4.12.2.5 Impacts from Alternative 2—New Transmission O'Banion Substation to Elverta Substation and Realignments

The socioeconomic impacts of Alternative 2 would be similar to those summarized for the Proposed Action, although unlike the Proposed Action and Alternative 1, none of these impacts would occur south of Elverta Substation. None of the socioeconomic impacts associated with Alternative 2 would be significant. The amount of prime farmland permanently affected by new transmission structures under this alternative is the same as with the Proposed Action (approximately 6.7 acres). Like the Proposed Action, this alternative includes the 1.7 miles of new ROW in Segment G that is not adjacent and parallel to existing ROW. The potential for adverse impacts on property values is greater in this segment than in others, but the magnitude of the impact still is not expected to be significant for the reasons described in Section 4.12.2.3.

4.12.2.6 Impacts from Alternative 3—New Transmission Elk Grove Substation to Tracy Substation

Alternative 3 differs from the Proposed Action and the other action alternatives in that no activities would occur north of Elk Grove Substation. Otherwise, the types of impacts described for the Proposed Action also apply to this alternative. Unlike the Proposed Action and Alternative 2, this alternative does not include any new ROW that would not be adjacent and parallel to existing transmission ROWs. Therefore, the potential for adverse impacts on property values is lower with this alternative.

This alternative includes the most amount of acreage that could be removed from agricultural production on a long-term basis. About 22.5 acres of land would be needed for transmission structures (see Table 3-2) and most of this land would likely be prime farmland; however, for the reasons described in Section 4.12.2.3, related impacts to farming operations and practices are not expected to be significant.

4.12.2.7 Impacts from the No Action Alternative

Under the No Action Alternative, the existing single- and double-circuit 230-kV transmission system between O'Banion Substation and Tracy Substation would be operated and maintained as it is presently. The line would periodically undergo routine maintenance or emergency repairs along the existing ROW and access roads. The No Action Alternative would therefore not cause any of the new construction- and operation-related impacts discussed in the sections above. As periodic maintenance and operations activities increase, local spending on food, lodging, and minor field equipment would also increase, resulting in short-term beneficial impacts.

The risk of power outages due to the existing problem in the study area could increase under the No Action Alternative, and outages could become more frequent and severe. Any outages would result in increasing widespread, negative socioeconomic impacts to local businesses, their employees, and perhaps the fiscal resources and related public services of affected agencies.

4.13 SOILS

4.13.1 Affected Environment

This section addresses soils within the study area and discusses constraints posed during construction, operation, and maintenance of the transmission line. The lower Sacramento Valley has many landforms. Nearly level floodplains exist along the Sacramento, American, and Cosumnes rivers and along the smaller creeks. Basin and terrace remnant landforms are in the American Basin, north of the American River and east of the Sacramento River. The most extensive area is the main valley floor, which extends from the northern Sacramento county line to the southern county line and is the primary area of the Draft EIS investigation. The main valley floor consists of nearly level, low terraces, basin rims, and local basins with slopes of less than one percent. The basin rims and local basins extend along the western edge of the main valley floor from south of Sacramento to the Cosumnes River (Soil Survey of Sacramento County–Soil Conservation Service).

Activities affecting soils would fall under the Federal EPA regulations (40 CFR Part 122) requiring the permitting of storm water pollution under the National Pollutant Discharge Elimination System (NPDES). The California Regional Water Quality Control Board has jurisdiction over the enforcement of the *Storm Water Program* in California. This agency regulates construction activities to control surface water runoff, transport of contaminants, and increased sedimentation in waterways.

4.13.1.1 Resource Study Area

The study area for the Proposed Action and alternatives extends from Sutter County to Sacramento County, Placer County, San Joaquin County, Contra Costa County and

Alameda County. Tables 4.13-1 and 4.13-2 describe the soils that exist along the Proposed Action and alternatives which cross Sacramento and San Joaquin counties. Soil reports for Sutter and Contra Costa counties are being revised, and new reports would be available soon. Soils data from Sacramento and San Joaquin counties were used for this analysis.

4.13.1.2 Issues of Environmental Concern

Issues of environmental concern for soils include erosion, drainage, high water erodibility, steep slopes, and compaction from construction disturbance, and potential impacts to existing access roads and new roads. These issues are somewhat heightened due to the large number of ditches, canals, rivers, and creeks, and the proximity of the water table to the land surface. Construction and maintenance could cause sedimentation, loss of farmland, and revegetation. Construction of structures, footings, and access roads in areas with steep or unstable slopes could create hazardous conditions that may pose a threat of disruption to structures. Increased soil compaction and rutting in the transmission line corridor could occur during construction, operation, and maintenance of the transmission lines.

4.13.1.3 Characterization

The study area is in the central portion of California's Central Valley. To the north is the Sacramento Valley, and to the south, the San Joaquin Valley. The primary land use types are irrigated cropland, livestock grazing, and urban development.

Table 4.13-1. Soils in Sacramento County

Soil	Description	Permeability (In/hr)	Erosion Factor K[1] Scale (good .02 - .69 poor)
Gazwell-Rindge	Very poorly drained, highly organic mineral soils and organic soils that have a high water table throughout the year and are protected by levees.	2.0 - 20.0	0.02 - 0.28
Sailboat-Scribner-Cosumnes	Somewhat poorly drained and poorly drained soils that have a seasonal high water table and are protected by levees.	0.06 - 2.0	0.24 - 0.43
Egbert-Valpac	Somewhat poorly drained and poorly drained soils that have a high water table throughout the year or during part of the year and are protected by levees.	0.06 - 2.0	0.24 - 0.37
Columbia-Cosumnes	Somewhat poorly drained soils that are subject to flooding or are protected by levees.	0.06 - 6.0	0.28 - 0.43
Rossmor-Vina	Well drained soils that are protected by levees or are subject to flooding.	0.6 - 6.0	0.20 - 0.32
Urban Land-Americanos-Natomas	Urban land and well drained soils.	0.6 - 2.0	0.10 - 0.43
Clear Lake	Somewhat poorly drained soils that have a seasonal high water table, are protected by levees, and are very deep or deep over a cemented hardpan.	0.06 - 0.20	0.24 - 0.32
Dierssen	Somewhat poorly drained soils that have a perched water table, are protected from levees, and are moderately deep or deep over a cemented hardpan.	0.06 - 0.60	0.24 - 0.32
San Joaquin	Moderately well drained soils that are moderately deep over a cemented hardpan.	0.06 - 2.0	0.24 - 0.37

Source: Original 2002

1. Erosion Factor K -- The erosion factor K indicates the susceptibility of a soil to sheet and rill erosion. The estimates are based on percentage of silt, very fine sand, sand, and organic matter (as much as 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion.

Table 4.13-2. Soils in San Joaquin County

Soil	Description	Permeability (In/hr)	Erosion Factor K[1] Scale (good .02 - 0.69 poor)
Rindge-Kingile-Ryde	Very poorly drained, organic soils and very poorly drained, highly organic, moderately fine textured, mineral soils, all of which are very deep and have been partially drained; on deltas and flood plains.	0.06 - 20.0	0.02 - 0.28
Peltier-Egbert	Poorly drained, highly organic, moderately fine textured soils that are very deep and have been partially drained; on deltas and flood plains.	0.06 - 20.0	0.20 - 0.28
Merritt-Grangeville-Columbia	Poorly drained and somewhat poorly drained, moderately coarse textured and moderately fine textured soils that are very deep and have been partially drained or drained; on flood plains.	0.06 - 6.00	0.28 - 0.43
Willows-Pescadero	Poorly drained, moderately fine textured and fine textured, saline-sodic soils that are very deep and have been partially drained; in basins.	<0.06 - 0.20	0.28 - 0.32
Jacktone-Hollenbeck-Stockton	Somewhat poorly drained and moderately well drained, fine textured soils that are moderately deep and deep to a cemented hardpan and that have been drained in some areas; on basin rims and in basins.	0.06 - 6.00	0.24 - 0.37
Guard-Devries-Rioblancho	Poorly drained and somewhat poorly drained, moderately coarse textured and moderately fine textured soils that are moderately deep to a cemented hardpan or are very deep and that have been drained in most areas; on basin rims.	0.06 - 6.00	0.24 - 0.37
Capay	Moderately well drained, fine textured soils that are very deep and have been subject to artificial wetness; mainly in interfan basins.	0.06 - 0.20	0.24 - 0.37
Capay-Stomar-Zacharias	Moderately well drained and well drained, moderately fine textured, gravelly moderately fine textured, and fine textured soils that are very deep; in interfan basins and on alluvial fans and stream terraces.	0.06 - 2.00	0.20 - 0.37
Tokay-Acampo	Moderately well drained and well drained, moderately coarse textured soils that are deep to a cemented hardpan or are very deep; on low fan terraces.	2.00 - 6.00	0.32 - 0.37
San Joaquin-Bruella	Moderately well drained and well drained, moderately coarse textured and medium textured soils that are moderately deep to a cemented hardpan or are very deep; on low terraces	<0.06 - 6.00	0.24 - 0.37

Source: Original 2002

1. Erosion Factor K -- The erosion factor K indicates the susceptibility of a soil to sheet and rill erosion.
The estimates are based on percentage of silt, very fine sand, sand, and organic matter (as much as 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion

Soil information was obtained from the Sacramento and San Joaquin Soil Surveys prepared by the Soil Conservation Service, U. S. Department of Agriculture (USDA 1992 and 1993). Reference numbers in the tables correlate soil types with the general soil map of each county. Soil information generally includes data describing the engineering and physical/chemical properties of each individual soil type. Soil permeability and the erosion factors are most pertinent to this investigation.

The soil types and soil assemblages in the study area fall into three distinct sections: 1) O'Banion Substation to Hurley Substation; 2) Hurley Substation to the San Joaquin County line at Segment E at MP 11.0; and 3) San Joaquin County line to the Tracy Substation.

Soils in the O'Banion Substation to Hurley Substation section include the "Sailboat-Scribner-Cosumnes" and "Clear Lake" series. These soil types have low permeability and a moderate erosion factor. For the Hurley Substation to San Joaquin County line section, the soil is mostly the San Joaquin type, which also has a low permeability and moderate erosion factor. For the San Joaquin County line to Tracy Substation section, the major soil types include the "Peltier-Egbert," "Merritt-Grangeville-Columbia," "Jacktone-Hollenbeck- Stockton," "Tokay-Acampo," and the "San Joaquin-Bruella" soils. These soils have relatively high permeability values and moderate erosion factors.

Additional soil data is available from the soil surveys (USDA 1992 and 1993). This includes information pertaining to the soil depth, texture, plasticity, clay

content, bulk density, water capacity, salinity, shrink-swell potential, and wind erodibility. This information is used to classify the type of soil.

4.13.2 Environmental Consequences

Soils could be impacted by construction and maintenance of the transmission line and associated access roads. Potential impacts would be limited to the ROW for the transmission line, pulling and tensioning sites, any construction office or laydown areas, and access roads. The impacts of the Proposed Action and alternatives would be similar in nature, although the specific locations and total acreage impacted would vary depending on the alternative selected. Alternatives incorporating construction of new transmission lines would have a higher potential for impact than those involving reconductoring. Impacts from access road construction and/or use would be similar for all alternatives, but alternatives requiring more access roads that are new would have a higher potential for impact. Use of existing access roads would be maximized to the extent possible to minimize disturbance and soil compaction.

4.13.2.1 Standards of Significance

The Proposed Action and alternatives could have a significant effect on soils if they would

- Increase erosion along the transmission line ROW,
- Affect downstream resources by erosion and sedimentation, or
- Increase soil compaction so current use or revegetative growth would be significantly altered.

4.13.2.2 Environmental Protection Measures

EPMs for soil resources from Table 3-4 include the following:

- On completing the work, all work areas except access trails would be scarified or left in a condition that would facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion.
- In construction areas (for example, material storage yards, structure sites, and spur roads from existing access roads) where ground disturbance is substantial or where recontouring is required, surface restoration would occur.
- Access roads would be built at right angles to the streams and washes to the extent practicable. Culverts would be installed where needed. All construction activities would be conducted to minimize disturbance to vegetation and drainage channels.
- Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff or can encroach, in any way, upon the watercourse.
- Nonbiodegradable debris would not be deposited in the ROW. Slash and other biodegradable debris would be left in place or disposed.
- All soil excavated for structure foundations would be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Excavated soil excess to these needs would be removed from the site and disposed of appropriately.
- A California registered Professional Geotechnical Engineer would evaluate the potential for geotechnical hazards and unstable slopes on the centerline route and areas of new road construction or widening on slopes with over 15 percent gradient.
- All construction must be in conformance with Western's *Erosion Control and Revegetation Plan*.
- If wet areas cannot be avoided, Western would use wide-track and/or balloon tire vehicles and equipment and or timber mats.
- All construction vehicle movement outside the ROW normally would be restricted to predesignated access, contractor-acquired access, or public roads.
- When feasible, all construction activities would be rerouted around wet areas while ensuring that the route does not cross sensitive resource areas.
- Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses would be conducted to prevent muddy water and eroded materials from entering the streams or watercourses with construction of interceptors.

4.13.2.3 Impacts from Proposed Action—New Transmission O'Banion Substation to Elverta Substation; Realignments; Reconductoring Elverta Substation to Tracy Substation

Soil impacts are proportional to the area of surface disturbance (from construction of structures and access roads) for each alternative. The Proposed Action would involve approximately 330 new structures, more than for the alternatives. The Proposed Action would result in 66 acres of long-term disturbance.

New structure construction would require local grading that would alter the topography, particularly on steep

slopes. Grading could create unstable cut-and-fill slopes, especially on steep slopes and areas with weak rock materials. Most grading would be required for construction of suitable footings for the transmission structures. Some grading would be needed for the temporary spur roads, widening existing access roads, and construction pads for structure sites on steep slopes to provide safe, level surfaces for excavation equipment, cranes, bucket trucks, and structure assembly. Hazards from unstable slopes and seismic hazards could affect roads. Debris clearing and road repair would be required as a normal response to such an event.

The Proposed Action would not result in significant impacts because EPMs described above would be enforced during construction and maintenance of the transmission line. Western would follow its erosion control and revegetation procedures to minimize potential erosion. EPMs that control erosion would also minimize erosion and sedimentation impacts to downstream resources. EPMs would also minimize impacts on soil compaction that could potentially affect the time required for successful revegetative growth or current use such as agricultural.

Even with the application of EPMs, soil erosion on construction sites cannot be eliminated, but it can be reduced to rates similar to pasture lands (or about 1.5 tons per acre per year). Therefore, soil impacts are considered insignificant.

4.13.2.4 Impacts from Alternative 1—Reconductoring O'Banion Substation to Tracy Substation

Alternative 1 would reconductor 99.2 miles on existing ROW from O'Banion Substation to Tracy Substation (Segments A, B, C, D and E). This reconductor alternative would require 199 new structures. Alternative 1 would involve fewer new structures than the Proposed Action and would have less environmental impact. Alternative 1 would also not impact any additional acreage. It would be constructed entirely on existing ROW using existing access roads.

4.13.2.5 Impacts from Alternative 2—New Transmission O'Banion Substation to Elverta Substation and Realignments

Alternative 2 would be identical to the Proposed Action from O'Banion Substation to Elverta Substation, but would not entail any work south of Elverta. This alternative would consist of 27.4 miles of new construction on new ROW (Segments A_1 and G) and 4.2 miles of new construction on existing ROW (Segment B). 3.6 miles of existing line with encroachments would be abandoned (Segments F and H). Alternative 2 would require 167 new structures, while 17 existing structures would be abandoned in place. Alternative 2 would temporarily disturb 515 acres, and permanently impact 66 acres.

Alternative 2 would have the same impact on soil as the Proposed Action north of Elverta Substation.

4.13.2.6 Impacts from Alternative 3—New Transmission Elk Grove Substation to Tracy Substation

Alternative 3 consists of 46.2 miles of new construction on new ROW between Elk Grove Substation and Tracy Substation (Segment E_1). This alternative would require 225 new structures and 47 miles of new access roads. Alternative 3 would disturb 855 acres, with 108 acres disturbed for the long term.

Although the impacts of Alternative 3 would be confined to between Elk Grove Substation and Tracy Substation, it would be new construction on new ROW. Therefore, Alternative 3 impacts more acreage and requires more miles of access roads than any other alternative. The potential impacts to soil would be the highest for this alternative. Even so, no significant impacts have been identified and impacts to soil are considered insignificant.

4.13.2.7 Impacts from the No Action Alternative

Under the No Action Alternative, the existing 230-kV transmission system between O'Banion Substation and Tracy Substation would continue to be operated and maintained. The line would be periodically accessed for routine maintenance or emergency repairs along the existing ROW and access roads. Vehicles could cause rutting on dirt access roads in wet conditions. Otherwise, this action would have negligible impact to soil.

4.14 VISUAL RESOURCES

4.14.1 Affected Environment

The objectives of the visual resource analysis were to identify and describe visual resources, including visual quality and sensitivity, that could be affected by construction, operation, and maintenance of the Proposed Action or alternatives. Visual quality is the degree of contrast and variety within a landscape. Pleasant landscapes generally have high visual quality. Landscapes of high visual quality may contain distinctive landforms, vegetation patterns, and/or water forms. Visual sensitivity is the concern by viewers toward change to visual quality. Visual sensitivity is higher in natural or unmodified landscapes. The purpose of the analysis was to identify potential obstructions or modifications of present views in the landscape.