sandy loam | Saline | 36 to 60 inches | 0.28 | 3 |
| I21 | Bunejug-Erber complex, 0 to 1 percent slopes | Flood plains | Lacustrine deposits | Clay loam | Saline | 36 to 60 inches | 0.32 | 4L |
| I22 | Carcity clay, 0 to 1 percent slopes | Flood plains | Clayey alluvium over sandy alluvium | Clay | Slightly saline | 36 to 60 inches | 0.17 | 4 |
| I23 | Carcity clay, slightly saline, 0 to 1 percent slopes | Flood plains | Clayey alluvium over sandy alluvium | Clay | Slightly saline | 36 to 60 inches | 0.17 | 4 |
| I24 | Carcity clay, strongly saline, 0 to 1 percent slopes | Flood plains | Clayey alluvium over sandy alluvium | Clay | Saline | 36 to 60 inches | 0.17 | 4 |
| I25 | Carson clay, 0 to 1 percent slopes | Flood plains | Clayey alluvium | Clay | Saline-sodic | 36 to 60 inches | 0.24 | 4 |
| I26 | Carson clay loam, strongly saline, 0 to 1 percent slopes | Flood plains | Clayey alluvium | Clay loam | Saline-sodic | 36 to 60 inches | 0.32 | 4 |
| I29 | Carson-Stillwater complex, 0 to 2 percent slopes | Flood plains | Clayey alluvium from mixed rocks | Clay | Saline-sodic | 20 to 36 inches | 0.28 | 4 |
| I32 | Dia loam, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Loam | No. | 36 to 60 inches | 0.37 | 5 |
| I33 | Dia loam, strongly saline, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Loam | Saline-sodic | 36 to 60 inches | 0.37 | 5 |
| I35 | Dia loam, slightly saline, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Loam | Slightly saline | 36 to 60 inches | 0.37 | 5 |
| I37 | Dithod loam, slightly saline, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Loam | Slightly saline | 36 to 60 inches | 0.37 | 5 |
| I40 | East Fork clay loam, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Clay loam | No. | >80 inches | 0.28 | 6 |
| I42 | East Fork clay loam, strongly saline, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Clay loam | Saline-sodic | 36 to 60 inches | 0.28 | 6 |
| I44 | Erber clay, strongly saline, 0 to 1 percent slopes | Flood plains | Mixed alluvium | Clay | Saline-sodic | 36 to 60 inches | 0.17 | 4 |
| I47 | Erber sand, 0 to 1 percent slopes | Flood plains | Mixed alluvium | Sand | Saline | 36 to 60 inches | 0.15 | 2 |
| I49 | Fallon fine sandy loam, slightly saline, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Fine sandy loam | Slightly saline | 36 to 60 inches | 0.32 | 3 |
| I54 | Fernley sand, 0 to 1 percent slopes | Stream terraces | Mixed alluvium | Sand | No. | 36 to 60 inches | 0.15 | 1 |
| I86 | Pelic sand, clay substratum, 0 to 2 percent slopes | Flood plains | Mixed alluvium | Sand | Saline | Frequently at or above ground surface | 0.17 | 1 |
| I92 | Playas | Playas | -- | Silty clay. | Saline-sodic | Frequently at or above ground surface | 0.28 | 8 |
| I93 | Ragtown clay loam, slightly saline, 0 to 1 percent slopes | Lake plains | Lacustrine deposits | Clay loam | Slightly saline | 36 to 60 inches | 0.32 | 4L |
| 206 | Stillwater clay loam, slightly saline, 0 to 1 percent slopes | Flood plains | Clayey alluvium from mixed rocks | Clay loam | Slightly saline | 36 to 60 inches | 0.28 | 4L |
| 207 | Stillwater clay loam, strongly saline, 0 to 1 percent slopes | Flood plains | Clayey alluvium from mixed rocks | Clay loam | Saline-sodic | 36 to 60 inches | 0.28 | 4L |
| 208 | Stillwater clay loam, wet, 0 to 1 percent slopes | Flood plains | Clayey alluvium from mixed rocks | Clay loam | Saline-sodic | 18 to 36 inches | 0.28 | 4L |
| 215 | Swope clay loam, slightly saline, 0 to 1 percent slopes | Flood plains | Mixed alluvium | Clay loam | Slightly saline | 36 to 60 inches | 0.28 | 4L |
| 216 | Swope clay loam, strongly saline, 0 to 1 percent slopes | Flood plains | Mixed alluvium | Clay loam | Saline-sodic | 36 to 60 inches | 0.28 | 4L |
| 217 | Swope sandy loam, 0 to 1 percent slopes | Flood plains | Mixed alluvium | Sandy loam | Saline | 36 to 60 inches | 0.37 | 3 |
| 7017 | Biddleman-Mazuma-Weena association | Beach terraces | Mixed alluvium | Very cobbly fine sandy loam | Saline-sodic | >80 inches | 0.05 | 4 |
| 7026 | Isolde-Parran-Appian association | Dunes | Eolian deposits | Fine sand | No. | >80 inches | 0.17 | 1 |
| 7099 | Tuffman-Bluewing-Labou association | Beach terraces | Alluvium derived from tufa and/or alluvium derived from volcanic rock | Very gravelly sandy loam (10 to 20 inches to lithic bedrock) | No. | >80 inches | 0.1 | Not Rated |

| | | | | |
|--------------|-----|--------|------|-----------|
| Color Codes: | Low | Medium | High | Very High |
|--------------|-----|--------|------|-----------|

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Table G-2
Volume of Growth Medium - SPPC Project Area - Proposed
Action

| Project Component | Temporary Disturbance Area (acres) | Volume of Growth Medium in Temporary Disturbance Area (yd³)* |
|---|---|--|
| Proposed Bass Flat Switching Station | 5.75 | 4,630 |
| Proposed Pony Express Switching Station | 5.75 | 4,630 |
| Proposed Greenwave Substation | 11.5 | 9,277 |
| Proposed 230 kV Transmission Line | 789 | 636,460 |
| Proposed 60 kV Electric Folds | 0.6 | 484 |
| TOTAL: | 812.6 | 655,480 |

* Assumes a growth medium thickness of 6 inches.

Table G-3
Volume of Growth Medium - SPPC Project Area - Alternatives

| | Temporary Disturbance Area (acres) | Volume of Growth Medium in Temporary Disturbance Area (yd³)* |
|--------------------------------|---|--|
| Alternative 1 | 814.55 | 657,070 |
| Alternative 2 | 789.09 | 636,533 |
| Macari Fiber Optic Alternative | 345.56 | 278,752 |

* Assumes a growth medium thickness of 6 inches.

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Table G-4

Soil Map Units in Proposed Areas of Disturbance - Ormat Project Area

| Map unit symbol | Map unit name | Whole Soil Erodibility Factor (Kw) | Wind Erodibility Group (WEG) | Average Thickness of Surface Horizon in Map Unit (in.) | Surface Horizon Thickness for Each Component (in.) | Percentage of Map Unit in Each Component | Notes Regarding Quality of Surface Horizon | Is Shallow Bedrock or Shallow Groundwater Table Present in Component? |
|-----------------|----------------------------------|------------------------------------|------------------------------|--|--|--|---|---|
| I19 | Bunejug sandy loam | 0.28 | 3 | 2 | 2 | 85% | Sandy loam. Saline. | Yes. 36 to 60 inches to groundwater. |
| I21 | Bunejug-Erber complex | 0.32 | 4L | 3 | 2 | 45% | Sandy loam. Saline. | Yes. 36 to 60 inches to groundwater. |
| | | | | | 5 | 40% | Clay loam. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| I26 | Carson clay loam | 0.32 | 4 | 10 | 10 | 85% | Clay loam. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| I29 | Carson-Stillwater complex | 0.28 | 4 | 7 | 10 | 40% | Clay. Saline-sodic. | Yes. 20 to 36 inches to groundwater. |
| | | | | | 5 | 40% | Clay loam. Saline-sodic. | Yes. 18 to 36 inches to groundwater. |
| I43 | Erber clay, slightly saline | 0.17 | 4 | 5 | 5 | 85% | Clay. Slightly saline. | Yes. 36 to 60 inches to groundwater. |
| I44 | Erber clay, strongly saline | 0.17 | 4 | 5 | 5 | 85% | Clay. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| I45 | Erber loam | 0.37 | 4L | 5 | 5 | 85% | Loam. | Yes. 36 to 60 inches to groundwater. |
| I47 | Erber sand | 0.15 | I | 5 | 5 | 90% | Sand. Strongly saline. | Yes. 36 to 60 inches to groundwater. |
| I63 | Isolde fine sand | 0.17 | I | 6 | 6 | 85% | Fine sand. | No. |
| 208 | Stillwater clay loam | 0.28 | 4L | 5 | 5 | 90% | Clay loam. Saline-sodic. | Yes. 18 to 36 inches to groundwater. |
| 215 | Swope clay loam, strongly saline | 0.28 | 4L | 7 | 7 | 85% | Clay loam. Saline. | Yes. 36 to 60 inches to groundwater. |
| 240 | Parran-Sondoa association | 0.32 | 4 | 11 | 18 | 50% | Silty clay. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| | | | | | 4 | 35% | Silt loam. Saline-sodic. | No. |
| 7026 | Isolde-Parran-Appian association | 0.17 | I | 4 | 0 | 40% | Dune sand. | No. |
| | | | | | 18 | 15% | Silty clay. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| | | | | | 3 | 30% | Sandy loam. Saline-sodic. | No. |
| 7220 | Badland-Mazuma complex | 0.37 | 5 | 6 | 6 | 55% | Variable surface horizon underlain by clay. | No. |
| | | | | | 8 | 30% | Very cobbly fine sandy loam. Saline-sodic. | No. |

Average Growth Medium Thickness (in.): 6

| | | | | |
|--------------|-----|--------|------|-----------|
| Color Codes: | Low | Medium | High | Very High |
|--------------|-----|--------|------|-----------|

Notes:

Shallow groundwater means the water table is encountered less than 60 inches from ground surface.

Shallow bedrock means rock or paralithic material is encountered less than 80 inches from ground surface.

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Table G-5
Volume of Growth Medium - Ormat Project Area - Proposed Action

| Project Component | Temporary Disturbance Area (acres) | Volume of Growth Medium in Temporary Disturbance Area (yd³)* |
|-------------------------------------|--|--|
| Carson Lake Binary Power Plant Site | 30 | 24,200 |
| Carson Lake Power Plant Substation | Within the footprint of the Power Plant site. | --- |
| Macari Switching Station | Within the footprint of the Power Plant site. | --- |
| Interconnect Transmission Line | Within the footprint of the Power Plant site. | --- |
| Pipelines | 236.36 | 190,664 |
| Well Pads | 54.6 | 44,044 |
| Access Roads | Included in the pipeline corridor area of disturbance. | --- |
| TOTAL: | 320.96 | 258,908 |

* Assumes a growth medium thickness of 6 inches.

--- = Not Applicable.

Table G-6
Volume of Growth Medium - Ormat Project Area - Alternatives

| | Temporary Disturbance Area (acres) | Volume of Growth Medium in Temporary Disturbance Area (yd³)* |
|---------------|---|--|
| Alternative I | 317.84 | 256,391 |

* Assumes a growth medium thickness of 6 inches.

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Table G-7

Soil Map Units in Proposed Areas of Disturbance -Vulcan Project Area - Proposed Action

| Map unit symbol | Map unit name | Whole Soil Erodibility Factor (Kw) | Wind Erodibility Group (WEG) | Average Thickness of Surface Horizon in Map Unit (in.) | Surface Horizon Thickness for Each Component (in.) | Percentage of Map Unit in Each Component | Notes Regarding Quality of Surface Horizon | Is Shallow Bedrock or Shallow Groundwater Table Present in Component? |
|-----------------|-------------------------------------|------------------------------------|------------------------------|--|--|--|--|---|
| 192 | Playas | 0.28 | 8 | 6 | 6 | 100% | Silty clay. Saline-sodic. Frequent ponding of water. | Yes. Water table frequently at ground surface or above. |
| 240 | Parran-Sondoa association | 0.32 | 4 | 11 | 18 | 50% | Silty clay. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| | | | | | 4 | 35% | Silt loam. Saline-sodic. | No. |
| 7017 | Biddleman-Mazuma-Weena association | 0.05 | 4 | 4 | 3 | 50% | Very cobbly fine sandy loam. Saline-sodic. | No. |
| | | | | | 8 | 25% | Fine sandy loam. Saline-sodic. | No. |
| | | | | | 2 | 10% | Loam. | Yes. 4 to 14 inches to paralithic bedrock. |
| 7022 | Hawsley-Isolde association | 0.1 | 1 | 7 | 8 | 65% | Sand sheets. | No. |
| | | | | | 6 | 30% | Dune sand. | No. |
| 7023 | Bango-Biddleman-Mazuma association | 0.15 | 3 | 5 | 4 | 40% | Sandy loam. Sodic. | No. |
| | | | | | 3 | 30% | Very cobbly fine sandy loam. Sodic. | No. |
| | | | | | 8 | 20% | Fine sandy loam. Saline-sodic. | No. |
| 7024 | Turupah-Parran association | 0.28 | 6 | 7 | 2 | 55% | Clay loam. Saline. | Yes. 18 to 30 inches to groundwater. |
| | | | | | 18 | 30% | Silty clay. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| 7026 | Isolde-Parran-Appian association | 0.17 | 1 | 4 | 0 | 40% | Dune sand. | No. |
| | | | | | 18 | 15% | Silty clay. Saline-sodic. | Yes. 36 to 60 inches to groundwater. |
| | | | | | 3 | 30% | Sandy loam. Saline-sodic. | No. |
| 7099 | Tuffman-Bluewing-Labou association | 0.1 | Not Rated | 5 | 0 | 35% | Very gravelly sandy loam at surface. | Yes. 10 to 20 inches to lithic bedrock. |
| | | | | | 1 | 30% | Very gravelly loamy sand. | No. |
| | | | | | 20 | 20% | Gravelly loamy fine sand. Saline-sodic. | Yes. 8 to 14 inches to lithic bedrock. |
| 7220 | Badland-Mazuma complex | 0.37 | 5 | 6 | 6 | 55% | Variable surface horizon underlain by clay. | No. |
| | | | | | 8 | 30% | Very cobbly fine sandy loam. Saline-sodic. | No. |
| 7221 | Biddleman-Mazuma association, sodic | 0.05 | 6 | 4 | 3 | 55% | Very cobbly fine sandy loam. Saline-sodic. | No. |
| | | | | | 8 | 30% | Silt loam. Saline-sodic. | No. |

Average Growth Medium Thickness (in.): 5

| | | | | |
|--------------|-----|--------|------|-----------|
| Color Codes: | Low | Medium | High | Very High |
|--------------|-----|--------|------|-----------|

Notes:

Shallow groundwater means the water table is encountered less than 60 inches from ground surface.
 Shallow bedrock means rock or paralithic material is encountered less than 80 inches from ground surface.

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Table G-8
Volume of Growth Medium - Vulcan Project Area - Proposed Action

| Project Component | Temporary Disturbance Area (acres) | Volume of Growth Medium in Temporary Disturbance Area (yd³)* |
|------------------------------------|--|--|
| Proposed Power Plants | 94 | 63,189 |
| Proposed Power Plant Substations | Within the footprint of the Power Plant site. | --- |
| Proposed Bunejug Switching Station | 5.75 | 3,865 |
| Interconnect Transmission Lines | 287 | 192,928 |
| Pipelines | 698 | 469,211 |
| Well Pads | 109 | 73,272 |
| Geothermal Wells | Included in well pad disturbance footprint. | --- |
| Water Wells | 60 | 40,333 |
| Well Pad Access Roads | Included in the pipeline corridor area of disturbance. | --- |
| TOTAL: | 1253.75 | 842,799 |

* Assumes a growth medium thickness of 6 inches.

--- = Not Applicable.

Table G-9
Volume of Growth Medium - Vulcan Project Area - Alternatives

| | Temporary Disturbance Area (acres) | Volume of Growth Medium in Temporary Disturbance Area (yd³)* |
|---------------|---|--|
| Alternative I | 1426.75 | 959,093 |

* Assumes a growth medium thickness of 6 inches.

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