

Alternatives

9.1 Introduction

The California Environmental Quality Act (CEQA) requires consideration of “a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives” [14 CCR. 15126.6(a)]. Thus, the focus of an alternatives analysis should be on alternatives that “could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects” [14 CCR 15126.6(c)]. The CEQA Guidelines further provide that “[a]mong the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts” (*Id.*).

A range of reasonable alternatives that could feasibly attain most of the basic objectives of the proposed Walnut Energy Center (WEC) are identified and evaluated in this section including the “No Project” alternative (that is, not developing a new power generation facility), alternative site locations for constructing and operating WEC, alternatives to the linear facilities (electric, natural gas, and water), alternative combined-cycle configurations to the combustion turbine and steam turbine arrangement currently proposed for WEC, and alternative power generation technologies. This section also describes the site selection criteria used in determining the proposed location of WEC. Electric transmission connection alternatives are addressed in Section 5.0.

9.2 No Project Alternative

9.2.1 Description

If the No Project alternative is selected, Turlock Irrigation District (TID) would not receive authorization to construct and operate a new power generation facility. As a result, the proposed facility site would not be developed and would potentially be used for some other development, consistent with the zoning. Energy that would have been produced by the proposed facility would need to be generated by another source. Common available sources include older power generation facilities that operate less efficiently and release larger quantities of air pollutants than the proposed facility.

The purpose of a power plant, such as WEC, is to generate and provide electric power to TID’s customers. To generate and sell power in today’s market, generating facilities need to be operated in a cost-effective manner and produce power at a cost that is acceptable to end users. With WEC, TID will incur financial risks of project success or failure.

The No Project alternative is not considered feasible because it does not meet TID's business plans for the development of new power generation facilities to boost local production and reliability, reduce dependence on imported power, or the general objective of replacing existing, less efficient generation facilities.

9.2.2 Potential Environmental Impacts

WEC will produce electricity for TID's service area while consuming less fuel and discharging fewer air emissions for each energy unit generated when compared to other existing, older fossil fuel generation facilities. This is a beneficial environmental impact.

Potential environmental impacts from the No Project alternative would result in greater fuel consumption and air pollution because new power plants, including WEC, would not be brought into operation to displace production from older, less efficient, higher air emissions, utility-owned plants. An analysis of the environmental impacts from the No Project alternative is provided below in Subsection 9.3.2.3.

9.3 Proposed and Alternative Sites

Since 1923, TID has provided safe, low-cost, and reliable electricity to a growing customer base that today numbers more than 76,000 home, farm, business, industrial, and municipal accounts.

TID's service area covers 425 square miles in Stanislaus and Merced counties, providing electricity to Ceres, Turlock, Keyes, Denair, Hughson, Hickman, La Grange, South Modesto, Ballico, Delhi, and Hilmar.

TID desires to reduce its dependence on energy purchases from outside the region, and increase reliability by providing local generation. TID currently operates two natural gas-fired generation facilities at its Almond facility (50 MW) and Walnut station (50 MW, peaking plant), a hydroelectric facility at Don Pedro dam and powerhouse (135 MW), and four small hydroelectric plants on its canal facilities (15 MW). The remaining needs of the district are purchased externally in long- and short-term contracts. Additional capacity is needed because of the increasing demand for electricity in the rapidly urbanizing area served by TID. Location of a plant as close as possible to suitable transmission facilities and within or near the demand center reduces the loss of power incurred in transmission as well as the cost of transmission.

The location of the proposed WEC provides access to the electrical markets throughout TID and the western grid. Each considered location has the advantage of using either recycled wastewater or irrigation drain water for cooling.

9.3.1 The Proposed Site

The Walnut Energy Center is located at the western edge of Turlock, approximately 2.7 miles west of Highway 99, just south of West Main Avenue (J17). This site consists of approximately 18 acres within a 69-acre parcel of industrial land with industrial development on the north and east sides. Agricultural uses are located south of the site and agricultural, residential, and utility uses are to the west. The site is located in the City of

Turlock and is zoned for industrial use. A power plant would be consistent with the zoning.

The site is adjacent to a 115-kV transmission line that connects to the existing Walnut peaking plant and substation. The existing switchyard has sufficient transmission capacity to serve a new 250-MW plant. Natural gas would be supplied to the new power plant from the PG&E main on Bradbury Road. Additional compression would be necessary to serve the new plant. Water supply for the cooling towers would be obtained from the Turlock Wastewater Treatment Plant (WWTP), located about 3 miles east. Effluent from the plant would be treated using a zero-liquid-discharge (ZLD) system.

The plant would be located in an industrial area of Turlock for which a specific plan is presently under preparation. The facility would be located in an industrial area that has several tall industrial structures within the context of mixed residential and industrial uses. The nearest residential uses to the project, which are potentially sensitive noise receptors, are located less than 0.1 mile south of the project. There are up to eight other residential receptors within 0.5 mile.

The site is being acquired by TID and was selected to meet most of the basic objective of the project, including, but not limited to the following:

- To safely construct and operate a nominal 250-MW, natural-gas-fired, combined-cycle generating facility within the TID service territory.
- To provide additional generation to meet TID's growing load and meet the demands of customers within 200+ square miles of PG&E's service territory. This service territory acquisition is presently before the California Public Utility Commission (CPUC).
- To provide additional generation within TID to replace the expiration of significant long-term power purchase agreements.
- To increase the possibility of TID becoming a control area, or joining a different control area, both of which would require TID to have additional generation.
- To assist the State of California (State) in developing increased local generation projects, thus reducing dependence on imported power.
- To contribute to the diversification of the County's economic base by providing increased employment opportunities and a reliable power supply.

9.3.2 Alternative Sites

TID also identified and assessed the suitability of several other properties for WEC. As part of this assessment, properties that were less than 8 acres in size were eliminated from further consideration because of their inability to support the project's space requirements.

Five potential sites that have sufficient land available were identified. Figure 9.1-1 shows the location of the alternative sites that were potentially suitable for construction of WEC.

9.3.2.1 Alternative Site Selection Criteria

The criteria developed to evaluate the alternative sites' suitability for WEC correspond with the reasons the proposed site was selected. These criteria include the following:

- Ability to gain site control
- Availability of sufficient land area
- Proximity to existing transmission and distribution lines and close to an existing substation
- Proximity to recycled water supply
- Proximity to PG&E main gas pipeline
- Adjacent to a rail line to facilitate rail delivery of heavy equipment
- Consistency with the City and County General Plans and zoning ordinances, height restrictions, and existing land uses
- The ability, with implementation of reasonable mitigation measures, to have a less-than-significant impact on the environment
- Location in area appropriate for industrial development
- Location within TID's service territory

The alternative site locations, shown in Figure 9.1-1 (figures are located at the end of this section), were evaluated using the above criteria. The site characteristics are summarized in Table 9.3-1 and described in the following subsections.

TABLE 9.3-1
Comparison Using Site Selection Criteria

| Alternative Site | Site Size (acres) | Land Use Compatibility | Available Linear Facilities ^a | Environmental Sensitivity | Distance to Residential |
|--------------------------------------|-------------------|---|---|---------------------------|--|
| Walnut Energy Center (proposed site) | 18 | zoned: Industrial; currently farmed | W: 1.6 miles G: 3.6 miles T: 115 kV-0.4 mi; 69 kV-650 ft | Low | 3 homes 375 to 2,000 ft. |
| Washington Road | 40 | Zoned: AG-2-40; currently farmed | W: 2 miles G: 3.2 miles T: 115 kV-0.1 mi; 69 kV-0.1 mi | Low | 3 homes at 775 feet; 6 within 2,000 feet |
| Almond Power Plant | 10 | Zoned: Community Facility; currently farmed | W: 0.5 mile G: < 0.1 mile T: 5 miles | Low | 1 home 2,000 ft.; Subdivision at 3,700 ft |
| Chemurgic | 20 | Zoned: AG-2-40; Industrial uses | W: 0.5 mile G: 0.5 mile T: 0.1 mile | Low | 2 homes 1,000 ft. |
| Modesto WWTP | 8 | Zoned: AG-2-40; currently fallow (i.e., | W: 1 mile G: 6 miles | High | 2 homes 1,000 ft. |

road material storage)

T: 5 miles

Notes:

^a W: = recycled water; G: = natural gas; T= transmission.

9.3.2.2 Alternative Site Description

In this section, each of the alternative sites is described and analyzed based on its feasibility for use. Environmental considerations are presented in Subsection 9.3.2.3.

9.3.2.2.1 Washington Road Site

The Washington Road site would be situated on a 40-acre site (one 20-acre parcel and two 10-acre parcels that would be combined) located south of the Tidewater Southern Railroad (TSRR) tracks and the existing Walnut peaking plant on the west site of Washington Road, just south of West Main Avenue and due west of the proposed site.

Agricultural uses are located south, east, and west of the site, with utility uses to the north. The site is located in Stanislaus County and is zoned for agricultural use. A power plant would be consistent with the zoning.

The site is adjacent to a major 115-kV transmission line that connects to the existing Walnut peaking plant and substation. The existing switchyard has sufficient transmission capacity to serve a new 250-MW plant. Natural gas would be supplied to the new power plant from the PG&E main on Bradbury Road. Additional compression would be necessary to serve the new plant. Water supply for the cooling towers would be obtained from the Turlock WWTP, located about 2 miles east. Effluent from the plant would be treated using a ZLD system.

The facility would be located near an industrial area of the City of Turlock that has several tall industrial structures within the context of mixed residential and industrial uses. There are two residences located on the 40-acre Washington Road site. Assuming that the residences on the two parcels that would need to be acquired are removed, the nearest residential uses to the project, which are potentially sensitive noise receptors, are located less than 0.2 mile south of the project. There are up to six other residential receptors within 0.4 mile.

9.3.2.2.2 Almond Power Plant

The Almond Power Plant site is located on the southern edge of Ceres, about 4.4 miles south of the center of the City of Modesto, 2.2 miles west of Highway 99. The site is a 10-acre parcel of flat land, used primarily for row crops. A 230-kV transmission line crosses the south section of the property. The site is zoned Community Facilities. This zoning designation allows power plants, but may require a conditional use permit from the City of Ceres.

The nearest electric interconnection line is at the existing Almond power plant switchyard, located less than 0.2 mile east of the site. The Almond power plant is served by a 69-kV line. The nearby 230-kV line does not have sufficient capacity to serve a 250-MW plant. Therefore, the Almond power plant does not have the capacity to support the proposed facility. Natural gas delivery would require a short new line connecting to the supply at the Almond power plant. PG&E system improvements would also be required. Existing compression and capacity is not sufficient to support the power plant. Water supply would

be obtained from the Ceres WWTP, located 0.5 mile east of Almond power plant. This water is only secondary treated and not Title 22-compliant. Recycled water would be conveyed via a new 0.5-mile-long pipeline running primarily under and adjacent to existing irrigation canals. Effluent from the plant might be returned to the wastewater plant by agreement with the City, or disposed through ZLD.

Property surrounding the site is currently in agricultural use. However, the land to the north and west has recently been purchased and, therefore, may not be available for purchase by TID. Commercial and residential developments occur along Crow's Landing Road (0.5 mile to the west) and East Service Road (about 0.5 mile to the north). A residential subdivision is located just over 0.5 mile to the northeast at Morgan Road and East Service Road. The facility would be visible in nearly all directions within the context of mixed residential and industrial uses in the area. The residential uses nearest to the project, which are potentially sensitive noise receptors, are located 2,000 feet from the site to the west on Crows Landing Road.

9.3.2.2.3 Chemurgic Site

The Chemurgic site is located at 3106 South Faith Home Road, at the corner of Faith Home Road and Harding Avenue, 4 miles southwest of Turlock. The site is 38 acres, of which approximately 20 acres are currently used by Chemurgic Agricultural Chemicals, Inc. to produce pesticides and fertilizer products. In addition to the Chemurgic facilities, there is one tenant (a low-level radioactive waste hauler) located along the northwestern corner of the site. The rest of the site is unused. The site was formerly called the Turlock CWS Plant, acquired in 1945 and used for incendiary oil bomb filling, flare testing, and storage. Chemurgic Corporation operated a chemical manufacturing plant on the site from 1949 through 1961. In 1995, Chemurgic submitted an integrated cleanup plan. The primary contaminant is gamma BHC (Lindane), which is an insecticide. A soil treatment program was completed in the fall of 1995, removing an estimated 95 percent of the source chemicals onsite. Currently, two extraction wells operate onsite and groundwater is treated using an activated carbon adsorption treatment plant and an infiltration trench. Groundwater cleanup is in the final phase of the remedial program. The site contains some original buildings from its WWII operations.

The site is in unincorporated Stanislaus County and surrounded by almond orchards, alfalfa and hay fields, and sparse rural residential units. The site proposed for the power plant would be located in the eastern portion of the site. The site is zoned for PD 81 (Planned Development). A power plant would be consistent with the PD zoning, but would require an approved development plan.

The closest transmission line to the Chemurgic site would be a proposed 115-kV line along West Harding Road and would have sufficient capacity to handle the plant's output.

Water for this site would come from the Turlock WWTP located at Linwood Avenue and Walnut approximately 4 miles away. However, recycled water from the WWTP would be supplied via an existing outfall that transports the treated wastewater to the Harding drain. This pipeline is located about 0.5 mile from the proposed site. Effluent from the power plant would be disposed with a ZLD system. A TID transmission lines project is planned to run along Harding Road less than 0.1 mile from the site.

Natural gas would come from Washington Road, approximately 0.5 miles away, but might require a compressor station at the plant to provide sufficient pressure. Roads are adequate for heavy traffic and there is a functional rail spur to the facility to deliver heavy equipment.

9.3.2.2.4 Modesto WWTP Site

The Modesto WWTP site is located 100 yards southwest of the corner of Fulkerth and Vivian Road, 8.4 miles southwest of Ceres. The site is approximately 8 acres of “high ground” elevated above the surrounding area. To the south and west, the fields of alfalfa are irrigated with wastewater and drain to an unnamed meandering channel that is also south of the site. The soils on the elevated portion are whitish and are reported to be alkaline and salty, and therefore, undesirable for planting. The drainage canal immediately to the south is 20 feet wide in places, and supports a lush growth of dense bulrushes, and willow scrub. The site is in unincorporated Stanislaus County and currently zoned and used for agriculture. A power plant would be consistent with the zoning, but would require a use permit.

Water for this site would come from the Modesto Wastewater Treatment Plant located approximately one mile north of the site. Wastewater would be returned to the Modesto WWTP or treated with a ZLD system.

The closest transmission line is a 115-kV line located approximately 5 miles away. It has sufficient capacity to handle the plant’s output, but would require 5 miles of new line for connection. Natural gas would come from Bradbury Road, 6 miles to the south. Roads may need to be improved to be adequate for heavy traffic.

9.3.2.3 Environmental Considerations

In this section, the potential environmental impacts of the four alternative sites and the No Project alternative are discussed. Potential environmental impacts from use of the proposed site are presented in more detail in each of the 16 environmental subsections of Section 8 of the AFC. Table 9.3-2 (located at the end of this section), provides a summary of the impacts of each alternative site in compared to the proposed site. Unless otherwise stated, it is assumed that the No Project alternative would not provide the benefits of the project, would not meet the basic project objectives of the Applicant, and would not result in the impacts associated with the project.

9.3.2.3.1 Air Quality

The plant’s configuration and operation would be essentially the same from an air quality perspective at every location. The type and quantity of air emissions from the alternative sites would be identical. However, the impacts on the human population and the environment may differ slightly because of the location of residences and other human uses in the project vicinity. Local terrain is similar at all sites and not likely to change impacts. All of these sites are in the same air basin and offsets acquired by TID would be equally appropriate for every site. Potential impacts of the project to residents are discussed in Subsection 8.6, Public Health, and potential impacts on animals are discussed in Subsection 8.2, Biological Resources.

With the No Project alternative, air quality in the San Joaquin Valley Unified Air Pollution Control District (APCD) would be slightly worse than with the project since there would be

no permanent reduction in air pollutants resulting from the purchase of emission reduction credits. Electricity required to support growth within TID's boundaries would be provided under contracts from other power-generating sources outside the District. Therefore, it is likely that older plants, which create more air pollution than the proposed project, would remain online. In addition, electrical losses would result from the transmission of power over longer distances. Thus, overall, the air quality would be slightly worse than if the plant were not built.

9.3.2.3.2 Biological Resources

Special status species that are recorded, or that potentially occur in the region, are the same for all sites. Each alternative site is considered within the potential habitat range of San Joaquin Kit Fox (federally threatened), Swainson Hawk (state threatened), tricolor blackbird (federal and state special concern), and burrowing owl (federal and state special concern). The sites differ in their proximity and abundance of either onsite or adjacent habitat that is relatively natural or undeveloped. The greatest impact would be expected for development of the Modesto WWTP site because of the close proximity of abundant wetland and riparian habitat to the south and west. The Walnut Energy Center, Washington Road, Chemurgic, and Almond Power Plant are the sites least likely to cause significant biological impacts, respectively. None of the sites, with the possible exception of Modesto WWTP, would directly affect threatened or endangered species from development of the project site.

The Chemurgic site would have the least direct impact because it is already substantially developed packed earth or gravel. Similarly, the Walnut Energy Center, Washington Road and Almond power plant sites would have low impact because they are actively farmed and support little natural biological habitat. Additional development in these areas would be consistent with activities that have already occurred. Site-specific surveys of the various sites would further determine variations between them.

With the No Project alternative, the sites would remain in the current state and no additional biological impacts would occur.

9.3.2.3.3 Cultural Resources

The Chemurgic site is located in an area that was previously disturbed by past operation of the facility and, therefore, is the most disturbed of all the sites. Also, because of its use during WWII, the Chemurgic site is likely to support significant historic structures. The Walnut, Washington Road and Almond sites are located in fields that are actively farmed; and the surface soils have been graded, harrowed, and planted. Due to its location adjacent to the San Joaquin River and above the flood plain, the Modesto WWTP site is the most likely to have cultural resources present. A record search of the area was performed by staff of the Central California Information Center, California Historical Resources Information System (Department of Anthropology, California State University, Stanislaus – CCIC File # 4620N). The results of the records search are presented below in Table 9.3-3.

Historic resource sensitivity is likely to be greatest at the Chemurgic site, which was used for oil bomb production during in the mid- to late-1940s. A few of the original structures remain. Due to the longevity of dairy farming throughout the region, the Walnut and Washington Road sites are more likely to have structures greater than 45 years old within 0.5 mile of the plant site. There are few structures within 0.5 mile of the Almond site, and those structures near the Modesto site are less than 45 years old.

With the No Project alternative, there would be no impact to archeological or historic resources along the gas line or at the project site since the project construction would not occur and the potential to disturb cultural resources would not exist.

TABLE 9.3-3
Estimate of Archeological Sensitivity

| Power Plant Site | Previously Surveyed | Known/Recorded Cultural Resources within 0.5 mile radius | Relative Archaeological Sensitivity | Historical Structure Sensitivity |
|-------------------------|---|---|--|---|
| Walnut Energy Center | Nearby area was partially surveyed in 1995 with negative findings | None | Low | Moderate |
| Washington Road | Nearby area was partially surveyed in 1995 with negative findings | None | Low | Moderate |
| Almond Power Plant | Unsurveyed | None | Low | Low |
| Chemurgic | Completely surveyed in 1975 with negative findings | None | Low | High |
| Modesto WWTP | Unsurveyed | None | High | Low |

9.3.2.3.4 Land Use

The Walnut site is located in the City of Turlock. The Washington Road, Chemurgic, and Modesto sites are located in Stanislaus County. The Almond site is located in the City of Ceres. A summary of the land use issues is provided in Table 9.3-4.

TABLE 9.3-4
Land Use Status of Sites

| Site Location | Zoning | General Plan | Entitlements Required |
|----------------------|--------------------|---------------------|------------------------------|
| Walnut Energy Center | Industrial | Industrial | None |
| Washington Road | AG-2-40 | Agriculture | Use Permit |
| Almond Power Plant | Community Facility | Community Facility | Conditional Use Permit |
| Chemurgic | PD81 | Planned Development | Development Plan |
| Modesto WWTP | AG-2-40 | Agriculture | Use Permit |

The Washington Road and Modesto sites are zoned for agriculture. According to Stanislaus County, a power plant is consistent with the zoning for these sites because a power plant is considered a public facility (Kalash 2002). A use permit would be required for the construction and operation of a power plant in an agriculture zone, requiring a CEQA analysis prior to planning commission approval.

The Almond site is zoned as Community Facility (CF). A power plant is consistent with the zoning for the Almond site. Clarification is being sought from the City of Ceres regarding

additional requirements for the site, and it is assumed that a conditional use permit, requiring an initial study, would be required (Westbrooke 2002).

The Chemurgic site is zoned Planned Development (PD 81). A power plant appears to be an allowable use so long as the County approves a development plan.

With the No Project alternative, the land uses would remain as they are and are presumed to be consistent with existing land use plans and policies.

9.3.2.3.5 Noise

The Walnut location has two houses located about 375 to 800 feet south of the plant on Ruble Road with a few more houses along the road to the west. The ambient noise levels at this location may be higher than at other locations due to the site's proximity to West Main Avenue (which is heavily traveled) and the adjacent Foster Farms granary operation. There is also a rail line between the Foster Farms plant and the Walnut site. The rail spur would not affect ambient nighttime noise levels because of its sporadic use. Therefore, the power plant would add another noise source to this industrial area.

Assuming that the two residences on the site would be acquired and removed, the Washington Road site is located about 773 feet from three houses to the north and south. A 20-acre area to the south of the plant would act as a buffer between the plant and residential/agricultural uses to the south. A dairy operation is located to the northwest, behind the existing 230-kV substation. Although the peaking plant generates substantial noise when running, it does not run often. The rail spur would not affect ambient nighttime noise levels because of its sporadic use.

The Almond plant is located about 0.5 mile from scattered houses located along Crows Landing Road and about 0.7 mile from a residential development to the northeast. The nearest residential property is about 0.5 mile to the north or west of the plant.

The other sites are located in agricultural areas with scattered residential uses. The Chemurgic site has one residence located across the street from the facility's busy entrance gate; another is about 1,200 feet north of the plant, across from its farmed buffer land; and a third is about 1,200 feet to the east. The overall residential density in this area is less than Walnut. The Modesto WWTP site would be about 1,000 feet from residences to the north and east, and has relatively few residential units in the area.

The No Project alternative would not result in further development in these areas and ambient noise levels would remain unaffected.

9.3.2.3.6 Public Health

With the exception of the Almond plant's location about 0.7 mile from a residential subdivision, all of the sites are remote from large residential areas, schools, hospitals, churches or other facilities that would potentially be considered sensitive receptors for public health. Public health impacts are generally related to air quality, which is not expected to result in significant impacts. At a screening level, the sites appear equivalent with respect to this environmental resource.

Under the No Project alternative, land uses would remain the same. Therefore, there would be no public health impacts from the No Project alternative.

9.3.2.3.7 Worker Health and Safety

Potential impacts on worker health and safety are activity-specific rather than site-specific. Regardless of the location, TID will prepare appropriate health and safety plans to protect workers and reduce the potential for injuries. Therefore, the worker health and safety impacts from all of the alternative sites are equivalent.

Under the No Project alternative, there would be no construction and, therefore, no impacts to workers.

9.3.2.3.8 Socioeconomics

All sites are located in Stanislaus County. The closest large urban area to all of these sites is the greater Modesto area. Therefore, it is likely that most local purchases for construction and operation would be made in the greater Modesto area. Since the point of sale and the county of sale receive the greater portion of sales taxes that are not retained by the state, the local impacts would be similar among the alternatives since they are located in Stanislaus County.

Workforce would likely come from Stanislaus, Merced, San Joaquin, Fresno, and possibly the San Francisco Bay Area. However, due to the proximity of these sites, the origin of the workforce would not change among the alternative sites.

Because TID is a public agency, it does not pay property taxes. Therefore, no jurisdiction would receive property taxes from this plant and there would be no difference from alternate sites. Environmental justice issues would be similar for all of the sites.

With the No Project alternative, no economic benefits would be realized within the region of influence.

9.3.2.3.9 Agriculture and Soils

The Walnut site differs from alternative sites with respect to effects on prime agricultural land, erodibility of the land due to construction impacts, and revegetation of the site after construction. With the exception of the Modesto and Chemurgic sites, all other sites would be on land currently designated as prime agricultural land. At the Modesto WWTP site, the parcel proposed is an outcrop of alkaline soils that is unsuitable to support prime agriculture, but is surrounded by soils classified as prime. With the exception of Modesto and Chemurgic sites, implementation at any of the alternatives would convert prime agricultural land to industrial uses. Some of these sites may be converted to residential or industrial uses in any case, but at present they are zoned and used for agriculture. At the Walnut site, the City of Turlock made findings of overriding consideration regarding the conversion of prime farm land when the area was zoned industrial. Loss of 40 acres of prime agricultural land in this area has not been historically considered significant. However, the cumulative losses of farmland may be considered a significant impact.

Under the No Project alternative, soils currently used for agricultural purposes would not be lost.

9.3.2.3.10 Traffic and Transportation

All of the sites are easily accessible from Highway 99 and Interstate 5 (I-5). The area can be accessed by heading west from either the Patterson or Fink Road exits from I-5. The Almond plant and Walnut/Washington Road plants are off main roads (Crows Landing and West

Main, respectively) which both have exit ramps on Highway 99. The remaining sites (Modesto and Chemurgic) are not directly off collector boulevards. However, the entire area is served through a north/south, east/west grid of roads making construction traffic easily dispersed throughout the road network.

Tidewater Southern Railroad (TSRR) lines serve four sites: Walnut, Washington Road, Almond, and Chemurgic. A rail line runs along the back side (i.e., eastern edge) of the Almond plant. Access to the plant is not required to cross this line. A spur of the TSRR line runs just north of the Walnut and Washington Road plants and provides service to the Foster Farms granary and other industrial facilities to the east. Access to either the Walnut or Washington Road plants from West Main Avenue would require crossing this spur. However, the spur is infrequently used and has crossing arms. The Chemurgic site is also served by a spur track. None of these lines would appear to cause problems to construction workers since they are not heavily used (Walnut and Chemurgic) or in the case of the Almond plant, would not be crossed by construction traffic. Proximity to rail lines would allow heavy equipment (turbines and HRSG components) to be shipped by rail. Therefore, these three plants have a slight advantage from a traffic perspective.

The No Project alternative would allow traffic to be maintained at current levels.

9.3.2.3.11 Visual Resources

The potential for visual resource impacts associated with each of the sites varies depending on the relative visibility of the sites from roads and residences and the length and potential visibility of any new transmission lines that the power plant would require. Visual impacts are also a function of the surrounding facilities.

All but the Modesto site are located on flat terrain where scenic vistas are not enhanced by hills and vertical structures. The Modesto site is slightly elevated and can be seen in the distant views by those traveling east on West Main Avenue. In addition, this location would require the construction of a 5-mile-long transmission line.

Locating a plant adjacent to the existing Almond power plant site would have the benefit of being located next to an existing power plant with similar structures and would allow some equipment to be used for both plants. The plant would be set back almost 0.5 mile from the road, avoiding near-field views by motorists traveling along Crows Landing Road. However, the existing transmission lines do not have capacity for a 250-MW plant and would need to be reconducted or paralleled by another set of transmission lines about 5 miles long.

Similarly, locating a plant on Washington Road near the existing Walnut peaking plant would place it in an area that has already been converted to utility uses and is adjacent to the City of Turlock's industrial area. The proposed Walnut Energy Center site is adjacent to highly industrialized uses having the storage silos of Foster Farms adjacent to the plant and other tall industrial structures to the east. The existing transmission lines have adequate capacity to serve both the Washington Road and Walnut sites. However, a 115-kV transmission line about 0.4 mile long and a 69-kV transmission line about 650 feet long would be required for the Walnut site, while the Washington Road line requirements would be shorter, since it is located adjacent to the existing substation. The Chemurgic site is adjacent to the industrialized fertilizer facility, but would add some tall structures to the

horizon that would be seen by residents to the south. A 115-kV transmission line (a separate TID project) is planned to run along Harding Road.

The No Project alternative would avoid visual impacts from the development of a power plant and would avoid introducing tall structures and water vapor plumes into areas that do not have them (i.e., Chemurgic and Modesto).

9.3.2.3.12 Hazardous Materials Handling

The same quantity of hazardous materials would be stored and used at all five locations. Delivery of anhydrous ammonia and other hazardous materials is typical in the region because of widespread agricultural uses, fertilizers, and other farm chemicals. The Chemurgic plant has dozens of small anhydrous ammonia tanks available for farmers to tow to their farms. The delivery distance for the anhydrous ammonia is essentially the same for all alternatives. A breach in the ammonia tank would have little to no effect on the population due to the design controls that would prevent off-site migration. Although there are residences close to each of the sites, the region is a predominantly agricultural community, and deliveries of anhydrous ammonia for fertilizer are very common. Additional deliveries for the facility would be consistent with existing conditions.

The No Project alternative would avoid the transportation, use and storage of hazardous materials during construction and operation of a power plant.

9.3.2.3.13 Waste Management

The same quantity of waste will be generated at the proposed site as at all alternative sites. The environmental impact of waste disposal would not differ significantly between the alternative sites.

The No Project alternative would eliminate the need to dispose of liquid and solid waste from the construction and operation of the power plant.

9.3.2.3.14 Water Resources

The sources of water for the plant would consist of recycled water from either Turlock, Modesto, or Ceres. Use of recycled wastewater is considered preferable to use of surface water or groundwater. Therefore, all sites are generally equivalent with respect to water use. Similarly, the Walnut, Washington, and Chemurgic sites may have slightly higher potential impacts from the use of a ZLD system, which reduces efficiency and increases solid waste production. However, the method that would be used for ZLD would need to be determined before a definitive comparison is possible.

The No Project alternative at the Stanislaus County sites would require the recycled water to be discharged in its current manner and would avoid the additional salt loading that would occur from the plant's liquid waste stream being returned to the treatment plant. The No Project alternative would not assist in reuse and disposal of wastewater from the WWTP, which is an objective of the City of Turlock.

9.3.2.3.15 Geologic Hazards and Resources

Due to the screening level of this analysis and proximity of the sites to each other, no site-specific seismic analysis was performed. The potential for seismic impacts would be essentially the same for all plants and can be addressed in plant design.

The No Project alternative would not affect geological hazards or resources.

9.3.2.3.16 Paleontological Resources

In the vicinity of all of these sites, an alluvial fan has been created by rock debris deposited by the Merced River and adjacent smaller streams, all of which drain off the foothills of the Sierra Nevada. Geological materials composing the alluvial fan in the vicinity of Turlock can be divided into three stratigraphic units, from oldest to youngest: weakly cemented conglomerate, sandstone, and siltstone referred to as the Middle Pleistocene Riverbank Formation exposed on the upper alluvial fan; a slightly younger and less consolidated Late Pleistocene sedimentary sequence named the Modesto Formation; and Holocene alluvium informally referred to as "Basin Deposits" laid down on the modern San Joaquin River floodplain. Each of these units has yielded fossil remains at previously recorded fossil localities within the Central Valley. Therefore, all sites are considered to have an equal potential for paleontological impacts.

9.4 Alternative Linear Facilities

Linear facilities required for WEC include an electric transmission line, a natural gas supply line, and water supply line (see Figure 2.1-1a). The proposed linear facilities are presented in Section 2.0, Project Description; Section 5.0, Electric Transmission; Section 6.0, Natural Gas Supply; and Section 7.0, Water Supply. This section compares the alternative routes. The comparison is made among the following categories:

Institutional Factors. Institutional factors are an assessment of the ease of obtaining ROW, public agency support, required permits, etc.

Engineering/Construction Feasibility. Engineering/construction feasibility is an assessment of how the pipeline can be physically placed along a given route.

Length of Linear Feature. Length of pipeline is important because pressure drop, cost, and potential environmental impacts are usually functions of length.

Environmental Factors. Environmental factors are an initial assessment of which routes would have the least impact on the environment. Environmental impacts must be either not significant or mitigatable to a less-than-significant level.

9.4.1 Electric Transmission Lines

The Walnut substation is served by 230-, 115-, and 69-kV lines and has sufficient capacity to support WEC's output from both the 250-MW baseload unit and the existing 50-MW peaking unit. A 115-kV transmission line will be required from WEC's switchyard to the Walnut substation on Washington Road, about 0.4 mile away. This line will be located on TID's 69-acre parcel on which the 18-acre project site is located. An existing 69-kV transmission line currently runs along the south edge of the 69-acre parcel. This line would also loop into WEC's switchyard, about 650 feet away. Since both the 115-kV and the 69-kV transmission lines will be substantially located with the 69-acre parcel, no alternative routes are feasible.

9.4.2 Natural Gas Supply Lines

Two alternative natural gas pipeline routes and one modified route were evaluated in addition to the proposed route. All routes appear feasible. The proposed and alternative routes that were considered are presented in Figure 9.1-2 and described below.

9.4.2.1 Description of Routes

Proposed Route. The proposed gas pipeline route is approximately 3.6 miles long. The pipeline would run north from West Bradbury Road (where it ties into the PG&E main pipeline, Line 215) adjacent to South Commons Road. It would then turn east on the south side of the railroad tracks to WEC.

Construction of the pipeline would require a 50- to 75-foot-wide temporary construction corridor. However, TID is seeking approval of a 250-foot-wide pipeline corridor, which would provide TID the flexibility to locate the pipeline on either side of the road. The specific location of the pipeline would be determined based upon the avoidance of any sensitive environmental resources, ability to obtain ROW, and the location of existing pipelines.

Open trench construction would be used along most of the route. Where the pipeline crosses the two irrigation canals, open trench construction would be used if the canal can be taken out of service; otherwise, “jack and bore” or horizontal directional drilling (HDD) construction would be used.

Alternative G2. This alternative is approximately 3.6 miles long. The pipeline would run north from West Bradbury Road (where it ties into the PG&E main pipeline, Line 215) adjacent to South Commons Road. It would then turn east on Clayton Road, then north on Washington Road and east along the WEC access road before terminating at the plant site.

Alternative G1. This alternative is approximately 3.1 miles long. It begins at West Bradbury Road. From the interconnection point with Line 215, the pipeline would run north adjacent to South Washington Road for approximately 2.8 miles. It would then turn east along the WEC access road for another 0.4 miles before terminating at the plant site. Construction would be similar to that of the proposed route.

Alternative G3. This alternative is approximately 4.1 miles long. The pipeline would run north from West Bradbury Road adjacent to South Faith Home Road for approximately 2.3 miles. It would then turn east on Clayton Road for another 1.0 mile and then turn north on South Washington Road following Alternative G2 the rest of the way to WEC. Alternatively, the pipeline may turn east and follow the railroad tracks into the plant site. Construction would be similar to that of the proposed route.

9.4.2.2 Environmental Evaluation

9.4.2.2.1 Institutional Factors

Each of the gas line alternatives follows the alignment of railroads or public rural roads where waterlines and other utility easements are relatively common and do not interfere with local uses. There are no indications of any institutional factors, rights-of-way, or land uses that would favor the routes. Therefore, the least-cost alternative, the proposed route, is favored.

9.4.2.2.2 Engineering/Construction Feasibility

Each alternative would involve open-cut trenching techniques. The pipeline would cross rural roads, and there could be temporary interference with local transport; but the duration of construction and relatively low-level of traffic would not cause significant adverse environmental impacts. The proposed route would follow TID's existing right-of-way along the railroad tracks reducing disruption to traffic and not requiring pavement restoration. Pavement restoration will likely be required for alternatives that follow county roadways; however, every effort will be made to locate the pipeline outside of the paved road section where existing road ROW is available. Traffic control will also be required for those portions of the alternatives that follow roadways. Traffic on most roads is light and limited to local travel. Alternative routes are available to all regional traffic. Alternative G1 is complicated in that a gas line to the Walnut peaking plant currently exists in the corridor, making construction of a second line more difficult. The least-cost alternative would favor the proposed route.

9.4.2.2.3 Length of Pipeline

The proposed natural gas pipeline and Alternative G2 are both 3.6 miles long. Alternative G1 is slightly shorter at 3.1 miles and Alternative G3, slightly longer at 4.1 miles.

9.4.2.2.4 Environmental Factors

Each of the routes would have similar impacts in most of the environmental areas because they will be buried, constructed using similar methods, are located near each other, cross similar habitat, and cross the same number of irrigation channels. The differences between routes, although minor, would likely exist in the areas described below. It should be noted that these differences are slight and, like the construction of Applicant's proposed route, construction of any of the alternative routes would not likely result in significant adverse impacts.

Air Quality. Impacts would occur as a result of emissions from construction equipment. Since construction techniques would be similar, there would be a slight benefit from construction of the proposed route, which would allow construction along the railroad right-of-way, reducing the construction duration and need to resurface roads. Although Alternative G1 is shorter, the presence of the existing gas line would likely cause the new line to have to be put within the existing roadway increasing the duration of construction and the need to resurface (which also has minor air quality impacts). Alternative G2 would be preferred over G3 since it is shorter in length.

Biological Resources. Gas lines would generally follow roads and rights-of-way that are partly disturbed. No significant site-specific natural habitats or resources have been identified at this time. Small sites can be avoided if discovered through small changes within the 250-foot corridor.

Cultural Resources. Cultural resource sensitivity, which is low, would not differ throughout the area covered by the various alternative routes. However, there may be some difference in the number of historical structures that are 45 years old or older. The exact number cannot be determined without extensive field work. Therefore, the shorter routes would be favored as being less likely to cross near historic structures. Since there are no historic structures within 100 feet of the railroad tracks, Alternatives G1 and the proposed route would have the same length and, therefore, would have equal sensitivity for historic

structures; while Alternatives G2 and G3 being longer, respectfully, would have likelihood for greater impact on historic structures.

Noise. As with air quality impacts, noise impacts would be primarily a function of the duration and type of construction. Construction of the proposed route could require crossing to the north side of the railroad tracks at Washington Road and back again at Commons Road. Crossing under the railroad tracks would likely be done using a jack and bore, thus generating more noise at those locations. However, the closest residents are about 700 feet and 1,250 feet from the crossing points.

Public Health. Public health is a function of air quality and, therefore, would indicate the same preferences as air quality.

Traffic and Transportation. Traffic impacts are anticipated to be minor because traffic is light along all of these roads. However, impacts on traffic would occur from construction along the edge or within the roadway, since one lane would need to be closed in either case. Therefore, impacts on traffic and transportation are greater the longer the corridor, making Alternatives G1 and the proposed route preferred.

9.4.3 Potable Water Supply

Potable water will be provided by the City of Turlock from a water main located at South Tegner Road. The proposed potable supply water route goes south from the plant, then under or adjacent to Ruble Road east to Tegner Road. No significant impacts of this route were identified due to its short length and location along the proposed recycled water route. Use of another route from the site to South Tegner Road would require additional construction impacts. Therefore, no alternative routes for potable water were identified as within the reasonable range of feasible alternatives to the proposed route.

9.4.4 Recycled Water

Recycled water from the City of Turlock WWTP will be used for cooling water at WEC. Two routes were evaluated.

9.4.4.1 The Proposed Recycled Water Route

The proposed recycled water route is shown on Figure 9.1-2. The recycled water pipeline will leave the WEC plant site and head south to Ruble Road approximately 1,100 feet, along the east side of the 69-acre parcel. At this point it will head east on Ruble Road for approximately 3,350 feet to South Tegner Road. At South Tegner Road, the pipeline will proceed south approximately 1,100 feet, to an existing 69-kV TID transmission line corridor. The pipeline will then turn east, paralleling the transmission line for approximately 2,600 feet until it reaches South Kilroy Road. At South Kilroy Road, the pipeline will head south for approximately 350 feet, where it will head due east onto the City's WWTP site.

9.4.4.2 Alternative Recycled Water Route

The alternate recycled water pipeline route is shown in Figure 9.1-2. From the TID plant site, the recycled water pipeline will run due west to South Washington Road along the north edge of the 69-acre parcel, approximately 150 feet to 200 feet south of the centerline of the existing railroad tracks. From there the pipeline will head south on South Washington Road

to West Linwood Avenue. Along South Washington Road, the alignment will be up to 5 feet outside of the pole line on either side of the road. If a pole line does not exist on one side of the road, the location would be within an equivalent distance as on the south side. At West Linwood Avenue, the pipeline will run east to South Kilroy Road. Along West Linwood Avenue, the alignment will be up to 5 feet outside of the pole line on either side of the road or equivalent distance. The pipeline will then run north along South Kilroy Avenue, to the WWTF, entering the City of Turlock WWTP site in the same 660-foot corridor assumed for the proposed recycled water pipeline route.

Although other alternative routes were evaluated, they are essentially within the descriptions given (e.g., routing on north vs. south side of road), and do not significantly change the environmental impacts of the project. Therefore, only one specific alternative route, with possible variations, was identified and evaluated in detail.

9.4.4.3 Environmental Evaluation

9.4.4.3.1 Institutional Factors.

Both the proposed and alternative recycled-water pipeline routes follow the alignment of public rural roads, where waterlines and other utility easements are relatively common and do not interfere with local uses. There are no indications of institutional factors, rights-of-way, or land uses that would favor either route. Therefore, the least-cost alternative is favored.

9.4.4.3.2 Engineering/Construction Feasibility.

Each alternative would involve open-cut trenching techniques. The pipeline would cross rural roads, and there could be temporary interference with local transport; but the duration of construction and relatively low level of traffic would not cause significant adverse environmental impacts. Pavement restoration will likely be required for alternatives that follow county roadways; however, every effort will be made to locate the pipeline outside of the paved road section where existing road ROW is available. Traffic control will also be required for alternatives that follow roadways. Traffic on most roads is light and limited to local travel. Alternative routes are available to all regional traffic.

9.4.4.3.3 Length of Pipeline.

The proposed recycled water pipeline is 1.6 miles long. The alternative is longer at 2.8 miles.

9.4.4.3.4 Environmental Factors

The two routes will have similar impacts in most of the environmental areas because they will be buried, constructed using similar methods, located in the general vicinity of each other, and cross similar habitat (agricultural, industrial and rural residential). The differences between routes, although minor, would likely exist in the areas described below. It should be noted that these differences are slight and, like construction of TID's proposed route, construction of any of the alternative routes would not likely result in significant adverse impacts.

Air Quality: Impacts would occur as a result of emissions from construction equipment. Since construction techniques would be similar, there would be a slight benefit from construction of the proposed alignment since the overall distance is shorter and it will cross about 0.5 mile along the transmission line easement, thus reducing the possibility of having to construct through existing roads.

Biological Resources: Water lines would generally follow roads and rights-of-way that are partly disturbed. No significant site-specific natural habitats or resources have been identified at this time. Small sites can be avoided if discovered through small changes within the pipeline corridor.

Cultural Resources: Cultural resource sensitivity, which is low, would not differ throughout the area covered by the two routes. However, there may be some difference in the number of historic structures that are 45 years old or older. The exact number cannot be determined without extensive field work. Therefore, the shorter route would be favored as being less likely to impact buried cultural resources or cross near historic structures. Also, there are no structures near the transmission line right-of-way, further reducing the possible number of structures that would be encountered using the proposed route.

Noise: As with air quality impacts, noise impacts would be primarily a function of the duration and type of construction. The proposed route is shorter and construction along the transmission line right-of-way would further reduce the construction duration and minimize exposure to residential areas since there are no residence along that portion of the route.

Public Health: Public health is a function of air quality and, therefore, would favor the proposed route.

Traffic and Transportation: Traffic impacts are anticipated to be minor because traffic is light along all of these roads. However, impacts to traffic would occur from construction along the edge or within the roadway, since one lane would need to be closed in either case. Preference would, therefore, be a function of distance, thus favoring the proposed route, which travels less distance along the road right-of-way.

9.5 Selection of the Proposed WEC Site

Table 9.5-1 compares the potential environmental impacts of the proposed WEC site (Walnut) with the other alternatives. As shown in the table, no alternative site would feasibly attain most of the basic objectives of the project while also avoiding or substantially lessening any potentially significant effects of the project.

The Walnut site has some advantages; such as proximity to the existing peaking plant and substation, nearby tall industrial structures and plumes, proximity to rail lines, proper zoning, and minimal biological and cultural sensitivity and linear corridors of reasonable length. However, the Walnut plant site is located on prime farmland and has residential receptors nearby.

TABLE 9.5-1
Comparison of the Proposed Site and Alternative Site Locations

| Characteristic | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|---|----------------------|--------------------|--------|---------------------|---------|
| Potential Presence of T&E Species/Habitat | Low | Low | Low | Low | High |
| Potential Cultural/ Archaeological Sensitivity | Low | Low | Low | Moderate to High | High |
| Appropriate Zoning | Yes | Yes | Yes | Yes | Yes |

TABLE 9.5-1
Comparison of the Proposed Site and Alternative Site Locations

| Characteristic | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|--|--|--|---|--------------------------------|--|
| Land Use Entitlements Required | No | Yes | Yes | Yes | Yes |
| Proximity to Sensitive Noise Receptors | 3 residences within 1,000 feet of plant. | 3 homes at 775 feet; 6 within 2,000 feet | 2,100 feet to nearest residences; 3,700 feet to nearest subdivision | 3 residences within 1,200 feet | 2 residences about 1,000 feet from plant |
| Risk to Humans from Deposition of Air Pollutants | Low | Low | Low | Low | Low |
| Removal of Prime Agricultural Land | Yes ^a | Yes | Yes | No | No |
| Traffic & Transportation | Low | Low | Low | Low to Moderate | Moderate |
| Potential Visual Sensitivity | Low | Low | Low | Moderate to High | Moderate to High |
| Risk to Humans from Offsite Migration of Hazardous Materials | Low | Low | Low | Low | Low |
| Ability to Use Water Consistent with SWRCB Policy | Yes | Yes | Yes | Yes | Yes |
| Distance to Cooling Water Source | 1.6 miles | 2 miles | 0.5 mile | 0.5 mile | 1 mile |
| Potential Paleontological Sensitivity | High | High | High | High | High |
| Existing Gas Supply | 3.3 miles | 2.9 miles | 0.5 mile | 0.5 mile | 6 miles |
| Existing Transmission | 0.4 miles & 650 feet | less than 0.1 mile | 5 miles | 0.1 mile | 5 miles |

^a However, the City made findings of overriding consideration when this area was zoned industrial.

The Washington Road site is very similar to the Walnut site. There would be advantages by being located adjacent to the existing peaking plant and substation. In addition, it would be located near the City of Turlock's industrial area. However, the site is located in Stanislaus County on land zoned and used for agriculture. The site is further away from industrial uses that operate 24 hours per day, 7 days per week and, therefore, would have a quieter ambient noise level. Like the Walnut site, there are a few residential receptors located nearby.

The Almond site has advantages in that it would have proper zoning and be located adjacent to an existing power plant making visual sensitivity low, is set back from residential receptors, has low biological and cultural sensitivity, and is located adjacent to a rail spur. However, it would require the removal of prime farmland, and the site may not be available (due to its recent purchase). It also has insufficient transmission line capacity, which would require in a new 5-mile-long transmission line.

The Chemurgic site would locate the plant in an industrial area, has few residential receptors, would not remove prime farmland, has low biological sensitivity, is located near a rail spur, and has linear corridors of reasonable length. However, it has cultural sensitivity (due to the presence of historic structures), and visual concerns.

The Modesto site is acceptable from a zoning aspect, would not remove prime farmland, and has few residential receptors. However, it would introduce industrial uses and plumes in an agricultural setting, has biological and cultural sensitivity, is not located near a rail spur, and would have long linear corridors.

9.6 Alternative Project Configurations

The proposed project configuration of WEC is the result of considering a variety of design and operating limitations. The main factors affecting the configuration include available gas turbine-generator sizes, economies of scale for both construction and operation of the plant, fuel supply, power transmission capacities, and forecast market demand for electrical power. Other generator configurations investigated included 7F, M501D, LM6000, 6B, 6F. The proposed configuration was selected based on the following determinations:

- A 2x1 (two CTGs and one STG) Frame 7EA is more costly and less efficient than other technologies, e.g., a 1x1 7FA. However, the 7EA has better reliability and availability than a 7FA.
- A 2x1 configuration provides better overall plant reliability by having more generators with fewer megawatts per generator. In the 1x1 case, a gas turbine outage or trip forces a shutdown of the entire plant. In a 2x1 configuration, a single gas turbine outage or trip only shuts down half the plant.

9.7 Alternative Technologies

Other generation technologies considered for WEC are grouped according to the fuel used:

- Oil and natural gas
- Coal
- Nuclear
- Hydroelectric
- Biomass
- Solar
- Wind

Alternative technologies were evaluated with respect to commercial availability, implementability, and cost-effectiveness.

9.7.2.1 Oil; Natural Gas; Coal; Conventional and Supercritical Boiler/ Steam Turbine, or Simple Combustion Turbine

These technologies are commercially available, and could be implemented. However, because of relatively low efficiency, they emit a greater quantity of air pollutants per kilowatt-hour generated than technologies that are more efficient. The cost of generation is relatively high relative to combined-cycle/natural gas-fired technologies.

9.7.2.2 Nuclear

California law prohibits new nuclear plants until the scientific and engineering feasibility of disposal of high-level radioactive waste has been demonstrated. To date, the CEC is unable to make the findings of disposal feasibility required by law for this alternative to be viable in California. The technology, therefore, is not implementable.

9.7.2.3 Water

These technologies use water as “fuel,” and include hydroelectric, geothermal, and ocean energy conversion.

9.7.2.3.1 Hydroelectric

Most of the sites for hydroelectric facilities have already been developed in California and any remaining potential sites face lengthy environmental licensing periods. It is doubtful that this technology could be implemented within 3-5 years, and the cost would probably be higher than the cost of a conventional combined cycle. There are no hydroelectric sites in TID’s service territory

9.7.2.3.2 Geothermal

Geothermal development is not viable at the WEC project location because suitable thermal vents and strata are not present. It was therefore eliminated from consideration.

9.7.2.4 Biomass

Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing waste, and construction and urban wood wastes. Their cost tends to be high relative to conventional combined-cycle units burning natural gas.

9.7.2.5 Solar

Most of these technologies collect solar radiation, heat water to create steam, and use the steam to power a steam turbine/generator. Power is only available while the sun shines so the units do not supply power that can be cycled up or down to follow demand. The cost of solar power is relatively high when compared to combined-cycle units burning natural gas.

9.7.2.6 Wind Generation

In California, the average wind generation capacity factor has been 25 to 30 percent and, like solar, cannot be cycled up and down to track demand. The cost of generation is generally above the cost of combined-cycle units burning natural gas. There are no wind generation sites located in TID’s service territory.

9.8 References

California Energy Commission. 1995. 1994 Biennial Electricity Report (ER94), P300-95-002. November.

Kalash, Bob. 2002. Personal communication between Bob Kalash, Planning Director for Stanislaus County, and Katy Carrasco of CH2M HILL. May 24.

Westbrooke, Tom. 2002. Personal communication between Tom Westbrooke, Associate Planner for the City of Ceres, and Katy Carrasco of CH2M HILL. May 24.

TABLE 9.3-2
 Summary Comparison of Environmental Effects of Alternative Project Sites

| Resource | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|----------------------|---|---|---|---|---|
| Air Quality | Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be in the mid-range since this site would require approximately 5.2 miles of pipeline construction. Air impacts would be expected to be insignificant. | Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be in the mid-range since this site would require approximately 5.2 miles of pipeline construction. Air impacts would be expected to be insignificant. | Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be lowest since this site would require approximately 0.6 miles of pipeline construction. Air impacts would be expected to be insignificant. | Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be low since this site would require approximately 1 mile of pipeline construction. Air impacts would be expected to be insignificant. | Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be high since this site would require approximately 7 miles of pipeline construction. Air impacts would be expected to be insignificant. |
| Biological Resources | The 18-acre site is in active agricultural production providing minimum usable habitat for wildlife, except for a single clump of trees along the north property line. The project site is surrounded on three sides by encroaching residential and industrial uses. No other sensitive habitat is present. | The 40-acre site is in active agricultural production providing minimum usable habitat for wildlife. The project site has a peaking plant and substation uses adjacent to it. No other sensitive habitat is present. | Site is in active agricultural production and is used by foraging raptors, but is surrounded by encroaching residential development. No riparian, wetland, or other high-quality habitats adjacent to site. | Some of the site is used by foraging raptors, but is generally in industrial use. No riparian, wetland, or similar high-sensitivity habitats on site. Site is further from residential and industrial encroachment than Almond or Walnut. | Site is adjacent to bulrush wetlands that may support giant garter snake, tri-colored blackbird, nesting and migratory birds. Cottonwood riparian forest is located 0.2 mile southeast and 0.5 mile west of site. High-sensitivity habitats in the area and likely a high level of wildlife use in adjacent alfalfa fields. |

TABLE 9.3-2
 Summary Comparison of Environmental Effects of Alternative Project Sites

| Resource | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|--------------------|--|---|--|--|--|
| Cultural Resources | The Walnut peaking plant near the site was partially surveyed (with negative findings) in 1995. A cultural resource search of the remainder of this site and linear corridors was negative. However, based on the additional 5.2 miles of linear corridors, this location is expected to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that any potential cultural resource impacts could be mitigated below the level of significance. | The Walnut peaking plant adjacent to the site was partially surveyed (with negative findings) in 1995. A cultural resource search of the remainder of this site and linear corridors was negative. However, based on the additional 5.2 miles of linear corridors, this location is expected to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that any potential cultural resource impacts could be mitigated below the level of significance. | A cultural resource search has not been performed for this site or the linear corridors. However, based on the additional 0.6 miles of linear corridors, this location may have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that any potential cultural resource impacts could be mitigated below the level of significance. | The Chemurgic site was completely surveyed (with negative findings) in 1975. A cultural resource search has not been performed for the linear corridors. Based on 1 mile of linear corridors, and presence of historic structures, this location may have moderate to high cultural sensitivity. With implementation of appropriate mitigation measures, any potential cultural resource impacts could be mitigated below the level of significance. | A cultural resource search has not been performed for this site or the linear corridors. However, based on the additional 11 miles of linear corridors, this location may have high cultural sensitivity. Also the proximity of the site to water makes it more likely that cultural resources may be encountered in this area. With implementation of appropriate mitigation measures, it is anticipated that any potential cultural resource impacts could be mitigated below the level of significance. |
| Land Use | The site is located in Turlock. It is zoned Industrial. No entitlements would be required. | The site is located in Stanislaus County. It is zoned PD 81. An approved development plan would be required. | The site is located in Ceres. It is zoned as Community Facility (CF). A power plant is consistent with this zoning. It is assumed that a conditional use permit would be required. | The site is located in Stanislaus County. It is zoned AG-2-40. A use permit would be required. | The site is located in Stanislaus County. It is zoned AG-2-40. A use permit would be required. |

TABLE 9.3-2
 Summary Comparison of Environmental Effects of Alternative Project Sites

| Resource | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|--------------------------|--|---|--|--|---|
| Noise | The plant's noise output would be approximately the same at all sites. However, there are 3 residences within 1,000 feet of the plant site. | The plant's noise output would be approximately the same at all sites. However, there are 3 residences within 775 feet of the plant site. | The plant's noise output would be approximately the same at all sites. However, nearest residences are about 0.5 mile west and north of the site, with a residential development 0.7 mile northeast of the site. | The plant's noise output would be approximately the same at all sites. However, there are sparse rural residential uses in the area. Buffer lands surrounding the Chemurgic plant would provide some noise attenuation | The plant's noise output would be approximately the same at all sites. Two residences are located about 1,000 feet to the north and east of the site. |
| Public Health | The impacts are directly related to air quality impacts described above, considered to be less than to be significant. | The impacts are directly related to air quality impacts described above, considered to be less than to be significant. | The impacts are directly related to air quality impacts described above, considered to be less than to be significant. | The impacts are directly related to air quality impacts described above, considered to be less than to be significant. | The impacts are directly related to air quality impacts described above, considered to be less than to be significant. |
| Worker Health and Safety | No difference. | No difference. | No difference. | No difference. | No difference. |
| Socioeconomics | Potential impact to schools and public services is anticipated to be the same at all locations. Potential benefit to Turlock from use of reclaimed water. Construction workforce would not have to travel about the same for each location. No fiscal benefit to Turlock or County since TID is a public entity and does not pay property taxes. Some benefit would likely occur to Modesto and Stanislaus County from purchase of goods and services. | No difference. | No difference. | No difference. | No difference. |

TABLE 9.3-2
 Summary Comparison of Environmental Effects of Alternative Project Sites

| Resource | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|----------------------------|---|---|---|--|--|
| Agriculture and Soils | Would represent small loss of agricultural uses in County from conversion of the plant site to non-agricultural uses. However, City made finding of overriding consideration when site was zoned industrial. | Would represent small loss of agricultural uses in County from conversion of the plant site to non-agricultural uses. | Would represent small loss of agricultural uses in County from conversion of the plant site to non-agricultural uses. | Site has not been in agricultural production for several years. Therefore, would not convert agricultural uses. | The location is probably not considered prime farmland because of alkaline soils. No significant impact to agriculture and soils. |
| Traffic and Transportation | No hazardous intersections apparent. Rail spur runs adjacent to existing plant and would allow for heavy equipment to be delivered by rail. Railroad has crossing arms and is infrequently used. No significant impacts on traffic and transportation are expected. | No hazardous intersections apparent. Rail spur runs adjacent to existing plant and would allow for heavy equipment to be delivered by rail. Railroad has crossing arms and is infrequently used. No significant impacts on traffic and transportation are expected. | No hazardous intersections apparent. Rail line runs behind existing plant and would allow for heavy equipment to be delivered by rail. No significant impacts on traffic and transportation are expected. | No hazardous intersections apparent. There are no collector streets nearby. Traffic is primarily associated with existing industrial activities. Rail spur runs into Chemurgic plant and would allow for heavy equipment to be delivered by rail. No significant impacts on traffic and transportation are expected. | No hazardous intersections apparent. Rail transport not available adjacent to site requiring heavy loads to be off-loaded and transported along county roads. No significant impacts on traffic and transportation are expected. |

TABLE 9.3-2
 Summary Comparison of Environmental Effects of Alternative Project Sites

| Resource | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|-----------------------------|---|---|--|--|---|
| Visual Resources | The plant would be located behind the existing Foster Farms grain facility. The area is generally industrial and commercial with several tall silos and some scattered housing. With mitigation measures, impacts would be less than significant. | The plant would be located adjacent to the existing peaking plant and substation. The area is generally industrial and commercial with several tall silos and some scattered housing. With mitigation measures, impacts would be less than significant. | The plant would be located in an area adjacent to the existing Almond plant. The site is setback about 0.5 mile from Crows Landing Road and would be outside the cone of vision of drivers. This site would require construction of a 5-mile-long transmission line. With mitigation measures, impacts would be less than significant. | The plant would be located in an area of historic industrial development. Number of residences are few, but no tall structures or plumes exist in the area. Tall structures would be visible from nearby residences. With mitigation measures, impacts would be less than significant. | The general area is primarily agricultural. Site is visible from drivers in their distant view. Number of residences are few, but no tall structures or plumes exist in the area. Plant would be screened from the house to the east by existing mature trees, but would be visible from the residence to the north. This site would require construction of a 5-mile-long transmission line. With mitigation measures, impacts would be less than significant. |
| Hazardous Material Handling | Anhydrous ammonia shipments would likely come down Highway 99 and are presently delivered to neighboring businesses. Residences are closest to this plant, but the plant would be designed to prevent significant off-site consequences to residences from an ammonia leak. | Anhydrous ammonia shipments would likely come down Highway 99 and are presently delivered to neighboring businesses. Residences are close to this plant, but the plant would be designed to prevent significant off-site consequences to residences from an ammonia leak. | Anhydrous ammonia shipments would likely come down Highway 99 and are presently delivered to the Almond plant. Sufficient buffer exists from residential subdivisions. | The Chemurgic plant stores and sells anhydrous ammonia to local farmers. Therefore, the plant would create no additional sources of hazardous materials handling. The power plant would be designed to prevent impacts on sensitive receptors. | Anhydrous ammonia shipments could come down Interstate 5 or Highway 99. The area has the lowest density of residential use. The plant would be designed to prevent impacts to sensitive receptors. |
| Waste Management | No difference. | No difference. | No difference. | No difference. | No difference. |

TABLE 9.3-2
 Summary Comparison of Environmental Effects of Alternative Project Sites

| Resource | Walnut (Proposed) | Washington Road | Almond | Chemurgic | Modesto |
|---------------------------|--|--|---|--|---|
| Water Resources | Would use recycled wastewater, a potential beneficial impact. Would also use ZLD facility. | Would use recycled wastewater, a potential beneficial impact. Would also use ZLD facility. | Would use recycled wastewater, a potential beneficial impact. | Would use recycled wastewater, a potential beneficial impact. Would also use ZLD facility. | Would use recycled wastewater, a potential beneficial impact. |
| Geologic Hazards | No difference. | No difference. | No difference. | No difference. | No difference. |
| Paleontological Resources | No difference. | No difference. | No difference. | No difference. | No difference. |

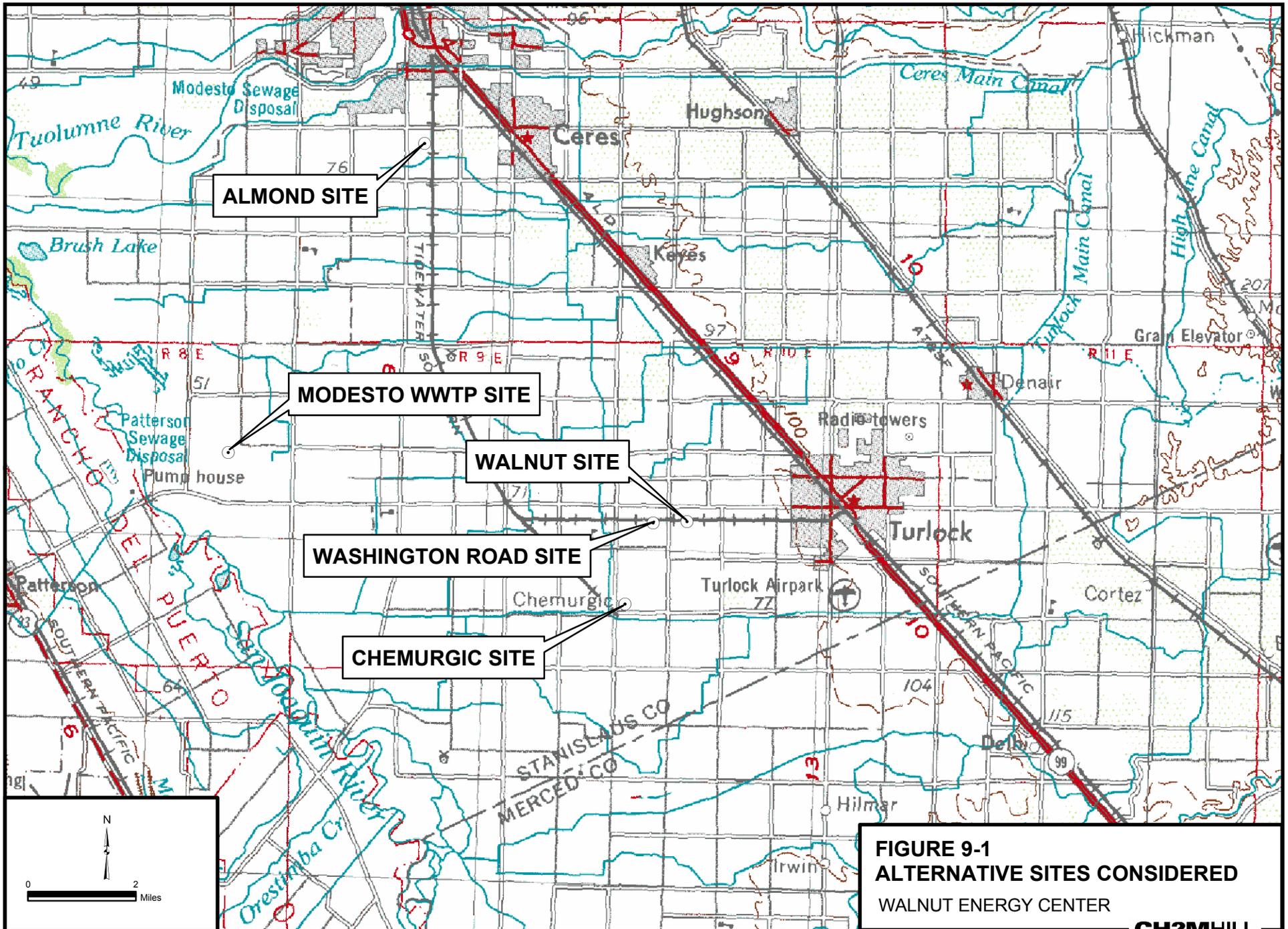


FIGURE 9-1
ALTERNATIVE SITES CONSIDERED
 WALNUT ENERGY CENTER

