9.3 Alternate Site Analysis

This section identifies and evaluates alternatives to the proposed South Texas Project (STP) site for the construction and operation of a two-unit nuclear facility (the proposed project). The analysis described in this section addresses alternative sites to determine if there is an "environmentally preferable" site in terms of environmental impacts and other factors when compared to the proposed site (Reference 9.3-1).

A detailed description of proposed project construction and operation is provided in ER Chapter 3; ownership information is included in ER Section 8.1.1. STP Nuclear Operating Company (STPNOC) intends that the proposed project be built and operated in a location that is safe, secure, and environmentally responsible. The alternative site analysis is submitted to ensure that an evaluation of the appropriateness of the proposed site, in terms of geographical and environmental restrictions, is made against reasonable alternative sites for comparison.

This section provides a description of the process for evaluating alternative sites that includes selection procedures for the Region of Interest (ROI), candidate areas, potential sites, primary sites, and candidate sites, factors considered at each level of the selection process, criteria used to screen sites, and methodologies used in the alternative site comparison process. Section 9.3.1 explains the alternative site selection process. Section 9.3.2 details how the alternative sites were selected. Section 9.3.3 compares these alternatives with the proposed site.

9.3.1 Alternate Site Selection Process

STPNOC currently operates a two-unit nuclear power plant at its STP site near Bay City, Texas (STP Units 1 & 2). The STP site was selected as the proposed site for the project (STP Units 3 & 4) based on its numerous advantages as an existing nuclear power plant site, including its:

- Proven site suitability (previously licensed for nuclear power construction and operation);
- Capacity for expansion (availability of land and water to support additional units);
- Existing site infrastructure;
- Established positive working relationships with local communities; and
- Ability to serve the Electric Reliability Council of Texas (ERCOT) markets.

The proposed site is on the site of an existing operating nuclear power plant that was previously found acceptable on the basis of a National Environmental Policy Act (NEPA) review and has demonstrated to be environmentally satisfactory on the basis of some 20 years of operating experience. The area to be occupied by the proposed new units was included in the original license application and site analysis for STP Units 1 & 2. Under these circumstances, NUREG-1555 allows consideration of the proposed site as a "special case" enabling it to be compared to other alternate sites within the ROI. STPNOC relied on this special case provision in their methodology to compare alternate sites (Reference 9.3-1):

> *"…there will be special cases in which the proposed site was not selected on the basis of a systematic site-selection process. Examples include plants proposed to be constructed on the site of an existing nuclear power plant previously found acceptable on the basis of a NEPA review and/or demonstrated to be environmentally satisfactory on the basis of operating experience, and sites assigned or allocated to an applicant by a State government from a list of State-approved power-plant sites. For such cases, the reviewer should analyze the applicant's site-selection process only as it applies to candidate sites other than the proposed site, and the site comparison process may be restricted to a site-by-site comparison of these candidates with the proposed site."*

The STPNOC site selection process was conducted in accordance with guidance provided in NUREG-1555 (Reference 9.3-1) and followed the overall process outlined in the Electric Power Research Institute's (EPRI) Siting Guide (Reference 9.3-2), and site suitability considerations set forth in NRC Regulatory Guide 4.7, Revision 2, "General Site Suitability Criteria for Nuclear Power Stations" (Reference 9.3-3). This process is depicted in Figure 9.3-1. The site selection study in its entirety, including process descriptions and technical evaluations and analyses, is detailed in the STPNOC Nuclear Power Plant Siting Report, June 2009 (Reference 9.3-4). The overall objective of this site selection study was to apply such a process to identify alternative nuclear power plant sites that:

- Satisfy applicable Nuclear Regulatory Commission (NRC) site suitability requirements,
- Are the best sites that could reasonably be found from an environmental perspective, and
- Would allow NRC to conclude that all reasonable alternatives have been identified in compliance with NEPA.

STPNOC conducted a thorough analysis to select candidate sites for the site-by-site comparison process discussed above. This section describes the process that evaluates the ROI for licensable sites other than the proposed site, and reducing those sites to reasonable alternate sites.

STPNOC divided its analysis into two general steps:

- Identify the proposed and alternate sites (Section 9.3.2). This step includes justification for selecting the ROI, and explains the process for identifying candidate areas, potential sites, primary sites, and candidate sites. From these candidate sites, STP was selected as the proposed site and the remaining sites were designated as the alternate sites (Reference 9.3-4).

- Compare the alternative sites with the proposed site (Section 9.3.3). This step is a site-by-site comparison of the alternate sites with the proposed site to see if any of the alternatives might be "environmentally preferable" to the proposed site. The objective of this step is to determine whether the impacts at the alternate sites are greater than, similar to, or less than the impacts at the proposed site. During this step, STPNOC considered various topics consistent with those identified in NUREG 1555. These topics provided the environmental and health impact information that enabled STPNOC to determine the environmental impacts of the proposed plant at the alternate sites. Once the comparison was completed, STPNOC determined if any of the alternate sites were environmentally preferable.

Because the findings in Section 9.3.3 identified no alternate site that is environmentally preferable to the proposed site, a subsequent analysis, consistent with NUREG-1555, to determine whether the proposed site was "obviously superior" to the alternate sites was not required.

9.3.2 Alternate Site Selection Process

The following subsections describe the site assessment process that identifies and evaluates the potential locations, including the existing STP site, for construction and operation of the two proposed reactor units. This site assessment was based on the dual unit U.S. Advanced Boiling Water Reactor (US-ABWR) facility. STPNOC adopted the EPRI Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application, dated March 2002, in its site selection process study (Reference 9.3-2). This process proceeded through the following steps that successively reduced the number of sites down to a final proposed site and three alternate sites:

- Identify the Region of Interest (ROI) (Section 9.3.2.1);
- Review the ROI to identify the Candidate Areas (Section 9.3.2.2);
- Survey the Candidate Areas to identify Potential Sites (Section 9.3.2.3);
- Screen the Potential Sites to identify Primary Sites, using nine regional screening criteria (Section 9.3.2.4); and
- Evaluate the Primary Sites to identify Candidate Sites (including the Proposed and Alternate Sites), using thirty-four general site criteria (Section 9.3.2.5).

9.3.2.1 Identification of Region of Interest

As stated in ER Section 1.1.1, the purpose of STP Units 3 & 4 is to provide baseload generation for use by the owners and/or for eventual sale on the wholesale market. Because the STPNOC owners are chartered to provide power in the ERCOT region, and because energy generated in the region is also consumed within the region, the ROI was defined as the ERCOT service territory. STP Units 3 & 4 are located within the ERCOT region.

ERCOT is the regional transmission operator for almost all of Texas, managing the flow of electric power to approximately 22 million Texas customers (Reference 9.3-5).

Its transmission grid is unique from other regional grids in that ERCOT has limited interties that connect the grid with other systems. Because of this lack of interconnects, the vast majority of the power generated in the region must be used within ERCOT. In addition to ensuring reliability of the transmission grid, ERCOT also manages the power market. The size and environmental diversity of ERCOT also provides a large, manageable area from which to draw candidate areas and potential sites. ERCOT was also selected as the ROI because the power generated by the new nuclear power plant will be sold to customers within the region. ERCOT manages grids from Houston in the east to the Mexican Border. To facilitate this process, ERCOT is divided into three regional planning areas: (1) North Region, with Dallas, Waco and Austin as the main load centers; (2) South Region, with Houston, San Antonio, Corpus Christi and Laredo as main load centers; and (3) West Region, where the major load centers are Odessa and Abilene. The ROI encompasses the shaded counties depicted in Figure 9.3-2.

9.3.2.2 Identification of Candidate Areas

The first step in the site selection process was to screen the ROI to eliminate those areas that are either unsuitable or are significantly less suitable than other potential siting areas. Exclusionary and avoidance criteria identified in the EPRI Siting Guide were reviewed to identify those criteria and related physical features that provide insights into site suitability on an areal basis within the STPNOC ROI. The criteria applied to the initial screening of the ROI are listed in Table 9.3-1.

Information defined for each of the ROI screening criteria listed in Table 9.3-1 was mapped, and these maps were then combined using a simple overlaying technique to produce a composite screening map (Reference 9.3-4).

Areas identified as eligible based on the screening process described above were reviewed to verify that they provided adequate land area for a reasonable number of potential sites.

The water availability criterion was the most influential criterion in screening the region of interest down to candidate areas. For purposes of the siting study, a closed-cycle cooling system utilizing a main cooling reservoir was assumed for the STP Units 3 & 4 site, a closed-cycle cooling system utilizing either a cooling water reservoir or cooling towers was assumed for the remaining inland locations, and once-through cooling was assumed for the coastal locations. For the most part, rivers in the ERCOT-West region cannot support the water availability requirements defined for the STPNOC plant. Additionally, the pumping distance condition restricted candidate areas to areas very near the rivers/coast that are potential water sources. After applying all regional screening criteria (Reference 9.3-4), nine candidate areas were identified as follows:

- Candidate Area 1 – The Nueces River below Choke Canyon Reservoir – approximately 85 river miles.
- Candidate Area 2 – The Guadalupe River below New Braunfels, TX and the San Antonio River below Goliad, TX – approximately 320 river miles.

- Candidate Area 3 – The Colorado River below San Saba, TX (just above Lake Buchanan) – approximately 450 river miles.
- Candidate Area 4 – The Brazos River below South Bend, TX (just above Possum Kingdom Lake) and the Little River below Little River, TX – approximately 685 river miles.
- Candidate Area 5 – The Trinity River below Dallas, TX – approximately 200 river miles.
- Candidate Area 6 – The Neches River below Lake Palestine and the Angelina River below Alto, TX – approximately 185 river miles.
- Candidate Area 7 – The Sabine River below Mineola, TX – approximately 60 river miles.
- Candidate Area 8 – The Sulphur River below Talco, TX and the Red River below Burkburnett, TX – approximately 435 river miles.
- Candidate Area 9 – The Gulf Coast – approximately 230 coastal miles.

These Candidate Areas are shown in Figure 9.3-3.

9.3.2.3 Identification of Potential Sites

Based on the composite ROI screening results, the identification of Potential Sites was conducted as follows. Potential Sites were identified in each of the nine Candidate Areas. The following steps were used to locate Potential Sites:

(1) Low resolution aerial photographs of each Candidate Area were viewed using Google Earth® (http://earth.google.com/).

(2) 1:100,000-scale topographic maps (United States Geological Survey [USGS]), railroad system maps, and the ERCOT transmission system map were also examined for supplemental information.

(3) A nominal site location was identified on a 1:100,000 scale topographic map (USGS) to evaluate the topography of the site and surrounding area.

(4) Higher resolution aerial photographs and updated atlases were inspected to confirm the location of nearby communities and the amount of development in the vicinity of the potential site as well as topography.

(5) The latitude and longitude of the approximate center point of the potential site was noted.

The over-arching objective of the independent identification was that the set of Potential Sites should allow for evaluation of major trade-offs (e.g., transmission, water supply, population density) available within the Candidate Areas. Overall considerations for the set of potential sites included:

- At least one site in each of the Candidate Areas; however, note that more than one site was identified within most Candidate Areas in this study, given the significant length/size of each Candidate Area and the objective to maximize the geographic coverage within a given area to the extent possible.
- Sites that allow evaluation of the range of proximity to transmission and grid stability options, and
- Sites that have a range of proximity to load versus remoteness from high population densities and areas of intense development.

The following criteria were subjectively applied, as feasible, in locating Potential Sites.

- Distance to existing rail lines: The distance to existing rail lines was minimized to the extent possible.
- Distance to existing transmission lines: The distance to existing 345 kV transmission lines was minimized to the extent possible.
- Distances from towns, villages, and developed areas (commercial and residential) were maximized. Developed areas were identified from regional screening, satellite imagery, and county and topographic maps.
- Distance from industrial areas: The distance from industrial areas identifiable from the aerial photographs and topographic maps (e.g. airports, industrial complexes) was maximized except where an existing power plant site was being considered.
- Water availability: Several factors were taken into account.
  - Proximity to cooling water supply: Distance to the potential cooling water source was minimized to extent possible.
  - Exiting lakes or reservoirs: Whenever possible, lands around existing lakes and reservoirs were evaluated.
  - Construction of new reservoirs: If existing lakes or reservoirs were not in areas of interest, the topography of the land was qualitatively evaluated for the construction of a new reservoir.
- Topography: The optimal topography was assumed to be a relatively flat area and above the 100-year floodplain for construction of the plant, adjacent to streams with surrounding topography conducive to the construction of a reservoir. Topographic maps and aerial photographs were qualitatively examined to find areas as close to this ideal as possible.
- Land use: Nominal site areas encompassing a consistent land use pattern were considered most suitable, with preference to lands that show no current development but signs of previous disturbance (e.g., recently timbered forest or pasture land). Such patterns were assumed to be associated with fewer

landowners (preferred) and less challenges in land acquisition. Note that land ownership (by applicant) or known availability was not a criterion in selecting Potential Sites.

- Transportation: Access to the potential areas was qualitatively evaluated. Areas around major highways were avoided. Areas within a reasonable distance of state highways were considered.

The Potential Sites were selected using best professional judgment to optimize the location of the Potential Sites within each of the Candidate Areas (Reference 9.3-4). Note that potential greenfield sites were defined to be approximately 6,000 acres in size in order to maximize options relating to land acquisition and siting flexibility (for avoidance or mitigation of potential environmental impacts), although favorable sites as small as 2,000 acres were considered. In addition to reflecting major siting trade-offs, the objective of this phase was to optimize Potential Sites within each Candidate Area with respect to cost and environmental considerations.

Two existing nuclear power plants are located in the STPNOC ROI: STP and Comanche Peak. The STP site was included in the siting study. However, the Comanche Peak site was not included as a potential site, as the site is owned by another utility, already being proposed for a new nuclear power plant, and not available to STPNOC for development.

The identification of potential sites also included consideration of existing power plant locations and brownfield locations that were found within the candidate areas. The EIA-860 Annual Electric Generator Report (2007) identified 108 power plant sites in the counties surrounding the nine candidate areas (Reference 9.3-6). Each power plant site was mapped, and 31 of these sites were found to be within a candidate area. While each of these 31 sites was considered, none of the sites were selected as potential sites, primarily because of insufficient land or size constraints or close proximity to (or within) a populated area. However, some potential sites were identified as greenfield locations in close proximity to the existing plant sites, including Colorado 3 near the Fayette Power Plant, Red 2 near the Valley plant site, and Trinity 2 near the Big Brown plant site. It was noted that many of the existing plant sites are small hydroelectric plants and were not found to be suitable sites for a new nuclear power plant.

Inclusion of brownfield locations was also considered in the siting study. A number of abandoned mine land (AML) reclamation sites are present in Texas, and two such sites are located within the candidate areas: Bastrop AML and Malakoff AML (Reference 9.3-7). While each of these brownfield locations was considered, neither was chosen as a potential site. The Bastrop AML site is located adjacent to Highway 95 and neighboring residential developments. A greenfield potential site was identified near the Bastrop AML site providing a location nearer the cooling water source (Colorado River) and farther from residential developments (Colorado 2). The Malakoff AML site was not chosen as a greenfield location as land currently owned by NRG Energy (NRG) was identified near the Malakoff AML (Malakoff). This greenfield site is located closer to the cooling water source (Trinity River), has flatter topography, and appears from satellite imagery to be previously disturbed.

The Potential Sites are shown in Figure 9.3-4.

9.3.2.4 Evaluation of Potential Sites and Identification of Primary Sites

The Potential Sites were evaluated to identify a smaller set of Primary Sites for more detailed evaluation (Reference 9.3-4). Criteria used in this evaluation included cooling water supply, flooding, population, hazardous land uses, ecology, wetlands, heavy haul access, transmission access, and land acquisition. These criteria were derived from the larger set of more detailed criteria listed in Chapter 3 of the EPRI Siting Guide (Reference 9.3-2). These criteria provide insights into the overall site suitability trade-offs inherent in the available sites within the ROI and were designed to take advantage of data available at this stage of the site selection process.

Weight factors reflecting the relative importance of these criteria were developed by a multi-disciplinary committee in the areas of nuclear power plant site suitability; this committee was comprised of subject matter experts in water use and availability, engineering and licensing, real estate, ecology and environment, transmission, land use, health & safety, geotechnical, socioeconomics, and public relations. The weight factors were derived using methodology consistent with the modified Delphi process specified in the EPRI Siting Guide.

Criterion ratings were developed for each of the Potential Sites. Each site was assigned a rating of 1 to 5 (1 = least suitable, 5 = most suitable) for each of the potential site evaluation criteria. Information sources for these evaluations included publicly available data, information available from STPNOC files, personnel, and large scale satellite photographs. Composite suitability ratings reflecting the overall suitability of each Potential Site were then developed by multiplying criterion ratings by the criterion weight factors and summing over all criteria for each site (Table 9.3-2) (Reference 9.3-4).

Results of applying these screening criteria and weight factors are summarized in Figure 9.3-5 (Reference 9.3-4). Examination of the screening results indicates that the top nine sites rank higher than the next group of six sites whose composite ratings are similar. Additionally, an examination of the lower-ranked sites did not identify significant environmental advantages or the opportunity to further evaluate major siting tradeoffs. Based on these results, the nine highest rated sites were selected as the primary sites for further evaluation, and lower-ranked sites were deferred from further consideration. The resulting set of primary sites (listed below and shown in Figure 9.3-6) allows evaluation of the major siting trade-offs within the ROI:

- South Texas Project
- Trinity 2
- Guadalupe 2

- Sulphur 1
- Red 2
- Red 1
- Malakoff
- Colorado 3
- Allens Creek

9.3.2.5 Evaluation of Primary Sites and Identification of Candidate Sites

The Primary Sites were then evaluated to select a smaller set of Candidate Sites, which would then lead to the ultimate selection of the Proposed and Alternate Sites (Reference 9.3-4). General siting criteria used to evaluate the primary sites were derived from those presented in Chapter 3.0 of the EPRI Siting Guide (Reference 9.3-2); criteria from the siting guide were tailored to reflect issues applicable to, and data available for, the STPNOC Primary Sites.

Weight factors were developed using the same process as described for the evaluation of potential sites (Section 9.3.2.4). Criterion ratings were developed for each of the Primary Sites. Each site was assigned a rating of 1 to 5 (1 = least suitable, 5 = most suitable) for each of the general siting criteria Information sources for these evaluations included publicly available data, information available from STPNOC files, personnel, and large scale satellite photographs. Composite suitability ratings reflecting the overall suitability of each Primary Site were then developed by multiplying criterion ratings by the criterion weight factors and summing over all criteria for each site (Table 9.3-3) (Reference 9.3-4).

Results of applying these screening criteria and weight factors are summarized in Figure 9.3-7 (Reference 9.3-4). Examination of the results indicates that, after the STP site, the Red 2 site ranks high, followed by the third through sixth ranked sites (Allens Creek, Colorado 3, Trinity 2, and Guadalupe 2) which are rated similarly. To provide additional insights on environmental preferability of these sites, two additional indicators were developed:

- Environmental Site Rating – This rating consists of the Health and Safety Criteria (minus the Geology/Seismology criterion), the Environmental Criteria, and the Socioeconomic Criteria. The top sites based on this rating were STP, Red 1, Red 2, Trinity 2, and Allens Creek/Guadalupe 2, with no significant difference between Allens Creek and Guadalupe 2.
- Expanded Environmental Site Rating – This rating consists of the Environmental Site Rating plus the Railroad Access and Transmission Access criteria, which reflect a rough proxy of environmental impact through measurement of the relative distances required for these support facilities. The top sites based on this rating were STP, Red 2, Trinity 2, and Allens Creek, with the observation that no significant difference was found between Allens Creek, Red 1, and Colorado 3.

This evaluation showed that while the Colorado 3 site ranked fourth overall in composite rating, it did not rank as high in the environmentally-related criteria ratings and is not expected to be among the best alternatives environmentally. Additionally, the Guadalupe 2 site, ranked sixth overall, did not rank high in the environmentally-related criteria ratings and is not expected to be among the best alternatives environmentally. These two sites, along with the three lowest ranked sites, were deferred from further consideration. Additionally, the Allens Creek site utilizes a different cooling water source than the other candidate sites, thereby allowing for the evaluation of environmental impacts for a site using the Brazos River as the cooling water source. Thus, the following sites (shown in Figure 9.3-8) were identified as the candidate sites for the STPNOC project:

- STP
- Red 2
- Allens Creek
- Trinity 2

As noted in Section 9.3.1, the STP site was identified as the proposed site for the STPNOC project. This conclusion was confirmed by the very favorable rankings at each stage of the siting analysis (Reference 9.3-4).

Beyond STP, the remaining candidate sites were identified through the process described above as being among the best sites that could reasonably be found within the ROI; these sites are designated as alternate sites and include:

- Red 2
- Allens Creek
- Trinity 2

Finally, two additional sites were previously selected and evaluated as Alternate Sites in other revisions of the COLA: Malakoff and Limestone. For completeness, the environmental impacts at these two sites are also evaluated in Section 9.3.3.

9.3.3 Alternate Site Review

NRC guidelines (NUREG-1555, Section 9.3, Reference 9.3-1), call for a comparison of Candidate Sites (Proposed Site and Alternate Sites) to allow a finding as to whether there exists a site that is environmentally preferable to the Proposed Site. This section evaluates the comparative environmental impacts of constructing and operating a new two-unit nuclear power plant at each of the Candidate Sites. This section reviews in detail the set of Alternate Sites based on the selection criteria and review topics suggested in NUREG 1555 (Reference 9.3-1). STPNOC reviewed the Alternate Sites with the following environmental factors in mind:

- Land Use (both on site and off site impacts);

- Air Quality;
- Water Use and Water Quality;
- Ecology (terrestrial and aquatic ecosystems, including threatened and endangered species);
- Socioeconomics;
- Historic and Cultural Resources;
- Environmental Justice;
- Nonradiological and Radiological Health; and
- Postulated Accidents.

In addition to evaluating the Alternate Sites, this section also includes a summary review of the Proposed Site, which is evaluated in detail throughout this environmental report, in order to provide the necessary comparison of impacts against the Alternate Sites.

The comparison of the Candidate Sites uses the impact significance defined in 10 CFR 51, Appendix B, Table B-1, Footnote (Reference 9.3-8). These definitions of significance are as follows:

- SMALL – Environmental effects are not noticeable or are small such that they will not noticeably degrade the attributes of the resource.
- MODERATE – Environmental effects are noticeable, but will not significantly impact the attributes of the resource.
- LARGE – Environmental effects are clearly noticeable and may significantly impact the attributes of the resource.

The results of this evaluation are summarized in Table 9.3-4 (for construction impacts) and Table 9.3-5 (for operational impacts).

9.3.3.1 Evaluation of South Texas Project Site

The STP site is the Proposed Site for the development of a new two-unit nuclear power plant (STP Units 3 & 4). The site is located in Matagorda County, Texas, approximately 10.8 km (6.7 mi) south of Buckeye, TX and approximately 22.0 km (13.7-mi) southwest of Bay City, TX. The cooling water source for the STP site is the Colorado River. The Proposed Site is adjacent to the existing STP Units 1 & 2.

The proposed STP site is reviewed at length in this Environmental Report. This section summarizes the information for the purposes of comparison, with references to the relevant portions of the Environmental Report.

9.3.3.1.1 Land Use Including Site and Transmission Line Rights-of-Way

Land use in the vicinity of the STP site is predominantly agricultural and rangeland. In 2007, approximately 81% of total land acreage in Matagorda County was devoted to farming, including 903 farms and ranches covering 577,594 acres. Of this, 295,031 acres (51%) were devoted to pasture (permanent pasture and rangeland other than cropland and woodland pasture), 234,688 acres (41%) to cropland, and 37,337 acres (6%) to woodlands. The remaining farmland (10,538 acres) is devoted to farmsteads, buildings for livestock, ponds, roads, and wasteland (Reference 9.3-9). Industrial land use within the vicinity is limited to STP, the Lyondal facility, and the Port of Bay City. There is also commercial fishing in the Lower Colorado River, East and West Matagorda Bays, Intercoastal Waterway and the Gulf of Mexico. There are no federal, state, regional or county land use plans for this area (ER Section 4.1.1.2). Since there is no zoning in Matagorda County, no rezoning would be required for this project. All temporary and permanent facilities associated with the construction of the proposed project will be located within the existing STP property boundary on land areas previously disturbed by construction (ER Section 4.1.1).

STPNOC currently owns 12,220 acres at the STP site and vicinity. The STP site currently includes 65 acres of generating facilities, buildings, parking areas, switchyard, and transmission line corridors associated with Units 1 and 2. A total of approximately 540 acres would be required for construction facilities including permanent facilities, structures, and laydown. Approximately 300 of the 540 acres would be permanently dedicated to the new units and their supporting facilities (power block area, cooling tower area, cooling water intake system, and switchyard). The remaining 200 acres would be temporarily impacted and include a concrete batch plant and material storage area, a construction laydown and facilities area, a construction parking area, a heavy haul road, and a borrow and spoils area (ER Section 4.1.1; Table 4.1-1 in RAI response to Question 10.05S-03, ML 090860873). These areas would be reclaimed to the extent possible following construction.

The STP Units 3 & 4 site is located at the existing South Texas Project nuclear power plant. Multiple 345kV connections are available at the site. There would be no new offsite transmission corridors required to support the new units (ER Section 4.1.2).

Given that all impacted acres will be within existing STP property on land areas previously disturbed, no offsite areas would be impacted, and no rezoning would be required, impacts on land use from construction and operation of STP Units 3 & 4 at the proposed site are expected to be SMALL (ER Section 5.8.2.2.3).

9.3.3.1.2 Air Quality

Impacts to air quality from construction activities at the STP site are detailed in ER Section 4.4.1.3. Air quality impacts associated with plant construction include both impacts from the construction activities themselves and transportation impacts from workers commuting to the worksite. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities, including a preconstruction air permit from the Texas Commission on Environmental Quality (TCEQ) (Reference 9.3-10). The air permits would ensure both construction and operational emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the National Ambient Air Quality Standards (NAAQS) (Reference 9.3-11).

Air quality impacts from construction activities are similar to those for any large-scale construction effort and consist of fugitive dust emissions, emissions from equipment and machinery, and emissions from concrete batch plant operations. Fugitive dust emissions can be controlled through use of water sprays and postponing certain activities during windy conditions. Equipment emissions can be controlled through equipment inspections and regular maintenance. Concrete batch plant operations would employ equipment emissions controls to minimize air quality impacts. Specific mitigation measures would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment. In total, air quality emissions from construction activities would be small and temporary and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the construction workforce commuting to the worksite. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity. Air quality impacts would be more detrimental in areas already exceeding the NAAQS for criteria pollutants. Texas has no nonattainment areas for carbon monoxide, nitrogen dioxide, ozone (1-hour), sulfur dioxide, particulate matter (less than 2.5 micrometers [$PM_{2.5}$]), or lead. Part of El Paso County, Texas is in nonattainment for particulate matter (less than 10 micrometers [PM_{10}]); however, this county is in the extreme western portion of the state and is not located near the STP site. The Houston-Galveston-Brazoria area holds non-attainment status for ground-level ozone under the 8-hour standard. Counties affected under this status include Brazoria (adjacent county east of the plant site), Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, and Waller (Reference 9.3-12).

As the STP site is located outside of the affected counties and vehicular transportation is not expected to significantly increase across the affected counties as a result of the construction activities, impacts are expected to be SMALL.

Impacts to air quality from plant operation at the STP site are detailed in ER Section 5.8.1.2. Air quality impacts associated with plant operation include both impacts from the plant operational activities themselves and transportation impacts from workers commuting to the plant. Operating activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Air quality impacts from operational activities result from releases of heat and moisture to the environment from cooling operations and emissions from the operation of auxiliary equipment. As described in ER Section 3.4, a closed-cycle cooling system will be used for STP Units 3 & 4, using the existing Main Cooling Reservoir (MCR). Additionally, mechanical draft cooling towers will be constructed to assist in heat load dissipation and serve as the Ultimate Heat Sink (UHS). Thermal discharges resulting from these systems will be to the MCR and to the atmosphere. During normal operating conditions, most of the heat load will be to the MCR, and each of the towers would operate at one-half capacity. The cooling towers would operate at full capacity during emergency reactor shutdown.

Cooling tower operation often results in drift, or the transport of residual salts and chemicals through water droplets carried out of the cooling towers. Based on a review of the measurements of deposition of draft from nuclear power plants (Reference 9.3-13), measurements indicate that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Auxiliary equipment may also be operated on an intermittent basis. Auxiliary equipment emissions can be controlled through equipment inspections and regular maintenance. Small amounts of ozone and smaller amounts of oxides of nitrogen are produced by transmission lines (Reference 9.3-14). Production of ozone and oxides of nitrogen are insignificant and does not measurably contribute to ambient levels of those gases (Reference 9.3-13). In total, air quality emissions from operational activities would be small and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the workforce commuting to the plant. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity for the same reasons as previously described for the commuting construction workforce: the STP site is located outside of affected counties in non-attainment for criteria pollutants. While adjacent Brazoria County is in non-attainment for ground-level ozone under the 8-hour standard, vehicular transportation is not expected to significantly increase across this affected county as a result of plant operation. Impacts are expected to be SMALL.

9.3.3.1.3 Hydrology, Water Use, and Water Quality

Water-related impacts from construction activities at the STP site are detailed in ER Section 4.2. Water-related impacts associated with plant construction include both water use impacts and water quality impacts and are consistent with those caused by typical large-scale construction projects. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

STPNOC estimates that groundwater would be used at a peak or maximum rate of approximately 1,200 gpm (ER Section 2.3.1.2.6) during construction with normal demands being much less than maximum use. Groundwater would be used during construction for personal consumption and use, concrete batch plant operation, concrete curing, cleanup activities, dust suppression, placement of engineered backfill, and piping hydrotests and flushing (ER Section 2.3.1.2.6).

In summary, due to the relatively small water quantity requirements and the availability of groundwater or imported water, the site will have a SMALL impact on water use for construction activities.

Water quality impacts from construction activities would primarily result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through Texas Pollutant Discharge Elimination System (TPDES) permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from construction activities would be regulated and would require obtaining TPDES or other discharge permits. Regulated discharges would not be expected to significantly impact local drainages or other surface water bodies. Additionally, significant hydrological alterations are not anticipated at the STP site. Therefore, impacts to water quality will be SMALL.

Water-related impacts from operational activities at the STP site are detailed in ER Section 5.2. Water-related impacts associated with plant operation include both water use impacts and water quality impacts. Plant operation would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Plant operational activities consume water through plant cooling and personal (sanitary) uses. Overall use of water is dominated by plant cooling uses for wet-cooled plants. As described in ER Section 3.4, a closed-cycle cooling system will be used for STP Units 3 & 4, using the existing MCR. Additionally, mechanical draft cooling towers will be constructed to assist in heat load dissipation and serve as the UHS. The assumed maximum plant cooling design consumption for a two-unit plant is 50,000 acre-ft/yr (31,000 gpm, 69.1 cfs). The necessary water rights for this cooling water requirement from the Colorado River are presently owned by STPNOC, and the site will have a SMALL impact on water use for operational activities.

Cooling tower operations result in the concentration of dissolved solids in the water stream, resulting from evaporation loss, which must occasionally be discharged and replenished with freshwater. The discharged water (blowdown) would be of lower quality than the source water. Cooling tower blowdown would be discharged to the MCR (where it is diluted) and ultimately the Colorado River as necessary (in accordance with discharge permit conditions). Discharge in accordance with permit conditions, in addition to operating experience at STP Units 1 & 2, indicate that minimal water quality impacts to surface water bodies would be realized (ER Section 5.3.2). Additionally, a TPDES permit would be required to discharge effluents, and any unforeseen water quality impacts could be addressed during periodic permit renewals.

Water quality impacts could also result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from operational activities would also be regulated and would require obtaining TPDES or other discharge permits.

Therefore, due to the management of cooling tower blowdown using a MCR, and due to the regulatory conditions associated with the operational activities, impacts to water quality will be SMALL.

9.3.3.1.4 Terrestrial Resources Including Threatened and Endangered Species

All temporary and permanent facilities associated with the construction of the proposed project will be located within the existing STP property boundary on land areas previously disturbed by construction (ER Section 4.1.1).

The potential impacts from construction, such as erosion and dust generation, would be typical of large construction projects. These impacts could be mitigated using standard industrial procedures and best management practices. Standard practices, such as silt fences to control sedimentation and water sprays to limit dust generation, would protect wetlands and other ecological resources in the site vicinity. In terms of habitat loss from constructing two new units at STP, minimal terrestrial habitat would be cleared and impacts would be SMALL.

Threatened and endangered species that may be present in the site vicinity have been identified and evaluated in ER Section 4.3.1.2. Construction activities should not reduce local biodiversity or impact threatened or endangered species. Three listed species (bald eagle, brown pelican, and alligator) have been observed within the proposed STP site (ER Section 4.3.1.1). The Texas Prairie Wetland Project is located several hundred yards from the proposed site, but given the distance from the construction site and the limited duration of the construction activities, the long-term presence of waterbirds on the site should not be impacted by construction (ER Section 4.3.1.1.1). An active bald eagle nest is located on the proposed STP site near the eastern boundary. Although recently delisted under the Endangered Species Act, the bald eagle remains protected under the Bald and Golden Eagle Protection Act. National management guidelines for bald eagles recommend a protection zone to extend out 660 feet from each eagle nest (ER Section 4.3.1.1. No activities related to construction will occur within one mile of the eagle nest. Much of the construction-impacted areas will be available as wildlife habitat when construction is complete, and relatively similar open habitats will remain on site and are present off-site (ER Section 4.3.1.2).

STPNOC expects impacts from construction and operation at the proposed site to be SMALL (ER Section 5.6.1).

9.3.3.1.5 Aquatic Resources Including Threatened and Endangered Species

Construction impacts to aquatic species at the STP site have been evaluated in detail in the ER Section 4.3.2. In summary, the aquatic species that occur on site are ubiquitous, common, and easily located in nearby waters (ER Section 4.3.2.1). Most of the common fish species tend to be tolerant of salinity and temperature fluctuations and are ubiquitous in coastal wetlands along the Gulf Coast. A preliminary jurisdictional determination identified a total of 17.6 acres on the site; however, all wetlands would be avoided by construction activities and there would be no impacts to these wetlands.

Best management practices and good construction engineering practices will be used to avoid or minimize sedimentation. Some dredging will be required to prepare the existing barge slip for vessels transporting large components to the site but these impacts have already been evaluated and the necessary permits are in place for both the barge slip and the reservoir makeup pumping facility. Impacts would occur over a relatively brief period (one spawning season) and would not produce long term or lasting impacts. The season of the year in which construction occurs would determine which specific resources may be affected. Because the area to be disturbed is small and in a protected near shore area that is adjacent to the reservoir makeup pumping facility, the overall impacts on aquatic species is expected to be minimal and temporary (ER Section 4.3.2.4).

Nearby coastal waters to the STP site have been designated as essential fish habitat (EFH) for various species. EFH has been designated within the Gulf of Mexico and Matagorda Bay estuary along the Texas coastline for the following species: Reef fish, Red drum, Stone crab, Shrimp, and coastal migratory pelagic fish (References 9.3-15 and 9.3-16). However, since development of additional units at the STP site would not include construction within, or water withdrawal directly from, the Gulf of Mexico or Matagorda Bay, which is over seven miles away, no impacts are expected to protected habitat in the Gulf or to the coastal threatened and endangered species which include five species of sea turtles. No threatened or endangered species are expected to be affected by the proposed construction (ER Section 4.3.2.1).

Impacts from project operations on aquatic species at the STP site have been evaluated in detail in ER Section 5.3. ER Section 5.3 describes the STP Units 3 & 4 cooling system and its operation. Sections 5.3.1 and 5.3.2 describe the impact of STP Units 3 & 4 cooling on the aquatic communities of the lower Colorado River. STP Units 3 & 4 will rely on the MCR for dissipation of heat.

Aquatic organisms can become entrapped, entrained, or impinged when water is drawn into the intakes at a flow greater than what they can escape (ER Section 5.3.1.2.1). Impacts are dependent on species that are present, the velocity of flow into the intake, the velocity of water withdrawn, and specific design features of the intake structure and pumps. Final design of intake and discharge systems considered potential impacts on aquatic organisms under U.S. Environmental Protection Agency (EPA) regulations implementing Section 316(b) of the Clean Water Act (CWA), and incorporates the best technology available.

Aquatic resources potentially present at makeup water intake include commercially and recreationally important species. Monitoring of STP Units 1 & 2 concluded (by NRC) that entrainment would be insignificant, and effects of impingement would be “minor.” The potential for environmental impacts to aquatic resources, including threatened and endangered species, from nuclear power facility operations at STP Units 3 & 4 would be SMALL (ER Section 5.6.2).

9.3.3.1.6 Socioeconomics

ER Section 4.4 addresses impacts from the projected in-migrating population on the region and on local populations at the STP site. Additional detail is provided here relating to key assumptions used in the evaluation of alternate sites, in order to provide a consistent comparison across STP and the alternate sites. The discussion of potential socioeconomic impacts includes physical impacts as well as impacts relating to demography, local economy, tax revenues, housing, public services, education, recreation, and transportation. These are presented in detail below; the same assumptions apply to STP and each of the alternate sites.

The primary assumptions for the alternative socioeconomic impact analysis is consistent with that used in the detailed evaluation of the preferred STP site (ER Section 4.4) and relates to the number of in-migrating construction workers: 50% of the peak construction workforce would in-migrate into the site area, and the other 50% would commute to the site daily from their existing homes in nearby cities and towns. Of the 50% of workers who would in-migrate into the area, 80% would bring their families.

While the STP site is in a rural, low population area, the surrounding counties within potential commuting distance had a total employed workforce population in 2000 of 193,904 (Reference 9.3-4) which should be adequate from which to draw 50% of the estimated construction workforce as daily commuters to the site.

Other assumptions include the following:

- The number of persons per family is 3.28, based on state average (Reference 9.3-17); it is the same across all sites.
- The percentage of in-migrating population that consists of school-age children (ages 5 to 19) is 23.5%, based on state average (Reference 9.3-17); it is the same across all sites.
- For purposes of developing an estimate of in-migrating workers to the site area, the peak construction workforce is assumed to be 6,810 workers, based on the following workforce estimates identified by STPNOC in RAI Response (LTR 3, ABR-AE-08000056; ML 090860873): 5,950 peak onsite construction workforce between months 26 and 35; and an average of 860 new operations staff who would also be on site for STP Units 3 & 4 during this same time (based on range of 790 to 930 operations staff). Existing workforce for STP Units 1 & 2 (1,200) were not considered, other than as part of the potential cumulative impact analysis, since they are assumed to already live in the area. In addition, the workers required during peak outages (1,100 workers) were not considered given the short duration of their work (one to two months).
- For purposes of the socioeconomic analysis, STPNOC has assumed that the residential distribution of construction workers on the new nuclear units at STP and the alternate sites would resemble the residential distribution of STPNOC's current workforce at STP Units 1 & 2: as of January 2007, 83% of the workforce reside within two counties: Matagorda (host county, 60.7%) and Brazoria (adjacent county, 22.4%). The remaining 17% are distributed across at least 18 other counties with less than 5% of the employees per county. The socioeconomic impact would be most evident in Matagorda and Brazoria Counties. For the

remaining counties, the number of current operations workforce residing in each county represents a very small percentage of the 2000 county's population.

- STPNOC is applying these same percentages to the potential in-migrating workforce in the evaluation of socioeconomic impacts at the alternate sites.

A peak construction workforce of 6,810 workers would result in a total in-migrating population of 9,616 to the region based on the following logic:

- 50% of workers will in-migrate to the area (3,405 workers)
- 61% of in-migrating workers will reside in host county (Matagorda), 2,077
- 22% of in-migrating workers will reside in adjacent county (Brazoria), 750
- Number of in-migrating workers that bring families into 50-mile radius (80% of in-migrating workers), 2,724
- Number of in-migrating workers that do not bring families into 50-mile radius (20% of in-migrating workers), 681
- Average in-migrating worker family size (worker, spouse, children), 3.28
- Total in-migration: 9,616 (8,935 + 681), 83% of which would be to host and adjacent county
- Number of in-migrating workers that bring families into Matagorda County, 1,662 (61% of 2,724)
- Number of in-migrating workers that do not bring families into Matagorda County, 415 (61% of 681)
- Total in-migration into Matagorda County, 5,866 (5,451+415)
- Number of in-migrating workers that bring families into Brazoria County, 600 (22% of 2,724)
- Number of in-migrating workers that do not bring families into Brazoria County, 150 (22% of 681)
- Total in-migration into Brazoria County, 2,118 (1,968+150)

Thus an influx of 3,405 workers is predicted to result in a total population influx of 7,984 persons into Matagorda and Brazoria Counties and the remaining 1,632 in-migrating workers and their families would reside in other neighboring counties within commuting distance of the site. The socioeconomic impact is assumed to be greatest in a two-county region, including the host county, and this is the primary region of impact evaluated for STP and the alternate sites, although a comparison of impacts to a larger multi-county region is also made. The remaining workers (and their families) are assumed to disperse across multiple counties, with the percentage residing in each county representing a very small percentage of the total county population for that county. This would represent a SMALL impact for each individual county within the region.

Physical Impacts

Physical impacts at the site would be minimal since the site is part of an operating nuclear plant. (ER Section 4.4.1).

Demography

Based on an estimated total in-migrating population of 9,616 into the multi-county region, and a total in-migrating population of 5,866 and 2,118 into Matagorda and Brazoria counties, respectively, as derived above, the percent increases in population would be as shown in Table 9.3-7. Potential increases in population during construction for the proposed project within the multi-county study area are also presented. The individual impacts to each county would constitute an increase of 15.5% in Matagorda County (host county), and an increase of 0.9% in the adjacent (and more populated) Brazoria County. The potential impacts would be LARGE in Matagorda County and SMALL in Brazoria County. Should the in-migrating population be more evenly distributed between the two counties, the resulting population increase would be 2.9%, or a SMALL impact on the two-county area. Finally, impacts to the multi-county region include a 2.2 percent increase in population, or a SMALL impact on the region. Note that all impacts would be temporary and are based on conservative 2000 U.S. Census Bureau population levels. A comparison to the estimated 2008 population for Matagorda County (37,265, a 1.8% decrease from 2000) would not change the results. In contrast, the 2008 population for Brazoria County (301,044) increased by 24.5%, which would result in even smaller impacts to this county and to the two-county area (which would remain SMALL).

Local Economy and Taxes

Impacts to the local economy and taxes are discussed in ER Section 4.4.2.2.

In general, impacts of construction on the local economy depend on the region's current and projected economy and population. Conclusions for the STP site are that the additional jobs from construction would be a boost to the economy, particularly in Matagorda County as the site of the construction and the county where most of the construction labor force would reside. The magnitude of the positive economic impacts would become more diffuse as a result of interacting with the larger economic base of other counties, particularly in Brazoria County, which contains a portion of the outskirts of Houston.

STPNOC further assumes that following construction, approximately 50% of the in-migrating workforce would remain in the 50-mile radius and the remainder would migrate out. Assuming a 50% decrease in the labor force, there would be a corresponding economic impact in the 50-mile region. This would be considered a negative impact. However, the out-migration could occur gradually over a 2-year period, which would assists in mitigating the impact to the community from destabilizing effects of a sudden decrease in households.

Based on the estimated distribution of the in-migrating workforce (61% to Matagorda County and 22% to Brazoria County), Matagorda County would be the most affected. STPNOC concludes that the impacts of construction on the economy of the region would be SMALL everywhere in the region, except Matagorda County, where the impacts of an in-migrating construction labor force and the negative impacts of the departing labor force (upon completion of construction) could be MODERATE to LARGE. Mitigation would be warranted. To mitigate these impacts, STPNOC would maintain communication with local and regional government authorities and intergovernmental organizations to disseminate project information that could have socioeconomic impacts in the community in a timely manner. These organizations would be given the opportunity to perform their decision-making regarding future economic choices with the understanding that approximately half of the positive economic impacts resulting from construction would be temporary and could disappear when the construction is complete.

Regarding potential construction impacts on taxes, the tax structure and revenue categories for Texas are described in detail for the STPNOC in ER Section 2.5.2.3, and potential community impacts from construction are described in ER Section 4.4.2.2. In summary, the state of Texas would not collect franchise taxes from the privately owned investors in STP Units 3 & 4 during the construction period for those units. In absolute terms, the amount of state sales and use taxes collected over a potential 7-year construction period could be LARGE, but SMALL when compared to the total amount of sales and use taxes collected by Texas. However, because of their small populations, sales taxes collected by the cities of Bay City and Palacios would have MODERATE to LARGE and BENEFICIAL impact. The construction site related property taxes collected and distributed to Matagorda County would be LARGE and BENEFICIAL when compared to the total amount of taxes Matagorda County currently collects. In addition, Matagorda County would benefit from an increase in housing values and inventory caused by the influx of a permanent construction labor force (i.e., would not out-migrate at the completion of construction) thereby further increasing property tax revenues for the county and special taxing districts. Therefore, the potential beneficial impacts of taxes collected during construction would be MODERATE to LARGE and BENEFICIAL in Matagorda County and to local entities within the county, SMALL to MODERATE and BENEFICIAL to the local independent school district(s), and SMALL and BENEFICIAL in the surrounding area and in the state of Texas. Mitigation would not be warranted at any site because the impacts are positive.

Infrastructure and Community Services

Transportation

Impacts on the existing transportation network surrounding the STP sites have been described in ER Sections 4.4.1.1.3 and 5.8.2.2.4. The site is located approximately eight miles east of SH-60 which provides primary access to the area. Expansion of the STP site to include two new units would add commuters, deliveries, and congestion to the local residents and significant workforce and delivery system associated with existing STP Units 1 & 2. However, the existing transportation routes adequately serve the site area, and no new public roads would be required as a part of construction activities. The impact construction workers would have on the two-lane roadways in Matagorda County, particularly FM 521 and feeder roads, would be a MODERATE to LARGE impact and require mitigation. Mitigation measures would be implemented as needed to help reduce potential cumulative impacts during the peak construction period when both construction and operations workers would be traveling to and from the site. Such measures might include: shuttling construction workers to and from the site, encouraging carpooling, and staggering shifts to avoid traditional traffic congestion time periods.

Recreation

Nearby recreational facilities at the STP site have been described previously in ER Section 2.5.2.5 and include two wildlife management areas within 15 miles, and two National Wildlife Refuges within 15 miles. Any adverse impacts on recreation and aesthetics would be minimal (ER Section 4.4.2.2.5).

Housing

The impacts of plant construction on housing depend upon the number of workers already residing in the study area and the number that would relocate and require housing. As discussed previously, STPNOC estimates that approximately 3,405 workers and their families (for a total of 9,616 persons) would in-migrate into the region. Assuming these workers are dispersed throughout the multi-county region, the impacts on housing at each site are expected to be SMALL, based on the small percentage increases in total study area population occurring at each site (See Table 9.3-7). Impacts on housing under the more conservative scenario, where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county), are provided in Table 9.3-8, as a percentage use of the existing vacant housing inventory. These numbers are based on housing data for 2000 (vacant) and assume one housing unit per worker.

Based on absolute numbers, the available housing would be sufficient to house the in-migrating workforce at the STP site. The available housing may not be sufficient, however, in terms of the type, size, and pricing desired by the workers. In this case, workers could relocate to other areas in the region, such as to larger metropolitan areas within commuting distance; have new homes constructed; bring their own homes; or live in hotels, motels or nearby recreational vehicle (RV) parks. Rental property and mobile home facilities are scarce in rural counties within a 50-mile radius of the STP site, but are more plentiful in the larger municipalities. Single workers could also share an apartment, which would reduce the total number of housing units needed. An increase in housing demand could result in an increase in housing prices and rent, which could result in pricing some low-income populations out of their rental housing. In the long-term, however, the study area, and particularly the host county of each site, would benefit from increased property values and the addition of new houses to the tax rolls.

In general, impacts on housing are considered to be SMALL when a small change in housing availability occurs and MODERATE when there is a discernable but temporary reduction in the availability of housing units. STPNOC concludes that the potential impacts on housing at the STP site would be LARGE if the majority of workers choose to reside in the two-county area (increase of 21.1% in two-county area and 44.1% increase in host Matagorda County), and SMALL if the workers are dispersed throughout the larger study area.

Public Services

Public services include water supply and wastewater treatment facilities, police, fire and medical facilities; and social services. New construction or operations workers relocating from outside the region would most likely live in residentially developed areas where adequate water supply and wastewater treatment facilities already exist. Small increases in the regional population would not materially affect the availability of police, fire, or medical services. It is not expected that public services would be materially impacted by new construction or operations employees relocating into the region. Therefore, the impacts on public services within the region would be expected to be SMALL. Population increases for the two-county area, as shown in Table 9.3-7, are less than 5 percent (2.9%) such that impacts on public services within the two-county area would be SMALL. However, the population percentage increase in the host (Matagorda) county is 15.5%. In general a large population influx would increase demands on existing medical, police and fire services in sparsely populated local communities. These local (or county) governments would need to hire additional staff, buy additional vehicles, and improve/build new facilities. Additional tax revenues from population influx would help offset the cost to expand local police and fire departments and benefit the area in the long term. However, the short-term impacts could be adverse as existing capacities are exceeded in the initial years of construction. Given the estimated increase in the population of Matagorda County, impacts to the host county would be MODERATE to LARGE. Note that impacts to the host county could be alleviated somewhat if a larger percentage of the in-migrating population chose to reside in the more populated Brazoria County.

Education

According to the 2000 Census estimate, school-age children (between the ages of 5 and 19) comprise 23.5% of the population of Texas (Reference 9.3-17). Applying the same percentage to the total in-migrating population that would reside in the two-county area at the STP site, based on the assumption that most of the workers will come from within Texas, the anticipated in-migrating school age population is 1,880. Under the assumption that 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county), the number of school-age children migrating into Matagorda County would be 1,380 and the number of school-age children migrating into adjacent Brazoria County would be 500. (Note that this works out to 0.83 school-age children per family (1,380 / 1,662; and 500 / 600), which is consistent with STP assumption of 0.8 school age children per family.) The percentage increases for each county are identified in Table 9.3-9.

The projected increase within the two county area is less than 5 percent and impacts would be SMALL. The projected increase in Matagorda County, however, is 14.2

percent. Impacts in the host county would be MODERATE to LARGE. The quickest mitigation measure would be to hire additional teachers and move modular classrooms to existing schools. Increased property and sales tax revenues as a result of the increased population would fund additional teachers and facilities.

The above discussion pertains to socioeconomic impacts from construction. Socioeconomic impacts from plant operation have been described in ER Section 5.8.2. In summary, STPNOC expects the impacts from operation at the proposed site to be SMALL to MODERATE, with MODERATE beneficial impacts as a result of increased taxes and jobs.

9.3.3.1.7 Historic and Cultural Resources

Adverse effects to archaeological, paleontological, and cemetery resources are generally the result of direct impacts from ground disturbing activities. Therefore, the area of potential effect coincides with those areas where direct impacts from construction and operation of the proposed project would occur. Adverse effects to historic resources (e.g., standing structures) may occur through direct impacts that may change the character of a property's use or the physical features within a structure's setting that contribute to its historic significance. Adverse effects may also occur through indirect impacts that could introduce visual or noise elements that diminish the integrity of a property's significant historic features.

Only one historic structure property is listed on the National Register of Historic Places (NRHP) in Matagorda County: the Hotel Blessing located 8.9 miles from the project site. Other significant cultural resources are found between 6.0 and 9.2 miles from the site; and 35 archaeological sites are located between 4.1 and 10 miles from the site (ER Section 4.1.1.2). Construction activities would be conducted immediately adjacent to the current STP plant on previously disturbed areas. No changes to offsite transmission corridors are anticipated, and there would be no impacts on historic or cultural resources due to construction in transmission corridors. Therefore, it is unlikely that any historical properties or other significant cultural resources are within the area that would be impacted by construction. If historic properties were encountered during construction, activities would cease in the vicinity of the discovery and STPNOC would consult with the State Historic Preservation Officer (SHPO) (Texas Historical Commission). A letter dated January 19, 2007 was received from the Texas Historical Commission (THC) indicating that no historic properties will be affected by the proposed construction and operation of STP Units 3 & 4 (ER Section 4.1.3).

There is minimal potential for direct impacts as a result of operations. In general, plant operation is not expected to involve the physical conversion of additional lands for the plant's use. It is further assumed that any plans to disturb additional lands would avoid existing known (and significant) historic and cultural resources, and would require consultation with the THC prior to disturbance to address potential impacts on unidentified and potentially significant resources. Such mitigative actions would ensure that impacts to historic and cultural resources from plant operation are small. The potential for impacts to cultural resources related to project operations would be limited to indirect impacts that could alter the character of a resource or its setting. Because there are no known cultural resources in the area of the proposed plant site, no direct or indirect impacts are anticipated.

STPNOC concludes that impacts of construction and operation on historic properties would be SMALL.

9.3.3.1.8 Environmental Justice

The Census Bureau data (2000) for Texas characterizes 11.5% of the population as Black, 0.6% American Indian or Alaskan Native, 2.7% Asian, 0.1% Native Hawaiian or other Pacific Islander, 11.7% some other race, 2.5% two or more races, 29.1% aggregate of minority races, and 32% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 12% of families were living below the poverty level in 1999 (Reference 9.3-18).

Total percentages of minority populations within a 50-mile radius of the STP site were determined using 2000 Census block points with the following results: 11% black, 0.5% American Indian and Alaskan Native, 1.2% Asian, 0.03% Hawaiian and Other Pacific Islander, 11.7% All Other Races, and 2.2% Two or More Races, and 27.3% Hispanic or Latino of any race (Hispanic Ethnicity). In addition, the percentage of low income population (families) was determined using Census block groups within a 50-mile radius of the STP site with the following result: 6.5% were living below the poverty level; the data were for 1999 (Reference 9.3-19). These percentages are consistent or slightly lower than the state averages for Texas.

In addition, because it is assumed that those minority populations living closest to the site have the potential to be affected by plant construction activities, the 2000 Census block data within a 5-mile radius of the STP site were used for ascertaining minority population in the area, as follows:

- 29 Census Blocks with a total population of 433 are found within a 5-mile radius of the STP site; this area includes Matagorda County, TX.

For purposes of this evaluation, the potential for the proposed project to result in disproportionate impacts on minority and low income populations is based in part on whether any block percentage exceeded its corresponding state percentage by more than 20% or was greater than 50% overall. In this situation, the block was identified as having a significant minority population.

For the STP site, minority populations exist in four blocks as follows: black minority population exists in one block; Hispanic population exists in two blocks; and populations of other races exist in two blocks, one of which is the same block – counting the same two persons – as one of the Hispanic population blocks. Note that the actual minority populations in these Census blocks are very low: 20 persons out of a total population within 5 miles of 433 persons. The closest minority population to the site is a population of other races, located 2.4 miles NNE of the site and totaling 6 persons. The remaining minority populations are found between 4 and 5 miles from the site.

While construction activities (noise, fugitive dust, air emissions, traffic) could disproportionately affect these blocks of minority populations during construction activities at the STP site, longer term impacts from plant construction and operation could benefit this low-income population through an increase in related jobs.

The 1999 Census block group data within a 10-mile radius of each site were used for ascertaining low-income population in the area. The Census Bureau data characterizes 12% of families as living below the poverty level in Texas in 1999. Within the three block groups included in the 10-mile radius, the percentages ranged from 3.7% to 21.2%. Based on the “more than 20 percent” criterion, no low income populations exist in a 10-mile radius of the STP site.

In general, new facilities would be considered beneficial economically to the existing population, especially those disadvantaged population segments served by the State and local social service agencies. Two new units may enable the disadvantaged population to improve their social and economic position by moving to higher paying jobs. At a minimum, the expenditures of construction workforce in the area of food, services, etc. could, through the multiplier effect, increase the number of jobs available to the disadvantaged population.

Impacts to minority and low income populations from plant operation are expected to be similar to those identified for construction activities; however, the impacts during plant operation are expected to be generally beneficial to a disadvantaged community. Minority and low-income populations have been shown to benefit economically from the existing plant (e.g., construction and operation of the Grand Gulf nuclear plant in Mississippi (Reference 9.3-14), and are expected to receive long-term positive economic benefits from construction and operation of two new units at all six candidate sites. From this perspective, it could be argued that those sites with the highest minority and low income populations, would receive LARGER and more BENEFICIAL impacts to these populations than the other sites.

STPNOC concludes that environmental justice impacts of construction and operation of the proposed project at the preferred STP site would be SMALL, and that potential long-term impacts from project operation would be BENEFICIAL to the minority and low-income populations (ER Section 5.8.3).

9.3.3.1.9 Nonradiological Health

Typical nonradiological health hazards associated with large construction projects (such as construction of a new nuclear power plant) include the following:

- Air Emissions, such as fugitive dust, smoke, and engine exhaust;
- Physical Hazards, such as falls, impact injuries, and vehicular accidents; and
- Noise Hazards.

All construction activities would be performed in compliance with the Occupational Safety and Health Act (OSHA) (29 CFR 1910).

Construction-related air emissions are anticipated to consist of fugitive dust, smoke, and engine exhaust. Impacts to construction workers would be the same for both the proposed and alternate sites. Construction workers would be protected from such hazards via personal protective equipment (dust masks, etc.) and other controls (water sprays, equipment emission controls, equipment inspections, etc.).

Impacts to neighboring populations would be dependent on distance to these receptors. The STP site is located adjacent to an operating nuclear power plant. However, the majority of workers at the plant work indoors and would not be impacted. Training, awareness, and personal protective equipment would minimize the impacts to personnel working outdoors. The STP site is not located in the immediate vicinity of residential areas, and fugitive emissions are not anticipated to impact offsite receptors.

Physical hazards at the construction site would be consistent with any large-scale construction project and could include falls, impact injuries, vehicular accidents, and electric hazards. Access to the construction site would be controlled, and physical hazards to neighboring populations are not anticipated. Impacts to construction workers would be minimized through training, awareness, and personal protective equipment, and are expected to be minor.

Activities at the site would create noise consistent with large-scale construction activities. Noise levels for common construction activities are typically about 90 dBA at a distance of 10 feet (Reference 9.3-14), and decrease with distance from the source. Due to the distance to local residential areas from the STP site, these populations are not expected to be impacted from construction noise hazards. Impacts to construction workers and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

In summary, construction-related nonradiological health impacts (air emissions, physical hazards, and noise hazards) to construction workers, workers at neighboring facilities, and neighboring residential areas are expected to be SMALL for the STP site, and impacts can be minimized through training, awareness, personal protective equipment, and activity scheduling.

In general, operational-related nonradiological health hazards would consist of occupational injuries. Historically, actual injury and fatality rates at nuclear reactor facilities have been lower than the average U.S. industrial rates (Reference 9.3-14). In all cases, plant operational activities would be performed with adherence to applicable laws and regulations, practices, and procedures.

Other typical nonradiological health hazards associated with plant operational activities include the following:

- Health impacts from cooling tower operation;
- Noise Hazards; and
- Health impacts from transmission line operation.

At the STP site, plant cooling water effluent would be returned to the MCR and either reused for additional cooling or discharged to the Colorado River. Discharges have the potential to increase the growth of microorganisms in the receiving waters. Serious illness and death can occur when there is high exposure to these microorganisms (Reference 9.3-14). NUREG-1437 notes that a discharge to a small river (defined as having an average flow of less than 100,000 cfs) would have the greatest chance of affecting the public (Reference 9.3-13). The Colorado River, in the vicinity of the STP site, has an average flow rate of approximately 2,590 cfs, and discharge would have a moderate impact. Operational experience with STP Units 1 & 2 has shown a reduced volume of discharge back to the Colorado River.

The principal sources of noise from plant operation are cooling towers (where employed), transformers, and loudspeakers. Generally, power plant sites do not result in off-site levels more than 10 decibels above background (Reference 9.3-13), and impacts to neighboring populations would be small. Impacts to plant operators and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

The two human health issues related to transmission lines are the acute effects (shock hazard), and the potential for chronic effects from exposure to electric and magnetic fields. Acute effects can be minimized through tower design precluding direct public access to components that may pose a shock hazard and are considered to be small at each location. Chronic effects from the operation of energized transmission lines on public receptors are not conclusive but do indicate some impacts are possible. However, these impacts are assumed to be small as transmission rights-of-way are located in a manner to avoid residential populations to the greatest extent.

In summary, noise hazards and hazards associated with transmission line operation are small for the STP site. Health impacts associated with discharge of cooling water from the main cooling reservoir are moderate. Since impacts will generally consist of occupational injuries, and since injury/fatality rates at nuclear plants are generally lower than the average rates at industrial sites, operational-related nonradiological impacts at the STP site are SMALL.

9.3.3.1.10 Radiological Health

Radiation exposure to construction workers at the STP site is detailed in ER Section 4.5. The source of radiation exposure to site preparation and construction workers is primarily due to the operation of the existing nuclear power plants at the STP site. Site specific dose estimates depend largely on the proposed location of the new plant in relation to the existing plant; impacts from direct radiation sources, gaseous effluent sources, and liquid effluent sources are detailed in ER Section 4.5. Given that doses to the STP Units 3 & 4 construction workers meet the public dose criteria of 10 CFR 20 and 40 CFR 190, it is concluded that the radiological impact on construction workers is SMALL, and could be mitigated through training, awareness, and monitoring of conditions.

Plant locations at the STP site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Therefore, impacts to offsite receptors would be minimal.

Radiological impacts of plant operation at the STP site are detailed in ER Section 5.4. Radiological impacts occur through exposure pathways from releases and direct radiation from the plant, and can be viewed as dose to public receptors, occupational receptors, and other biota.

The STP site is located adjacent to and would discharge cooling water blowdown to surface waters. However, discharges will be within regulatory limits which assure that the radiological impact is SMALL. The STP site is also located in the area of groundwater used for potable uses and agricultural irrigation. The valuable groundwater aquifers are generally deep and would not be impacted by discharges resulting from plant operation.

The STP site is located near existing agricultural operations, and potential radiological releases could impact these foodstuffs. Because the primary coolant is contained in a heavily shielded area, dose rates are generally undetectable at the site boundary (as measurements taken along the protected area boundary at the existing STP Units 1 & 2 show) (ER Section 5.4.1.3).

Plant locations at the STP site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Radiation doses to members of the public from current operation of nuclear power plants have been examined from a variety of perspectives, and the impacts were found to be well within design objectives and regulations in each instance (ER Section 5.4.3).

The total site liquid and gaseous effluent doses from STP Units 1 & 2 plus STP Units 3 & 4 would be well within the regulatory limits of 40 CFR 190 (ER Section 5.4). The collective total body dose to the population within 50 miles of the STP site that would be attributable to both STP Units 1 & 2 and STP Units 3 & 4 is less than 0.001% of that received by the population from natural causes. Impacts to members of the public from operation of the new units would be SMALL.

The calculated total body doses can be compared to the 1 rad per day dose criteria evaluated in the “Effects of Ionizing Radiation on Plants and Animals at Levels Implied by Current Radiation Protection Standards” (ER Section 5.4). The biota doses meet the dose guidelines by a large margin. In these cases, the annual dose to biota is much less than the daily allowable doses to aquatic and terrestrial organisms. Impacts to biota other than members of the public from exposure to sources of radiation would be SMALL.

With the collective worker dose for STP Units 3 & 4 expected to be comparable to that received from STP Units 1 & 2, and with the impacts to individual construction workers SMALL (ER Section 9.3.3.1.9), impacts to workers from occupational radiation doses would be SMALL.

9.3.3.1.11 Impact of Postulated Accidents

The impacts of postulated accidents at the STP site are detailed in ER Section 7.1. The analyses demonstrate that, in addition to meeting the limits of 10 CFR 100.11 and NUREG-0800, all accident doses also meet the 25 rem TEDE acceptance criteria of 10 CFR 50.34(a)(1)(ii). Because the dose criterion of 10 CFR 50.34 is intended to provide assurance of low risk to the public under postulated accidents, any health effects resulting from the design basis accidents are considered to be negligible. The STP site is not located in the immediate vicinity of residential areas. The accident impacts at the STP site are SMALL.

9.3.3.1.12 Conclusion Regarding the South Texas Project Site

Impacts from the construction of a new nuclear power plant at the STP site would generally be SMALL, and impacts from the operation of a new nuclear power plant at the STP site would generally be SMALL. Construction-related environmental impact areas with predicted adverse impacts other than SMALL include socioeconomics (demography impacts to the host county and impacts to infrastructure and community services). Operation-related environmental impact areas with predicted adverse impacts other than SMALL include socioeconomics (demography). Any adverse impact from the new plant is not predicted to have a disproportionate effect on minority or low-income populations.

9.3.3.2 Evaluation of Red 2 Site

The Red 2 site is an Alternate Site for the development of a new two-unit nuclear power plant. The site is located in Fannin County, Texas, approximately 6.0 km (3.7 mi) north of Savoy, TX and approximately 19.6 km (12.2 mi) southeast of Denison, TX. The cooling water source for the Red 2 site is the Red River. The Red 2 site is a greenfield site located approximately 2.9 km (1.8 mi) north of the existing Valley power plant, on the north side of Valley Lake, which serves the purpose of condenser cooling and other plant uses for the Valley power plant. The proposed Red 2 site is not presently owned by the applicants.

The following assumptions form the basis of the evaluation of impacts at the Red 2 site:

- Nearby 1,200-acre Valley Lake would not be available for use by the new plant given its current capacity and use: it provides condenser cooling and other power plant uses for the neighboring Valley power plant.
- Either a new off-channel reservoir for cooling water (similar to that used at STP site) or a water storage reservoir to support cooling towers would be created off of Brushy Creek (and downstream of Valley Lake) to support plant operating needs. Area topography could support up to a 1,700-acre reservoir, whose construction has been evaluated for purposes of comparing project impacts across the preferred and alternate sites. However, note that plant design layouts, including specific reservoir size and location, have not been completed for any of the alternate sites.

- While the plant would use a closed cycle cooling system, plant design at this site is not final, and the potential exists to use either cooling towers or a cooling water reservoir to assist in heat load dissipation. Therefore, potential impacts from cooling towers are also evaluated for this site.

- Cooling water discharge would be returned to the Red River downstream of the intake location.

- Detailed transmission routing analyses were not conducted for the alternate sites; potential land use impacts from transmission line routing are based on combined and approximate distances to three nearest 345kV lines.

9.3.3.2.1 Land Use Including Site and Transmission Line Rights-of-Way

Land use impacts associated with plant construction include both impacts to the site and immediate vicinity, including a new reservoir; and impacts to offsite areas such as transmission, cooling water intake and discharge pipelines, and transportation rights-of-way (e.g., road and rail).

Construction of a new nuclear power plant would include clearing, dredging, grading, excavation, spoil deposition, and dewatering activities. The impacted area would be approximately 800 acres[1] for the main power plant site (major structures including switchyard), which would largely be focused in one central location; and up to 1,700 acres (surface area) for a new reservoir. Impacts would also be realized near the surface water withdrawal and discharge locations used for cooling water makeup. Approximately 150 acres per unit (in the immediate site area) and 1,700 acres for the reservoir (for a total of 2,000 acres) would be permanently impacted. The remaining acreage would be temporarily impacted and reclaimed to the extent possible following construction.

Other area land use impacts would result from construction of housing and other infrastructure in support of a construction workforce. It is predicted that the majority of this expansion would occur near existing communities, and a significant land use impact is not expected to occur.

The region surrounding the proposed Red 2 site is mostly rural. Fannin County comprises 891 square miles of mainly Northern Blackland Prairie, characterized by rolling to nearly level plains. The land is drained by the Red River and Bois D'Arc Creek and is watered by numerous springs. Most of the prairie has been converted to cropland and non-native pasture. In 2007, approximately 83 % of total land acreage in Fannin County was devoted to farming, including 2,110 farms and ranches covering 473,853 acres. Of this, 216,972 acres (46%) were devoted to pasture (permanent pasture and rangeland other than cropland and woodland pasture), 207,535 acres (44%) to cropland, and 34,605 acres (7%) to woodlands. The remaining farmland (14,741 acres) is devoted to farmsteads, buildings for livestock, ponds, roads, and wasteland (Reference 9.3-9). This region now contains a higher percentage of

1 Consistent with area of impact from a new unit or units (400 acres per unit) at Grand Gulf Nuclear Station (GGNS) as evaluated in NUREG-1817 (Reference 9.3-14).

cropland than other regions; pasture and forage production for livestock is common. The main natural resource is timber; consequently, wood-product manufacture has been important in the local economy (Reference 9.3-20).

The proposed Red 2 site is located in a mostly cleared, agricultural area north of the Valley plant. There are several residences in the area and a school is located in Savoy, within 3 miles of the site. The major water feature at this site is Valley Lake (site is located on north end of the lake); onsite drainages include Brushy Creek, Sheep Creek and Patillo Branch. Land use in the area of the proposed reservoir is a mixture of cleared land and forest, based on Google Earth imagery (Reference 9.3-21).

As specific site locations and plant design layouts have not been finalized, specific acreage impacts cannot be determined for the sites under consideration. However, the following presents the general land uses for an area approximately 2,000 acres in size at the Red 2 site where the main plant site and reservoir could be located. The acreage estimates are combined for plant site and reservoir and are based on percentage breakouts from Google Earth imagery using best professional judgment (Reference 9.3-21).

Land Cover Class	**Area (acres)**	**Percentage of Site**
Forested	930	47%
Cleared farmland	1,020	51%
Water resources/freshwater ponds (no high quality forested wetlands identified)	50	2%

Additional information pertaining to wetlands in the site area is found in ER Section 9.3.3.2.5 (Aquatic Ecology).

Additional acreage (up to several hundred acres) that would be required for construction activities (e.g., laydown areas) also includes a mixture of forest and open fields, although cleared land would be used to the greatest extent possible. However, the impact on this acreage would be temporary. Following construction activities, impacted areas without constructed buildings or transportation infrastructure would be reclaimed to the greatest extent feasible.

Project construction would have a long-term impact on the current uses of pasture land and forested lands (potential timbering operation), which would change to industrial use. However, much of the proposed power plant site area has already been cleared and now appears to be used for farm activities. Onsite impacts from construction of the power plant and potential reservoir at the Red 2 site would be SMALL to MODERATE, depending on the final size of the reservoir and the extent to which undisturbed (primarily forested) lands are affected.

Specific routing of transmission lines has not yet been identified, but rough estimates of requirements for new transmission lines have been developed. The feasibility of using existing infrastructure is dependent on the available capacity remaining in the system. If sufficient capacity is not available, either existing rights-of-way would be expanded to accommodate additional transmission lines or new rights-of-way would be obtained and transmission lines constructed. Expansion of existing rights-of-way is expected to result in small environmental impacts while construction in new rights-of-way could result in moderate impacts.

The proposed site is approximately 5 miles north of the existing Valley power plant where multiple 345kV connections exist. New rights-of-ways (ROW) would be needed to get to the Valley plant. Based on 5 miles of corridor and a 200-foot width, installation of new lines would impact approximately 120 acres. Once at the Valley Plant, it is assumed that the lines could parallel the existing ROW (with potential need for expansion). The use of lands that are currently used for timber production or forest would be altered. Trees would be replaced by grasses and low-growth ground cover. Construction of the transmission lines would be expected to comply with all applicable laws and regulations, permit requirements, and use of best construction practices. Given this and the short distance to the interconnection point, construction impacts to offsite land use would be SMALL.

Impacts associated with construction of pipelines to deliver plant cooling water to the reservoir/plant site and transportation rights-of-way (both road and rail) would also be realized at the Red 2 site. The following are acreage estimates for new cooling water supply pipeline, rail, and road rights-of-way to be constructed at each site (total of 63 acres):

- Rail: 4.2 miles, 26 acres (based on 50-foot ROW width)
- Cooling water intake/discharge (3.8 miles) from/to the Red River and new reservoir, 35 acres (based on 75-foot ROW width)
- Access road: 2.2 miles of new construction, 20 acres (based on 75 foot ROW width)

Additional transportation volume also could require the expansion of some existing local roads. Shift schedules could be planned so that shift changes at the co-located facilities would not coincide with each other. Impacts from constructing road access to the site would be small.

Construction at the proposed pipeline corridors would have temporary, minor effects on land use during actual construction due to trenching, equipment movement and material laydown. The ability to use current lands for their existing uses (e.g., cattle ranching), along the proposed pipeline corridor would be temporarily lost during construction. Direct and indirect impacts of construction from the proposed transportation infrastructure would be similar to those for the proposed plant: a loss of some existing pasture land and range land depending on their locations. Construction of any proposed project related transportation infrastructure requiring compliance with any regulations would be coordinated with the appropriate county as deemed necessary.

In summary, offsite impacts from transmission line construction and transportation infrastructure, which would affect an estimated 183 acres of land, are predicted to be SMALL at the Red 2 site.

Operational impacts to site land use would include a permanent change in land use of 2,000 acres of land for the power plant site and reservoir – that would be generally unusable for other purposes. The proposed change would be a change from current land use at the site. However, it would also be somewhat compatible with other land uses in the area since the site is located just north of the existing Valley Plant and lake.

In addition, operational impacts to the site and immediate vicinity would include maintenance operations on existing structures and would be small and temporary in nature.

Operational impacts of transmission lines result primarily from line maintenance, and include right-of-way vegetation clearing, transmission line maintenance, and other normal access activities. To ensure power system reliability, the growth of tall vegetation under the lines must be prevented to avoid physical interference with lines or the potential for short-circuiting from the line to the vegetation. Additional right-of-way acquisition and development would not normally be required as part of plant operational activities. Maintenance activities would be limited to the immediate right-of-way and would be minimal. New transmission corridor would not be expected to permanently affect agricultural areas but would have potential to impact residents along ROW. Corridor vegetation management and line maintenance procedures would be established by transmission service provider. Given rural setting and low population density along transmission corridors, operational impacts to land use along ROWs would be SMALL.

Other offsite land use impacts as a result of plant operational activities would be minimal, temporary, and limited in the area impacted. Such activities could include pipeline, road, and rail maintenance and auxiliary building maintenance. It is likely that most lands above the proposed water intake and discharge pipelines and related areas of construction could continue to be used for ranching, farming and any passive uses. The proposed transportation infrastructure could result in the loss of a small amount of ranch land, pasture land and forested land on the proposed plant site and in areas where access roads and a rail spur would be needed.

In summary, land use impacts at the site and immediate vicinity from plant operation, including the new reservoir, are predicted to be SMALL; and impacts from transmission line maintenance and transportation infrastructure maintenance are predicted to be SMALL.

9.3.3.2.2 Air Quality

Air quality impacts associated with plant construction include both impacts from the construction activities themselves and transportation impacts from workers commuting to the worksite. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities, including a preconstruction air permit from the TCEQ (Reference 9.3-10). The air permits would ensure both construction and operational emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-11).

Air quality impacts from construction activities are similar to those for any large-scale construction effort and consist of fugitive dust emissions, emissions from equipment and machinery, and emissions from concrete batch plant operations. Fugitive dust emissions can be controlled through use of water sprays and postponing certain activities during windy conditions. Equipment emissions can be controlled through equipment inspections and regular maintenance. Concrete batch plant operations would employ equipment emissions controls to minimize air quality impacts. Specific mitigation measures would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment. In total, air quality emissions from construction activities would be small and temporary and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the construction workforce commuting to the worksite. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity. Air quality impacts would be more detrimental in areas already exceeding the NAAQS for criteria pollutants. Texas has no nonattainment areas for carbon monoxide, nitrogen dioxide, ozone (1-hour), sulfur dioxide, particulate matter (less than 2.5 micrometers [$PM_{2.5}$]), or lead. Part of El Paso County, Texas is in nonattainment for particulate matter (less than 10 micrometers [PM_{10}]); however, this county is in the extreme western portion of the state and is not located near the Red 2 site. The Dallas-Fort Worth area holds non-attainment status for ground-level ozone under the 8-hour standard. Counties affected under this status include Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant (Reference 9.3-12).

As the Red 2 site is located outside of the affected counties and vehicular transportation is not expected to significantly increase across the affected counties as a result of the construction activities, impacts are expected to be SMALL.

Air quality impacts associated with plant operation include both impacts from the plant operational activities themselves and transportation impacts from workers commuting to the plant. Operating activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Air quality impacts from operational activities result from releases of heat and moisture to the environment from cooling operations and emissions from the operation of auxiliary equipment. A closed-cycle cooling system will be used for Red 2, using either cooling towers or a cooling water reservoir. Thermal discharges resulting from these systems will be to the reservoir and/or to the atmosphere.

Cooling tower operation often results in drift, or the transport of residual salts and chemicals through water droplets carried out of the cooling towers. Based on a review of the measurements of deposition of draft from nuclear power plants (Reference 9.3-13), measurements indicate that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Auxiliary equipment may also be operated on an intermittent basis. Auxiliary equipment emissions can be controlled through equipment inspections and regular maintenance. Small amounts of ozone and smaller amounts of oxides of nitrogen are produced by transmission lines (Reference 9.3-14). Production of ozone and oxides of nitrogen are insignificant and does not measurably contribute to ambient levels of those gases (Reference 9.3-13). In total, air quality emissions from operational activities would be small and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from increased vehicular emissions from the workforce commuting to the plant. However, as the Red 2 site is located outside of the affected counties in non-attainment for criteria pollutants, and vehicular transportation is not expected to significantly increase across the affected counties as a result of plant operation, impacts are expected to be SMALL.

9.3.3.2.3 Hydrology, Water Use, and Water Quality

Water-related impacts associated with plant construction include both water use impacts and water quality impacts and are consistent with those caused by typical large-scale construction projects. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

STPNOC estimates that groundwater would be used at a peak or maximum rate of approximately 1,200 gpm (ER Section 2.3.1.2.6) during construction with normal demands being much less than maximum use. Groundwater would be used during construction for personal consumption and use, concrete batch plant operation, concrete curing, cleanup activities, dust suppression, placement of engineered backfill, and piping hydrotests and flushing (ER Section 2.3.1.2.6).

In summary, due to the relatively small water quantity requirements and the availability of groundwater or imported water, the sites will have a SMALL impact on water use for construction activities.

Water quality impacts from construction activities would primarily result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from construction activities would be regulated and would require obtaining TPDES or other discharge permits. Regulated discharges would not be expected to significantly impact local drainages or other surface water bodies. Additionally, significant hydrological alterations are not anticipated at the Red 2 site. Therefore, impacts to water quality will be SMALL.

Water-related impacts associated with plant operation include both water use impacts and water quality impacts. Plant operation would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Plant operational activities consume water through plant cooling and personal (sanitary) uses. Overall use of water is dominated by plant cooling uses for wet-cooled plants. A closed-cycle cooling system will be used for Red 2, using either cooling towers or a cooling water reservoir. The assumed maximum plant cooling design consumption for a two-unit plant is 50,000 acre-ft/yr (31,000 gpm, 69.1 cfs). The necessary water rights for this cooling water requirement from the Red River are not presently owned by STPNOC and would need to be acquired. Unappropriated flows are available for a new application 0-25% of the months (Reference 9.3-22). Active industrial, irrigation, and mining uses were considered as potentially available for water rights sale/transfer – municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses were not considered viable water rights for sale/transfer. At present, there are 249 water rights owners in the Red Basin that are industrial, irrigation, or mining uses totaling 455,971 acre-ft/yr (Reference 9.3-23). Assuming no unappropriated flows exist, the new plant would need to acquire 11.0% of these existing water rights. Acquisition of these water rights would result in a MODERATE to LARGE impact on water use for operational activities.

Acquisition of water rights could encounter permitability challenges from negotiating with multiple states (Texas and Oklahoma). The Red River Compact divides the river into five reaches. The Red 2 site is located in Reach II. Within Reach II, the four signatory states have equal rights to the use of runoff originating in Reach II and undesignated water flowing into Reach II, so long as the flow of the Red River at the Arkansas-Louisiana state boundary is 3,000 cfs or more (Reference 9.3-24).

Cooling tower operations result in the concentration of dissolved solids in the water stream, resulting from evaporation loss, which must occasionally be discharged and replenished with freshwater. The discharged water (blowdown) would be of lower quality than the source water. Cooling tower blowdown would be discharged to the reservoir and/or the Red River as necessary. The concentration of total dissolved solids in the cooling tower blowdown averages 500 percent of that in the makeup water, a concentration factor that can be tolerated by most freshwater biota (Reference 9.3-13). Additionally, a TPDES permit would be required to discharge effluents, and any unforeseen water quality impacts could be addressed during periodic permit renewals.

Water quality impacts could also result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from operational activities would also be regulated and would require obtaining TPDES or other discharge permits.

Therefore, and due to the regulatory conditions associated with the operational activities, impacts to water quality will be SMALL.

9.3.3.2.4 Terrestrial Resources Including Threatened and Endangered Species

For the Red 2 site, it is assumed that construction of two units and a reservoir would disturb up to 2,000 acres of land, with approximately 300 acres required for permanent structures and facilities including plant footprint and support buildings, and switchyard; and up to 1,700 acres for a new reservoir. This is exclusive of the land required for development of transmission lines, water pipelines, rail or road access, which are estimated to impact an additional 183 acres. All acreage not containing a permanent structure would be reclaimed to the maximum extent possible.

The natural flora in the site area consists of oak, hickory, ash, walnut, pecan, cottonwood, elm, cedar, and Bois D'Arc trees, as well as redbud, spicewood, dogwood, pawpaw, and dwarf buckeye. Dominant grasses include little bluestem, big bluestem, yellow Indiangrass, and switchgrass. Stream bottoms are often wooded with burr oak, shumard oak, sugar hackberry, elm, ash, eastern cottonwood and pecan. Typical game species include mourning dove and northern bobwhite on the uplands and eastern fox squirrel along stream bottoms (Reference 9.3-25).

Impacts to terrestrial ecology are estimated based on satellite imagery and information in the general literature for the site and vicinity.

The proposed Red 2 site is located in a mostly cleared, agricultural area north of the Valley power plant. The major water feature at this site is Valley Lake (site is located on north end of the lake); onsite drainages include Brushy Creek, Sheep Creek and Patillo Branch. Land use in the area of the proposed reservoir is a mixture of cleared land and forest, based on Google Earth imagery (Reference 9.3-21).

Construction of the new plant and reservoir would affect up to 2,000 acres of land that currently includes forest (estimated at around 930 acres), pasture land (estimated at around 1,020 acres), and surface water resources (intermittent streams, ponds and associated habitat – estimated at 50 acres), resulting in the permanent loss of this habitat. Of the 300 acres permanently impacted at the power plant site, approximately 220 acres would include previously cleared land and 80 acres would include forested lands.

Other temporary impacts from plant construction, such as erosion and dust generation, would be temporary and typical of large construction projects. These impacts could be mitigated using standard industrial procedures and best management practices. Standard practices, such as silt fences to control sedimentation and water sprays to limit dust generation, would protect ecological resources in the site vicinity.

Based on a review of threatened and endangered species databases generated by the Texas Parks and Wildlife Department (TPWD) and U.S. Fish and Wildlife Service (USFWS), there are four Federally listed species that could occur in Fannin County, including three birds (endangered interior least tern, threatened piping plover, and the endangered eskimo curlew), one mammal (threatened Louisiana black bear/black bear), and one endangered insect (American burying beetle). Note that the TPWD lists the black bear as potentially occurring in Fannin County (listed because of similarity in appearance to threatened Louisiana black bear); but the USFWS lists the Louisiana black bear as potentially occurring in Fannin County. Additional State listed (threatened) terrestrial species include: four birds (American peregrine falcon, bald eagle, and peregrine falcon which are delisted Federal species; and wood stork); and two reptile species (Texas horned lizard and Timber/Canebrake rattlesnake). Table 9.3-6 provides a complete listing of Federal and State protected species in Fannin County with their listing status and common and scientific names. No critical habitat or other sensitive or protected habitats have been identified in the site area (Reference 9.3-26). The Caddo National Grassland and the Caddo Wildlife Management Area both lie in northeastern Fannin County. In addition, portions of Bois D'Arc Creek, east of the site area, include Priority 4 Bottomland Hardwood areas that are considered high quality habitat for waterfowl (Reference 9.3-27). However, these areas lie more than 10 miles to the east of the site area and would not be impacted from site construction or operational activities.

Other terrestrial species of concern that are considered rare but with no regulatory status include: one bird species (Cerulean warbler); one mammal species (plains spotted skunk); and one reptile (Texas garter snake) (Reference 9.3-26).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission, pipeline and transportation (e.g., rail spur) corridors. In addition, construction-related land clearing and reservoir development would be conducted according to federal and state regulations, permit conditions and established best management practices. This would include consultation with the appropriate resource agencies and development of appropriate mitigation measures where required to minimize potential impacts to sensitive resources.

In terms of habitat loss from constructing a new nuclear power plant and reservoir, the impacts to terrestrial resources, including threatened and endangered species would be SMALL in the area of the facility footprint, and MODERATE at the reservoir location, given the potential for impacting over 900 acres of forested land and the total number of protected species that could potentially occur in the area.

Although the most direct route would be used between transmission corridor terminations, consideration would also be given to avoiding possible conflicts with natural areas where sensitive environmental resources may be present. Given the short transmission corridor between the Red 2 site and the Valley Plant site, and the fact that construction impacts would be temporary, impacts to terrestrial resources from construction of transmission lines would be SMALL. In addition, land clearing associated with construction of the makeup water intake line to the river could result in short-term displacement of species within that corridor.

It is assumed that the proposed new units would employ a closed-cycle cooling system that would potentially use cooling towers. Impacts to terrestrial resources that may result from operation of two new nuclear units include those associated with cooling tower drift and bird collisions. The principal environmental concern with cooling tower drift impacts is related to the emission and downwind deposition of cooling water salts.

Salt deposition can adversely affect sensitive plant and animal communities through changes in water and soil chemistry.

The impacts of cooling tower drift on crops, ornamental vegetation, native plants, birds, shoreline habitat and protected species were evaluated previously in NUREG-1437 (Reference 9.3-13) and found to be small for all plants, including those with multiple cooling towers of various types. Measurements indicated that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13). However, these findings relate primarily to freshwater natural draft cooling towers. In the case of the Red 2 site, salt deposits may be higher than at other sites given the ongoing issues with exceptionally high, naturally occurring, levels of salts in the Red River. The Red 2 site is located in Reach I of the Red River Basin where 13 out of 19 segments are either on the 2008 303(d) List and/or the 2008 TWQM for water bodies with concerns for use attainment and screening levels or both. Concerns included elevated chlorophyll a levels, elevated orthophosphorus levels, depressed dissolved oxygen levels, elevated ammonia levels, and/or elevated nitrate, total phosphorus, bacteria, total dissolved solids and chloride (Reference 9.3-28).

However, given the small area of impact expected from drift, the absence of important or unique habitats in the area, and the fact that most of the site area has been previously cleared and currently used as pasture, ecological impacts from cooling tower drift during plant operation at the Red 2 site would be SMALL.

In addition, creation of a new reservoir to support plant operation would provide new habitat for birds/fowl that would not be adversely affected by plant operation.

9.3.3.2.5 Aquatic Resources Including Threatened and Endangered Species

The major aquatic resources in the site area include the Red River and Valley Lake; local drainages include Brushy Creek, Sheep Creek, and Patillo Branch. Valley Lake is a man-made reservoir, also on Brushy Creek, owned and operated by the Texas Power and Light Company for the purpose of condenser cooling and other plant uses for its Valley Creek steam electric generating station. The lake has a surface area of 1,180 acres and its water level is maintained by the diversion of water from the Red River by two pumps installed in the plant at the mouth of Sand Creek. The lake is 0.5 miles southwest of the proposed plant site and would not be used by the plant for cooling purposes (Reference 9.3-20). It is not expected to be impacted by plant construction.

Impacts on the aquatic ecosystem from construction of a new nuclear power plant at the Red 2 site would be associated primarily with construction of a new reservoir, which would flood portions of Brushy Creek; construction of intake and discharge structures on the Red River; and potential stream crossings by the proposed new rail line, access road and transmission lines. The most significant environmental impacts would be from creation of the new reservoir which would inundate the natural habitat along Brushy Creek and Patillo Branch and associated aquatic species. Habitat areas along

Brushy Creek downstream of the new reservoir to its outfall in the Red River could also be impacted. Currently, Brushy Creek rises east of Valley Lake and flows north for four miles, through the site area, before emptying into the Red River. It traverses flat land surfaced by clay and sandy loams that support water-tolerant hardwoods, conifers, and grasses. The Brushy Creek area has been used mostly as crop and range land (Reference 9.3-20). Water resources within the Red River Basin are generally good and support a robust aquatic life with respect to stream standards. Fish species sampled at Bois D'Arc Creek at FM 100 downstream of the site include: Bullhead minnow, Texas shiner, Red shiner, mosquito fish, bluegill and longear sunfish (Reference 9.3-29). Inland fisheries stream surveys are not available for Brushy Creek or Patillo Branch. Flows in these smaller drainages are assumed to be intermittent with any fisheries resource limited to seasonal flows. Because the streams are assumed to be intermittent with limited aquatic resources present, impacts during construction of the reservoir would be SMALL to MODERATE.

In addition to the local drainages, numerous freshwater ponds are scattered throughout the site area. These include about 10 acres that would be impacted by construction activities within the proposed power plant area (including switchyard and cooling towers), and an additional 30 to 40 acres of ponds that would be flooded by the new reservoir. One small freshwater emergent wetland (0.9 acre) would also be impacted in the main power plant area. No high quality forested wetland areas were identified in the immediate site area, however, or in the larger 2,000 acre area that would be impacted by reservoir construction (Reference 9.3-4). A detailed wetlands assessment and study will be required in order to obtain the appropriate permits from the U.S. Army Corps of Engineers (USACE) to construct the reservoir.

The proposed project could result in localized, direct, and adverse construction impacts to wetlands. Filling in or modifying portions of wetlands, if avoidance is not feasible, would permanently alter hydrologic function and wetland vegetation and result in direct habitat loss. Potential habitat degradation of wetlands and waters downstream could also occur if flow to adjacent areas is reduced. Construction impacts would be mitigated by minimizing areas disturbed and preventing runoff from entering wetlands during construction. Mitigation for wetland loss would also likely be required but the exact amount is not known at this time.

Construction activities for a new cooling water intake and discharge structures in the Red River include: dredging, construction of cooling towers and onsite impacts on water sources, and pipeline construction. Water resources within the Red River are assumed to be more limited than its freshwater tributaries given the environment of the river is characterized by saline water (from naturally occurring salt) and poor habitat insufficient to sustain a diverse aquatic ecosystem.

Dredging should be localized and while it would result in increased turbidity, the effects would be temporary and dredging operations would be in compliance with the USACE and State water quality requirements so that long-term water quality is not degraded. Construction of the trenches for the intake and discharge pipelines from the water to the site could lead to temporary soil erosion and increased turbidity in any onsite water sources. All construction impacts from construction related to cooling towers and onsite impacts on water resources (e.g., from dewatering effluent and runoff), such as erosion and sedimentation into the water resources, could be mitigated using standard industrial procedures and best management practices. Pipeline construction impacts would be temporary and would also incorporate best management practices. Pipes would be buried, so there would be no permanent alteration of water flow patterns in the floodplain.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, there are no federally protected aquatic species in Fannin County (host county of Red 2 site). State protected aquatic species in Fannin County include the threatened alligator snapping turtle and five threatened fish species: Blackside darter, Blue sucker, Creek chubsucker, Paddlefish, and Shovelnose sturgeon. A full listing of these protected aquatic species is provided in Table 9.3-6. Based on a review of their habitat requirements and the assumption that the drainages affected by reservoir construction are intermittent, no State protected fish species are expected to be found at the site, but rather in the Red River or its larger tributaries. The alligator snapping turtle has the potential to occur in the site area (Reference 9.3-26).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and transportation (e.g., rail spur) corridors. In addition, construction-related land clearing would be conducted according to federal and state regulations, permit conditions and established best management practices.

In summary, impacts from construction of a new reservoir would affect a large area (up to 1,700 acres) and inundate the natural aquatic habitat along a portion of Brushy Creek. However, the affected drainages are assumed to be intermittent with limited aquatic resources and no Federally protected threatened or endangered species are present. A state threatened species may be present but no high quality wetlands are found in the site area. With respect to onsite impacts from construction of the nuclear power plant facilities, much of the immediate site area has already been disturbed and existing aquatic resources are also limited. Construction impacts would be temporary and incorporate best management practices. Given this, impacts to aquatic resources, including wetlands and threatened and endangered species, from construction of nuclear power facilities at the Red 2 site would be SMALL at the power plant site, and MODERATE at the reservoir location.

Impacts to aquatic resources from plant operation primarily include those from water intake (i.e., impingement and entrainment), and discharge of heated effluents (heat shock). Additional concerns could include: physical changes to aquatic systems from storm water collection, and accumulation of contaminants in sediments or biota and thermal plume barrier to migrating fish. In general, impacts are dependent on the species that are present, the flow in the river (which can affect thermal discharge impacts), the velocity of flow into the intake, the velocity of water withdrawn, and specific design features of the intake structure and pumps (all affecting potential entrainment and impingement impacts).

Aquatic organisms can become entrapped, entrained, or impinged when water is drawn into the intakes at a flow greater than what they can escape. Entrainment occurs when planktonic larval fish and shellfish drifting in waters in the plant vicinity are carried with cooling water through the intake screens, pumps, and steam condensers. High mortality to larval fish can result from mechanical and hydraulic forces experienced within the cooling system. The impacts of fish and shellfish entrainment are typically small, and not expected to be a concern for new units with a closed-cycle cooling system.

Aquatic organisms that are drawn into the intake with the cooling water and are too large to pass through the debris screens may be impinged against the screens. Mortality of fish that are impinged is high at many plants because impinged organisms are eventually suffocated by being held against the screen mesh or are abraded which can result in fatal infection. As with entrainment, operational monitoring and mitigative measures, and now modified intake designs for new units with closed cycle systems, have allayed concerns about population level effects at most plants.

The heated effluents of steam-electric power plants can cause mortality among fish and other aquatic organisms from either thermal discharge effects, or cold shock. Plants today have the benefit of extensive studies on thermal effects such that discharge effects are now relatively predictable. Mitigative measures (and those incorporated into plant design) can now be employed to reduce the potential for thermal discharge effects.

In summary, final design of intake and discharge systems will consider potential impacts on aquatic organisms under EPA regulations implementing Section 316(b) of the CWA. Use of a cooling water reservoir or cooling towers is a mitigation measure for reducing impacts from impingement and entrainment; they use relatively smaller volumes of makeup water in comparison to once-through cooing systems. Design features can also include fish handling and bypass system to minimize impacts. Characteristics of thermal discharge into the river also would be reduced through use of a cooling tower or reservoir system. It is assumed that system designs at each site would use intake and cooling tower designs that would minimize operations impacts to aquatic resources. The potential for environmental impacts to aquatic resources, including threatened and endangered species, from nuclear power facility operations at the Red 2 site, would be SMALL.

9.3.3.2.6 Socioeconomics

This section addresses impacts from the projected in-migrating population on the region and on local populations at the Red 2 site. Specifically, the evaluation considers potential physical impacts and impacts to demography; local economy and tax revenues; and infrastructure and community services (e.g., housing, transportation, recreation, public services, and education) and identifies those notable community characteristics that would be impacted at a given site. The preferred and alternative sites currently meet the population requirements of 10 CFR 100. The population distribution near each site is low with typically rural characteristics.

Using the same assumptions as used in the evaluation of the STP site in ER Section 9.3.3.1.6, and applying the same in-migrating population totals to the two-county area for Red 2 as were applied to STP, construction of the two nuclear units at the Red 2 site would result in a total in-migrating population of 5,866 persons (workers and families) into Fannin County, including 2,077 workers; and a total in-migrating population of 2,118 persons (workers and families) into Grayson County, including 750 workers.

Some of the key assumptions used in the analyses for all of the sites are provided below for easy reference:

- 50% of the peak construction workforce will in-migrate (3,405 workers) to the site region
- 80% of these workers bring their families (3.28 average family size)
- Socioeconomic impacts will be most evident in a two-county area, where 83% of the in-migrating workforce and their families are expected to reside, with the following split: 61% will reside in the site host county and 22% will reside in an adjacent county. Note that these percentages are consistent with the breakout of the current operations workforce at STP.
- The remaining 17% of in-migrating workers will be distributed across other counties in the region, where the expected influx in each county represents a very small percentage of that county's population and impacts would be expected to be SMALL.

In the case of the Red 2 site, given the site's proximity to the Sherman-Denison metropolitan area in adjacent Grayson County, the area workforce should be sufficient to supply 50% of the estimated construction workforce within commuting distance of the site. The Sherman-Denison metropolitan area in adjacent Grayson County had a population of 110,595 in 2000, and an employed workforce population of nearly 51,000 (Reference 9.3-30).

Physical Impacts

Construction activities can cause temporary and localized physical impacts such as noise, odor, vehicle exhaust, vibration, shock from blasting, and dust emissions. The use of public roadways and railways would be necessary to transport construction materials and equipment. It is expected that all construction activities would occur within the existing site areas, and would be located sufficiently far from critical receptors outside the plant boundaries (e.g., residential) such that the noise is attenuated to nearby ambient levels and would not be noticeable. In the event that some activities were loud enough, and some critical receptors were close enough to plant boundaries, to interfere with daily activities (e.g., outdoor speech communication), additional measures would be implemented (e.g.., scheduling) to minimize any adverse effects. Offsite areas that would support construction activities are expected to be already permitted and operational. Impacts on those facilities from normal construction of the new units would be small incremental impacts associated with their normal operation.

Aesthetic impacts would be temporary and limited both in terms of land disturbance and the duration of activity; they would have characteristics similar to those encountered during typical industrial construction activities.

Construction activities would be temporary and occur mainly within the boundaries of each existing site. Offsite impacts would represent small incremental changes to offsite services supporting the construction activities. Therefore, with respect to physical impacts, impacts from construction activities are expected to be SMALL.

Potential impacts from plant operation include noise, odors, exhausts, thermal emissions, and visual intrusions. New units would produce noise from operation of pumps, cooling tower fans, transformers, turbines, generators, and switchyard equipment; traffic at the site would also be a source for noise. Any noise coming from the proposed site would be controlled in accordance with standard noise protection and abatement procedures. Noise levels would be managed to local ordinances. Commuter traffic would be controlled by speed limits. Good road conditions and appropriate speed limits would minimize the noise level generated by the workforce commuting to the site.

New units would have standby diesel generators and auxiliary power systems. Permits obtained for these generators would ensure that air emissions comply with regulations. In addition, generators would be operated on a short-term, limited basis. During normal plant operation, new units would not use a significant quantity of chemicals that could generate odors that exceed odor threshold values. Good access roads and appropriate speed limits would minimize the dust generated by the commuting workforce.

With respect to aesthetics, any new units would be closed systems that would likely include cooling towers. Visible plumes resulting from cooling tower operation also could cause negative aesthetic effects.

For the Red 2 site, the presence of cooling towers would significantly change the landscape. Also depending on how far the towers could be seen (such as from a recreational area or state park), the impacts could be MODERATE. During plant layout, it is also assumed that every effort would be made to locate the towers in an area isolated from area view points to the maximum extent possible.

Demography

Based on an estimated total in-migrating population of 9,616 into the multi-county region, and a total in-migrating population of 5,866 and 2,118 into Fannin and Grayson counties, respectively, the percent increases in population would be as shown in Table 9.3-7. Potential increases in population during construction of the proposed project within the multi-county region are also presented. The individual impacts to each county would include an increase of 18.8% in Fannin County (host county), and an increase of 1.9% in the adjacent and more populated Grayson County. The potential impacts would be LARGE in Fannin County and SMALL in Grayson County. Should the in-migrating population be more evenly distributed between the host and adjacent counties, the resulting population increase in the combined two-county area would be 5.6%, or a SMALL to MODERATE impact on the two-county area. Finally, impacts to the multi-county region include a 1.1 percent increase in population, or a SMALL impact on the region. Note that all impacts would be temporary and are based on conservative 2000 U.S. Census Bureau population levels. A comparison to the estimated 2008 population for Fannin County (33,229, a 6.4% increase), results in a slightly reduced percentage increase in the host county (17.6%) from the in-migrating population; however, the potential impacts to the host county would still be considered LARGE. Factoring in the 2008 population for Grayson County (118,804) would result in a population increase to the two-county area that is still just over 5%, and impacts would remain SMALL to MODERATE.

The addition of two new units at Red 2 is assumed to require an operations workforce of up to 600 employees (1,200 total, based on existing workforce for STP Units 1 & 2). While part of the operational workforce at each site is expected to relocate into the region, their numbers are small when compared to those in-migrating for construction, and many could presumably occupy housing vacated by construction workers. Assuming a small in-migrating operations workforce is evenly distributed within in the region, the demographic impacts are expected to be SMALL when compared to the total base population within the region for each site. Should the majority of the in-migrating population choose to live in the two-county area surrounding the site, the impacts would be SMALL to MODERATE at Red 2, depending on the distribution of workers. Impacts would be less in the more populated Grayson County, which includes the Sherman-Denison MSA, than in Fannin County.

Local Economy and Taxes

Construction of two new units would result in direct construction jobs and increased spending in the region by the workers and through the purchase of non-labor goods and services to support construction. The wages and salary of an in-migrating workforce would have a multiplier effect that could result in an increase in business activity, particularly in the retail and service sectors. This would have a positive impact on the business community and could provide opportunities for new business and increased job opportunities for new residents. The economic effect in the study area would be beneficial for the Red 2 site. It is assumed that direct jobs would be filled by an in-migrating workforce, but at least half of the indirect jobs would be service-related, not highly specialized, and filled by the existing workforce in the study area at the Red 2 site. Expenditures made by the direct and indirect workforce would strengthen the regional economy, particularly at Red 2 given its rural location. The additional jobs generated at Red 2 would be a significant boost to the economy and the current unemployment rates. Overall positive effects would result.

Similar to the conclusions reached for the STP site, impacts to the economy are generally BENEFICIAL and would be expected to be LARGE in the host county (Fannin) as the site of the construction and the county where most of the construction labor force would reside. The magnitude of the positive economic impacts would become more diffuse as a result of interacting with the larger economic base of other counties, particularly those counties that are closer to Dallas. Impacts to the region would be SMALL and BENEFICIAL.

Over the longer term, and applying the same assumptions as developed for the STP site where 50% of the in-migrating workforce would migrate out following completion of construction, impacts to the local area could be negative. Fannin County would be the most affected county, based on the estimated distribution of the in-migrating workforce (61% to Fannin County and 22% to Grayson County). STPNOC concludes that the impacts of construction on the economy of the region would be SMALL everywhere in the region, except Fannin County, where the impacts of an in-migrating construction labor force and the negative impacts of the departing labor force (upon construction of completion) could be MODERATE to LARGE impacts. Mitigation would be warranted. The same measures would be implemented as described for the STP site.

Regarding potential construction impacts on taxes, plant induced increases to local tax receipts are considered beneficial. Typically the benefits of plant construction to local tax structures are considered by evaluating the magnitude of potential new tax payments by the existing plant in relation to total revenues in the host community. The new payments could be made directly to local government jurisdictions or indirectly to local government jurisdictions through state tax and revenue sharing programs. In the absence of plant-specific details regarding the local tax structure, impacts from construction on taxes are assumed to be beneficial. In general, plant construction (and operation) workers would pay income, sales and use taxes to the host state and to the local governments in the region where the sales take place and property taxes to the counties in which the workers own a residence. Sales and use taxes would be paid from the sales of construction materials and supplies purchased for the project and on expenditures of the construction workforce for goods and services. Corporate income taxes on profits would also be paid for those companies engaged in construction at the site.

Based on past experience, STP has a significant and beneficial impact on the well being of the Matagorda County where STP Units 1 & 2 now reside. In conclusion, given the rural location of the Red 2 site, the property tax base represented by a new nuclear facility at the Red 2 site would be expected to represent BENEFICIAL and LARGE impact to Fannin County and to local entities within the county, and SMALL to the region (which would include part of the Dallas metropolitan area) and state of Texas.

Socioeconomic impacts of operation relate primarily to the benefits afforded to local communities as a result of the plant's presence (e.g., tax plans, local emergency planning support, educational program support). The continued availability (and potential expansion at each nuclear site), and the associated tax base is an important feature in each host county's ability to continue to invest in infrastructure and to draw industry and new residents.

Potential social and economic impacts due to nuclear plant operation at Red 2 would include significant increases in tax revenues for the host counties and in the size of the operations workforce. The existing STP plant (STP owned) is a major employer in the local community, and STP is a major contributor to the local tax base. STP personnel also contribute to the tax base by paying sales taxes.

During the life of the new plant, operations workers would pay income, sales and use taxes to state and local governments in the region where the sales take place and property taxes to the counties in which they own a residence. Sales and use taxes would be paid on expenditures of the operations workforce for goods and services. Corporate income taxes on profits would also be paid for those companies supporting plant operation.

In summary, the economic impacts from operation of two nuclear units at the site would result in BENEFICIAL and LARGE impacts, particularly to the local economies. The impacts to the regional economies would be expected to be MODERATE at Red 2 where the new plant would play a more significant role in the regional economy.

Infrastructure and Community Services

Transportation

The Red 2 site is located in western Fannin County, which is served by US-82/SH-56, SH-121, SH-78 and SH 11 in Fannin County; and US-69 and US-75 in adjacent Grayson County. The proposed site is located off of Farm to Market Route (FM) 1752. The site is located approximately 3 miles north of US-82, which provides primary access to the area. The existing transportation routes adequately serve the site area, which includes the existing Valley Plant located just south of the Red 2 site. However, development of the Red 2 site would likely require the widening of FM 1752, and development of a new access road to the site. A portion of FM-1752 will also need to be rerouted to avoid the site exclusion zone. In addition, development at the Red 2 site would add commuters, deliveries, and congestion to the local residents and recreational users that might use Valley Lake.

Given the rural nature of the site, potential impacts on transportation would be MODERATE to LARGE. Mitigation measures for the access road and surrounding roads may be required and could include the following:

- Widening of FM 1752 to accommodate the additional traffic.
- Installing traffic-control lighting and directional signage.
- Creating two entrances to the site to alleviate traffic at the primary plant entrance.
- Shuttling construction workers to and from the site.
- Encouraging carpooling.
- Staggering shifts to avoid traditional traffic congestion time periods.

Transportation impacts from operation at all sites would be significantly less than construction since the operations workforce and daily plant deliveries would be significantly less and the necessary road improvements to accommodate the construction workforce would already have been completed. Some congestion could still occur during shift changes; however, the magnitude of impact is expected to be SMALL through the help of mitigation measures such as vanpooling and travel reduction incentives currently in use by the existing workforce. In particular, the size of the existing workforce at the existing Valley plant is assumed to be small (based on the type of plant) compared to the operations workforce projected for the new nuclear units. Future general population increases likely will increase highway congestion at specific locations; the magnitude of impact of new units at the Red 2 site on this service degradation is likely to be SMALL to MODERATE and could require mitigation.

Recreation

Recreational facilities surrounding the Red 2 site in Fannin County include the historic Texas Lakes Trail, the East Coffee Mill Recreational Area, Lake Davy Crockett Recreational Area; Caddo Wildlife Management Area (WMA) and the Caddo National Grassland, Ray Roberts Lake State Park, Ray Roberts Lake WMA, and the Texas Lakes Trail.

The recreational areas typically offer a boat ramp, picnicking, and camping, and include sanitary areas. The Caddo and Lyndon B. Johnson (LBJ) National Grasslands are located in two areas northeast and northwest of the Dallas-Fort Worth metroplex and cover 38,098 acres. The grasslands provide grazing land for cattle and habitat for wildlife, as well as a variety of recreation. The most popular activities are hiking, camping, fishing, hunting, horseback riding, wildlife viewing and photography. White-tailed deer, coyotes, bobcats, red fox, waterfowl, bobwhite quail, turkey and songbirds thrive in the grasslands habitats. Largemouth bass, blue, perch and channel and yellow catfish are common catches at the many lakes. In spring, visitors enjoy spectacular viewing of migratory neotropical birds from Central and South America (Reference 9.3-31). The 16,240-acre Caddo WMA also attracts many hunters, other visitors, and wildlife. A diverse habitat among the grasses and trees of the area attracts small mammals, red and gray fox, waterfowl, gulls, quail, white-tailed deer, wild turkey, and a variety of other birds (Reference 9.3-32).

The proposed site is located to the north of Valley Lake which supports the existing Valley power plant. Recreational use of this private lake, if it occurs, could be impacted during construction of the proposed plant. However, construction impacts would be temporary and the proposed project also includes the construction of a new reservoir. Given the distances to the other recreational facilities in the county, impacts to these recreational areas would be SMALL.

Operation of two new units at each site would occur on lands currently owned (or to be acquired) by STPNOC. Impacts from operation are expected to be less than the impacts from construction which are expected to have minimal impact on nearby recreational facilities or recreational users. Impacts to recreation from operation of two new units are expected to be SMALL at all sites.

Housing

The impacts of plant construction on housing depend upon the number of workers already residing in the study area and the number that would relocate and require housing. As discussed previously, STPNOC estimates that approximately 3,405 workers and their families (for a total of 9,616 persons) would in-migrate into the region. Assuming these workers are dispersed throughout the multi-county region, the impacts on housing at each site are expected to be SMALL, based on the small percentage increases in total study area population occurring at each site. Impacts on housing under the more conservative scenario, where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) are provided in Table 9.3-8 as a percentage use of the existing vacant housing inventory. These numbers are based on housing data for 2000 (vacant) and assume one housing unit per worker.

Based on absolute numbers, the available housing within the two-county area (combined) would be sufficient to house the in-migrating workforce at the Red 2 site which includes the Sherman-Denison metropolitan area. Rental property and mobile home facilities are scarce in rural counties within a 50 mile radius of the Red 2 site, but are more plentiful in the larger municipalities. There is insufficient vacant housing available in Fannin County (1,782 units) to accommodate an influx of 2,077 workers projected for the host county. In addition, the available housing in the two-county area may not be sufficient, in terms of the type, size, and pricing desired by the workers. In this case, workers could relocate to other areas in the region, such as to larger metropolitan areas within commuting distance; have new homes constructed; bring their own homes; or live in hotels, motels or nearby RV parks. Single workers could also share an apartment, which would reduce the total number of housing units needed. An increase in housing demand could result in an increase in housing prices and rent, which could result in pricing some low-income populations out of their rental housing. In the long-term, however, the study area, and particularly the host county of each site, would benefit from increased property values and the addition of new houses to the tax rolls.

In general, impacts on housing are considered to be SMALL when a small change in housing availability occurs and MODERATE when there is a discernable but temporary reduction in the availability of housing units. STPNOC concludes that the potential impacts on housing at the Red 2 site would be LARGE if the majority of workers choose to reside in the two-county area (increase of 39% in two-county area and 117% increase in host Fannin County), and SMALL if the workers are dispersed throughout the larger study area. The impacts on housing from operations workforce is expected to be SMALL at all sites given that the number of in-migrating operations workers (and their families) would be significantly less than the construction workforce and considered to be small in relation to the available housing markets, particularly a market that presumably will have been recently expanded to accommodate the construction workforce.

Public Services

Public services include water supply and wastewater treatment facilities, police, fire and medical facilities; and social services. New construction or operations workers relocating from outside the region would most likely live in residentially developed areas where adequate water supply and wastewater treatment facilities already exist. Small increases in the regional population would not materially affect the availability of police, fire, or medical services. It is not expected that public services would be materially impacted by new construction or operations employees relocating into the region. Therefore, the impacts on public services within the region would be SMALL. Population increases assumed for the two-county area, as shown in Table 9.3-7, are just above 5 percent (5.6%) such that impacts on public services within the two-county area would be SMALL to MODERATE. The population percentage increase in the host (Fannin) county is significantly higher, at 18.8%. In general a large population influx would increase demands on existing medical, police and fire services in sparsely populated local communities. These local (or county) governments would need to hire additional staff, buy additional vehicles, and improve/build new facilities. Additional tax revenues from population influx would help offset the cost to expand local police and fire departments and benefit the area in the long term. However, the short-term impacts could be adverse as existing capacities are exceeded in the initial years of construction. Given the estimated increase in the population of Fannin County, impacts to the host county would be LARGE. Note that impacts to the host county could be alleviated somewhat if a larger percentage of the in-migrating population chose to reside in the more populated Grayson County (e.g., Sherman-Denison metropolitan area).

It is assumed that revenue generated by plant construction and operation would be used to expand and update public services, as needed and appropriate, to accommodate in-migrating workers and their families associated with construction activities. Such improvements are assumed to be completed, or well underway, to sufficiently accommodate the influx of a smaller population associated with plant operation. Therefore, impacts associated with population influx are expected to be SMALL at all sites.

In terms of plant operational requirements (e.g., cooling water), water rights would have to be purchased by STPNOC Active industrial, irrigation, and mining uses would be considered as potential candidates for water rights sale/transfer. Municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses would not be considered viable water rights for sale/transfer. As such, impacts from plant operation would not be expected to have a significant effect on public water supplies.

Education

According to the 2000 Census estimate, school-age children (between the ages of 5 and 19) comprise 23.5% of the population of Texas. Applying the same percentage to the total in-migrating population that would reside in the two-county area at the Red 2 site, based on the assumption that most of the workers will come from within Texas, the anticipated in-migrating school age population is 1,880. Further assuming a conservative scenario where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) – consistent with the breakout found with current operations workers at the STP site – the number of school-age children migrating into Fannin County would be 1,380 and the number of school-age children migrating into adjacent Grayson County would be 500. The percentage increases for each county are identified in Table 9.3-9.

The projected increase within the two county area is less than 6.1 percent and impacts would be MODERATE. The projected increase in Fannin County, however, is 22 percent. Impacts in the host county would be LARGE. The quickest mitigation measure would be to hire additional teachers and move modular classrooms to existing schools. Increased property and sales tax revenues as a result of the increased population would fund additional teachers and facilities.

It should also be noted that while this is a conservative estimate, in the case of the Red 2 site, more than 22 percent of the in-migrating workers with school-age children are likely to reside in the more populated Grayson County that includes the Sherman-Denison metropolitan area. The school district system of Grayson County is expected to more easily absorb an influx of school age children than the less populated Fannin County. This would help further reduce the impacts on this host county, as analyzed in this conservative scenario.

Similar to housing and public services, the impacts on the educational systems from the operations workforce is expected to be SMALL at all sites given the following:

- The number of in-migrating operations workers (and their families) would be significantly less than the construction workforce, and
- The local and regional school systems would have already taken the necessary steps to add teachers and expand facilities to accommodate the construction workforce.

It is assumed that the in-migrating operations workforce and their families would benefit from educational improvements implemented during the construction phase, and that additional improvements would be implemented, as needed and appropriate, using revenues generated by plant operation of a new unit.

9.3.3.2.7 Historic and Cultural Resources

Adverse effects to archaeological, paleontological, and cemetery resources are generally the result of direct impacts from ground disturbing activities. Therefore, the area of potential effect coincides with those areas where direct impacts from construction and operation of the proposed project would occur. Adverse effects to historic resources (e.g., standing structures) may occur through direct impacts that may change the character of a property’s use or the physical features within a structure’s setting that contribute to its historic significance. Adverse effects may also occur through indirect impacts that could introduce visual or noise elements that diminish the integrity of a property’s significant historic features.

STPNOC conducted historical and archaeological records searches on the National Park Service's NRHP Information System and reviewed information on listed sites in Fannin County, host county of the Red 2 site, as well as Grayson County, which lies immediately west of the site (site is in western Fannin County).

Nine historic sites listed on the National Register of Historic Places are found in Fannin County, including five buildings in the Bonham (including Texas and Pacific Railroad Bonham Depot), one building in Ladonia, one building in Honey Grove, and the State Highway 78 bridge at the Red River across Red River (TX-OK) Ravenna. In addition, one Historic District, the Lake Fannin Camp Organizational Camp, was identified. The District is found within the Caddo National Grasslands, a 900-acre area containing 11 buildings and two structures. However, none of these structures are located within the area of potential effect by proposed plant construction or operational activities (i.e., within or immediately adjacent to the boundaries of the proposed plant [or reservoir site]). All are confined to towns or within a protected area (National Grasslands) located over 10 miles away (Reference 9.3-33).

In addition, the Texas Archaeological Sites Atlas was reviewed for additional sites that may be found within a two-mile radius of the Red 2 site. Six archaeological sites were recorded along the banks of Valley Lake (Reference 9.3-34). The USGS topographic map also indicates the presence of a cemetery 0.75 mile west of the site. The Virginia Point Cemetery is an active grave site with over 50 graves, the earliest of which appears to be in early 1870s (Reference 9.3-35). However, since neither the archaeological sites nor nearby cemetery are located within or immediately adjacent to the boundaries of the proposed plant site (or potential reservoir location), they should not be adversely affected by the project.

Construction impacts to known or unknown cultural resources would primarily be direct and result in ground disturbing activities that could destroy some or all of a resource. It is not known where other potentially cultural or archaeological resources may be found on this greenfield site. Much of the area has been cleared for agricultural uses and the existing Valley Plant and man-made Valley Lake lie to the south of the proposed site. However, as with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists. Building the proposed nuclear power plant at the Red 2 site would require formal consultation with the THC prior to construction. Additional surveys would be conducted where required (e.g., new reservoir location), and mitigation measures, if required, would be coordinated with the Commission such that any impacts to cultural resources from construction of the proposed nuclear power plant would be SMALL. In addition, protective measures would be implemented if historic and/or cultural resources were discovered during construction. In the event that an unanticipated discovery is made, site personnel would be instructed to notify and consult with the Commission to determine if additional evaluation is needed and further mitigation is required. As with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists, particularly in areas with no prior land disturbance.

There is minimal potential for direct impacts as a result of operations. In general, plant operation is not expected to involve the physical conversion of additional lands for the plant's use. It is further assumed that any plans to disturb additional lands would avoid existing known (and significant) historic and cultural resources, and would require consultation with the THC prior to disturbance to address potential impacts on unidentified and potentially significant resources. Such mitigative actions would ensure that impacts to historic and cultural resources from plant operation are small. The potential for impacts to cultural resources related to project operations would be limited to indirect impacts that could alter the character of a resource or its setting. Because there are no known cultural resources in the area of the proposed plant site, no direct or indirect impacts are anticipated.

STPNOC concludes that impacts of construction and operation on historic properties would be SMALL.

9.3.3.2.8 Environmental Justice

The Census Bureau data (2000) for Texas characterizes 11.5% of the population as Black, 0.6% American Indian or Alaskan Native, 2.7% Asian, 0.1% Native Hawaiian or other Pacific Islander, 11.7% some other race, 2.5% two or more races, 29.1% aggregate of minority races, and 32% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 12% of families were living below the poverty level in 1999 (Reference 9.3-18).

Total percentages of minority populations within a 50-mile radius of the Red 2 site were determined using 2000 Census block points with the following results: 5.7% black, 1.7% American Indian and Alaskan Native, 3.6% Asian, 0.04% Hawaiian and Other Pacific Islander, 4.1% All Other Races, and 2.3% Two or More Races, and 9.2% Hispanic or Latino of any race (Hispanic Ethnicity). In addition, the percentage of low income population (families) was determined using Census block groups within a 50-mile radius of the Red 2 site with the following result: 6.5% were living below the poverty level; the data were for 1999. These percentages were compared against the state averages for both Texas and Oklahoma since part of the 50-mile radius for the Red 2 site encompasses Oklahoma.[2] Note that the resulting percentages are either lower or only slightly higher – by only a few percentage points or less (e.g., American Indian and Asian) – than the minority population percentages for both states. However, the slightly higher percentage points are not considered a significant enough difference to result in disproportionate impacts to these populations. In addition, the higher percentage of American Indians, while higher than the state average for Texas, is lower than the state average for Oklahoma, where the majority of this particular Indian population is assumed to reside (Reference 9.3-19).

In addition, because it is assumed that those minority populations living closest to the site have the potential to be affected by plant construction activities, the 2000 Census

2 The Census Bureau data (2000) for Oklahoma characterizes 7.65% of the population as Black, 7.9% American Indian or Alaskan Native, 1.4% Asian, 0.1% Native Hawaiian or other Pacific Islander, 2.4% some other race, 4.5% two or more races, 23.95% aggregate of minority races, and 5.2% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 11.2% of families were living below the poverty level in 1999 (Reference 9.3-18).

block data within a 5-mile radius of the Red 2 site were used for ascertaining minority population in the area, as follows:

- 172 Census Blocks with a total population of 3,860 are found within a 5-mile radius of the Red 2 site; this area includes parts of western Fannin County, Grayson County, TX, and a small portion of Bryan County, OK.

For purposes of this evaluation, the potential for the proposed project to result in disproportionate impacts on minority and low income populations is based in part on whether any block percentage exceeded its corresponding state percentage by more than 20% or was greater than 50% overall. In this situation, the block was identified as having a significant minority population.

For the Red 2 site, minority populations exist in a total of 6 blocks with the breakout as follows: Indian/Alaskan Native populations exist in three blocks; a Hispanic population exists in one block; and populations of two or more races exist in two blocks. Total minority populations in these blocks are very low, however, at 13 persons total (out of total population of 3860), and all are more than 3.5 miles away. Note that only one block was located in Oklahoma and it included no significant minority populations (based on a comparison with the minority population percentages for the State of Oklahoma).

While construction activities (noise, fugitive dust, air emissions, traffic) could disproportionately affect these blocks of minority populations at the Red 2 site, longer term impacts from plant construction and operation could benefit this low-income population through an increase in related jobs.

The 2000 Census block group data within a 10-mile radius of each site were used for ascertaining low-income population in the area. The Census Bureau data characterizes 12% of families as living below the poverty level in Texas in 1999. Within the twelve block groups included in the 10-mile radius, the percentages ranged mainly from 0.0% and 10.9%, although there were two block groups at 17.1% and 17.3%. Based on the “more than 20 percent” criterion, however, no low income populations exist in a 10-mile radius of the Red 2 site.

In general, new facilities would be considered beneficial economically to the existing population, especially those disadvantaged population segments served by the State and local social service agencies. Two new units may enable the disadvantaged population to improve their social and economic position by moving to higher paying jobs. At a minimum, the expenditures of construction workforce in the area of food, services, etc. could, through the multiplier effect, increase the number of jobs available to the disadvantaged population.

Impacts to minority and low income populations from plant operation are expected to be similar to those identified for construction activities; however, the impacts during plant operation are expected to be generally beneficial to a disadvantaged community. Minority and low-income populations have been shown to benefit economically from the existing plant (e.g., construction and operation of the Grand Gulf nuclear plant in Mississippi) (Reference 9.3-14), and are expected to receive long-term positive economic benefits from construction and operation of two new units at all six candidate sites. From this perspective, it could be argued that those sites with the highest minority and low income populations, would receive LARGER and more BENEFICIAL impacts to these populations than the other sites.

Finally, given the slightly higher number of the Native American population in the Red 2 site area compared to other sites (14,013 within a 50-mile radius and 4 persons within a 5-mile radius of the site), there is the potential for this population to be affected in different ways than the general population would. These include unique exposure pathways or rates of exposure (e.g., from subsistence fishing), special sensitivities (e.g., to air pollution because of less access to health care), or different uses of natural resources (e.g., for cultural, religious or economic practices). While these are a potential concern, no significant health or physical impacts to any human populations are expected to occur at the Red 2 site (or any site under consideration) as a result of project construction or operation. Therefore, no significant disproportionate impacts are expected to this minority population.

STPNOC concludes that environmental justice impacts of construction and operation of the proposed project at the Red 2 site would be SMALL, and that potential long-term impacts from project operation would be BENEFICIAL to the minority and low-income populations.

9.3.3.2.9 Nonradiological Health

Typical nonradiological health hazards associated with large construction projects (such as construction of a new nuclear power plant) include the following:

- Air Emissions, such as fugitive dust, smoke, and engine exhaust;
- Physical Hazards, such as falls, impact injuries, and vehicular accidents; and
- Noise Hazards.

All construction activities would be performed in compliance with OSHA (29 CFR 1910).

Construction-related air emissions are anticipated to consist of fugitive dust, smoke, and engine exhaust. Impacts to construction workers would be the same for both the proposed and alternate sites. Construction workers would be protected from such hazards via personal protective equipment (dust masks, etc.) and other controls (water sprays, equipment emission controls, equipment inspections, etc.).

Impacts to neighboring populations would be dependent on distance to these receptors. The Red 2 site is located adjacent to an operating power plant. However, the majority of workers at the plant work indoors and would not be impacted. Training, awareness, and personal protective equipment would minimize the impacts to personnel working outdoors. The Red 2 site is not located in the immediate vicinity of residential areas, and fugitive emissions are not anticipated to impact offsite receptors.

Physical hazards at the construction site would be consistent with any large-scale construction project and could include falls, impact injuries, vehicular accidents, and electric hazards. Access to the construction site would be controlled, and physical hazards to neighboring populations are not anticipated. Impacts to construction workers would be minimized through training, awareness, and personal protective equipment, and are expected to be minor.

Activities at the site would create noise consistent with large-scale construction activities. Noise levels for common construction activities are typically about 90 dBA at a distance of 10 feet (Reference 9.3-14), and decrease with distance from the source. Due to the distance to local residential areas from the Red 2 site, these populations are not expected to be impacted from construction noise hazards. Impacts to construction workers and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

In summary, construction-related nonradiological health impacts (air emissions, physical hazards, and noise hazards) to construction workers, workers at neighboring facilities, and neighboring residential areas are expected to be SMALL for the Red 2 site, and impacts can be minimized through training, awareness, personal protective equipment, and activity scheduling.

In general, operational-related nonradiological health hazards would consist of occupational injuries. Historically, actual injury and fatality rates at nuclear reactor facilities have been lower than the average U.S. industrial rates (Reference 9.3-14). In all cases, plant operational activities would be performed with adherence to applicable laws and regulations, practices, and procedures.

Other typical nonradiological health hazards associated with plant operational activities include the following:

- Health impacts from cooling tower operation;
- Noise Hazards; and
- Health impacts from transmission line operation.

At the Red 2 site, plant cooling water effluent would be returned to the cooling water reservoir and/or discharged to the Red River. Discharges have the potential to increase the growth of microorganisms in the receiving waters. Serious illness and death can occur when there is high exposure to these microorganisms (Reference 9.3-14). NUREG-1437 notes that a discharge to a small river (defined as having an average flow of less than 100,000 cfs) would have the greatest chance of affecting the public (Reference 9.3-13). The Red River, in the vicinity of the Red 2 site, has an average flow rate of approximately 5,000 cfs, and discharge would have a moderate impact.

The principal sources of noise from plant operation are cooling towers (where employed), transformers, and loudspeakers. Generally, power plant sites do not result in off-site levels more than 10 decibels above background (Reference 9.3-13), and impacts to neighboring populations would be small. Impacts to plant operators and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

The two human health issues related to transmission lines are the acute effects (shock hazard) and the potential for chronic effects from exposure to electric and magnetic fields. Acute effects can be minimized through tower design precluding direct public access to components that may pose a shock hazard and are considered to be small at each location. Chronic effects from the operation of energized transmission lines on public receptors are not conclusive but do indicate some impacts are possible. However, these impacts are assumed to be small as transmission rights-of-way will be located in a manner to avoid residential populations to the greatest extent.

In summary, noise hazards and hazards associated with transmission line operation are small for the Red 2 site. Health impacts associated with discharge of cooling water are moderate. Since impacts will generally consist of occupational injuries, and since injury/fatality rates at nuclear plants are generally lower than the average rates at industrial sites, operational-related nonradiological impacts at the Red 2 site are SMALL.

9.3.3.2.10 Radiological Health

As the Red 2 site is not located in the vicinity of existing radiological operations, sources of radiation exposure to site preparation and construction workers are limited to those sources introduced by the new plant. The radiological impact on construction workers at the Red 2 site is no more than that at the STP site; therefore, it is concluded that the radiological impact on construction workers is SMALL.

Plant locations at the Red 2 site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Therefore, impacts to offsite receptors would be minimal.

Radiological impacts of plant operation occur through exposure pathways from releases and direct radiation from the plant, and can be viewed as dose to public receptors, occupational receptors, and other biota. The Red 2 site is located adjacent to and would discharge cooling water blowdown to surface waters. However, discharges will be within regulatory limits which assure that the radiological impact is SMALL. The Red 2 site is also located in the area of groundwater used for potable uses and agricultural irrigation. The valuable groundwater aquifers are generally deep and would not be impacted by plant operation.

The Red 2 site is located near existing agricultural operations, and potential radiological releases could impact these foodstuffs. Because liquid releases will be maintained within regulatory limits, dose rates would generally be less than 1 mrem/yr at the site boundary (Reference 9.3-13).

Plant locations at the Red 2 site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Radiation doses to members of the public from current operation of nuclear power plants have been examined from a variety of perspectives, and the impacts were found to be well within design objectives and regulations in each instance (Reference 9.3-13). Therefore, radiological impacts to public receptors are SMALL for the Red 2 site. Additionally, NUREG-1437 examines radiological impacts to occupational receptors and concludes that occupational radiation exposure is of SMALL significance.

9.3.3.2.11 Impact of Postulated Accidents

As site specific meteorology data is not available for the alternate sites, a general analysis of the impacts of postulated accidents is provided. NUREG-1437 contains a thorough analysis of environmental impacts of accidents during operation. The analysis assumes accident frequency based on regulatory controls ensuring the plant's licensing basis is maintained. The analysis concludes that the environmental impacts from design-basis accidents are of SMALL significance for all plants (Reference 9.3-13). Similarly, the analysis evaluated severe accidents and concluded calculated impacts from atmospheric releases, fallout onto open bodies of water, groundwater releases, and societal and economic impacts to be of SMALL significance. Effective emergency planning can aid in mitigating the impacts of accidents.

The Red 2 site is not located in the immediate vicinity of residential areas. The accident impacts at the Red 2 site are SMALL.

9.3.3.2.12 Conclusion Regarding the Red 2 Site

Impacts from the construction of a new nuclear power plant at the Red 2 site would generally be SMALL to MODERATE, and impacts from the operation of a new nuclear power plant at the Red 2 site would generally be SMALL. Construction-related environmental impact areas with predicted adverse impacts other than SMALL include land use at the site and vicinity, and terrestrial and aquatic ecology, and socioeconomics (demographic impacts to the host county and two-county local area and impacts to infrastructure and community services). Operation-related environmental impact areas with predicted adverse impacts other than SMALL include water use and socioeconomics (physical impacts and demography). Any adverse impact from the new plant is not predicted to have a disproportionate effect on minority or low-income populations. As a result, the predicted impacts at the Red 2 site are equal to or greater than those at the proposed STP site. Red 2 was not considered environmentally preferable to the proposed STP site.

9.3.3.3 Evaluation of Allens Creek Site

The Allens Creek site is an Alternate Site for the development of a new two-unit nuclear power plant. The site is located in Austin County, Texas, approximately 7.1 km (4.4 mi) north of Wallis, TX and approximately 11.7 km (7.3 mi) southeast of Sealy, TX. Originally, the Allens Creek site had been set aside for a nuclear power plant and cooling reservoir; the project was cancelled. The City of Houston and the Brazos River

Authority later acquired the land for the reservoir and proposed a municipal water supply reservoir for the property. Currently, the Brazos River Authority (BRA) plans to build and operate a 9,500-acre reservoir. The previous TCEQ water right permit has been amended to reflect the change to a water supply lake. According to the project timeline, USACE 404 permit negotiations are slated to begin in 2009 and construction is expected to begin in 2018 (Reference 9.3-36). NRG still owns 1,722 acres at the site, including the proposed location for the power block, related facilities and switchyard. The cooling water source for the Allens Creek site is the Brazos River. The Allens Creek site is a greenfield site.

The following assumptions apply to evaluation of impacts at the Allens Creek site:

- A new 9,500-acre cooling water reservoir would be created off of Allens Creek, consistent in size with the water supply reservoir currently proposed by BRA, and that the impacts of reservoir construction would be cumulative with those of the nuclear power plant. Should the proposed BRA reservoir not be constructed as planned, a smaller reservoir would have to be constructed for the nuclear power plant; environmental impacts associated with its construction would be similar to those estimated for the other alternative sites. Accordingly, environmental impacts associated with reservoir construction would not be reduced to a point where they would be less than the associated environmental impacts at the STP site.
- The proposed Allens Creek Reservoir (or portion thereof) would serve either as the cooling water reservoir for the plant (similar to that used at STP site) or as a water storage reservoir to support cooling towers and plant operating needs.
- While the plant would use a closed cycle cooling system, plant design at this site is not final and the potential exists to use either cooling towers or a cooling water reservoir to assist in heat load dissipation. Therefore, potential impacts from cooling towers are also evaluated for this site.
- Given the large size of the proposed Allens Creek Reservoir, the potential also exists for the reservoir to support both the anticipated water supply needs of the City of Houston as well as the nuclear power plant – if not as a shared single reservoir then perhaps as two separate but adjacent reservoirs.
- The potential land use and ecological impacts from construction of the larger 9,500-acre reservoir are evaluated herein in order to address potential cumulative impacts of this action with construction of a new nuclear plant given the actions would affect the same area within a similar timeframe.
- Cooling water discharge would be returned to the Brazos River downstream of the intake location.
- Potential land use impacts from transmission line routing are based on combined and approximate distances to three nearest 345kV lines.

9.3.3.3.1 Land Use Including Site and Transmission Line Rights-of-Way

Land use impacts associated with plant construction include both impacts to the site and immediate vicinity and impacts to offsite areas such as transmission, cooling water intake and discharge pipelines, and transportation rights-of-way (e.g., road and rail).

Construction of a new nuclear power plant would include clearing, dredging, grading, excavation, spoil deposition, and dewatering activities. The impacted area would be approximately 800 acres for the main power plant site (major structures including switchyard), which would largely be focused in one central location; and up to 9,500 acres (surface area) for a cooling water reservoir. While a reservoir of smaller size could be constructed, area topography lends itself to a larger reservoir. Should the larger reservoir be constructed, it would likely support the anticipated water supply needs of the City of Houston as well as the nuclear power plant; potential impacts of the larger reservoir are evaluated to address potential cumulative impacts of these two related actions. Impacts would also be realized near the surface water withdrawal and discharge locations used for cooling water makeup. Approximately 150 acres per unit (in the immediate site area) and 9,500 acres for the cooling water reservoir (for a total of 9,800 acres) would be permanently impacted. The remaining acreage would be temporarily impacted and reclaimed to the extent possible following construction.

Other area land use impacts would result from construction of housing and other infrastructure in support of a construction workforce. It is predicted that the majority of this expansion would occur near existing communities, and a significant land use impact is not expected to occur.

In 2007, approximately 80% of total land acreage in Austin County was devoted to farming, including 2,112 farms and ranches covering 333,928 acres. Of this, 197,150 (59%) were devoted to pasture (permanent pasture and rangeland other than cropland and woodland pasture), 96,559 acres (29%) to cropland, and 30,814 acres (9%) to woodlands. The remaining farmland (9,405 acres) is devoted to farmsteads, buildings for livestock, ponds, roads, and wasteland (Reference 9.3-9). Beef, hay, cotton, corn, grain sorghum, and pecans were the chief agricultural products. Substantial reserves of petroleum and natural gas are the most significant of the county's limited mineral resources (Reference 9.3-37).

In 1973, the majority of the Allens Creek site was cleared of the native hardwood vegetation, and an extensive system of drainage ditches were constructed which allowed much of the area to be used to farm row crops. Major crops grown include corn, cotton, sorghum, hay and improved pasture. Uncleared and partially cleared land was used to graze cattle (Reference 9.3-38). The area is not considered appropriate for more urban development because the area is prone to flooding (Reference 9.3-39). Much of the Allens Creek site is open cropland and pasture, but hardwood riparian areas and bluff forests exist along the Brazos River and Allens Creek.

As specific site locations and plant design layouts have not been finalized, specific acreage impacts cannot be determined for the sites under consideration. However, the following presents the general land uses for an area approximately 9,800 acres in size at the Allens Creek site where the main plant site and reservoir could be located. The acreage breakouts for the proposed reservoir are based on a 1995 Wildlife Habitat Appraisal conducted for the proposed reservoir site for the TPWD; note that the appraisal encompasses 8,400 of the 9,500 acres (Reference 9.3-40). The acreage estimate for the proposed plant site, with a proposed location on the bluff above the western side of the reservoir, is based on a percentage breakout using Google Earth and best professional judgment (Reference 9.3-41).

Land Cover Class	Area (acres)	Percentage of Site
Crops	1,722	21%
Bottomland forest (including 1733 acres of wetlands)	2,640	31%
Bluff forest		
Reservoir	90	1%
Plant site (out of 300 acres)	75	25%
Grass		
Reservoir	3,923	47%
Plant site (pasture) (out of 300 acres)	225	75%
Parks*	27	0.3%

* Parks are trees that are greater than 9 feet tall and with a canopy cover varying from 11% to 70%

In addition, the forest below FM 1458 (82 acres), as well as the grasses below FM 1458 (186 acres) are assumed to suffer major changes in habitat with rerouting of Allens Creek downstream from FM 1458.

A discussion of wetlands in the site area is provided in ER Section 9.3.3.3.5 (Aquatic Ecology).

Additional acreage (up to several hundred acres) that would be required for construction activities (e.g., laydown areas) also includes a mixture of forest and open fields, although cleared land would be used to the greatest extent possible. However, the impact on this acreage would be temporary. Following construction activities, impacted areas without constructed buildings or transportation infrastructure would be reclaimed to the greatest extent feasible.

The majority of the site appears to be farmed between the Brazos River and Highway 36. Project construction would have a long-term impact on the current uses of cropland and pasture land and alter this land use from agriculture to industrial. The potentially affected acreage is the largest of the alternate sites when the reservoir acreage is included. Land use impacts associated with on-site construction of the power plant itself would be SMALL since most of the site area has already been cleared. However, given the extensive acreage affected from development of the reservoir, and the potential for the reservoir to support combined uses as a public water supply reservoir and a cooling water reservoir for nuclear plant operations, land use impacts associated with the reservoir at Allens Creek are MODERATE to LARGE.

Onsite impacts from construction of the power plant and potential reservoir at the Allens Creek site would be MODERATE to LARGE, depending on the final size of the reservoir and the extent to which undisturbed (primarily forested) lands are affected.

Specific routing of transmission lines has not yet been identified, but rough estimates of requirements for new transmission lines have been developed. The feasibility of using existing infrastructure is dependent on the available capacity remaining in the system. If sufficient capacity is not available, either existing rights-of-way would be expanded to accommodate additional transmission lines or new rights-of-way would be obtained and transmission lines constructed. Expansion of existing rights-of-way is expected to result in small environmental impacts while construction in new rights-of-way could result in moderate impacts.

Three new ROWs would be required to connect to the three closest 345 kV lines in the area. The proposed site is approximately 20 miles west of 345kV connection at the O'Brien substation which connects to multiple double-circuit lines; 30 miles northwest of 345kV line between W.A. Parish power plant and Hill Substation which is a triple-circuit line; and 35 miles northeast of 345kV line between Holman and Hill substations. The total combined distance is approximately 85 miles. Based on 85 miles of corridor and 200-foot width, installation of the new lines would impact around 2,060 acres. Although the most direct route, in general, would be used between terminations, efforts would be made to avoid conflicts with natural or man-made areas where important environmental resources are located. Route selection would also seek to avoid populated and residences to the extent possible. The use of lands that are currently used for timber production or forest would be altered. Trees would be replaced by grasses and low-growth ground cover. Construction of the transmission lines would be expected to comply with all applicable laws and regulations, permit requirements, and use of best construction practices. Note that construction impacts from a new transmission ROW would be greater at Allens Creek than at the other sites based on the total length of new ROW that would be required.

Impacts associated with construction of pipelines to deliver plant cooling water to the reservoir/plant site and transportation rights-of-way (both road and rail) would also be realized at the Allens Creek site. The following are estimates of the length of new pipeline, rail, and road rights-of-way to be constructed:

- Rail: 0.7 mile, 5 acres (based on 50-foot ROW width)
- Cooling water intake/discharge (4 miles) from/to the Brazos River and new reservoir, 36 acres (based on 75-foot ROW width)
- Access road: 1.2 miles of new construction, 11 acres (based on 75 foot ROW width)

Additional transportation volume also could require the expansion of some existing local roads. Shift schedules could be planned so that shift changes at the co-located facilities would not coincide with each other. Impacts from constructing road access to the site would be small.

Construction at the proposed pipeline corridors would have temporary, minor effects on land use during actual construction due to trenching, equipment movement and material laydown. The ability to use current lands for their existing uses (cattle ranching, gas production), along each of the proposed pipeline corridors would be temporarily lost during construction. Direct and indirect impacts of construction from the proposed transportation infrastructure would be similar to those for the proposed plant: a loss of some existing pasture land and range land depending on their locations. Construction of any proposed project related transportation infrastructure requiring compliance with any regulations would be coordinated with the appropriate county as deemed necessary.

In summary, offsite impacts from transmission line construction and transportation infrastructure, which would affect an estimated 2,112 acres of land, are predicted to be MODERATE at the Allens Creek site.

Operational impacts to site land use would include a permanent change in land use of 9,800 acres of land for the power plant site and reservoir – that would be generally unusable for other purposes. The proposed change would represent a significant change from current land use at the site which is primarily agricultural.

In addition, operational impacts to the site and immediate vicinity would include maintenance operations on existing structures and would be small and temporary in nature.

Operational impacts of transmission lines result primarily from line maintenance, and include right-of-way vegetation clearing, transmission line maintenance, and other normal access activities. To ensure power system reliability, the growth of tall vegetation under the lines must be prevented to avoid physical interference with lines or the potential for short-circuiting from the line to the vegetation. Additional right-of-way acquisition and development would not normally be required as part of plant operational activities. Maintenance activities would be limited to the immediate right-of-way and would be minimal. New transmission corridor would not be expected to permanently affect agricultural areas but would have potential to impact residents along ROW. Corridor vegetation management and line maintenance procedures would be established by transmission service provider. Given rural setting and low population density along transmission corridors, operational impacts to land use along ROWs would be SMALL.

Other offsite land use impacts as a result of plant operational activities would be minimal, temporary, and limited in the area impacted. Such activities could include pipeline, road, and rail maintenance and auxiliary building maintenance. It is likely that most lands above the proposed water intake and discharge pipelines and related areas of construction could continue to be used for ranching, farming and any passive uses.

The proposed transportation infrastructure could result in the loss of a very small amount of ranch land and pasture land on the proposed plant site and in areas where access roads would be needed.

In summary, land use impacts at the site and immediate vicinity from plant operation, including the new reservoir, are predicted to be SMALL; and impacts from transmission line maintenance and transportation infrastructure maintenance are predicted to be SMALL.

9.3.3.3.2 Air Quality

Air quality impacts associated with plant construction include both impacts from the construction activities themselves and transportation impacts from workers commuting to the worksite. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities, including a preconstruction air permit from the TCEQ (Reference 9.3-10). The air permits would ensure both construction and operational emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-11).

Air quality impacts from construction activities are similar to those for any large-scale construction effort and consist of fugitive dust emissions, emissions from equipment and machinery, and emissions from concrete batch plant operations. Fugitive dust emissions can be controlled through use of water sprays and postponing certain activities during windy conditions. Equipment emissions can be controlled through equipment inspections and regular maintenance. Concrete batch plant operations would employ equipment emissions controls to minimize air quality impacts. Specific mitigation measures would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment. In total, air quality emissions from construction activities would be small and temporary and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the construction workforce commuting to the worksite. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity. Air quality impacts would be more detrimental in areas already exceeding the NAAQS for criteria pollutants. Texas has no nonattainment areas for carbon monoxide, nitrogen dioxide, ozone (1-hour), sulfur dioxide, particulate matter (less than 2.5 micrometers [$PM_{2.5}$]), or lead. Part of El Paso County, Texas is in nonattainment for particulate matter (less than 10 micrometers [PM_{10}]); however, this county is in the extreme western portion of the state and is not located near the Allens Creek site. The Houston-Galveston-Brazoria area holds non-attainment status for ground-level ozone under the 8-hour standard. Counties affected under this status include Brazoria, Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, and Waller (adjacent county east of the plant site) (Reference 9.3-12).

As the Allens Creek site is located outside of the affected counties and vehicular transportation is not expected to significantly increase across the affected counties as a result of the construction activities, impacts are expected to be SMALL.

Air quality impacts associated with plant operation include both impacts from the plant operational activities themselves and transportation impacts from workers commuting to the plant. Operating activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Air quality impacts from operational activities result from releases of heat and moisture to the environment from cooling operations and emissions from the operation of auxiliary equipment. A closed-cycle cooling system would be used for Allens Creek, using either cooling towers or a cooling water reservoir. Thermal discharges resulting from these systems would be to the reservoir and/or to the atmosphere.

Cooling tower operation often results in drift, or the transport of residual salts and chemicals through water droplets carried out of the cooling towers. Based on a review of the measurements of deposition of draft from nuclear power plants (Reference 9.3-13), measurements indicate that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Auxiliary equipment may also be operated on an intermittent basis. Auxiliary equipment emissions can be controlled through equipment inspections and regular maintenance. Small amounts of ozone and smaller amounts of oxides of nitrogen are produced by transmission lines (Reference 9.3-14). Production of ozone and oxides of nitrogen are insignificant and does not measurably contribute to ambient levels of those gases (Reference 9.3-13). In total, air quality emissions from operational activities would be small and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from increased vehicular emissions from the workforce commuting to the plant. However, as the Allens Creek site is located outside of the affected counties in non-attainment for criteria pollutants, and vehicular transportation is not expected to significantly increase across the affected counties as a result of plant operation, impacts are expected to be SMALL.

9.3.3.3.3 Hydrology, Water Use, and Water Quality

Water-related impacts associated with plant construction include both water use impacts and water quality impacts and are consistent with those caused by typical large-scale construction projects. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

STPNOC estimates that groundwater would be used at a peak or maximum rate of approximately 1,200 gpm (ER Section 2.3.1.2.6) during construction with normal demands being much less than maximum use. Groundwater would be used during construction for personal consumption and use, concrete batch plant operation, concrete curing, cleanup activities, dust suppression, placement of engineered backfill, and piping hydrotests and flushing (ER Section 2.3.1.2.6).

In summary, due to the relatively small water quantity requirements and the availability of groundwater or imported water, the sites will have a SMALL impact on water use for construction activities.

Water quality impacts from construction activities would primarily result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from construction activities would be regulated and would require obtaining TPDES or other discharge permits. Regulated discharges would not be expected to significantly impact local drainages or other surface water bodies. Additionally, significant hydrological alterations are not anticipated at the Allens Creek site. Therefore, impacts to water quality will be SMALL.

Water-related impacts associated with plant operation include both water use impacts and water quality impacts. Plant operation would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Plant operational activities consume water through plant cooling and personal (sanitary) uses. Overall use of water is dominated by plant cooling uses for wet-cooled plants. A closed-cycle cooling system will be used for Allens Creek, using either cooling towers or a cooling water reservoir. The assumed maximum plant cooling design consumption for a two-unit plant is 50,000 acre-ft/yr (31,000 gpm, 69.1 cfs). The necessary water rights for this cooling water requirement from the Brazos River are not presently owned by STPNOC and would need to be acquired. Unappropriated flows are available for a new application 25-50% of the months (Reference 9.3-22). Active industrial, irrigation, and mining uses were considered as potentially available for water rights sale/transfer – municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses were not considered viable water rights for sale/transfer. At present, there are 1,368 water rights owners in the Brazos Basin that are industrial, irrigation, or mining uses totaling 4,349,464 acre-ft/yr (Reference 9.3-23). Assuming no unappropriated flows exist, the new plant would need to acquire 1.1% of these existing water rights. Acquisition of these water rights would result in a SMALL to MODERATE impact on water use for operational activities.

Cooling tower operations result in the concentration of dissolved solids in the water stream, resulting from evaporation loss, which must occasionally be discharged and replenished with freshwater. The discharged water (blowdown) would be of lower quality than the source water. Cooling tower blowdown would be discharged to the reservoir and/or the Brazos River as necessary. The concentration of total dissolved solids in the cooling tower blowdown averages 500 percent of that in the makeup water, a concentration factor that can be tolerated by most freshwater biota (Reference 9.3-13). Additionally, a TPDES permit would be required to discharge effluents, and any unforeseen water quality impacts could be addressed during periodic permit renewals.

Water quality impacts could also result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from operational activities would also be regulated and would require obtaining TPDES or other discharge permits.

Therefore, due to the regulatory conditions associated with the operational activities, impacts to water quality will be SMALL.

9.3.3.3.4 Terrestrial Resources Including Threatened and Endangered Species

For the Allens Creek site, it is assumed that construction of two units and a reservoir would disturb up to 9,800 acres of land, with approximately 300 acres required for permanent structures and facilities including plant footprint and support buildings, and switchyard; and up to 9,500 acres for a new reservoir. This is exclusive of the land required for development of transmission lines, water pipelines, rail or road access, which are estimated to impact an additional 2,112 acres. All acreage not containing a permanent structure would be reclaimed to the maximum extent possible.

Austin County covers 656 square miles on the boundary between the Post Oak Savannah and the Coastal Prairie regions of Texas. The terrain varies from rolling hills in the northern, western, and central sections to a nearly level coastal prairie in the south where site is located. In the south the coastal prairie exhibits wide expanses of open grassland fringed by stands of oak and elm. Although the timber and grassland were almost equal in extent during the nineteenth century, the woodland has been reduced in the twentieth century by advancing urbanization. On the coastal prairie the dominant species are marsh and salt grasses, bluestems, and coarse grasses (Reference 9.3-25). Onsite streams include Allens Creek. Between 11 and 20 percent of the land in the county is regarded as prime farmland (Reference 9.3-37).

The site is comprised of mostly flat, agricultural land used to farm row crops (primarily cotton, sorghum, corn and soybeans) and graze cattle. Although much of the site has been disturbed for agriculture, the coastal prairie around the site exhibits wide expanses of open grassland fringed by stands of oak and elm. Animal species that occur near the site are typically found in similar habitats in Post Oak Savannah region of Texas. Forested areas are found to the north of the reservoir site and along the bluff areas above the reservoir (Reference 9.3-40).

A wildlife habitat appraisal of the proposed Allens Creek reservoir was conducted for TPWD to classify, delineate and map the major vegetative covers, develop mitigation requirements, and estimate the extent of jurisdictional wetlands. Within the proposed reservoir area, grassy areas comprise the largest habitat type (nearly 4,000 acres), followed by forests (over 2,700 acres), and cropland (over 1,700 acres). Forests (bottomland and bluff) rated the highest habitat quality scores due to the greater diversity of woody and herbaceous species. Croplands scored low due to the nature of the monoculture (Reference 9.3-40).

According to the appraisal, the area along Allens Creek between FM 1458 and the Brazos River consists of a riparian forest bordered with grasses and herbaceous plants. The forests on both sides of the creek are characterized as pecan/elm/hackberry forests. The dominant trees on the north side are pecan, cedar elm, hackberry, soapberry, cottonwood, green ash, locust, and hawthorne. The south side is less diverse. The grass cover types in this area are a mixture of different grasses and herbaceous plants characterized as mixed grass. The north side grassy area is partially wooded while the south side is heavily grazed. Bottomland forest cover type is primarily riparian forest or non-riparian bottomland hardwood areas. The bottomland forests at the Allens Creek site are found in the bowl-like depression left by past meandering of the Brazos River, the largest tract of which is Alligator Hole which contains approximately 600 acres. Cedar elm inhabits drier areas on the outer edges of Alligator Hole. The meander bluff created by the Brazos River which is the boundary on the north, west and south side of the proposed reservoir, is considered the most valuable habitat within the potentially disturbed area because of a greater diversity of woody and herbaceous species, and is rated as very uncommon, unique or irreplaceable. It displays a composition of trees that is noticeably different from the forests found at other locations within the proposed reservoir. The bluff is forested with bur oak, Durand oak, cedar elm, American elm, pecan, and hackberry (Reference 9.3-40). It is assumed that the proposed power plant and facilities would be located on the west side of the bluff.

Construction of the new plant and reservoir would affect up to 9,800 acres of land that currently mostly includes grassy areas, forests, and cropland, including over 1,700 acres of wetlands, resulting in the permanent loss of this habitat. Of the 300 acres permanently impacted at the power plant site on the western bluff, the majority of land has already been cleared. However, some of the area also includes bluff forests which may be cleared for the construction of site facilities.

Other temporary impacts from plant construction, such as erosion and dust generation, would be temporary and typical of large construction projects. These impacts could be mitigated using standard industrial procedures and best management practices. Standard practices, such as silt fences to control sedimentation and water sprays to limit dust generation, would protect ecological resources in the site vicinity.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, Federally protected species that could occur in Austin County include three birds (Attwater's Greater prairie chicken, interior least tern, whooping crane – USFWS listing), one mammal (Louisiana black bear – possible transient), and one amphibian (Houston toad). Additional State listed (threatened) terrestrial species include: six birds (American peregrine falcon, bald eagle, and peregrine falcon which are delisted Federal species; white-faced ibis, white tailed hawk, and wood stork); and three reptile species (Smooth green snake, Texas horned lizard and Timber/ Canebrake rattlesnake) (Reference 9.3-42). Table 9.3-6 provides a complete listing of Federal and State protected species in Austin County with their listing status and common and scientific names. No critical habitat or other sensitive habitats have been identified in the site area.

Other terrestrial species of concern that are considered rare but with no regulatory status include: three birds (Henslow's sparrow, mountain plover, western burrowing owl); one mammal (plains spotted skunk); and two plant species (Shinner's sunflower and Texas meadow-rue) (Reference 9.3-42).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and transportation (e.g., rail spur) corridors. In addition, construction-related land clearing and reservoir development would be conducted according to federal and state regulations, permit conditions and established best management practices. This would include consultation with the appropriate resource agencies and development of appropriate mitigation measures where required to minimize potential impacts to sensitive resources.

In terms of habitat loss from constructing a new nuclear power plant and reservoir, the impacts to terrestrial resources, including threatened and endangered species would be SMALL in the area of the facility footprint, and LARGE at the reservoir location, based on the potential for impacting over 2,700 acres of forested land, including potential high quality bottomland hardwood habitat, and the total number of protected species that could potentially occur in the area.

Although the most direct route would be used between transmission corridor terminations, consideration would also be given to avoiding possible conflicts with natural areas where sensitive environmental resources may be present. Transmission corridors could impact up over 2,000 acres of new ROW, although construction effects would be temporary. Impacts would be expected to be MODERATE to LARGE, depending on what percentage of the ROW would be constructed on previously undisturbed rights-of-way. In addition, land clearing associated with construction of the makeup water intake line to the river could result in short-term displacement of species within that corridor.

As noted previously, it is assumed that the proposed new units would employ a closed-cycle cooling system that would potentially use cooling towers. Impacts to terrestrial resources that may result from operation of two new nuclear units include those associated with cooling tower drift and bird collisions. The principal environmental concern with cooling tower drift impacts is related to the emission and downwind deposition of cooling water salts. Salt deposition can adversely affect sensitive plant and animal communities through changes in water and soil chemistry.

The impacts of cooling tower drift on crops, ornamental vegetation, native plants, birds, shoreline habitat and protected species were evaluated previously in NUREG-1437 and found to be small for all plants, including those with multiple cooling towers of various types (Reference 9.3-13). Measurements indicated that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Given the small area of impact expected from drift, the absence of critical habitat in the site area, and the fact that most of the site area has been previously cleared, ecological impacts from cooling tower drift during plant operation at the Allens Creek site would be SMALL.

In addition, creation of a new reservoir to support plant operation would provide new habitat for birds/fowl that would not be adversely affected by plant operation.

9.3.3.3.5 Aquatic Resources Including Threatened and Endangered Species

Major aquatic resources in the site area include the Brazos River and Allens Creek. Allens Creek originates southeast of Sealy, Texas (Austin County), and flows southeast through mostly open country for 15 miles to its mouth on the Brazos River. The area is gently sloping to nearly level and surfaced with loam and clay that support elm, hackberry, post oak, black hickory, and blackjack oak (Reference 9.3-37).

Impacts on the aquatic ecosystem from construction of a new nuclear power plant at the Allens Creek site would be associated primarily with construction of a new cooling water reservoir, construction of intake and discharge structures on the Brazos River; and potential stream crossings by the proposed new rail line, access road and transmission lines. The most significant impacts to aquatic resources would be from creation of the 9,500-acre reservoir which would inundate the natural habitat along Allens Creek. Habitat areas along Allens Creek downstream of the new reservoir to its outfall in the Brazos River could also be impacted. The reservoir would be an off-channel reservoir roughly bounded by SH 36 on the west, FM 1458 on the east, Mixville Road on the north, and FM 1093 on the south. The reservoir would fill the area of a Brazos River meander bounded on all sides by bluff except the east edge (Reference 9.3-40).

The Texas Water Development Board (TWDB) has contracted several instream flow studies along various rivers including the Lower Brazos River as part of the proposed Allens Creek Reservoir project. Sampling conducted in 2006 identified 44 fish species, including western mosquitofish, red shiner, blacktail shiner, channel catfish, longnose gar, longear sunfish, bullhead minnow, flathead catfish. A high diversity of freshwater mussel populations was also identified in the Brazos River (Reference 9.3-43). A fisheries inventory and assessment of both Allens Creek and the Brazos River were also conducted for the TWDB in November 1993. Forty-four species were collected from Allens Creek and the Brazos River. Western mosquitofish, pirate perch, longear sunfish, and red shiner were the most abundant species found in Allens Creek and red shiner also dominated collections in the Brazos River. River carpsucker was collected at all stations and was the most abundant of the three sucker species collected; six catfish species were collected, the most abundant of which were channel catfish and yellow bullhead (Reference 9.3-44).

An April, 2000 report entitled “Report on Allens Creek Reservoir Supporting an Application to Amend Water Right Permit 2925” identified several potential wetlands within the proposed reservoir site. The report, prepared by the engineering firms of Freese and Nichols & Brown and Root, lists approximately 1,428 acres of wetlands that may be inundated by the reservoir (Reference 9.3-36). Previously, a wildlife habitat assessment for the proposed Allens Creek Reservoir was conducted in the summer of 1995. The total area of wetlands was computed to be 1,733 acres. The majority of potential wetlands were mapped as Brazoria depressional soils, with the most notable area referred to as Alligator Hole. The deepest depressions have a meander-like pattern, and are probably remnants of former cutoff channels or oxbow lakes. The Brazos bottomland has been highly disturbed by human activity since settlement times. As a result it would appear that none of the proposed reservoir retains pristine vegetation, including the uncultivated depressions which are predominantly in bottomland forests. The dominant tree in the depressions is weedy hackberry with little ecological preference with respect to wetlands. The best indicator tree species in the wetter areas is the green ash (Reference 9.3-40). The immediate plant site area has been mostly cleared for agricultural use, with some scattered woods and a small forested wetland in the northern portion (less than 1 acre), and several small freshwater ponds. Bluff forests are found in the eastern portion, and a 44-acre forested wetland area is found to the south. A detailed wetlands assessment and study will be required in order to obtain the appropriate permits from the USACE to construct the reservoir.

The proposed project could result in localized, direct, and adverse construction impacts to wetlands. Filling in or modifying portions of wetlands, if avoidance is not feasible, would permanently alter hydrologic function and wetland vegetation and result in direct habitat loss. Potential habitat degradation of wetlands and waters downstream could also occur if flow to adjacent areas is reduced. Construction impacts would be mitigated by minimizing areas disturbed and preventing runoff from entering wetlands during construction. Mitigation for wetland loss would also likely be required but the exact amount is not known at this time.

Construction activities for a new cooling water intake and discharge structures in the Brazos River include: dredging, construction of cooling towers and onsite impacts on water sources, and pipeline construction. Aquatic resources in the Brazos River are rich and have been discussed previously. Dredging should be localized and while it would result in increased turbidity, the effects would be temporary and dredging operations would be in compliance with the USACE and State water quality requirements so that long-term water quality is not degraded. Construction of the trenches for the intake and discharge pipelines from the water to the site could lead to temporary soil erosion and increased turbidity in any onsite water sources. All construction impacts from construction related to cooling towers and onsite impacts on water resources (e.g., from dewatering effluent and runoff), such as erosion and sedimentation into the water resources, could be mitigated using standard industrial procedures and best management practices. Pipeline construction impacts would be temporary and would also incorporate best management practices. Pipes would be buried, so there would be no permanent alteration of water flow patterns in the floodplain.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, there are no Federally listed threatened or endangered aquatic species in Austin County (host county of the Allens Creek site). However, the sharpnose shiner is a candidate species with the potential to occur (Reference 9.3-45); see also Table 9.3-6. The sharpnose shiner is endemic to the Brazos River Basin. The species is an obligate riverine fish that typically occurs in fairly shallow water, open sandy channels with moderate to high current. Reservoir construction on the main stem Brazos River appears to have had a substantial impact on the distribution of the shiner with apparent population declines in many parts of the river system.

State protected species include the state threatened alligator snapping turtle that also has the potential to occur in the site area.

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and rail spur corridors. In addition, construction-related land clearing would be conducted according to federal and state regulations, permit conditions and established best management practices.

In summary, impacts from construction of a new reservoir would affect a large area (up to 9,500 acres) and inundate the natural aquatic habitat along a portion of Allens Creek. While much of the area has already been disturbed, a candidate Federal species and state threatened species may be present and high quality wetlands would also be impacted. With respect to onsite impacts from construction of the nuclear power plant facilities on the bluff above the reservoir, much of the land has been cleared and Allens Creek (above the reservoir) lies to the west of the proposed plant location. Construction impacts would be temporary and incorporate best management practices. Given this, impacts to aquatic resources, including wetlands and threatened and endangered species, from construction of nuclear power facilities at the Allens Creek site would be SMALL at the power plant site, and LARGE at the reservoir location.

Potential impacts from plant operation are similar to those discussed for the Red 2 site (see discussion for Red 2, ER Section 9.3.3.2.5). In summary, potential impacts to aquatic resources from plant operation primarily include those from water intake (i.e., impingement and entrainment), and discharge of heated effluents (heat shock). Additional concerns could include: physical changes to aquatic systems from storm water collection, and accumulation of contaminants in sediments or biota and thermal plume barrier to migrating fish.

Final design of intake and discharge systems will consider potential impacts on aquatic organisms under EPA regulations implementing Section 316(b) of the CWA. Use of a cooling water reservoir or cooling towers is a mitigation measure for reducing impacts from impingement and entrainment; they use relatively smaller volumes of makeup water in comparison to once-through cooing systems. Characteristics of thermal discharge into the river also would be reduced through use of a cooling tower or reservoir system. It is assumed that system designs at each site would use intake and cooling tower designs that would minimize operations impacts to aquatic resources, including threatened and endangered species. The potential for environmental impacts to aquatic resources, including threatened and endangered species, from nuclear power facility operations at the Allens Creek site, would be SMALL.

9.3.3.3.6 Socioeconomics

This section addresses impacts from the projected in-migrating population on the region and on local populations at the Allens Creek site. Specifically, the evaluation considers potential physical impacts and impacts to demography, local economy, tax revenues, housing, public services, education, recreation, and transportation and identifies those notable community characteristics that would be impacted at a given site. The preferred and alternative sites currently meet the population requirements of 10 CFR 100. The population distribution near each site is low with typically rural characteristics.

Using the same assumptions as used in the evaluation of the STP site in ER Section 9.3.3.1.6, and applying the same in-migrating population totals to the two-county area for Allens Creek as were applied to STP, construction of the two nuclear units at the Allens Creek site would result in a total in-migrating population of 5,866 persons (workers and families) into Austin County, including 2,077 workers; and a total in-migrating population of 2,118 persons (workers and families) into Fort Bend County, including 750 workers.

Some of the key assumptions used in the analyses for all of the sites are provided below for easy reference:

- 50% of the peak construction workforce will in-migrate (3,405 workers) to the site region
- 80% of these workers bring their families (3.28 average family size)
- Socioeconomic impacts will be most evident in a two-county area, where 83% of the in-migrating workforce and their families are expected to reside, with the following split: 61% will reside in the site host county and 22% will reside in an adjacent county. Note that these percentages are consistent with the breakout of the current operations workforce at STP.
- The remaining 17% of in-migrating workers will be distributed across other counties in the region, where the expected influx in each county represents a very small percentage of that county's population and impacts would be expected to be SMALL.

Because of the large population projections and available workforce at the Allens Creek site (given its proximity to the Houston metro area), it is possible that up to 100% of the estimated peak construction workforce could be found within daily commuting distance of the site and result in no (or minimal) in-migrating workforce. However, the same percentage influx was assumed for the Allens Creek site as for the other alternate sites in order to bound the potential impacts and address potential local impacts of an in-migrating workforce on the more rural Austin (host county).

Physical Impacts

Physical activities from construction activities include noise, odor, vehicle exhaust, vibration, shock from blasting, and dust emissions. These have been described in more detail for the Red 2 site (ER Section 9.3.3.2.6) and are expected to be the same for the Allens Creek site which is also a greenfield site. In summary, construction activities would be temporary and occur mainly within the boundaries of the site. Offsite impacts would represent small incremental changes to offsite services supporting the construction activities. Therefore, with respect to physical impacts, impacts from construction activities are expected to be SMALL.

Physical impacts from operation, as described for the Red 2 site (ER Section 9.3.3.2.6), are also applicable to the Allens Creek site, including the potential impacts on aesthetics, which are summarized here. With respect to aesthetics, any new units would be closed systems that would likely include cooling towers. Visible plumes resulting from cooling tower operation also could cause negative aesthetic effects. For the Allens Creek site, the presence of cooling towers would significantly change the landscape. Also depending on how far the towers could be seen (such as from the recreational areas, national wildlife refuge, or historic trail), the impacts could be MODERATE. During plant layout, it is also assumed that every effort would be made to locate the towers in an area isolated from area view points to the maximum extent possible.

Demography

Based on an estimated total in-migrating population of 9,616 into the multi-county region, and a total in-migrating population of 5,866 and 2,118 into Austin and Fort Bend counties, respectively, the percent increases in population would be as shown in Table 9.3-7. Potential increases in population during construction of the proposed project within the multi-county region are also presented. The individual impacts to each county would include an increase of 24.9% in Austin County (host county), and an increase of 0.6% in the adjacent (and more populated) Fort Bend County. The potential impacts would be LARGE in Austin County and SMALL in Fort Bend County. Should the in-migrating population be more evenly distributed between the host and adjacent counties, the resulting population increase in the combined two-county area would be 2.1%, or a SMALL impact on the two-county area. Finally, impacts to the multi-county region include a 0.2 percent increase in population, or a SMALL impact on the region. Note that all impacts would be temporary and are based on conservative 2000 U.S. Census Bureau population levels. A comparison to the estimated 2008 population for Austin County (26,851, a 13.8% increase), results in a slightly reduced percentage increase from the in-migrating population (21.8%); however, the potential impacts to the host county would still be considered LARGE. Factoring in the 2008 population for Fort Bend County, which grew 50% to 532,141 since 2000, the impacts to the two-county area would be just over 5%; impacts to this county and to the two-county area would remain SMALL, but by an even smaller percentage.

With respect to demography, the addition of two new units at Allens Creek is assumed to require an operations workforce of up to 600 employees (1,200 total, based on existing workforce for STP Units 1 & 2). While part of the operational workforce at each site is expected to relocate into the region, their numbers are small when compared to those in-migrating for construction, and many could presumably occupy housing vacated by construction workers. Assuming a small in-migrating operations workforce is evenly distributed within in the region, the demographic impacts are expected to be SMALL when compared to the total base population within the region for each site. Should the majority of the in-migrating population choose to live in the two-county area surrounding the site, the impacts would be SMALL at Allens Creek, given it includes the western Houston suburbs.

Local Economy and Taxes

Impacts relating to the economy and taxes from construction of the Allens Creek site would be expected to be similar to those described for the STP and Red 2 sites. In general, construction of two new units would result in direct construction jobs and increased spending in the region by the workers and through the purchase of non-labor goods and services to support construction; and plant induced increases to local tax receipts are considered beneficial.

Similar to the conclusions reached for the STP site, impacts to the economy are generally BENEFICIAL and would be expected to be LARGE in the host county (Austin) as the site of the construction and the county where most of the construction labor force would reside. The magnitude of the positive economic impacts would become more diffuse as a result of interacting with the larger economic base of other counties, particularly those that include portions of the Houston metropolitan area. Given the site's proximity to Houston, impacts to the region would be SMALL and BENEFICIAL.

Over the longer term, and applying the same assumptions as developed for the STP site where 50% of the in-migrating workforce would migrate out following completion of construction, impacts to the local area could be negative. Austin County would be the most affected county, based on the estimated distribution of the in-migrating workforce (61% to Austin County and 22% to Fort Bend County). STPNOC concludes that the impacts of construction on the economy of the region would be SMALL everywhere in the region, except Austin County, where the impacts of an in-migrating construction labor force and the negative impacts of the departing labor force (upon construction of completion) could be MODERATE to LARGE impacts. Mitigation would be warranted. The same measures would be implemented as described for the STP site.

With respect to potential construction impacts on taxes, STPNOC's past experience at existing STP Units 1 & 2 is that they have had a significant and beneficial impact on the well being of the Matagorda County where STP Units 1 & 2 now reside. In conclusion, given the rural location of the Allens Creek site, the property tax base represented by a new nuclear facility at the Allens Creek site would be expected to represent BENEFICIAL and LARGE impact to Austin County and to local entities within the county, and SMALL to the region (given the proximity to Houston) and Texas.

With respect to social and economic impacts from operation, these would also be similar to those described for the Red 2 site (ER Section 9.3.3.2.6). Socioeconomic impacts of operation relate primarily to the benefits afforded to local communities as a result of the plant's presence (e.g., tax plans, local emergency planning support, educational program support). The continued availability (and potential expansion at each nuclear site), and the associated tax base is an important feature in each host county's ability to continue to invest in infrastructure and to draw industry and new residents.

In summary, the economic impacts from operation of two nuclear units at the site would result in BENEFICIAL and LARGE impacts, particularly to the local economies. The impact to the regional economies would be expected to be SMALL at Allens Creek since the site region includes the Houston metropolitan area.

Infrastructure and Community Services

Transportation

The Allens Creek site is located in Austin County, which is served by I-20, US-90, SH-36, and FM 1458, 1093, 1489 and 3013. The site is located approximately 6 miles south of I-10 which provides primary access to the area. The site is located between approximately 1 mile northeast of SH-36 and between SH-36 and FM1458. A new road would need to be constructed to access the site, most likely from SH-36. In addition, a portion of FM 1458 would likely need to be relocated (or removed) to accommodate construction of the proposed 9,500-acre reservoir. Development of the Allens Creek site would add commuters, deliveries, and congestion to the existing local residents and recreational in the area.

Given the rural nature of the site, potential impacts on transportation would be MODERATE to LARGE. Mitigation measures for the access road and surrounding roads would be required, including the potential widening of SH-36 to accommodate the increased traffic. Other mitigation measures might include installing traffic-control lighting and directional signage, creating two entrances to the site to alleviate traffic at the primary plant entrance, shuttling construction workers to and from the site, encouraging carpooling, and staggering shifts to avoid traditional traffic congestion time periods.

Transportation impacts from operation at all sites would be significantly less than construction since the operations workforce and daily plant deliveries would be significantly less and the necessary road improvements to accommodate the construction workforce would already have been completed. Some congestion could still occur during shift changes; however, the magnitude of impact is expected to be SMALL through the help of mitigation measures such as vanpooling and travel reduction incentives currently in use by the existing workforce. Future general population increases likely will increase highway congestion at specific locations; the magnitude of impact of new units at the Allens Creek site on this service degradation is likely to be SMALL to MODERATE and could require mitigation, although the population increases at the Allens Creek site are expected to be less than at the other sites due to the smaller number of workers assumed to in-migrate into the area (given site's proximity to Houston).

Recreation

Recreational areas surrounding the Allens Creek site include the historic Texas Independence Trail, the 667-acre Stephen F. Austin State Historical Park at San Felipe, which attracts thousands of visitors annually, and the Attwater Prairie Chicken National Wildlife Refuge located west of site. Both the Park and NWR are located north and northwest of the site off of I-10.

The Stephen F. Austin State Park offers a variety of camping, a group dining hall, group recreation hall, picnicking, and hiking and biking trails. Adjoining the park is the San Felipe State Historic Site, site of the township of San Felipe, where Stephen F. Austin ("Father of Texas") brought the first 297 families to colonize Texas under a contract with the Mexican Government (Reference 9.3-46).

Given the distances to the other recreational facilities in the area, impacts to recreational resources in the area would be SMALL. Construction of the Allens Creek Reservoir could directly impact the Texas Independence Trail which runs between the Brazos River and FM 1458, within the proposed reservoir location.

Housing

The impacts of plant construction on housing depend upon the number of workers already residing in the study area and the number that would relocate and require housing. As discussed previously, STPNOC estimates that approximately 3,405 workers and their families (for a total of 9,616 persons) would in-migrate into the region. Assuming these workers are dispersed throughout the multi-county region, the impacts on housing at each site are expected to be SMALL, based on the small percentage increases in total study area population occurring at each site. Impacts on housing under the more conservative scenario, where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) are provided in Table 9.3-8 as a percentage use of the existing vacant housing inventory. These numbers are based on housing data for 2000 (vacant) and assume one housing unit per worker.

Based on absolute numbers, the available housing within the two county area would be sufficient to house the workforce at the Allens Creek site which includes the western suburbs of Houston. Rental property and mobile home facilities are scarce in rural counties within a 50 mile radius of the Allens Creek site, but are more plentiful in the larger municipalities. There is insufficient vacant housing available in Austin County (1,458 units) to accommodate an influx of 2,077 workers. In addition, the available housing in the two-county area may not be sufficient, in terms of the type, size, and pricing desired by the workers. In this case, workers could relocate to other areas in the region, such as to larger metropolitan areas within commuting distance; have new homes constructed; bring their own homes; or live in hotels, motels or nearby RV parks. Single workers could also share an apartment, which would reduce the total number of housing units needed. An increase in housing demand could result in an increase in housing prices and rent, which could result in pricing some low-income populations out of their rental housing. In the long-term, however, the study area, and particularly the host county of each site, would benefit from increased property values and the addition of new houses to the tax rolls.

In general, impacts on housing are considered to be SMALL when a small change in housing availability occurs and MODERATE when there is a discernable but temporary reduction in the availability of housing units. STPNOC concludes that the potential impacts on housing at the Allens Creek site would be LARGE if the majority of workers choose to reside in the two-county area (increase of 43.3% in two-county area and 142% increase in host Austin County), and SMALL if the workers are dispersed throughout the larger study area. It should be noted that while this is a conservative estimate, the Allens Creek site is within 50 miles of Houston which had 112,876 vacant units in the Houston metropolitan area. In the case of the Allens Creek site, more than 22 percent of the in-migrating workers and their families are likely to reside in the more populated Fort Bend County or even closer to Houston in Harris County. The vacant housing market of Houston is expected to more easily absorb an influx of population than the less populated Austin County. A larger in-migration into the Houston area would help further reduce impacts in Austin County as analyzed in this conservative scenario.

Public Services

Public services include water supply and wastewater treatment facilities, police, fire and medical facilities; and social services. New construction or operations workers relocating from outside the region would most likely live in residentially developed areas where adequate water supply and wastewater treatment facilities already exist. Small increases in the regional population would not materially affect the availability of police, fire, or medical services. It is not expected that public services would be materially impacted by new construction or operations employees relocating into the region. Therefore, the impacts on public services within the region would be SMALL. Population increases for the two-county area, as shown in Table 9.3-7, are less than 5 percent (2.1%) such that impacts on public services within the two-county area would be SMALL. However, the population percentage increase in the host (Austin) county is 24.9%. In general a large population influx would increase demands on existing medical, police and fire services in sparsely populated local communities. These local (or county) governments would need to hire additional staff, buy additional vehicles, and improve/build new facilities. Additional tax revenues from population influx would help offset the cost to expand local police and fire departments and benefit the area in the long term. However, the short-term impacts could be adverse as existing capacities are exceeded in the initial years of construction. Impacts to the host county would be LARGE. Note that impacts to the host county could be alleviated somewhat if a larger percentage of the in-migrating population chose to reside in the more populated Fort Bend County which includes the western suburbs of Houston.

With respect to operational impacts to public services, it is assumed that revenue generated by plant construction and operation would be used to expand and update public services, as needed and appropriate, to accommodate in-migrating workers and their families associated with operational activities. Such improvements are assumed to be completed, or well underway, to sufficiently accommodate the influx of a smaller population associated with plant operation. Therefore, impacts associated with population influx are expected to be SMALL at all sites.

In terms of plant operational requirements (e.g., cooling water), water rights would have to be purchased by STPNOC Active industrial, irrigation, and mining uses would be considered as potential candidates for water rights sale/transfer. Municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses would not be considered viable water rights for sale/transfer. As such, impacts from plant operation would not be expected to have a significant effect on public water supplies.

Education

According to the 2000 Census estimate, school-age children (between the ages of 5 and 19) comprise 23.5% of the population of Texas. Applying the same percentage to the total in-migrating population that would reside in the two-county area at the Allens Creek site, based on the assumption that most of the workers will come from within Texas, the anticipated in-migrating school age population is 1,880. Further assuming a conservative scenario where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) – consistent with the breakout found with current operations workers at the STP site – the number of school-age children migrating into Austin County would be 1,380 and the number of school-age children migrating into adjacent Fort Bend County would be 500. The percentage increases for each county are identified in Table 9.3-9.

The projected increase within the two county area is less than 2 percent and impacts would be SMALL. The projected increase in Austin County, however, is 25.2 percent. Impacts in the host county would be LARGE. The quickest mitigation measure would be to hire additional teachers and move modular classrooms to existing schools. Increased property and sales tax revenues as a result of the increased population would fund additional teachers and facilities.

It should also be noted that while this is a conservative estimate, in the case of the Allens Creek site, more than 22 percent of the in-migrating workers with school-age children are likely to reside in the more populated Fort Bend County that includes the western suburbs of Houston. The school district system of Fort Bend is expected to more easily absorb an influx of school age children than the less populated Austin County. This would help further reduce the impacts on this host county, as analyzed in this conservative scenario.

Socioeconomics impacts from operation at the Allens Creek site would be similar to those described for the Red 2 site with respect to recreation, housing, and education (ER Section 9.3.3.2.6). Impacts would be SMALL at all of the alternate sites.

9.3.3.3.7 Historic and Cultural Resources

Adverse effects to archaeological, paleontological, and cemetery resources are generally the result of direct impacts from ground disturbing activities. Therefore, the area of potential effect coincides with those areas where direct impacts from construction and operation of the proposed project would occur. Adverse effects to historic resources (e.g., standing structures) may occur through direct impacts that may change the character of a property's use or the physical features within a structure's setting that contribute to its historic significance. Adverse effects may also occur through indirect impacts that could introduce visual or noise elements that diminish the integrity of a property's significant historic features.

STPNOC conducted historical and archaeological records searches on the National Park Service's NRHP Information System and reviewed information on historic and archaeological sites listed in Austin County, host county of the Allens Creek site.

There are seven NRHP sites in Austin County, including a church in Wesley, a structure in Nelsonville, lodge in Bellville, the Austin County Jail in Bellville, a Church in Wallis, a recreational/cultural (museum) site in Shelby, and the Allens Creek Ossuary Site (prehistoric, grave/burials). NRHP sites closest to the proposed plant site include the Church of the Guardian Angel in Wallis, approximately four miles from the site, and the Ossuary site whose location is restricted but noted as being in the Wallis vicinity (Reference 9.3-47).

A state historical marker near the site notes the foundation of the Martin Allen Public House. Allen family members operated a "Public House" that was frequently visited by a future hero of the Alamo, William B. Travis. Martin Allen, a Texas War for Independence veteran, was buried near the "Public House" in the Allen family cemetery (Reference 9.3-48). The THC database was searched for more information on the cemetery. Officially referred to as the Allen-Johnson Cemetery, it includes four burials, the earliest of which is from the 1870s. Based on a map included in the THC database, the cemetery is located along Allens Creek just off of Highway 36 (south of El Pleasant and north of Wallis), over one mile from the proposed plant site; it is also located outside the area of the proposed reservoir location (Reference 9.3-49). Given the distance, no direct impacts on this historic resource from construction activities would be expected. However, the historical significance of the foundation and cemetery would be considered and the SHPO would be consulted prior to construction to identify measures to mitigate or avoid potential adverse (indirect) impacts to this resource.

Construction impacts to known or unknown cultural resources would primarily be direct and result in ground disturbing activities that could destroy some or all of a resource. It is not known where other potentially cultural or archaeological resources may be found on this greenfield site. Much of the site is open cropland and pasture, particularly in the area of the proposed reservoir, but bluff forests exist along Allens Creek in the vicinity of the proposed plant site. A recent visit to NRG-owned property at Allens Creek by an NRG representative identified the presence of numerous mounds in the site area (Reference 9.3-50). Consultation with the THC as well as federally recognized Native American tribes that may have an interest in the project area would be conducted prior to construction to determine the potential significance of these mounds (e.g., Indian burial sites), and the potential presence of other traditional cultural properties important to Native American tribes that might be in the site area. As with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists, particularly in areas with no prior land disturbance. Building the proposed nuclear power plant at the Allens Creek site would require formal consultation with the THC prior to construction. Additional surveys would be conducted where required, and mitigation measures, if required, would be coordinated with the Commission (and potentially affected Native American tribes) such that any impacts to cultural resources from construction of the proposed nuclear power plant would be small. In addition, protective measures would be implemented if historic and/or cultural resources were discovered during construction. In the event that an unanticipated discovery is made, site personnel would be instructed to notify and consult with the Commission (and affected Tribes) to determine if additional evaluation is needed and further mitigation is required.

Impacts to historical and cultural resources at the Allens Creek site would be SMALL since the existing historical marker and cemetery and any other potentially significant resources, including any traditional cultural properties of Native American tribes, would be appropriately managed in accordance with SHPO regulations and tribal law (where applicable).

While cultural resources may be determined to be present on or near the site (e.g., potential burial mounds), there is minimal potential for direct impacts to these resources as a result of operations. In general, plant operation is not expected to involve the physical conversion of additional lands for the plant's use. It is further assumed that any plans to disturb additional lands would avoid existing known (and significant) historic and cultural resources, and would require consultation with the THC prior to disturbance to address potential impacts on unidentified and potentially significant resources. Such mitigative actions would ensure that impacts to historic and cultural resources from plant operation are small. The potential for impacts to cultural resources related to project operations would be limited to indirect impacts that could alter the character of a resource or its setting. It is assumed that consultation with the THC or relevant Native American tribes would identify appropriate mitigation, if determined to be required, to also address potential indirect impacts. No direct or indirect impacts are anticipated.

STPNOC concludes that impacts of construction and operation on historic properties would be SMALL.

9.3.3.3.8 Environmental Justice

The Census Bureau data (2000) for Texas characterizes 11.5% of the population as Black, 0.6% American Indian or Alaskan Native, 2.7% Asian, 0.1% Native Hawaiian or other Pacific Islander, 11.7% some other race, 2.5% two or more races, 29.1% aggregate of minority races, and 32% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 12% of families were living below the poverty level in 1999 (Reference 9.3-18).

Total percentages of minority populations within a 50-mile radius of the Allens Creek site were determined using 2000 Census block points with the following results: 20% black, 0.4% American Indian and Alaskan Native, 5.9% Asian, 0.05% Hawaiian and Other Pacific Islander, 13% All Other Races, and 2.8% Two or More Races, and 30.2% Hispanic or Latino of any race (Hispanic Ethnicity). In addition, the percentage of low income population (families) was determined using Census block groups within a 50-mile radius of the Allens Creek site with the following result: 11.6% were living below the poverty level; the data were for 1999. These percentages are slightly higher than state average for minority populations of Black, Asian, Other, and Two or More Races, and slightly lower in the remaining categories. The black population group had the highest percentage (20%), which represents an 8.5% percentage point increase over the average state percentage at 11.5%. While this may be considered a large percentage increase compared to the state average, no significant health or physical impacts to any human populations are expected to occur at the Allens Creek site (or any site under consideration); therefore, no significant disproportionate impacts to this minority population would be expected (Reference 9.3-19).

In addition, because it is assumed that those minority populations living closest to the site have the potential to be affected by plant construction activities, the 2000 Census block data within a 5-mile radius of the Allens Creek site were used for ascertaining minority population in the area, as follows:

- 125 Census Blocks with a total population of 3,223 are found within a 5-mile radius of the Allens Creek site; this area includes parts of Austin County and a small portion of western Fort Bend County, TX.

For purposes of this evaluation, the potential for the proposed project to result in disproportionate impacts on minority and low income populations is based in part on whether any block percentage exceeded its corresponding state percentage by more than 20% or was greater than 50% overall. In this situation, the block was identified as having a significant minority population.

For the Allens Creek site, minority populations exist in 27 blocks with the breakout as follows: black minority populations exist in 13 blocks; Hispanic populations exist in 12 blocks, two of which also contain black populations; populations of other races exist in eleven blocks, one of which is the same block that also contains a black population and the six of which are in the same blocks that also contain Hispanic populations; and two or more races exist in two blocks, both of which are in the same blocks that also contain populations of Hispanics and other races. The total minority populations in these 27 Census blocks total 315 persons out of a total population within 5 miles of 3,223 persons. The two closest blocks are located at 2.8 miles W (total of 6 persons with Hispanic ethnicity) and 2.9 miles SSE of the site (total of 70 persons including 39 blacks and 13 persons with Hispanic ethnicity). The majority of blocks are over 4 miles from the site.

While construction activities (noise, fugitive dust, air emissions, traffic) could disproportionately affect these blocks of minority populations at the Allens Creek site, longer term impacts from plant construction and operation could benefit this low-income population through an increase in related jobs.

The 2000 Census block group data within a 10-mile radius of each site were used for ascertaining low-income population in the area. The Census Bureau data characterizes 12% families as living below the poverty level in Texas in 1999. Within the 12 block groups included in the 10-mile radius, the percentages ranged from 1.8% to 19.9%. Based on the “more than 20 percent” criterion, no low income populations exist in a 10-mile radius of the Allens Creek site.

In general, new facilities would be considered beneficial economically to the existing population, especially those disadvantaged population segments served by the State and local social service agencies. Two new units may enable the disadvantaged population to improve their social and economic position by moving to higher paying jobs. At a minimum, the expenditures of construction workforce in the area of food, services, etc. could, through the multiplier effect, increase the number of jobs available to the disadvantaged population.

Impacts to minority and low income populations from plant operation are expected to be similar to those identified for construction activities; however, the impacts during plant operation are expected to be generally beneficial to a disadvantaged community. Minority and low-income populations have been shown to benefit economically from the existing plant (e.g., construction and operation of the Grand Gulf nuclear plant in Mississippi) (Reference 9.3-14), and are expected to receive long-term positive economic benefits from construction and operation of two new units at all six candidate sites. From this perspective, it could be argued that those sites with the highest minority and low income populations, would receive LARGER and more BENEFICIAL impacts to these populations than the other sites.

STPNOC concludes that environmental justice impacts of construction and operation of the proposed project at the Allens Creek site would be SMALL, and that potential long-term impacts from project operation would be BENEFICIAL to the minority and low-income populations.

9.3.3.3.9 Nonradiological Health

Typical nonradiological health hazards associated with large construction projects (such as construction of a new nuclear power plant) include the following:

- Air Emissions, such as fugitive dust, smoke, and engine exhaust;
- Physical Hazards, such as falls, impact injuries, and vehicular accidents; and
- Noise Hazards.

All construction activities would be performed in compliance with OSHA (29 CFR 1910).

Construction-related air emissions are anticipated to consist of fugitive dust, smoke, and engine exhaust. Impacts to construction workers would be the same for both the proposed and alternate sites. Construction workers would be protected from such hazards via personal protective equipment (dust masks, etc.) and other controls (water sprays, equipment emission controls, equipment inspections, etc.).

Impacts to neighboring populations would be dependent on distance to these receptors. The Allens Creek site is not located in the immediate vicinity of residential areas or other industrial operations, and fugitive emissions are not anticipated to impact offsite receptors.

Physical hazards at the construction site would be consistent with any large-scale construction project and could include falls, impact injuries, vehicular accidents, and electric hazards. Access to the construction site would be controlled, and physical hazards to neighboring populations are not anticipated. Impacts to construction workers would be minimized through training, awareness, and personal protective equipment, and are expected to be minor.

Activities at the site would create noise consistent with large-scale construction activities. Noise levels for common construction activities are typically about 90 dBA at a distance of 10 feet (Reference 9.3-14), and decrease with distance from the source. Due to the distance to local residential areas from the Allens Creek site, these populations are not expected to be impacted from construction noise hazards. Impacts to construction workers and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

In summary, construction-related nonradiological health impacts (air emissions, physical hazards, and noise hazards) to construction workers, workers at neighboring facilities, and neighboring residential areas are expected to be SMALL for the Allens Creek site, and impacts can be minimized through training, awareness, personal protective equipment, and activity scheduling.

In general, operational-related nonradiological health hazards would consist of occupational injuries. Historically, actual injury and fatality rates at nuclear reactor facilities have been lower than the average U.S. industrial rates (Reference 9.3-14). In all cases, plant operation activities would be performed with adherence to applicable laws and regulations, practices, and procedures.

Other typical nonradiological health hazards associated with plant operational activities include the following:

- Health impacts from cooling tower operation;
- Noise Hazards; and
- Health impacts from transmission line operation.

At the Allens Creek site, plant cooling water effluent would be returned to the cooling water reservoir and/or discharged to the Brazos River. Discharges have the potential to increase the growth of microorganisms in the receiving waters. Serious illness and death can occur when there is high exposure to these microorganisms (Reference 9.3-14). NUREG-1437 notes that a discharge to a small river (defined as having an average flow of less than 100,000 cfs) would have the greatest chance of affecting the public (Reference 9.3-13). The Brazos River, in the vicinity of the Allens Creek site, has an average flow rate of approximately 6,850 cfs, and discharge would have a moderate impact.

The principal sources of noise from plant operation are cooling towers (where employed), transformers, and loudspeakers. Generally, power plant sites do not result in off-site levels more than 10 decibels above background (NUREG-1437), and impacts to neighboring populations would be small. Impacts to plant operators and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

The two human health issues related to transmission lines are the acute effects (shock hazard) and the potential for chronic effects from exposure to electric and magnetic fields. Acute effects can be minimized through tower design precluding direct public access to components that may pose a shock hazard and are considered to be small at each location. Chronic effects from the operation of energized transmission lines on public receptors are not conclusive but do indicate some impacts are possible. However, these impacts are assumed to be small as transmission rights-of-way will be located in a manner to avoid residential populations to the greatest extent.

In summary, noise hazards and hazards associated with transmission line operation are small for the Allens Creek site. Health impacts associated with discharge of cooling water are moderate. Since impacts will generally consist of occupational injuries, and since injury/fatality rates at nuclear plants are generally lower than the average rates at industrial sites, operational-related nonradiological impacts at the Allens Creek site are SMALL.

9.3.3.3.10 Radiological Health

As the Allens Creek site is not located in the vicinity of existing radiological operations, sources of radiation exposure to site preparation and construction workers are limited to those sources introduced by the new plant. The radiological impact on construction workers at the Allens Creek site is no more than that at the STP site; therefore, it is concluded that the radiological impact on construction workers is SMALL.

Plant locations at the Allens Creek site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Therefore, impacts to offsite receptors would be minimal.

Radiological impacts of plant operation occur through exposure pathways from releases and direct radiation from the plant, and can be viewed as dose to public receptors, occupational receptors, and other biota. The Allens Creek site is located adjacent to and would discharge cooling water blowdown to surface waters. However, discharges will be within regulatory limits which assure that the radiological impact is SMALL. The Allens Creek site is also located in the area of groundwater used for potable uses and agricultural irrigation. The valuable groundwater aquifers are generally deep and would not be impacted by plant operation.

The Allens Creek site is located near existing agricultural operations, and potential radiological releases could impact these foodstuffs. Because liquid releases will be maintained within regulatory limits, dose rates would generally be less than 1 mrem/yr at the site boundary (Reference 9.3-13).

Plant locations at the Allens Creek site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Radiation doses to members of the public from current operation of nuclear power plants have been examined from a variety of perspectives, and the impacts were found to be well within design objectives and regulations in each instance (Reference 9.3-13). Therefore, radiological impacts to public receptors are SMALL for the Allens Creek site. Additionally, NUREG-1437 examines radiological impacts to occupational receptors and concludes that occupational radiation exposure is of SMALL significance.

9.3.3.3.11 Impact of Postulated Accidents

As site specific meteorology data is not available for the alternate sites, a general analysis of the impacts of postulated accidents is provided. NUREG-1437 contains a thorough analysis of environmental impacts of accidents during operation. The analysis assumes accident frequency based on regulatory controls ensuring the plant's licensing basis is maintained. The analysis concludes that the environmental impacts from design-basis accidents are of SMALL significance for all plants (Reference 9.3-13). Similarly, the analysis evaluated severe accidents and concluded calculated impacts from atmospheric releases, fallout onto open bodies of water, groundwater releases, and societal and economic impacts to be of SMALL significance. Effective emergency planning can aid in mitigating the impacts of accidents.

The Allens Creek site is not located in the immediate vicinity of residential areas. The accident impacts at the Allens Creek site are SMALL.

9.3.3.3.12 Conclusion Regarding the Allens Creek Site

Impacts from the construction of a new nuclear power plant at the Allens Creek site would generally be MODERATE, and impacts from the operation of a new nuclear power plant at the Allens Creek site would generally be SMALL. Construction-related environmental impact areas with predicted adverse impacts other than SMALL include land use (both on-site and off-site areas), terrestrial and aquatic ecology, and socioeconomics (demographic impacts to the host county and impacts to infrastructure and community services). Operation-related environmental impact areas with predicted adverse impacts other than SMALL include water use and socioeconomics (physical impacts). Any adverse impact from the new plant is not predicted to have a disproportionate effect on minority or low-income populations. As a result, the predicted impacts at the Allens Creek site are equal to or greater than those at the proposed STP site. Allens Creek was not considered environmentally preferable to the proposed STP site.

9.3.3.4 Evaluation of Trinity 2 Site

The Trinity 2 site is an Alternate Site for the development of a new two-unit nuclear power plant. The site is located in Freestone County, Texas, approximately 16.7 km (10.4 mi) northeast of Fairfield, TX and approximately 40.1 km (24.9 mi) south of the Malakoff site (ER Section 9.3.3.5). The cooling water source for the Trinity 2 site is the Trinity River. The Alternate Site is a greenfield site located approximately 4.2 km (2.6 mi) east of the existing Big Brown power plant. The proposed Trinity 2 site is not presently owned by the applicants.

The following assumptions form the basis of the evaluation of impacts at the Trinity 2 site:

- Nearby reservoirs (Lake Fairfield to the west and Richland Chambers Reservoir to the north) would not be available for use by the new plant given their current capacities and use: Lake Fairfield serves as the cooling system for the Big Brown Plant and a State Park is found at its southern shore; and the Richland Chambers reservoir serves as the water source for Tarrant County, under the control of the Tarrant County Water Control.
- Either a new off-channel reservoir for cooling water (similar to that used at the STP site) or a water storage reservoir to support cooling towers would be created off of Tehuacana Creek to support plant operating needs. Area topography could support up to a 1,700-acre reservoir, whose construction has been evaluated for purposes of comparing project impacts across the preferred and alternate sites. However, note that plant design layouts, including specific reservoir size and location, have not been completed for any of the alternate sites.
- While the plant would use a closed cycle cooling system, plant design at this site is not final and the potential exists to use either cooling towers or a cooling water reservoir to assist in heat load dissipation. Therefore, potential impacts from cooling towers are also evaluated for this site.
- Cooling water discharge would be returned to the Trinity River downstream of the intake location.
- Detailed transmission routing analyses were not conducted for the alternate sites; potential land use impacts from transmission line routing are based on combined and approximate distances to three nearest 345kV lines.

9.3.3.4.1 Land Use Including Site and Transmission Line Rights-of-Way

Land use impacts associated with plant construction include both impacts to the site and immediate vicinity and impacts to offsite areas such as transmission, cooling water intake and discharge pipelines, and transportation rights-of-way (e.g., road and rail).

Construction of a new nuclear power plant would include clearing, dredging, grading, excavation, spoil deposition, and dewatering activities. The impacted area would be approximately 800 acres for the main power plant site (major structures including switchyard), which would largely be focused in one central location; and 1,700 acres (surface area) for a cooling water reservoir. Impacts would also be realized near the surface water withdrawal and discharge locations used for cooling water makeup. Approximately 150 acres per unit (in the immediate site area) and 1,700 acres for the cooling water reservoir (for a total of 2,000 acres) would be permanently impacted. The remaining acreage would be temporarily impacted and reclaimed to the extent possible following construction.

Other area land use impacts would result from construction of housing and other infrastructure in support of a construction workforce. It is predicted that the majority of this expansion would occur near existing communities, and a significant land use impact is not expected to occur.

In 2007, approximately 71% of total land acreage in Freestone County was devoted to farming, including 1,473 farms and ranches covering 399,584 acres. Of this, 236,291 (59%) were devoted to pasture (permanent pasture and rangeland other than cropland and woodland pasture), 80,055 acres (20%) to cropland, and 74,191 acres 1(9%) to woodlands. The remaining farmland (9,047 acres) is devoted to farmsteads, buildings for livestock, ponds, roads, and wasteland (Reference 9.3-9). Beef cattle, hay, fruits, vegetables, melons, pecans, and corn were the chief agricultural products. Based on ecology maps, current cover in the site area appears to be a mix of post oak woods, improved pasture, and rangeland (Reference 9.3-25).

The region surrounding the proposed site is mostly rural consisting of undeveloped agricultural property with surface lignite mining operations to the west. Land use in the immediate site area appears to be a mixture of forest and open fields/grasslands, based on Google Earth imagery (Reference 9.3-51). Onsite drainages include Big Brown Creek, Tehuacana Creek, and Rock Springs. There also appears to be active oil and gas activity in the area. More than 263,851,000 cubic feet of gas-well gas were produced in the county in 2004 (Reference 9.3-52).

As specific site locations and plant design layouts have not been finalized, specific acreage impacts cannot be determined for the sites under consideration. However, the following presents the general land uses for an area approximately 2,000 acres in size at the Trinity 2 site where the main plant site and reservoir could be located. The acreage estimates are combined for both site and reservoir areas, and based on percentage breakouts from Google Earth imagery using best professional judgment (Reference 9.3-51).

Land Cover Class	Area (acres)	Percentage of Site
Forested	350 (including 80 acres of high quality forested wetlands)	18%
Open land/grasslands	1,600	80%
Developed areas (roads, drill pads)	30	1%
Water resources/freshwater ponds	20	1%

Additional information pertaining to wetlands is found in Section 9.3.3.4.5 (Aquatic Ecology).

Additional acreage (up to several hundred acres) that would be required for construction activities (e.g., laydown areas) also includes a mixture of forest and open fields, although cleared land would be used to the greatest extent possible. However, the impact on this acreage would be temporary. Following construction activities, impacted areas without constructed buildings or transportation infrastructure would be reclaimed to the greatest extent feasible.

Project construction would have a long-term impact on the current uses of pasture land, which would change to industrial use, and on any oil and gas activity in the site area. However, much of the proposed power plant site area has already been cleared and there is other industry in the area. Onsite impacts from construction of the power plant and potential reservoir at the Trinity 2 site would be SMALL to MODERATE, depending on the final size of the reservoir and the extent to which undisturbed (primarily forested) lands are affected.

Specific routing of transmission lines has not yet been identified, but rough estimates of requirements for new transmission lines have been developed. The feasibility of using existing infrastructure is dependent on the available capacity remaining in the system. If sufficient capacity is not available, either existing rights-of-way would be expanded to accommodate additional transmission lines or new rights-of-way would be obtained and transmission lines constructed. Expansion of existing rights-of-way is expected to result in small environmental impacts while construction in new rights-of-way could result in moderate impacts.

The proposed site is approximately 5 miles east of the Big Brown power plant where multiple 345kV connections exist. New rights-of-ways (ROW) would be needed to get to the Big Brown plant. Based on 5 miles of corridor and a 200-foot width, installation of new lines would impact approximately 120 acres. Once at the Big Brown Plant, it is assumed that the lines could parallel the existing ROW (with potential need for expansion). The use of lands that are currently used for timber production or forest would be altered. Trees would be replaced by grasses and low-growth ground cover. Construction of the transmission lines would be expected to comply with all applicable laws and regulations, permit requirements, and use of best construction practices. Given this and the short distance to the interconnection point, construction impacts to offsite land use would be SMALL.

Impacts associated with construction of pipelines to deliver plant cooling water to the reservoir/plant site and transportation rights-of-way (both road and rail) would also be realized at the Trinity 2 site. The following are estimates of the length of new pipeline, rail, and road rights-of-way to be constructed at each site.

- Rail: 19.5 miles, 120 acres (based on 50-foot ROW width)
- Cooling water intake/discharge (4 miles) from/to the Trinity River and new reservoir, 36 acres (based on 75-foot ROW width)
- Access road: 3 miles of new construction, 27 acres (based on 75 foot ROW width)

Additional transportation volume also could require the expansion of some existing local roads. Shift schedules could be planned so that shift changes at the co-located facilities would not coincide with each other. Impacts from constructing road access to the site would be small.

Construction at the proposed pipeline corridors would have temporary, minor effects on land use during actual construction due to trenching, equipment movement and material laydown. The ability to use current lands for their existing uses (cattle ranching, gas production), along each of the proposed pipeline corridors would be temporarily lost during construction. Direct and indirect impacts of construction from the proposed transportation infrastructure would be similar to those for the proposed plant: a loss of some existing pasture land and range land depending on their locations. Construction of any proposed project related transportation infrastructure requiring compliance with any regulations would be coordinated with the appropriate county as deemed necessary. Note that the Trinity 2 site has the highest acreage requirements that would be affected by construction of a new rail spur (120 acres) compared to the other sites. However, this acreage is still very small as compared to the potential acreage required for a new reservoir.

In summary, offsite impacts from transmission line construction and transportation infrastructure, which would affect an estimated 285 acres of land, are predicted to be SMALL at the Trinity 2 site.

Operational impacts to site land use would include a permanent change in land use of 2,000 acres of land for the power plant site and reservoir – that would be generally unusable for other purposes. The proposed change would be a change from current land use at the site; however, it would also be somewhat compatible with other land uses in the area since the site is located just east of the existing Big Brown coal plant and lignite mining operations.

In addition, operational impacts to the site and immediate vicinity would include maintenance operations on existing structures and would be small and temporary in nature.

Operational impacts of transmission lines result primarily from line maintenance, and include right-of-way vegetation clearing, transmission line maintenance, and other normal access activities. To ensure power system reliability, the growth of tall vegetation under the lines must be prevented to avoid physical interference with lines or the potential for short-circuiting from the line to the vegetation. Additional right-of-way acquisition and development would not normally be required as part of plant operational activities. Maintenance activities would be limited to the immediate right-of-way and would be minimal. New transmission corridor would not be expected to permanently affect agricultural areas but would have potential to impact residents along ROW. Corridor vegetation management and line maintenance procedures would be established by transmission service provider. Given rural setting and low population density along transmission corridors, operational impacts to land use along ROWs would be SMALL.

Other offsite land use impacts as a result of plant operational activities would be minimal, temporary, and limited in the area impacted. Such activities could include pipeline, road, and rail maintenance and auxiliary building maintenance. It is likely that most lands above the proposed water intake and discharge pipelines and related areas of construction could continue to be used for ranching, farming and any passive uses. Any existing or future subsurface activities (e.g., gas drilling or mining) would not be possible in the immediate utility corridor once the utilities were installed. The proposed transportation infrastructure could result in the loss of a small amount of ranch land, pasture land and forested land on the proposed plant site and in areas where access roads and a rail spur would be needed.

In summary, land use impacts at the site and immediate vicinity from plant operation, including the new reservoir, are predicted to be SMALL; and impacts from transmission line maintenance and transportation infrastructure maintenance are predicted to be SMALL.

9.3.3.4.2 Air Quality

Air quality impacts associated with plant construction include both impacts from the construction activities themselves and transportation impacts from workers commuting to the worksite. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities, including a preconstruction air permit from the TCEQ (Reference 9.3-10). The air permits would ensure both construction and operational emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-11).

Air quality impacts from construction activities are similar to those for any large-scale construction effort and consist of fugitive dust emissions, emissions from equipment and machinery, and emissions from concrete batch plant operations. Fugitive dust emissions can be controlled through use of water sprays and postponing certain activities during windy conditions. Equipment emissions can be controlled through equipment inspections and regular maintenance. Concrete batch plant operations would employ equipment emissions controls to minimize air quality impacts. Specific mitigation measures would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment. In total, air quality emissions from construction activities would be small and temporary and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the construction workforce commuting to the worksite. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity. Air quality impacts would be more detrimental in areas already exceeding the NAAQS for criteria pollutants. Texas has no nonattainment areas for carbon monoxide, nitrogen dioxide, ozone (1-hour), sulfur dioxide, particulate matter (less than 2.5 micrometers [$PM_{2.5}$]), or lead. Part of El Paso County, Texas is in nonattainment for particulate matter (less than 10 micrometers [PM_{10}]); however, this county is in the extreme western portion of the state and is not located near the Trinity 2 site. The Dallas-Fort Worth area holds non-attainment status for ground-level ozone under the 8-hour standard. Counties affected under this status include Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant (Reference 9.3-12).

As the Trinity 2 site is located outside of the affected counties and vehicular transportation is not expected to significantly increase across the affected counties as a result of the construction activities, impacts are expected to be SMALL.

Air quality impacts associated with plant operation include both impacts from the plant operational activities themselves and transportation impacts from workers commuting to the plant. Operating activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Air quality impacts from operational activities result from releases of heat and moisture to the environment from cooling operations and emissions from the operation of auxiliary equipment. A closed-cycle cooling system will be used for Trinity 2, using either cooling towers or a cooling water reservoir. Thermal discharges resulting from these systems will be to the reservoir and/or to the atmosphere.

Cooling tower operation often results in drift, or the transport of residual salts and chemicals through water droplets carried out of the cooling towers. Based on a review of the measurements of deposition of draft from nuclear power plants (Reference 9.3-13), measurements indicate that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Auxiliary equipment may also be operated on an intermittent basis. Auxiliary equipment emissions can be controlled through equipment inspections and regular maintenance. Small amounts of ozone and smaller amounts of oxides of nitrogen are produced by transmission lines (Reference 9.3-14). Production of ozone and oxides of nitrogen are insignificant and does not measurably contribute to ambient levels of those gases (Reference 9.3-13). In total, air quality emissions from operational activities would be small and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from increased emissions from the workforce commuting to the plant. However, as the Trinity 2 site is located outside of the affected counties in non-attainment for criteria pollutants, and vehicular transportation is not expected to significantly increase across the affected counties as a result of plant operation, impacts are expected to be SMALL.

9.3.3.4.3 Hydrology, Water Use, and Water Quality

Water-related impacts associated with plant construction include both water use impacts and water quality impacts and are consistent with those caused by typical large-scale construction projects. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

STPNOC estimates that groundwater would be used at a peak or maximum rate of approximately 1,200 gpm (ER Section 2.3.1.2.6) during construction with normal demands being much less than maximum use. Groundwater would be used during construction for personal consumption and use, concrete batch plant operation, concrete curing, cleanup activities, dust suppression, placement of engineered backfill, and piping hydrotests and flushing (ER Section 2.3.1.2.6).

In summary, due to the relatively small water quantity requirements and the availability of groundwater or imported water, the sites will have a SMALL impact on water use for construction activities.

Water quality impacts from construction activities would primarily result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from construction activities would be regulated and would require obtaining TPDES or other discharge permits. Regulated discharges would not be expected to significantly impact local drainages or other surface water bodies. Additionally, significant hydrological alterations are not anticipated at the Trinity 2 site. Therefore, impacts to water quality will be SMALL.

Water-related impacts associated with plant operation include both water use impacts and water quality impacts. Plant operation would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Plant operational activities consume water through plant cooling and personal (sanitary) uses. Overall use of water is dominated by plant cooling uses for wet-cooled plants. A closed-cycle cooling system will be used for Trinity 2, using either cooling towers or a cooling water reservoir. The assumed maximum plant cooling design consumption for a two-unit plant is 50,000 acre-ft/yr (31,000 gpm, 69.1 cfs). The necessary water rights for this cooling water requirement from the Red River are not presently owned by STPNOC and would need to be acquired. Unappropriated flows are available for a new application 25-50% of the months (Reference 9.3-22). Active industrial, irrigation, and mining uses were considered as potentially available for water rights sale/transfer – municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses were not considered viable water rights for sale/transfer.

At present, there are 475 water rights owners in the Trinity Basin that are industrial, irrigation, or mining uses totaling 1,168,745 acre-ft/yr (Reference 9.3-23). Assuming no unappropriated flows exist, the new plant would need to acquire 4.3% of these existing water rights. Acquisition of these water rights would result in a SMALL to MODERATE impact on water use for operational activities.

Cooling tower operations result in the concentration of dissolved solids in the water stream, resulting from evaporation loss, which must occasionally be discharged and replenished with freshwater. The discharged water (blowdown) would be of lower quality than the source water. Cooling tower blowdown would be discharged to the reservoir and/or the Trinity River as necessary. The concentration of total dissolved solids in the cooling tower blowdown averages 500 percent of that in the makeup water, a concentration factor that can be tolerated by most freshwater biota (Reference 9.3-13). Additionally, a TPDES permit would be required to discharge effluents, and any unforeseen water quality impacts could be addressed during periodic permit renewals.

Water quality impacts could also result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from operational activities would also be regulated and would require obtaining TPDES or other discharge permits.

Therefore, due to the regulatory conditions associated with the operational activities, impacts to water quality will be SMALL.

9.3.3.4.4 Terrestrial Resources Including Threatened and Endangered Species

For the Trinity 2 site, it is assumed that construction of two units and a reservoir would disturb up to 2,000 acres of land, with approximately 300 acres required for permanent structures and facilities including plant footprint and support buildings, and switchyard; and up to 1,700 acres for a new reservoir. This is exclusive of the land required for development of transmission lines, water pipelines, rail or road access, which are estimated to impact an additional 285 acres. All acreage not containing a permanent structure would be reclaimed to the maximum extent possible.

Freestone County covers 888 square miles of coastal plain upland; the area is timbered where the eastern half (where the site is located) includes almost every variety of oak, hickory, and walnut; there is a also scattering of pine groves on the western bank of the Trinity River, which provides drainage for the entire county, with the exception of a small area in the southwest, where runoff finds its way to the Navasota River (Reference 9.3-52). The Trinity 2 site is located in the East Central Texas Plains in the Southern Post Oak Savanna ecoregion. This ecoregion consists mostly of hardwoods. Current land cover is a mix of post oak woods, improved pasture, and rangeland, with some invasive mesquite (Reference 9.3-25).

Impacts to terrestrial ecology are estimated based on satellite imagery and information in the general literature for the site and vicinity.

Current land use in the immediate site area appears to be a mixture of forest and fields/grasslands. The site sits just east of Lake Fairfield and the Big Brown power plant and lignite mine. There also appears to be active oil and gas drilling in the area. Onsite drainages include Tehuacana Creek, Big Brown Creek and Rock Springs.

Construction of the new plant and reservoir would affect up to 2,000 acres of land that currently includes forest (estimated at 350 acres, including 80 acres of high quality forested wetlands), pasture land (estimated at 1,600 acres), and surface water resources (intermittent streams, ponds and associated habitat – estimated at 30 acres), resulting in the permanent loss of this habitat. The remaining 20 acres (estimate) contain oil and gas drilling operations. Of the 300 acres permanently impacted at the power plant site, approximately half would include previously cleared land (140 acres) and half (160 acres) would include forested lands. Construction of the rail spur would affect an additional 120 acres or more, depending on the final routing. Consideration would be given to avoiding possible conflicts with natural areas where sensitive environmental resources may be present.

Other temporary impacts from plant construction, such as erosion and dust generation, would be temporary and typical of large construction projects. These impacts could be mitigated using standard industrial procedures and best management practices. Standard practices, such as silt fences to control sedimentation and water sprays to limit dust generation, would protect ecological resources in the site vicinity.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, Federally protected species that could occur in Freestone County include three birds (interior least tern, piping plover, whooping crane – USFWS listing), one amphibian (Houston toad), and two plants (large fruited sand-verana and Navosota ladies' tresses). Additional State listed (threatened) terrestrial species include: five birds (American peregrine falcon, bald eagle, and peregrine falcon which are delisted Federal species; Bachman's sparrow, and wood stork); and two reptile species (Texas horned lizard and Timber/Canebrake rattlesnake) (Reference 9.3-53). Table 9.3-6 provides a complete listing of Federal and State protected species in Freestone County with their listing status and common and scientific names. No critical habitat or other sensitive habitats have been identified in the site area, although portions of the Trinity River and Tehuacana Creek include priority bottomland hardwood habitat (as classified by the USFWS) because of their high habitat resource value, particularly for waterfowl. The site area, particularly along Tehuacana Creek heading towards the Richland Chambers Reservoir, also contains excellent deer and wild turkey habitat, as well as gray squirrel habitat (because of the sizeable high quality bottomland hardwood habitat present) (Reference 9.3-27).

In addition, the Richland Creek WMA lies seven miles to the north of the site. Named for Richland Creek, a tributary to the Trinity River which flowed through the property prior to the construction of the Richland-Chambers Reservoir, the Richland Creek WMA was created to compensate for habitat losses associated with the construction of the reservoir. Its mission is to develop and manage populations of indigenous and migratory wildlife species and their habitats. The area lies almost entirely within the Trinity River floodplain and include high productive bottomland soils that support a wide variety of bottomland and wetland dependent wildlife and vegetation communities. Cedar elm, sugarberry, and green ash dominate the bottomland hardwood forest communities, which serve as nesting and brood rearing habitat for many species of neotropical birds. The area has numerous marshes and sloughs, which provide habitat for migrating and wintering waterfowl, wading birds and shore birds (Reference 9.3-54). The Site also lies just east of Fairfield Lake State Park. Natural features of the park include woods of oak, hickory, cedar and elm; and wildlife that includes osprey, bald eagles (November through February), white-tailed deer, raccoons, foxes, beaver, squirrels and armadillos (Reference 9.3-55).

Other terrestrial species of concern that are considered rare but with no regulatory status in Freestone County include: one bird (Henslow's sparrow); two mammals (plains spotted skunk and southeastern myotis bat); one reptile (Texas garter snake); and two plant species (Chapman's yellow-eyed grass, Rough-stem aster) (Reference 9.3-53).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and transportation (e.g., rail spur) corridors. In addition, construction-related land clearing and reservoir development would be conducted according to federal and state regulations, permit conditions and established best management practices. This would include consultation with the appropriate resource agencies and development of appropriate mitigation measures where required to minimize potential impacts to sensitive resources.

In terms of habitat loss from constructing a new nuclear power plant and reservoir, the impacts to terrestrial resources, including threatened and endangered species would be SMALL in the area of the facility footprint, and MODERATE to LARGE at the reservoir location, based on the potential for impacting 350 acres of forested land, including high quality bottomland hardwood habitat, and the total number of protected species that could potentially occur in the area.

Although the most direct route would be used between transmission corridor terminations, consideration would also be given to avoiding possible conflicts with natural areas where sensitive environmental resources may be present. Given the short transmission corridor between the Trinity 2 site and the Big Brown Plant site, and the fact that construction impacts would be temporary, impacts to terrestrial resources from construction of transmission lines would be SMALL. In addition, land clearing associated with construction of the makeup water intake line to the river could result in short-term displacement of species within that corridor.

As noted previously, it is assumed that the proposed new units would employ a closed-cycle cooling system that would potentially use cooling towers. Impacts to terrestrial resources that may result from operation of two new nuclear units include those associated with cooling tower drift and bird collisions. The principal environmental concern with cooling tower drift impacts is related to the emission and downwind deposition of cooling water salts. Salt deposition can adversely affect sensitive plant and animal communities through changes in water and soil chemistry.

The impacts of cooling tower drift on crops, ornamental vegetation, native plants, birds, shoreline habitat and protected species were evaluated previously in NUREG-1437 (Reference 9.3-13) and found to be small for all plants, including those with multiple cooling towers of various types. Measurements indicated that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Given the small area of impact expected from drift, the absence of critical habitat in the site area, and the fact that most of the site area has been previously cleared, ecological impacts from cooling tower drift during plant operation at the Trinity 2 site would be SMALL.

In addition, creation of a new reservoir to support plant operation would provide new habitat for birds/fowl that would not be adversely affected by plant operation.

9.3.3.4.5 Aquatic Resources Including Threatened and Endangered Species

Major aquatic resources in the site area include the Trinity River and Lake Fairfield (two miles west of the site); local drainages include Tehuacana Creek, Big Brown Creek and Rock Springs Branch. Lake Fairfield is a 2,100-acre lake (approximate surface area) warmed by the Big Brown generating station and is a popular recreational fishing spot, hosting numerous fishing tournaments each year. Popular catches include catfish, largemouth bass, red drum, carp, freshwater redfish, and other varieties (Reference 9.3-55). Because the proposed nuclear plant would use a different reservoir for cooling and would be located two miles from Lake Fairfield, no impacts from construction of nuclear power facilities on Lake Fairfield aquatic resources are expected.

Impacts on the aquatic ecosystem from construction of a new nuclear power plant at the Trinity 2 site would be associated primarily with construction of the new cooling water storage reservoir, which would flood portions of Tehuacana Creek and Big Brown Creek; construction of intake and discharge structures on the Trinity River; and potential stream crossings by the proposed new rail line, access road and transmission lines. The most significant environmental impacts would be from creation of the new reservoir which would inundate the natural habitat along Tehuacana Creek and a portion of Big Brown Creek and other smaller tributaries in the area. Big Brown Creek begins three miles southwest of Fairfield in central Freestone County and runs northeast thirteen miles to its mouth on Tehuacana Creek, four miles east of Fairfield Lake. Big Brown Creek dammed in its middle reaches to form Fairfield Lake. It crosses rolling prairie with local shallow depressions, surfaced by clay and sandy loams that support hardwoods, mesquite, conifers, and grasses. The area is used primarily for dry-land farming (Reference 9.3-52). Tehuacana Creek originates in Tehuacana in northeastern Limestone County and flows northeast for 42 miles to its mouth on the Trinity River. The terrain through which the creek passes is generally flat with local shallow depressions surfaced by clay and sandy loams that support water-tolerant hardwood, conifers, and grasses (Reference 9.3-52).

Inland fisheries stream surveys have not been identified for the Tehuacana Creek, Big Brown Creek or Rock Springs Branch. Tehuacana Creek and its major tributaries have been reported as having intermittent flow conditions with some small permanent potholes occurring in the lower reaches. The fishery resource is limited to small potholes except during seasonal flows. The lower portions of this resource are affected by channel degradation. Fish species present are reported primarily as catfish. (Reference 9.3-27) The 2002/2007 Texas Water Quality Inventory identifies Tehuacana Creek as an unclassified water body that fully supports aquatic life use and fish consumption use (Reference 9.3-56).

In addition to the local drainages, small isolated ponds were identified along Big Brown Creek. Given the level of disturbance found in the proposed power plant area, the total wetland acreage is estimated to be low, and the majority of wetlands appear to be found primarily along the Trinity River. No digitized wetlands maps are available for the site area; however, dated (1988) hard copy wetland maps of the Young (1988) and Yard (1980) Quads were reviewed. Within a 2,000-acre area that would include the potential reservoir location, wetlands appear to be mostly limited to the northern portion of the reservoir area, which includes several forested wetlands, with several small freshwater ponds also scattered in the north. Total acreage is estimated at 100 acres, including 80 acres of high quality forested wetlands. Approximately 15 of these 100 acres (10 acres of high quality forested wetlands) appear to be located in the proposed plant location area. A detailed wetlands assessment and study will be required in order to obtain the appropriate permits from the USACE to construct the reservoir (Reference 9.3-4).

The proposed project could result in localized, direct, and adverse construction impacts to wetlands. Filling in or modifying portions of wetlands, if avoidance is not feasible, would permanently alter hydrologic function and wetland vegetation and result in direct habitat loss. Potential habitat degradation of wetlands and waters downstream could also occur if flow to adjacent areas is reduced. Construction impacts would be mitigated by minimizing areas disturbed and preventing runoff from entering wetlands during construction. Mitigation for wetland loss would also likely be required but the exact amount is not known at this time.

Construction activities for new cooling water intake and discharge structures in the Trinity River include: dredging, construction of cooling towers and onsite impacts on water sources, and pipeline construction. Aquatic species richness within the Trinity River, downstream of Dallas, has improved significantly over the past several decades. The change since 1972-74 is a likely consequence of improvements in water quality, particularly improvements in the quality of discharges from wastewater treatment plants in the Dallas-Fort Worth area. The USGS conducted fish-community surveys on the reach at Trinity River downstream from Dallas (above the proposed plant site) during 1993-95. A cumulative total of 25 species of fish were collected in this reach during the three-year period. Several game species were collected including largemouth bass, white crappie, and white bass. Two darter species, bigscale logperch and slough darter, also were collected. The presence of these indigenous species suggests a return of this reach to a more natural condition. Other species frequently collected included those characteristic of warm-water southeastern streams—alligator, spotted, and longnose gars and flathead, blue, and channel catfish (Reference 9.3-57).

Dredging should be localized and while it would result in increased turbidity, the effects would be temporary and dredging operations would be in compliance with the USACE and State water quality requirements so that long-term water quality is not degraded. Construction of the trenches for the intake and discharge pipelines from the water to the site could lead to temporary soil erosion and increased turbidity in any onsite water sources. All construction impacts from construction related to cooling towers and onsite impacts on water resources (e.g., from dewatering effluent and runoff), such as erosion and sedimentation into the water resources, could be mitigated using standard industrial procedures and best management practices. Pipeline construction impacts would be temporary and would also incorporate best management practices. Pipes would be buried, so there would be no permanent alteration of water flow patterns in the floodplain.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, there are no protected aquatic species within Freestone County (host county of the Trinity 2 site). State protected species in Freestone County include the threatened alligator snapping turtle which has the potential to occur in the site area (see also Table 9.3-6).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and rail spur corridors. In addition, construction-related land clearing would be conducted according to federal and state regulations, permit conditions and established best management practices.

In summary, impacts from construction of a new reservoir would affect a large area (up to 1,700 acres). The affected drainages are assumed to be intermittent with limited aquatic resources and no Federally protected threatened or endangered species are present. A state threatened species may be present and high quality wetlands would also be impacted. With respect to onsite impacts from construction of the nuclear power plant facilities, much of the immediate site area has already been disturbed and existing aquatic resources are limited. Construction impacts would be temporary and incorporate best management practices. Given this, impacts to aquatic resources, including wetlands and threatened and endangered species, from construction of nuclear power facilities at the Trinity 2 site would be SMALL at the power plant site, and MODERATE at the reservoir location.

Potential impacts from plant operation are similar to those discussed for the Red 2 site (see discussion for Red 2, ER Section 9.3.3.2.5). In summary, potential impacts to aquatic resources from plant operation primarily include those from water intake (i.e., impingement and entrainment), and discharge of heated effluents (heat shock).

Additional concerns could include: physical changes to aquatic systems from storm water collection, and accumulation of contaminants in sediments or biota and thermal plume barrier to migrating fish.

Final design of intake and discharge systems will consider potential impacts on aquatic organisms under EPA regulations implementing Section 316(b) of the CWA. Use of a cooling water reservoir or cooling towers is a mitigation measure for reducing impacts from impingement and entrainment; they use relatively smaller volumes of makeup water in comparison to once-through cooing systems. Characteristics of thermal discharge into the river also would be reduced through use of a cooling tower or reservoir system. It is assumed that system designs at each site would use intake and cooling tower designs that would minimize operations impacts to aquatic resources, including threatened and endangered species. The potential for environmental impacts to aquatic resources, including threatened and endangered species, from nuclear power facility operations at the Trinity 2 site, would be SMALL.

9.3.3.4.6 Socioeconomics

This section addresses impacts from the projected in-migrating population on the region and on local populations at the Trinity 2 site. Specifically, the evaluation considers potential physical impacts and impacts to demography, local economy, tax revenues, housing, public services, education, recreation, and transportation and identifies those notable community characteristics that would be impacted at a given site. The preferred and alternative sites currently meet the population requirements of 10 CFR 100. The population distribution near each site is low with typically rural characteristics.

Using the same assumptions as used in the evaluation of the STP site in ER Section 9.3.3.1.6, and applying the same in-migrating population totals to the two-county area for Trinity 2 as were applied to the STP site, construction of the two nuclear units at the Trinity 2 site would result in a total in-migrating population of 5,866 persons (workers and families) into Freestone County, including 2,077 workers; and a total in-migrating population of 2,118 persons (workers and families) into Anderson County, including 750 workers.

Some of the key assumptions used in the analyses for all of the sites are provided below for easy reference:

- 50% of the peak construction workforce will in-migrate (3,405 workers) to the site region
- 80% of these workers bring their families (3.28 average family size)
- Socioeconomic impacts will be most evident in a two-county area, where 83% of the in-migrating workforce and their families are expected to reside, with the following split: 61% will reside in the site host county and 22% will reside in an adjacent county. Note that these percentages are consistent with the breakout of the current operations workforce at STP.

- The remaining 17% of in-migrating workers will be distributed across other counties in the region, where the expected influx in each county represents a very small percentage of that county's population and impacts would be expected to be SMALL.

While the Trinity 2 site is in a rural, low population area, the surrounding counties within potential commuting distance had a total employed workforce population in 2000 of 158,273 (Reference 9.3-58) which should be adequate from which to draw 50% of the estimated construction workforce as daily commuters to the site.

Physical Impacts

Physical activities from construction activities include noise, odor, vehicle exhaust, vibration, shock from blasting, and dust emissions. These have been described in more detail for the Red 2 site (ER Section 9.3.3.2.6) and are expected to be similar for Trinity 2 which is also a greenfield site. In summary, construction activities would be temporary and occur mainly within the boundaries of the site. Offsite impacts would represent small incremental changes to offsite services supporting the construction activities. Note that in the case of the Trinity 2 site, development at the site would add air and noise emissions to existing air and noise emissions associated with the nearby Big Brown plant and lignite mining operations. However, because the Trinity 2 site, although a greenfield site, is located in an industrial area, activities at both plants would be in compliance with the necessary federal, state and local permits. Therefore, with respect to physical impacts, impacts from construction activities, including potential cumulative impacts, are expected to be SMALL.

Physical impacts from operation, as described for the Red 2 site (ER Section 9.3.3.2.6), are also applicable to the Trinity 2 site, with the exception of potential impacts on aesthetics. With respect to aesthetics, any new units would be closed systems that would likely include cooling towers. Visible plumes resulting from cooling tower operation also could cause negative aesthetic effects. For the Trinity 2 site that is already located in an industrial area (existing Big Brown coal plant and lignite mine) that include smokestacks, additional towers for new reactors would not be expected to significantly change the existing appearance of the site. The impacts would be SMALL. It is also assumed that during plant layout, every effort would be made to locate the towers in an area isolated from area view points to the maximum extent possible.

Demography

Based on an estimated total in-migrating population of 9,616 into the multi-county region, and a total in-migrating population of 5,866 and 2,118 into Freestone and Anderson counties, respectively, the percent increases in population would be as shown in Table 9.3-7. Potential increases in population during construction of the proposed project within the multi-county region are also presented. The individual impacts to each county would include an increase of 32.8% in Freestone County (host county), and an increase of 3.8% in the adjacent (and more populated) Anderson County. The potential impacts would be LARGE in Freestone County and SMALL in Anderson County. Should the in-migrating population be more evenly distributed between the host and adjacent counties, the resulting population increase in the combined two-county area would be 10.9%, or a MODERATE impact on the two-county area. Finally, impacts to the multi-county region include a 2.5 percent increase in population, or a SMALL impact on the region. Note that all impacts would be temporary and are based on conservative 2000 U.S. Census Bureau population levels.

With respect to demography, the addition of two new units at Trinity 2 is assumed to require an operations workforce of up to 600 employees (1,200 total, based on existing workforce for STP Units 1 & 2). While part of the operational workforce at each site is expected to relocate into the region, their numbers are small when compared to those in-migrating for construction, and many could presumably occupy housing vacated by construction workers. Assuming a small in-migrating operations workforce is evenly distributed within in the region, the demographic impacts are expected to be SMALL when compared to the total base population within the region for each site. Should the majority of the in-migrating population choose to live in the two-county area surrounding the site, the impacts would be MODERATE at Trinity 2, given its rural location. A comparison to the estimated 2008 population for Freestone County (18,923, a 5.9% increase), results in a slightly reduced percentage increase (31%); however, the potential impacts to the host county would still be considered LARGE. Factoring in the 2008 population for Anderson County (56,838), impacts to the two-county area would remain just over 10%, and impacts would remain MODERATE.

Local Economy and Taxes

Impacts relating to the economy and taxes from construction of the Trinity 2 site would be expected to be similar to those described for the STP and Red 2 sites. In general, construction of two new units would result in direct construction jobs and increased spending in the region by the workers and through the purchase of non-labor goods and services to support construction; and plant induced increases to local tax receipts are considered beneficial.

Similar to the conclusions reached for the STP site, impacts to the economy are generally BENEFICIAL and would be expected to be LARGE in the host county (Freestone) as the site of the construction and the county where most of the construction labor force would reside. The magnitude of the positive economic impacts would become more diffuse as a result of interacting with the larger economic base of other counties. Given the rural area surrounding the Trinity 2 site and the absence of a major metropolitan area within 50 miles of the site, impacts to the region would be SMALL to MODERATE and BENEFICIAL.

Over the longer term, and applying the same assumptions as developed for the STP site where 50% of the in-migrating workforce would migrate out following completion of construction, impacts to the local area could be negative. Freestone County would be the most affected county, based on the estimated distribution of the in-migrating workforce (61% to Freestone County and 22% to Anderson County). STPNOC concludes that the impacts of construction on the economy of the region would be SMALL everywhere in the region, except Freestone County, where the impacts of an in-migrating construction labor force and the negative impacts of the departing labor force (upon construction of completion) could be MODERATE to LARGE impacts.

Mitigation would be warranted. The same measures would be implemented as described for the STP site.

With respect to potential construction impacts on taxes, STPNOC's past experience at existing STP Units 1 & 2 is that they have had a significant and beneficial impact on the well being of the Matagorda County where STP Units 1 & 2 now reside. In conclusion, given the rural location of the Trinity 2 site, the property tax base represented by a new nuclear facility at the Trinity 2 site would be expected to represent BENEFICIAL and LARGE impact to Freestone County and to local entities within the county, and SMALL to MODERATE to the region (given the absence of a major metropolitan area within 50 miles), and SMALL to the state of Texas.

With respect to social and economic impacts from operation, these would also be similar to those described for the Red 2 site (ER Section 9.3.3.2.6). Socioeconomic impacts of operation relate primarily to the benefits afforded to local communities as a result of the plant's presence (e.g., tax plans, local emergency planning support, educational program support). The continued availability (and potential expansion at each nuclear site), and the associated tax base is an important feature in each host county's ability to continue to invest in infrastructure and to draw industry and new residents.

One potential negative impact of developing the Trinity 2 site for a nuclear power plant, however, is the inability to access mineral resources beneath the site if a future need was identified. The Trinity 2 site is an area of potential and historic mineral development (active lignite mining adjacent to the Trinity 2 site and evidence of oil and gas drilling in the general site area). Acquisition of the Trinity 2 site for development of nuclear power would require STPNOC to purchase the mineral rights, in addition to the land, in order to protect plant operations from future subsurface disturbances. However, this also means that any valuable resources found beneath the site (not yet determined) could not be extracted to fulfill future needs (e.g., energy needs). In addition, there is the potential that some active drilling operations/wells in the site area would get displaced (or shut down) if the Trinity 2 site were selected. This could lead to a loss of some jobs in the area from oil or gas exploration. However, it is assumed that the owner would be able to plan for the loss of mineral rights, and workers could find employment at the new plant (e.g., construction) or at other oil/gas exploration locations. Overall, however, the net economic benefits from plant operation are considered to be positive.

In summary, the economic impacts from operation of two nuclear units at the site would result in BENEFICIAL and LARGE impacts, particularly to the local economies. The impacts to the regional economies would be expected to be MODERATE at Trinity 2 where the new plant, along with the existing Big Brown plant, would play a significant role in the regional economy.

Infrastructure and Community Services

Transportation

The Trinity 2 site is located in eastern Freestone County, which is served by I-45, US-84, and SH-75. The site is located approximately 11 miles northeast of I-45 which provides primary access to the area. Roads closest to the sites FM Routes 488, 1124, 833, 2570, and 3285 which all access the Big Brown power plant and lignite mine operations, as well as Fairfield Lake State Park, to the west and southwest of the Trinity 2 site. Several smaller roads are found in the immediate site area, although these are mostly private. A new road would need to be constructed to access the site, most likely from the west from FM 2570 near the Big Brown power plant. Development of the Trinity 2 site would add commuters, deliveries, and congestion to the existing and significant workforce and delivery system associated with the nearby Big Brown plant and lignite mining operation, as well as to recreational users of Fairfield Lake State Park.

Given the rural nature of the site area, construction impacts on transportation, especially considering potential cumulative impacts from commuting workforces at both plants and recreational users of the state park, would be LARGE. Mitigation measures for the access road and surrounding roads would be required, including the widening of FM 2570 to accommodate the increased traffic. Other mitigation measures might include installing traffic-control lighting and directional signage, creating two entrances to the site to alleviate traffic at the primary plant entrance, shuttling construction workers to and from the site, encouraging carpooling, and staggering shifts to avoid traditional traffic congestion time periods.

Transportation impacts from operation at all sites would be significantly less than construction since the operations workforce and daily plant deliveries would be significantly less and the necessary road improvements to accommodate the construction workforce would already have been completed. Some congestion could still occur during shift changes, particularly at Trinity 2 given its proximity to the existing Big Brown plant and lignite mining operations; however, the magnitude of impact is expected to be SMALL through the help of mitigation measures such as vanpooling and travel reduction incentives currently in use by the existing workforce. Future general population increases likely will increase highway congestion at specific locations; the magnitude of impact of new units at the Trinity 2 site on this service degradation is likely to be SMALL to MODERATE and could require mitigation.

Recreation

Recreational facilities surrounding the Trinity 2 site include the Catfish Creek Gus Engeling WMA, Richland Creek WMA and Richland Chambers Reservoir (north of the site), and Fairfield Lake State Park. Fairfield Lake State Park is located closest to the Trinity 2 site, at 2.5 miles southwest of the site. The Park encompasses 1,460 acres on the southern end of Lake Fairfield, a 2,400-acre lake that supports a variety of water activities including: swimming, boating, skiing, and fishing. Fairfield Lake is warmed by the Big Brown power plant and attracts visitors from all over the state to enjoy the warm water fishing opportunities. Tournaments are held every weekend from

November through February. Other facilities available at the park include campsites (with water and electricity and primitive), picnicking, lighted fishing pier and fish cleaning facilities, boat ramps, playgrounds, a group dining hall, and an amphitheater. A continuous 15 miles of trailways connect each end of the park and provide multi-use access, including hiking, mountain biking, and equestrian use; there is also a 2-mile nature trail and a mile of bird watching trail (Reference 9.3-59).

Given: (1) the close proximity of Fairfield Lake and State Park to the Trinity 2 site; (2) the extensive recreational activities offered at the park; (3) the large number of recreational users likely to visit the park annually; (4) the additional nearby operations of the Big Brown power plant and lignite mine at the north end of the lake; and (5) the fact that site access would likely require travel past the state park, impacts from construction of a new nuclear facility at Trinity 2 would be expected to be MODERATE to LARGE on Fairfield Lake State Park. Other recreational facilities, mostly to the north of the site, are at a sufficient distance and impacts would be expected to be SMALL.

In addition to impacts on nearby recreational users from increased construction traffic, the proposed site may also be visible to visitors at Fairfield State Park. However, given that the proposed site is located in an industrial area that already includes a coal fired power plant and lignite mining operations on the north end of the lake, it unlikely that the construction impacts from a new nuclear facility 2.5 miles away would detract any further from the experience of recreational users along Fairfield Lake than is already being impacted by existing operations at the Big Brown plant and mining operations.

Housing

The impacts of plant construction on housing depend upon the number of workers already residing in the study area and the number that would relocate and require housing. As discussed previously, STPNOC estimates that approximately 3,405 workers and their families (for a total of 9,616 persons) would in-migrate into the region. Assuming these workers are dispersed throughout the multi-county region, the impacts on housing at each site are expected to be SMALL, based on the small percentage increases in total study area population occurring at each site. Impacts on housing under the more conservative scenario, where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) are provided in Table 9.3-8 as a percentage use of the existing vacant housing inventory. These numbers are based on housing data for 2000 (vacant) and assume one housing unit per worker.

Based on absolute numbers, the available housing within the two-county area (combined) would be sufficient to house the in-migrating workforce at the Trinity 2 site. Rental property and mobile home facilities are scarce in rural counties within a 50 mile radius of the Trinity 2 site, but are more plentiful in the larger municipalities. There is insufficient vacant housing available in Freestone County (1,550 units) to accommodate an influx of 2,077 workers projected for the host county. In addition, the available housing in the two-county area may not be sufficient, in terms of the type, size, and pricing desired by the workers. In this case, workers could relocate to other areas in the region, such as to larger metropolitan areas within commuting distance; have new homes constructed; bring their own homes; or live in hotels, motels or nearby

RV parks. Single workers could also share an apartment, which would reduce the total number of housing units needed. An increase in housing demand could result in an increase in housing prices and rent, which could result in pricing some low-income populations out of their rental housing. In the long-term, however, the study area, and particularly the host county of each site, would benefit from increased property values and the addition of new houses to the tax rolls.

In general, impacts on housing are considered to be SMALL when a small change in housing availability occurs and MODERATE when there is a discernable but temporary reduction in the availability of housing units. STPNOC concludes that the potential impacts on housing at the Trinity 2 site would be LARGE if the majority of workers choose to reside in the two-county area (increase of 65.6% in two-county area and 134% increase in host Freestone County), and SMALL if the workers are dispersed throughout the larger study area. In addition, the town of Fairfield, which is located approximately 10 miles from the site, indicates that it has additional housing available outside the city for up to 16,712 persons; the town had a population of 3,349 persons in 2000 (Reference 9.3-60). If this information is still accurate, this additional housing would help to alleviate housing impacts from an in-migrating population at the Trinity 2 site.

Public Services

Public services include water supply and wastewater treatment facilities, police, fire and medical facilities; and social services. New construction or operations workers relocating from outside the region would most likely live in residentially developed areas where adequate water supply and wastewater treatment facilities already exist. Small increases in the regional population would not materially affect the availability of police, fire, or medical services. It is not expected that public services would be materially impacted by new construction or operations employees relocating into the region. Therefore, the impacts on public services within the region would be SMALL. However, population increases for both the two-county area and the host county, as shown in Table 9.3-7, are 10.9% and 32.8%, respectively. Impacts on public services within the two-county area would be MODERATE and impacts on the host (Freestone) county would be LARGE. In general a large population influx would increase demands on existing medical, police and fire services in sparsely populated local communities. These local (or county) governments would need to hire additional staff, buy additional vehicles, and improve/build new facilities. Additional tax revenues from population influx would help offset the cost to expand local police and fire departments and benefit the area in the long term. However, the short-term impacts could be adverse as existing capacities are exceeded in the initial years of construction.

Education

According to the 2000 Census estimate, school-age children (between the ages of 5 and 19) comprise 23.5% of the population of Texas. Applying the same percentage to the total in-migrating population that would reside in the two-county area at the Trinity 2 site, based on the assumption that most of the workers will come from within Texas, the anticipated in-migrating school age population is 1,880. Further assuming a conservative scenario where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) – consistent with the breakout found with current operations workers at the STP site – the number of school-age children migrating into Freestone County would be 1380 and the number of school-age children migrating into adjacent Anderson County would be 500. The percentage increases for each county are identified in Table 9.3-9.

The projected increase within the two county area is 14.1 percent and impacts would be MODERATE to LARGE. The projected increase in Freestone County, however, is 37.4 percent. Impacts in the host county would be LARGE. The quickest mitigation measure would be to hire additional teachers and move modular classrooms to existing schools. Increased property and sales tax revenues as a result of the increased population would fund additional teachers and facilities.

Socioeconomics impacts from operation at the Trinity 2 site would be similar to those described for the Red 2 site with respect to recreation, housing, public services, and education (ER Section 9.3.3.2.6). Impacts would be SMALL at all of the alternate sites.

9.3.3.4.7 Historic and Cultural Resources

Adverse effects to archaeological, paleontological, and cemetery resources are generally the result of direct impacts from ground disturbing activities. Therefore, the area of potential effect coincides with those areas where direct impacts from construction and operation of the proposed project would occur. Adverse effects to historic resources (e.g., standing structures) may occur through direct impacts that may change the character of a property's use or the physical features within a structure's setting that contribute to its historic significance. Adverse effects may also occur through indirect impacts that could introduce visual or noise elements that diminish the integrity of a property's significant historic features.

STPNOC conducted historical and archaeological records searches on the National Park Service's NRHP Information System and reviewed information on historic and archaeological sites listed in Freestone County, host county of the Trinity 2 site. Only one historic structure property is listed on the National Register of Historic Places in Freestone County: the Trinity and Brazos Railroad Depot and Office Building in Teague, over 10 miles away (Reference 9.3-61).

In addition, the Texas Archaeological Sites Atlas was reviewed for additional sites that may be found within a two-mile radius of the Trinity 2 site. Eleven archaeological sites were recorded within two miles of the site location, the closest of which is within 0.5 mile of the site (Reference 9.3-34). Several cemeteries are visible on the USGS topographic map; however, none are in close enough to the proposed site location to be affected by construction activities.

Construction impacts to known or unknown cultural resources would primarily be direct and result in ground disturbing activities that could destroy some or all of a resource. It is not known where other potentially cultural or archaeological resources may be found on this greenfield site. Much of the general site area consists of undeveloped (and cleared) agricultural property with surface lignite mining operations and Big

Brown plant to the west, and scattered gas/drilling activities to the north. However, as with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists. Building the proposed nuclear power plant at the Trinity 2 site would require formal consultation with the THC prior to construction. Additional surveys would be conducted where required (e.g., new reservoir location), and mitigation measures, if required, would be coordinated with the Commission such that any impacts to cultural resources from construction of the proposed nuclear power plant would be SMALL. In addition, protective measures would be implemented if historic and/or cultural resources were discovered during construction. In the event that an unanticipated discovery is made, site personnel would be instructed to notify and consult with the Commission to determine if additional evaluation is needed and further mitigation is required.

There is minimal potential for direct impacts as a result of operations. In general, plant operation is not expected to involve the physical conversion of additional lands for the plant's use. It is further assumed that any plans to disturb additional lands would avoid existing known (and significant) historic and cultural resources, and would require consultation with the THC prior to disturbance to address potential impacts on unidentified and potentially significant resources. Such mitigative actions would ensure that impacts to historic and cultural resources from plant operation are small. The potential for impacts to cultural resources related to project operations would be limited to indirect impacts that could alter the character of a resource or its setting. Because there are no known cultural resources in the area of the proposed plant site, no direct or indirect impacts are anticipated.

STPNOC concludes that impacts of construction and operation on historic properties would be SMALL.

9.3.3.4.8 Environmental Justice

The Census Bureau data (2000) for Texas characterizes 11.5% of the population as Black, 0.6% American Indian or Alaskan Native, 2.7% Asian, 0.1% Native Hawaiian or other Pacific Islander, 11.7% some other race, 2.5% two or more races, 29.1% aggregate of minority races, and 32% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 12% of families were living below the poverty level in 1999 (Reference 9.3-18).

Total percentages of minority populations within a 50-mile radius of the Trinity 2 site were determined using 2000 Census block points with the following results: 14.2% black, 0.5% American Indian and Alaskan Native, 0.4% Asian, 0.07% Hawaiian and Other Pacific Islander, 5.6% All Other Races, and 1.3% Two or More Races, and 10.2% Hispanic or Latino of any race (Hispanic Ethnicity). In addition, the percentage of low income population (families) was determined using Census block groups within a 50-mile radius of the Trinity 2 site with the following result: 12.3% were living below the poverty level; the data were for 1999. These are all lower than the state averages, with exception of American Indian and Black minority populations and low-income families, which are only slightly higher (less than 3 percentage points) than the state average for each of these minority populations. The difference is not considered significant enough difference to result in potential disproportionate impacts to these minority populations (Reference 9.3-19).

In addition, because it is assumed that those minority populations living closest to the site have the potential to be affected by plant construction activities, the 2000 Census block data within a 5-mile radius of the Trinity 2 site were used for ascertaining minority population in the area, as follows:

- 4 Census Blocks with a total population of 152 are found within a 5-mile radius of the Trinity 2 site; this area includes parts of Freestone and Anderson Counties, TX.

For purposes of this evaluation, the potential for the proposed project to result in disproportionate impacts on minority and low income populations is based in part on whether any block percentage exceeded its corresponding state percentage by more than 20% or was greater than 50% overall. In this situation, the block was identified as having a significant minority population.

For the Trinity 2 site, Hispanic population exists in only one block, which is located 0.8 mile from the site. The total population is very low (2 persons out of 152 in 5-mile radius).

While construction activities (noise, fugitive dust, air emissions, traffic) could disproportionately affect this block of Hispanic population at the Trinity 2 site, longer term impacts from plant construction and operation could benefit this low-income population through an increase in related jobs.

The 2000 Census block group data within a 10-mile radius of each site were used for ascertaining low-income population in the area. The Census Bureau data characterizes 12% families as living below the poverty line in Texas in 1999. Within the three block groups included in the 10-mile radius, the percentages ranged from 0.0% to 14.1%. Based on the “more than 20 percent” criterion, no low income populations exist in a 10-mile radius of the Trinity 2 site.

In general, new facilities would be considered beneficial economically to the existing population, especially those disadvantaged population segments served by the State and local social service agencies. Two new units may enable the disadvantaged population to improve their social and economic position by moving to higher paying jobs. At a minimum, the expenditures of construction workforce in the area of food, services, etc. could, through the multiplier effect, increase the number of jobs available to the disadvantaged population.

Impacts to minority and low income populations from plant operation are expected to be similar to those identified for construction activities; however, the impacts during plant operation are expected to be generally beneficial to a disadvantaged community. Minority and low-income populations have been shown to benefit economically from the existing plant (e.g., construction and operation of the Grand Gulf nuclear plant in Mississippi) (Reference 9.3-14), and are expected to receive long-term positive economic benefits from construction and operation of two new units at all six candidate sites. From this perspective, it could be argued that those sites with the highest minority and low income populations, would receive LARGER and more BENEFICIAL impacts to these populations than the other sites.

STPNOC concludes that environmental justice impacts of construction and operation of the proposed project at the Trinity 2 site would be SMALL, and that potential long-term impacts from project operation would be BENEFICIAL to the minority and low-income populations.

9.3.3.4.9 Nonradiological Health

Typical nonradiological health hazards associated with large construction projects (such as construction of a new nuclear power plant) include the following:

- Air Emissions, such as fugitive dust, smoke, and engine exhaust;
- Physical Hazards, such as falls, impact injuries, and vehicular accidents; and
- Noise Hazards.

All construction activities would be performed in compliance with OSHA (29 CFR 1910).

Construction-related air emissions are anticipated to consist of fugitive dust, smoke, and engine exhaust. Impacts to construction workers would be the same for both the proposed and alternate sites. Construction workers would be protected from such hazards via personal protective equipment (dust masks, etc.) and other controls (water sprays, equipment emission controls, equipment inspections, etc.).

Impacts to neighboring populations would be dependent on distance to these receptors. The Trinity 2 site is located adjacent to an operating power plant. However, the majority of workers at the plant work indoors and would not be impacted. Training, awareness, and personal protective equipment would minimize the impacts to personnel working outdoors. The Trinity 2 site is not located in the immediate vicinity of residential areas, and fugitive emissions are not anticipated to impact offsite receptors.

Physical hazards at the construction site would be consistent with any large-scale construction project and could include falls, impact injuries, vehicular accidents, and electric hazards. Access to the construction site would be controlled, and physical hazards to neighboring populations are not anticipated. Impacts to construction workers would be minimized through training, awareness, and personal protective equipment, and are expected to be minor.

Activities at the site would create noise consistent with large-scale construction activities. Noise levels for common construction activities are typically about 90 dBA at a distance of 10 feet (Reference 9.3-14), and decrease with distance from the source. Due to the distance to local residential areas from the Trinity 2 site, these populations are not expected to be impacted from construction noise hazards. Impacts to construction workers and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

In summary, construction-related nonradiological health impacts (air emissions, physical hazards, and noise hazards) to construction workers, workers at neighboring facilities, and neighboring residential areas are expected to be SMALL for the Trinity 2 site, and impacts can be minimized through training, awareness, personal protective equipment, and activity scheduling.

In general, operational-related nonradiological health hazards would consist of occupational injuries. Historically, actual injury and fatality rates at nuclear reactor facilities have been lower than the average U.S. industrial rates (Reference 9.3-14). In all cases, plant operational activities would be performed with adherence to applicable laws and regulations, practices, and procedures.

Other typical nonradiological health hazards associated with plant operational activities include the following:

- Health impacts from cooling tower operation;
- Noise Hazards; and
- Health impacts from transmission line operation.

At the Trinity 2 site, plant cooling water effluent would be returned to the cooling water reservoir and/or discharged to the Trinity River. Discharges have the potential to increase the growth of microorganisms in the receiving waters. Serious illness and death can occur when there is high exposure to these microorganisms (Reference 9.3-14). NUREG-1437 notes that a discharge to a small river (defined as having an average flow of less than 100,000 cfs) would have the greatest chance of affecting the public (Reference 9.3-13). The Trinity River, in the vicinity of the Trinity 2 site, has an average flow rate of approximately 4,400 cfs, and discharge would have a moderate impact.

The principal sources of noise from plant operation are cooling towers (where employed), transformers, and loudspeakers. Generally, power plant sites do not result in off-site levels more than 10 decibels above background (Reference 9.3-13), and impacts to neighboring populations would be small. Impacts to plant operators and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

The two human health issues related to transmission lines are the acute effects (shock hazard) and the potential for chronic effects from exposure to electric and magnetic fields. Acute effects can be minimized through tower design precluding direct public access to components that may pose a shock hazard and are considered to be small at each location. Chronic effects from the operation of energized transmission lines on public receptors are not conclusive but do indicate some impacts are possible.

However, these impacts are assumed to be small as transmission rights-of-way will be located in a manner to avoid residential populations to the greatest extent.

In summary, noise hazards and hazards associated with transmission line operation are small for the Trinity 2 site. Health impacts associated with discharge of cooling water are moderate. Since impacts will generally consist of occupational injuries, and since injury/fatality rates at nuclear plants are generally lower than the average rates at industrial sites, operational-related nonradiological impacts at the Trinity 2 site are SMALL.

9.3.3.4.10 Radiological Health

As the Trinity 2 site is not located in the vicinity of existing radiological operations, sources of radiation exposure to site preparation and construction workers are limited to those sources introduced by the new plant. The radiological impact on construction workers at the Trinity 2 site is no more than that at the STP site; therefore, it is concluded that the radiological impact on construction workers is SMALL.

Plant locations at the Trinity 2 site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Therefore, impacts to offsite receptors would be minimal.

Radiological impacts of plant operation occur through exposure pathways from releases and direct radiation from the plant, and can be viewed as dose to public receptors, occupational receptors, and other biota. The Trinity 2 site is located adjacent to and would discharge cooling water blowdown to surface waters. However, discharges will be within regulatory limits which assure that the radiological impact is SMALL. The Trinity 2 site is also located in the area of groundwater used for potable uses and agricultural irrigation. The valuable groundwater aquifers are generally deep and would not be impacted by plant operation.

The Trinity 2 site is located near existing agricultural operations, and potential radiological releases could impact these foodstuffs. Because liquid releases will be maintained within regulatory limits, dose rates would generally be less than 1 mrem/yr at the site boundary (Reference 9.3-13).

Plant locations at the Trinity 2 site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Radiation doses to members of the public from current operation of nuclear power plants have been examined from a variety of perspectives, and the impacts were found to be well within design objectives and regulations in each instance (Reference 9.3-13). Therefore, radiological impacts to public receptors are SMALL for the Trinity 2 site. Additionally, NUREG-1437 examines radiological impacts to occupational receptors and concludes that occupational radiation exposure is of SMALL significance.

9.3.3.4.11 Impact of Postulated Accidents

As site specific meteorology data is not available for the alternate sites, a general analysis of the impacts of postulated accidents is provided. NUREG-1437 contains a thorough analysis of environmental impacts of accidents during operation. The analysis assumes accident frequency based on regulatory controls ensuring the plant's licensing basis is maintained. The analysis concludes that the environmental impacts from design-basis accidents are of SMALL significance for all plants (Reference 9.3-13). Similarly, the analysis evaluated severe accidents and concluded calculated impacts from atmospheric releases, fallout onto open bodies of water, groundwater releases, and societal and economic impacts to be of SMALL significance. Effective emergency planning can aid in mitigating the impacts of accidents.

The Trinity 2 site is not located in the immediate vicinity of residential areas. The accident impacts at the Trinity 2 site are SMALL.

9.3.3.4.12 Conclusion Regarding the Trinity 2 Site

Impacts from the construction of a new nuclear power plant at the Trinity 2 site would generally be SMALL to MODERATE, and impacts from the operation of a new nuclear power plant at the Trinity 2 site would generally be SMALL. Construction-related environmental impact areas with predicted adverse impacts other than SMALL include land use at the site and vicinity, terrestrial and aquatic ecology, and socioeconomics (demographic impacts to the region, the host county, and the two-county local area, social and economic impacts, and impacts to infrastructure and community services). Operation-related environmental impact areas with predicted adverse impacts other than SMALL include water use and socioeconomics (demographic impacts). Any adverse impact from the new plant is not predicted to have a disproportionate effect on minority or low-income populations. As a result, the predicted impacts at the Trinity 2 site are equal to or greater than those at the proposed STP site. Trinity 2 was not considered environmentally preferable to the proposed STP site.

9.3.3.5 Evaluation of Malakoff Site

In previous revisions of the COLA, the Malakoff site was selected and evaluated as an Alternate Site. For completeness, the projected environmental impacts at this site are also evaluated. The Malakoff site is owned by NRG and is located in Henderson County, Texas, approximately 6.3 km (3.9 mi) south of Malakoff, TX and approximately 20.1 km (12.5 mi) east of Athens, TX. Cedar Creek defines the western boundary of the site, and the remainder is bordered by the former Trinity Lignite Mine site. Houston Lighting and Power began construction of a coal-fired power plant at the Malakoff site in the 1980s; however, the project was cancelled and construction activities were discontinued. Reclamation of the lignite mine, which consisted of five underground mine openings, was completed in 1995. Clay fill materials were placed into the excavated tunnels and shaft and compacted. Surface water runoff was diverted away from the enclosures (Reference 9.3-62). The cooling water source for the Malakoff site is the Trinity River. The site is a greenfield site.

The following assumptions form the basis of the evaluation of impacts at the Malakoff site:

- Nearby Trinidad Lake and Cedar Creek Reservoir would not be available for use by the new plant given their current capacities and use: Trinidad Lake serves as the cooling water source for the Trinidad power plant, and Cedar Creek Reservoir is owned and operated by the Tarrant County Water Control and Improvement District No. 1 for municipal water supply; there is also significant development around Cedar Creek Reservoir.

- Either a new off-channel reservoir for cooling water (similar to that used at STP site) or a storage reservoir to support cooling towers would be created off of Cedar Creek (below existing Cedar Creek Reservoir and to the east of Trinidad Lake) to support plant operating needs. Area topography could support up to a 2,300-acre reservoir, whose construction has been evaluated for purposes of comparing project impacts across the preferred and alternate sites. However, note plant design layouts, including specific reservoir size and location, have not been completed for any of the alternate sites.

- While the plant would use a closed cycle cooling system, plant design at this site is not final and the potential exists to use either cooling towers or a cooling water reservoir. Therefore, potential impacts from cooling towers are also evaluated for this site.

- Cooling water discharge would be returned to the Trinity River downstream of the intake location.

- Detailed transmission routing analyses were not conducted for the alternate sites; potential land use impacts from transmission line routing are based on combined and approximate distances to three nearest 345kV lines.

9.3.3.5.1 Land Use Including Site and Transmission Line Rights-of-Way

Land use impacts associated with plant construction include both impacts to the power plant site and proposed reservoir site, as well as offsite areas associated with transmission, cooling water intake and discharge pipelines, and transportation rights-of-way (e.g., road and rail).

Construction of a new nuclear power plant would include clearing, dredging, grading, excavation, spoil deposition, and dewatering activities. The impacted area would be approximately 800 acres for the main power plant site (major structures including switchyard), which would largely be focused in one central location; and up to 2,300 acres for a reservoir. Impacts would also be realized near the surface water withdrawal and discharge locations used for cooling water makeup. Approximately 150 acres per unit and 2,300 acres for the cooling water reservoir (for a total of 2,600 acres) would be permanently impacted. Following construction activities, impacted areas without constructed buildings or transportation infrastructure (assumed to be several hundred acres) would be reclaimed to the greatest extent.

Other area land use impacts would result from construction of housing and other infrastructure in support of a construction workforce. It is predicted that the majority of this expansion would occur near existing communities, and a significant land use impact is not expected to occur.

In 2007, approximately 57 % of total land acreage in Henderson County was devoted to farming, including 2,109 farms and ranches covering 318,452 acres. Of this, 162,982 (51%) were devoted to pasture (permanent pasture and rangeland other than cropland and woodland pasture), 86,495 acres (27%) to cropland, and 55,467 acres (17%) to woodlands. The remaining farmland (13,508 acres) was devoted to farmsteads, buildings for livestock, ponds, roads, and wasteland (Reference 9.3-9).

The terrain at the site is relatively flat. Much of the site is open cropland and pasture, but some hardwood riparian areas existing along the Trinity River and Cedar Creek. The vegetation in the area surrounding the proposed site consists of mixed pine and hardwoods, including oak, elm, hackberry, and pecan (Reference 9.3-63). There also appears to be active oil and gas activity in the area.

As specific site locations and plant design layouts have not been finalized, specific acreage impacts cannot be determined for the sites under consideration. However, the following presents the general land uses for an area approximately 2,600 acres in size at the Malakoff site where the main plant site and reservoir could be located. The acreage estimates are combined for site and reservoir locations, and based on percentage breakouts from Google Earth imagery using best professional judgment (Reference 9.3-64).

Land Cover Class	Area (acres)	Percentage of Site
Forested (potentially reclaimed/planted), including 140 acres of forested wetlands	1,210	47%
Open ag land/grasslands	1,250	48%
Developed areas (roads, drill pads)	5	0.2%
Water resources/freshwater ponds	140	5%

Additional information pertaining to wetlands is found in Section 9.3.3.5.5 (Aquatic Ecology).

Additional acreage (up to several hundred acres) that would be required for construction activities (e.g., laydown areas) also includes a mixture of forest and open fields, although cleared land would be used to the greatest extent possible. However, the impact on this acreage would be temporary. Following construction activities, impacted areas without constructed buildings or transportation infrastructure would be reclaimed to the greatest extent feasible.

Project construction would have a long-term impact on the current uses of forested and grasslands and on any oil and gas activity in the area, although much of the site area appears to be reclaimed land from former mining operations at Malakoff. Onsite impacts from construction of the power plant and potential reservoir at the Malakoff site would be SMALL to MODERATE, depending on the final size of the reservoir and the extent to which undisturbed (primarily forested) lands are affected.

Specific routing of transmission lines has not yet been identified, but rough estimates of requirements for new transmission lines have been developed. The feasibility of using existing infrastructure is dependent on the available capacity remaining in the system. If sufficient capacity is not available, either existing rights-of-way would be expanded to accommodate additional transmission lines or new rights-of-way would be obtained and transmission lines constructed. Expansion of existing rights-of-way is expected to result in small environmental impacts while construction in new rights-of-way could result in moderate impacts.

Three new ROWs would be required to connect to the three closest 345 kV lines in the area. The proposed site is approximately 5 miles east of the 345kV line between the Trinidad substation and the Richland power plant (a double-circuit line); 5 miles south of the 345kV line between the Trinidad substation and the Stryker Creek power plant (a double circuit line); and approximately 30 miles south of 345kV line between Tricorner and Elkton substations. The total combined distance is approximately 40 miles. Based on 40 miles of corridor and 200-foot width, installation of the new lines would impact around 970 acres. Although the most direct route, in general, would be used between terminations, efforts would be made to avoid conflicts with natural or man-made areas where important environmental resources are located. New ROW for each of three connections would be required. According to Google Earth aerial photography, effectively all the land along the potential corridors is currently farmland or woodlands (Reference 9.3-64).

Impacts associated with construction of pipelines to deliver plant cooling water to the reservoir/plant site and transportation rights-of-way (both road and rail) would also be realized at the Malakoff site. The following are estimates of the length of new pipeline, rail, and road rights-of-way to be constructed:

- Rail: 2.6 miles, 16 acres (based on 50-foot ROW width)
- Cooling water intake/discharge (4.6 miles) from/to the Trinity River and new reservoir, 42 acres (based on 75-foot ROW width)
- Access road: 3.2 miles of new construction, 29 acres (based on 75 foot ROW width)

Additional transportation volume also could require the expansion of some existing local roads. Shift schedules could be planned so that shift changes at the co-located facilities would not coincide with each other. Impacts from constructing road access to the site would be small.

Construction at the proposed pipeline corridors would have temporary, minor effects on land use during actual construction due to trenching, equipment movement and material laydown. The ability to use current lands for their existing uses (cattle ranching, gas production), along each of the proposed pipeline corridors would be temporarily lost during construction. Direct and indirect impacts of construction from the proposed transportation infrastructure would be similar to those for the proposed plant: a loss of some existing pasture/range land and forested land depending on their locations. Construction of any proposed project related transportation infrastructure requiring compliance with any regulations would be coordinated with the appropriate county as deemed necessary.

In summary, offsite impacts from transmission line construction and transportation infrastructure, which would affect an estimated 1,040 acres of land, are predicted to be MODERATE at the Malakoff site, depending on the amount of transmission line construction that would occur in previously undisturbed rights-of-way.

Operational impacts to site land use would include a permanent change in land use of 2,600 acres of land for the power plant site and reservoir – that would be generally unusable for other purposes. The proposed change would be a change from current land use at the site; however, it would also be somewhat compatible with other land uses in the area since the site is located just east of the existing Trinidad plant and near land formerly used for lignite mining operations.

In addition, operational impacts to the site and immediate vicinity would include maintenance operations on existing structures and would be small and temporary in nature.

Operational impacts of transmission lines result primarily from line maintenance, and include right-of-way vegetation clearing, transmission line maintenance, and other normal access activities. To ensure power system reliability, the growth of tall vegetation under the lines must be prevented to avoid physical interference with lines or the potential for short-circuiting from the line to the vegetation. Additional right-of-way acquisition and development would not normally be required as part of plant operational activities. Maintenance activities would be limited to the immediate right-of-way and would be minimal. New transmission corridor would not be expected to permanently affect agricultural areas but would have potential to impact residents along ROW. Corridor vegetation management and line maintenance procedures would be established by transmission service provider. Given rural setting and low population density along transmission corridors, operational impacts to land use along ROWs would be SMALL.

Other offsite land use impacts as a result of plant operational activities would be minimal, temporary, and limited in the area impacted. Such activities could include pipeline, road, and rail maintenance and auxiliary building maintenance. It is likely that most lands above the proposed water intake and discharge pipelines and related areas of construction could continue to be used for ranching, farming and any passive uses. Any existing or future subsurface activities (e.g., gas drilling or mining) would not be possible in the immediate utility corridor once the utilities were installed. The proposed transportation infrastructure could result in the loss of a small amount of ranch land, pasture land and forested land on the proposed plant site and in areas where access roads and a rail spur would be needed.

In summary, land use impacts at the site and immediate vicinity from plant operation, including the new reservoir, are predicted to be SMALL; and impacts from transmission line maintenance and transportation infrastructure maintenance are predicted to be SMALL.

9.3.3.5.2 Air Quality

Air quality impacts associated with plant construction include both impacts from the construction activities themselves and transportation impacts from workers commuting to the worksite. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities, including a preconstruction air permit from the TCEQ (Reference 9.3-10). The air permits would ensure both construction and operational emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-11).

Air quality impacts from construction activities are similar to those for any large-scale construction effort and consist of fugitive dust emissions, emissions from equipment and machinery, and emissions from concrete batch plant operations. Fugitive dust emissions can be controlled through use of water sprays and postponing certain activities during windy conditions. Equipment emissions can be controlled through equipment inspections and regular maintenance. Concrete batch plant operations would employ equipment emissions controls to minimize air quality impacts. Specific mitigation measures would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment. In total, air quality emissions from construction activities would be small and temporary and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the construction workforce commuting to the worksite. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity. Air quality impacts would be more detrimental in areas already exceeding the NAAQS for criteria pollutants. Texas has no nonattainment areas for carbon monoxide, nitrogen dioxide, ozone (1-hour), sulfur dioxide, particulate matter (less than 2.5 micrometers [$PM_{2.5}$]), or lead. Part of El Paso County, Texas is in nonattainment for particulate matter (less than 10 micrometers [PM_{10}]); however, this county is in the extreme western portion of the state and is not located near the Malakoff site. The Dallas-Fort Worth area holds non-attainment status for ground-level ozone under the 8-hour standard. Counties affected under this status include Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant (Reference 9.3-12).

As the Malakoff site is located outside of the affected counties and vehicular transportation is not expected to significantly increase across the affected counties as a result of the construction activities, impacts are expected to be SMALL.

Air quality impacts associated with plant operation include both impacts from the plant operational activities themselves and transportation impacts from workers commuting to the plant. Operating activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Air quality impacts from operational activities result from releases of heat and moisture to the environment from cooling operations and emissions from the operation of auxiliary equipment. A closed-cycle cooling system will be used for Malakoff, using either cooling towers or a cooling water reservoir. Thermal discharges resulting from these systems will be to the reservoir and/or to the atmosphere.

Cooling tower operation often results in drift, or the transport of residual salts and chemicals through water droplets carried out of the cooling towers. Based on a review of the measurements of deposition of draft from nuclear power plants (Reference 9.3-13), measurements indicate that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Auxiliary equipment may also be operated on an intermittent basis. Auxiliary equipment emissions can be controlled through equipment inspections and regular maintenance. Small amounts of ozone and smaller amounts of oxides of nitrogen are produced by transmission lines (Reference 9.3-14). Production of ozone and oxides of nitrogen are insignificant and does not measurably contribute to ambient levels of those gases (Reference 9.3-13). In total, air quality emissions from operational activities would be small and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from increased emissions from the workforce commuting to the plant. However, as the Malakoff site is located outside of the affected counties in non-attainment for criteria pollutants, and vehicular transportation is not expected to significantly increase across the affected counties as a result of plant operation, impacts are expected to be SMALL.

9.3.3.5.3 Hydrology, Water Use, and Water Quality

Water-related impacts associated with plant construction include both water use impacts and water quality impacts and are consistent with those caused by typical large-scale construction projects. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

STPNOC estimates that groundwater would be used at a peak or maximum rate of approximately 1,200 gpm (ER Section 2.3.1.2.6) during construction with normal demands being much less than maximum use. Groundwater would be used during construction for personal consumption and use, concrete batch plant operation, concrete curing, cleanup activities, dust suppression, placement of engineered backfill, and piping hydrotests and flushing (ER Section 2.3.1.2.6).

In summary, due to the relatively small water quantity requirements and the availability of groundwater or imported water, the sites will have a SMALL impact on water use for construction activities.

Water quality impacts from construction activities would primarily result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from construction activities would be regulated and would require obtaining TPDES or other discharge permits. Regulated discharges would not be expected to significantly impact local drainages or other surface water bodies. Additionally, significant hydrological alterations are not anticipated at the Malakoff site. Therefore, impacts to water quality will be SMALL.

Water-related impacts associated with plant operation include both water use impacts and water quality impacts. Plant operation would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Plant operational activities consume water through plant cooling and personal (sanitary) uses. Overall use of water is dominated by plant cooling uses for wet-cooled plants. A closed-cycle cooling system will be used for Malakoff, using either cooling towers or a cooling water reservoir. The assumed maximum plant cooling design consumption for a two-unit plant is 50,000 acre-ft/yr (31,000 gpm, 69.1 cfs). The necessary water rights for this cooling water requirement from the Trinity River are not presently owned by STPNOC and would need to be acquired. Unappropriated flows are available for a new application 25-50% of the months (Reference 9.3-22). Active industrial, irrigation, and mining uses were considered as potentially available for water rights sale/transfer – municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses were not considered viable water rights for sale/transfer. At present, there are 475 water rights owners in the Trinity Basin that are industrial, irrigation, or mining uses totaling 1,168,745 acre-ft/yr (Reference 9.3-23). Assuming no unappropriated flows exist, the new plant would need to acquire 4.3% of these existing water rights. Acquisition of these water rights would result in a SMALL to MODERATE impact on water use for operational activities.

Cooling tower operations result in the concentration of dissolved solids in the water stream, resulting from evaporation loss, which must occasionally be discharged and replenished with freshwater. The discharged water (blowdown) would be of lower quality than the source water. Cooling tower blowdown would be discharged to the MCR and/or the Trinity River as necessary. The concentration of total dissolved solids in the cooling tower blowdown averages 500 percent of that in the makeup water, a concentration factor that can be tolerated by most freshwater biota (Reference 9.3-13). Additionally, a TPDES permit would be required to discharge effluents, and any unforeseen water quality impacts could be addressed during periodic permit renewals.

Water quality impacts could also result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from operational activities would also be regulated and would require obtaining TPDES or other discharge permits.

Therefore, due to the regulatory conditions associated with the operational activities, impacts to water quality will be SMALL.

9.3.3.5.4 Terrestrial Resources Including Threatened and Endangered Species

For the Malakoff site, it is assumed that construction of two units and a reservoir would disturb up to 2,600 acres of land, with approximately 300 acres required for permanent structures and facilities including plant footprint and support buildings, and switchyard; and up to 2,300 acres for a new reservoir. This is exclusive of the land required for development of transmission lines, water pipelines, rail or road access, which are estimated to impact an additional 1,040 acres. All acreage not containing a permanent structure would be reclaimed to the maximum extent possible.

Henderson County is located in East Texas between the Neches and Trinity Rivers, referred to as the East Central Texas Plains, and in the Northern Post Oak Savanna ecoregion. The deciduous forest or woodland is composed mostly of post oak, blackjack oak, eastern redcedar, and black hickory. Prairie openings contain little bluestem and other grasses and forbs. Some coniferous trees occur and loblolly pine has been planted in several areas. Typical wildlife species include white-tailed deer, eastern wild turkey, northern bobwhite, eastern fox squirrel, and eastern gray squirrel (Reference 9.3-25). Along the Trinity River, the western border of the county, lie the bottomlands of the flood plain, where the vegetation features mixed hardwoods and a dense undergrowth of scrubs and vines typical of the East Texas mixed forests (Reference 9.3-65).

The site is located west of the Malakoff abandoned mining land (AML) that has since been reclaimed. Current land use at the site appears to include a mixture of open cropland and pasture; hardwood riparian areas exist along Cedar Creek. The vegetation in the area surrounding the site consists of mixed pine and hardwoods, including oak, elm, hackberry and pecan. Major onsite drainages include Cedar Creek and Walnut Creek. There also appears to be some active oil and gas drilling in the area. Mineral resources in Henderson County include oil and gas reserves, sulfur, lignite coal, sand and gravel, and clay used for making bricks and pottery (Reference 9.3-65).

A thorough on-site habitat evaluation has not been conducted for the Malakoff site, nor has the layout and design of the plant and reservoir sites been finalized. Impacts to terrestrial ecology are estimated based on satellite imagery and information in the general literature for the site and vicinity.

Construction of the new plant and reservoir would affect up to 3,200 acres of land that currently includes forest (estimated at 1,200 acres, including 140 acres of bottomland hardwoods/high quality forested wetlands), pasture land (estimated at 1,250 acres), and surface water resources (intermittent streams, ponds and associated habitat – estimated at 140 acres), resulting in the permanent loss of this habitat. Of the 300 acres permanently impacted at the power plant site, most of this land would encompass land that has already been cleared. However, a small amount of forested land, including potential bottomland hardwood forest, may also be cleared for construction activities. Construction of the rail spur would affect an additional 16 acres or more, depending on the final routing. Consideration would be given to avoiding possible conflicts with natural areas where sensitive environmental resources may be present.

Other temporary impacts from plant construction, such as erosion and dust generation, would be temporary and typical of large construction projects. These impacts could be mitigated using standard industrial procedures and best management practices. Standard practices, such as silt fences to control sedimentation and water sprays to limit dust generation, would protect ecological resources in the site vicinity.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, Federally protected species that could occur in Henderson County include three birds (interior least tern, piping plover, whooping crane), and one mammal (black bear because of similarity in appearance to threatened Louisiana black bear). State listed (threatened) terrestrial species include: five birds (American peregrine falcon, bald eagle, and peregrine falcon which are delisted Federal species; Bachman’s sparrow, and wood stork); one mammal (black bear as noted above) and three reptile species (Northern scarlet snake, Texas horned lizard and Timber/Canebrake rattlesnake) (Reference 9.3-66). Table 9.3-6 provides a complete listing of Federal and State protected species in Henderson County with their listing status and common and scientific names. No critical habitat or other sensitive habitats have been identified in the site area, although portions of the Trinity River include priority bottomland hardwood habitat (as classified by the USFWS) because of its high habitat resource value, particularly for waterfowl (Reference 9.3-27).

Other terrestrial species of concern that are considered rare but with no regulatory status include: one bird (Henslow’s sparrow); two mammals (plains spotted skunk and southeastern myotis bat); and three plant species (Chapman’s yellow-eyed grass, Rough-stem aster, Small-headed pipewort) (Reference 9.3-66).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and transportation (e.g., rail spur) corridors. In addition, construction-related land clearing and reservoir development would be conducted according to federal and state regulations, permit conditions and established best management practices. This would include consultation with the appropriate resource agencies and development of appropriate mitigation measures where required to minimize potential impacts to sensitive resources.

In terms of habitat loss from constructing a new nuclear power plant and reservoir, the impacts to terrestrial resources, including threatened and endangered species would be SMALL in the area of the facility footprint since most of the land has already been cleared, and LARGE at the reservoir location, based on the potential for impacting over 1,000 acres of forested land, including potential high quality bottomland hardwood habitat, and the total number of protected species that could potentially occur in the area.

Although the most direct route would be used between transmission corridor terminations, consideration would also be given to avoiding possible conflicts with natural areas where sensitive environmental resources may be present. Transmission corridors could impact more than 2,000 acres or more of new ROW, although construction effects would be temporary. Impacts would be expected to be LARGE, assuming a significant portion may occur in previously undisturbed rights-of-way. Potential impacts from construction of rail and access road corridors would be minimal given the site's proximity to existing infrastructure. Impacts would be SMALL. In addition, land clearing associated with construction of the makeup water intake line to the river could result in short-term displacement of species within that corridor.

As noted previously, it is assumed that the proposed new units would employ a closed-cycle cooling system that would potentially use cooling towers. Impacts to terrestrial resources that may result from operation of two new nuclear units include those associated with cooling tower drift and bird collisions. The principal environmental concern with cooling tower drift impacts is related to the emission and downwind deposition of cooling water salts. Salt deposition can adversely affect sensitive plant and animal communities through changes in water and soil chemistry.

The impacts of cooling tower drift on crops, ornamental vegetation, native plants, birds, shoreline habitat and protected species were evaluated previously in NUREG-1437 and found to be small for all plants, including those with multiple cooling towers of various types (Reference 9.3-13). Measurements indicated that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Given the small area of impact expected from drift, the absence of critical habitat in the site area, and the fact that most of the site area has been previously cleared, ecological impacts from cooling tower drift during plant operation at the Malakoff site would be SMALL.

In addition, creation of a new reservoir to support plant operation would provide new habitat for birds/fowl that would not be adversely affected by plant operation.

9.3.3.5.5 Aquatic Resources Including Threatened and Endangered Species

The major aquatic resources in the site area include the Trinity River, Cedar Creek and Walnut Creek. Trinidad Lake to the west of the proposed Malakoff site, and Cedar Creek Reservoir to the north of the proposed site would not be used for cooling water. They are located 2.5 miles and 4.3 miles from the proposed site, respectively, and are not expected to be impacted by plant construction (or operation).

Impacts on the aquatic ecosystem from construction of a new nuclear power plant at the Malakoff site would be associated primarily with construction of a new reservoir; and construction of intake and discharge structures on the Trinity River, and potential stream crossings by the proposed new rail line, access road and transmission lines. The most significant impacts to aquatic resources would be from creation of a new 2,300-acre reservoir which would inundate the natural habitat along Cedar Creek (downstream of the existing Cedar Creek Reservoir) and Walnut Creek. Habitat areas along Cedar Creek downstream of the new reservoir to its outfall in the Trinity River could also be impacted. Cedar Creek was dammed in 1965 to form Cedar Creek Reservoir in southeastern Kaufman and northern Henderson Counties, north of the proposed Malakoff site. The land surface drained by Cedar Creek is generally flat with locally shallow depressions. The area has historically been used as range and crop land although recreation has become important following the construction of Cedar Creek Reservoir. Walnut Creek traverses fourteen miles southwest to its mouth in Cedar Creek. Both Cedar and Walnut Creeks traverse flat to rolling terrain surfaced by sandy and clay loams that support water tolerant hardwoods, conifers, and grasses (Reference 9.3-65). Inland fisheries stream surveys are not available for Cedar or Walnut Creek. However, Cedar Creek Reservoir has good to excellent fishing, with the most predominant species being largemouth bass; blue, channel and flathead catfish; white and hybrid striped bass; and crappie (Reference 9.3-67). Flows in these smaller drainages are assumed to be intermittent with any fisheries resource limited to seasonal flows.

No digitized wetland maps were available for the site area; however, hard copy wetland maps for the Malakoff (1988) and Cressland Ranch (1989) Quads were reviewed. Because these maps are dated, it is not known whether all the wetland areas still exist or not, however it is assumed that they do for purposes of this evaluation. A detailed wetlands assessment and study will be required in order to obtain the appropriate permits from the USACE to construct the reservoir.

In addition to the local drainages, numerous freshwater ponds and freshwater emergent wetlands appear to be scattered throughout the site area. Most of the high quality wetlands appear to be found around the two major onsite drainages, Cedar Creek and Walnut Creek. Within a 2,000-acre area that would include the potential reservoir location, total wetland acreage is conservatively estimated at 280 acres, of which 140 acres may forested and considered high quality (Reference 9.3-4). Most of the area around the proposed plant site is cleared; a riparian area (presumably McCallister Slough) runs across the northern portion of the site area but it could likely be avoided during construction.

The proposed project could result in localized, direct, and adverse construction impacts to wetlands. Filling in or modifying portions of wetlands, if avoidance is not feasible, would permanently alter hydrologic function and wetland vegetation and result in direct habitat loss. Potential habitat degradation of wetlands and waters downstream could also occur if flow to adjacent areas is reduced. Construction impacts would be mitigated by minimizing areas disturbed and preventing runoff from entering wetlands during construction. Mitigation for wetland loss would also likely be required but the exact amount is not known at this time.

Construction activities for a new cooling water intake and discharge structures in the Trinity River include: dredging, construction of cooling towers and onsite impacts on water sources, and pipeline construction. Existing aquatic resources in the Trinity River, and potential impacts to these resources from construction of a new nuclear power facility at the Malakoff site, are expected to be similar to those described for the Trinity 2 site. The Trinity 2 site is also located on the Trinity River, approximately 20 miles downstream (and west) of the Malakoff site (ER Section 9.3.3.4)

Dredging should be localized and while it would result in increased turbidity, the effects would be temporary and dredging operations would be in compliance with the USACE and State water quality requirements so that long-term water quality is not degraded. Construction of the trenches for the intake and discharge pipelines from the water to the site could lead to temporary soil erosion and increased turbidity in any onsite water sources. All construction impacts from construction related to cooling towers and onsite impacts on water resources (e.g., from dewatering effluent and runoff), such as erosion and sedimentation into the water resources, could be mitigated using standard industrial procedures and best management practices. Pipeline construction impacts would be temporary and would also incorporate best management practices. Pipes would be buried, so there would be no permanent alteration of water flow patterns in the floodplain.

Road, rail and transmission crossings would also implement best management practices so as to reduce impacts to surface water bodies/streams.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, there are no Federally protected aquatic species within the proposed power plant site or surrounding area.

State protected species in Henderson County include the state threatened alligator snapping turtle that does have the potential to occur in the site area (Reference 9.3-66) (see also Table 9.3-6).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission and rail spur corridors. In addition, construction-related land clearing would be conducted according to federal and state regulations, permit conditions and established best management practices.

In summary, impacts from construction of a new reservoir would affect a large area (up to 2,300 acres) and inundate the natural aquatic habitat along a portion of Cedar Creek and Walnut Creek. However, the affected drainages are assumed to be intermittent with limited aquatic resources and no Federally protected threatened or endangered species are present. A state threatened species may be present and high quality wetlands would also be impacted. With respect to onsite impacts from construction of the nuclear power plant facilities, much of the immediate site area has already been disturbed and existing aquatic resources are also limited. Construction impacts would be temporary and incorporate best management practices. Given this, impacts to aquatic resources, including wetlands and threatened and endangered species, from construction of nuclear power facilities at the Malakoff site would be SMALL at the power plant site, and MODERATE at the reservoir location.

Potential impacts from plant operation are expected to be similar at all of the alternate sites (see discussion for Red 2, ER Section 9.3.3.2.5). In summary, potential impacts to aquatic resources from plant operation primarily include those from water intake (i.e., impingement and entrainment), and discharge of heated effluents (heat shock).

Additional concerns could include: physical changes to aquatic systems from storm water collection, and accumulation of contaminants in sediments or biota and thermal plume barrier to migrating fish.

Final design of intake and discharge systems will consider potential impacts on aquatic organisms under EPA regulations implementing Section 316(b) of the CWA. Use of a cooling water reservoir or cooling towers is a mitigation measure for reducing impacts from impingement and entrainment; they use relatively smaller volumes of makeup water in comparison to once-through cooing systems. Characteristics of thermal discharge into the river also would be reduced through use of a cooling tower or reservoir system. It is assumed that system designs at each site would use intake and cooling tower designs that would minimize operations impacts to aquatic resources, including threatened and endangered species. The potential for environmental impacts to aquatic resources, including threatened and endangered species, from nuclear power facility operations at the Malakoff site, would be SMALL.

9.3.3.5.6 Socioeconomics

This section addresses impacts from the projected in-migrating population on the region and on local populations at the Malakoff. Specifically, the evaluation considers potential physical impacts and impacts to demography, local economy, tax revenues, housing, public services, education, recreation, and transportation and identifies those notable community characteristics that would be impacted at a given site. The preferred and alternative sites currently meet the population requirements of 10 CFR 100. The population distribution near each site is low with typically rural characteristics.

Using the same assumptions as used in the evaluation of the STP site in ER Section 9.3.3.1.6, and applying the same in-migrating population totals to the two-county area for Malakoff as were applied to STP, construction of the two nuclear units at the Malakoff site would result in a total in-migrating population of 5,866 persons (workers and families) into Henderson County, including 2,077 workers; and a total in-migrating population of 2,118 persons (workers and families) into Ellis County, including 750 workers. Although Navarro County is directly adjacent to Henderson County, Ellis County was assumed to attract more of in-migrating population given its higher population and proximity to Dallas.

Some of the key assumptions used in the analyses for all of the sites are provided below for easy reference:

- 50% of the peak construction workforce will in-migrate (3,405 workers) to the site region
- 80% of these workers bring their families (3.28 average family size)
- Socioeconomic impacts will be most evident in a two-county area, where 83% of the in-migrating workforce and their families are expected to reside, with the following split: 61% will reside in the site host county and 22% will reside in an

adjacent county. Note that these percentages are consistent with the breakout of the current operations workforce at STP.

- The remaining 17% of in-migrating workers will be distributed across other counties in the region, where the expected influx in each county represents a very small percentage of that county's population and impacts would be expected to be SMALL.

Given the site proximity to the southern suburbs of Dallas (Ellis County within 50 miles), the area workforce should be sufficient from which to draw 50% of the estimated construction workforce as daily commuters to the site.

Physical Impacts

Physical activities from construction activities include noise, odor, vehicle exhaust, vibration, shock from blasting, and dust emissions. These have been described in more detail for the Red 2 site (ER Section 9.3.3.2.6) and are expected to be the same for the Malakoff site which is also a greenfield site. In summary, construction activities would be temporary and occur mainly within the boundaries of the site. Offsite impacts would represent small incremental changes to offsite services supporting the construction activities. Therefore, with respect to physical impacts, impacts from construction activities are expected to be SMALL.

Physical impacts from operation, as described for the Red 2 site (ER Section 9.3.3.2.6), are also applicable to the Malakoff site, including the potential impacts on aesthetics, which are summarized here. With respect to aesthetics, any new units would be closed systems that would likely include cooling towers. Visible plumes resulting from cooling tower operation also could cause negative aesthetic effects. For the Malakoff site, the presence of cooling towers would significantly change the landscape. Also depending on how far the towers could be seen (such as from Cedar Creek Reservoir or the Texas Lakes Trail), the impacts could be MODERATE.

Demography

Based on an estimated total in-migrating population of 9,616 into the multi-county region, and a total in-migrating population of 5,866 and 2,118 into Henderson and Ellis counties, respectively, the percent increases in population would be as shown in Table 9.3-7. Potential increases in population during construction of the proposed project within the multi-county region are also presented. The individual impacts to each county would include an increase of 8% in Henderson County (host county), and an increase of 1.9% in the adjacent (and more populated) Ellis County. The potential impacts would be MODERATE in Henderson County and SMALL in Ellis County. Should the in-migrating population be more evenly distributed between the host and adjacent counties, the resulting population increase in the combined two-county area would be 5.6%, or a MODERATE impact on the two-county area. Finally, impacts to the multi-county region include a 1.5 percent increase in population, or a SMALL impact on the region. Note that all impacts would be temporary and are based on conservative 2000 U.S. Census Bureau population levels. A comparison to the estimated 2008 population for Henderson County (78,814, a 7.6% increase), results in a slightly reduced percentage increase (7.5%); however, the potential impacts to the host county would still be considered MODERATE. Factoring in the 2008 population for Ellis County (148,186), which grew 33.1% since 2000, would reduce the percentage increase within the two-county area to 3.5%, and impacts would be SMALL.

With respect to demography, the addition of two new units at Malakoff is assumed to require an operations workforce of up to 600 employees (1,200 total, based on existing workforce for STP Units 1 & 2). While part of the operational workforce at each site is expected to relocate into the region, their numbers are small when compared to those in-migrating for construction, and many could presumably occupy housing vacated by construction workers. Assuming a small in-migrating operations workforce is evenly distributed within in the region, the demographic impacts are expected to be SMALL when compared to the total base population within the region for each site. Should the majority of the in-migrating population choose to live in the two-county area surrounding the site, the impacts would be SMALL at Malakoff, given it includes the southern Dallas suburbs.

Local Economy and Taxes

Impacts relating to the economy and taxes from construction of the Malakoff site would be expected to be similar to those described for the STP and Red 2 sites. In general, construction of two new units would result in direct construction jobs and increased spending in the region by the workers and through the purchase of non-labor goods and services to support construction; and plant induced increases to local tax receipts are considered beneficial.

Similar to the conclusions reached for the STP site, impacts to the economy are generally BENEFICIAL and would be expected to be LARGE in the host county (Henderson) as the site of the construction and the county where most of the construction labor force would reside. The magnitude of the positive economic impacts would become more diffuse as a result of interacting with the larger economic base of other counties. Given the site's proximity to the Dallas area, impacts to the region would be SMALL and BENEFICIAL.

Over the longer term, and applying the same assumptions as developed for the STP site where 50% of the in-migrating workforce would migrate out following completion of construction, impacts to the local area could be negative. Henderson County would be the most affected county, based on the estimated distribution of the in-migrating workforce (61% to Henderson County and 22% to Ellis County). STPNOC concludes that the impacts of construction on the economy of the region would be SMALL everywhere in the region, except Henderson County, where the impacts of an in-migrating construction labor force and the negative impacts of the departing labor force (upon construction of completion) could be MODERATE to LARGE impacts. Mitigation would be warranted. The same measures would be implemented as described for the STP site.

With respect to potential construction impacts on taxes, STPNOC's past experience at existing STP Units 1 & 2 is that they have had a significant and beneficial impact on the well being of the Matagorda County where STP Units 1 & 2 now reside. In conclusion, given the rural location of the Malakoff site, the property tax base represented by a new nuclear facility at the Malakoff site would be expected to represent BENEFICIAL and LARGE impact to Henderson County and to local entities within the county, and SMALL to the region (given the proximity to Dallas area) and to the state of Texas.

With respect to social and economic impacts from operation, these would also be similar to those described for the Red 2 site (ER Section 9.3.3.2.6). Socioeconomic impacts of operation relate primarily to the benefits afforded to local communities as a result of the plant's presence (e.g., tax plans, local emergency planning support, educational program support). The continued availability (and potential expansion at each nuclear site), and the associated tax base is an important feature in each host county's ability to continue to invest in infrastructure and to draw industry and new residents.

One potential negative impact of developing the Malakoff site for a nuclear power plant, however, is the inability to access mineral resources beneath the site if a future need was identified. The Malakoff site is an area of potential and historic mineral development (former lignite mine and evidence of oil and gas drilling in the general site area). Acquisition of the Malakoff site for development of nuclear power would require STPNOC to purchase the mineral rights in addition to the land in order to protect plant operations from future subsurface disturbances. However, this also means that any valuable resources found beneath the site (not yet determined) could not be extracted to fulfill future needs (e.g., energy needs). In addition, there is the potential that some active drilling operations/wells in the site area would be displaced (or shut down) if the Malakoff site were selected. This could lead to a loss of some jobs in the area from oil or gas exploration. However, it is assumed that the owner would be able to plan for the loss of mineral rights, and workers could find employment at the new plant (e.g., construction) or at other oil/gas exploration locations. Overall, however, the net economic benefits from plant operation are considered to be positive.

In summary, the economic impacts from operation of two nuclear units at the site would result in BENEFICIAL and LARGE impacts, particularly to the local economies. The impacts to the regional economies would be expected to be SMALL at Malakoff since the site region includes the southern outskirts of Dallas.

Infrastructure and Community Services

Transportation

The Malakoff site is located in western Henderson County, which is served by US-175, US-287, SH-31, SH-198, SH-274, SH-19, and FM 59, 3441, and 1667. The site is located approximately 3 miles south of SH-31 which provides primary access to the area. A new road would be required to access the site, either from SH 31, which is also part of the Texas Lakes Heritage Trail System, or from FM 3441. Development of the Malakoff site would add commuters, deliveries, and congestion to local residents and recreational users in the area. Recreational use is heavy given the site's proximity to the Trinity River, Cedar Creek Reservoir (to the north) and Richland Chambers

Reservoir (to the west). In addition, a portion of FM 3441 may need to be relocated to accommodate construction of a potential new reservoir at the site, depending on the final sizing and location of the reservoir. At a minimum, road use may be restricted during periods of construction.

Given the rural nature of the site area, construction impacts on transportation, especially considering potential cumulative impacts from the construction workforce, local residents and recreational users in the area, would be MODERATE to LARGE. Mitigation measures for the access road and surrounding roads would be required, including potential upgrades to SH-31 and FM 3441 to accommodate increased traffic. Other mitigation measures might include installing traffic-control lighting and directional signage, creating two entrances to the site to alleviate traffic at the primary plant entrance, shuttling construction workers to and from the site, encouraging carpooling, and staggering shifts to avoid traditional traffic congestion time periods.

Transportation impacts from operation at all sites would be significantly less than construction since the operations workforce and daily plant deliveries would be significantly less and the necessary road improvements to accommodate the construction workforce would already have been completed. Some congestion could still occur during shift changes; however, the magnitude of impact is expected to be SMALL through the help of mitigation measures such as vanpooling and travel reduction incentives currently in use by the existing workforce. In particular, the size of the existing workforce at the Trinidad plant is assumed to be small (based on the type of plant) compared to the operations workforce projected for the new nuclear units. Future general population increases likely will increase highway congestion at specific locations; the magnitude of impact of new units at the Malakoff site on this service degradation is likely to be SMALL to MODERATE and could require mitigation, although the population increases at the Malakoff site are expected to be less than at the other sites due to the smaller number of workers assumed to in-migrate into the area (given the site's proximity to Dallas).

Recreation

Recreational areas surrounding the Malakoff site include two historic trails (Texas Forest Trail and the Texas Lakes Trail) and a several large reservoirs in the area, including Cedar Creek to the northwest, Richland-Chambers Reservoir to the southwest, and Lake Palestine to the southeast. Because of its favorable climate, the county's recreation areas are popular retirement centers. The nearby town of Athens hosts the Old Fiddlers Reunion in May and the Black-Eyed Pea Jamboree in July (Reference 9.3-65).

Cedar Creek Reservoir is a 32,623 acre-lake with eleven points of public access, including five along the southern end, closest to the Malakoff site (Sunny Glen Marina, Caney Cove, Fisherman's Wharf, RH Lee Park, and Cedar Creek Landing); all have parking, dock, and picnic area, and two have camping. The lake is almost completely developed on two sides. Several small cities populate the lake and there are three golf courses nearby (Reference 9.3-67).

The Texas Lakes Trail sprawls across 31 counties from Red River to Bosque River in the south. The southeastern portion between Canton, Athens, and Corsicana, lies along SH-31, just north of the Malakoff site. The Lakes Trail is part of the Texas Heritage Trails Program that includes 10 scenic driving trails throughout the state. The driving trails allow visitors to explore the history and culture of Texas and are the backbone of the THC's statewide heritage tourism program (Reference 9.3-68).

The expected increase in traffic along SH 31, which would provide primary access to the Malakoff site, could adversely affect recreational users traveling on SH-31 to access Cedar Creek Reservoir from Athens and points east, as well as visitors traveling either direction along the Texas Lakes Trail, which includes the section of SH-31 providing potential access to the site. Impacts to these recreational resources in the immediate site area would be MODERATE to LARGE. Other recreational facilities in the area are at sufficient distance from the site that impacts would be expected to be SMALL.

Housing

The impacts of plant construction on housing depend upon the number of workers already residing in the study area and the number that would relocate and require housing. As discussed previously, STPNOC estimates that approximately 3,405 workers and their families (for a total of 9,616 persons) would in-migrate into the region. Assuming these workers are dispersed throughout the multi-county region, the impacts on housing at each site are expected to be SMALL, based on the small percentage increases in total study area population occurring at each site. Impacts on housing under the more conservative scenario, where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) are provided in Table 9.3-8 as a percentage use of the existing vacant housing inventory. These numbers are based on housing data for 2000 (vacant) and assume one housing unit per worker.

Based on absolute numbers, the available housing would be sufficient to house the workforce at the Malakoff site. The available housing may not be sufficient, however, in terms of the type, size, and pricing desired by the workers. In this case, workers could relocate to other areas in the region, such as to larger metropolitan areas within commuting distance; have new homes constructed; bring their own homes; or live in hotels, motels or nearby RV parks. Single workers could also share an apartment, which would reduce the total number of housing units needed. An increase in housing demand could result in an increase in housing prices and rent, which could result in pricing some low-income populations out of their rental housing. In the long-term, however, the study area, and particularly the host county of each site, would benefit from increased property values and the addition of new houses to the tax rolls.

In general, impacts on housing are considered to be SMALL when a small change in housing availability occurs and MODERATE when there is a discernable but temporary reduction in the availability of housing units. STPNOC concludes that the potential impacts on housing would be LARGE if the majority of workers choose to reside in the two-county area (30.8% increase in two-county area and 29.1% increase in host Henderson County), and SMALL if the workers are dispersed throughout the larger study area. Rental property and mobile home facilities are scarce in rural counties within a 50 mile radius of the Malakoff site, but are more plentiful in the larger municipalities. Note also that while this is a conservative analysis, in the case of the Malakoff site, the large metropolitan area of Dallas (84,103 vacant units in 2000), located in a third county (Dallas) approximately 50 miles to the north of the site, is likely to draw some percentage of workers thereby helping to further reduce the impacts on Henderson and Ellis Counties, as analyzed in this conservative scenario.

Public Services

Public services include water supply and wastewater treatment facilities, police, fire and medical facilities; and social services. New construction or operations workers relocating from outside the region would most likely live in residentially developed areas where adequate water supply and wastewater treatment facilities already exist. Small increases in the regional population would not materially affect the availability of police, fire, or medical services. It is not expected that public services would be materially impacted by new construction or operations employees relocating into the region. Therefore, the impacts on public services within the region would be SMALL. Population increases for the two-county area, as shown in Table 9.3-7, are less than 5 percent (4.3%) such that impacts on public services within the two-county area would be SMALL. The population percentage increase in the host (Henderson) county is 8%. In general a large population influx would increase demands on existing medical, police and fire services in sparsely populated local communities. These local (or county) governments would need to hire additional staff, buy additional vehicles, and improve/build new facilities. Additional tax revenues from population influx would help offset the cost to expand local police and fire departments and benefit the area in the long term. However, the short-term impacts could be adverse as existing capacities are exceeded in the initial years of construction. Given the estimated increase in the population of Henderson County, impacts to the host county would be MODERATE. Note that impacts to the host county could be alleviated somewhat if a larger percentage of the in-migrating population chose to reside in the southern suburbs of Dallas in Ellis County (or even Dallas County).

Education

According to the 2000 Census estimate, school-age children (between the ages of 5 and 19) comprise 23.5% of the population of Texas. Applying the same percentage to the total in-migrating population that would reside in the two-county area at the Malakoff site, based on the assumption that most of the workers will come from within Texas, the anticipated in-migrating school age population is 1,880. Further assuming a conservative scenario where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) – consistent with the breakout found with current operations workers at the STP site – the number of school-age children migrating into Henderson County would be 1380 and the number of school-age children migrating into adjacent Ellis County would be 500. The percentage increases for each county are identified in Table 9.3-9.

The projected increase within the two county area is less than 5 percent and impacts would be SMALL. The projected increase in Henderson County, however, is 9.2

percent. Impacts in the host county would be MODERATE. The quickest mitigation measure would be to hire additional teachers and move modular classrooms to existing schools. Increased property and sales tax revenues as a result of the increased population would fund additional teachers and facilities.

It should also be noted that while this is a conservative estimate, in the case of the Malakoff site, more than 22 percent of the in-migrating workers with school-age children are likely to reside in the more populated Ellis (or even Dallas) County that includes the portions of the Dallas metropolitan area. The school district system of Ellis/Dallas Counties is expected to more easily absorb an influx of school age children than the less populated Henderson County. This would help further reduce the impacts on this host county, as analyzed in this conservative scenario.

Socioeconomics impacts from operation at the Malakoff site would be similar to those described for the Red 2 site with respect to recreation, housing, public services, and education (ER Section 9.3.3.2.6). Impacts would be SMALL at all of the alternate sites.

9.3.3.5.7 Historic and Cultural Resources

Adverse effects to archaeological, paleontological, and cemetery resources are generally the result of direct impacts from ground disturbing activities. Therefore, the area of potential effect coincides with those areas where direct impacts from construction and operation of the proposed project would occur. Adverse effects to historic resources (e.g., standing structures) may occur through direct impacts that may change the character of a property's use or the physical features within a structure's setting that contribute to its historic significance. Adverse effects may also occur through indirect impacts that could introduce visual or noise elements that diminish the integrity of a property's significant historic features.

STPNOC conducted historical and archaeological records searches on the National Park Service's NRHP Information System and reviewed information on historic and archaeological sites provided in documents associated with the Malakoff coal fired unit. The area has been previously disturbed by lignite mining activities. There is one NRHP site in Henderson County, host county for the Malakoff site. It is located in the town of Athens which is over 5 miles away (Reference 9.3-69).

Construction impacts to known or unknown cultural resources would primarily be direct and result in ground disturbing activities that could destroy some or all of a resource. Several potential archaeological sites were identified at the Malakoff site during cultural resource surveys to support the cancelled coal-fired unit. The sites were evaluated for listing on the National Register but none were eligible. In addition, as with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists, particularly in areas with no prior land disturbance. However, as with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists. Building the proposed nuclear power plant at the Malakoff site would require formal consultation with the THC prior to construction. Additional surveys would be conducted where required (e.g., new reservoir location), and mitigation measures, if required, would be coordinated with the Commission such that any impacts to cultural resources from construction of the proposed nuclear power plant would be SMALL. In addition, protective measures would be implemented if historic and/or cultural resources were discovered during construction. In the event that an unanticipated discovery is made, site personnel would be instructed to notify and consult with the Commission to determine if additional evaluation is needed and further mitigation is required.

Finally, the Texas Heritage Trail / Texas Lakes Trail Region runs just north of the site through the Town of Malakoff (5 miles away). The Lakes Trail spans 31 counties in Texas, from Red River in the north to the Bosque River in the south, and includes prairie and plains cities. Many visitors travel by car along this trail each year to discover important heritage sites in the area and learn the history of the peoples who settled this region of Texas. Given its distance from the site, none of the heritage sites along this trail are expected to be adversely affected by the proposed project (see also discussion of recreation impacts under Socioeconomics, ER 9.3.3.5.6) (Reference 9.3-68).

There is minimal potential for direct impacts as a result of operations. In general, plant operation is not expected to involve the physical conversion of additional lands for the plant's use. It is further assumed that any plans to disturb additional lands would avoid existing known (and significant) historic and cultural resources, and would require consultation with the THC prior to disturbance to address potential impacts on unidentified and potentially significant resources. Such mitigative actions would ensure that impacts to historic and cultural resources from plant operation are small. The potential for impacts to cultural resources related to project operations would be limited to indirect impacts that could alter the character of a resource or its setting. Because there are no known cultural resources in or near the area of the proposed plant site and the area has been previously disturbed, no direct or indirect impacts are anticipated.

STPNOC concludes that impacts of construction and operation on historic properties would be SMALL.

9.3.3.5.8 Environmental Justice

The Census Bureau data (2000) for Texas characterizes 11.5% of the population as Black, 0.6% American Indian or Alaskan Native, 2.7% Asian, 0.1% Native Hawaiian or other Pacific Islander, 11.7% some other race, 2.5% two or more races, 29.1% aggregate of minority races, and 32% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 12% of families were living below the poverty level in 1999 (Reference 9.3-18).

Total percentages of minority populations within a 50-mile radius of the Malakoff site were determined using 2000 Census block points with the following results: 14.4% black, 0.5% American Indian and Alaskan Native, 0.5% Asian, 0.05% Hawaiian and Other Pacific Islander, 6.5% All Other Races, and 1.5% Two or More Races, and 12.6% Hispanic or Latino of any race (Hispanic Ethnicity). In addition, the percentage of low income population (families) was determined using Census block groups within a 50-mile radius of the Malakoff site with the following result: 11.1% were living below the poverty level; the data were for 1999. These percentages are all lower than the state averages for Texas except for the black population; this minority population is slightly higher than the state average, however the difference (i.e., just under 3%) is not significant enough to result in potential disproportionate impacts to this minority population (Reference 9.3-19).

In addition, because it is assumed that those minority populations living closest to the site have the potential to be affected by plant construction activities, the 2000 Census block data within a 5-mile radius of the Malakoff site were used for ascertaining minority population in the area, as follows:

- 171 Census Blocks with a total population of 4,122 are found within a 5-mile radius of the Malakoff site; this area includes Henderson and Navarro Counties, TX.

For purposes of this evaluation, the potential for the proposed project to result in disproportionate impacts on minority and low income populations is based in part on whether any block percentage exceeded its corresponding state percentage by more than 20% or was greater than 50% overall. In this situation, the block was identified as having a significant minority population.

For the Malakoff site, minority populations exist in 41 blocks with the breakout as follows: black minority populations exist in 31 blocks; American Indian populations exist in one block; populations of other races exist in seven blocks (four blocks which also include Hispanic populations); and Hispanic populations exist in seven blocks (four of which also contain populations of other races and one block which also contains black population). The total minority population in these 41 Census blocks is 665 out of a total population within 5 miles of 4,122 persons; more than 80 percent of these minorities are black. The closest block is found 1.2 miles from the site; it contains a population of 2 persons who are black. The majority of the remaining block minority populations are beyond 4 miles from the site.

The 2000 Census block group data within a 10-mile radius of each site were used for ascertaining low-income population in the area. The Census Bureau data characterizes 12% families as living below the poverty level in Texas in 1999. Within the 10 block groups included in the 10-mile radius, the percentages ranged from 5.2% to 32.3%. Based on the “more than 20 percent” criterion, one block of low income populations exist in a 10-mile radius of the Malakoff site; this corresponds to 81 families out of a total of 4,106 families living within a 10-mile radius of the Malakoff site.

Construction activities (noise, fugitive dust, air emissions, traffic) could disproportionately this low-income population because of its proximity to the Malakoff site and location along some of the roads that could be used to access the site. However, longer term impacts from plant construction and operation could benefit this low-income population through an increase in related jobs.

In general, new facilities would be considered beneficial economically to the existing population, especially those disadvantaged population segments served by the State and local social service agencies. Two new units may enable the disadvantaged population to improve their social and economic position by moving to higher paying jobs. At a minimum, the expenditures of construction workforce in the area of food, services, etc. could, through the multiplier effect, increase the number of jobs available to the disadvantaged population.

Impacts to minority and low income populations from plant operation are expected to be similar to those identified for construction activities; however, the impacts during plant operation are expected to be generally beneficial to a disadvantaged community. Minority and low-income populations have been shown to benefit economically from the existing plant (e.g., construction and operation of the Grand Gulf nuclear plant in Mississippi) (Reference 9.3-14), and are expected to receive long-term positive economic benefits from construction and operation of two new units at all six candidate sites. From this perspective, it could be argued that those sites with the highest minority and low income populations, would receive LARGER and more BENEFICIAL impacts to these populations than the other sites.

Finally, given the slightly higher number of blacks (566 within a 5-mile radius) and low-income families in the Malakoff site area (81 families within a 10-mile radius) compared to other sites, there is the potential for this population to be affected in different ways than the general population would. These include unique exposure pathways or rates of exposure (e.g., from subsistence fishing), special sensitivities (e.g., to air pollution because of less access to health care), or different uses of natural resources (e.g., for economic practices). While these are a potential concern, no significant health or physical impacts to any human populations are expected to occur at the Malakoff site (or any site under consideration) as a result of project construction or operation. Therefore, no significant disproportionate impacts are expected to these low-income families.

STPNOC concludes that environmental justice impacts of construction and operation of the proposed project at the Malakoff site would be SMALL, and that potential long-term impacts from project operation would be BENEFICIAL to the minority and low-income populations.

9.3.3.5.9 Nonradiological Health

Typical nonradiological health hazards associated with large construction projects (such as construction of a new nuclear power plant) include the following:

- Air Emissions, such as fugitive dust, smoke, and engine exhaust;
- Physical Hazards, such as falls, impact injuries, and vehicular accidents; and
- Noise Hazards.

All construction activities would be performed in compliance with OSHA (29 CFR 1910).

Construction-related air emissions are anticipated to consist of fugitive dust, smoke, and engine exhaust. Impacts to construction workers would be the same for both the proposed and alternate sites. Construction workers would be protected from such hazards via personal protective equipment (dust masks, etc.) and other controls (water sprays, equipment emission controls, equipment inspections, etc.).

Impacts to neighboring populations would be dependent on distance to these receptors. The Malakoff site is not located in the immediate vicinity of residential areas or other industrial operations, and fugitive emissions are not anticipated to impact offsite receptors.

Physical hazards at the construction site would be consistent with any large-scale construction project and could include falls, impact injuries, vehicular accidents, and electric hazards. Access to the construction site would be controlled, and physical hazards to neighboring populations are not anticipated. Impacts to construction workers would be minimized through training, awareness, and personal protective equipment, and are expected to be minor.

Activities at the site would create noise consistent with large-scale construction activities. Noise levels for common construction activities are typically about 90 dBA at a distance of 10 feet (Reference 9.3-14), and decrease with distance from the source. Due to the distance to local residential areas from the Malakoff site, these populations are not expected to be impacted from construction noise hazards. Impacts to construction workers and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

In summary, construction-related nonradiological health impacts (air emissions, physical hazards, and noise hazards) to construction workers, workers at neighboring facilities, and neighboring residential areas are expected to be SMALL for the Malakoff site, and impacts can be minimized through training, awareness, personal protective equipment, and activity scheduling.

In general, operational-related nonradiological health hazards would consist of occupational injuries. Historically, actual injury and fatality rates at nuclear reactor facilities have been lower than the average U.S. industrial rates (Reference 9.3-14). In all cases, plant operational activities would be performed with adherence to applicable laws and regulations, practices, and procedures.

Other typical nonradiological health hazards associated with plant operational activities include the following:

- Health impacts from cooling tower operation;
- Noise Hazards; and
- Health impacts from transmission line operation.

At the Malakoff site, plant cooling water effluent would be returned to the cooling water reservoir and/or discharged to the Trinity River. Discharges have the potential to increase the growth of microorganisms in the receiving waters. Serious illness and death can occur when there is high exposure to these microorganisms (Reference

9.3-14). NUREG-1437 notes that a discharge to a small river (defined as having an average flow of less than 100,000 cfs) would have the greatest chance of affecting the public (Reference 9.3-13). The Trinity River, in the vicinity of the Malakoff site, has an average flow rate of approximately 4,400 cfs, and discharge would have a moderate impact.

The principal sources of noise from plant operation are cooling towers (where employed), transformers, and loudspeakers. Generally, power plant sites do not result in off-site levels more than 10 decibels above background (Reference 9.3-13), and impacts to neighboring populations would be small. Impacts to plant operators and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

The two human health issues related to transmission lines are the acute effects (shock hazard) and the potential for chronic effects from exposure to electric and magnetic fields. Acute effects can be minimized through tower design precluding direct public access to components that may pose a shock hazard and are considered to be small at each location. Chronic effects from the operation of energized transmission lines on public receptors are not conclusive but do indicate some impacts are possible. However, these impacts are assumed to be small as transmission rights-of-way will be located in a manner to avoid residential populations to the greatest extent.

In summary, noise hazards and hazards associated with transmission line operation are small for the Malakoff site. Health impacts associated with discharge of cooling water are moderate. Since impacts will generally consist of occupational injuries, and since injury/fatality rates at nuclear plants are generally lower than the average rates at industrial sites, operational-related nonradiological impacts at the Malakoff site are SMALL.

9.3.3.5.10 Radiological Health

As the Malakoff site is not located in the vicinity of existing radiological operations, sources of radiation exposure to site preparation and construction workers are limited to those sources introduced by the new plant. The radiological impact on construction workers at the Malakoff site is no more than that at the STP site; therefore, it is concluded that the radiological impact on construction workers is SMALL.

Plant locations at the Malakoff site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Therefore, impacts to offsite receptors would be minimal.

Radiological impacts of plant operation occur through exposure pathways from releases and direct radiation from the plant, and can be viewed as dose to public receptors, occupational receptors, and other biota. The Malakoff site is located adjacent to and would discharge cooling water blowdown to surface waters. However, discharges will be within regulatory limits which assure that the radiological impact is SMALL. The Malakoff site is also located in the area of groundwater used for potable uses and agricultural irrigation. The valuable groundwater aquifers are generally deep and would not be impacted by plant operation.

The Malakoff site is located near existing agricultural operations, and potential radiological releases could impact these foodstuffs. Because liquid releases will be maintained within regulatory limits, dose rates would generally be less than 1 mrem/yr at the site boundary (Reference 9.3-13).

Plant locations at the Malakoff site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Radiation doses to members of the public from current operation of nuclear power plants have been examined from a variety of perspectives, and the impacts were found to be well within design objectives and regulations in each instance (Reference 9.3-13). Therefore, radiological impacts to public receptors are SMALL for the Malakoff site. Additionally, NUREG-1437 examines radiological impacts to occupational receptors and concludes that occupational radiation exposure is of SMALL significance.

9.3.3.5.11 Impact of Postulated Accidents

As site specific meteorology data is not available for the alternate sites, a general analysis of the impacts of postulated accidents is provided. NUREG-1437 contains a thorough analysis of environmental impacts of accidents during operation. The analysis assumes accident frequency based on regulatory controls ensuring the plant's licensing basis is maintained. The analysis concludes that the environmental impacts from design-basis accidents are of SMALL significance for all plants (Reference 9.3-13). Similarly, the analysis evaluated severe accidents and concluded calculated impacts from atmospheric releases, fallout onto open bodies of water, groundwater releases, and societal and economic impacts to be of SMALL significance. Effective emergency planning can aid in mitigating the impacts of accidents.

The Malakoff site is not located in the immediate vicinity of residential areas. The accident impacts at the Malakoff site are SMALL.

9.3.3.5.12 Conclusion Regarding the Malakoff Site

Impacts from the construction of a new nuclear power plant at the Malakoff site would generally be MODERATE, and impacts from the operation of a new nuclear power plant at the Malakoff site would generally be SMALL. Construction-related environmental impact areas with predicted adverse impacts other than SMALL include land use (both on-site and off-site), terrestrial and aquatic ecology, and socioeconomics (demographic impacts to the host county and the two-county local area and impacts to infrastructure and community services). Operation-related environmental impact areas with predicted adverse impacts other than SMALL include water use and socioeconomics (physical impacts). Any adverse impact from the new plant is not predicted to have a disproportionate effect on minority or low-income populations. As a result, the predicted impacts at the Malakoff site are equal to or greater than those at the proposed STP site. Malakoff was not considered environmentally preferable to the proposed STP site.

9.3.3.6 Evaluation of Limestone Site

In previous revisions of the COLA, the Limestone site was selected and evaluated as an Alternate Site. For completeness, the projected environmental impacts at this site are also evaluated. The Limestone site is owned by NRG and is located in Freestone County, Texas, approximately 10.6 km (6.6 mi) northwest of Jewett, TX and approximately 23.5 km (14.3 mi) south of Teague, TX. The Burlington Northern Santa Fe Railroad runs along the northeastern border of the proposed site. The site area is characterized by gently rolling reclaimed mine lands immediately adjacent to an operating lignite mine and the Limestone Electric Generating Station. The assumed cooling water source for the Limestone site is the Trinity River. The site is a greenfield site located approximately 1.9 km (1.2 mi) east of the existing Limestone power plant and was previously considered (but not selected) as a site for the Department of Energy FutureGen project. The FutureGen Project would have included the planning, design, construction, operation by the FutureGen Alliance of a coal-fueled electric power and hydrogen gas production plant integrated with carbon dioxide capture and geologic sequestration for the captured gas (Reference 9.3-70).

The following assumptions form the basis of the evaluation of impacts at the Limestone site:

- Nearby Limestone Lake (12,553 acres) would not be available for use by the new plant given its current capacity and use as a cooling source for the Limestone Electric Generating Station.
- Either a new off-channel reservoir for cooling water (similar to that used at STP site) or a storage reservoir to support cooling towers would be created to support plant operating needs. Area topography could support up to a 3,200-acre reservoir, whose construction has been evaluated for purposes of comparing project impacts across the preferred and alternate sites. However, note plant design layouts, including specific reservoir size and location, have not been completed for any of the alternate sites.
- While the plant would use a closed cycle cooling system, plant design at this site is not final and the potential exists to use either cooling towers or a cooling water reservoir. Therefore, potential impacts from cooling towers are also evaluated for this site.
- Cooling water discharge would be returned to the Trinity River downstream of the intake location.
- Detailed transmission routing analyses were not conducted for the alternate sites; potential land use impacts from transmission line routing are based on combined and approximate distances to three nearest 345kV lines.
- The site is adjacent to the Limestone Generating Station which is owned by NRG. NRG is planning an expansion at the station which would add a third generating unit (Unit 3) to the facility, adjacent to existing generating units 1 and 2. Unit 3 will produce 744 MW and will include a new pulverized coal boiler, steam turbine,

generator and related equipment. For purposes of cumulative impact analysis, it is assumed that this planned expansion will proceed, with a separate site identified for the proposed nuclear facility. The Unit 3 construction phase is expected to last four years. It is assumed that there would be minimal (if any) overlap of the two project construction periods. However, operation of the two facilities would coincide, and their combined impacts, as well as those from operation of the existing coal plant and construction of the proposed nuclear facility, raise the potential for cumulative impacts. Potential cumulative impacts relating to air emissions, water use, ecology and socioeconomic resources are also considered in the evaluation of the Limestone site.

9.3.3.6.1 Land Use Including Site and Transmission Line Rights-of-Way

Land use impacts associated with plant construction include both impacts to the power plant site and proposed reservoir site, as well as offsite areas associated with transmission, cooling water intake and discharge pipelines, and transportation rights-of-way (e.g., road and rail).

Construction of a new nuclear power plant would include clearing, dredging, grading, excavation, spoil deposition, and dewatering activities. The impacted area would be approximately 800 acres for the main power plant site (major structures including switchyard), which would largely be focused in one central location; and up to 3,200 acres for a reservoir. Impacts would also be realized near the surface water withdrawal and discharge locations used for cooling water makeup. Approximately 150 acres per unit and 3,200 acres for the reservoir (for a total of 3,500 acres) would be permanently impacted. Following construction activities, impacted areas without constructed buildings or transportation infrastructure (assumed to be several hundred acres) would be reclaimed to the greatest extent.

Other area land use impacts would result from construction of housing and other infrastructure in support of a construction workforce. It is predicted that the majority of this expansion would occur near existing communities, and a significant land use impact is not expected to occur.

In 2007, approximately 71% of total land acreage in Freestone County was devoted to farming, including 1,473 farms and ranches covering 399,584 acres. Of this, 236,291 (59%) were devoted to pasture (permanent pasture and rangeland other than cropland and woodland pasture), 80,055 acres (20%) to cropland, and 74,191 acres 1(9%) to woodlands. The remaining farmland (9,047 acres) is devoted to farmsteads, buildings for livestock, ponds, roads, and wasteland (Reference 9.3-9). Freestone County was selected as the representative county in the Limestone site evaluation since the majority of the affected acres that would be impacted are in Freestone County.

The proposed plant site lies within a larger 3,000 acre area that is currently permitted and operating as a lignite coal mine (in Leon County). There is also active oil and gas drilling conducted in the area. The region surrounding the Limestone plant site is a rural area that consists primarily of undeveloped agricultural property and the surface lignite mining operations to the south and east (Reference 9.3-71). There are no local zoning districts or development standards in effect in the area of the proposed plant site or utility corridors (Reference 9.3-70).

The proposed plant site consists mostly of open land. The site and general area around the site are located in a rural area where land use has been dominated historically by ranching, gas well activities, and lignite mining activities. The plant site contains unimproved roads and structures related to gas well activities. The southern part of the proposed plant site consists of land that was previously surfaced mined but has since been reclaimed and is currently used as pasture land and for hay production. Much of the northern part, including the proposed 3200 acre reservoir (located in Freestone County), has not been mined and is currently wooded, primarily with deciduous trees (e.g., oak, willow) and scrub pine. The central part of the site includes a 21-acre white rock pad area used as a contractor staging area, storage for mining, and hay baling equipment, pipe-fusing area and general outdoor storage. In addition to two gas wells on the proposed plant site, nine gas gathering lines, one gas transmission line, and 12 other gas lines traverse the area, four of which traverse the proposed plant site (Reference 9.3-70).

As specific site locations and plant design layouts have not been finalized, specific acreage impacts cannot be determined for the sites under consideration. However, the following presents the general land uses for an area approximately 3,500 acres in size at the Limestone site where the main plant site and reservoir could be located. The acreage estimates are combined for the plant site and reservoir areas and are based on percentage breakouts from Google Earth imagery using best professional judgment (Reference 9.3-72).

Land Cover Class	Area (acres)	Percentage of Site
Forested (scattered throughout open fields), including potential for forested wetlands along Lynn Creek (< 10 acres)	1,700	49%
Reclaimed mine land/pasture land	920	26%
Developed areas (existing plant, drill pads)	75 (5 in reservoir area)	2%
Cleared ag land	800	23%
Water resources/freshwater ponds	5	0.1%

Additional information pertaining to wetlands is found in Section 9.3.3.6.5 (Aquatic Ecology).

Additional acreage (up to several hundred acres) that would be required for construction activities (e.g., laydown areas) also includes a mixture of forest and open fields, although cleared land would be used to the greatest extent possible. However, the impact on this acreage would be temporary. Following construction activities, impacted areas without constructed buildings or transportation infrastructure would be reclaimed to the greatest extent feasible.

Project construction would have a long-term impact on the current uses of forested and grasslands and on any oil and gas activity in the area, although much of the site area currently includes industry (Limestone plant and lignite mine). Onsite impacts from construction of the power plant and potential reservoir at the Limestone site would be SMALL to MODERATE, depending on the final size of the reservoir and the extent to which undisturbed (primarily forested) lands are affected.

Specific routing of transmission lines has not yet been identified, but rough estimates of requirements for new transmission lines have been developed. The feasibility of using existing infrastructure is dependent on the available capacity remaining in the system. If sufficient capacity is not available, either existing rights-of-way would be expanded to accommodate additional transmission lines or new rights-of-way would be obtained and transmission lines constructed. Expansion of existing rights-of-way is expected to result in small environmental impacts while construction in new rights-of-way could result in moderate impacts.

The proposed site is approximately 1 mile east of the existing Limestone power plant where multiple 345kV connections exist. Based on 5 miles of corridor and a 200-foot width, installation of new lines would impact approximately 24 acres. Once at the Limestone Plant, it is assumed that the lines could parallel the existing ROW (with potential need for expansion). Construction of the transmission lines would be expected to comply with all applicable laws and regulations, permit requirements, and use of best construction practices. Given this and the short distance to the interconnection point, construction impacts to offsite land use would be SMALL.

Impacts associated with construction of pipelines to deliver plant cooling water to the reservoir/plant site and transportation rights-of-way (both road and rail) would also be realized at the Limestone site. The following are estimates of the length of new pipeline, rail, and road rights-of-way to be constructed:

- Rail: 0 miles given existing rail line to Limestone plant forms northern border of site
- Cooling water intake/discharge (64 miles) from/to the Trinity River and new reservoir, 582 acres (based on 75-foot ROW width)
- Access road: 0 miles given the western site boundary is FM 39; no new transportation corridors were assumed in the FutureGen EIS.

Additional transportation volume also could require the expansion of some existing local roads. Shift schedules could be planned so that shift changes at the co-located facilities would not coincide with each other. Impacts from constructing road access to the site would be small.

Construction at the proposed pipeline corridors would have temporary, minor effects on land use during actual construction due to trenching, equipment movement and material laydown. The ability to use current lands for their existing uses (ranching, gas production), along each of the proposed pipeline corridors would be temporarily lost during construction. Construction of any proposed project related transportation infrastructure requiring compliance with any regulations would be coordinated with the appropriate county as deemed necessary.

In summary, offsite impacts from transmission line construction and transportation infrastructure, which would affect an estimated 24+ acres of land, would be SMALL at the Limestone site.

Operational impacts to site land use would include a permanent change in land use of 3,500 acres of land for the power plant site and reservoir – that would be generally unusable for other purposes. The proposed plant would be compatible with land uses near plant site because majority of land in the area is used for industrial purposes (coal production, ash management, power production, and gas well activities). Other than these comparable operations, little other development is present in the site area.

In addition, operational impacts to the site and immediate vicinity would include maintenance operations on existing structures and would be small and temporary in nature.

Operational impacts of transmission lines result primarily from line maintenance, and include right-of-way vegetation clearing, transmission line maintenance, and other normal access activities. Maintenance activities would be limited to the immediate right-of-way and would be minimal. Corridor vegetation management and line maintenance procedures would be established by transmission service provider. Given rural setting and low population density along transmission corridors, operational impacts to land use along ROWs would be SMALL.

Other offsite land use impacts as a result of plant operational activities would be minimal, temporary, and limited in the area impacted. Such activities could include pipeline, road, and rail maintenance and auxiliary building maintenance. It is likely that most lands above the proposed water intake and discharge pipelines and related areas of construction could continue to be used for ranching, farming and any passive uses. Any existing or future subsurface activities (e.g., gas drilling or mining) would not be possible in the immediate utility corridor once the utilities were installed.

In summary, land use impacts at the site and immediate vicinity from plant operation, including the new reservoir, are predicted to be SMALL; and impacts from transmission line maintenance and transportation infrastructure maintenance are predicted to be SMALL.

With respect to potential cumulative impacts with the Unit 3 expansion at the existing Limestone coal plant, the new coal unit (Unit 3) will be constructed adjacent to the existing Units 1 and 2 so that it will be located on land already in use for electrical generation. It would also rely on much of the existing infrastructure at Limestone to minimize the amount of space required for expansion. Potential cumulative impacts relating to land use would be expected to be minimal, and the overall impact characterization level would be SMALL.

9.3.3.6.2 Air Quality

Air quality impacts associated with plant construction include both impacts from the construction activities themselves and transportation impacts from workers commuting to the worksite. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities, including a preconstruction air permit from the TCEQ (Reference 9.3-10). The air permits would ensure both construction and operational emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-11).

Air quality impacts from construction activities are similar to those for any large-scale construction effort and consist of fugitive dust emissions, emissions from equipment and machinery, and emissions from concrete batch plant operations. Fugitive dust emissions can be controlled through use of water sprays and postponing certain activities during windy conditions. Equipment emissions can be controlled through equipment inspections and regular maintenance. Concrete batch plant operations would employ equipment emissions controls to minimize air quality impacts. Specific mitigation measures would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment. In total, air quality emissions from construction activities would be small and temporary and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from the construction workforce commuting to the worksite. Vehicular emissions would increase as a result of the action. It is unlikely that air quality would be noticeably degraded beyond the immediate site vicinity. Air quality impacts would be more detrimental in areas already exceeding the NAAQS for criteria pollutants. Texas has no nonattainment areas for carbon monoxide, nitrogen dioxide, ozone (1-hour), sulfur dioxide, particulate matter (less than 2.5 micrometers [$PM_{2.5}$]), or lead. Part of El Paso County, Texas is in nonattainment for particulate matter (less than 10 micrometers [PM_{10}]); however, this county is in the extreme western portion of the state and is not located near the Limestone site. The Dallas-Fort Worth area holds non-attainment status for ground-level ozone under the 8-hour standard. Counties affected under this status include Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant (Reference 9.3-12).

As the Limestone site is located outside of the affected counties and vehicular transportation is not expected to significantly increase across the affected counties as a result of the construction activities, impacts are expected to be SMALL.

Air quality impacts associated with plant operation include both impacts from the plant operational activities themselves and transportation impacts from workers commuting to the plant. Operating activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Air quality impacts from operational activities result from releases of heat and moisture to the environment from cooling operations and emissions from the operation of auxiliary equipment. A closed-cycle cooling system will be used for Limestone, using either cooling towers or a cooling water reservoir. Thermal discharges resulting from these systems will be to the reservoir and/or to the atmosphere.

Cooling tower operation often results in drift, or the transport of residual salts and chemicals through water droplets carried out of the cooling towers. Based on a review of the measurements of deposition of draft from nuclear power plants (Reference 9.3-13), measurements indicate that, beyond about 1.5 km (1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Auxiliary equipment may also be operated on an intermittent basis. Auxiliary equipment emissions can be controlled through equipment inspections and regular maintenance. Small amounts of ozone and smaller amounts of oxides of nitrogen are produced by transmission lines (Reference 9.3-14). Production of ozone and oxides of nitrogen are insignificant and does not measurably contribute to ambient levels of those gases (Reference 9.3-13). In total, air quality emissions from operational activities would be small and can be mitigated to minimize any resulting impacts.

Air quality impacts would also result from increased emissions from the workforce commuting to the plant. However, as the Limestone site is located outside of the affected counties in non-attainment for criteria pollutants, and vehicular transportation is not expected to significantly increase across the affected counties as a result of plant operation, impacts are expected to be SMALL.

With respect to potential cumulative impacts with the Unit 3 expansion at the existing Limestone coal plant, the new unit would use low-sulfur coal as its fuel source and best available technology to minimize emissions. Specifically, it will be equipped with nitrogen-oxides burners/over-fire air and selective catalytic reduction for NO_x control, flue gas desulfurization for sulfur dioxide control, and a fabric filter baghouse for particulate control. Emissions of mercury will be reduced through a combination of controls expected to result in emissions below regulatory requirements. Air emissions from the proposed nuclear facility would be minimal. Potential cumulative impacts relating to air quality would be expected to be minimal, and the overall impact characterization level would be SMALL.

9.3.3.6.3 Hydrology, Water Use, and Water Quality

Water-related impacts associated with plant construction include both water use impacts and water quality impacts and are consistent with those caused by typical large-scale construction projects. Construction activities would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

STPNOC estimates that groundwater would be used at a peak or maximum rate of approximately 1,200 gpm (ER Section 2.3.1.2.6) during construction with normal demands being much less than maximum use. Groundwater would be used during construction for personal consumption and use, concrete batch plant operation, concrete curing, cleanup activities, dust suppression, placement of engineered backfill, and piping hydrotests and flushing (ER Section 2.3.1.2.6).

In summary, due to the relatively small water quantity requirements and the availability of groundwater or imported water, the sites will have a SMALL impact on water use for construction activities.

Water quality impacts from construction activities would primarily result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from construction activities would be regulated and would require obtaining TPDES or other discharge permits. Regulated discharges would not be expected to significantly impact local drainages or other surface water bodies. Additionally, significant hydrological alterations are not anticipated at the Limestone site. Therefore, impacts to water quality will be SMALL.

Water-related impacts associated with plant operation include both water use impacts and water quality impacts. Plant operation would require obtaining Federal, state, and/or local permits and approvals prior to beginning activities.

Plant operational activities consume water through plant cooling and personal (sanitary) uses. Overall use of water is dominated by plant cooling uses for wet-cooled plants. A closed-cycle cooling system will be used for Limestone, using either cooling towers or a cooling water reservoir. The assumed maximum plant cooling design consumption for a two-unit plant is 50,000 acre-ft/yr (31,000 gpm, 69.1 cfs). The necessary water rights for this cooling water requirement from the Trinity River are not presently owned by STPNOC and would need to be acquired. Unappropriated flows are available for a new application 25-50% of the months (Reference 9.3-22). Active industrial, irrigation, and mining uses were considered as potentially available for water rights sale/transfer – municipal/domestic, hydroelectric, navigation, recreation, recharge, and storage uses were not considered viable water rights for sale/transfer. At present, there are 475 water rights owners in the Trinity Basin that are industrial, irrigation, or mining uses totaling 1,168,745 acre-ft/yr (Reference 9.3-23). Assuming no unappropriated flows exist, the new plant would need to acquire 4.3% of these existing water rights. Acquisition of these water rights would result in a SMALL to MODERATE impact on water use for operational activities.

Cooling tower operations result in the concentration of dissolved solids in the water stream, resulting from evaporation loss, which must occasionally be discharged and replenished with freshwater. The discharged water (blowdown) would be of lower quality than the source water. Cooling tower blowdown would be discharged to the reservoir and/or the Trinity River as necessary. The concentration of total dissolved solids in the cooling tower blowdown averages 500 percent of that in the makeup water, a concentration factor that can be tolerated by most freshwater biota (Reference 9.3-13). Additionally, a TPDES permit would be required to discharge effluents, and any unforeseen water quality impacts could be addressed during periodic permit renewals.

Water quality impacts could also result from erosion and stormwater effects, and activity mitigation requirements would be stipulated through TPDES permits obtained for the action. Standard best management practices could be implemented to minimize the impacts of erosion and stormwater runoff. Any wastewater discharges from operational activities would also be regulated and would require obtaining TPDES or other discharge permits.

Therefore, due to the regulatory conditions associated with the operational activities, impacts to water quality will be SMALL.

With respect to potential cumulative impacts with the Unit 3 expansion at the existing Limestone coal plant, the new unit would use dry cooling to conserve area water resources; dry cooling is expected to reduce water usage at Unit 3 to approximately one-sixth of the water used by a traditional coal plant. The proposed nuclear plant would be a closed cycle system and located on a different water source than the existing Limestone station. Potential cumulative impacts relating to water resources would be expected to be minimal, and the overall impact characterization level would be SMALL.

9.3.3.6.4 Terrestrial Resources Including Threatened and Endangered Species

For the Limestone site, it is assumed that construction of two units and a reservoir would disturb up to 3,500 acres of land, with approximately 300 acres required for permanent structures and facilities including plant footprint and support buildings, and switchyard; and up to 3,200 acres for a new reservoir. This is exclusive of the land required for development of transmission lines, water pipelines, rail or road access, which are estimated to impact an additional 24 acres. All acreage not containing a permanent structure would be reclaimed to the maximum extent possible.

The proposed plant site and surrounding area are located in Freestone, Limestone, and Leon Counties within the Post Oak Savannah Vegetational Areas of Texas. Originally, the two dominant species – post oak and blackjack oak – were scattered throughout tallgrass prairies. The suppression of natural fires and other disturbances has contributed to development of oak and hickory which are now dispersed among improved or native pastures. Although the region was previously cropped, many areas have returned to native vegetation or developed into managed pastures for livestock operations.

Upland woodland forest includes post and blackjack oak, black hickory, winged elm, sassafras, and eastern red cedar. Prairie grasses common to the area are indiangrass, little bluestem, silver bluestem, Texas wintergrass, switchgrass, purpletop, and beaked panicum. Much of the grassland community has been converted to improved pasture grasses for grazing or hay production. Typical species in the improved pastures include Bermuda grass, dallisgrass, and bahiagrass. Water oak, cedar elm, American elm, black gum, river birch, box elder, pecan, and Carolina basswood are the predominant tree species in the riparian woodlands. Common understory and shrubs include deciduous holly, coralberry, red mulberry, flowering dogwood, American holly and eastern redbud. Groundcover is dominated by small-flowered creek oats, poison ivy, peppervine, and Virginia creeper.

Much of the site area includes the Jewett Mine where mine owners have previously conducted detailed vegetation studies. Data collected from these studies indicate that the predominant vegetation type is Upland Hardwood Forest (47 percent), followed by Grasslands (44 percent), Bottomland/riparian forest (5%), hydric habitat (3%) and aquatic habitat (1%) (Reference 9.3-70). The dominant vegetation types on the proposed site include Post Oak Woods/Forest and Grassland Mosaic. Characteristics species of these communities include post oak, blackjack oak, eastern red cedar, honey mesquite, black hickory, live oak, cedar elm, hackberry, little bluestem, silver bluestem, hackberry, supplejack, greenbriar, sand lovegrass, three-awn, green sprangletop, and tickclover (Reference 9.3-70).

The immediate site area contains unimproved roads and structures related to gas well activities. The southern part of the proposed plant site consists of land that was previously surfaced mined but has since been reclaimed and is currently used as pasture land and for hay production. Much of the northern part, including the proposed 3,200 acre reservoir (located in Freestone County), has not been mined and is currently wooded, primarily with deciduous trees (e.g., oak, willow) and scrub pine. The central part of the site includes a 21-acre white rock pad area used as a contractor staging area, storage for mining, and hay baling equipment, pipe-fusing area and general outdoor storage (Reference 9.3-70).

Construction of the new plant and reservoir would affect up to 3,500 acres of land that currently includes forest (estimated at 1,700 acres), including some forested wetlands; pasture land, including reclaimed land (estimated at 1,720 acres), minimal surface water resources (intermittent streams and ponds) at 5 acres, and 75 acres of developed lands. Of the 300 acres permanently impacted at the power plant site, the majority would occur on previously disturbed lands.

Other temporary impacts from plant construction, such as erosion and dust generation, would be temporary and typical of large construction projects. These impacts could be mitigated using standard industrial procedures and best management practices. Standard practices, such as silt fences to control sedimentation and water sprays to limit dust generation, would protect ecological resources in the site vicinity.

The majority of land disturbance, including proposed reservoir construction, would occur in Freestone County. Federal, state, and other sensitive species in Freestone County have been identified previously for the Trinity 2 Site. Since the site actually encompasses portions of Leon and Limestone Counties, lists of federal and state protected species that could occur in these counties were also reviewed but no additional species were identified except for the threatened Louisiana black bear which could occur in Leon County, and the white-faced ibis (state threatened) in Limestone County. Federal species include three birds (interior least tern, piping plover, whooping crane – USFWS listing), one mammal (Louisiana black bear), one amphibian (Houston toad), and two plants (large fruited sand-verana and Navosota ladies' tresses) (References 9.3-53 and 9.3-73). Additional State listed (threatened) terrestrial species include: six birds (American peregrine falcon, bald eagle, and peregrine falcon which are delisted Federal species; white-faced ibis, Bachman's sparrow, and wood stork); and two reptile species (Texas horned lizard and

Timber/Canebrake rattlesnake) (Reference 9.3-53 and 9.3-73). Table 9.3-6 provides a complete listing of Federal and State protected species in Freestone, Leon and Limestone Counties with their listing status and common and scientific names. No critical habitat or other sensitive habitats have been identified in the site area.

With respect to the Houston toad, surveys for the Houston toad within the Jewett mine site have been conducted on numerous occasions with no observations of toads. USFWS concurred that the Houston toad is unlikely to occur in the vicinity of the Jewett Mine; therefore it is unlikely to occur on the proposed plant site, utility corridors, or within the site area. The Houston toad, a protected species in Freestone, Limestone and Leon Counties, breeds in shallow bodies of water that persist long enough (30-60 day) for egg hatching and metamorphosis to occur (Reference 9.3-70).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site, in the proposed reservoir area, and along associated transmission, pipeline and transportation (e.g., rail spur) corridors. In addition, construction-related land clearing and reservoir development would be conducted according to federal and state regulations, permit conditions and established best management practices. This would include consultation with the appropriate resource agencies and development of appropriate mitigation measures where required to minimize potential impacts to sensitive resources.

In terms of habitat loss from constructing a new nuclear power plant and reservoir, the impacts to terrestrial resources, including threatened and endangered species would be SMALL in the area of the facility footprint, and MODERATE to LARGE at the reservoir location, given the potential for impacting up to 1,700 acres of forested land and the total number of protected species that could potentially occur in the area.

Potential impacts from construction of transmission, rail and access road corridors would be minimal given the site's proximity to existing infrastructure at the adjacent Limestone plant. Impacts to terrestrial resources from construction of transmission corridors, rail and access road would be SMALL. In addition, land clearing associated with construction of the makeup water intake line to the river could result in short-term displacement of species within that corridor.

As noted previously, it is assumed that the proposed new units would employ a closed cycle cooling system that would potentially use cooling towers. Impacts to terrestrial resources that may result from operation of two new nuclear units include those associated with cooling tower drift and bird collisions. The principal environmental concern with cooling tower drift impacts is related to the emission and downwind deposition of cooling water salts. Salt deposition can adversely affect sensitive plant and animal communities through changes in water and soil chemistry.

The impacts of cooling tower drift on crops, ornamental vegetation, native plants, birds, shoreline habitat and protected species were evaluated previously in NUREG-1437 and found to be small for all plants, including those with multiple cooling towers of various types (Reference 9.3-13). Measurements indicated that, beyond about 1.5 km

(1.0 mi) from nuclear plant cooling towers, salt deposition is not significantly above natural background levels. Additionally, no instances of nuclear power plant cooling tower operation resulting in measurable productivity losses in agricultural crops or measurable damage to ornamental vegetation have been identified (Reference 9.3-13).

Given the small area of impact expected from drift, the absence of critical habitat in the site area, and the fact that most of the site area has been previously cleared, ecological impacts from cooling tower drift during plant operation at the Limestone site would be SMALL.

In addition, creation of a new reservoir to support plant operation would provide new habitat for birds/fowl that would not be adversely affected by plant operation.

Finally, with respect to potential cumulative impacts with the Unit 3 expansion at the existing Limestone coal plant, as discussed under land use, the planned expansion would be located on land already in use, and would rely on much of the existing infrastructure at Limestone to minimize the amount of space required for expansion. The proposed nuclear facility would also be constructed on land that has mostly been disturbed and no sensitive resources are known to occur on the proposed site. Potential cumulative impacts relating to terrestrial resources would be expected to be minimal, and the overall impact characterization level would be SMALL.

9.3.3.6.5 Aquatic Resources Including Threatened and Endangered Species

The only surface waters on the proposed power plant site are three small creeks and a few man-made holding ponds. Aquatic invertebrates expected to be found in the streams and ponds of the proposed site include a variety of insects, crustaceans, mollusk, and segmented worms. No fish are expected to occur on the onsite streams because they are intermittent. Any fish species found within the man-made impoundments on the proposed plant site would be the result of land-owner stocking (Reference 9.3-70).

Impacts on the aquatic ecosystem from construction of a new nuclear power plant at the Limestone site would be associated primarily with construction of a new reservoir, and construction of intake and discharge pipelines to the Trinity River. The most significant environmental impacts would be from creation of a new 3,200-acre reservoir which would inundate the natural habitat along existing drainages in the proposed reservoir area (e.g., Lynn Creek and Dry Creek). Flows in these smaller drainages are assumed to be intermittent with any fishery resources limited to seasonal flows. No major creeks, rivers or large impoundments are located in the site area although Lake Limestone is located within a couple of miles to the northwest/west (tip of one arm of the lake is located within a mile of the site). Lake Limestone would not be used to support cooling and therefore would not be impacted by construction (or operation) of the new plant and reservoir.

Portions of wetlands, ponds and channels within the proposed power plant site have been previously disturbed as part of the Jewett Surface Lignite Mine Operation. Most of Red Hollow Channel along the site's eastern boundary has been modified for mine drainage with the inclusion of two impoundments for sedimentation control. A portion of an original branch of the Red Hollow Channel extends to a small, on-channel pond near the northern part of the proposed site. Two small wetland areas are located in a pasture in the western part of the southern half of the proposed site. These wetlands are isolated and non-jurisdictional. Total wetland area is estimated to be 2 acres of low quality palustrine wetland, 0.1 acre of medium quality palustrine wetland, and 18 acres of low quality ponds of questionable jurisdictional status (Reference 9.3-70).

The majority of wetland features within a mile of the site, including the proposed reservoir area, are categorized as man-made upland stock pond. These are generally of low quality due to previous mining activities. However, Lynn Creek would be considered jurisdictional waters of the U.S. under Section 404 of the CWA even though it has been modified by mining activities. Five palustrine forested wetlands are identified with Lynn Creek (Reference 9.3-70). A detailed wetlands assessment and study will be required in order to obtain the appropriate permits from the USACE to construct the reservoir.

The proposed project could result in localized, direct, and adverse construction impacts to wetlands. Filling in or modifying portions of wetlands, if avoidance is not feasible, would permanently alter hydrologic function and wetland vegetation and result in direct habitat loss. Potential habitat degradation of wetlands and waters downstream could also occur if flow to adjacent areas is reduced. Construction impacts would be mitigated by minimizing areas disturbed and preventing runoff from entering wetlands during construction. Mitigation for wetland loss would also likely be required but the exact amount is not known at this time.

Construction activities for a new cooling water intake and discharge structures on the Trinity River include: dredging, construction of cooling towers (if required), and onsite impacts on water sources, and pipeline construction. Aquatic resources in the immediate site area have been described previously. Existing aquatic resources in the Trinity River, and potential impacts to these resources from construction of intake and discharge pipelines from the Limestone site, are expected to be similar to those described for the Trinity 2 site (ER Section 9.3.3.4.5), although the length of intake and discharge pipelines would be longer at the Limestone site since it is farther from the river.

Dredging should be localized and temporary. While it would result in increased turbidity, the effects would be temporary and dredging operations would be in compliance with the USACE and State water quality requirements so that long-term water quality is not degraded. Construction of the trenches for the intake and discharge pipelines from the water to the site could lead to temporary soil erosion and increased turbidity in any onsite water sources. All construction impacts from construction related to the reservoir/cooling towers and onsite impacts on water resources (e.g., from dewatering effluent and runoff), such as erosion and sedimentation into the water resources, could be mitigated using standard industrial procedures and best management practices. Pipeline construction impacts would be temporary and would also incorporate best management practices. Pipes would be buried, so there would be no permanent alteration of water flow patterns in the floodplain.

Based on a review of threatened and endangered species databases generated by the TPWD and USFWS, there are no protected aquatic species within the proposed power plant site or surrounding area. The smalleye shiner, a candidate fish species, could occur in Limestone County. However, because the fish is endemic to the Upper Brazos River and its tributaries (Reference 9.3-53), where no proposed construction activities would occur, the shiner would not be expected to be impacted by the project. State protected species include the alligator snapping turtle that does have the potential to occur in the site area (Reference 9.3-70) (see also Table 9.3-6).

Field surveys would be conducted for threatened and endangered aquatic species as part of the permitting process prior to any clearing or construction activities at the site and in the proposed reservoir area. In addition, construction-related land clearing would be conducted according to federal and state regulations, permit conditions and established best management practices.

In summary, impacts from construction of a new reservoir would affect a large area (up to 3,200 acres). However, the affected drainages are assumed to be intermittent with limited aquatic resources and no Federally protected threatened or endangered species are present. A state threatened species may be present and high quality wetlands would also be impacted. With respect to onsite impacts from construction of the nuclear power plant facilities, much of the immediate site area has already been disturbed and existing aquatic resources are also limited. Construction impacts would be temporary and incorporate best management practices. Given this, impacts to aquatic resources, including wetlands and threatened and endangered species, from construction of nuclear power facilities at the Limestone site would be SMALL at the power plant site, and MODERATE at the reservoir location.

Potential impacts from plant operation are expected to be similar at all of the alternate sites (see discussion for Red 2, ER Section 9.3.3.2.5). In summary, potential impacts to aquatic resources from plant operation primarily include those from water intake (i.e., impingement and entrainment), and discharge of heated effluents (heat shock). Additional concerns could include: physical changes to aquatic systems from storm water collection, and accumulation of contaminants in sediments or biota and thermal plume barrier to migrating fish.

Final design of intake and discharge systems will consider potential impacts on aquatic organisms under EPA regulations implementing Section 316(b) of the CWA. Use of a cooling water reservoir or cooling towers is a mitigation measure for reducing impacts from impingement and entrainment; they use relatively smaller volumes of makeup water in comparison to once-through cooing systems. Characteristics of thermal discharge into the river also would be reduced through use of a cooling tower or reservoir system. It is assumed that system designs at each site would use intake and cooling tower designs that would minimize operations impacts to aquatic resources, including threatened and endangered species. The potential for environmental impacts to aquatic resources, including threatened and endangered species, from nuclear power facility operations at the Limestone site, would be SMALL.

With respect to potential cumulative impacts with the Unit 3 expansion at the existing Limestone coal plant, the planned expansion would be located on land already in use, utilize dry cooling to minimize water requirements and utilize a different water source than the planned nuclear facility. Only one listed aquatic species (reptile), the state-threatened alligator snapping turtle, has the potential to occur in both projects. Field surveys would be conducted as part of the permitting process prior to any clearing or construction activities at each site and in the proposed reservoir area. In addition, all ground disturbing activities would be conducted according to federal and state regulations, permit conditions and established best management practices. Potential cumulative impacts relating to aquatic resources would be expected to be minimal, and the overall impact characterization level would be SMALL.

9.3.3.6.6 Socioeconomics

This section addresses impacts from the projected in-migrating population on the region and on local populations at the Limestone site. Specifically, the evaluation considers potential physical impacts and impacts to demography, local economy, tax revenues, housing, public services, education, recreation, and transportation and identifies those notable community characteristics that would be impacted at a given site. The preferred and alternative sites currently meet the population requirements of 10 CFR 100. The population distribution near each site is low with typically rural characteristics.

Using the same assumptions as used in the evaluation of the STP site in ER Section 9.3.3.1.6, and applying the same in-migrating population totals to the two-county area for Limestone as were applied to STP, construction of the two nuclear units at the Limestone site would result in a total in-migrating population of 5,866 persons (workers and families) into Freestone County, including 2,077 workers; and a total in-migrating population of 2,118 persons (workers and families) into Limestone County, including 750 workers.

Some of the key assumptions used in the analyses for all of the sites are provided below for easy reference:

- 50% of the peak construction workforce will in-migrate (3,405 workers) to the site region
- 80% of these workers bring their families (3.28 average family size)
- Socioeconomic impacts will be most evident in a two-county area, where 83% of the in-migrating workforce and their families are expected to reside, with the following split: 61% will reside in the site host county and 22% will reside in an adjacent county. Note that these percentages are consistent with the breakout of the current operations workforce at STP.

- The remaining 17% of in-migrating workers will be distributed across other counties in the region, where the expected influx in each county represents a very small percentage of that county's population and impacts would be expected to be SMALL.

While the Limestone site is in a rural, low population area, there is sufficient population residing within commuting distance in the neighboring counties – including McLennan County which includes the City of Waco – from which to draw 50% of the estimated construction workforce within commuting distance of site. Note that the Limestone site actually straddles three counties: Freestone (where majority of the affected land is located), Leon and Limestone. Limestone was included rather than Leon in the two-county region of influence since it has a slightly greater population than Leon.

Physical Impacts

Physical activities from construction activities include noise, odor, vehicle exhaust, vibration, shock from blasting, and dust emissions. These have been described in more detail for the Red 2 site (ER Section 9.3.3.2.6) and are expected to be similar for Limestone which is also a greenfield site. In summary, construction activities would be temporary and occur mainly within the boundaries of the site. Offsite impacts would represent small incremental changes to offsite services supporting the construction activities. Note that in the case of the Limestone site, development at the site would add air and noise emissions to existing air and noise emissions associated with the nearby Limestone power plant and lignite mining operations. However, because the Limestone site, although a greenfield site, is located in an industrial area, activities at both plants would be in compliance with the necessary federal, state and local permits. Therefore, with respect to physical impacts, impacts from construction activities, including potential cumulative impacts, are expected to be SMALL.

Physical impacts from operation, as described for the Red 2 site (ER Section 9.3.3.2.6), are also applicable to the Limestone site, with the exception of potential impacts on aesthetics. With respect to aesthetics, any new units would be closed systems that would likely include cooling towers. Visible plumes resulting from cooling tower operation also could cause negative aesthetic effects. For the Limestone site that is already located in an industrial area (existing Limestone power plant and lignite mine) that include smokestacks, additional towers for two new reactors would not be expected to significantly change the existing appearance of the site. The impacts would be SMALL. It is also assumed that during plant layout, every effort would be made to locate the towers in an area isolated from area view points to the maximum extent possible.

Demography

Based on an estimated total in-migrating population of 9,616 into the multi-county region, and a total in-migrating population of 5,866 and 2,118 into Freestone and Limestone counties, respectively, the percent increases in population would be as shown in Table 9.3-7. Potential increases in population during construction of the proposed project within the multi-county region are also presented. The individual impacts to each county would include an increase of 32.8% in Freestone County (host county), and an increase of 9.6% in the adjacent Limestone County. The potential impacts would be LARGE in Freestone County and MODERATE in Limestone County. Should the in-migrating population be more evenly distributed between the host and adjacent counties, the resulting population increase in the combined two-county area would be 20%, or a LARGE impact on the two-county area. Finally, impacts to the multi-county region include a 3.4 percent increase in population, or a SMALL impact on the region. Note that all impacts would be temporary and are based on conservative 2000 U.S. Census Bureau population levels. A comparison to the estimated 2008 population for Freestone County (18,923, a 5.9% increase), results in a slightly reduced percentage increase (31%); however, the potential impacts to the host county would still be considered LARGE. Factoring in the 2008 population for Limestone County (22,192), impacts to the two-county area would be just over 19.4%, and impacts would remain LARGE.

With respect to demography, the addition of two new units at Limestone is assumed to require an operations workforce of up to 600 employees (1,200 total, based on existing workforce for STP Units 1 & 2). While part of the operational workforce at each site is expected to relocate into the region, their numbers are small when compared to those in-migrating for construction, and many could presumably occupy housing vacated by construction workers. Assuming a small in-migrating operations workforce is evenly distributed within in the region, the demographic impacts are expected to be SMALL when compared to the total base population within the region for each site. Should the majority of the in-migrating population choose to live in the two-county area surrounding the site, the impacts would be SMALL at Limestone, given its rural location.

Local Economy and Taxes

Impacts relating to the economy and taxes from construction of the Limestone site would be expected to be similar to those described for the STP and Red 2 sites. In general, construction of two new units would result in direct construction jobs and increased spending in the region by the workers and through the purchase of non-labor goods and services to support construction; and plant induced increases to local tax receipts are considered beneficial.

Similar to the conclusions reached for the STP site, impacts to the economy are generally BENEFICIAL and would be expected to be LARGE in the host county (Freestone) as the site of the construction and the county where most of the construction labor force would reside. The magnitude of the positive economic impacts would become more diffuse as a result of interacting with the larger economic base of other counties. The host and surrounding counties are very rural, although there is some other industry nearby (e.g., Limestone Generating Plant). Impacts to the region would be expected to be SMALL to MODERATE and BENEFICIAL.

Over the longer term, and applying the same assumptions as developed for the STP site where 50% of the in-migrating workforce would migrate out following completion of construction, impacts to the local area could be negative. Freestone County would be the most affected county, based on the estimated distribution of the in-migrating workforce (61% to Freestone County and 22% to Limestone County). STPNOC concludes that the impacts of construction on the economy of the region would be SMALL everywhere in the region, except Freestone County, where the impacts of an in-migrating construction labor force and the negative impacts of the departing labor force (upon construction of completion) could be MODERATE to LARGE impacts. Mitigation would be warranted. The same measures would be implemented as described for the STP site.

With respect to potential construction impacts on taxes, STPNOC's past experience at existing STP Units 1 & 2 is that they have had a significant and beneficial impact on the well being of the Matagorda County where STP Units 1 & 2 now reside. In conclusion, given the rural area surrounding the Limestone site, the property tax base represented by a new nuclear facility at Limestone would be expected to represent BENEFICIAL and LARGE impact to Freestone County and to local entities within the county, and SMALL to MODERATE to the region (given the absence of a major metropolitan area within 50 miles), and SMALL to the state of Texas.

With respect to social and economic impacts from operation, these would also be similar to those described for the Red 2 site (ER Section 9.3.3.2.6). Socioeconomic impacts of operation relate primarily to the benefits afforded to local communities as a result of the plant's presence (e.g., tax plans, local emergency planning support, educational program support). The continued availability (and potential expansion at each nuclear site), and the associated tax base is an important feature in each host county's ability to continue to invest in infrastructure and to draw industry and new residents.

One potential negative impact of developing the Limestone site for a nuclear power plant, however, is the inability to access mineral resources beneath the site if a future need was identified. The Limestone site is an area of potential and historic mineral development (active lignite mining adjacent to Limestone and evidence of extensive oil and gas drilling in the general site area). Acquisition of the Limestone site for development of nuclear power would require STPNOC to purchase the mineral rights in addition to the land in order to protect plant operations from future subsurface disturbances. However, this also means that any valuable resources found beneath the site (not yet determined) could not be extracted to fulfill future needs (e.g., energy needs). In addition, there is the potential that some active drilling operations/wells in the site area would get displaced (or shut down) if the Limestone site were selected. This could lead to a loss of some jobs in the area from oil or gas exploration. However, it is assumed that the owner would be able to plan for the loss of mineral rights, and workers could find employment at the new plant (e.g., construction) or at other oil/gas exploration locations. Overall, however, the net economic benefits from plant operation are considered to be positive.

In summary, the economic impacts from operation of two nuclear units at the site would result in BENEFICIAL and LARGE impacts, particularly to the local economies. The impacts to the regional economies would be expected to be MODERATE at Limestone where the new plant (along with the existing Limestone coal plant) would play a significant role in the regional economy.

Infrastructure and Community Services

Transportation

The Limestone site is located at the juncture of Limestone, Freestone, and Leon Counties. The site area is served by I-45, US-79, US-84, SH-164, FM 39, and FM 80. The site is located approximately nine miles west of I-45 which provides primary access to the area. The site is located directly off of FM 39. Development of the Limestone site would add commuters, deliveries, and congestion to the existing and significant workforce and delivery system associated with the Limestone power plant and lignite mining activities located adjacent to the site, as well as local residents and recreational users of Lake Limestone. In addition, a portion of FM 80 or other unimproved roads north of the plant site area may need to be relocated to accommodate construction of a potential new reservoir at the site, depending on the final sizing and location of the reservoir. At a minimum, road use may be restricted during periods of construction.

Given the rural nature of the site area, construction impacts on transportation, especially potential cumulative impacts from commuting workforces at both plants and recreational users around Lake Limestone (which supports several parks and campgrounds), would be LARGE. Mitigation measures for the access road and surrounding roads may be required, including the potential widening of FM 39 to accommodate increased traffic. Other mitigation measures might include installing traffic-control lighting and directional signage, creating two entrances to the site to alleviate traffic at the primary plant entrance, shuttling construction workers to and from the site, encouraging carpooling, and staggering shifts to avoid traditional traffic congestion time periods.

Transportation impacts from operation at all sites would be significantly less than construction since the operations workforce and daily plant deliveries would be significantly less and the necessary road improvements to accommodate the construction workforce would already have been completed. Some congestion could still occur during shift changes, particularly at Limestone given its proximity to the Limestone coal plant and lignite mining operations; however, the magnitude of impact is expected to be SMALL through the help of mitigation measures such as vanpooling and travel reduction incentives currently in use by the existing workforce. Future general population increases likely will increase highway congestion at specific locations; the magnitude of impact of new units at the Limestone site on this service degradation is likely to be SMALL to MODERATE and could require mitigation.

Recreation

The closest recreation area to the Limestone site is Lake Limestone, a 12,553-acre lake located three miles to the west of the site. Bank access to the reservoir is limited to four Brazos River Authority parks, two of which are in Leon County (Brazos River Authority Park 1 and Leon County Park 4) and two of which are in Limestone County (Limestone County Parks 2 and 3). Each includes restrooms, boat ramps, and picnic areas. Camping is allowed, but there are no water or electric hookups. Two private marinas (Running Branch and Limestone) also offer camping with water and electric hookups (Reference 9.3-74).

Additional recreational resources in the area include Fort Parker State Parker to the north (between Mexia and Grosbeck), which includes camping, swimming, fishing, picnicking, hiking, biking, canoeing, nature study and baseball/softball (Reference 9.3-75); and Fort Bogy State Park located south of Centerville, which includes a beach and swimming area, bike and nature trails and a 15-acre lake (Reference 9.3-76).

While Lake Limestone is close to the proposed site, and recreational users traveling to Lake Limestone along FM 39 past the site from points south may be affected. However, there are other alternate routes users can take to access the lake and avoid heavy construction traffic and delays. While one “arm” of the lake does come within a mile of the Limestone site, the site is at considerable distance compared to the existing Limestone coal plant that currently operates on the lake. Given that the proposed Limestone site is located in an industrial area, it unlikely that the construction impacts from a new nuclear facility three miles away would detract any further from the experience of recreational users along Lake Limestone than is already being impacted by operation of the existing Lake Limestone power plant and lignite mining operations. Impacts to recreational resources, including potential cumulative impacts, would be SMALL.

Housing

The impacts of plant construction on housing depend upon the number of workers already residing in the study area and the number that would relocate and require housing. As discussed previously, STPNOC estimates that approximately 3,405 workers and their families (for a total of 9,616 persons) would in-migrate into the region. Assuming these workers are dispersed throughout the multi-county region, the impacts on housing at each site are expected to be SMALL, based on the small percentage increases in total study area population occurring at each site. Impacts on housing under the more conservative scenario, where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) are provided in Table 9.3-8 as a percentage use of the existing vacant housing inventory. These numbers are based on housing data for 2000 (vacant) and assume one housing unit per worker.

Based on absolute numbers, the available housing within the two-county area (combined) would be sufficient to house the in-migrating workforce at the Limestone site. Rental property and mobile home facilities are scarce in rural counties within a 50 mile radius of the Limestone site, but are more plentiful in the larger municipalities. There is insufficient vacant housing available in Freestone County (1,550 units) to accommodate an influx of 2,077 workers projected for the host county. In addition, the available housing in the two-county area may not be sufficient, in terms of the type, size, and pricing desired by the workers. In this case, workers could relocate to other areas in the region, such as to larger metropolitan areas within commuting distance; have new homes constructed; bring their own homes; or live in hotels, motels or nearby RV parks. Single workers could also share an apartment, which would reduce the total number of housing units needed. An increase in housing demand could result in an increase in housing prices and rent, which could result in pricing some low-income populations out of their rental housing. In the long-term, however, the study area, and particularly the host county of each site, would benefit from increased property values and the addition of new houses to the tax rolls.

In general, impacts on housing are considered to be SMALL when a small change in housing availability occurs and MODERATE when there is a discernable but temporary reduction in the availability of housing units. STPNOC concludes that the potential impacts on housing at the Limestone site would be LARGE if the majority of workers choose to reside in the two-county area (increase of 84% in two-county area and 134% increase in host Freestone County), and SMALL if the workers are dispersed throughout the larger study area. Note also that while this is a conservative analysis, in the case of the Limestone site, the larger community of Waco (an additional 3,540 vacant units in 2000), located in a third county (McLennan) approximately 55 miles to the west of the site, is likely to draw some percentage of workers thereby helping to further reduce the impacts on Freestone County (and even Limestone County), as analyzed in this conservative scenario.

Public Services

Public services include water supply and wastewater treatment facilities, police, fire and medical facilities, and social services. New construction or operations workers relocating from outside the region would most likely live in residentially developed areas where adequate water supply and wastewater treatment facilities already exist. Small increases in the regional population would not materially affect the availability of police, fire, or medical services. It is not expected that public services would be materially impacted by new construction or operations employees relocating into the region. Therefore, the impacts on public services within the region would be SMALL. However, population increases for both the two-county area and the host county, as shown in Table 9.3-7, are 20% and 32.8%, respectively. Impacts on public services within the two-county area and on the host (Freestone) county would be LARGE. In general a large population influx would increase demands on existing medical, police and fire services in sparsely populated local communities. These local (or county) governments would need to hire additional staff, buy additional vehicles, and improve/build new facilities. Additional tax revenues from population influx would help offset the cost to expand local police and fire departments and benefit the area in the long term. However, the short-term impacts could be adverse as existing capacities are exceeded in the initial years of construction. Note that impacts to the host county could be alleviated somewhat if a larger percentage of the in-migrating population chose to reside in the nearby and more populated third county, McLennan County, which includes the town of Waco.

Education

According to the 2000 Census estimate, school-age children (between the ages of 5 and 19) comprise 23.5% of the population of Texas. Applying the same percentage to the total in-migrating population that would reside in the two-county area at the Limestone site, based on the assumption that most of the workers will come from within Texas, the anticipated in-migrating school age population is 1,880. Further assuming a conservative scenario where 83% of in-migrating workers and their families choose to reside in a two-county area (61% reside in host county and 22% reside in adjacent county) – consistent with the breakout found with current operations workers at the STP site – the number of school-age children migrating into Freestone County would be 1,380 and the number of school-age children migrating into adjacent Limestone County would be 500. The percentage increases for each county are identified in Table 9.3-9.

The projected increase within the two county area is 23.3 percent and impacts would be LARGE. The projected increase in Freestone County is slightly higher at 37.4 percent, and impacts to the host county also would be LARGE. The quickest mitigation measure would be to hire additional teachers and move modular classrooms to existing schools. Increased property and sales tax revenues as a result of the increased population would fund additional teachers and facilities.

It should also be noted that while this is a conservative estimate, in the case of the Limestone site, more than 22 percent of the in-migrating workers with school-age children are likely to reside in the more populated McLennan County that includes Waco, or even Navarro County that includes the town of Corsicana. The school district system of McLennan or Navarro Counties is expected to more easily absorb an influx of school age children than the less populated Freestone, or Limestone or Leon Counties. This would help further reduce the impacts on this host count(ies), as analyzed in this conservative scenario.

Socioeconomics impacts from operation at the Limestone site would be similar to those described for the Red 2 site with respect to recreation, housing, public services, and education (ER Section 9.3.3.2.6). Impacts would be SMALL at all of the alternate sites.

Potential Cumulative Impacts

With respect to potential cumulative impacts with the Unit 3 expansion at the existing Limestone coal plant, construction of the new coal unit is expected to employ over 1,000 construction workers. Operation of existing Units 1 and 2 currently employs 250 people full-time. Assuming that half of this number would be required to operate a third unit, this would add 125 more staff for Unit 3 and result in a total operating staff of 375 for the three units. Based on the assumption that construction of the new Unit 3 would be completed prior to the expected peak in-migrating construction workers (and their families) associated with the nuclear plant, some of the expected socioeconomic impacts from the new nuclear facility may be slightly reduced if the same set of construction workers could be used to support both projects. That could help not only reduce the potential number of in-migrating workers (and their families) during construction of the nuclear facility, but also help reduce the associated demands on housing, schools, public services, etc. The local communities would be more prepared for the additional worker influx when construction of the nuclear facility begins. In addition, the combined impacts of both projects would result in even more jobs and greater economic benefits to the local communities and region. In summary, the additional 125 operations workers associated with the Unit 3 expansion are not expected to significantly add to the impacts already identified for a proposed nuclear facility at the Limestone site. The biggest impact is likely to be increased traffic from the commuting workforce at both plants. These impacts have already been determined to be LARGE during construction of the nuclear plant and would require mitigation. During operation of both plants, the combined operating workforces would still result in significantly less transportation impacts than during construction since the operations workforce and daily plant deliveries would be significantly less and the necessary road improvements to accommodate the construction workforce would already have been completed. Some congestion could still occur during shift changes; however, the magnitude of impact is expected to be SMALL through the help of mitigation measures such as vanpooling and travel reduction incentives currently in use by the existing workforce. Future general population increases likely will increase highway congestion at specific locations, even in the absence of new plant development. The magnitude of impact of new nuclear units at the Limestone site, in combination with Units 1, 2 and 3 at the coal plant, on this service degradation is likely to be SMALL to MODERATE and could require mitigation.

9.3.3.6.7 Historic and Cultural Resources

Adverse effects to archaeological, paleontological, and cemetery resources are generally the result of direct impacts from ground disturbing activities. Therefore, the area of potential effect coincides with those areas where direct impacts from construction and operation of the proposed project would occur. Adverse effects to historic resources (e.g., standing structures) may occur through direct impacts that may change the character of a property's use or the physical features within a structure's setting that contribute to its historic significance. Adverse effects may also occur through indirect impacts that could introduce visual or noise elements that diminish the integrity of a property's significant historic features.

STPNOC conducted historical and archaeological records searches in and near the coal-fired unit at Limestone. A review of the NRHP records revealed no registered places within 10 miles of the site (Reference 9.3-77). Although there are some historic sites in the region, they would not be adversely affected by construction at the site. There are no documented historic properties listed in or potentially eligible for the NRHP for the proposed power plant site.

In addition, the proposed site was recently evaluated by the Department of Energy as a potential site for the FutureGen project (coal-fired electric power and hydrogen gas production plant integrated with CO_2 sequestration) (Reference 9.3-70). The EIS indicates that the 400 acres of the proposed power plant site location has been surveyed and that strip mining and land reclamation has extensively disturbed the entire property. Therefore, there appears to be low potential for the existence of intact, unrecorded prehistoric or historic sites within the proposed plant site area.

Two formal cemeteries (Wilson Chapel and Evansville Miller) and a third location believed to contain isolated graves are documented within one mile of the proposed power plant. However, none are located within or immediately adjacent to the boundaries of the proposed plant site and should not be adversely affected by the project (Reference 9.3-70).

Construction impacts to known or unknown cultural resources would primarily be direct and result in ground disturbing activities that could destroy some or all of a resource. Given the results of previous surveys and the level of disturbance in the area, no adverse impacts to cultural resources are expected. However, as with any land disturbing project, the potential for discovery or disturbance of unknown cultural resources exists. Building the proposed nuclear power plant at Limestone site would require formal consultation with the THC prior to construction. Additional surveys would be conducted where required (e.g., new reservoir location), and mitigation measures, if required, would be coordinated with the Commission such that any impacts to cultural resources from construction of the proposed nuclear power plant would be SMALL. In addition, protective measures would be implemented if historic and/or cultural resources were discovered during construction. In the event that an unanticipated discovery is made, site personnel would be instructed to notify and consult with the Commission to determine if additional evaluation is needed and further mitigation is required.

There is minimal potential for direct impacts as a result of operations. In general, plant operation is not expected to involve the physical conversion of additional lands for the plant's use. It is further assumed that any plans to disturb additional lands would avoid existing known (and significant) historic and cultural resources, and would require consultation with the THC prior to disturbance to address potential impacts on unidentified and potentially significant resources. Such mitigative actions would ensure that impacts to historic and cultural resources from plant operation are small. The potential for impacts to cultural resources related to project operations would be limited to indirect impacts that could alter the character of a resource or its setting. Because there are no known cultural resources in or near the area of the proposed plant site and much of the area has been previously disturbed, no direct or indirect impacts are anticipated.

STPNOC concludes that impacts of construction and operation on historic properties would be SMALL.

9.3.3.6.8 Environmental Justice

The Census Bureau data (2000) for Texas characterizes 11.5% of the population as Black, 0.6% American Indian or Alaskan Native, 2.7% Asian, 0.1% Native Hawaiian or other Pacific Islander, 11.7% some other race, 2.5% two or more races, 29.1% aggregate of minority races, and 32% Hispanic or Latino Ethnicity. Regarding poverty status, an indicator of low-income populations, 12% of families were living below the poverty level in 1999 (Reference 9.3-18).

Total percentages of minority populations within a 50-mile radius of the Limestone site were determined using 2000 Census block points with the following results: 21.1% black, 0.5% American Indian and Alaskan Native, 0.3% Asian, 0.08% Hawaiian and Other Pacific Islander, 7.1% All Other Races, and 1.3% Two or More Races, and 12.83% Hispanic or Latino of any race (Hispanic Ethnicity). In addition, the percentage of low income population (families) was determined using Census block groups within a 50-mile radius of the Limestone site with the following result: 13.8% were living below the poverty level; the data were for 1999. These percentages are all lower than the Texas state averages except for the low-income population (less than 2 percentage points higher) and the black population, which is approximately 20 percentage points higher than the state average. The difference in low income population percentages is not considered significant enough difference to result in potential disproportionate impacts to this population. The difference in black population percentages, however, would indicate the potential for this minority population to receive a disproportionate share of impacts within a 50-mile radius of the site (Reference 9.3-19). It is assumed that the majority of this population resides in the cities and larger urban area (e.g., Waco), and would not be adversely affected by construction activities.

In addition, because it is assumed that those minority populations living closest to the site have the potential to be affected by plant construction activities. Accordingly, the 2000 Census block data within a 5-mile radius of the Limestone site were used for ascertaining minority population in the area, as follows:

- 50 Census Blocks with a total population of 630 are found within a 5-mile radius of the Limestone site; this area includes parts of Freestone, Limestone, and Leon Counties, TX.

For purposes of this evaluation, the potential for the proposed project to result in disproportionate impacts on minority and low income populations is based in part on whether any block percentage exceeded its corresponding state percentage by more than 20% or was greater than 50% overall. In this situation, the block was identified as having a significant minority population.

For the Limestone site, minority populations exist in six blocks as follows: black minority populations exist in three blocks; Hispanic and Hawaiian populations exist in one block each; and populations of other races exist in three blocks, two of which also include Hispanic population (one of the two blocks includes 7 persons classifying themselves as both Hispanic and Other Races), and black population (one block). Note that the total minority population in the 5-mile radius consists of 31 persons (out of a total of 630). The closest block is 2.9 miles NE of the site and includes both black (2 persons) and a population of other races (4 persons) for a total of 6 persons.

While construction activities (noise, fugitive dust, air emissions, traffic) could disproportionately affect these blocks of minority populations living within 5 miles of the Limestone site, longer term impacts from plant construction and operation could benefit this low-income population through an increase in related jobs.

The 2000 Census block group data within a 10-mile radius of each site were used for ascertaining low-income population in the area. The Census Bureau data characterizes 12% families as living below the poverty level in Texas in 1999. Within the four block groups included in the 10-mile radius, the percentages ranged from 2.7% to 18.3%. Based on the "more than 20 percent" criterion, no low income populations exist in a 10-mile radius of the Limestone site.

In general, new facilities would be considered beneficial economically to the existing population, especially those disadvantaged population segments served by the State and local social service agencies. Two new units may enable the disadvantaged population to improve their social and economic position by moving to higher paying jobs. At a minimum, the expenditures of construction workforce in the area of food, services, etc. could, through the multiplier effect, increase the number of jobs available to the disadvantaged population.

Impacts to minority and low income populations from plant operation are expected to be similar to those identified for construction activities; however, the impacts during plant operation are expected to be generally beneficial to a disadvantaged community. Minority and low-income populations have been shown to benefit economically from the existing plant (e.g., construction and operation of the Grand Gulf nuclear plant in Mississippi) (Reference 9.3-14), and are expected to receive long-term positive economic benefits from construction and operation of two new units at all six candidate sites. From this perspective, it could be argued that those sites with the highest minority and low income populations, would receive LARGER and more BENEFICIAL impacts to these populations than the other sites.

In addition, given the higher percentage of blacks (total population of 48,109 within a 50-mile radius) in the Limestone area compared to other sites, there is the potential for this population to be affected in different ways than the general population would. These include unique exposure pathways or rates of exposure (e.g., from subsistence fishing), special sensitivities (e.g., to air pollution because of less access to health care), or different uses of natural resources (e.g., for economic practices). While these are a potential concern, no significant health or physical impacts to any human populations are expected to occur at the Limestone site (or any site under consideration) as a result of project construction or operation. Therefore, no significant disproportionate impacts are expected to the black population.

STPNOC concludes that environmental justice impacts of construction and operation of the proposed project at the Limestone site would be SMALL, and that potential long-term impacts from project operation would be BENEFICIAL to the minority and low-income populations.

9.3.3.6.9 Nonradiological Health

Typical nonradiological health hazards associated with large construction projects (such as construction of a new nuclear power plant) include the following:

- Air Emissions, such as fugitive dust, smoke, and engine exhaust;
- Physical Hazards, such as falls, impact injuries, and vehicular accidents; and
- Noise Hazards.

All construction activities would be performed in compliance with OSHA (29 CFR 1910).

Construction-related air emissions are anticipated to consist of fugitive dust, smoke, and engine exhaust. Impacts to construction workers would be the same for both the proposed and alternate sites. Construction workers would be protected from such hazards via personal protective equipment (dust masks, etc.) and other controls (water sprays, equipment emission controls, equipment inspections, etc.).

Impacts to neighboring populations would be dependent on distance to these receptors. The Limestone site is located adjacent to an operating power plant. However, the majority of workers at the plant work indoors and would not be impacted. Training, awareness, and personal protective equipment would minimize the impacts to personnel working outdoors. The Limestone site is not located in the immediate vicinity of residential areas, and fugitive emissions are not anticipated to impact offsite receptors.

Physical hazards at the construction site would be consistent with any large-scale construction project and could include falls, impact injuries, vehicular accidents, and electric hazards. Access to the construction site would be controlled, and physical hazards to neighboring populations are not anticipated. Impacts to construction workers would be minimized through training, awareness, and personal protective equipment, and are expected to be minor.

Activities at the site would create noise consistent with large-scale construction activities. Noise levels for common construction activities are typically about 90 dBA at a distance of 10 feet (Reference 9.3-14), and decrease with distance from the source. Due to the distance to local residential areas from the Limestone site, these populations are not expected to be impacted from construction noise hazards. Impacts to construction workers and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

In summary, construction-related nonradiological health impacts (air emissions, physical hazards, and noise hazards) to construction workers, workers at neighboring facilities, and neighboring residential areas are expected to be SMALL for the Limestone site, and impacts can be minimized through training, awareness, personal protective equipment, and activity scheduling.

In general, operational-related nonradiological health hazards would consist of occupational injuries. Historically, actual injury and fatality rates at nuclear reactor facilities have been lower than the average U.S. industrial rates (Reference 9.3-14). In all cases, plant operational activities would be performed with adherence to applicable laws and regulations, practices, and procedures.

Other typical nonradiological health hazards associated with plant operational activities include the following:

- Health impacts from cooling tower operation;
- Noise Hazards; and

- Health impacts from transmission line operation.

At the Limestone site, plant cooling water effluent would be returned to the cooling water reservoir and/or discharged to the Trinity River. Discharges have the potential to increase the growth of microorganisms in the receiving waters. Serious illness and death can occur when there is high exposure to these microorganisms (Reference 9.3-14). NUREG-1437 notes that a discharge to a small river (defined as having an average flow of less than 100,000 cfs) would have the greatest chance of affecting the public (Reference 9.3-13). The Trinity River, in the vicinity of the Limestone site discharge location, has an average flow rate of approximately 4,400 cfs, and discharge would have a moderate impact.

The principal sources of noise from plant operation are cooling towers (where employed), transformers, and loudspeakers. Generally, power plant sites do not result in off-site levels more than 10 decibels above background (Reference 9.3-13), and impacts to neighboring populations would be small. Impacts to plant operators and personnel at neighboring industrial sites would be minimized through training, awareness, personnel protective equipment, and scheduling of activities with particularly high levels of noise generation.

The two human health issues related to transmission lines are the acute effects (shock hazard) and the potential for chronic effects from exposure to electric and magnetic fields. Acute effects can be minimized through tower design precluding direct public access to components that may pose a shock hazard and are considered to be small at each location. Chronic effects from the operation of energized transmission lines on public receptors are not conclusive but do indicate some impacts are possible. However, these impacts are assumed to be small as transmission rights-of-way will be located in a manner to avoid residential populations to the greatest extent.

In summary, noise hazards and hazards associated with transmission line operation are small for the Limestone site. Health impacts associated with discharge of cooling water are moderate. Since impacts will generally consist of occupational injuries, and since injury/fatality rates at nuclear plants are generally lower than the average rates at industrial sites, operational-related nonradiological impacts at the Limestone site are SMALL.

9.3.3.6.10 Radiological Health

As the Limestone site is not located in the vicinity of existing radiological operations, sources of radiation exposure to site preparation and construction workers are limited to those sources introduced by the new plant. The radiological impact on construction workers at the Limestone site is no more than that at the STP site; therefore, it is concluded that the radiological impact on construction workers is SMALL.

Plant locations at the Limestone site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Therefore, impacts to offsite receptors would be minimal.

Radiological impacts of plant operation occur through exposure pathways from releases and direct radiation from the plant, and can be viewed as dose to public receptors, occupational receptors, and other biota. The Limestone site would discharge cooling water blowdown to surface waters. However, discharges will be within regulatory limits which assure that the radiological impact is SMALL. The Limestone site is located in the area of groundwater used for potable uses and agricultural irrigation. The valuable groundwater aquifers are generally deep and would not be impacted by plant operation.

The Limestone site is located near existing agricultural operations, and potential radiological releases could impact these foodstuffs. Because liquid releases will be maintained within regulatory limits, dose rates would generally be less than 1 mrem/yr at the site boundary (Reference 9.3-13).

Plant locations at the Limestone site are capable of maintaining the required exclusion zone and meet low-population zone requirements. Radiation doses to members of the public from current operation of nuclear power plants have been examined from a variety of perspectives, and the impacts were found to be well within design objectives and regulations in each instance (Reference 9.3-13). Therefore, radiological impacts to public receptors are SMALL for the Limestone site. Additionally, NUREG-1437 examines radiological impacts to occupational receptors and concludes that occupational radiation exposure is of SMALL significance.

9.3.3.6.11 Impact of Postulated Accidents

As site specific meteorology data is not available for the alternate sites, a general analysis of the impacts of postulated accidents is provided. NUREG-1437 contains a thorough analysis of environmental impacts of accidents during operation. The analysis assumes accident frequency based on regulatory controls ensuring the plant's licensing basis is maintained. The analysis concludes that the environmental impacts from design-basis accidents are of SMALL significance for all plants (Reference 9.3-13). Similarly, the analysis evaluated severe accidents and concluded calculated impacts from atmospheric releases, fallout onto open bodies of water, groundwater releases, and societal and economic impacts to be of SMALL significance. Effective emergency planning can aid in mitigating the impacts of accidents.

The Limestone site is not located in the immediate vicinity of residential areas. The accident impacts at the Limestone site are SMALL.

9.3.3.6.12 Conclusion Regarding the Limestone Site

Impacts from the construction of a new nuclear power plant at the Limestone site would generally be SMALL to MODERATE, and impacts from the operation of a new nuclear power plant at the Limestone site would generally be SMALL. Construction-related environmental impact areas with predicted adverse impacts other than SMALL include land use at the site and vicinity, terrestrial and aquatic ecology, and socioeconomics (demographic impacts to the region, the host county, and the two-county local area, social and economic impacts, and impacts to infrastructure and community services).

Operation-related environmental impact areas with predicted adverse impacts other than SMALL include water use and socioeconomics (demographic impacts). Any adverse impact from the new plant is not predicted to have a disproportionate effect on minority or low-income populations. As a result, the predicted impacts at the Limestone site are equal to or greater than those at the proposed STP site. Limestone was not considered environmentally preferable to the proposed STP site.

9.3.4 Summary and Conclusions

As discussed in Section 9.3.1, the STP site was selected as the proposed site for the project (STP Units 3 & 4) based on its numerous advantages as an existing nuclear power plant site, including its:

- Proven site suitability (previously licensed for nuclear power construction and operation);
- Capacity for expansion (availability of land and water to support additional units);
- Existing site infrastructure;
- Established positive working relationships with local communities; and
- Ability to serve the Electric Reliability Council of Texas (ERCOT) markets.

Analysis of the STP site in comparison with a wide variety of potential sites (Section 9.3.2) further indicates that it ranks highest in site suitability in relation to other sites available in the Region of Interest (Figures 9.3-5 and 9.3-7) (Reference 9.3-4).

Finally, an analysis of estimated construction (Table 9.3-4) and operational (Table 9.3-5) impacts likely to occur at STP and five alternate sites indicates that the adverse environmental impacts of the proposed plant on the alternate sites are greater than or equal to the adverse environmental impacts associated with construction and operation of the proposed plant at the proposed STP site in each topical area except for socioeconomics (operational demographic impacts) at Allens Creek and Malakoff. However, Allens Creek and Malakoff have greater adverse impacts overall and therefore are not environmentally preferable to the STP site.

Based on these analyses, STPNOC concludes that no alternate site is environmentally preferable to the proposed STP site; accordingly, no alternative site is obviously superior to STP as the site for its new two-unit nuclear power plant.

9.3.5 References

9.3-1 U.S. Nuclear Regulatory Commission (USNRC) 1999. NUREG-1555, Standard Review Plans for Environmental Reviews for Nuclear Power Plants, NUREG-1555, U.S. Nuclear Regulatory Commission, Washington D.C., October 1999.

9.3-2 Electric Power Research Institute (EPRI) 2002. EPRI Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application, Electric Power Research Institute, March 2002.

9.3-3 NRC Regulatory Guide 4.7, Revision 2, “General Site Suitability Criteria for Nuclear Power Stations

9.3-4 STP Nuclear Operating Company (STPNOC) 2009. STPNOC Nuclear Power Plant Siting Report. June 2009.

9.3-5 Electric Reliability Council of Texas, Inc. (ERCOT). About ERCOT website, http://www.ercot.com/about/.

9.3-6 Energy Information Administration (EIA) 2007. Form EIA-860 Database – Annual Electric Generator Report, 2007. http://www.eia.doe.gov/cneaf/electricity/page/eia860.html.

9.3-7 Railroad Commission of Texas, Surface and Mining Reclamation Division, Texas Abandoned Mine Land Reclamation Projects. http://www.rrc.state.tx.us/programs/mining/texasamlprojects.pdf.

9.3-8 10 CFR 51, Appendix B, Table B-1, Footnote

9.3-9 U.S. Department of Agriculture (USDA), 2009. 2007 Census of Agriculture Texas State and County Data: National Agricultural Statistics Service, Washington, D.C. 2007. Released February 4 and available at http://www.agcensus.usda.gov/Publications/2007/Full_Report/index.asp. Last accessed: March 16, 2009.

9.3-10 TCAA 2007. Texas Clean Air Act, Texas Health and Safety Code, Chapter 382.

9.3-11 TAC 2007. Texas Administrative Code, Title 30, Chapter 116.

9.3-12 United Stated Environmental Protection Agency (USEPA) Air Data, Texas Nonattainment Areas, http://www.epa.gov/air/data/repsst.html?st~TX~Texas.

9.3-13 U.S. Nuclear Regulatory Commission (USNRC) 1996. NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, U.S. Nuclear Regulatory Commission, Washington D.C., May 1996.

9.3-14 U.S. Nuclear Regulatory Commission (USNRC) 2006. NUREG-1817, Environmental Impact Statement for an Early Site Permit (ESP) at the Grand Gulf ESP Site, U.S. Nuclear Regulatory Commission, Washington D.C., April 2006.

9.3-15 NOAA Fisheries Service, Southeast Regional Office, Office of Protected Resources. An Overview of Protected Species Commonly Found in the Gulf of Mexico. Revised February 2008. Available at http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/index_a.htm. Last accessed June 18, 2009.

9.3-16 NOAA Fisheries Service, Galveston Laboratory. No date. Table 1, EFH Mapped Estuaries of the Gulf of Mexico. http://galveston.ssp.nmfs.gov/research/fisheryecology/EFH/Relative/estuaries/index.html.

9.3-17 U. S. Census Bureau 2000. Census 2000. State and County QuickFacts for Texas. Available at: http://quickfacts.census.gov/qfd/states/48000.html. Last accessed June 18, 2009.

9.3-18 U. S. Census Bureau (USCB) 2000. Census 2000. DP-1 Profile of General Demographic Characteristics (minority population data for Texas and Oklahoma). Available at http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF1_U_DP1&ds_name=DEC_2000_SF1_U&geo_id=04000US48. Last Accessed; June 18, 2009.

9.3-19 United States Department of Commerce 2003. U.S. Department of Commerce, Economics and Statistics Bureau, U.S. Census Bureau, LandView® 6 on DVD, V1-T00-LV06-US1, December 2003.

9.3-20 Handbook of Texas (HOT Online) 2008 (June 17). Fannin County. Available at http://www.tshaonline.org/handbook/online/articles/FF/hcf2.html. Last Accessed: June 18, 2009.

9.3-21 Google Earth 2009 (Release 5). June 18, 2009. (Red 2 Site) Available at http://earth.google.com.

9.3-22 Texas Commission on Environmental Quality. Water Availability by River Basin, http://www.tceq.state.tx.us/permitting/water_supply/water_rights/wam.html.

9.3-23 Texas Commission on Environmental Quality. Water Rights Database accessed April 2, 2009. http://www.tceq.state.tx.us/permitting/water_supply/water_rights/wr_databases.html.

9.3-24 Texas Water Code, Section 46.013, Text of the Red River Compact, http://law.onecle.com/texas/water/46.013.00.html.

9.3-25 U.S. Geological Survey, Ecoregions of Texas, 2004. Color Poster with Map, descriptive text and photographs (1:2,500,000), as found on EPA website. Available at ftp://ftp.epa.gov/wed/ecoregions/tx/tx_back.pdf; and http://www.epa.gov/wed/pages/ecoregions/tx_eco.htm.

9.3-26 Texas Parks and Wildlife Department (TPWD) 2009. Annotated County Lists of Rare Species (Fannin County), Rare, Threatened and Endangered Species of Texas by County (last revised, April 1, 2009). Available at: http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/.

http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx.

9.3-27 Handbook of Texas (HOT Online) 2008 (January 8). Brushy Creek Reservoir. Available at http://www.tshaonline.org/handbook/online/articles/VV/rovnr.html. Last Accessed: June 18, 2009.

9.3-28 Texas Commission on Environmental Quality. 2008. Texas Water Quality Inventory: Water bodies with concerns for use for use attainment and screening levels (March 19, 2008). Red River. Available at http://www.tceq.state.tx.us/assets/public/compliance/monops/water/08twqi/2008_concerns.pdf. Last Accessed June 18, 2009.

9.3-29 Red River Authority of Texas. 1998. An Assessment of the Biological Integrity of the Eastern Red River Basin in East Texas. Wichita Falls, TX. April. Available at http://www.rra.dst.tx.us/publications/crp/rba-01/. Last Accessed June 4, 2009.

9.3-30 U.S. Census Bureau (USCB) 2000. Census 2000. DP-1 Profile of General Demographic Characteristics (population data for Austin and Grayson Counties. Available at http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF1_U_DP1&ds_name=DEC_2000_SF1_U&geo_id=04000US48. Last Accessed; June 18, 2009.

9.3-31 Caddo-LBJ National Grasslands Recreational Opportunities. Available at http://www.fs.fed.us/r8/texas/recreation/caddo_lbj/caddo-lbj_rec_opps.shtml. Last Accessed June 1, 2009.

9.3-32 Caddo National Grasslands Wildlife Management Area. Available at http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=4. Last Accessed June 18, 2009.

9.3-33 National Register of Historic Places. State and County Listings (Fannin County). Available at http://www.nationalregisterofhistoricplaces.com/tx/state.html. Last Accessed June 18, 2009.

9.3-34 THC (Texas Historical Commission), Texas Archaeological Sites Atlas. 2009 (Restricted Information Access). Data search conducted for Red 2 and Trinity 2 sites by J. Bryan Mason, Brown and Caldwell. Available at: http://nueces.thc.state.tx.us/. Last Accessed June 25, 2009.

9.3-35 Cemeteries of Fannin County, Texas (Virginia Point Cemetery). Available at http://www.rootsweb.ancestry.com/~txfannin/vpoint1.html. Last Accessed June 18, 2009.

9.3-36 Brazos River Authority website. Information on Allens Creek Reservoir. (Project Timeline, Frequently Asked Questions). Available at: http://www.brazos.org/acrHome.asp. Last Accessed on June 25, 2009.

9.3-37 Handbook of Texas (HOT Online) 2008 (January 8). Austin County. Available at http://www.tshaonline.org/handbook/online/articles/AA/hca8.html. Last Accessed: June 18, 2009.

9.3-38 NRC (U.S. Nuclear Regulatory Commission) 1973. Final Supplement to the Final Environmental Impact Statement Related to the Construction of Allen's Creek Nuclear Generating Station Unit No. 1, NUREG-0470, Washington, D.C., August 1973.

9.3-39 Kellogg Brown & Root, Inc. 2006. 2006 Region H Water Plan, Kellogg Brown & Root, Inc., Turner Collie and Braden, Houston, December 16, 2005. Available at http://www.twdb.state.tx.us/rwpg/2006_RWP/RegionH/.

9.3-40 Texas Parks and Wildlife Department (TPWD). No date. Wildlife Habitat Appraisal for the Proposed Allens Creek Reservoir Site. Available at http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_rp_t3200_1052/lists.phtml#tables. Last Accessed June 18, 2009.

9.3-41 Google Earth 2009 (Release 5). June 18. (Allens Creek) Available at http://earth.google.com.

9.3-42 Texas Parks and Wildlife Department (TPWD) 2009. Annotated County Lists of Rare Species (Austin County), Rare, Threatened and Endangered Species of Texas by County (last revised, April 1, 2009). Available at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/.

9.3-43 Texas Water Development Board. 1994. A Fisheries Inventory and Assessment of Allens Creek and the Brazos River, Austin County, Texas. Prepared by Texas Parks and Wildlife Department. Available at http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_rp_t3200_1071.pdf. Last accessed June 18, 2009.

9.3-44 Texas Water Development Board. 1991. A Natural Resource Survey for Proposed Reservoir Sites and Selected Stream Segments in Texas (under Agency Contract #1756). August (including Allens Creek/Brazos River Basin, Bonham Creek/Red River Basin, and Tuehacana Creek/Trinity River Basin). Available at http://www.twdb.state.tx.us/RWPG/rpgm_rpts/91483797.pdf. Last Accessed June 18, 2009.

9.3-45 U.S. Fish and Wildlife Service, Arlington, Texas Ecological Services Field Office. Smalleye and Sharpnose Shiners included in 2002 Candidate Notice of Review. Last Updated November 29, 2005. Available at http://www.fws.gov/southwest/es/arlingtontexas/shiner.htm. Last accessed June 12, 2009.

9.3-46 Texas Parks and Wildlife Department (TPWD). Stephen F. Austin State Park. Last Modified February 23, 2009. Available at http://www.tpwd.state.tx.us/spdest/findadest/parks/stephen_f_austin_and_san_felipe/. Last Accessed June 1, 2008.

9.3-47 National Register of Historic Places. State and County Listings (Austin County). Available at http://www.nationalregisterofhistoricplaces.com/tx/state.html. Last Accessed June 18, 2009.

9.3-48 Allen Johnston Cemetery 2007. Report of Allen Johnston Cemetery, Available at http://atlas.thc.state.tx.us/common/viewform.asp?atlas_num=7015004802&site_name=Al. Last accessed June 18, 2009.

9.3-49 THC (Texas Historical Commission). Texas Historical Sites Atlas. Historical Cemeteries in Texas (Allen Johnson Cemetery location map). Available at http://atlas.thc.state.tx.us/shell-county.htm. Last accessed June 18, 2009.

9.3-50 Telephone Conversation with Gary Oldan, NRG, regarding site visit to NRG-owned property at Allens Creek. May 11, 2009.

9.3-51 Google Earth 2009 (Release 5). June 18. (Trinity 2 Site) Available at http://earth.google.com.

9.3-52 Handbook of Texas (HOT Online) 2008 (January 17). Freestone County. Available at http://www.tshaonline.org/handbook/online/articles/FF/hcf9.html. Last Accessed: June 18, 2009.

9.3-53 Texas Parks and Wildlife Department (TPWD) 2009. Annotated County Lists of Rare Species (Freestone County), Rare, Threatened and Endangered Species of Texas by County (last revised, April 1, 2009). Available at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/.

http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx. Last Accessed April 16, 2009.

9.3-54 Texas Parks and Wildlife Department (TPWD). Richland Creek WMA. Last Modified October 30, 2008. Available at http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=23Fe. Last Accessed June 18, 2009.

9.3-55 Texas Parks and Wildlife. Fishing Fairfield Lake. Last Modified February 9, 2007. Available at http://www.tpwd.state.tx.us/fishboat/fish/recreational/lakes/fairfield/. Last Accessed June 1, 2009.

9.3-56 Texas Commission on Environmental Quality. 2008. Texas Water Quality Inventory: Water bodies with concerns for use for use attainment and screening levels (March 19, 2008). Tehuecana Creek. Available at http://www.tceq.state.tx.us/assets/public/compliance/monops/water/08twqi/2008_concerns.pdf. Last Accessed June 18, 2009.

9.3-57 U.S. Geological Survey (USGS), Department of the Interior. Fish Community Changes Reflect Water Quality Improvements in the Trinity River Downstream of Dallas. Last Modified September 21, 2009. Available at http://pubs.usgs.gov/circ/circ1171/html/fishcom.htm. Last accessed June 18, 2009.

9.3-58 U.S. Census Bureau (USCB) 2000. Census 2000. DP-1 Profile of General Demographic Characteristics (population data for Henderson and Anderson Counties. Available at http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF1_U_DP1&ds_name=DEC_2000_SF1_U&geo_id=04000US48. Last Accessed; June 18, 2009.

9.3-59 Texas Parks and Wildlife Department (TPWD). Fairfield Lake State Park. Last Modified September 16, 2008. Available at http://www.tpwd.state.tx.us/spdest/findadest/parks/fairfield_lake/. Last Accessed June 1, 2008.

9.3-60 Fairfield, Texas website, 2008. Available at http://www.fairfieldtexaschamber.com/html/aboutfairfield.html. Last Accessed June 18, 2009.

9.3-61 National Register of Historic Places. State and County Listings (Freestone County). Available at http://www.nationalregisterofhistoricplaces.com/tx/state.html. Last Accessed June 18, 2009.

9.3-62 Railroad Commission of Texas. 2002. Texas Abandoned Mine Land Reclamation Projects. Surface Mining and Reclamation Division. November. Available at http://www.rrc.state.tx.us/programs/mining/texasamlprojects.pdf. Last Accessed June 18, 2009.

9.3-63 HOT (Handbook of Texas Online) 2007. Henderson County. Available at http://www.tsha.utexas.edu/handbook/online/articles/HH/hch13.html. Last accessed June 18, 2009.

9.3-64 Google Earth 2009 (Release 5). June 18. (Malakoff site) Available at http://earth.google.com.

9.3-65 Handbook of Texas (HOT Online) 2009 (March 12). Henderson County. Available at http://www.tshaonline.org/handbook/online/articles/HH/hch13.html. Last Accessed: June 18, 2009.

9.3-66 Texas Parks and Wildlife Department (TPWD) 2009. Annotated County Lists of Rare Species (Henderson County), Rare, Threatened and Endangered Species of Texas by County (last revised, April 1, 2009). Available at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/. http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx. Last Accessed April 16, 2009.

9.3-67 Texas Parks and Wildlife Department (TPWD). Fishing Cedar Creek Reservoir. Last Modified February 9, 2007. Available at http://www.tpwd.state.tx.us/fishboat/fish/recreational/lakes/cedar_creek/. Last Accessed June 1, 2009.

9.3-68 THC (Texas Historical Commission). Texas Lakes Trail Region Brochure. 2003. Available at http://www.thc.state.tx.us/publications/brochures/LakesTrail.pdf. Last Accessed June 18, 2009.

9.3-69 National Register of Historic Places. State and County Listings (Henderson County). Available at http://www.nationalregisterofhistoricplaces.com/tx/state.html. Last Accessed June 18, 2009.

9.3-70 Department of Energy (DOE) 2007. FutureGen Project Final Environmental Impact Statement (DOE/EIS-0394). National Energy Technology Laboratory. November. Available at http://www.netl.doe.gov/technologies/coalpower/futuregen/EIS/. Last Accessed June 18, 2009.

9.3-71 ENSR. 2004. Phase 1 Environmental Site Assessment of Limestone Generating Station, Route 1, Box 85, Jewett, Texas. Document Number 08713-313-600, Report to GC Power Acquisition, LLC, Houston, Texas.

9.3-72 Google Earth 2009 (Release 5). June 18. (Limestone site) Available at http://earth.google.com.

9.3-73 Texas Parks and Wildlife Department (TPWD) 2009. Annotated County Lists of Rare Species (Limestone and Leon Counties), Rare, Threatened and Endangered Species of Texas by County (last revised, April 1, 2009). Available at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/. http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx. Last Accessed April 16, 2009.

9.3-74 Texas Parks and Wildlife Department (TPWD). Lake Limestone State Park. Last Modified February 9, 2007. Available at http://www.tpwd.state.tx.us/fishboat/fish/recreational/lakes/limestone/. Last Accessed June 1, 2009.

9.3-75 Texas Parks and Wildlife Department (TPWD). Fort Parker State Park. Last Modified September 16, 2008. Available at http://www.tpwd.state.tx.us/spdest/findadest/parks/fort_parker/. Last Accessed June 1, 2009.

9.3-76 Texas Parks and Wildlife Department (TPWD). Fort Boggy State Park. Last Modified April 13, 2009. Available at http://www.tpwd.state.tx.us/spdest/findadest/parks/fort_boggy/. Last Accessed June 18, 2009.

9.3-77 NPS (National Park Service) 2006. National Register Information System. Available at http://www.nr.nps.gov. Last Accessed on June 18, 2009.

9.3-78 USFWS (U.S. Fish and Wildlife Service). Southwest Region. Endangered Species Program. T&E Species Lists by County (Fannin, Austin, Freestone, Henderson, Leon and Limestone Counties). Last Updated January 9, 2009. Available at: http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpeceis.cfm. Last Accessed on June 25, 2009.

Table 9.3-1 ROI Regional Screening Criteria

Criterion	Mapped Data	Screening Criteria	Suitability Impact	Data Source(s)	Comments/Rationale
Geology/ Seismology	Ground Motion	Areas with predicted peak ground acceleration < 0.3g with a 2% probability of exceedance in 50 years	> 0.3g Excluded	Rukstales, Kenneth S. (compiler), 2002	The ROI was screened using the seismic hazard map for the United States. Note that there are not any regions with predicted peak ground accelerations > 0.3g within the state of Texas. Thus, this criterion will have no practical effect on regional screening. http://nationalatlas.gov/mld/seihazp.html
Water Availability	Water sources (major rivers, existing reservoirs, coastal areas)	River reaches for which the average flow > 10 times the plant makeup water requirement, and the Gulf of Mexico	Excluded areas greater than 5 miles from rivers and 10 miles from the Gulf of Mexico that meet the mapping criteria	USGS records	Rivers for which more than 10% of the average flow will be required for makeup water may present permitting or operational water supply problems. The Gulf of Mexico is assumed to be a viable source for cooling water makeup. Pumping makeup water more than 5 miles from rivers and more than 10 miles from the Gulf of Mexico may impose significant construction and operational costs and can result in operational risks. Based on water use at the existing STP Units 1 and 2, assumed makeup water requirements = 50,000 acre-ft/yr (69.1 cfs, 31,000 gpm, 44.6 Mgal/day). Assumed that groundwater would not supply a significant portion of the required cooling water makeup.
Population	Urban and metropolitan areas	Urbanized areas in Texas, mapped by Texas General Land Office (TGLO) personnel	Excluded	TGLO, 1999	Urban and metropolitan areas likely would place the plant within an unacceptable distance of high population density areas. http://www.glo.state.tx.us/gisdata/gisdata.html

Table 9.3-1 ROI Regional Screening Criteria (Continued)

Criterion	Mapped Data	Screening Criteria	Suitability Impact	Data Source(s)	Comments/Rationale
Dedicated Lands	Lands designated as National Park Service parks, U.S. Fish and Wildlife Service national wildlife refuges, Department of Defense lands, and Texas Parks and Wildlife Department parks and wildlife management areas	Boundaries of dedicated lands identified	Excluded	NPS, 2001 USFWS TPWD, 1995	NPS, USFWS, DOD, and TPWD lands were classified as dedicated lands that should be excluded from consideration in the siting study. http://www.glo.state.tx.us/gisdata/gisdata.html http://nationalatlas.gov/mld/fedlanp.html
Ecology	Critical Habitat	Boundaries of critical habitat identified for Federally listed threatened and endangered species	Excluded	USFWS	Development of a plant at the location of significant known areas of ecological importance could result in unacceptable environmental impacts and/or challenge as to whether obviously superior alternatives are available. http://criticalhabitat.fws.gov/

Table 9.3-2 Screening Criteria Ratings for Potential Sites

Potential Site Name	Cooling Water Supply	Flooding	Population	Hazardous Land Uses	Ecology	Wetlands	Railroad Access	Transmission Access	Land Acquisition	Site Rating
	Weight Factors									
	9.2	4.8	7.8	5.9	6.2	6.3	6.3	7.2	6.2	
Nueces 1	1	5	4	2	4	4	4	2	3	184.4
Nueces 2	1	5	3	3	2	5	3	4	3	184.5
Guadalupe 1	1	1	3	3	4	3	2	3	2	145.4
Guadalupe 2	3	5	4	2	4	4	4	2	3	202.8
San Antonio 1	3	3	3	3	4	3	4	2	3	185.0
Colorado 1	2	3	3	4	3	4	2	1	2	155.8
Colorado 2	2	3	3	3	3	4	4	4	2	184.1
Colorado 3	2	3	4	2	4	4	4	4	2	192.2
Colorado 4	2	3	3	2	4	5	3	3	3	183.4
South Texas Project	5	5	5	4	3	5	5	5	5	281.2
Brazos 1	1	3	3	4	3	2	1	2	3	141.1
Brazos 2	2	5	3	4	4	4	2	3	1	179.8
Brazos 3	3	1	2	2	4	2	3	3	2	150.1
Brazos 4	3	1	3	4	4	3	3	2	3	175.0
Brazos 5	3	5	3	4	3	3	2	2	1	169.3
Allens Creek	3	5	3	3	3	2	5	2	3	188.4
Brazos 6	4	5	2	3	3	2	1	3	2	165.6
Trinity 1	3	3	2	4	4	3	2	3	2	171.5
Malakoff	3	1	3	3	4	3	4	3	5	195.0
Trinity 2	3	5	5	3	3	4	1	5	3	213.0
Trinity 3	3	1	5	4	3	3	1	4	2	180.0
Trinity 4	3	1	5	4	4	4	1	2	2	178.1
Neches 1	2	5	4	4	3	3	3	2	2	180.4
Neches 2	2	5	4	5	4	3	1	1	2	172.7
Neches 3	3	3	4	4	4	2	2	1	2	166.4
Angelina 1	2	5	4	3	4	4	2	2	2	180.7
Sabine 1	2	3	2	2	4	3	3	2	1	143.4
Sulphur 1	2	5	5	4	4	3	1	4	3	202.4
Red 1	3	5	4	5	4	4	2	1	3	200.7
Red 2	2	5	3	3	4	3	3	5	3	200.7
Red 3	2	1	4	4	3	3	2	2	3	161.1
Coastal 1	4	3	3	4	1	4	2	2	4	181.4
Coastal 2	4	3	4	4	1	1	2	4	4	184.7

Ratings from 1 (less suitable) to 5 (more suitable)

Table 9.3-3 General Siting Criteria Ratings for Primary Sites

Health and Safety Criteria

Criteria		Weight Factor	Guadalupe 2 Rating	Guadalupe 2 Score	Colorado 3 Rating	Colorado 3 Score	South Texas Project Rating	South Texas Project Score	Allens Creek Rating	Allens Creek Score	Malakoff Rating	Malakoff Score	Trinity 2 Rating	Trinity 2 Score	Sulphur 1 Rating	Sulphur 1 Score	Red 1 Rating	Red 1 Score	Red 2 Rating	Red 2 Score
D.1.1.1	Geology/ Seismology	5.9	4	23.6	4	23.6	4	23.6	4	23.6	4	23.6	4	23.6	3	17.7	3	17.7	3	17.7
D.1.1.2	Cooling System Requirements	8.5	2	17.0	2	17.0	5	42.5	3	25.5	3	25.5	3	25.5	2	17.0	1	8.5	1	8.5
D.1.1.3	Flooding	4.4	5	22.0	3	13.2	5	22.0	5	22.0	1	4.4	4	17.6	5	22.0	4	17.6	4	17.6
D.1.1.4	Nearby Hazardous Land Uses	4.9	2	9.8	2	9.8	4	19.6	3	14.7	3	14.7	3	14.7	4	19.6	5	24.5	3	14.7
D.1.1.5	Extreme Weather Conditions	3.2	3	9.6	3	9.6	2	6.4	3	9.6	3	9.6	3	9.6	4	12.8	3	9.6	3	9.6
D.1.2	Accident Effect Related	7.4	4	29.6	4	29.6	4	29.6	4	29.6	3	22.2	4	29.6	4	29.6	4	29.6	3	22.2
D.1.3.1	Surface Water – Radionuclide Pathway	4.4	4	17.6	5	22.0	5	22.0	5	22.0	4	17.6	4	17.6	4	17.6	4	17.6	4	17.6
D.1.3.2	Groundwater Radionuclide Pathway	4.5	2	9.0	3	13.5	2	9.0	2	9.0	3	13.5	3	13.5	2	9.0	3	13.5	3	13.5
D.1.3.3	Air Radionuclide Pathway	4.5	5	22.5	4	18.0	4	18.0	4	18.0	3	13.5	4	18.0	4	18.0	5	22.5	5	22.5
D.1.3.4	Air-Food Ingestion Pathway	4.2	2	8.4	2	8.4	2	8.4	2	8.4	3	12.6	3	12.6	3	12.6	1	4.2	1	4.2
D.1.3.5	Surface Water-Food Radionuclide Pathway	4.1	5	20.5	3	12.3	3	12.3	3	12.3	4	16.4	5	20.5	4	16.4	4	16.4	4	16.4
D.1.3.6	Transportation Safety	4.3	1	4.3	2	8.6	3	12.9	2	8.6	3	12.9	4	17.2	5	21.5	4	17.2	4	17.2

Ratings from 1 (less suitable) to 5 (more suitable)

Table 9.3-3 General Siting Criteria Ratings for Primary Sites (Continued)

Environmental Criteria

Criteria		Weight	Guadalupe 2		Colorado 3		South Texas Project		Allens Creek		Malakoff		Trinity 2		Sulphur 1		Red 1		Red 2	
		Factor	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
D.2.1.1	Disruption of Important Species/Habitats	5.5	4	22.0	4	22.0	4	22.0	4	22.0	4	22.0	3	16.5	3	16.5	5	27.5	3	16.5
D.2.1.2	Bottom Sediment Disruption Effects	3.9	3	11.7	2	7.8	2	7.8	3	11.7	2	7.8	2	7.8	3	11.7	3	11.7	3	11.7
D.2.2.1	Disruption of Important Species/Habitats and Wetlands	4.9	4	19.6	3	14.7	4	19.6	2	9.8	2	9.8	3	14.7	3	14.7	4	19.6	4	19.6
D.2.2.2	Dewatering Effects on Adjacent Wetlands	4.2	5	21.0	4	16.8	4	16.8	2	8.4	2	8.4	4	16.8	3	12.6	5	21.0	4	16.8
D.2.3.1	Thermal Discharge Effects	5.2	3	15.6	4	20.8	3	15.6	4	20.8	4	20.8	4	20.8	2	10.4	3	15.6	4	20.8
D.2.3.2	Entrainment/Impingement Effects	5.1	4	20.4	4	20.4	4	20.4	3	15.3	4	20.4	4	20.4	3	15.3	4	20.4	4	20.4
D.2.3.3	Dredging/Disposal Effects	3.6	3	10.8	2	7.2	3	10.8	3	10.8	2	7.2	2	7.2	3	10.8	3	10.8	3	10.8
D.2.4.1	Drift Effects on Surrounding Areas	4.2	4	16.8	4	16.8	5	21.0	3	12.6	3	12.6	3	12.6	3	12.6	4	16.8	4	16.8

Socioeconomic Criteria

Criteria		Weight	Guadalupe 2		Colorado 3		South Texas Project		Allens Creek		Malakoff		Trinity 2		Sulphur 1		Red 1		Red 2	
		Factor	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
D.3.1	Socioeconomics – Construction – Related Effects	6.2	2	12.4	1	6.2	3	18.6	5	31.0	4	24.8	2	12.4	1	6.2	2	12.4	4	24.8
D.3.3	Environmental Justice	5.5	3	16.5	5	27.5	3	16.5	3	16.5	4	22.0	4	22.0	3	16.5	5	27.5	5	27.5
D.3.4	Land Use	6.2	2	12.4	3	18.6	5	31.0	2	12.4	3	18.6	3	18.6	2	12.4	2	12.4	3	18.6

Ratings from 1 (less suitable) to 5 (more suitable)

Table 9.3-3 General Siting Criteria Ratings for Primary Sites (Continued)

Engineering and Cost Related Criteria

Criteria		Weight Factor	Guadalupe 2 Rating	Guadalupe 2 Score	Colorado 3 Rating	Colorado 3 Score	South Texas Project Rating	South Texas Project Score	Allens Creek Rating	Allens Creek Score	Malakoff Rating	Malakoff Score	Trinity 2 Rating	Trinity 2 Score	Sulphur 1 Rating	Sulphur 1 Score	Red 1 Rating	Red 1 Score	Red 2 Rating	Red 2 Score
D.4.1.1	Water Supply	7.5	2	15.0	3	22.5	5	37.5	2	15.0	2	15.0	3	22.5	2	15.0	2	15.0	3	22.5
D.4.1.2	Pumping Distance	5.6	4	22.4	4	22.4	4	22.4	4	22.4	4	22.4	4	22.4	4	22.4	4	22.4	4	22.4
D.4.1.3	Flooding	4.2	5	21.0	3	12.6	5	21.0	5	21.0	2	8.4	5	21.0	5	21.0	5	21.0	5	21.0
D.4.1.5	Civil Works	4.2	5	21.0	5	21.0	5	21.0	5	21.0	5	21.0	5	21.0	4	16.8	5	21.0	5	21.0
D.4.2.1	Railroad Access	6.2	4	24.8	4	24.8	5	31.0	5	31.0	4	24.8	1	6.2	1	6.2	2	12.4	4	24.8
D.4.2.2	Highway Access	6.2	2	12.4	4	24.8	5	31.0	4	24.8	3	18.6	2	12.4	2	12.4	4	24.8	3	18.6
D.4.2.3	Barge Access	6.5	4	26.0	3	19.5	5	32.5	3	19.5	2	13.0	2	13.0	1	6.5	1	6.5	1	6.5
D.4.2.4	Transmission Access	7.8	2	15.6	4	31.2	5	39.0	2	15.6	3	23.4	5	39.0	4	31.2	1	7.8	5	39.0
D.4.3.1	Topography	4.9	4	19.6	5	24.5	5	24.5	5	24.5	5	24.5	3	14.7	5	24.5	4	19.6	4	19.6
D.4.3.2	Land Rights	7.0	3	21.0	2	14.0	5	35.0	2	14.0	4	28.0	2	14.0	2	14.0	2	14.0	2	14.0
D.4.3.3	Labor Rates	4.7	3	14.1	3	14.1	3	14.1	3	14.1	3	14.1	3	14.1	3.5	16.5	3	14.1	3.5	16.5

Composite Site Rating	Guadalupe 2	Colorado 3	STP	Allens Creek	Malakoff	Trinity 2	Sulphur 1	Red 1	Red 2
	586.00	595.80	735.40	597.50	574.10	590.10	539.95	573.20	611.85

Environmental Site Rating	Guadalupe 2	Colorado 3	STP	Allens Creek	Malakoff	Trinity 2	Sulphur 1	Red 1	Red 2
	349.50	340.80	402.80	351.00	337.30	366.20	335.80	376.90	368.30

Expanded Environmental Site Rating - Transmission & Rail	Guadalupe 2	Colorado 3	STP	Allens Creek	Malakoff	Trinity 2	Sulphur 1	Red 1	Red 2
	389.90	396.80	472.80	397.60	385.50	411.40	373.20	397.10	432.10

Ratings from 1 (less suitable) to 5 (more suitable)

Table 9.3-4 Comparison of the Construction Impacts at the Candidate Sites

Impact Area Category	STP	Red 2	Allens Creek	Trinity 2	Malakoff	Limestone
Land Use						
Site and vicinity	SMALL	SMALL to MODERATE	MODERATE to LARGE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Power transmission line right-of-way and offsite areas	SMALL	SMALL	MODERATE	SMALL	MODERATE	SMALL
Air Quality	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Water-Related						
Water use	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Water quality	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Ecological						
Terrestrial ecosystems	SMALL	SMALL to MODERATE	LARGE	MODERATE to LARGE	LARGE	MODERATE to LARGE
Aquatic ecosystems	SMALL	MODERATE	LARGE	MODERATE	MODERATE	MODERATE

Table 9.3-4 Comparison of the Construction Impacts at the Candidate Sites (Continued)

Impact Area Category	STP	Red 2	Allens Creek	Trinity 2	Malakoff	Limestone
Socioeconomic						
Physical impacts	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Demography	Region: SMALL Local: SMALL Host County: LARGE	Region: SMALL Local: SMALL to MODERATE Host County: LARGE	Region: SMALL Local: SMALL Host County: LARGE	Region: SMALL to MODERATE Local: LARGE Host County: LARGE	Region: SMALL Local: SMALL to MODERATE Host County: LARGE	Region: SMALL to MODERATE Local: LARGE Host County: LARGE
Social and economic	Region: SMALL and BENEFICIAL Host County: LARGE and BENEFICIAL	Region: SMALL and BENEFICIAL Host County: LARGE and BENEFICIAL	Region: SMALL and BENEFICIAL Host County: LARGE and BENEFICIAL	Region: SMALL to MODERATE Host County: LARGE and BENEFICIAL	Region: SMALL and BENEFICIAL Host County: LARGE and BENEFICIAL	Region: SMALL to MODERATE Host County: LARGE and BENEFICIAL
Infrastructure and community services (local area)	SMALL to MODERATE	MODERATE to LARGE	MODERATE	MODERATE to LARGE	MODERATE	LARGE
Historic and Cultural Resources	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL
Nonradiological Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Radiological Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL

Table 9.3-5 Comparison of the Operational Impacts at the Candidate Sites

Impact Area Category	STP	Red 2	Allens Creek	Trinity 2	Malakoff	Limestone
Land Use						
Site and vicinity	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Power transmission line right-of-way and offsite areas	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Air Quality	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Water-Related						
Water use	SMALL	MODERATE to LARGE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Water quality	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Ecological						
Terrestrial ecosystems	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Aquatic ecosystems	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Socioeconomic						
Physical impacts	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL	SMALL to MODERATE	SMALL
Demography	SMALL to MODERATE	SMALL to MODERATE	SMALL	MODERATE	SMALL	MODERATE
Social and economic	MODERATE and BENEFICIAL	MODERATE to LARGE and BENEFICIAL	MODERATE and BENEFICIAL	MODERATE to LARGE and BENEFICIAL	MODERATE and BENEFICIAL	MODERATE to LARGE and BENEFICIAL
Infrastructure and community services	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL

Table 9.3-5 Comparison of the Operational Impacts at the Candidate Sites (Continued)

Impact Area Category	STP	Red 2	Allens Creek	Trinity 2	Malakoff	Limestone
Historic and Cultural Resources	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL	SMALL and BENEFICIAL
Nonradiological Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Radiological Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Impact of Postulated Accidents	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL

Table 9.3-6 State and Federal Threatened and Endangered Species Potentially Occurring in Host Counties of Alternate Sites

Scientific Name	Common Name	State Status	Federal Status	County with Listing
Amphibian				
Bufo houstonensis	Houston Toad	Endangered	Endangered	Austin, Freestone, Leon
Reptiles				
Macrochelys temminckii	Alligator Snapping Turtle	Threatened	--	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Liochlorophis vernalis	Smooth Green Snake	Threatened	--	Austin
Phrynosoma cornutum	Texas Horned Lizard	Threatened	--	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Crotalus horridus	Timber/ Canebrake Rattlesnake	Threatened	--	Austin, Fannin, Freestone, Leon, Limestone
Cemophora coccinea copei	Northern Scarlet Snake	Threatened	--	Henderson
Birds				
Falco peregrinus anatum	American Peregrine Falcon	Threatened	Federally delisted	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Tympanuchus cupido attwateri	Attwater's Greater Prairie-Chicken	Endangered	Endangered	Austin (within historic range)
Haliaeetus leucocephalus	Bald Eagle	Threatened	Federally delisted	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Sterna antillarum athalassos	Interior Least Tern	Endangered	Endangered	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Falco peregrinus	Peregrine Falcon	Threatened	Federally delisted	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Plegadis chihi	White-faced Ibis	Threatened	--	Austin, Limestone

Table 9.3-6 State and Federal Threatened and Endangered Species Potentially Occurring in Host Counties of Alternate Sites (Continued)

Scientific Name	Common Name	State Status	Federal Status	County with Listing
Birds (continued)				
Buteo albicaudatus	White-tailed Hawk	Threatened	--	Austin
Grus americana	Whooping Crane	Endangered	Endangered	Austin, Freestone Henderson, Leon, Limestone
Mycteria americana	Wood Stork	Threatened	--	Austin, Fannin, Henderson, Freestone, Leon, Limestone
Numenius borealis	Eskimo Curlew	Endangered	Endangered	Fannin (historic)
Charadrius melodus	Piping Plover	Threatened	Threatened	Fannin, Henderson, Freestone
Aimophila aestivalis	Bachman's Sparrow	Threatened	--	Henderson, Freestone, Leon
Fishes				
Percina maculate	Blackside Darter	Threatened	--	Fannin
Cycleptus elongates	Blue Sucker	Threatened	--	Fannin
Erimyzon oblongus	Creek Chubsucker	Threatened	--	Fannin
Polyodon spathula	Paddlefish	Threatened	--	Fannin
Scaphirhynchus platorynchus	Shovelnose Sturgeon	Threatened	--	Fannin
Notropis oxyrhunchus	Sharpnose Shiner	--	Candidate	Austin
Notropis buccula	Smalleye Shiner	--	Candidate	Limestone
Insects				
Nicrophorus americanus	American Burying Beetle	--	Endangered	Fannin
Mammals				
Ursus americanus luteolus	Louisiana Black Bear	Threatened	Threatened	Austin and Leon (as possible transient), Fannin

Table 9.3-6 State and Federal Threatened and Endangered Species Potentially Occurring in Host Counties of Alternate Sites (Continued)

Scientific Name	Common Name	State Status	Federal Status	County with Listing
Mammals (continued)				
Ursus americanus	Black Bear	Threatened	T/SA; NL Field characteristics similar to Louisiana Black Bear Not Federally Listed	Fannin, Henderson
Plants				
Abronia macrocarpa	Large-fruited Sand-Verbena	Endangered	Endangered	Freestone
Spiranthes parksii	Navasota Ladies'-Tresses	Endangered	Endangered	Freestone, Limestone

Notes:

1. Red 2 site is in Fannin County; Allens Creek site is in Austin County; Trinity 2 site is in Freestone County; Malakoff site is in Henderson County; Limestone site straddles Limestone, Freestone, and Leon Counties. A listing of species that have been observed within the STP site is included in ER Section 4.3.1.1.
2. The whooping crane shown as potential migrant in TPWD database and as nonessential experimental population in USFWS database.
3. The red wolf identified in TWPD database, but not included in table since it is identified as an extirpated species.
4. The TPWD database identifies the Louisiana black bear as a possible transient species in Austin and Leon Counties; and the black bear as potentially occurring in Fannin and Henderson Counties. The black bear is included on both Federal and State lists due to its similar appearance to the Federally threatened Louisiana black bear. In contrast to the TPWD database, the USFWS database only lists the Louisiana black bear as potentially occurring in Fannin County. (References 9.3-26, 9.3-41, 9.3-53, 9.3-66, 9.3-73, and 9.3-78).

Table 9.3-7 Percent Increase in Population* for Study Area† and Host County for Each Site

Site	Study Area† Population (2000)	Percentage Increase	Host County Population (2000)	Percentage Increase	Adjacent County Population (2000)	Percentage Increase	Two-County Population (2000)	Percentage Increase
STP	440,038	2.2%	37,957 (Matagorda)	15.5%	241,767 (Brazoria)	0.9%	279,724	2.9%
Red 2	844,688	1.1%	31,242 (Fannin)	18.8%	110,595 (Grayson)	1.9%	141,837	5.6%
Allens Creek	3,925,038	0.2%	23,590 (Austin)	24.9%	354,452 (Fort Bend)	0.6%	378,042	2.1%
Trinity 2	387,196	2.5%	17,867 (Freestone)	32.8%	55,109 (Anderson)	3.8%	72,976	10.9%
Malakoff	643,555	1.5%	73,277 (Henderson)	8%	111,360 (Ellis)	1.9%	184,637	4.3%
Limestone	284,772	3.4%	17,867 (Freestone)	32.8%	22,051 (Limestone)	9.6%	39,918	20%

* Population increase due to in-migrating construction workers and their families during peak construction period.

† Study Areas for each site are defined as follows:

- STP: Matagorda, Brazoria, Wharton, Jackson, Calhoun, and Victoria Counties
- Red 2: Fannin, Grayson, Lamar, Cooke, Collin, and Hunt Counties in Texas; Bryan and Marshall Counties in Oklahoma.
- Trinity 2: Freestone, Anderson, Leon, Houston, Cherokee, Henderson, Ellis and Navarro Counties
- Allens Creek: Austin, Fort Bend, Harris, Waller, Colorado, Wharton, Washington, and Fayette Counties
- Malakoff: Henderson, Anderson, Freestone, Navarro, Van Zandt, Kaufman, Ellis, Smith, and Cherokee Counties
- Limestone: Limestone, Freestone, Leon, Robertson, McLennan, and Navarro Counties

Table 9.3-8 Percentage Use* of Existing Vacant Housing

Site	County	Required Housing Units (assuming 1 per worker)	Total Housing Available †(Vacant) (2000)	Percent Utilized	Percent Utilized in Two-County Area
STP	Matagorda	2,077 workers in-migrate and reside in host county; 750 workers in-migrate and reside in adjacent county; total workers in-migrating to two-county area is 2827	4,710 ($61,500)	44.1%	21.1%
	Brazoria		8,674 ($88,500)	8.6%	
Red 2	Fannin		1,782 ($54,500)	117%	39%
	Grayson		5,466 ($69,100) Sherman-Denison MSA	13.7%	
Allens Creek	Austin		1,458 (85,000)	142%	43.3% [2.5% if the Houston PMSA is included]
	Fort Ben		5,076 ($115,000) Houston PMSA, 112,876	14.8% [0.7% in Houston PMSA]	
Trinity 2	Freestone		1,550 ($56,000)	134%	65.6%
	Anderson		2,758 ($58,900)	27.2%	
Malakoff	Henderson		7,131 ($75,300)	29.1%	30.8%
	Ellis		2,051 ($91,400)	36.6%	
Limestone	Freestone		1,550 ($56,000)	134%	84%
	Limestone		1,819 ($46,300)	41.2%	

* Percentage use by In-migrating construction workers and their families during peak construction period.

† Vacant housing units available for sale or rent by county (median price).

Table 9.3-9 Projected Increase1 in School-Age Children within the Host and Two-County Area*

Site	County	Total Population School-Age Children (5-19) (2000)†	Percent Increase in School-Age Children by County	Percent Increase for Two-County Area
STP	Matagorda	9,724	14.2%	2.8%
	Brazoria	57,217	0.9%	
Red 2	Fannin	6,271	22%	6.1%
	Grayson	24,254	2.1%	
Allens Creek	Austin	5,472	25.2%	1.9%
	Fort Bend	95,701	0.5%	
Trinity 2	Freestone	3,688	37.4%	14.1%
	Anderson	9,614	5.2%	
Malakoff	Henderson	15,027	9.2%	4.3%
	Ellis	28,765	1.7%	
Limestone	Freestone	3,688	37.4%	23.3%
	Limestone	4,727	10.6%	

* Increase due to in-migrating school-age children of construction workers and their families during peak construction period.

† Population estimates for school age children, including age brackets 5-9, 10-14, and 15-19.

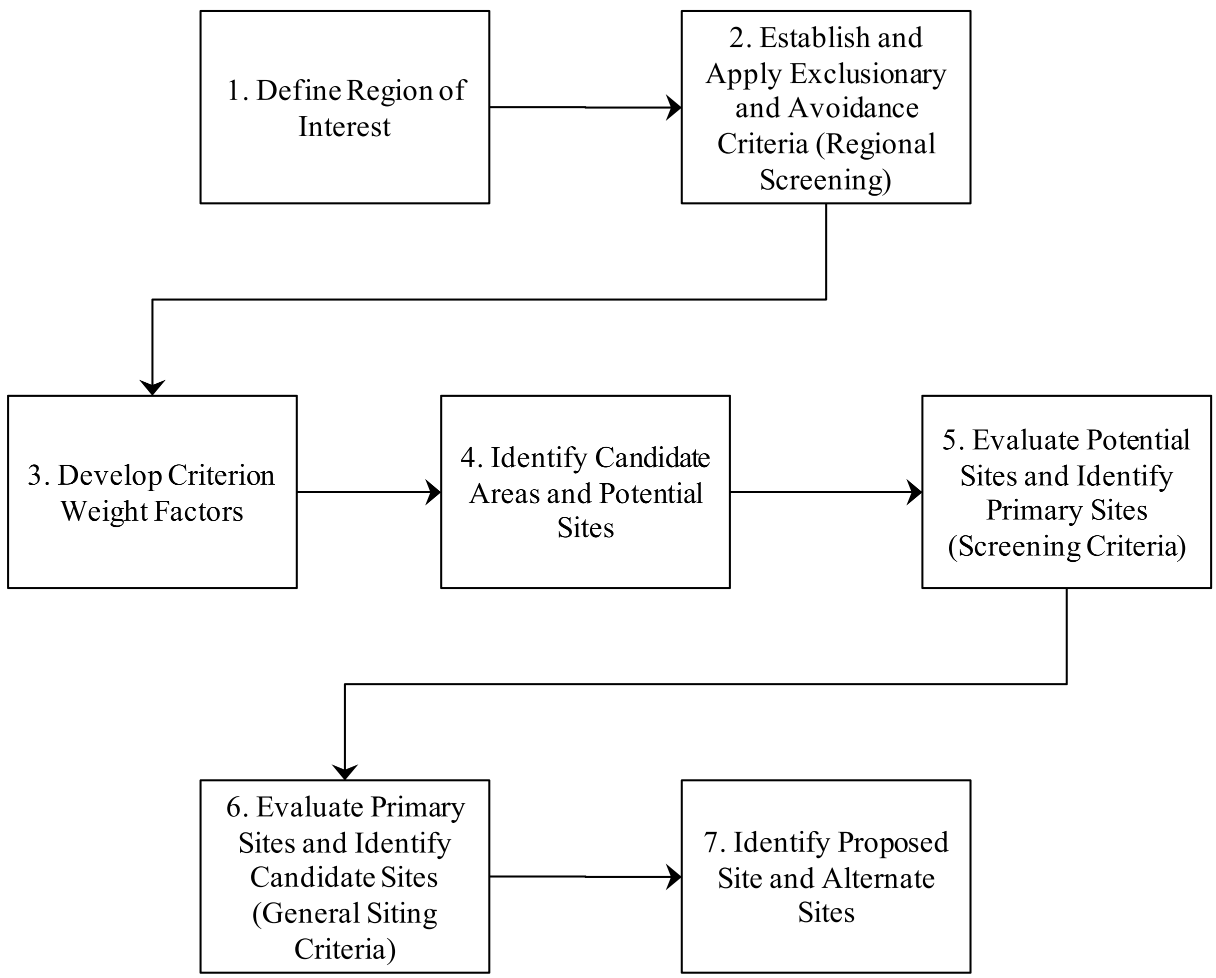


Figure 9.3-1 Alternate Site Selection Process

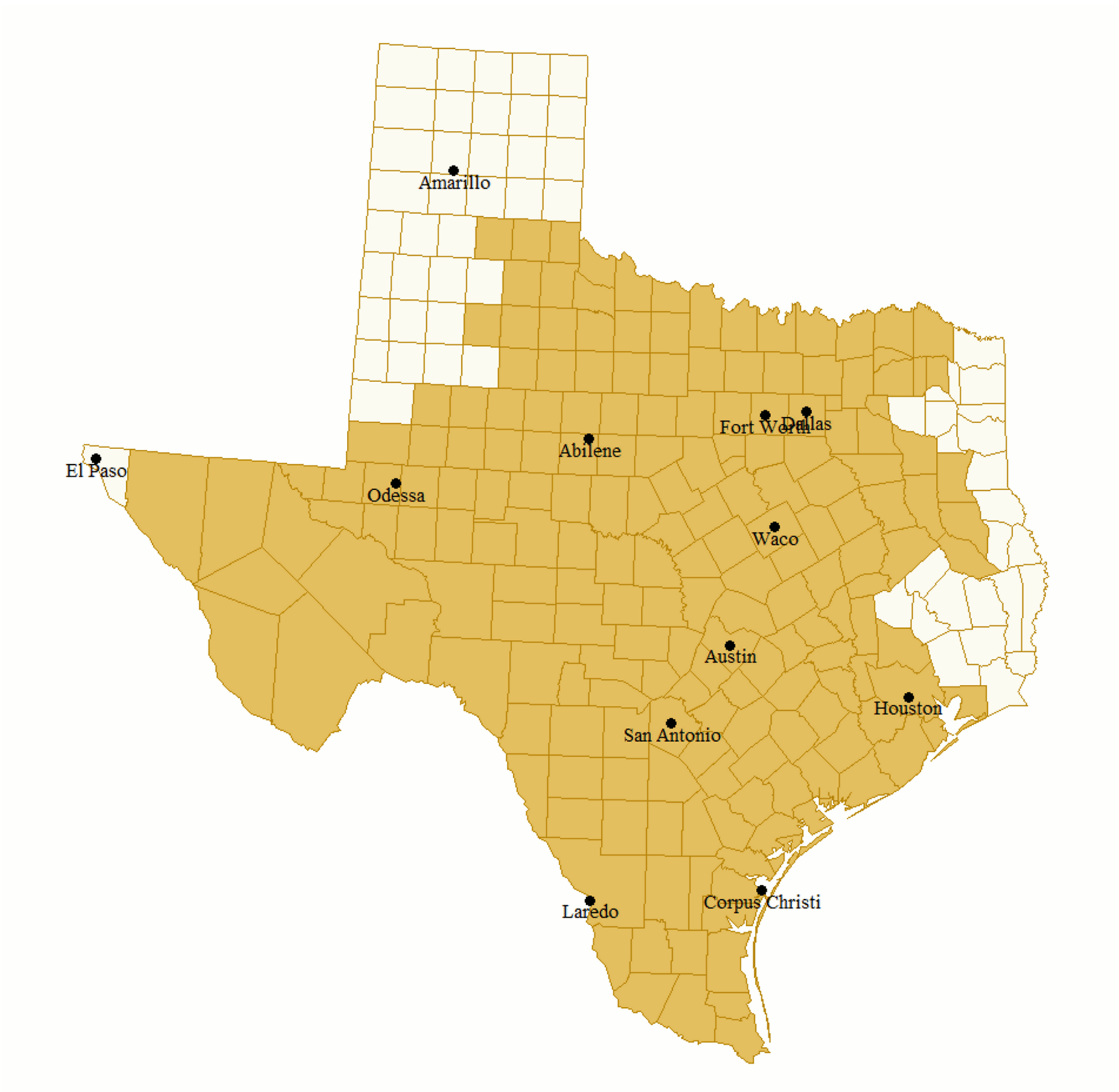


Figure 9.3-2 Region of Interest

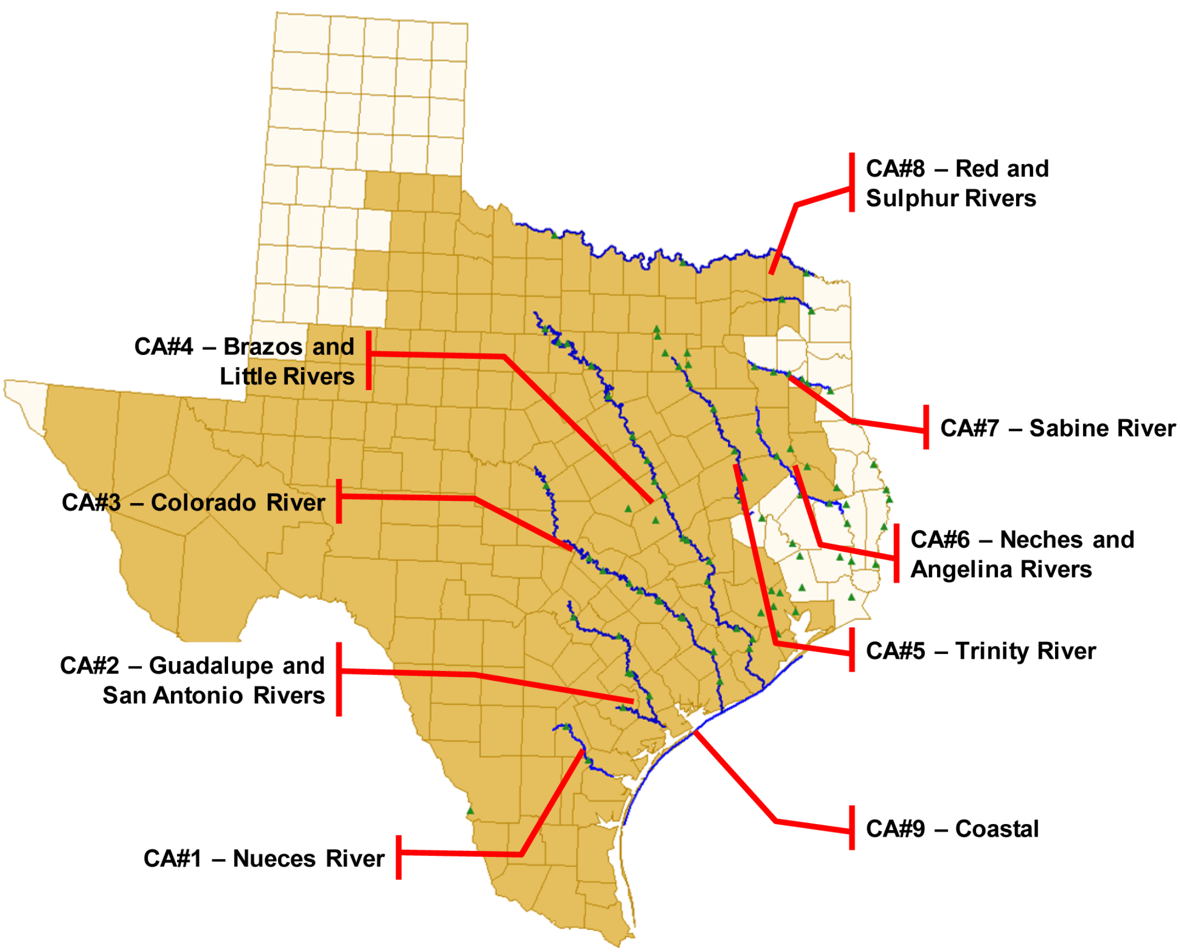
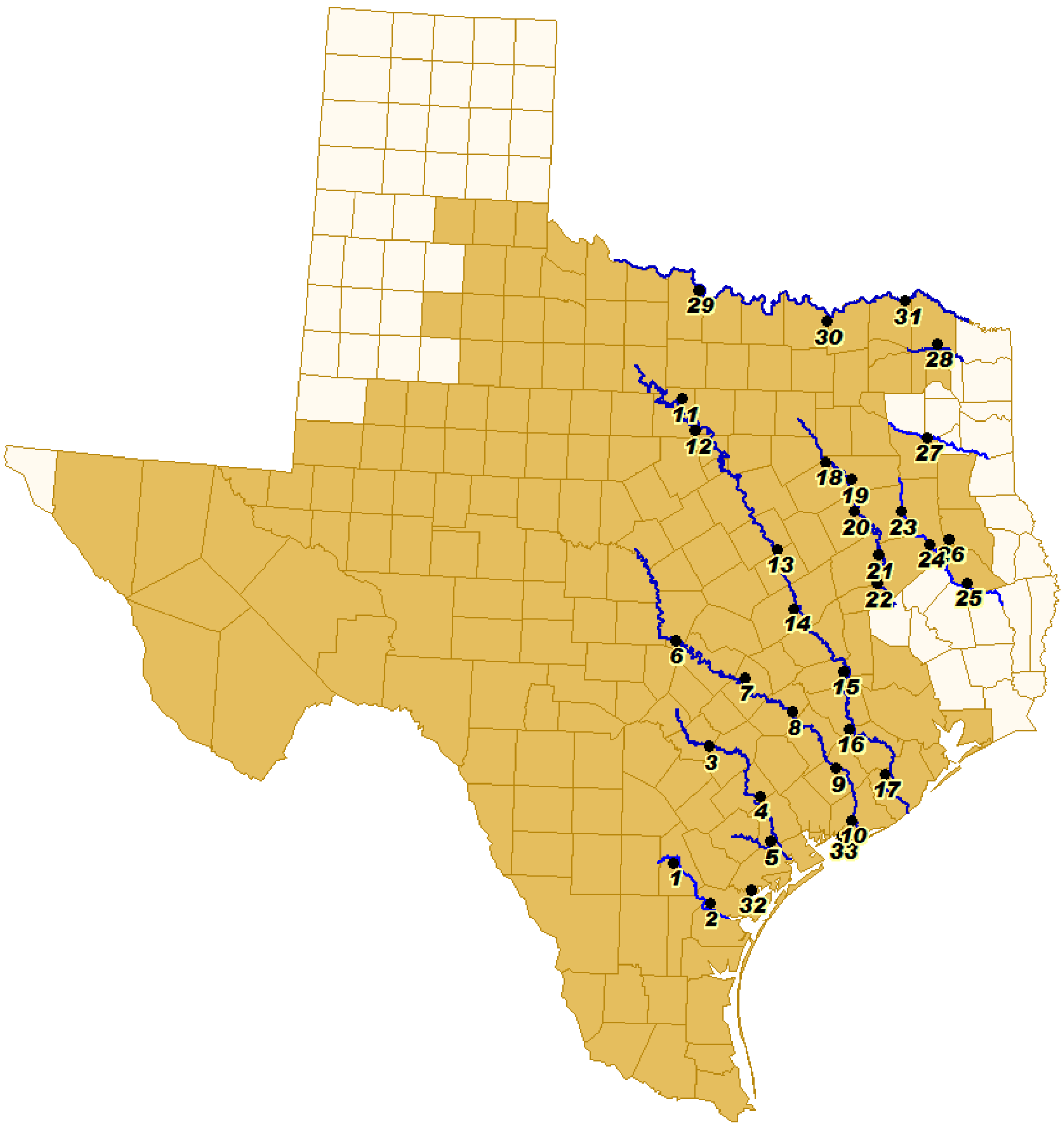


Figure 9.3-3 Candidate Areas



Site numbers on Figure 9.3-4 correspond to site numbers in the STPNOC Nuclear Power Plant Siting Report, Table 4-1 (Reference 9.3-4).

Figure 9.3-4 Potential Sites

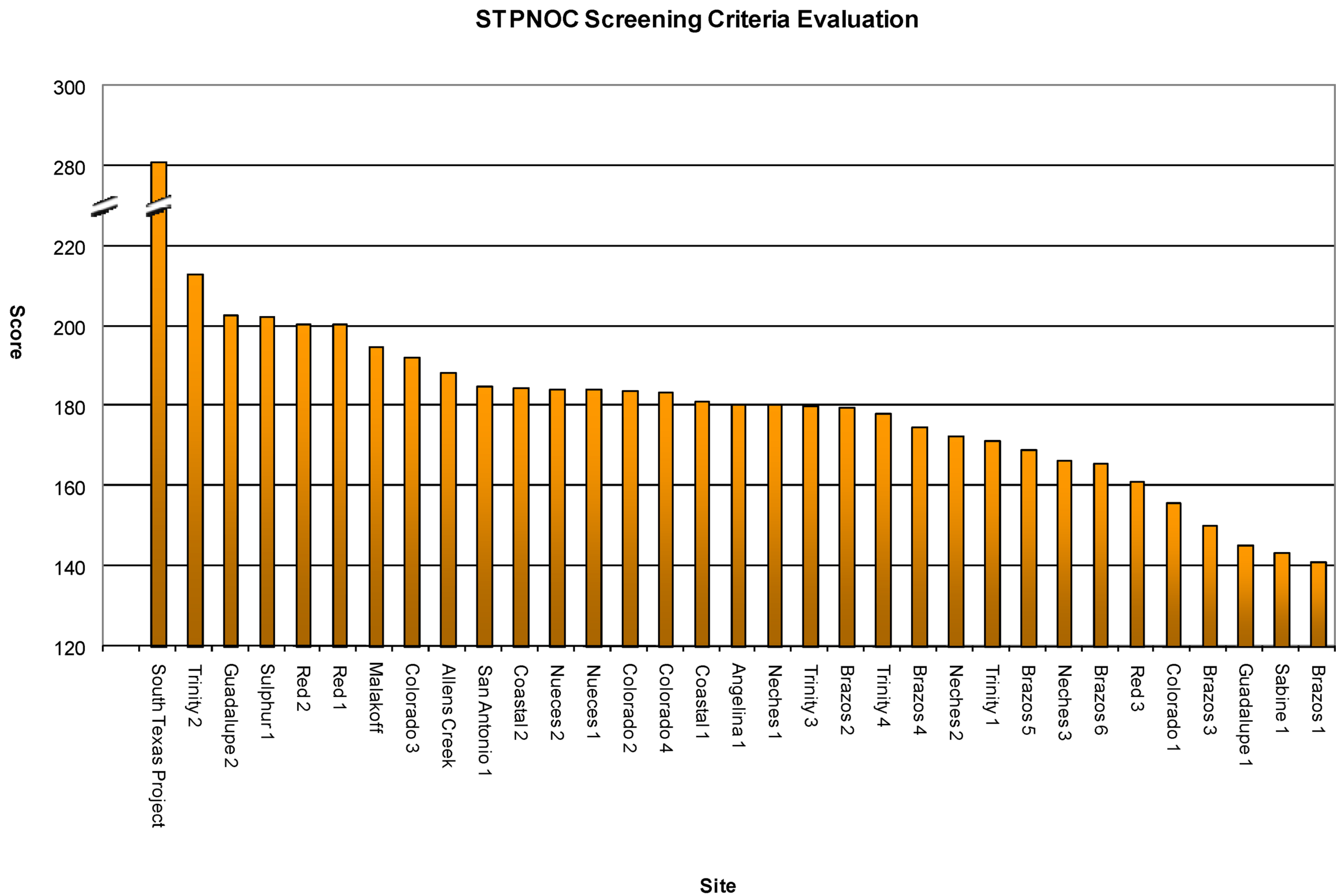
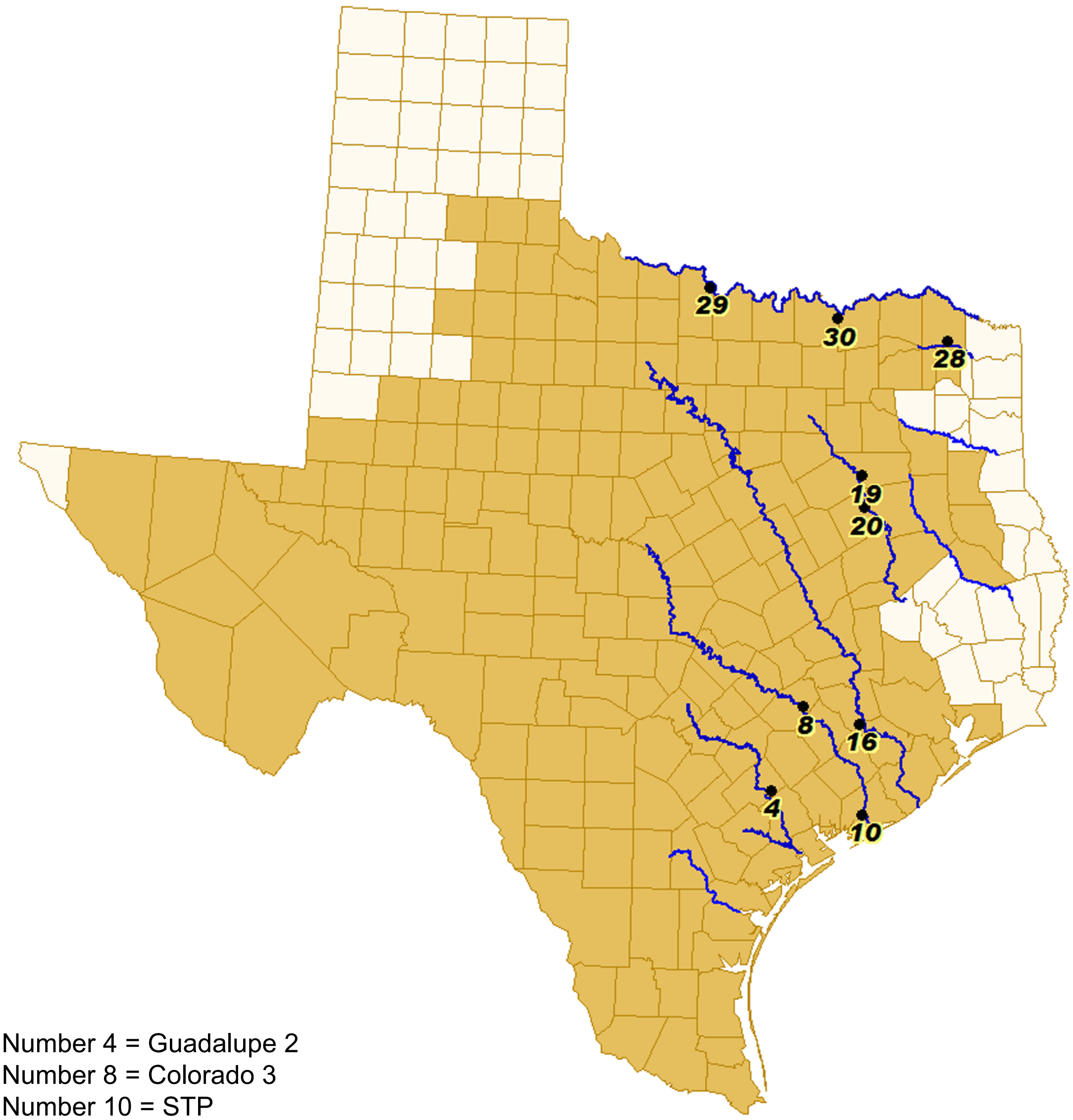


Figure 9.3-5 Screening Criteria Evaluation Results



Site Number 4 = Guadalupe 2
Site Number 8 = Colorado 3
Site Number 10 = STP
Site Number 16 = Allens Creek
Site Number 19 = Malakoff
Site Number 20 = Trinity 2
Site Number 28 = Sulphur 1
Site Number 29 = Red 1
Site Number 30 = Red 2

Figure 9.3-6 Primary Sites

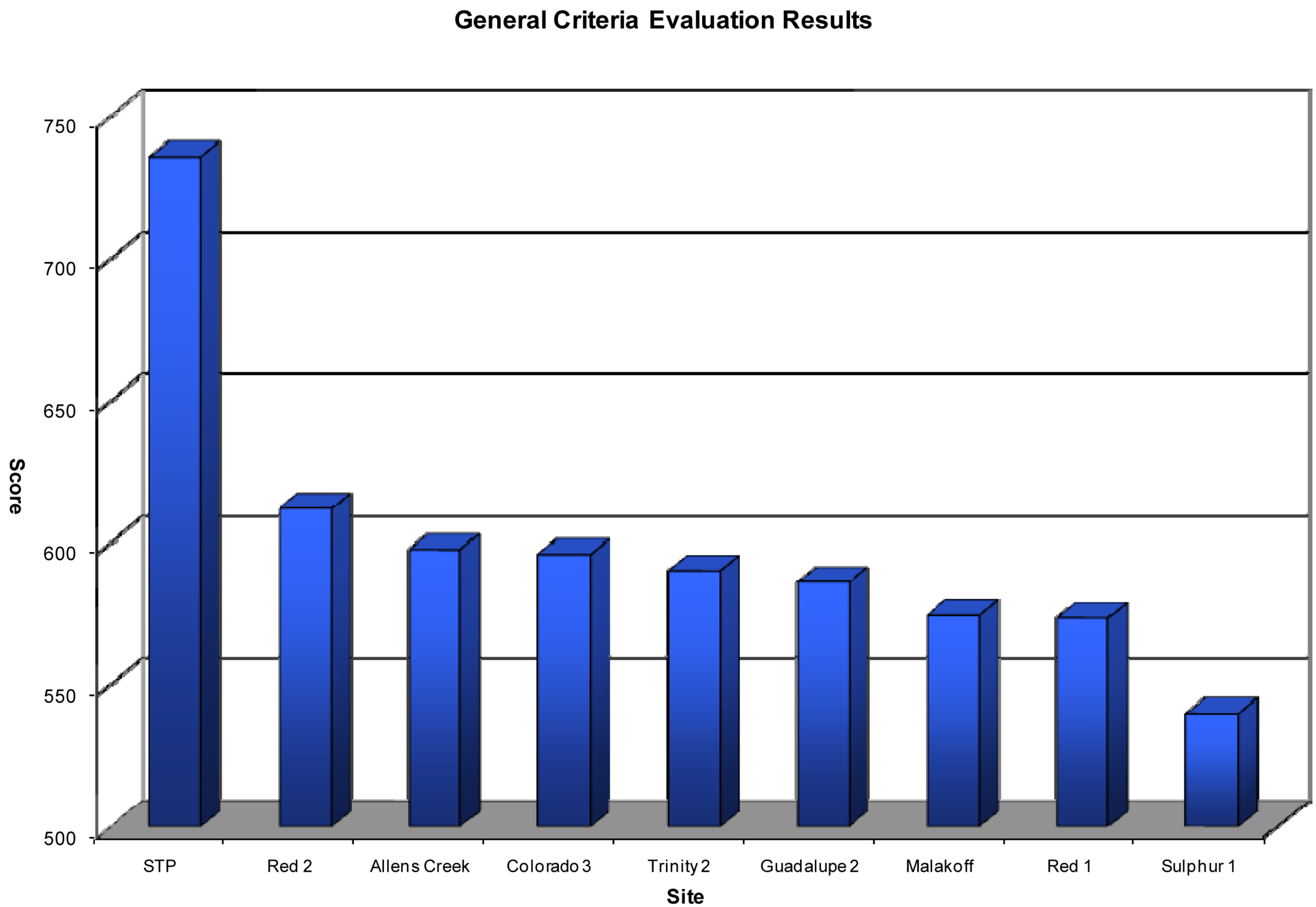


Figure 9.3-7 Primary Sites

Figure 9.3-8 Candidate Sites

9.3 ~~Alternative Site Analysis~~

~~This section identifies and evaluates alternatives to the proposed STP site for the construction and operation of a two-unit nuclear facility (the proposed project). The analysis described here addresses alternative sites to determine if there is an "obviously superior" site in terms of environmental impacts and other factors when compared to the proposed site (Reference 9.3-1).~~

~~STPNOC will operate the two proposed nuclear facilities as merchant nuclear plants, providing electrical energy to the competitive marketplace. STPNOC intends that the proposed project be built and operated in a location that is safe, secure, and environmentally responsible. The alternative site analysis is submitted to ensure that an evaluation of the appropriateness of the proposed site, in terms of geographical and environmental restrictions, is made against reasonable alternative sites for comparison.~~

~~This section provides a description of the process for evaluating alternative sites that includes selection procedures for the Region of Interest (ROI) and candidate sites, factors considered at each level of the selection process, criteria used to screen candidate sites, and methodologies used in the alternative site comparison process. Section 9.3.1 explains the alternative site selection process. Section 9.3.2 explains how the alternative sites were selected. Section 9.3.3 compares these alternatives with the proposed site.~~

9.3.1 ~~Alternative Site Selection Process~~

~~The proposed site for STP 3 & 4 is adjacent to an operational nuclear power site and was included in the orginal license application and site analysis. Under these circumstances, NUREG-1555 allows consideration of the proposed site as a "special case" enabling it to be compared to other alternative sites within the ROI. STPNOC relied on this special case provision in their methodology to compare alternative sites (Reference 9.3-1):~~

> ~~*"…there will be special cases in which the proposed site was not selected on the basis of a systematic site-selection process. Examples include plants proposed to be constructed on the site of an existing nuclear power plant previously found acceptable on the basis of a NEPA review and/or demonstrated to be environmentally satisfactory on the basis of operating experience, and sites assigned or allocated to an applicant by a State government from a list of State-approved power plant sites. For such cases, the reviewer should analyze the applicant's site-selection process only as it applies to candidate sites **other than the proposed site**, and the site-comparison process may be restricted to a site-by-site comparison of these candidates with the proposed site."*~~

~~STPNOC conducted a thorough analysis to select candidate sites for the site-by-site comparison process discussed above. This section describes the process that evaluates the ROI for licensable sites other than the proposed site, and reducing those sites to reasonable alternative sites. The section also outlines the detailed review that~~

~~leads to the selection of the sites used to determine if any sites in the ROI are "environmentally preferable" to the proposed site (Reference 9.3-1).~~

~~In accordance with NUREG-1555 (Reference 9.3-1), STPNOC divided its analysis into three general steps:~~

- ~~**Identify the alternative sites:** This step includes the justification for selecting the ROI, and explains the process for identifying the Candidate Areas, potential sites, and candidate sites. STPNOC selected the alternative sites from the candidate sites, using the "candidate site criteria" found in NUREG-1555 (Reference 9.3-1). This step is discussed in Section 9.3.2 below.~~

- ~~**Compare the alternative sites with the proposed site:** This step is a site-by-site comparison of the alternative sites with the proposed site, to see if any of the alternatives might be "environmentally preferable" to the proposed site. The objective of this step is to determine whether the impacts at the alternative sites are greater than or equal to the impacts at the proposed site. During this step, STPNOC considered various topics. These topics provided the environmental and health impact information that enabled STPNOC to determine the environmental impacts of the proposed plant at the alternative sites. Once the comparison was completed, STPNOC determined if any of the alternatives are "environmentally preferable." This step is discussed in Section 9.3.3 below.~~

- ~~**"Obviously superior" analysis:** This step is completed only if an environmentally preferable alternative site is identified. In this review, STPNOC did not identify any sites that were environmentally preferable. As a result, this final step was not performed by STPNOC.~~

~~The process used to perform the alternatives analysis is shown in Figure 9.3-1.~~

9.3.2 ~~Identify Alternative Sites~~

~~This step has several general reviews~~

- ~~Identify the ROI (Section 9.3.2.1 below).~~
- ~~Review the ROI to identify the Candidate Area (Section 9.3.2.2 below).~~
- ~~Survey the Candidate Area to identify potential sites (Section 9.3.2.3 below).~~
- ~~Screen the potential sites to identify Candidate Sites (Section 9.3.2.4 below).~~
- ~~Review of the Candidate Sites to identify the Alternative Sites (Section 9.3.2.5 below).~~

~~The general investigation involves narrowing the possible Candidate Areas, candidate sites, and alternatives based on the criteria found in NUREG-1555 (Reference 9.3-1).~~

9.3.2.1 ~~Identification of the Region of Interest.~~

~~The existing STP site, located in Matagorda County in southeastern Texas, is the proposed site for STP Units 3 & 4. This site is within the Electric Reliability Council of Texas (ERCOT) territory. ERCOT is the regional transmission operator for almost all of Texas. Its transmission grid is unique from other regional grids in that ERCOT has limited interties that connect the grid with other systems. Because of this lack of interconnects, the vast majority of the power generated in the region must be used within ERCOT. In addition to ensuring reliability of the transmission grid, ERCOT also manages the power market. Chapter 8 of this ER describes ERCOT operations in detail. The size and environmental diversity of ERCOT also provides a large, manageable area from which to draw Candidate Areas and potential alternative sites. ERCOT was also selected as the ROI because the power generated by STP Units 3 & 4 will be sold to customers within the region. ERCOT manages grids from Houston in the east to the Mexican Border. To facilitate this process, ERCOT is divided into three regional planning areas: (1) North Region, with Dallas, Waco and Austin as the main load centers; (2) South Region, with Houston, San Antonio, Corpus Christi and Laredo as main load centers; and (3) West Region, where the major load centers are Odessa and Abilene. The ERCOT ROI is shown in Figure 9.3-2.~~

9.3.2.2 ~~Review of the Region of Interest to Identify the Candidate Areas~~

~~STPNOC reviewed ERCOT's three planning regions (West, North, and South), noting that each region had characteristics suitable for Candidate Areas. They are environmentally diverse, and could be potentially appropriate in terms of safety, seismic restrictions and geographic or engineering restrictions. STPNOC evaluated issues that could render the region unsuitable for a nuclear facility, and a brief discussion follows.~~

~~Most portions of the West Region of the ROI are unsuitable for inclusion in the Candidate Area because they lack some important characteristics of a suitable nuclear site (Reference 9.3-19). For example, the West Region is far from major load centers and it is home to less than two percent of the population. New transmission corridors would likely be required to accommodate the additional power from a new nuclear plant. The West Region is currently experiencing growth in wind energy production, which is resulting in congestion on current transmission lines, particularly around Odessa. Limited transmission upgrades are planned for the area, and new Rights-of-Way (ROW) would require new routing and construction, with associated environmental impacts.~~

~~Ultimately, the availability of a suitable source for cooling water removed the West Region from consideration. The Texas Water Development Board (TWDB) projects that the West Region will suffer from water shortages or deficits as early as 2010. This impending deficit is expected to leave many new water needs unfulfilled, including those for new electrical generation facilities (Reference 9.3-2).~~

~~The North and South Regions contain the most populous regions of the state. The load center at Dallas/Fort Worth anchors the North Region while the Houston load center anchors the South Region. Transmission corridors in the North and South Regions are~~

~~highly developed, particularly around the cities of Houston, Dallas/Fort Worth, and San Antonio. ERCOT expects that most load growth in the next five years will occur around those three cities and has plans for transmission upgrades through 2011. These areas also host highly developed generation infrastructure, including roads, railroads, and transmission corridors that are available for construction and operation of a nuclear plant. Suitable water sources are also available. The North and South Regions generally experience between 15 and 25 inches of rain per year, and the water resources capabilities in the areas' rivers and reservoirs are highly developed. Additionally, most of ERCOT's existing generating plants are in the North and South Regions, making either area suitable for co-locating a new nuclear facility at an existing generating plant (Reference 9.3-3).~~

~~Some portions of the South Region may be less suitable for the proposed project. The load centers in the region's southern half (Corpus Christi, Brownsville, and Laredo) are small and like the West Region, are located far from the major ERCOT load centers.~~

~~From this analysis, STPNOC concluded that the Candidate Area should be a combination of the North Region and the northern portion of the South Region. The three major load centers in ERCOT (Houston, Dallas-Fort Worth, and Central Texas) can provide logical points of reference for a Candidate Area. These load centers form a rough triangle of intensely urban cities that transition quickly into rural, undeveloped country. Water sources are generally available for development, while transportation and transmission infrastructure are well developed. This triangle forms the "Candidate Area" from which STPNOC might draw potential sites for comparison with the proposed STP site. The Candidate Area is shown in Figure 9.3-3.~~

~~The Candidate Area is diverse geographically and environmentally. It includes coastal regions, riparian regions, and drier upland areas.~~

9.3.2.3 ~~Survey of the Candidate Area to Identify Potential Sites~~

~~STPNOC surveyed the Candidate Area to identify potential sites. This process consisted of the following:~~

- ~~Identification of existing generating sites in the Candidate Area (See Section 9.3.2.3.1 below).~~
- ~~Identification of a reasonable number of greenfield sites; i.e., sites that have not been developed for industrial or commercial use (See Section 9.3.2.3.2 below).~~
- ~~Identification of a reasonable number of brownfield sites; i.e., sites that have been previously developed for an industrial or commercial use, but are now available for other uses (See 9.3.2.3.3 below).~~

9.3.2.3.1 ~~Existing Generating Sites~~

~~STPNOC first identified existing generating sites in Texas based on generating facility information provided in the Energy Information Administration (EIA) 2005 Report of existing generator sites in Texas (Reference 9.3-4). This report, also known as Form 860, is a reliable source for identifying existing and proposed generation sites. The~~

~~2005 report referenced in this ER contains the most recent data available, and identifies all existing and planned generating facilities in the United States as of the report's compilation date. The existing generating facilities are arranged by State, generating capacity, energy source, and other attributes.~~

~~All existing generating sites in Texas were identified in this list. Additionally, STPNOC compared recent FERC utility codes (current as of November 2006) to ensure that the latest information on renewable and traditional energy facilities was available. These forms provide utility, plant and energy source information, as well as state and county locations. This information was tabulated to show all of the existing generating sites in Texas, their location, utility information, energy source, and transportation methods. Four separate sets of generation facility information were arranged and included fossil fueled facilities, renewable energy facilities, cogeneration facilities, and distributed generation sites. This information is shown in Table 9.3-1.~~

~~After identifying all generating sites in Texas, STPNOC used the FERC utility code information available on the EIA web site to sort the sites by county to determine which were located within the Candidate Area (Reference 9.3-4). Sites outside of the Candidate Area were deselected, and the remaining sites were compiled into a table (Table 9.3-2) that showed only sites within the Candidate Area. In addition to identifying existing generating facilities, the EIA 2005 Annual Generator Report (Reference 9.3-4) identifies sites for proposed generating facilities. The location of proposed facilities were sorted by county to identify sites within the Candidate Area. These proposed sites along with operational facilities are included in Table 9.3-2.~~

~~Most of the potential sites shown in Table 9.3-2 are fossil fuel sites. Others are renewable energy generation sites. Because the renewable energy sites generally have characteristics of greenfields, they were carried forward as potential greenfield sites and are discussed below in Sections 9.3.2.3.2 and 9.3.2.4.2.~~

9.3.2.3.2 ~~Reasonable Number of Greenfield Sites~~

~~Potentially, there are an almost limitless number of greenfield sites that could be reviewed to identify candidate sites for a new nuclear plant. In order to arrive at a reasonable number of potential greenfield sites, STPNOC identified potential greenfield sites from the following sources:~~

- ~~Existing renewable energy generation sites.~~
- ~~Proposed reservoir sites in the Candidate Area. This is a reasonable consideration, given that the reservoirs could provide necessary cooling water without significant or potentially long-term reliance on groundwater. Additionally, since Texas law requires planning regions to identify important reservoir sites in advance, publicly available studies allow STPNOC to perform a reconnaissance view of locations and potential impacts. In its 2007 report, three new reservoirs are planned in the Candidate Area: Allen's Creek, Little River, and Bedias Creek. (Reference 9.3-2, Reference 9.3-5).~~

- ~~STPNOC also considered a "generic" greenfield site. A generic greenfield site is one that represents other attributes of an undeveloped site that may not be characteristic of other candidate sites. This ensures that any other pertinent site attributes are considered during the comparison process.~~

9.3.2.3.3 ~~Reasonable Number of Brownfield Sites~~

~~Potentially, there are a large number of brownfield sites that could be reviewed to identify candidate sites for a new nuclear plant. In order to arrive at a reasonable number of potential brownfield sites, STPNOC identified potential brownfield sites using the following process.~~

~~STPNOC reviewed potential sites that would incorporate characteristics of a reclaimed "industrial" site and still meet the siting criteria from 10 CFR 100 (Reference 9.3-6) and other potential site criteria in NUREG-1555 (Reference 9.3-1). STPNOC concluded that abandoned lignite mines along the active lignite mining band in the Candidate Area provide the best potential brownfield sites because they tend to be located away from populated area, have some existing infrastructure to support a new nuclear station (such as rail lines), and generally have a source of water. Five abandoned mine projects were identified as potential sites from reclamation reports prepared by the State of Texas (Reference 9.3-7). These sites included the Parker Abandoned Mine Land Reclamation (AML) project in Parker County, the Bastrop AML project in Bastrop County, the Alcoa AML project in Milam County, the Somerset AML project in Bexar County and the Malakoff AML in Henderson County.~~

9.3.2.4 ~~Screening of the Potential Sites to Identify the Candidate Sites~~

~~STPNOC screened potential sites to identify candidate sites. The process included screening potential sites with existing generating facilities, potential greenfield sites, and potential brownfield sites. The process is described in detail below.~~

9.3.2.4.1 ~~Screening of Potential Sites with Existing Generating Facilities~~

~~STPNOC screened electric generating facilities based on their fuel types to determine if the proposed nuclear plant could be reasonably and safely co-located. Natural gas-fired generation facilities were considered potentially unacceptable due to hazards associated with the use of natural gas and its transport through pipeline infrastructure. Hazards of concern in this analysis included over-pressurization due to air blast, thermal load resulting from gas deflagration, missile hazards, and gas accumulation and concentration within the plan (Reference 9.3-8). Due to these hazards, existing natural gas-fired generation sites were screened out in preference to other generation facilities that did not share these hazards.~~

~~Landfill gas facilities were also screened out as potential sites. Such operations involve the same kind of pipeline transportation issues and risk as natural gas-fired generation sites.~~

~~Cogeneration facilities within the Candidate Area generally use natural gas, distillate fuels, or other gases. These facilities are not desirable for co-location for the same reasons that more traditional natural gas facilities are unsuitable: potential accidents~~

~~at the cogeneration facility, coupled with other potential accidents at the adjoining plants that may pose an unacceptable threat to the nuclear plant. Table 9.3-3 shows the results of this screening process.~~

~~A number of the existing fossil generating sites were deselected because they were too close to population centers. STPNOC also reviewed existing nuclear plants as potential candidate sites. There are two operating commercial nuclear sites within the Candidate Area: the two-unit Comanche Peak Nuclear Plant and the two-unit STP Plant near Bay City Texas. While the Comanche Peak site is an appropriate potential site, it is not suitable for development by STPNOC because Comanche Peak's owner, TXU, recently announced plans to enlarge its own nuclear facility at the site. Table 9.3-4 shows this analysis and the remaining fossil generating facilities that were carried forward for further review as candidate sites.~~

9.3.2.4.2 ~~Screening of Potential Greenfield Sites~~

~~STPNOC reviewed the existing renewable energy sites as greenfields because they have not been developed for fossil generation. Some renewable generation sites were deselected because they were too close to population centers, were popular recreation areas or were far from appropriate transmission infrastructure. One wind farm and one hydropower site were carried forward as candidate greenfield sites. The results of this screening are included in Table 9.3-4.~~

~~STPNOC also reviewed the three sites where new reservoirs are planned in the Candidate Area: Allen's Creek, Little River and Bedias Creek (Reference 9.3-2, Reference 9.3-5). A review of the three sites noted that potential environmental impacts, as well as transmission issues would likely be greater at the Little River and Bedias Creek sites than at the Allen's Creek site. For example, threatened and endangered species have been reported at the proposed Bedias Creek and Little River reservoir sites, while none is known to be present at the Allen's creek site. A TWDB environmental review noted that environmental impacts would be small (Reference 9.3-5). As a result, STPNOC looked at Allen's Creek as one of its candidate "greenfields."~~

~~STPNOC also evaluated a generic greenfield site. STPNOC assumed that the generic greenfield site would be located in an area that met the siting criteria of 10 CFR Part 100 (Reference 9.3-6). The following assumptions and characterizations were used to assess the site:~~

- ~~The characteristics of the site could be largely rural, or at least in an area with low population in the Candidate Area.~~
- ~~The site would be near a possible supply of cooling water similar to those available at the proposed STP site. For example, water could be possibly obtained from Matagorda Bay, the lower Colorado River Basin, or the Gulf of Mexico.~~
- ~~The site would consist of at least 500 to 1000 acres to accommodate construction and operation needs (for comparison, construction of the STP units would disturb~~

~~approximately 770 acres, with 90 acres permanently dedicated to new units and their supporting facilities).~~

- ~~The general environmental considerations associated with construction and operation at a greenfield site would be similar to those discussed in NUREG-1555 (Reference 9.3-1).~~
- ~~The hydrology of the greenfield sites would be generally similar to the alternative sites selected, and water use would be driven by the construction and operational water use described in the ER. Water rights in Texas must be purchased, and distribution is governed by water districts throughout the state.~~
- ~~Water rights would need to be purchased along with the available land, increasing the cost and complexity of the project.~~
- ~~Construction impacts would be greater at a potential greenfield site when compared to the proposed STP site. For example, construction of STP Units 3 & 4 will use much of the existing infrastructure at the existing facility. STPNOC assumed that similar infrastructure would not be available at the greenfield site.~~
- ~~Aesthetic impact would be greater than similar impacts at the proposed site.~~
- ~~It is reasonable to predict that environmental impacts of construction and operation would be similar to those at the STP site, except that much of the existing infrastructure at a greenfield site would have to be developed to access the site. Additionally, large areas of land would be cleared, graded and modified to accommodate construction and operation.~~
- ~~Impacts to terrestrial and aquatic resources at a generic greenfield site would likely be greater than the impact at the proposed site (Reference 9.3-9). For example, large undeveloped forest or grassland habitats could be permanently displaced by development on a greenfield site.~~
- ~~It was assumed that no threatened or endangered species are present at the generic greenfield site, and that the impacts during construction would temporarily disturb most aquatic habitats, while permanently disturbing some forest or open areas.~~
- ~~Impacts to land use are expected to be generally more adverse at a greenfield site when compared to the proposed site. Given the assumption that the land use in the area would be largely recreational or agricultural, changes in the land use at the site would likely be permanent.~~

~~Based upon the above analysis, STPNOC screened the generic greenfield site from its list of candidate sites.~~

9.3.2.4.3 ~~Screening of Potential Brownfield Sites~~

~~STPNOC reviewed five potential sites with abandoned mine projects. Three sites were deselected because they were too close to the growing populations of San Antonio and~~

~~Dallas. The Alcoa Inc. site in Milam County is slated for expansion by the owner. The Malakoff site in Henderson county remained as a candidate site.~~

9.3.2.5 ~~Review of the Candidate Sites to Identify the Alternative Sites~~

~~After deselecting potential sites based on negative attributes, STPNOC reviewed the remaining candidate sites that could support the proposed nuclear plant.~~

~~The other Candidate Sites were reviewed using the minimum seven candidate site criteria in NUREG-1555 (Reference 9.3-1):~~

- ~~Consumptive use of water does not cause significant adverse effects on other users.~~
- ~~The proposed action will not jeopardize listed threatened or endangered species or result in the destruction or adverse modification of critical habitat.~~
- ~~There will not be any potential significant impacts to spawning grounds or nursery areas of populations of important aquatic species on Federal, State, and affected Native American tribal lists.~~
- ~~Discharges of effluents into waterway will be in accordance with Federal, State, regional, local and affected Native American tribal regulations and will not adversely impact efforts to meet water quality objectives.~~
- ~~The will be no preemption of or adverse impacts on land specifically designated for environmental, recreational, or other special purposes.~~
- ~~There will not be any potential significant impact on terrestrial and aquatic ecosystems, including wetlands, which are unique to the resource area.~~
- ~~No other significant issues preclude use of the site.~~

~~The results of these reviews are shown in Tables 9.3-5 and 9.3-6. Table 9.3-5 shows this review as applied to the remaining existing fossil fuel candidate sites. Table 9.3-6 shows this review as applied to greenfield candidate sites, including the renewable energy candidate sites, and brownfield candidate sites. STPNOC performed a side-by-side comparison of each of the sites in relation to the criteria noted above. This review, particularly for existing fossil-fueled sites, showed that the candidate sites had similar environmental characteristics and impacts. As a result, STPNOC reviewed the sites to determine if any other issues affected use of the site.~~

~~STPNOC concluded that its development of many of the fossil-fueled sites would be adversely affected by additional factors, such as proximity to population, transmission corridors, institutional factors such as rezoning or special use issues, and potential public concerns. However STPNOC noted that the development at the existing 1700 MWe Limestone Electric Generating Station northwest of Houston, would not present the kind of development and safety issues associated with some of the other sites.~~

~~A similar review was conducted for the remaining greenfield and brownfield sites. These sites also showed that the candidate sites had similar environmental characteristics and impacts. As a result, STPNOC looked at any issues that might adversely affect STPNOC's use of the site, including availability of land for the site and transmission, and population density and characteristics. STPNOC concluded that Allen's Creek and Malakoff did not have these drawbacks. Based on these reviews, STPNOC chose three alternative sites from the candidate sites for the purpose of comparison with the proposed site:~~

- ~~The Limestone Electric Generating Station is located about 140 miles northwest of Houston. The Limestone facility is an operating coal-fired power plant in east central Texas, in the middle of a rough triangle formed by the Dallas-Fort Worth, Houston, and Austin metropolitan areas.~~
- ~~The Allen's Creek site is located about 45 miles west of Houston. It was once considered for a nuclear plant and cooling lake, but plans for the plant were abandoned. The planned 9,500 acre reservoir and accompanying water rights are now owned by the City of Houston and the Brazos River Authority (BRA).~~
- ~~The Malakoff site is located in Henderson County, about 50 miles southeast of Dallas. This site was originally planned for a coal-fired plant, and was once a lignite mine.~~

~~These alternative sites represent the best available alternative sites in terms of the criteria discussed above. For the purposes of the Alternative Site Review described below, STPNOC reviewed these sites only to determine if the sites were environmentally preferable to the proposed STP site.~~

9.3.3 ~~Alternative Site Review~~

~~The proposed site is reviewed at length in this environmental report. However, it is also reviewed here for comparison against the three alternative sites. This section reviews in detail the other alternative sites based on the selection criteria and review topics suggested in NUREG-1555 (Reference 9.3-1). The object of the analysis is to consider whether any of the alternative sites are "obviously superior" to the proposed site. STPNOC generally reviewed these alternative sites with the following topics in mind:~~

- ~~hydrology, water quality, and water availability.~~
- ~~aquatic biological resources, including wetlands, wetland buffers, essential fish habitat, and endangered species.~~
- ~~terrestrial resources, including endangered species, and areas requiring special consideration.~~
- ~~land uses and transmission corridors.~~
- ~~socioeconomic factors, including aesthetics, archaeological and historic preservation, and environmental justice.~~

- ~~population distribution and density.~~
- ~~air quality.~~

~~Other categories of review, such as radiological health and postulated accident scenarios would likely not vary from site to site.~~

9.3.3.1 ~~Evaluation of Limestone Electric Generating Station Site~~

~~The Limestone Electric Generating Station (Limestone) is a two unit lignite-and-coal-fired electric generating facility with a combined capacity of 1,700 MWe (Reference 9.3-10). The site is located in eastern Limestone County, at its junction with Freestone and Leon Counties, about 2.5 miles southeast of Farrar and 8 miles north of Jewett (Reference 9.3-11). The city of Waco, TX is on the edge of the 50 mile radius.~~

9.3.3.1.1 ~~Land Use Including Site and Transmission Line Rights-of-Way~~

~~The Limestone plant encompasses about 4,346 acres. The two generating units are centrally located in the main plant area. The main plant is divided into northern and southern portions by railroad spurs along the south side of the bottom ash cooling impoundment. The solid waste disposal area (SWDA) occupies the eastern half of the property. A 28-acre switchyard is also located at the plant site. The rest of the site is primarily occupied by undeveloped land (Reference 9.3-11).~~

~~The region surrounding the Limestone plant site is a rural area that consists primarily of undeveloped agricultural property with surface lignite mining operations to the south and east (Reference 9.3-11). In 2002 approximately 85 percent total land acreage near the site was devoted to farming (Reference 9.3-12).~~

~~Based on preliminary transmission analysis performed by Siemens, two new 345-kilovolt transmission lines would be required to connect the proposed project to ERCOT transmission system (Reference 9.3-13). The new lines would likely be installed within, or mostly within, the existing 345-kilovolt transmission line ROWs (Reference 9.3-14).~~

~~Therefore, the land use impacts of construction of a new nuclear plant at Limestone would be similar to those at STP. Using impact categories as outlined in NUREG-1437 (Reference 9.3-9), land use impacts at the Limestone site would be SMALL. However, if new corridors are required, expected impacts to land use could be greater during construction than those at the propose STP site.~~

9.3.3.1.2 ~~Air Quality~~

~~The Limestone site is located in Austin-Waco Intrastate Air Quality Control Region, which is designated as unclassifiable/attainment with respect to the National Ambient Air Quality Standards (NAAQS) (Reference 9.3-15). The nearest non-attainment area is Ellis County, which is designated as a non-attainment area with respect to the 8-hour ozone standard (Reference 9.3-15). Ellis County is located about 50 miles northwest of the Limestone site. Any required permits (e.g., preconstruction air permits) would be obtained from the Texas Commission on Environmental Quality (TCEQ).~~

~~Before project construction activities could begin, the project would be required to obtain a preconstruction air permit from the TCEQ (Reference 9.3-16). The air permit would ensure both construction and operation emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-17).~~

~~Air quality impacts from construction and operation of the proposed project at Limestone would be similar to those at the proposed STP site. The impacts to air quality at Limestone would be SMALL.~~

9.3.3.1.3 ~~Hydrology, Water Use, and Water Quality~~

~~Boiler water and potable water for the lignite-fired Limestone Generating Facility is primarily obtained from three on-site wells (Reference 9.3-11) that tap into the prolific Carrizo-Wilcox Aquifer. The Carrizo-Wilcox Aquifer now has more than 251,852 acre-feet of availability in the eastern region, with significant potential for further development (Reference 9.3-18)~~

~~Circulation water for the existing facility is purchased through diversion rights with the BRA. (Reference 9.3-18). It is routed via underground pipes from Lake Limestone, located about 5 miles southwest of the facility (Reference 9.3-11). Lake Limestone is directly fed by the Navasota River. It has an authorized storage capacity of 204,524 acre-feet and an authorized diversion of 65,450 acre-feet (Reference 9.3-18). Circulation water usage for the existing Limestone generating facility is about 22,400 acre-feet per year (Reference 9.3-19). For the purpose of analysis, STPNOC conservatively assumed that water for the proposed nuclear generating units would also come from the Lake Limestone and the Carrizo-Wilcox Aquifer.~~

~~Impacts to hydrology, water use and water quality at the Limestone site would be SMALL, and similar to those at the proposed STP site, since water resources from surface and groundwater are available for development.~~

9.3.3.1.4 ~~Terrestrial Resources Including Threatened and Endangered Species~~

~~The plant site is located east of the Austin-Waco metropolitan area. The Limestone site encompasses approximately 4,346 acres (Reference 9.3-11). The terrain is generally flat. Most of the undeveloped portion of the site is land managed for agriculture and livestock although some of the proposed plant site is existing industrial land, the Limestone Generating Station. The area surrounding this proposed site consists of open cropland and pasture habitats interspersed with wooded bottomlands and forested patches, multiple limestone mining sites, lignite mining sites, and Lake Limestone to the south. Animal species that occur on the Limestone Site are those typically found in similar habitats in the Post Oak Savannah region of Texas.~~

~~STPNOC is unaware of any known occurrences of threatened and endangered species on the Limestone Site. There are no known spawning areas or designated critical habitat on the site (Reference 9.3-30).~~

~~Land clearing associated with construction of plant facilities, pipeline corridors, or transmission lines would be conducted according to Federal and state regulations, permit conditions, existing STPNOC procedures, good construction practices, and established Best Management Practices (e.g., directed drainage ditches, silt fencing). While construction would cause some short term displacement of terrestrial species, it is assumed that operation of a facility at this site will not adversely affect threatened or endangered species or habitat.~~

~~STPNOC assumed that the proposed plant would use mostly existing transmission circuits and corridors to distribute power to the grid. Any expansion of the transmission lines would require clearing and grubbing along the ROW.~~

~~Impacts to terrestrial resources at the Limestone site would be SMALL, and similar to those at the proposed STP site, since most potentially adverse impacts could be limited by using existing ROWs.~~

9.3.3.1.5 ~~Aquatic Resources Including Threatened and Endangered Species~~

~~There are no known threatened or endangered species at the site or within the vicinity. Additionally, there are no known spawning grounds or critical habitat located within the vicinity of the site (References 9.3-20 and 9.3-30). However, state and federal agencies have expressed concern over fish species down stream from the dam (Reference 9.3-18). Water for closed loop cooling would likely come from Lake Limestone, a 12,553 acre impoundment reservoir located on the Navasota River. Short term impacts to aquatic resources in the lake would likely occur from construction of intake structures. Construction and operation of discharge and intake structures would also have an impact on lake and river aquatic resources.~~

~~Using impact categories as outlined in NUREG-1437 (Reference 9.3-9), impacts to aquatic resources at the Limestone site would be SMALL to MODERATE, and greater than those at the proposed STP site, since potential consumption for operation may affect aquatic ecology.~~

9.3.3.1.6 ~~Socioeconomics~~

~~The predicted socioeconomic impacts of construction and operation at the Limestone site is summarized below:~~

- ~~The population distribution near the site is low with typical rural characteristics. Some population increase with the construction and operation of the plant is possible, but it is likely that much of the work force will come from within the region. Impacts of increased population will be similar to those at the proposed STP site.~~
- ~~Physical impacts as a result of construction and operation would be similar to those at the proposed STP site.~~
- ~~Economic impacts of construction and operation would be similar to those described in Chapters 4 and 5 of this ER. Wages and increased taxes will likely have a beneficial impact, and be similar to those at the proposed STP site.~~

- ~~Impacts to transportation will be similar to those at the proposed STP site.~~
- ~~Impacts on aesthetics and recreation will be similar to those at the proposed STP site. Construction of cooling towers may increase the aesthetic impact of the plant.~~
- ~~Impacts on housing from the construction labor force are expected to be similar to those at the proposed STP site.~~
- ~~Impacts to public services and educational systems is expected to be similar to those at the proposed STP site. Some local school districts may experience some pressure as a result of increased student population during plant construction and operation.~~

~~Impacts to socioeconomic issues at the Limestone site will be SMALL, with potential MODERATE beneficial impacts. These impacts are somewhat less than those at the proposed site.~~

9.3.3.1.7 ~~Historic and Cultural Resources~~

~~The site at Limestone is on undeveloped, but previously disturbed land. STPNOC conducted historical and archaeological records searches in and near the coal-fired unit at Limestone. A review of the National Register of Historical Places records revealed no registered places within 10 miles of the Limestone site (Reference 9.3-21). Although there are some historic sites in the region, they would not be adversely affected by construction or operation at the site.~~

~~Impacts to historical and cultural resources at the Limestone site would be SMALL, similar to those at the proposed STP site, since both sites have been previously disturbed.~~

9.3.3.1.8 ~~Environmental Justice~~

~~The 2000 Census block groups were used for ascertaining minority and low-income populations in the area. There are 195 block groups within a 50 mile radius of Limestone. The Census Bureau data for Texas characterizes 11.53 percent of the population as Black races; 0.57 percent American Indian or Alaskan Native; 2.7 percent Asian; 0.07 percent Native Hawaiian or other Pacific Islander; 11.69 percent all other races; 2.47 percent multi-racial; 29.03 percent aggregate of minority races; and 31.99 percent Hispanic ethnicity. If any block group minority percentage exceeded 50 percent, then the block group was identified as containing a minority population. If any block group percentage exceeded its corresponding state percentage by more than 20 percent, then the block group was identified as having minority population. One hundred sixteen minority populations exist in 195 block groups (Reference 9.3-22).~~

~~The Census Bureau data characterize 13.98 percent of Texas households as low-income. Based on the "more than 20 percent" criterion, 18 block groups contain a low-income population. Both groups are unlikely to be disproportionately affected; most~~

~~minority and low income population groups are located near the larger towns and urban areas (Reference 9.3-22).~~

~~Impacts on low-income and minority populations would be SMALL, similar to those at the proposed STP site, since minority and low income populations will not be disproportionately affected by construction or operation of the project.~~

9.3.3.1.9 ~~Conclusion Regarding the Limestone Site~~

~~Impacts from the construction of a new nuclear plant at the Limestone Site would be generally SMALL, similar to those at the proposed STP site. This site is an active industrial area, with infrastructure and transmission corridors available for construction or potential expansion. Terrestrial and aquatic impacts would be similar to or greater than those at the proposed STP site, while socioeconomic impacts would be similar. Any adverse impact from the new plant would not have a disproportionate effect on minority or low-income populations. As a result, the predicted impacts will be equal to, or greater than, those at the proposed site. Limestone was not considered environmentally preferable to the proposed STP site.~~

9.3.3.2 ~~Evaluation of the Allen's Creek Site~~

~~The 11,000-acre Allen's Creek site is located in southwestern Austin County, just west of the Brazos River and about 45 miles west of Houston, about four miles northwest of Wallis, and seven miles south-southeast of Sealy, between State Highway 36 and the Brazos River floodplain. The terrain rolls gently with elevations that range from 98 to 146 feet above mean sea level (Reference 9.3-23). The site is primarily agricultural, with approximately 87.5 percent of the 6-mile vicinity dedicated to farming.~~

~~Originally, the site had been set aside for a cooling lake and nuclear plant. The project was cancelled. The City of Houston and the BRA later acquired the land for the reservoir and proposed a water supply reservoir for the property. Currently the parties plan to build the reservoir between 2018 and 2030 to meet water needs for the Houston metropolitan area. Any surface water rights required for an operating plant would be purchased from the city and the BRA. The following analysis conservatively assumes that water from the reservoir could be available in the time frame needed for the new nuclear plant, and that groundwater could be reasonably developed.~~

9.3.3.2.1 ~~Land Use Including Site and Transmission Line Rights-of-Way~~

~~In 1973, the majority of the Allen's Creek site was cleared of the native hardwood vegetation, and an extensive system of drainage ditches were constructed which allowed much of the area to be used to farm row crops. Major crops grown include corn, cotton, sorghum, hay, and improved pasture. Uncleared and partially cleared land was used to graze cattle (Reference 9.3-23). The area is not considered appropriate for more urban development, because the area is prone to flooding (Reference 9.3-5). Currently, the land is a greenfield site primarily in agricultural use.~~

~~Construction of the power plant and transmission lines would alter land use at the site from vacant to industrial use. After the sale of the reservoir site, the area first planned for construction of the cancelled plant, as well as significant holdings around the~~

~~proposed reservoir, were retained by the current owner. STPNOC assumed that the area would be available for the construction and operation of a nuclear facility.~~

~~Based on preliminary transmission analysis performed by Siemens, two new 345-kilovolt transmission lines would be required (Reference 9.3-13). New corridors would be required to connect these lines to ERCOT's system. As of April 2007 there were no existing 345-kilovolt transmission lines between the Allen's Creek Site and the nearest substation. Although there could be some short-term loss of land use during construction of the new corridors, it is expected that those impacts will not adversely affect land use in the area.~~

~~Therefore, the land use impacts of construction of a new nuclear plant at Allen's Creek would be SMALL to LARGE, greater than those at the proposed STP site, since the land use at the Allen's Creek site would change from vacant to industrial. In contrast, the land use at the proposed STP site is currently industrial.~~

9.3.3.2.2 ~~Air Quality~~

~~The Allen's Creek site is located in the Metropolitan Houston-Galveston Intrastate Air Quality Control Region (Reference 9.3-15). Although the site is generally rural, much of the Houston metropolitan area lies within the 50 mile region. Before project construction activities could begin, the project would be required to obtain a preconstruction air permit from the TCEQ (Reference 9.3-16). The air permit would ensure both construction and operation emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-17).~~

~~It is anticipated that construction and operation impacts on air quality will be SMALL, similar to those at the proposed STP site, since any potentially adverse impacts will be mitigated.~~

9.3.3.2.3 ~~Hydrology, Water Use, and Water Quality~~

~~STPNOC assumes that the cooling water requirements would be similar to those described in Chapter 3 this ER.~~

~~The Allen's Creek site is located in Texas atop the Gulf Coast Aquifer in the southern portion of Austin County. The Gulf Coast Aquifer is a major aquifer that parallels the Gulf of Mexico coastline from the Louisiana border to the Mexican border. This aquifer covers 54 counties and consists of several aquifers, including the Jasper, Evangeline, and Chicot aquifers, which are composed of discontinuous sand, silt, clay, and gravel beds. The area of the aquifer is about 41,879 square miles (Reference 9.3-2). The predicted availability of the Carrizo-Wilcox Aquifer for year 2010 is about 1.8 million acre-feet per year, compared to a reported water use of about 1.1 million acre-feet per year (Reference 9.3-2).~~

~~Water for the proposed nuclear generating units could be provided by future development of the Allen's Creek Reservoir, described more thoroughly below. Based on current plans, reservoir construction would begin in year 2018 and be completed in~~

~~year 2030. Construction of the Allen's Creek Reservoir is part of the comprehensive TWDB water strategy for the region, as outlined in their 2007 Water Report (Reference 9.3-2). Most of the water (70%) in the reservoir has been appropriated by the City of Houston, The BRA owns the remaining water, and rights to the necessary cooling water source could be acquired from either entity. If the plant was built before the reservoir was complete, ground water would be required. While there is ample ground water available at the site, ground water resources would need to be developed. For the purposes of this analysis, it was assumed that the reservoir would be developed in time for the new nuclear plant, or that water for the plant could be obtained from existing water sources.~~

~~Impacts to hydrology, water use and water quality are expected to be SMALL, similar to those at the proposed STP site, since groundwater is available, and additional water may be available from the future reservoir.~~

9.3.3.2.4 ~~Terrestrial Resources Including Threatened and Endangered Species.~~

~~The 11,000 acre Allen's Creek site is located approximately 45 miles from Houston, Texas, immediately west of the Brazos River. The proposed Houston/BRA reservoir will inundate about 9,500 acres. Much of the site is open cropland and pasture, but hardwood riparian areas and bluff forests exist along the Brazos River and Allen's Creek (Reference 9.3-22). Although much of the Allen's Creek site has been disturbed for agriculture, the coastal prairie around the site exhibits wide expanses of open grassland fringed by stands of oak and elm. Animal species that occur near the Allen's Creek Site are those typically found in similar habitats in the Post Oak Savannah region of Texas. A small amount of forested land would be cleared for construction, resulting in the permanent loss of some habitat.~~

~~STPNOC is not aware of any known occurrences of threatened or endangered species on the Allen's Creek site (Reference 9.3-23, Reference 9.3-24). Additionally, there are no known spawning areas or designated critical habitat on the site. There are some bald eagle nests in the vicinity, but they would not be adversely affected by construction of the facility.~~

~~As noted above, STPNOC assumed that two 345-kilovolt transmission lines would connect the proposed project to the ERCOT transmission system. Construction of transmission corridors may affect relict populations of some federally listed species, depending on the routes chosen for the new lines.~~

~~Land clearing associated with construction of plant facilities, pipeline corridors, or transmission lines would be conducted according to Federal and state regulations, permit conditions, existing STPNOC procedures, good construction practices, and established Best Management Practices (e.g., directed drainage ditches, silt fencing). While construction would cause some short term displacement of terrestrial species, it is expected that operation of a facility at this site will not adversely affect threatened or endangered species or habitat.~~

~~Impacts to terrestrial resources at the Allen's Creek site would be SMALL, similar to or greater than those at the proposed STP site, because the short length of the potential~~

~~transmission corridor and current agricultural use will limit any adverse impacts on sensitive species.~~

9.3.3.2.5 ~~Aquatic Resources Including Threatened and Endangered Species~~

~~In order to assess the impacts to aquatic resources, STPNOC assumed that water would be available at the site and that the reservoir would be a water source. Generally, construction and operation of a nuclear power plant at the shore of Allen's Creek Reservoir is not expected to adversely affect aquatic species in the lake. The necessary intake and discharge structures could cause short-term adverse effects to the lake's aquatic environment. There are no known endangered species in this area of the Brazos River/Allen's Creek watershed.~~

~~Impacts to aquatic resources at the Allen's Creek site would be SMALL, similar to those at the proposed STP site, because there are non known species at the site, and measures can be taken to mitigate any effect when the reservoir is built.~~

9.3.3.2.6 ~~Socioeconomics~~

~~STPNOC noted the following social and economic impacts as a result of constructing and operating the proposed project at the Allen's Creek site:~~

- ~~The population distribution near the site is low with typical rural characteristics. Some population increase with the construction and operation of the plant is possible, but it is likely that much of the work force will come from the Houston area. Impacts of increased population will be similar to those at the proposed STP site.~~
- ~~Physical impacts as a result of construction and operation would be similar to those at the proposed STP site.~~
- ~~Economic impacts of construction and operation would be similar to those described in Chapters 4 and 5 of this ER. Wages and increased taxes will likely have a beneficial impact, and be similar to those at the proposed STP site.~~
- ~~Impacts to transportation will be similar to those at the proposed STP site.~~
- ~~Impacts on aesthetics and recreation will be similar to or greater than those at the proposed STP site. Construction of cooling towers may increase the aesthetic impact of the plant, given that the area around the reservoir would be largely rural and recreational.~~
- ~~Impacts on housing from the construction labor force are expected to be similar to those at the proposed STP site.~~
- ~~Impacts to public services and educational systems are expected to be similar to those at the proposed STP site. Some local school districts may experience some pressure as a result of increased student population during plant construction and operation.~~

~~Impacts to socioeconomic issues at the Allen's Creek site will be SMALL, with potential MODERATE beneficial impacts, and MODERATE effects in Austin County, where the influx of workers could strain services. These impacts are similar or greater than those impacts predicted for the proposed site.~~

9.3.3.2.7 ~~Historic and Cultural Resources~~

~~STPNOC is not aware of any historic or cultural resources at the Allen's Creek site. STPNOC conducted historical and archaeological records searches on the National Park Service's National Register Information System (NRHP) and reviewed information in the Allen's Creek Safety Analysis Report prepared in 1973. A search of the NRHP identified 54 sites in the 50 mile region surrounding the Allen's creek site. There are 7 sites in Austin County (4-42 miles from the site), which encompasses the Allen's Creek site. Two of these properties, the Allen's Creek Assuary Site and the Church of the Guardian Angel are in Willis, approximately 4 miles northwest of the Allen's Creek site. There are 5 sites in Colorado County (27 miles from the site), 31 sites in Wharton County (25 miles from the site), 5 sites in Fort Bend County (17-22 miles from the site), and 6 sites in Waller County (28 miles from the site) (Reference 9.3-21).~~

~~A state historical marker near the Allen's Creek site notes the foundation of the Martin Allen Public House, an important wayside for travelers moving through southeastern Texas in the early 19th century (Reference 9.3-25). Additionally, the Martin Allen cemetery is adjacent to this Public House. If a nuclear plant were constructed on this site, the historical significance of the foundation and cemetery would be considered and the State Historical Preservation Officer (SHPO) would be notified as required under Texas law.~~

~~Impacts to historic and cultural resources at the Allen's Creek site would be SMALL, similar to those at the proposed STP site, since the existing historical marker and cemetery will be managed under SHPO regulations.~~

9.3.3.2.8 ~~Environmental Justice~~

~~The 2000 Census block groups were used for ascertaining minority and low-income populations in the area. There are 1,257 block groups within a 50 mile radius of Allen's Creek. The Census Bureau data for Texas characterizes 11.53 percent of the population as Black races; 0.57 percent American Indian or Alaskan Native; 2.7 percent Asian; 0.07 percent Native Hawaiian or other Pacific Islander; 11.69 percent all other races; 2.47 percent multi-racial; 29.03 percent aggregate of minority races; and 31.99 percent Hispanic ethnicity. If any block group minority percentage exceeded 50 percent, then the block group was identified as containing a minority population. If any block group percentage exceeded its corresponding state percentage by more than 20 percent, then the block group was identified as having minority population. One thousand two hundred fifteen minority populations exist in 1,257 block groups (Reference 9.3-26).~~

~~STPNOC evaluated whether the health or welfare of minority and low-income populations could be disproportionately affected by construction activities. STPNOC~~

~~identified the most likely pathways by which adverse environmental impacts associated with construction could affect human populations. These pathways are land use, water use, ecological resources, physical impacts, socioeconomic resources, radiological releases, and meteorological effects from operation of cooling towers. However, most minority and low income populations are well outside potential site boundaries, and would not be disproportionately affected by a facility at Allen's Creek.~~

~~Impacts on low-income and minority populations would be SMALL, similar to those at the proposed STP site, since construction and operation at the site would not disproportionately affect these populations.~~

9.3.3.2.9 ~~Conclusions Regarding the Allen's Creek Site~~

~~Impacts from the construction of a new nuclear plant at the Allen's Creek site would be equal to or greater than those at the proposed STP site. This site is an undeveloped site that is largely agricultural. Land use will change significantly. New transmission lines will be required. Terrestrial and aquatic impacts would be similar to or greater than those at the proposed STP site, while socioeconomic impacts would be similar. STPNOC anticipates that the new plant will adversely affect the aesthetics of the largely rural area, given the fact that the agricultural area will be permanently changed to an industrial site. Any adverse impact from the new plant would not have a disproportionate effect on minority or low-income populations. Overall, the predicted environmental impact at the site is SMALL. Allen's Creek was not considered environmentally preferable to the proposed STP site.~~

9.3.3.3 ~~Evaluation of the Malakoff Site~~

~~The 3,400 Malakoff site is located on western side of Henderson County near of the town of Malakoff, Texas. The Dallas-Fort Worth metropolitan area is approximately 50 miles to the northwest of the site. State Highway 31 spans an east-west path about a half mile north of the Malakoff site; Cedar Creek defines the western boundary of the site; and the rest of the site is bordered by the former Trinity Lignite Mine site. Vegetation in the region includes mixed hardwoods, a dense undergrowth of scrubs and vines, and grasses. Farms occupy about 56 percent of the land near the site.~~

9.3.3.3.1 ~~Land Use Including Site and Transmission Line Rights-of-Way~~

~~In the early 1980s, Houston Lighting & Power began construction of a coal-fired generation plant at the Malakoff Site; however, the project was cancelled construction activities were discontinued. Today, based on GoogleEarth™ aerial photography, about half the site is wooded and half is cleared for agricultural use. No on-site structures are evident from the GoogleEarth™ aerial photographs (Reference 9.3-27).~~

~~Construction of the 2,700 MWe two-unit nuclear facilities would require approximately 770 acres of land for permanent structures and plant operations (Reference 9.3-9). Based on the size of the site, no additional land acquisitions would be necessary to construct the nuclear generation facility. However, a pipeline would likely be necessary to supply cooling water to the site from any one of several nearby reservoirs in the region. STPNOC assumed that a 100 foot wide pipeline ROW could be built to~~

~~provide cooling water. STPNOC also assumed that groundwater would also be available. Based on GoogleEarth™ aerial photography, effectively all the land along the potential corridors is currently farmland or woodlands (Reference 9.3-27).~~

~~New transmission lines may be necessary. There are, however, existing 345-kilovolt transmission lines in the area; it is possible that these ROW may be expanded for some or all of the new transmission lines.~~

~~The land use impacts of construction of a new nuclear plant at the Malakoff site would be SMALL, but greater than those at the proposed STP site, since construction will return the area from woodlands and agricultural use to industrial.~~

9.3.3.3.2 ~~Air Quality~~

~~The Malakoff site is located in a designated attainment area for the purpose of Texas air regulations. Before project construction activities could begin, the project would be required to obtain a preconstruction air permit from the TCEQ (Reference 9.3-16). The air permit would ensure both construction and operation emissions would conform to the Texas State Implementation Plan and would not challenge state efforts to achieve or maintain compliance with the NAAQS (Reference 9.3-17). STPNOC assumed that the emissions from construction and operation of the proposed facility would be similar to those described in Sections 4.4 and 5.8 of this ER.~~

~~Air quality impacts from construction and operation of the proposed project at Malakoff Site are expected to be SMALL, similar to those at the proposed STP site, because the emissions are expected to be within permit limits.~~

9.3.3.3.3 ~~Hydrology, Water Use, and Water Quality~~

~~The Malakoff site is located atop the Carrizo-Wilcox Aquifer, a major aquifer supplying most of eastern Texas groundwater. Sixty-three percent (63%) of the aquifer, including groundwater under the Malakoff site is governed by a groundwater control district (Reference 9.3-2). Across the entire Carrizo-Wilcox aquifer, the predicted availability of groundwater for year 2010 is about one million acre-feet per year, compared to a reported water use of 450,000 acre-feet per year (Reference 9.3-2). The Aquifer has more than 251,852 acre-feet of availability in the eastern region, with significant potential for further development (Reference 9.3-18). STPNOC therefore assumed that groundwater would be available for development for operations at the site.~~

~~Surface water for the plant could be drawn from any number of reservoirs within a 50 mile radius. For example, Lake Palestine is the second largest reservoir in the Neches Basin and is fed by the Neches River. However, the lake is more than 32 miles from the site. Cedar Lake is about 5 miles from the site. The Trinity River is also near the site. Ample surface water is available for use at the site.~~

~~Impacts to hydrology, water use and water quality at the Malakoff site would be SMALL, similar to those at the proposed STP site, because both ground and surface water are available for development.~~

9.3.3.3.4 ~~Terrestrial Resources Including Threatened and Endangered Species~~

~~The plant site is located approximately 50 miles southeast of Dallas, Texas, immediately east of the Trinity River, and is situated in southwestern Henderson County. The terrain at the site is relatively flat. Much of the site is open cropland and pasture, but some hardwood riparian areas exist along the Trinity River and Cedar Creek. The vegetation in the area surrounding this proposed site consists of mixed pine and hardwoods, including oak, elm, hackberry, and pecan. Along the Trinity River, the western border of the county, lie the bottomlands of the flood plain, where the vegetation features mixed hardwoods and a dense undergrowth of scrubs and vines typical of the East Texas mixed forests (Reference 9.3-28). A large variety of wildlife and game animals inhabits these areas. Animal species that occur on the Malakoff Site are those typically found in similar habitats in the Post Oak Savannah region of Texas. Since some of the Malakoff Site is bottomland hardwoods, a small amount of forested land may be cleared for the construction of site facilities. In addition, a make-up water intake line from the site to water sources be constructed. Land clearing associated with that activity could result in a short term displacement of species within that corridor.~~

~~STPNOC is not aware of any known occurrences of threatened or endangered species on the Malakoff Site, although the site has not been surveyed specifically for these species. No known spawning grounds or critical habitat has been designated in the county. Bald eagles are not known to nest in Henderson County, but do winter there and in adjacent counties (Reference 9.3-29).~~

~~Two 345-kilovolt transmission lines would be needed to connect the proposed project to the ERCOT transmission system. STPNOC assumes that construction of a ROW would be required. However, it is expected that any impacts to terrestrial habitats and species will be temporary.~~

~~Impacts to terrestrial resources at the Malakoff site would be generally SMALL, depending on the strategy selected for construction of transmission lines and makeup water pipelines. However, any impacts from construction and operation at the site are expected to be SMALL, similar to those at the proposed STP site, since any displacement will generally be temporary.~~

9.3.3.3.5 ~~Aquatic Resources Including Threatened and Endangered Species~~

~~The Malakoff site would be located near the city of Malakoff in Henderson County. Withdrawal water for the proposed plant is available at a number of reservoirs or rivers adjacent to the site. No known threatened or endangered species have been noted at any of these sites.~~

~~Discharge from the facility would likely be to Walnut Creek. This creek is part of the Trinity River watershed. No known threatened or endangered aquatic species occur in Henderson County (Reference 9.3-30). If a makeup water pipeline is constructed from any one of the surface water sources in the area, the necessary structures could cause short-term adverse effects to the lake's aquatic environment. STPNOC~~

~~assumes that these effects would be short term and would not result in any permanent displacement of aquatic species.~~

~~Impacts to aquatic resources at the Malakoff site would be SMALL, similar to those at the proposed STP site, because no known threatened or endangered species occur at the site, and any adverse effects from construction of plant facilities would be temporary.~~

9.3.3.3.6 ~~Socioeconomics~~

~~The social and economic impacts to the surrounding region as a result of constructing and operating the proposed project at the Malakoff site are summarized as follows.~~

- ~~The population distribution near the site is low with typical rural characteristics. Some population increase with the construction and operation of the plant is possible, but it is likely that much of the work force will come from the Dallas-Fort Worth area. Impacts of increased population will be similar to those at the proposed STP site.~~
- ~~Physical impacts as a result of construction and operation would be similar to those at the proposed STP site.~~
- ~~Economic impacts of construction and operation would be similar to those described in Chapters 4 and 5 of this ER. Wages and increased taxes will likely have a beneficial impact, and be similar to those at the proposed STP site.~~
- ~~Impacts to transportation will be similar to those at the proposed STP site.~~
- ~~Impacts on aesthetics and recreation will be similar to or greater than those at the proposed STP site. Construction of cooling towers may increase the aesthetic impact of the plant.~~
- ~~Impacts on housing from the construction labor force are expected to be similar to those at the proposed STP site.~~
- ~~Impacts to public services and educational systems is expected to be similar to those at the proposed STP site. Some local school districts may experience some pressure as a result of increased student population during plant construction and operation.~~

~~It is expected that socioeconomic impacts would be SMALL to MODERATE, similar to those at the proposed STP site, since an influx of construction workers could temporarily adversely affect resources in Henderson County. However, MODERATE beneficial impacts may also occur as a result of increased taxes and jobs in the county.~~

9.3.3.3.7 ~~Historic and Cultural Resources~~

~~STP conducted historical and archaeological records searches on the National Park Service's National Register Information System (NRHP) and reviewed information on historic and archaeological sites provided in documents associated with the canceled~~

~~Malakoff coal-fired unit. The area has been previously disturbed by lignite mining activities.~~

~~Several potential archaeological sites were identified at the Malakoff site during cultural resources surveys to support the cancelled coal-fired unit. The sites were evaluated for listing in the National Register, but none were eligible.~~

~~Impacts to historic and cultural resources at the Malakoff site would be SMALL, similar to those at the proposed STP site; because the area has been previously disturbed.~~

9.3.3.3.8 ~~Environmental Justice~~

~~The 2000 Census block groups were used for ascertaining minority and low-income populations in the area. There are 310 block groups within a 50 mile radius of Malakoff. The Census Bureau data for Texas characterizes 11.53 percent of the population as Black races; 0.57 percent American Indian or Alaskan Native; 2.7 percent Asian; 0.07 percent Native Hawaiian or other Pacific Islander; 11.69 percent all other races; 2.47 percent multi-racial; 29.03 percent aggregate of minority races; and 31.99 percent Hispanic ethnicity. If any block group minority percentage exceeded 50 percent, then the block group was identified as containing a minority population. If any block group percentage exceeded its corresponding state percentage by more than 20 percent, then the block group was identified as having minority population. One hundred twenty minority populations exist in 310 block groups (Reference 9.3-31).~~

~~Impacts to low-income and minority populations at the Malakoff site would be SMALL, similar to those at the proposed STP site. Although some minority and low income populations occur in the vicinity of the Malakoff site, any adverse environmental effects from the plant will not disproportionately affect minority or low income populations.~~

9.3.3.3.9 ~~Conclusions Regarding the Malakoff Site~~

~~Impacts from the construction of a new nuclear plant at the Malakoff Site would be SMALL, and equal to or greater than impacts at the proposed STP site. This site was set aside for a planned power plant, and land was disturbed earlier by this development and the operation of the lignite mine. Terrestrial and aquatic impacts would be equal to or greater than those at the proposed STP site, while socioeconomic impacts would be similar. Any adverse impact from the new plant would not have a disproportionate effect on minority or low-income populations. Because these impacts are essentially equal to impacts at the proposed site, the Malakoff site was not considered environmentally preferable to the proposed STP site.~~

9.3.3.4 ~~Summary of STP Units 3 & 4 (The Proposed Site)~~

~~The proposed STP site is reviewed at length in this ER. This section summarizes the information for the purposes of comparison, with references to the relevant portions of the ER.~~

9.3.3.4.1 ~~Land Use Including Site and Transmission Line Rights-of-Way~~

~~Land use in the area surrounding the proposed STP site is predominantly agricultural and rangeland. Industrial land use within the vicinity is limited to STP, the OXEA Corporation facility, the Lyondal Facility and the Port of Bay City. There is also commercial fishing in the lower Colorado River, East and West Matagorda Bays, Intracoastal Waterway and the Gulf of Mexico. There are no federal, state, regional or county land-use plans for this area (ER Section 4.1.1.2). Since there is no zoning in Matagorda County, no rezoning would be required for this project. There would be no new offsite transmission lines or corridors required to support the new units (ER Section 4.1.2). All temporary and new permanent facilities associated with the construction of the proposed project will be located within the existing STP property boundary on land areas previously disturbed by construction (ER Section 4.1.1).~~

~~STPNOC expects the impacts on land use at the proposed site to be SMALL.~~

9.3.3.4.2 ~~Air Quality~~

~~The proposed STP site is located in a designated attainment area for the purpose of Texas air regulations (ER Section 4.4.1.3). The region was classified as being in "moderate" non-attainment. Temporary and minor impacts to local ambient air quality could occur as a result of normal construction activities. Specific mitigation measures to control fugitive dust would be identified in the Construction Environmental Controls Plan, which implements TCEQ requirements and would be prepared before project construction. The Construction Environmental Controls Plan would also contain environmental management controls strategy to minimize emissions from construction activities and equipment.~~

~~STPNOC expects that the impacts on air quality at the proposed site will be SMALL.~~

9.3.3.4.3 ~~Hydrology, Water Use, and Water Quality~~

~~Five active onsite wells currently provide makeup water, process water, potable water and supply for the fire protection system for STP Units 1 & 2. The wells extend into the Chicot Aquifer, range in depth from 600 to 700 feet, and have design yields of 200 to 500 gpm. These wells would provide potable water for the construction project as well. Daily groundwater usage during peak construction activities, including usage by STP 1 & 2, could push total annual groundwater usage above the current permitted limit. To mitigate this potential shortage of capacity, STPNOC would implement several strategies, including water conservation, for construction activities (ER Section 4.4.2). In conjunction with surface water from the Colorado River, the wells would provide water for operation of STP 3 & 4 as well. However, additional capacity and full utilization of the STPNOC water right has been included in the Region K Water Plan for the Lower Colorado Regional Water Planning Group and the 1007 Texas State Water Plan. In addition the proposed STP site receives an average of 42 inches per year.~~

~~STPNOC expects that construction and operation impacts to hydrology, water use, and water quality will be SMALL.~~

9.3.3.4.4 ~~Terrestrial Ecology and Threatened and Endangered Species.~~

~~Construction activities should not reduce local biodiversity or impact threatened or endangered species (ER Section 4.3.1.2). Three listed species (bald eagle, brown pelican, and alligator) have been observed within the proposed STP site (ER Section 4.3.1.1). The Texas Prairie Wetland Project is located several hundred yards from the proposed site, but given the distance from the construction site and the limited duration of the construction activities, the long-term presence of waterbirds on the site should not be impacted by construction (ER Section 4.3.1.1.1). An active bald eagle nest is located on the proposed STP site near its eastern boundary. Although recently delisted under the Endangered Species Act, the bald eagle remains protected under the Bald and Golden Eagle Protection Act. National management guidelines for bald eagles recommend a protection zone to extend out 660 feet from each eagle nest (ER Section 4.3.1.1). No activities related to construction will occur within one mile of the eagle nest. Much of the construction-impacted areas will be available as wildlife habitat when construction is complete, and relatively similar open habitats will remain on site and are present off-site (ER Section 4.3.1.2).~~

~~STPNOC expects impacts from construction and operation at the proposed site to be SMALL.~~

9.3.3.4.5 ~~Aquatic Ecology and Sensitive Species~~

~~The aquatic species that occur on site are ubiquitous, common, and easily located in nearby waters (ER Section 4.3.2.1). No threatened or endangered species are expected to be affected by the proposed construction (Id.). Most of the common fish species tend to be tolerant of salinity and temperature fluctuations and are ubiquitous in coastal wetlands along the Gulf Coast. The particular wetlands that would be impacted on site are not substantively distinguishable from other wetland acreage in the vicinity and potential impacts were considered acceptable because the species readily colonize available surface waters and would not be lost to the area.~~

~~Best management practices and good construction engineering practices will be used to avoid or minimize sedimentation. Some dredging will be required to prepare the existing barge slip for vessels transporting large components to the site but impacts would occur over a relatively brief period (one spawning season) and would not produce long-term or lasting impacts. The season of the year in which construction occurs would determine which specific resources may be affected. Because the area to be disturbed is small and in a protected near shore area that is adjacent to the reservoir makeup pumping facility, the overall impact on aquatic species is expected to be minimal and temporary (ER Section 4.3.2.4).~~

~~STPNOC expects the impacts from construction and operation at the proposed site to be SMALL.~~

9.3.3.4.6 ~~Socioeconomics~~

~~The socioeconomic impacts of the proposed STP site are summarized as follows:~~

- ~~The population distribution near the site is low with typical rural characteristics. Any population increases as a result of the plant construction or operation will have a minimal impact on the area (ER Section 4.4.1.1.1).~~
- ~~Physical impacts as a result of construction and operation would be minimal, since the site is part of an operating nuclear plant (ER Section 4.4.1).~~
- ~~Economic impacts of construction and operation are described in Sections 4.4.2-4 and 5.8.2 of this ER. These impacts are predicted to be beneficial due to an increase in taxed property, jobs, and housing construction.~~
- ~~Impacts to transportation are described in ER Sections 4.4.1.1.3 and 5.8.2.2.4 of this ER, and are expected to be minimal.~~
- ~~Impacts on aesthetics and recreation are described in Sections 4 .4.2.2.5 and 5.8.2.2.2.5. Any adverse impacts are expected to be minimal.~~
- ~~Impacts on housing from the construction labor force and operations are described in Sections 4.4.2.2.6 and 5.8.2.2.6 of this ER. Any adverse impacts are expected to be minimal.~~
- ~~Impacts to public services and educational systems are described in Sections 4.4.2.2.7. 4.4.2.2.8, 5.8.2.2.7, and 5.8.2.2.8 of this ER. It is expected that any adverse impacts to public services will be minimal.~~

~~STPNOC expects the overall impacts of construction and operation at the proposed site to be SMALL to MODERATE, with MODERATE beneficial impacts as a result of increased taxes and jobs.~~

9.3.3.4.7 ~~Historic, Cultural, and Archaeological Resources~~

~~One historical property is located 8.9 miles from the project site, other significant cultural resources are between 6.0 and 9.2 miles away, and 35 archaeological sites are between 4.1 and 10 miles away (ER Section 4.4.1.1.2). Construction activities would be conducted immediately adjacent to the current STP plant on previously disturbed areas. No changes to offsite corridors are anticipated and there would be no impacts due to construction on the transmission corridors. Therefore, it is unlikely that any historical properties or other significant cultural resources are within the area that would be impacted by construction. If historic properties are encountered during construction, activities would cease at in the vicinity of the discovery and STPNOC would consult with the SHPO (ER Section 4.1.3). A letter dated January 19, 2007 was received from the Texas Historical Commission stating that no historic properties will be affected by the proposed construction and operation of STP Units 3 & 4 (ER Section 4.1.3).~~

~~STPNOC concludes that the impacts of construction and operation on historic properties will be SMALL.~~

9.3.3.4.8 ~~Environmental Justice~~

~~Nineteen census block groups within the 50-mile radius have significant Black or African American populations. One block group has a significant Asian minority population and six block groups have significant "some other race" populations. Thirty census block groups within the 50-mile radius have significant Hispanic ethnicity populations. The closest of these groups is approximately 10 miles from the site. Except for increased rental housing rates during construction-related activities, no adverse impacts in Matagorda County would disproportionately affect minority or low-income populations. Impacts of construction and operation on these populations are discussed in detail in ER Sections 4.4.3 and 5.8.3.~~

~~STPNOC concludes that the impacts of construction and operation at the proposed site on such populations will be SMALL.~~

9.3.4 ~~Summary and Conclusions~~

~~Table 9.3-7 assesses impact predictions based on the detailed discussions in Section 9.3.2 above. In determining the ultimate environmental impact of the proposed STP site when compared to the alternate sites, STPNOC used the impact categories outlined in NUREG-1437:~~

- ~~SMALL~~ ~~Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.~~
- ~~MODERATE~~ ~~Environmental effects are sufficient to alter noticeably, but not to destabilize, any important attribute of the resource.~~
- ~~LARGE~~ ~~Environmental effects are clearly noticeable and are sufficient to destabilize any important attributes of the resource.~~

~~STPNOC reviewed the proposed and alternative sites using the impact categories suggested in NUREG-1555. They are summarized as follows:~~

- ~~Land Use: Land use impact at the proposed site and the Limestone site will be SMALL since no change to the industrial character of the site will occur as a result of construction and operation of a plant at these sites. However, land use changes at Allen's Creek and Malakoff will be generally SMALL to MODERATE, since the land use will change from unoccupied and agricultural uses to industrial. Impacts to land use at the alternative sites will be equal to or greater than impacts at the proposed site.~~

- ~~Air Quality: Air quality impacts from construction and operation at all of the sites will be SMALL. STPNOC expects that emissions during construction and operation at each of these sites will be within permit limitations. It is also expected that construction and operation at all of the sites will not adversely impact air quality at any of the sites. Impacts to air quality at the alternative sites will be equal to or greater than impacts at the proposed site.~~

- ~~Water: Impacts to water use, quality, and availability will be SMALL at all of the sites. Thus, impacts to water use, quality, and availability are equal to those at the proposed site.~~

- ~~Terrestrial ecology, including threatened or endangered species: Impacts on terrestrial ecology are expected to be SMALL at all sites. Although sensitive species have been reported in areas around the undeveloped sites (Allen's Creek and Malakoff), it is expected that construction and operational practices will limit any potential adverse impacts. As a result, any impacts are greater than or equal to the impacts predicted for the proposed site.~~

- ~~Aquatic Ecology: Impacts to any wetlands, aquatic biological resources, and habitat are expected to be SMALL to MODERATE at the Limestone Site, and SMALL at the other sites. Since the impacts at the proposed site are expected to be SMALL, the alternative sites will have impacts that are equal to or greater than those predicted for the proposed site.~~

- ~~Socioeconomics: Impacts to demographic aesthetic, recreational, and historic values are expected to be SMALL to MODERATE at all sites (except for the Limestone Site, where they are expected to be SMALL), with some MODERATE beneficial impacts at all sites from increased taxes and jobs. Impacts to environmental justice values are predicted to be SMALL at all sites. As a result, socioeconomic impacts at the alternative sites are equal to or greater than the impacts predicted for the proposed site, except for the Limestone site where the impacts may be somewhat less.~~

- ~~Transmission Corridors: Impacts from transmission corridors is expected to be SMALL at the proposed site. At the alternative sites, impacts are predicted to be SMALL to LARGE, since construction or expansion of corridors at the alternative sites will be necessary, Thus, the impacts from transmission corridors at the alternative sites is greater than or equal to the impacts predicted for the proposed site.~~

- ~~Transportation: Impacts to transportation is expected to be SMALL to MODERATE, given the rural nature of all of the sites. Impacts because of congestion during construction of the proposed plant will be SMALL to MODERATE, and impacts will be SMALL during operation at each of the sites. Thus, the impacts to transportation from construction and operation at the alternative sites is equal to or greater than impacts predicted for the proposed site.~~

~~In summary, none of the alternative sites is "environmentally preferable" to the proposed site. STPNOC notes that the environmental impacts of the proposed plant on the alternative sites are greater than or equal to the impacts associated with construction and operation of the proposed plant at the proposed STP site, in each topical area except for socioeconomics at Limestone. However, Limestone has greater impacts in the areas of aquatic ecology and transmission corridors and therefore is not environmentally preferable to the STP site. As a result, STPNOC completed the process suggested in NUREG-1555, concluding that since no other~~

~~sites were environmentally preferable, the proposed site was obviously superior. Thus, the proposed STP Units 3 & 4 site is confirmed as the preferred site.~~

9.3.5 ~~References~~

9.3-1 ~~U.S. Nuclear Regulatory Commission (USNRC) 1999. NUREG-1555, Standard Review Plans for Environmental Reviews for Nuclear Power Plants, NUREG-1555, U.S. Nuclear Regulatory Commission, Washington, D.C., October 1999.~~

9.3-2 ~~Texas Water Development Board (TWDB) 2007. Water for Texas, Volume II, Texas Water Development Board, Austin, Texas, January 2007. Available at http://www.twdb.state.tx.us/publications/reports/State_Water_Plan/2007/2007StateWaterPlan/2007StateWaterPlan.htm. Accessed November 11, 2007.~~

9.3-3 ~~Electric Reliability Council of Texas (ERCOT) 2006. Report on Existing and Potential Transmission System Constraints and Needs, Electric Reliability Council of Texas, Austin, Texas, January 31, 2007. Available at http://www.ercot.com/news/presentations/2006/2006_ERCOT_Reports_Transmission_Constraints_and_Needs.pdf. Accessed November 11, 2007.~~

9.3-4 ~~Energy Information Administration (EIA) 2005. Form EIA-860 Database Annual Electric Generator Report, Energy Information Administration, Washington, D.C., 2005. Available at http://www.eia.doe.gov/cneaf/electricity/page/eia860.html. Accessed November 12, 2007.~~

9.3-5 ~~Kellogg Brown & Root, Inc. 2006. 2006 Region H Water Plan, Kellogg Brown & Root, Inc., Turner Collie and Braden, Houston, December 16, 2005. Available at http://www.twdb.state.tx.us/rwpg/2006_RWP/RegionH/. Last accessed November 12, 2007.~~

9.3-6 ~~10 CFR Part 100. Code of Federal Regulations. Available at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title10/10cfr100_main_02.tpl. Last accessed November 12, 2007.~~

9.3-7 ~~Railroad Commission of Texas, Surface Mining and Reclamation Division (RRC) 2002. Texas Abandoned Mine Reclamation Projects, Surface Mining and Reclamation Division, Austin Texas, November 2002. Available at http://www.rrc.state.tx.us/divisions/sm/programs/aml/aml.htm. Last accessed November 12, 2007.~~

9.3-8 ~~USNRC 2007. NUREG-0800, Rev 3. Standard Review Plans for Review of Safety Plans for Nuclear Power Plants, NUREG-0800, Rev. 3, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation,~~

~~Washington D.C., March 2007. Available at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/ch2/. Last accessed November 12, 2007.~~

9.3-9 ~~NUREG-1437. U.S. Nuclear Regulatory Commission, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437, Volume 1, Office of Nuclear Regulatory Research, Washington, D.C., May 1996. Available at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/v1/index.html. Last accessed November 12, 2007.~~

9.3-10 ~~NRG Energy. Inc. (NRG) 2007. Repowering Texas: Limestone 3 Expansion Project. Available at http://nrgels.com/about/repowering/repowering_tx_ls.htm. Last accessed November 12, 2007.~~

9.3-11 ~~ENSR. 2004. Phase 1 Environmental Site Assessment of Limestone Generating Station, Route 1, Box 85, Jewett, Texas. Document Number 08713-313-600, Report to GC Power Acquisition, LLC, Houston, Texas.~~

9.3-12 ~~U.S. Department of Agriculture (USDA) 2004. 2002 Census of Agriculture. Texas State and County Data. National Agricultural Statistics Service, Washington D.C., 2004. Available at http://www.nass.usda.gov/census/census02/volume1/tx/index2.htm. Last accessed November 12, 2007.~~

9.3-13 ~~Siemens (Siemens Power Transmission and Distribution, Inc) 2007. Memorandum to NRG Energy Inc. Re Preliminary Results of Analyzing Transmission Capabilities for a Nuclear Power Plant in Texas, May 29, 2007.~~

9.3-14 ~~ERCOT 2006. Long Term System Assessment for the ERCOT Region. Electric Reliability Council of Texas, Austin, Texas, 2006. Available at http://www.ercot.com/news/presentations/2006/Attch_A_-_Long_Term_System_Assessment_ERCOT_Region_December_.pdf. Last accessed November 12, 2007.~~

9.3-15 ~~EPA List of 156 Mandatory Class I Federal Areas. Code of Federal Regulations. Reference (40 CFR Part 81). Available at http://www.epa.gov/oar/vis/class1.html. Accessed on April 12, 2007.~~

9.3-16 ~~TCAA 2007. Texas Clean Air Act, Texas Health and Safety Code, Chapter 382, 2007.~~

9.3-17 ~~TAC 2007. Texas Administrative Code, Title 30, Chapter 116, 2007.~~

9.3-18 ~~TWDB (Texas Water Development Board) 2006. Brazos G Regional Planning Area - Regional Water Plan, Volume I. January.~~

9.3-19 ~~TWDB (Texas Water Development Board) 2003. Power Generation Water Use In Texas For The Years 2000 Through 2060.~~

9.3-20 ~~FutureGen Alliance 2006. Heart of Brazos Site Environmental Information Volume. PNWD-3767. FutureGen Alliance, Washington, D.C. Submitted to U.S. Department of Energy.~~

9.3-21 ~~NPS (National Park Service) 2006. National Register Information System Available at http://www.nr.nps.gov. Accessed on April 29, 2007.~~

9.3-22 ~~USCB (U.S. Census Bureau) 2000a. Census 2000 Table DP3 – Profile of Selected Economic Characteristics for Freestone, Limestone, and Leon Counties, Available at http://censtatscensus.gov/pub/Profiles.shtml. Accessed on June 3, 2007.~~

9.3-23 ~~NRC (U.S. Nuclear Regulatory Commission) 1973. Final Supplement to the Final Environmental Impact Statement Related to the Construction of Allen's Creek Nuclear Generating Station Unit No. 1, NUREG-0470, Washington, D.C., August 1973.~~

9.3-24 ~~Lovelace, A. Travis et al. 1995. Wildlife Habitat Appraisal for the Proposed Allen's Creek Reservoir Site. University of Houston Clear Lake, August 31, 1995. Available at http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_rp_t3200_1052. Last accessed November 12, 2007.~~

9.3-25 ~~Allen Johnston Cemetery 2007. Report of Allen Johnston Cemetery, Available at http://atlas.thc.state.tx.us/common/viewform.asp?atlas_num=7015004802&site_name=Al. Accessed on November 11, 2007.~~

9.3-26 ~~USCB (U.S. Census Bureau) 2000b. Census 2000 Table DP3 – Profile of Selected Economic Characteristics for Austin, Fort Bend, and Waller Counties. Available at http://censtats.census.gov/pub/Profiles.shtml. Accessed on June 3, 2007.~~

9.3-27 ~~GoogleEarth 2007. Google Earth (Release 4). January 8. Available at http://earth.google.com.~~

9.3-28 ~~HOT (Handbook of Texas Online) 2007. Henderson County. Available at http://www.tsha.utexas.edu/handbook/online/articles/HH/hch13.html. Last accessed November 12, 2007.~~

9.3-29 ~~TPWD (Texas Parks and Wildlife Department) 2007a. Species account: Bald eagle (*Haliaeetus leucocephalus*). Available at~~

9.3-30 ~~Texas Parks and Wildlife Department (TPWD) 2007b. Rare, Threatened, and Endangered Species of Texas query page. Available at http://www.tpwd.state.tx.us/huntwild/wild/species/endang/index.phtml. Last Accessed November 12, 2007.~~

9.3-31 ~~USCB (U.S. Census Bureau) 2000c. Census 2000 Table DP1 – Profile of General Demographic Characteristics for Henderson and Navarro Counties, Texas, Available at http://censtats.census.gov/pub/Profiles.shtml. Accessed on June 3, 2007.~~

Table 9.3-1 ~~Existing Generation Sites in Texas~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Southwestern Public Service Co~~	~~Jones~~	~~TX~~	~~17718~~	~~3482~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~R W Miller~~	~~TX~~	~~2172~~	~~3628~~	~~NG~~	~~PL~~
~~Mirant Corp~~	~~Bosque County Peaking~~	~~TX~~	~~12668~~	~~55172~~	~~NG~~	~~PL~~
~~ANP Operations Co - Hays~~	~~Hays Energy Project~~	~~TX~~	~~1074~~	~~55144~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~R W Miller~~	~~TX~~	~~2172~~	~~3628~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~R W Miller~~	~~TX~~	~~2172~~	~~3628~~	~~NG~~	~~PL~~
~~Greenville Electric Util Sys~~	~~Powerlane Plant~~	~~TX~~	~~7634~~	~~4195~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Ray Olinger~~	~~TX~~	~~6958~~	~~3576~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Sabine~~	~~TX~~	~~7806~~	~~3459~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Sabine~~	~~TX~~	~~7806~~	~~3459~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Sam Bertron~~	~~TX~~	~~50023~~	~~3468~~	~~NG~~	~~PL~~
~~Rio Nogales Power Project LP~~	~~Rio Nogales Power Project~~	~~TX~~	~~14068~~	~~55137~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Sabine~~	~~TX~~	~~7806~~	~~3459~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Spencer~~	~~TX~~	~~6958~~	~~4266~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Sam Bertron~~	~~TX~~	~~50023~~	~~3468~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Texas Genco II, LP~~	~~Sam Bertron~~	~~TX~~	~~50023~~	~~3468~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Rio Pecos~~	~~TX~~	~~20404~~	~~3526~~	~~NG~~	~~PL~~
~~Sempra Energy Resources~~	~~Twin Oaks Power One~~	~~TX~~	~~16885~~	~~7030~~	~~LIG~~	~~TK~~
~~AEP Texas North Company~~	~~Rio Pecos~~	~~TX~~	~~20404~~	~~3526~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Ray Olinger~~	~~TX~~	~~6958~~	~~3576~~	~~NG~~	~~PL~~
~~Rio Nogales Power Project LP~~	~~Rio Nogales Power Project~~	~~TX~~	~~14068~~	~~55137~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Lake Creek~~	~~TX~~	~~19323~~	~~3502~~	~~NG~~	~~PL~~
~~Rio Nogales Power Project LP~~	~~Rio Nogales Power Project~~	~~TX~~	~~14068~~	~~55137~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~R W Miller~~	~~TX~~	~~2172~~	~~3628~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Lamar Power Partners LP~~	~~Lamar Power Project~~	~~TX~~	~~10755~~	~~55097~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Riverview~~	~~TX~~	~~17718~~	~~3487~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~North Lake~~	~~TX~~	~~19323~~	~~3454~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~North Main~~	~~TX~~	~~19323~~	~~3493~~	~~NG~~	~~PL~~
~~Garland City of~~	~~C E Newman~~	~~TX~~	~~6958~~	~~3574~~	~~NG~~	~~PL~~
~~Denver City Energy Assoc LP~~	~~Mustang Station~~	~~TX~~	~~25104~~	~~55065~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Nichols~~	~~TX~~	~~17718~~	~~3484~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Nichols~~	~~TX~~	~~17718~~	~~3484~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Odessa-Ector Power Partners LP~~	~~Odessa-Ector Generating Station~~	~~TX~~	~~14298~~	~~55215~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~O W Sommers~~	~~TX~~	~~16604~~	~~3611~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~O W Sommers~~	~~TX~~	~~16604~~	~~3611~~	~~NG~~	~~PL~~
~~Public Service Co of Oklahoma~~	~~Oklaunion~~	~~TX~~	~~15474~~	~~127~~	~~SUB~~	~~RR~~
~~Bryan City of~~	~~Bryan~~	~~TX~~	~~2442~~	~~3561~~	~~NG~~	~~PL~~
~~Wise County Power Co., LP~~	~~Wise County Power LP~~	~~TX~~	~~21668~~	~~55320~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Nueces Bay~~	~~TX~~	~~49979~~	~~3441~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Nueces Bay~~	~~TX~~	~~49979~~	~~3441~~	~~NG~~	~~PL~~
~~Denver City Energy Assoc LP~~	~~Mustang Station~~	~~TX~~	~~25104~~	~~55065~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~Ty Cooke~~	~~TX~~	~~11292~~	~~3602~~	~~NG~~	~~PL~~
~~El Paso Electric Co~~	~~Newman~~	~~TX~~	~~5701~~	~~3456~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Mountain Creek~~	~~TX~~	~~6035~~	~~3453~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Mountain Creek~~	~~TX~~	~~6035~~	~~3453~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~Denver City Energy Assoc LP~~	~~Mustang Station~~	~~TX~~	~~25104~~	~~55065~~	~~NG~~	~~PL~~
~~El Paso Electric Co~~	~~Newman~~	~~TX~~	~~5701~~	~~3456~~	~~NG~~	~~PL~~
~~El Paso Electric Co~~	~~Newman~~	~~TX~~	~~5701~~	~~3456~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~NG~~	~~PL~~
~~Bastrop Energy Partners, LP~~	~~Bastrop Energy Center~~	~~TX~~	~~49768~~	~~55168~~	~~NG~~	~~PL~~
~~Wharton County Power Partners~~	~~Newgulf Cogen~~	~~TX~~	~~54695~~	~~50137~~	~~NG~~	~~PL~~
~~Tenaska III Texas Partners~~	~~Tenaska Paris Generating Station~~	~~TX~~	~~24508~~	~~50109~~	~~NG~~	~~PL~~
~~El Paso Electric Co~~	~~Newman~~	~~TX~~	~~5701~~	~~3456~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Plant X~~	~~TX~~	~~17718~~	~~3485~~	~~NG~~	~~PL~~
~~Odessa-Ector Power Partners LP~~	~~Odessa-Ector Generating Station~~	~~TX~~	~~14298~~	~~55215~~	~~NG~~	~~PL~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Welsh~~	~~TX~~	~~17698~~	~~6139~~	~~SUB~~	~~RR~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Plant X~~	~~TX~~	~~17718~~	~~3485~~	~~NG~~	~~PL~~
~~Greenville Electric Util Sys~~	~~Powerlane Plant~~	~~TX~~	~~7634~~	~~4195~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Spencer~~	~~TX~~	~~6958~~	~~4266~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Valley~~	~~TX~~	~~19323~~	~~3508~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Plant X~~	~~TX~~	~~17718~~	~~3485~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Coleto Creek~~	~~TX~~	~~49979~~	~~6178~~	~~SUB~~	~~RR~~
~~San Antonio Public Service Bd~~	~~Arthur Von Rosenberg~~	~~TX~~	~~16604~~	~~7512~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~P H Robinson~~	~~TX~~	~~50023~~	~~3466~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Paint Creek~~	~~TX~~	~~20404~~	~~3524~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~DeCordova Steam Electric Station~~	~~TX~~	~~19323~~	~~8063~~	~~NG~~	~~PL~~
~~Odessa-Ector Power Partners LP~~	~~Odessa-Ector Generating Station~~	~~TX~~	~~14298~~	~~55215~~	~~NG~~	~~PL~~
~~Odessa-Ector Power Partners LP~~	~~Odessa-Ector Generating Station~~	~~TX~~	~~14298~~	~~55215~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~North Lake~~	~~TX~~	~~19323~~	~~3454~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Handley~~	~~TX~~	~~6035~~	~~3491~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Pearsall~~	~~TX~~	~~17583~~	~~3630~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~South Texas Electric Coop Inc~~	~~Pearsall~~	~~TX~~	~~17583~~	~~3630~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Oak Creek~~	~~TX~~	~~20404~~	~~3523~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~P H Robinson~~	~~TX~~	~~50023~~	~~3466~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Paint Creek~~	~~TX~~	~~20404~~	~~3524~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Paint Creek~~	~~TX~~	~~20404~~	~~3524~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~NG~~	~~PL~~
~~Bryan City of~~	~~Bryan~~	~~TX~~	~~2442~~	~~3561~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Webster~~	~~TX~~	~~50023~~	~~3471~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Knox Lee~~	~~TX~~	~~17698~~	~~3476~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Sabine~~	~~TX~~	~~7806~~	~~3459~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~TX~~	~~16604~~	~~3609~~	~~NG~~	~~PL~~
~~Mirant Corp~~	~~Bosque County Peaking~~	~~TX~~	~~12668~~	~~55172~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~River Crest~~	~~TX~~	~~19323~~	~~3503~~	~~NG~~	~~PL~~
~~Bastrop Energy Partners, LP~~	~~Bastrop Energy Center~~	~~TX~~	~~49768~~	~~55168~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Victoria~~	~~TX~~	~~49979~~	~~3443~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~W B Tuttle~~	~~TX~~	~~16604~~	~~3613~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~W B Tuttle~~	~~TX~~	~~16604~~	~~3613~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~W B Tuttle~~	~~TX~~	~~16604~~	~~3613~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~TXU Sweetwater Generating Plant~~	~~TX~~	~~19323~~	~~50615~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~Ty Cooke~~	~~TX~~	~~11292~~	~~3602~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~Ty Cooke~~	~~TX~~	~~11292~~	~~3602~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~Ty Cooke~~	~~TX~~	~~11292~~	~~3602~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~TXU Sweetwater Generating Plant~~	~~TX~~	~~19323~~	~~50615~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~TXU Sweetwater Generating Plant~~	~~TX~~	~~19323~~	~~50615~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~Ty Cooke~~	~~TX~~	~~11292~~	~~3602~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Sabine~~	~~TX~~	~~7806~~	~~3459~~	~~NG~~	~~PL~~
~~AES Western Power LLC~~	~~Deepwater~~	~~TX~~	~~54779~~	~~3461~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Victoria~~	~~TX~~	~~49979~~	~~3443~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Victoria~~	~~TX~~	~~49979~~	~~3443~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~Lamar Power Partners LP~~	~~Lamar Power Project~~	~~TX~~	~~10755~~	~~55097~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~V H Braunig~~	~~TX~~	~~16604~~	~~3612~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Valley~~	~~TX~~	~~19323~~	~~3508~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~J T Deely~~	~~TX~~	~~16604~~	~~6181~~	~~SUB~~	~~RR~~
~~Texas Genco II, LP~~	~~P H Robinson~~	~~TX~~	~~50023~~	~~3466~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Tolk~~	~~TX~~	~~17718~~	~~6194~~	~~SUB~~	~~RR~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~SUB~~	~~RR~~
~~Southwestern Public Service Co~~	~~Harrington~~	~~TX~~	~~17718~~	~~6193~~	~~SUB~~	~~RR~~
~~AEP Texas North Company~~	~~Presidio~~	~~TX~~	~~20404~~	~~3525~~	~~DFO~~	~~TK~~
~~San Antonio Public Service Bd~~	~~J K Spruce~~	~~TX~~	~~16604~~	~~7097~~	~~SUB~~	~~RR~~
~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~TX~~	~~6763~~	~~55226~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~
~~Tenaska Gateway Partners Ltd~~	~~Tenaska Gateway Generating Station~~	~~TX~~	~~18518~~	~~55132~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Welsh~~	~~TX~~	~~17698~~	~~6139~~	~~SUB~~	~~RR~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Texas Genco II, LP~~	~~Hiram Clarke~~	~~TX~~	~~50023~~	~~3465~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Martin Lake~~	~~TX~~	~~19323~~	~~6146~~	~~LIG~~	~~TK~~
~~Southwestern Public Service Co~~	~~Moore County~~	~~TX~~	~~17718~~	~~3483~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~SUB~~	~~RR~~
~~Wise County Power Co., LP~~	~~Wise County Power LP~~	~~TX~~	~~21668~~	~~55320~~	~~NG~~	~~PL~~
~~Wolf Hollow I L P~~	~~Wolf Hollow I, L.P.~~	~~TX~~	~~313~~	~~55139~~	~~NG~~	~~PL~~
~~Wolf Hollow I L P~~	~~Wolf Hollow I, L.P.~~	~~TX~~	~~313~~	~~55139~~	~~NG~~	~~PL~~
~~ANP Operations Co~~	~~Midlothian Energy Facility~~	~~TX~~	~~739~~	~~55091~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Wilkes~~	~~TX~~	~~17698~~	~~3478~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Wilkes~~	~~TX~~	~~17698~~	~~3478~~	~~NG~~	~~PL~~
~~Wise County Power Co., LP~~	~~Wise County Power LP~~	~~TX~~	~~21668~~	~~55320~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~North Texas~~	~~TX~~	~~2172~~	~~3627~~	~~NG~~	~~PL~~
~~Frontera Generation Limited Partnership~~	~~Frontera Energy Center~~	~~TX~~	~~6519~~	~~55098~~	~~NG~~	~~PL~~
~~Texas Municipal Power Agency~~	~~Gibbons Creek~~	~~TX~~	~~18715~~	~~6136~~	~~SUB~~	~~RR~~
~~Southwestern Public Service Co~~	~~Harrington~~	~~TX~~	~~17718~~	~~6193~~	~~SUB~~	~~RR~~
~~Southwestern Public Service Co~~	~~Jones~~	~~TX~~	~~17718~~	~~3482~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Comanche Peak~~	~~TX~~	~~19323~~	~~6145~~	~~NUC~~	~~TK~~
~~TXU Generation Co LP~~	~~Comanche Peak~~	~~TX~~	~~19323~~	~~6145~~	~~NUC~~	~~TK~~
~~Topaz Power Group LLC~~	~~Nueces Bay~~	~~TX~~	~~49979~~	~~3441~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Spencer~~	~~TX~~	~~6958~~	~~4266~~	~~NG~~	~~PL~~
~~Greenville Electric Util Sys~~	~~Powerlane Plant~~	~~TX~~	~~7634~~	~~4195~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Sam Bertron~~	~~TX~~	~~50023~~	~~3468~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~San Angelo~~	~~TX~~	~~20404~~	~~3527~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Lower Colorado River Authority~~	~~Sim Gideon~~	~~TX~~	~~11269~~	~~3601~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Sim Gideon~~	~~TX~~	~~11269~~	~~3601~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Spencer~~	~~TX~~	~~6958~~	~~4266~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Fayette Power Project~~	~~TX~~	~~11269~~	~~6179~~	~~SUB~~	~~RR~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Lon C Hill~~	~~TX~~	~~49979~~	~~3440~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Wilkes~~	~~TX~~	~~17698~~	~~3478~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Vernon~~	~~TX~~	~~20404~~	~~3623~~	~~DFO~~	~~TK~~
~~TXU Generation Co LP~~	~~Stryker Creek~~	~~TX~~	~~19323~~	~~3504~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Tenaska Gateway Partners Ltd~~	~~Tenaska Gateway Generating Station~~	~~TX~~	~~18518~~	~~55132~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~San Jacinto Steam Electric Station~~	~~TX~~	~~50023~~	~~7325~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Sand Hill~~	~~TX~~	~~1015~~	~~7900~~	~~NG~~	~~PL~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Vernon~~	~~TX~~	~~20404~~	~~3623~~	~~DFO~~	~~TK~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~San Angelo~~	~~TX~~	~~20404~~	~~3527~~	~~NG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~TX~~	~~16604~~	~~3609~~	~~NG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Sand Hill~~	~~TX~~	~~1015~~	~~7900~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Texas Genco II, LP~~	~~Hiram Clarke~~	~~TX~~	~~50023~~	~~3465~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Sand Hill~~	~~TX~~	~~1015~~	~~7900~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Sand Hill~~	~~TX~~	~~1015~~	~~7900~~	~~NG~~	~~PL~~
~~Alcoa Inc~~	~~Sandow Station~~	~~TX~~	~~252~~	~~52071~~	~~LIG~~	~~CV~~
~~Tenaska III Texas Partners~~	~~Tenaska Paris Generating Station~~	~~TX~~	~~24508~~	~~50109~~	~~NG~~	~~PL~~
~~Tenaska III Texas Partners~~	~~Tenaska Paris Generating Station~~	~~TX~~	~~24508~~	~~50109~~	~~NG~~	~~PL~~
~~Lone Star Steel Co~~	~~Lone Star Steel~~	~~TX~~	~~11136~~	~~54971~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Welsh~~	~~TX~~	~~17698~~	~~6139~~	~~SUB~~	~~RR~~
~~Tenaska Gateway Partners Ltd~~	~~Tenaska Gateway Generating Station~~	~~TX~~	~~18518~~	~~55132~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~San Jacinto Steam Electric Station~~	~~TX~~	~~50023~~	~~7325~~	~~NG~~	~~PL~~
~~Tenaska Gateway Partners Ltd~~	~~Tenaska Gateway Generating Station~~	~~TX~~	~~18518~~	~~55132~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Sand Hill~~	~~TX~~	~~1015~~	~~7900~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Paint Creek~~	~~TX~~	~~20404~~	~~3524~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Webster~~	~~TX~~	~~50023~~	~~3471~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Thomas C Ferguson~~	~~TX~~	~~11269~~	~~4937~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Tradinghouse~~	~~TX~~	~~19323~~	~~3506~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Trinidad~~	~~TX~~	~~19323~~	~~3507~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Eagle Mountain~~	~~TX~~	~~19323~~	~~3489~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Lewis Creek~~	~~TX~~	~~7806~~	~~3457~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~Tenaska Frontier Partners Ltd~~	~~Tenaska Frontier Generation Station~~	~~TX~~	~~18611~~	~~55062~~	~~NG~~	~~PL~~
~~Tenaska Frontier Partners Ltd~~	~~Tenaska Frontier Generation Station~~	~~TX~~	~~18611~~	~~55062~~	~~NG~~	~~PL~~
~~Tenaska Frontier Partners Ltd~~	~~Tenaska Frontier Generation Station~~	~~TX~~	~~18611~~	~~55062~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Arthur Von Rosenberg~~	~~TX~~	~~16604~~	~~7512~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Nichols~~	~~TX~~	~~17718~~	~~3484~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~DeCordova Steam Electric Station~~	~~TX~~	~~19323~~	~~8063~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~Frontera Generation Limited Partnership~~	~~Frontera Energy Center~~	~~TX~~	~~6519~~	~~55098~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Ray Olinger~~	~~TX~~	~~6958~~	~~3576~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~DeCordova Steam Electric Station~~	~~TX~~	~~19323~~	~~8063~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Lost Pines 1 Power Project~~	~~TX~~	~~11269~~	~~55154~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Valley~~	~~TX~~	~~19323~~	~~3508~~	~~NG~~	~~PL~~
~~Lamar Power Partners LP~~	~~Lamar Power Project~~	~~TX~~	~~10755~~	~~55097~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Stryker Creek~~	~~TX~~	~~19323~~	~~3504~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~DeCordova Steam Electric Station~~	~~TX~~	~~19323~~	~~8063~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Cedar Bayou~~	~~TX~~	~~50023~~	~~3460~~	~~NG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~J Robert Massengale~~	~~TX~~	~~11292~~	~~3604~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~V H Braunig~~	~~TX~~	~~16604~~	~~3612~~	~~NG~~	~~PL~~
~~Garland City of~~	~~C E Newman~~	~~TX~~	~~6958~~	~~3574~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Limestone~~	~~TX~~	~~50023~~	~~298~~	~~LIG~~	~~CV~~
~~Texas Genco II, LP~~	~~Cedar Bayou~~	~~TX~~	~~50023~~	~~3460~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Cedar Bayou~~	~~TX~~	~~50023~~	~~3460~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Lost Pines 1 Power Project~~	~~TX~~	~~11269~~	~~55154~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Fayette Power Project~~	~~TX~~	~~11269~~	~~6179~~	~~SUB~~	~~RR~~
~~TXU Generation Co LP~~	~~Collin~~	~~TX~~	~~19323~~	~~3500~~	~~NG~~	~~PL~~
~~Calpine Corp-Magic Valley~~	~~Magic Valley Generating Station~~	~~TX~~	~~2877~~	~~55123~~	~~NG~~	~~PL~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~J T Deely~~	~~TX~~	~~16604~~	~~6181~~	~~SUB~~	~~RR~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~FPLE Forney LP~~	~~Forney Energy Center~~	~~TX~~	~~6844~~	~~55480~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~TX~~	~~6763~~	~~55226~~	~~NG~~	~~PL~~
~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~TX~~	~~6763~~	~~55226~~	~~NG~~	~~PL~~
~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~TX~~	~~6763~~	~~55226~~	~~NG~~	~~PL~~
~~South Texas Electric Coop Inc~~	~~Pearsall~~	~~TX~~	~~17583~~	~~3630~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Fort Phantom~~	~~TX~~	~~20404~~	~~4938~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Fort Phantom~~	~~TX~~	~~20404~~	~~4938~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Fort Stockton~~	~~TX~~	~~20404~~	~~3520~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Holly Street~~	~~TX~~	~~1015~~	~~3549~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Lake Hubbard~~	~~TX~~	~~19323~~	~~3452~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Exelon LaPorte Generating Station~~	~~TX~~	~~6035~~	~~55365~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Harrington~~	~~TX~~	~~17718~~	~~6193~~	~~SUB~~	~~RR~~
~~TXU Generation Co LP~~	~~Eagle Mountain~~	~~TX~~	~~19323~~	~~3489~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~J L Bates~~	~~TX~~	~~49979~~	~~3438~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Spencer~~	~~TX~~	~~6958~~	~~4266~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Exelon LaPorte Generating Station~~	~~TX~~	~~6035~~	~~55365~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~J Robert Massengale~~	~~TX~~	~~11292~~	~~3604~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Ennis Tractebel Power Co LP~~	~~Ennis Tractebel Power LP~~	~~TX~~	~~5761~~	~~55223~~	~~NG~~	~~PL~~
~~Ennis Tractebel Power Co LP~~	~~Ennis Tractebel Power LP~~	~~TX~~	~~5761~~	~~55223~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~TX~~	~~16604~~	~~3609~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Exelon Generation Co LLC~~	~~Exelon LaPorte Generating Station~~	~~TX~~	~~6035~~	~~55365~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Monticello~~	~~TX~~	~~19323~~	~~6147~~	~~LIG~~	~~RR~~
~~TXU Generation Co LP~~	~~Monticello~~	~~TX~~	~~19323~~	~~6147~~	~~LIG~~	~~RR~~
~~Tenaska Frontier Partners Ltd~~	~~Tenaska Frontier Generation Station~~	~~TX~~	~~18611~~	~~55062~~	~~NG~~	~~PL~~
~~Alcoa Inc~~	~~Sandow Station~~	~~TX~~	~~252~~	~~52071~~	~~LIG~~	~~CV~~
~~TXU Generation Co LP~~	~~Martin Lake~~	~~TX~~	~~19323~~	~~6146~~	~~LIG~~	~~TK~~
~~TXU Generation Co LP~~	~~Martin Lake~~	~~TX~~	~~19323~~	~~6146~~	~~LIG~~	~~TK~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~SUB~~	~~RR~~
~~TXU Generation Co LP~~	~~Monticello~~	~~TX~~	~~19323~~	~~6147~~	~~LIG~~	~~RR~~
~~Alcoa Inc~~	~~Sandow Station~~	~~TX~~	~~252~~	~~52071~~	~~LIG~~	~~CV~~
~~AEP Texas North Company~~	~~Rio Pecos~~	~~TX~~	~~20404~~	~~3526~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Abilene~~	~~TX~~	~~20404~~	~~3517~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Pirkey~~	~~TX~~	~~17698~~	~~7902~~	~~LIG~~	~~CV~~
~~San Miguel Electric Coop Inc~~	~~San Miguel~~	~~TX~~	~~16624~~	~~6183~~	~~LIG~~	~~TK~~
~~TXU Generation Co LP~~	~~Sandow No 4~~	~~TX~~	~~19323~~	~~6648~~	~~LIG~~	~~TK~~
~~El Paso Electric Co~~	~~Newman~~	~~TX~~	~~5701~~	~~3456~~	~~NG~~	~~PL~~
~~Robstown City of~~	~~Robstown~~	~~TX~~	~~16175~~	~~3608~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Vernon~~	~~TX~~	~~20404~~	~~3623~~	~~DFO~~	~~TK~~
~~TXU Generation Co LP~~	~~Big Brown~~	~~TX~~	~~19323~~	~~3497~~	~~LIG~~	~~TK~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Presidio~~	~~TX~~	~~20404~~	~~3525~~	~~DFO~~	~~TK~~
~~Calhoun County Navigation District~~	~~E S Joslin~~	~~TX~~	~~50053~~	~~3436~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~TX~~	~~7698~~	~~55153~~	~~NG~~	~~PL~~
~~Calpine Corp-Hildalgo~~	~~Hidalgo Energy Center~~	~~TX~~	~~2934~~	~~55545~~	~~NG~~	~~PL~~
~~Bryan City of~~	~~Dansby~~	~~TX~~	~~2442~~	~~6243~~	~~NG~~	~~PL~~
~~Garland City of~~	~~C E Newman~~	~~TX~~	~~6958~~	~~3574~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Tradinghouse~~	~~TX~~	~~19323~~	~~3506~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Vernon~~	~~TX~~	~~20404~~	~~3623~~	~~DFO~~	~~TK~~
~~Topaz Power Group LLC~~	~~Lon C Hill~~	~~TX~~	~~49979~~	~~3440~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Limestone~~	~~TX~~	~~50023~~	~~298~~	~~LIG~~	~~CV~~
~~Lower Colorado River Authority~~	~~Fayette Power Project~~	~~TX~~	~~11269~~	~~6179~~	~~SUB~~	~~RR~~
~~El Paso Electric Co~~	~~Newman~~	~~TX~~	~~5701~~	~~3456~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Big Brown~~	~~TX~~	~~19323~~	~~3497~~	~~LIG~~	~~TK~~
~~Bryan City of~~	~~Bryan~~	~~TX~~	~~2442~~	~~3561~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Lake Hubbard~~	~~TX~~	~~19323~~	~~3452~~	~~NG~~	~~PL~~
~~Bryan City of~~	~~Dansby~~	~~TX~~	~~2442~~	~~6243~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Knox Lee~~	~~TX~~	~~17698~~	~~3476~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Sam Bertron~~	~~TX~~	~~50023~~	~~3468~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Handley~~	~~TX~~	~~6035~~	~~3491~~	~~NG~~	~~PL~~
~~Garland City of~~	~~C E Newman~~	~~TX~~	~~6958~~	~~3574~~	~~NG~~	~~PL~~
~~Garland City of~~	~~C E Newman~~	~~TX~~	~~6958~~	~~3574~~	~~NG~~	~~PL~~
~~Bryan City of~~	~~Bryan~~	~~TX~~	~~2442~~	~~3561~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~North Texas~~	~~TX~~	~~2172~~	~~3627~~	~~NG~~	~~PL~~
~~Bryan City of~~	~~Bryan~~	~~TX~~	~~2442~~	~~3561~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~W B Tuttle~~	~~TX~~	~~16604~~	~~3613~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Topaz Power Group LLC~~	~~Barney M Davis~~	~~TX~~	~~49979~~	~~4939~~	~~NG~~	~~PL~~
~~Bastrop Energy Partners, LP~~	~~Bastrop Energy Center~~	~~TX~~	~~49768~~	~~55168~~	~~NG~~	~~PL~~
~~Wharton County Power Partners~~	~~Newgulf Cogen~~	~~TX~~	~~54695~~	~~50137~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Arthur Von Rosenberg~~	~~TX~~	~~16604~~	~~7512~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~P H Robinson~~	~~TX~~	~~50023~~	~~3466~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Barney M Davis~~	~~TX~~	~~49979~~	~~4939~~	~~NG~~	~~PL~~
~~Brazos Valley Energy~~	~~Brazos Valley Generating Facility~~	~~TX~~	~~2171~~	~~55357~~	~~NG~~	~~PL~~
~~Brazos Valley Energy~~	~~Brazos Valley Generating Facility~~	~~TX~~	~~2171~~	~~55357~~	~~NG~~	~~PL~~
~~Brazos Valley Energy~~	~~Brazos Valley Generating Facility~~	~~TX~~	~~2171~~	~~55357~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Sam Bertron~~	~~TX~~	~~50023~~	~~3468~~	~~NG~~	~~PL~~
~~Mirant Corp~~	~~Bosque County Peaking~~	~~TX~~	~~12668~~	~~55172~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~North Lake~~	~~TX~~	~~19323~~	~~3454~~	~~NG~~	~~PL~~
~~Sempra Energy Resources~~	~~Twin Oaks Power One~~	~~TX~~	~~16885~~	~~7030~~	~~LIG~~	~~TK~~
~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~TX~~	~~16604~~	~~3609~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~TX~~	~~16604~~	~~3609~~	~~NG~~	~~PL~~
~~Entergy Gulf States Inc~~	~~Lewis Creek~~	~~TX~~	~~7806~~	~~3457~~	~~NG~~	~~PL~~
~~Rio Nogales Power Project LP~~	~~Rio Nogales Power Project~~	~~TX~~	~~14068~~	~~55137~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Exelon LaPorte Generating Station~~	~~TX~~	~~6035~~	~~55365~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~TX~~	~~16604~~	~~3609~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Southwestern Electric Power Co~~	~~Lone Star~~	~~TX~~	~~17698~~	~~3477~~	~~NG~~	~~PL~~
~~Mirant Wichita Falls LP~~	~~Mirant Wichita Falls LP~~	~~TX~~	~~12719~~	~~50127~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~DeCordova Steam Electric Station~~	~~TX~~	~~19323~~	~~8063~~	~~NG~~	~~PL~~
~~Cottonwood Energy Co LP~~	~~Cottonwood Energy Project~~	~~TX~~	~~4405~~	~~55358~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Vernon~~	~~TX~~	~~20404~~	~~3623~~	~~DFO~~	~~TK~~
~~Topaz Power Group LLC~~	~~Lon C Hill~~	~~TX~~	~~49979~~	~~3440~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Lon C Hill~~	~~TX~~	~~49979~~	~~3440~~	~~NG~~	~~PL~~
~~STP Nuclear Operating Co~~	~~South Texas Project~~	~~TX~~	~~21535~~	~~6251~~	~~NUC~~	~~TK~~
~~AEP Texas North Company~~	~~Lake Pauline~~	~~TX~~	~~20404~~	~~3521~~	~~NG~~	~~PL~~
~~AEP Texas North Company~~	~~Lake Pauline~~	~~TX~~	~~20404~~	~~3521~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Handley~~	~~TX~~	~~6035~~	~~3491~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~La Palma~~	~~TX~~	~~49979~~	~~3442~~	~~NG~~	~~PL~~
~~ANP Operations Co~~	~~Midlothian Energy Facility~~	~~TX~~	~~739~~	~~55091~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~La Palma~~	~~TX~~	~~49979~~	~~3442~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~North Texas~~	~~TX~~	~~2172~~	~~3627~~	~~NG~~	~~PL~~
~~Lamar Power Partners LP~~	~~Lamar Power Project~~	~~TX~~	~~10755~~	~~55097~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Laredo~~	~~TX~~	~~49979~~	~~3439~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~J Robert Massengale~~	~~TX~~	~~11292~~	~~3604~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~V H Braunig~~	~~TX~~	~~16604~~	~~3612~~	~~NG~~	~~PL~~
~~Lamar Power Partners LP~~	~~Lamar Power Project~~	~~TX~~	~~10755~~	~~55097~~	~~NG~~	~~PL~~
~~Lamar Power Partners LP~~	~~Lamar Power Project~~	~~TX~~	~~10755~~	~~55097~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~Calpine Corp-Magic Valley~~	~~Magic Valley Generating Station~~	~~TX~~	~~2877~~	~~55123~~	~~NG~~	~~PL~~
~~Mirant Wichita Falls LP~~	~~Mirant Wichita Falls LP~~	~~TX~~	~~12719~~	~~50127~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~W A Parish~~	~~TX~~	~~50023~~	~~3470~~	~~SUB~~	~~RR~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Mountain Creek~~	~~TX~~	~~6035~~	~~3453~~	~~NG~~	~~PL~~
~~Brazos Valley Energy~~	~~Brazos Valley Generating Facility~~	~~TX~~	~~2171~~	~~55357~~	~~NG~~	~~PL~~
~~Southwestern Electric Power Co~~	~~Knox Lee~~	~~TX~~	~~17698~~	~~3476~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~Entergy Power Ventures LP~~	~~Harrison County Power Project~~	~~TX~~	~~6041~~	~~55664~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Sim Gideon~~	~~TX~~	~~11269~~	~~3601~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Lake Creek~~	~~TX~~	~~19323~~	~~3502~~	~~NG~~	~~PL~~
~~ANP Operations Co~~	~~Midlothian Energy Facility~~	~~TX~~	~~739~~	~~55091~~	~~NG~~	~~PL~~
~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~TX~~	~~6763~~	~~55226~~	~~NG~~	~~PL~~
~~Lower Colorado River Authority~~	~~Lost Pines 1 Power Project~~	~~TX~~	~~11269~~	~~55154~~	~~NG~~	~~PL~~
~~Calpine Corp-Magic Valley~~	~~Magic Valley Generating Station~~	~~TX~~	~~2877~~	~~55123~~	~~NG~~	~~PL~~
~~El Paso Electric Co~~	~~Copper~~	~~TX~~	~~5701~~	~~9~~	~~NG~~	~~PL~~
~~ANP Operations Co~~	~~Midlothian Energy Facility~~	~~TX~~	~~739~~	~~55091~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Mirant Wichita Falls LP~~	~~Mirant Wichita Falls LP~~	~~TX~~	~~12719~~	~~50127~~	~~NG~~	~~PL~~
~~Lone Star Steel Co~~	~~Lone Star Steel~~	~~TX~~	~~11136~~	~~54971~~	~~NG~~	~~PL~~
~~Mirant Wichita Falls LP~~	~~Mirant Wichita Falls LP~~	~~TX~~	~~12719~~	~~50127~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~La Palma~~	~~TX~~	~~49979~~	~~3442~~	~~NG~~	~~PL~~
~~ANP Operations Co~~	~~Midlothian Energy Facility~~	~~TX~~	~~739~~	~~55091~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Mountain Creek~~	~~TX~~	~~6035~~	~~3453~~	~~NG~~	~~PL~~
~~ANP Operations Co~~	~~Midlothian Energy Facility~~	~~TX~~	~~739~~	~~55091~~	~~NG~~	~~PL~~
~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~TX~~	~~7698~~	~~55153~~	~~NG~~	~~PL~~
~~STP Nuclear Operating Co~~	~~South Texas Project~~	~~TX~~	~~21535~~	~~6251~~	~~NUC~~	~~TK~~
~~Exelon Generation Co LLC~~	~~Handley~~	~~TX~~	~~6035~~	~~3491~~	~~NG~~	~~PL~~
~~Entergy Power Ventures LP~~	~~Harrison County Power Project~~	~~TX~~	~~6041~~	~~55664~~	~~NG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~NG~~	~~PL~~
~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~TX~~	~~7698~~	~~55153~~	~~NG~~	~~PL~~
~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~TX~~	~~7698~~	~~55153~~	~~NG~~	~~PL~~
~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~TX~~	~~7698~~	~~55153~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Permian Basin~~	~~TX~~	~~19323~~	~~3494~~	~~NG~~	~~PL~~
~~ANP Operations Co - Hays~~	~~Hays Energy Project~~	~~TX~~	~~1074~~	~~55144~~	~~NG~~	~~PL~~
~~ANP Operations Co - Hays~~	~~Hays Energy Project~~	~~TX~~	~~1074~~	~~55144~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Handley~~	~~TX~~	~~6035~~	~~3491~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~La Palma~~	~~TX~~	~~49979~~	~~3442~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Morgan Creek~~	~~TX~~	~~19323~~	~~3492~~	~~NG~~	~~PL~~
~~Entergy Power Ventures LP~~	~~Harrison County Power Project~~	~~TX~~	~~6041~~	~~55664~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Plant X~~	~~TX~~	~~17718~~	~~3485~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~

~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~TXU Generation Co LP~~	~~Graham~~	~~TX~~	~~19323~~	~~3490~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Mirant Corp~~	~~Bosque County Peaking~~	~~TX~~	~~12668~~	~~55172~~	~~NG~~	~~PL~~
~~Norit Americas Inc~~	~~Norit Americas Marshall Plant~~	~~TX~~	~~35120~~	~~54972~~	~~LIG~~	~~TK~~
~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~TX~~	~~6763~~	~~55226~~	~~NG~~	~~PL~~
~~Frontera Generation Limited Partnership~~	~~Frontera Energy Center~~	~~TX~~	~~6519~~	~~55098~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Laredo~~	~~TX~~	~~49979~~	~~3439~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~TX~~	~~7698~~	~~55153~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Graham~~	~~TX~~	~~19323~~	~~3490~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Greens Bayou~~	~~TX~~	~~50023~~	~~3464~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~J Robert Massengale~~	~~TX~~	~~11292~~	~~3604~~	~~NG~~	~~PL~~
~~Odessa-Ector Power Partners LP~~	~~Odessa Ector Generating Station~~	~~TX~~	~~14298~~	~~55215~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~Laredo~~	~~TX~~	~~49979~~	~~3439~~	~~NG~~	~~PL~~
~~Wolf Hollow I L P~~	~~Wolf Hollow I, L.P.~~	~~TX~~	~~313~~	~~55139~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Holly Street~~	~~TX~~	~~1015~~	~~3549~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Holly Street~~	~~TX~~	~~1015~~	~~3549~~	~~NG~~	~~PL~~
~~Topaz Power Group LLC~~	~~J L Bates~~	~~TX~~	~~49979~~	~~3438~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~Eagle Mountain~~	~~TX~~	~~19323~~	~~3489~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~T H Wharton~~	~~TX~~	~~50023~~	~~3469~~	~~NG~~	~~PL~~
~~Exelon Generation Co LLC~~	~~Mountain Creek~~	~~TX~~	~~6035~~	~~3453~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Southwestern Electric Power Co~~	~~Knox Lee~~	~~TX~~	~~17698~~	~~3476~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~J Robert Massengale~~	~~TX~~	~~11292~~	~~3604~~	~~NG~~	~~PL~~
~~Odessa-Ector Power Partners LP~~	~~Odessa-Ector Generating Station~~	~~TX~~	~~14298~~	~~55215~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~R W Miller~~	~~TX~~	~~2172~~	~~3628~~	~~NG~~	~~PL~~
~~Garland City of~~	~~Ray~~	~~TX~~	~~6958~~	~~3576~~	~~NG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Tolk~~	~~TX~~	~~17718~~	~~6194~~	~~SUB~~	~~RR~~
~~Texas Genco II, LP~~	~~Hiram Clarke~~	~~TX~~	~~50023~~	~~3465~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Hiram Clarke~~	~~TX~~	~~50023~~	~~3465~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Hiram Clarke~~	~~TX~~	~~50023~~	~~3465~~	~~NG~~	~~PL~~
~~ANP Operations Co - Hays~~	~~Hays Energy Project~~	~~TX~~	~~1074~~	~~55144~~	~~NG~~	~~PL~~
~~Calpine Corp-Hildalgo~~	~~Hidalgo Energy Center~~	~~TX~~	~~2934~~	~~55545~~	~~NG~~	~~PL~~
~~Texas Genco II, LP~~	~~Hiram Clarke~~	~~TX~~	~~50023~~	~~3465~~	~~NG~~	~~PL~~
~~Calpine Corp-Hildalgo~~	~~Hidalgo Energy Center~~	~~TX~~	~~2934~~	~~55545~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Holly Street~~	~~TX~~	~~1015~~	~~3549~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Sand Hill~~	~~TX~~	~~1015~~	~~7900~~	~~NG~~	~~PL~~
~~Grupo Mexico~~	~~ASARCO El Paso Texas~~	~~TX~~	~~7734~~	~~54905~~	~~NG~~	~~PL~~
~~Electra City of~~	~~Electra~~	~~TX~~	~~5744~~	~~3571~~	~~NG~~	~~PL~~
~~Electra City of~~	~~Electra~~	~~TX~~	~~5744~~	~~3571~~	~~NG~~	~~PL~~
~~Floydada City of~~	~~Floydada~~	~~TX~~	~~6472~~	~~3573~~	~~NG~~	~~PL~~
~~Electra City of~~	~~Electra~~	~~TX~~	~~5744~~	~~3571~~	~~NG~~	~~PL~~
~~Floydada City of~~	~~Floydada~~	~~TX~~	~~6472~~	~~3573~~	~~NG~~	~~PL~~
~~Floydada City of~~	~~Floydada~~	~~TX~~	~~6472~~	~~3573~~	~~NG~~	~~PL~~
~~Floydada City of~~	~~Floydada~~	~~TX~~	~~6472~~	~~3573~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Fossil Fueled Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Electra City of~~	~~Electra~~	~~TX~~	~~5744~~	~~3571~~	~~NG~~	~~PL~~
~~San Antonio Public Service Bd~~	~~Mission Road~~	~~TX~~	~~16604~~	~~3610~~	~~NG~~	~~PL~~
~~Electra City of~~	~~Electra~~	~~TX~~	~~5744~~	~~3571~~	~~NG~~	~~PL~~
~~Electra City of~~	~~Electra~~	~~TX~~	~~5744~~	~~3571~~	~~NG~~	~~PL~~
~~Floydada City of~~	~~Floydada~~	~~TX~~	~~6472~~	~~3573~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Renewable Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Austin Energy~~	~~Decker Creek~~	~~TX~~	~~1015~~	~~3548~~	~~SUN~~	
~~Guadalupe Blanco River Auth~~	~~Abbott TP 3~~	~~TX~~	~~7751~~	~~3581~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Buchanan~~	~~TX~~	~~11269~~	~~3595~~	~~WAT~~	
~~Guadalupe Blanco River Auth~~	~~TP 4~~	~~TX~~	~~7751~~	~~3586~~	~~WAT~~	
~~Gonzales City of~~	~~Gonzales Hydro Plant~~	~~TX~~	~~7370~~	~~7394~~	~~WAT~~	
~~Maverick Cnty Wtr Control & Imp Dst No 1~~	~~Eagle Pass~~	~~TX~~	~~54682~~	~~3437~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Marble Falls~~	~~TX~~	~~11269~~	~~3599~~	~~WAT~~	
~~USCE-Tulsa District~~	~~Denison~~	~~TX~~	~~27470~~	~~6416~~	~~WAT~~	
~~USCE-Fort Worth District~~	~~Sam Rayburn~~	~~TX~~	~~19449~~	~~6413~~	~~WAT~~	
~~Maverick Cnty Wtr Control & Imp Dst No 1~~	~~Eagle Pass~~	~~TX~~	~~54682~~	~~3437~~	~~WAT~~	
~~USCE-Fort Worth District~~	~~Robert D Willis~~	~~TX~~	~~19449~~	~~7200~~	~~WAT~~	
~~International Bound & Wtr Comm~~	~~Falcon Dam & Power~~	~~TX~~	~~9339~~	~~6410~~	~~WAT~~	
~~Brazos River Authority~~	~~Morris Sheppard~~	~~TX~~	~~2176~~	~~3557~~	~~WAT~~	
~~USCE-Fort Worth District~~	~~Robert D Willis~~	~~TX~~	~~19449~~	~~7200~~	~~WAT~~	
~~Entergy Gulf States Inc~~	~~Toledo Bend~~	~~TX~~	~~7806~~	~~6595~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Granite Shoals~~	~~TX~~	~~11269~~	~~3597~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Marshall Ford~~	~~TX~~	~~11269~~	~~3600~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Marble Falls~~	~~TX~~	~~11269~~	~~3599~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Buchanan~~	~~TX~~	~~11269~~	~~3595~~	~~WAT~~	
~~USCE-Fort Worth District~~	~~Whitney~~	~~TX~~	~~19449~~	~~6414~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Buchanan~~	~~TX~~	~~11269~~	~~3595~~	~~WAT~~	
~~Brazos River Authority~~	~~Morris Sheppard~~	~~TX~~	~~2176~~	~~3557~~	~~WAT~~	

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Renewable Generation Facilities~~

~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Maverick Cnty Wtr Control & Imp Dst No 1~~	~~Eagle Pass~~	~~TX~~	~~54682~~	~~3437~~	~~WAT~~	
~~USCE-Fort Worth District~~	~~Whitney~~	~~TX~~	~~19449~~	~~6414~~	~~WAT~~	
~~International Bound & Wtr Comm~~	~~Falcon Dam & Power~~	~~TX~~	~~9339~~	~~6410~~	~~WAT~~	
~~International Bound & Wtr Comm~~	~~Amistad Dam & Power~~	~~TX~~	~~9339~~	~~6128~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Abbott TP 3~~	~~TX~~	~~7751~~	~~3581~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Marshall Ford~~	~~TX~~	~~11269~~	~~3600~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Granite Shoals~~	~~TX~~	~~11269~~	~~3597~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Inks~~	~~TX~~	~~11269~~	~~3598~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Dunlap TP 1~~	~~TX~~	~~7751~~	~~3582~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~H 4~~	~~TX~~	~~7751~~	~~3583~~	~~WAT~~	
~~Gonzales City of~~	~~Gonzales Hydro Plant~~	~~TX~~	~~7370~~	~~7394~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Marshall Ford~~	~~TX~~	~~11269~~	~~3600~~	~~WAT~~	
~~Small Hydro of Texas Inc~~	~~Small Hydro of Texas~~	~~TX~~	~~17345~~	~~55000~~	~~WAT~~	
~~Entergy Gulf States Inc~~	~~Toledo Bend~~	~~TX~~	~~7806~~	~~6595~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Dunlap TP 1~~	~~TX~~	~~7751~~	~~3582~~	~~WAT~~	
~~Denton City of~~	~~Ray Roberts~~	~~TX~~	~~5063~~	~~796~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Austin~~	~~TX~~	~~11269~~	~~3594~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Nolte~~	~~TX~~	~~7751~~	~~3585~~	~~WAT~~	
~~Gonzales City of~~	~~Gonzales Hydro Plant~~	~~TX~~	~~7370~~	~~7394~~	~~WAT~~	
~~USCE-Fort Worth District~~	~~Sam Rayburn~~	~~TX~~	~~19449~~	~~6413~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Nolte~~	~~TX~~	~~7751~~	~~3585~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Canyon~~	~~TX~~	~~7751~~	~~791~~	~~WAT~~	

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Renewable Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Small Hydro of Texas Inc~~	~~Small Hydro of Texas~~	~~TX~~	~~17345~~	~~55000~~	~~WAT~~	
~~International Bound & Wtr Comm~~	~~Falcon Dam & Power~~	~~TX~~	~~9339~~	~~6410~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~Canyon~~	~~TX~~	~~7751~~	~~791~~	~~WAT~~	
~~Small Hydro of Texas Inc~~	~~Small Hydro of Texas~~	~~TX~~	~~17345~~	~~55000~~	~~WAT~~	
~~Lower Colorado River Authority~~	~~Austin~~	~~TX~~	~~11269~~	~~3594~~	~~WAT~~	
~~Garland City of~~	~~Lewisville~~	~~TX~~	~~6958~~	~~794~~	~~WAT~~	
~~International Bound & Wtr Comm~~	~~Amistad Dam & Power~~	~~TX~~	~~9339~~	~~6128~~	~~WAT~~	
~~USCE-Tulsa District~~	~~Denison~~	~~TX~~	~~27470~~	~~6416~~	~~WAT~~	
~~Guadalupe-Blanco River Auth~~	~~H 5~~	~~TX~~	~~7751~~	~~3584~~	~~WAT~~	
~~Babcock & Brown Power Op Partners LLC~~	~~Sweetwater Wind 3 LLC~~	~~TX~~	~~50123~~	~~56311~~	~~WND~~	
~~AEP Texas North Company~~	~~Fort Davis~~	~~TX~~	~~20404~~	~~7724~~	~~WND~~	
~~Trent Wind Farm LP~~	~~Trent Wind Farm, L.P.~~	~~TX~~	~~19171~~	~~55968~~	~~WND~~	
~~FPL Energy Callahan Wind, LLC~~	~~Callahan Divide Wind Energy Center~~	~~TX~~	~~50012~~	~~56270~~	~~WND~~	
~~Babcock & Brown Power Op Partners LLC~~	~~Sweetwater Wind 2 LLC~~	~~TX~~	~~50123~~	~~56212~~	~~WND~~	
~~Pecos Wind I LP~~	~~Woodward Mountain I~~	~~TX~~	~~14628~~	~~55796~~	~~WND~~	
~~Shell Wind Energy Inc.~~	~~Brazos Wind Farm~~	~~TX~~	~~17058~~	~~56111~~	~~WND~~	
~~Shell Wind Energy Inc.~~	~~Llano Estacado Wind Ranch~~	~~TX~~	~~17058~~	~~55579~~	~~WND~~	
~~Babcock & Brown Power Op Partners LLC~~	~~Sweetwater Wind 1 LLC~~	~~TX~~	~~50123~~	~~56211~~	~~WND~~	
~~FPL Energy Upton Wind LP~~	~~King Mountain Wind Ranch 1~~	~~TX~~	~~6354~~	~~55581~~	~~WND~~	
~~El Paso Electric Co~~	~~Hueco Mountain Wind Ranch~~	~~TX~~	~~5701~~	~~55578~~	~~WND~~	
~~West Texas Wind Egy Ptnrs LLC~~	~~West Texas Wind Energy LLC~~	~~TX~~	~~20424~~	~~55367~~	~~WND~~	
~~Delaware Mountain LP~~	~~Delaware Mountain Windfarm~~	~~TX~~	~~34362~~	~~55399~~	~~WND~~	

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Renewable Generation Facilities~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Pecos Wind II LP~~	~~Woodward Mountain II~~	~~TX~~	~~14629~~	~~55795~~	~~WND~~	
~~Aelous Wind, LLC~~	~~Aeolus Wind Facility~~	~~TX~~	~~49903~~	~~56225~~	~~WND~~	
~~FPL Energy Horse Hollow LLC~~	~~Horse Hollow Wind Energy Center~~	~~TX~~	~~50063~~	~~56291~~	~~WND~~	
~~NWP Indian Mesa Wind Farm LP~~	~~NWP Indian Mesa Wind Farm~~	~~TX~~	~~13866~~	~~55747~~	~~WND~~	
~~WindPower Partners, 1994, L.P.~~	~~West Texas Windplant~~	~~TX~~	~~34389~~	~~54966~~	~~WND~~	
~~West Texas Renewables~~	~~West Texas Renewables LLC~~	~~TX~~	~~54767~~	~~56402~~	~~WND~~	
~~Desert Sky Wind Farm LP~~	~~Desert Sky~~	~~TX~~	~~49796~~	~~55992~~	~~WND~~	
~~WM Renewable Energy LLC~~	~~DFW Gas Recovery~~	~~TX~~	~~54842~~	~~50569~~	~~LFG~~	~~PL~~
~~WM Renewable Energy LLC~~	~~DFW Gas Recovery~~	~~TX~~	~~54842~~	~~50569~~	~~LFG~~	~~PL~~
~~Temple-Inland~~	~~Inland Paperboard and Packaging~~	~~TX~~	~~54745~~	~~10425~~	~~BLQ~~	~~TK~~
~~Gas Recovery Systems Inc~~	~~Sunset Farms~~	~~TX~~	~~25049~~	~~55588~~	~~LFG~~	~~PL~~
~~Gas Recovery Systems Inc~~	~~Sunset Farms~~	~~TX~~	~~25049~~	~~55588~~	~~LFG~~	~~PL~~
~~Gas Recovery Systems Inc~~	~~Sunset Farms~~	~~TX~~	~~25049~~	~~55588~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Baytown~~	~~TX~~	~~54721~~	~~55551~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Baytown~~	~~TX~~	~~54721~~	~~55551~~	~~LFG~~	~~PL~~
~~Gas Recovery Systems Inc~~	~~Sunset Farms~~	~~TX~~	~~25049~~	~~55588~~	~~LFG~~	~~PL~~
~~Ft Worth City of~~	~~Village Creek Wastewater Treatment Plant~~	~~TX~~	~~6831~~	~~54520~~	~~OBG~~	~~PL~~
~~Ft Worth City of~~	~~Village Creek Wastewater Treatment Plant~~	~~TX~~	~~6831~~	~~54520~~	~~OBG~~	~~PL~~
~~Ft Worth City of~~	~~Village Creek Wastewater Treatment Plant~~	~~TX~~	~~6831~~	~~54520~~	~~OBG~~	~~PL~~
~~Caithness Operating Co LLC~~	~~Big Spring Wind Power Facility~~	~~TX~~	~~2793~~	~~54979~~	~~WND~~	

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Oxy Vinyls LP~~	~~Deer Park Plant~~	~~NG~~	~~PL~~
~~Shell Oil Co Deer Park~~	~~Shell Deer Park~~	~~PUR~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Lubbock City of~~	~~Brandon Station~~	~~NG~~	~~PL~~
~~Rice University~~	~~Rice University~~	~~NG~~	~~PL~~
~~Phelps Dodge Refining Corp~~	~~Phelps Dodge Refining~~	~~NG~~	~~PL~~
~~Dow Chemical Company-Oyster Creek VIII~~	~~Oyster Creek Unit VIII~~	~~NG~~	~~PL~~
~~Wim-Sam Inc~~	~~University of Texas at San Antonio~~	~~NG~~	~~PL~~
~~Huntsman Corp~~	~~JCO Oxides Olefins Plant~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 3~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~Johnson County~~	~~NG~~	~~PL~~
~~Clear Lake Cogeneration LP~~	~~Clear Lake Cogeneration Ltd~~	~~NG~~	~~PL~~
~~University of Texas at Dallas~~	~~University of Texas at Dallas~~	~~NG~~	~~PL~~
~~Abitibi Consolidated-Lufkin~~	~~Abitibi Consolidated Lufkin~~	~~NG~~	~~PL~~
~~Air Products LP~~	~~Air Products Port Arthur~~	~~NG~~	~~PL~~
~~Air Liquide Large Industries U S LP~~	~~Bayou Cogen Plant~~	~~NG~~	~~PL~~
~~DPS Gregory LLC~~	~~Gregory Power Facility~~	~~NG~~	~~PL~~
~~Calpine Corp-Texas City~~	~~Texas City Power Plant~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Turbine~~	~~NG~~	~~PL~~
~~Pasadena Paper Co LP~~	~~Pasadena Paper~~	~~BLQ~~	
~~Calpine Central LP~~	~~Baytown Energy Center~~	~~NG~~	~~PL~~
~~Pasadena Paper Co LP~~	~~Pasadena Paper~~	~~BLQ~~	
~~Clear Lake Cogeneration LP~~	~~Clear Lake Cogeneration Ltd~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Reliant Energy Channelview LP~~	~~Channelview Cogeneration Plant~~	~~NG~~	~~PL~~
~~Power Resources Ltd~~	~~C R Wing Cogen Plant~~	~~NG~~	~~PL~~
~~Deer Park Energy Center~~	~~Deer Park Energy Center~~	~~NG~~	~~PL~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Celanese Engineering Resin Inc~~	~~Celanese Engineering Resin~~	~~NG~~	~~PL~~
~~Oxy Vinyls LP~~	~~Deer Park Plant~~	~~NG~~	~~PL~~
~~Celanese Engineering Resin Inc~~	~~Celanese Engineering Resin~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Phelps Dodge Refining Corp~~	~~Phelps Dodge Refining~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Baylor University~~	~~Baylor University Cogen~~	~~NG~~	~~PL~~
~~Valero Refining Co Texas City~~	~~Valero Refining Texas City~~	~~NG~~	~~PL~~
~~Pure Resources~~	~~North Riley~~	~~NG~~	~~PL~~
~~Minnesota Mining & Mfg Co~~	~~Central Utility Plant~~	~~NG~~	~~PL~~
~~SRW Cogeneration LP~~	~~SRW Cogen LP~~	~~NG~~	~~PL~~
~~Celanese Engineering Resin Inc~~	~~Celanese Engineering Resin~~	~~NG~~	~~PL~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Rio Grande Valley Sugar Growers, Inc.~~	~~Rio Grande Valley Sugar Growers~~	~~AB~~	~~TK~~
~~South Houston Green Power LP~~	~~Green Power 2~~	~~NG~~	~~PL~~
~~Phelps Dodge Refining Corp~~	~~Phelps Dodge Refining~~	~~NG~~	~~PL~~
~~Calpine Central LP~~	~~Baytown Energy Center~~	~~NG~~	~~PL~~
~~BASF Corp~~	~~NAFTA Region Olefins Complex Cogen Fac~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Oxy Vinyls LP~~	~~Deer Park Plant~~	~~NG~~	~~PL~~
~~Calpine Corp-Texas City~~	~~Texas City Power Plant~~	~~NG~~	~~PL~~
~~Minnesota Mining & Mfg Co~~	~~Central Utility Plant~~	~~NG~~	~~PL~~
~~Channel Energy Center~~	~~Channel Energy Center~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Shell Oil Co Deer Park~~	~~Shell Deer Park~~	~~PUR~~	~~UN~~
~~Air Products LP~~	~~Air Products Port Arthur~~	~~OG~~	~~PL~~
~~SRW Cogeneration LP~~	~~SRW Cogen LP~~	~~NG~~	~~PL~~
~~Power Resources Ltd~~	~~C R Wing Cogen Plant~~	~~NG~~	~~PL~~
~~Flint Hills Resources LP~~	~~Corpus Refinery~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Turbine~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Oxy Vinyls LP~~	~~Deer Park Plant~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Pasadena Cogeneration LP~~	~~Pasadena Cogeneration~~	~~NG~~	~~PL~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Goodyear Tire & Rubber Co~~	~~Goodyear Beaumont Chemical Plant~~	~~NG~~	~~PL~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Rio Grande Valley Sugar Growers, Inc.~~	~~Rio Grande Valley Sugar Growers~~	~~AB~~	~~TK~~
~~Rice University~~	~~Rice University~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Reliant Energy Channelview LP~~	~~Channelview Cogeneration Plant~~	~~NG~~	~~PL~~
~~Alcoa World Alumina LLC~~	~~Point Comfort Operations~~	~~NG~~	~~PL~~
~~Phelps Dodge Refining Corp~~	~~Phelps Dodge Refining~~	~~NG~~	~~PL~~
~~Solutia Inc-Chocolate~~	~~Chocolate Bayou Plant~~	~~WH~~	
~~Reliant Energy Channelview LP~~	~~Channelview Cogeneration Plant~~	~~NG~~	~~PL~~
~~Alcoa World Alumina LLC~~	~~Point Comfort Operations~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Green Power 2~~	~~NG~~	~~PL~~
~~SRW Cogeneration LP~~	~~SRW Cogen LP~~	~~NG~~	~~PL~~
~~E I DuPont De Nemours & Co~~	~~Sabine River Works~~	~~NG~~	~~PL~~
~~Sweeny Cogeneration LP~~	~~Sweeny Cogen Facility~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 3~~	~~OG~~	~~PL~~
~~Reliant Energy Channelview LP~~	~~Channelview Cogeneration Plant~~	~~NG~~	~~PL~~
~~E I DuPont De Nemours & Co~~	~~Sabine River Works~~	~~WH~~	
~~Ingleside Cogeneration LP~~	~~Ingleside Cogeneration~~	~~NG~~	~~PL~~
~~Air Liquide Large Industries U S LP~~	~~Bayou Cogen Plant~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Goodyear Tire & Rubber Co~~	~~Goodyear Beaumont Chemical Plant~~	~~NG~~	~~PL~~
~~Abitibi Consolidated-Lufkin~~	~~Abitibi Consolidated-Lufkin~~	~~NG~~	~~PL~~
~~Alcoa World Alumina LLC~~	~~Point Comfort Operations~~	~~NG~~	~~PL~~
~~Shell Oil Co-Deer Park~~	~~Shell Deer Park~~	~~NG~~	~~PL~~
~~Abitibi Consolidated-Lufkin~~	~~Abitibi Consolidated-Lufkin~~	~~NG~~	~~PL~~
~~BASF Corporation~~	~~BASF Freeport Works~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~South Houston Green Power LP~~	~~Power Station 3~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Pasadena Cogeneration LP~~	~~Pasadena Cogeneration~~	~~NG~~	~~PL~~
~~INEOS Nitriles Greenlake~~	~~BP Chemicals Green Lake Plant~~	~~WH~~	
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Dow Chemical Company Oyster Creek VIII~~	~~Oyster Creek Unit VIII~~	~~NG~~	~~PL~~
~~E I DuPont De Nemours & Co~~	~~Sabine River Works~~	~~NG~~	~~PL~~
~~Abitibi Consolidated Lufkin~~	~~Abitibi Consolidated Lufkin~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Abitibi Consolidated Sheldon~~	~~Abitibi Consolidated Sheldon~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~OG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~OG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~MeadWestvaco Corp~~	~~MeadWestvaco Evadale~~	~~BLQ~~	~~RR~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Sabine Cogen LP~~	~~Sabine Cogen~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Pure Resources~~	~~North Riley~~	~~NG~~	~~PL~~
~~Union Carbide Corp Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~INEOS Nitriles Greenlake~~	~~BP Chemicals Green Lake Plant~~	~~WH~~	
~~Ingleside Cogeneration LP~~	~~Ingleside Cogeneration~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Calpine Corp-Texas City~~	~~Texas City Power Plant~~	~~NG~~	~~PL~~
~~DPS Gregory LLC~~	~~Gregory Power Facility~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Oxy Vinyls LP~~	~~Houston Chemical Complex Battleground~~	~~NG~~	~~PL~~
~~Invista~~	~~Victoria Texas Plant~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Goodyear Tire & Rubber Co~~	~~Goodyear Beaumont Chemical Plant~~	~~NG~~	~~PL~~
~~Calpine Corp-Texas City~~	~~Texas City Power Plant~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Turbine~~	~~NG~~	~~PL~~
~~Air Liquide America-Pt Neches~~	~~Port Neches Plant~~	~~NG~~	~~PL~~
~~International Paper Co~~	~~International Paper Texarkana Mill~~	~~BLQ~~	~~TK~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Green Power 2~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Turbine~~	~~NG~~	~~PL~~
~~Ingleside Cogeneration LP~~	~~Ingleside Cogeneration~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~S&L Cogeneration Co~~	~~S&L Cogeneration~~	~~NG~~	~~PL~~
~~Brazos Electric Power Coop Inc~~	~~Johnson County~~	~~OG~~	
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Rhodia Inc~~	~~Rhodia Houston Plant~~	~~OTH~~	~~WA~~
~~Deer Park Energy Center~~	~~Deer Park Energy Center~~	~~NG~~	~~PL~~
~~Borger Energy Associates LP~~	~~Black Hawk Station~~	~~NG~~	~~PL~~
~~Sid Richardson Carbon Ltd~~	~~Borger Plant~~	~~OG~~	~~UN~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Calpine Central LP~~	~~Baytown Energy Center~~	~~NG~~	~~PL~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~MeadWestvaco Corp~~	~~MeadWestvaco Evadale~~	~~BLQ~~	~~RR~~
~~Leviton Manufacturing Inc~~	~~Leviton Manufacturing~~	~~DFO~~	~~TK~~
~~Clear Lake Cogeneration LP~~	~~Clear Lake Cogeneration Ltd~~	~~NG~~	~~PL~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Pasadena Cogeneration LP~~	~~Pasadena Cogeneration~~	~~NG~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Texas Petrochemicals Corp~~	~~Texas Petrochemicals~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Pasadena Cogeneration LP~~	~~Pasadena Cogeneration~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Air Products LP~~	~~Pasadena~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 4~~	~~NG~~	~~PL~~
~~Dow Chemical Company-Oyster Creek VIII~~	~~Oyster Creek Unit VIII~~	~~NG~~	~~PL~~
~~Sabine Cogen LP~~	~~Sabine Cogen~~	~~NG~~	~~PL~~
~~Borger Energy Associates LP~~	~~Black Hawk Station~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Dow Chemical Company Oyster Creek VIII~~	~~Oyster Creek Unit VIII~~	~~NG~~	~~PL~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Air Liquide Large Industries U S LP~~	~~Bayou Cogen Plant~~	~~NG~~	~~PL~~
~~Eastman Cogeneration LP~~	~~Eastman Cogeneration Facility~~	~~NG~~	~~PL~~
~~Rhodia Inc~~	~~Rhodia Houston Plant~~	~~OTH~~	~~WA~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Turbine~~	~~NG~~	~~PL~~
~~Alcoa World Alumina LLC~~	~~Point Comfort Operations~~	~~NG~~	~~PL~~
~~Phelps Dodge Refining Corp~~	~~Phelps Dodge Refining~~	~~NG~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Sherwin Alumina Company~~	~~Sherwin Alumina~~	~~PUR~~	~~PL~~
~~Sherwin Alumina Company~~	~~Sherwin Alumina~~	~~PUR~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Texas State University - San Marcos~~	~~Southwest Texas State University~~	~~NG~~	~~PL~~
~~Solutia Inc Chocolate~~	~~Chocolate Bayou Plant~~	~~WH~~	
~~Deer Park Energy Center~~	~~Deer Park Energy Center~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Seadrift Coke L P~~	~~Seadrift Coke LP~~	~~WH~~	
~~Power Resources Ltd~~	~~C R Wing Cogen Plant~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 4~~	~~NG~~	~~PL~~
~~Union Carbide Corp Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Snider Industries Inc~~	~~Snider Industries~~	~~WDS~~	~~TK~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Clear Lake Cogeneration LP~~	~~Clear Lake Cogeneration Ltd~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Celanese Engineering Resin Inc~~	~~Celanese Engineering Resin~~	~~NG~~	~~PL~~
~~Goodyear Tire & Rubber Co~~	~~Goodyear Beaumont Chemical Plant~~	~~NG~~	~~PL~~
~~Eastman Cogeneration LP~~	~~Eastman Cogeneration Facility~~	~~NG~~	~~PL~~
~~MeadWestvaco Corp~~	~~MeadWestvaco Evadale~~	~~BLQ~~	~~RR~~
~~Shell Oil Co Deer Park~~	~~Shell Deer Park~~	~~PUR~~	~~UN~~
~~Reliant Energy Channelview LP~~	~~Channelview Cogeneration Plant~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 3~~	~~OG~~	~~PL~~
~~Air Liquide Large Industries U S LP~~	~~Bayou Cogen Plant~~	~~NG~~	~~PL~~
~~Shell Oil Co Deer Park~~	~~Shell Deer Park~~	~~NG~~	~~PL~~
~~Solutia Inc Chocolate~~	~~Chocolate Bayou Plant~~	~~WH~~	
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Sherwin Alumina Company~~	~~Sherwin Alumina~~	~~PUR~~	~~PL~~
~~AES Deepwater Inc~~	~~AES Deepwater~~	~~PC~~	~~RR~~
~~South Houston Green Power LP~~	~~Power Station 3~~	~~NG~~	~~PL~~
~~Valero Refining Co~~	~~Valero Refinery Corpus Christi West~~	~~OG~~	~~WA~~
~~Union Carbide Corp Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Austin Energy~~	~~Domain Plant~~	~~NG~~	~~PL~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Sherwin Alumina Company~~	~~Sherwin Alumina~~	~~PUR~~	~~PL~~
~~Pasadena Cogeneration LP~~	~~Pasadena Cogeneration~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Union Carbide Corp Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Oxy Vinyls LP~~	~~Houston Chemical Complex Battleground~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Minnesota Mining & Mfg Co~~	~~Central Utility Plant~~	~~NG~~	~~PL~~
~~Sweeny Cogeneration LP~~	~~Sweeny Cogen Facility~~	~~NG~~	~~PL~~
~~Sweeny Cogeneration LP~~	~~Sweeny Cogen Facility~~	~~NG~~	~~PL~~
~~TXU Generation Co LP~~	~~TXU Sweetwater Generating Plant~~	~~NG~~	~~PL~~
~~Union Carbide Corp Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~Clear Lake Cogeneration LP~~	~~Clear Lake Cogeneration Ltd~~	~~NG~~	~~PL~~
~~Total Petrochemicals USA Inc~~	~~Port Arthur Texas Refinery~~	~~NG~~	~~PL~~
~~BASF Corp~~	~~NAFTA Region Olefins Complex Cogen Fac~~	~~NG~~	~~PL~~
~~Eastman Cogeneration LP~~	~~Eastman Cogeneration Facility~~	~~NG~~	~~PL~~
~~International Paper Co~~	~~International Paper Texarkana Mill~~	~~BLQ~~	~~TK~~
~~Valero Energy Corporation~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~Deer Park Energy Center~~	~~Deer Park Energy Center~~	~~NG~~	~~PL~~
~~Oxy Vinyls LP~~	~~Houston Chemical Complex Battleground~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 3~~	~~OG~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Deer Park Energy Center~~	~~Deer Park Energy Center~~	~~NG~~	~~PL~~
~~Occidental Permian Ltd~~	~~Wasson CO2 Removal Plant~~	~~NG~~	~~PL~~
~~Valero Refining Co Texas City~~	~~Valero Refining Texas City~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Abitibi Consolidated Sheldon~~	~~Abitibi Consolidated Sheldon~~	~~NG~~	~~PL~~
~~Shell Chemical LP~~	~~Westhollow Technology Center~~	~~NG~~	~~PL~~
~~Pure Resources~~	~~North Riley~~	~~NG~~	~~PL~~
~~Huntsman Corp~~	~~JCO Oxides Olefins Plant~~	~~NG~~	~~PL~~
~~Valero Refining Co - TX~~	~~Valero Refining Texas Houston~~	~~NG~~	~~PL~~
~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~NG~~	~~PL~~
~~Celanese Engineering Resin Inc~~	~~Celanese Engineering Resin~~	~~NG~~	~~PL~~
~~E I DuPont De Nemours & Co~~	~~Sabine River Works~~	~~NG~~	~~PL~~
~~Motiva Enterprises LLC~~	~~Port Arthur Refinery~~	~~NG~~	~~PL~~
~~BASF Corporation~~	~~BASF Freeport Works~~	~~NG~~	~~PL~~
~~Abitibi Consolidated Lufkin~~	~~Abitibi Consolidated Lufkin~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Calpine Central LP~~	~~Baytown Energy Center~~	~~NG~~	~~PL~~
~~Goodyear Tire & Rubber Co~~	~~Goodyear Beaumont Chemical Plant~~	~~NG~~	~~PL~~
~~Channel Energy Center~~	~~Channel Energy Center~~	~~NG~~	~~PL~~
~~Channel Energy Center~~	~~Channel Energy Center~~	~~NG~~	~~PL~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Rio Grande Valley Sugar Growers, Inc.~~	~~Rio Grande Valley Sugar Growers~~	~~AB~~	~~TK~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~UTILITY NAME~~	~~PLANT NAME~~	~~FUEL~~	~~TRANSPORT~~
~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~INEOS USA LLC~~	~~Chocolate Bayou Works~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Oxy Vinyls LP~~	~~Houston Chemical Complex Battleground~~	~~NG~~	~~PL~~
~~Kinder Morgan Yates Operation~~	~~Yates Gas Plant~~	~~NG~~	~~PL~~
~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~NG~~	~~PL~~
~~Sabine Cogen LP~~	~~Sabine Cogen~~	~~NG~~	~~PL~~
~~Valero Refining Co Texas City~~	~~Valero Refining Texas City~~	~~NG~~	~~PL~~
~~Valero Refining Co~~	~~Valero Refinery Corpus Christi East~~	~~NG~~	~~PL~~
~~Valero Refining Co - TX~~	~~Valero Refining Texas Houston~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~Union Carbide Corp-Texas City~~	~~Texas City Plant Union Carbide~~	~~NG~~	~~PL~~
~~Union Carbide Corp-Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~Rock-Tenn~~	~~Rock Tenn Dallas Mill~~	~~NG~~	~~PL~~
~~Valero Refining Co~~	~~Valero Refinery Corpus Christi East~~	~~NG~~	~~PL~~
~~Solutia Inc-Chocolate~~	~~Chocolate Bayou Plant~~	~~WH~~	
~~Morton International Inc~~	~~Morton Salt Grand Saline~~	~~NG~~	~~PL~~
~~Equistar Chemicals LP~~	~~Corpus Christi~~	~~NG~~	~~PL~~
~~Union Carbide Corp-Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~
~~DPS Gregory LLC~~	~~Gregory Power Facility~~	~~NG~~	~~PL~~
~~Sweeny Cogeneration LP~~	~~Sweeny Cogen Facility~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Cogeneration Facilities~~			
~~**UTILITY NAME**~~	~~**PLANT NAME**~~	~~**FUEL**~~	~~**TRANSPORT**~~
~~Abitibi Consolidated Lufkin~~	~~Abitibi Consolidated Lufkin~~	~~NG~~	~~PL~~
~~Union Carbide Corp-Texas City~~	~~Texas City Plant Union Carbide~~	~~PUR~~	~~PL~~
~~Abitibi Consolidated Sheldon~~	~~Abitibi Consolidated Sheldon~~	~~NG~~	~~PL~~
~~Kinder Morgan Yates Operation~~	~~Yates Gas Plant~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Green Power 2~~	~~NG~~	~~PL~~
~~South Houston Green Power LP~~	~~Power Station 4~~	~~NG~~	~~PL~~
~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~NG~~	~~PL~~
~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~NG~~	~~PL~~
~~Corpus Christi Cogeneration LP~~	~~Corpus Christi Energy Center~~	~~NG~~	~~PL~~
~~Corpus Christi Cogeneration LP~~	~~Corpus Christi Energy Center~~	~~NG~~	~~PL~~
~~Corpus Christi Cogeneration LP~~	~~Corpus Christi Energy Center~~	~~NG~~	~~PL~~
~~Union Carbide Corp Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Distributed Generation~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~
~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~TX~~	~~18050~~	~~55390~~	~~DFO~~	~~TK~~
~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~TX~~	~~18050~~	~~55390~~	~~DFO~~	~~TK~~
~~PPG Industries Inc Works 4~~	~~PPG Industries Works 4~~	~~TX~~	~~50036~~	~~54364~~	~~DFO~~	~~TK~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~
~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~TX~~	~~18050~~	~~55390~~	~~DFO~~	~~TK~~
~~PPG Industries Inc Works 4~~	~~PPG Industries Works 4~~	~~TX~~	~~50036~~	~~54364~~	~~DFO~~	~~TK~~
~~PPG Industries Inc Works 4~~	~~PPG Industries Works 4~~	~~TX~~	~~50036~~	~~54364~~	~~DFO~~	~~TK~~
~~Flint Hills Resources LP~~	~~Corpus Refinery~~	~~TX~~	~~6426~~	~~50026~~	~~OG~~	
~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~TX~~	~~18050~~	~~55390~~	~~DFO~~	~~TK~~
~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~TX~~	~~18050~~	~~55390~~	~~DFO~~	~~TK~~
~~Alon USA LP~~	~~Big Spring Texas Refinery~~	~~TX~~	~~379~~	~~10569~~	~~PUR~~	~~PL~~
~~Austin State Hospital~~	~~Austin State Hospital~~	~~TX~~	~~1053~~	~~54940~~	~~NG~~	~~PL~~
~~Duke Energy Field Services~~	~~Fullerton~~	~~TX~~	~~5460~~	~~54948~~	~~NG~~	~~PL~~
~~Duke Energy Field Services~~	~~Fullerton~~	~~TX~~	~~5460~~	~~54948~~	~~NG~~	~~PL~~
~~Duke Energy Field Services~~	~~Fullerton~~	~~TX~~	~~5460~~	~~54948~~	~~NG~~	~~PL~~
~~PPG Industries Inc Works 4~~	~~PPG Industries Works 4~~	~~TX~~	~~50036~~	~~54364~~	~~DFO~~	~~TK~~
~~Duke Energy Field Services~~	~~Fullerton~~	~~TX~~	~~5460~~	~~54948~~	~~NG~~	~~PL~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Distributed Generation~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Exxon Mobil Production Co~~	~~ExxonMobil Hawkins Gas Plant~~	~~TX~~	~~6529~~	~~54962~~	~~NG~~	~~PL~~
~~Duke Energy Field Services~~	~~Fullerton~~	~~TX~~	~~5460~~	~~54948~~	~~NG~~	~~PL~~
~~Duke Energy Field Services~~	~~Fullerton~~	~~TX~~	~~5460~~	~~54948~~	~~NG~~	~~PL~~
~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~TX~~	~~18050~~	~~55390~~	~~DFO~~	~~TK~~
~~Valero Refining Co~~	~~Valero Refinery Corpus Christi West~~	~~TX~~	~~19685~~	~~50121~~	~~OG~~	~~WA~~
~~Engineered Carbons Inc~~	~~Engineered Carbons Echo Cogeneration~~	~~TX~~	~~23476~~	~~10187~~	~~OG~~	~~PL~~
~~Southwestern Public Service Co~~	~~Celanese~~	~~TX~~	~~17718~~	~~7678~~	~~PUR~~	~~PL~~
~~Engineered Carbons Inc~~	~~Engineered Carbons Borger Cogen~~	~~TX~~	~~23476~~	~~10072~~	~~OG~~	~~PL~~
~~Valero Refining Co~~	~~Valero Refinery Corpus Christi West~~	~~TX~~	~~19685~~	~~50121~~	~~OG~~	~~WA~~
~~Tenet Hospital Ltd~~	~~Providence Memorial Hospital~~	~~TX~~	~~27378~~	~~50241~~	~~NG~~	~~PL~~
~~Maytag Corp~~	~~Hoover Company~~	~~TX~~	~~11146~~	~~55536~~	~~DFO~~	~~TK~~
~~Maytag Corp~~	~~Hoover Company~~	~~TX~~	~~11146~~	~~55536~~	~~DFO~~	~~TK~~
~~Tenet Hospital Ltd~~	~~Providence Memorial Hospital~~	~~TX~~	~~27378~~	~~50241~~	~~NG~~	~~PL~~
~~ExxonMobil Corp~~	~~ExxonMobil Beaumont Refinery~~	~~TX~~	~~6090~~	~~50625~~	~~NG~~	~~PL~~
~~Valero Refining Co~~	~~Valero Refinery Corpus Christi West~~	~~TX~~	~~19685~~	~~50121~~	~~PC~~	~~WA~~
~~Southwestern Public Service Co~~	~~Celanese~~	~~TX~~	~~17718~~	~~7678~~	~~OTH~~	~~UN~~
~~Maytag Corp~~	~~Hoover Company~~	~~TX~~	~~11146~~	~~55536~~	~~DFO~~	~~TK~~
~~Maytag Corp~~	~~Hoover Company~~	~~TX~~	~~11146~~	~~55536~~	~~DFO~~	~~TK~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~DFO~~	~~TK~~
~~Viridis Energy~~	~~Coastal Plains~~	~~TX~~	~~54721~~	~~55554~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Atascosita~~	~~TX~~	~~54721~~	~~55526~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Coastal Plains~~	~~TX~~	~~54721~~	~~55554~~	~~LFG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Distributed Generation~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~Viridis Energy~~	~~Baytown~~	~~TX~~	~~54721~~	~~55551~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Bluebonnet~~	~~TX~~	~~54721~~	~~55552~~	~~LFG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~Viridis Energy~~	~~Atascosita~~	~~TX~~	~~54721~~	~~55526~~	~~LFG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~TX~~	~~17583~~	~~3631~~	~~DFO~~	~~TK~~
~~Viridis Energy~~	~~Conroe~~	~~TX~~	~~54721~~	~~55555~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Security~~	~~TX~~	~~54721~~	~~55556~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Bluebonnet~~	~~TX~~	~~54721~~	~~55552~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Atascosita~~	~~TX~~	~~54721~~	~~55526~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Security~~	~~TX~~	~~54721~~	~~55556~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Coastal Plains~~	~~TX~~	~~54721~~	~~55554~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Atascosita~~	~~TX~~	~~54721~~	~~55526~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Conroe~~	~~TX~~	~~54721~~	~~55555~~	~~LFG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~Viridis Energy~~	~~Security~~	~~TX~~	~~54721~~	~~55556~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Bluebonnet~~	~~TX~~	~~54721~~	~~55552~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Coastal Plains~~	~~TX~~	~~54721~~	~~55554~~	~~LFG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~Viridis Energy~~	~~Atascosita~~	~~TX~~	~~54721~~	~~55526~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Conroe~~	~~TX~~	~~54721~~	~~55555~~	~~LFG~~	~~PL~~
~~Viridis Energy~~	~~Bluebonnet~~	~~TX~~	~~54721~~	~~55552~~	~~LFG~~	~~PL~~

Table 9.3-1 ~~Existing Generation Sites in Texas (Continued)~~

~~Distributed Generation~~						
~~UTILITY NAME~~	~~PLANT NAME~~	~~STATE~~	~~UTILITY CODE~~	~~PLANT CODE~~	~~FUEL~~	~~TRANSPORT~~
~~Viridis Energy~~	~~Baytown~~	~~TX~~	~~54721~~	~~55551~~	~~LFG~~	~~PL~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~Brownsville Public Utils Board~~	~~Silas Ray~~	~~TX~~	~~2409~~	~~3559~~	~~DFO~~	~~TK~~
~~Imperial Sugar Co~~	~~Fort Bend Utilities~~	~~TX~~	~~22225~~	~~10136~~	~~NG~~	~~PL~~
~~Imperial Sugar Co~~	~~Fort Bend Utilities~~	~~TX~~	~~22225~~	~~10136~~	~~NG~~	~~PL~~
~~Imperial Sugar Co~~	~~Fort Bend Utilities~~	~~TX~~	~~22225~~	~~10136~~	~~NG~~	~~PL~~
~~Imperial Sugar Co~~	~~Fort Bend Utilities~~	~~TX~~	~~22225~~	~~10136~~	~~NG~~	~~PL~~

~~Source: Reference 9.3-4~~

~~Note:~~

~~Energy Source~~

~~NG~~	~~Natural Gass~~
~~BFG~~	~~Blast Furnace Gas~~
~~OG~~	~~Other Gas (Butane, Coal Processes, Coke Oven, Refinery, and other processes)~~
~~PG~~	~~Propane~~
~~NUC~~	~~Nuclear (Uranium, Plutonium, Thorium)~~
~~AB~~	~~Agriculture Crop Byproducts/Straw/Energy Crops~~
~~BLQ~~	~~Black Liquor~~
~~GEO~~	~~Geothermal~~
~~LFG~~	~~Landfill Gas~~
~~MSW~~	~~Municipal Solid Waste~~

~~Transportation~~

~~Mode of Transportation Code~~	~~Mode of Transportation Description~~
~~CV~~	~~Conveyer~~
~~PL~~	~~Pipeline~~
~~RR~~	~~Railroad~~
~~TK~~	~~Truck~~
~~WA~~	~~Water~~
~~UN~~	~~Unknown at this time.~~

~~OBS~~	~~Other Biomass Solid (Animal Manure and Waste, Solid Byproducts, and other solid biomass not specified)~~
~~OBL~~	~~Other Biomass Liquid (Ethanol, Fish Oil, Liquid Acetonitrile Waste, Medical Waste, Tall Oil, Waste Alcohol, and other Biomass not specified)~~
~~OBG~~	~~Other Biomass Gases (Digester Gas, Methane, and other biomass gases)~~
~~OTH~~	~~Other (Batteries, Chemicals, Coke Breeze, Hydrogen, Pitch, Sulfur, Tar Coal, and miscellaneous technologies)~~
~~PUR~~	~~Purchased Steam~~
~~SLW~~	~~Sludge Waste~~
~~SUN~~	~~Solar (Photovoltaic, Thermal)~~
~~TDF~~	~~Tires~~
~~WAT~~	~~Water (Conventional, Pumped Storage)~~
~~WDS~~	~~Wood/Wood Waste Solids (Paper Pellets, Railroad Ties, Utility Poles, Wood Chips, and other wood solids)~~
~~WDL~~	~~Wood Waste Liquids (Red Liquor, Sludge Wood, Spent Sulfite Liquor, and other wood related liquids not~~
~~WND~~	~~Wind~~
~~NA~~	~~Not Available~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~Abbott TP 3~~	~~Guadalupe~~	~~SUN~~	~~-~~
~~65~~	~~Abitibi Consolidated Lufkin~~	~~Abitibi Consolidated Lufkin~~	~~Angelina~~	~~NG~~	~~PL~~
~~666~~	~~Abitibi Consolidated Sheldon~~	~~Abitibi Consolidated Sheldon~~	~~Harris~~	~~NG~~	~~PL~~
~~156~~	~~AES Deepwater Inc~~	~~AES Deepwater~~	~~Harris~~	~~NG~~	~~PL~~
~~16604~~	~~San Antonio Public Service Bd~~	~~Arthur Von Rosenberg~~	~~Bexar~~	~~NG~~	~~PL~~
~~54721~~	~~Viridis Energy~~	~~Atascosita~~	~~Harris~~	~~LFG~~	~~PL~~
~~11269~~	~~Lower Colorado River Authority~~	~~Austin~~	~~Travis~~	~~WAT~~	~~-~~
~~49979~~	~~Topaz Power Group LLC~~	~~Barney M Davis~~	~~Nueces~~	~~NG~~	~~PL~~
~~1182~~	~~BASF Corporation~~	~~BASF Freeport Works~~	~~Brazoria~~	~~NG~~	~~PL~~
~~49768~~	~~Bastrop Energy Partners, LP~~	~~Bastrop Energy Center~~	~~Bastrop~~	~~NG~~	~~PL~~
~~2255~~	~~Baylor University~~	~~Baylor University Cogen~~	~~McLennan~~	~~NG~~	~~PL~~
~~327~~	~~Air Liquide Large Industries U S LP~~	~~Bayor Cogen Plant~~	~~Harris~~	~~NG~~	~~PL~~
~~54721~~	~~Viridis Energy~~	~~Baytown~~	~~Chambers~~	~~LFG~~	~~PL~~
~~2838~~	~~Calpine Central LP~~	~~Baytown Energy Center~~	~~Chambers~~	~~NG~~	~~PL~~
~~25260~~	~~Duke Energy Bell LP~~	~~Bell Energy Facility~~	~~Bell~~	~~-~~	~~-~~
~~49769~~	~~BFI Waste Systems of America~~	~~BFI Tessman Rd Landfill (gas)~~	~~Bexar~~	~~-~~	~~-~~
~~19323~~	~~TXU Generation Co LP~~	~~Big Brown~~	~~Freestone~~	~~LIG~~	~~TK~~
~~54721~~	~~Viridis Energy~~	~~Bluebonnet~~	~~Harris~~	~~LFG~~	~~PL~~
~~12668~~	~~Mirant Corp~~	~~Bosque County Peaking~~	~~Bosque~~	~~NG~~	~~PL~~
~~54837~~	~~INEOS Nitriles Greenlake~~	~~BP Chemicals Green Lake Plant~~	~~Calhoun~~	~~WH~~	~~-~~
~~2171~~	~~Brazos Valley Energy~~	~~Brazos Valley Generating Facility~~	~~Fort Bend~~	~~NG~~	~~PL~~
~~34981~~	~~Devon Gas Services~~	~~Bridgeport Gas Processing Plant~~	~~Wise~~	~~-~~	~~-~~
~~2442~~	~~Bryan City of~~	~~Bryan~~	~~Brazos~~	~~NG~~	~~PL~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~11269~~	~~Lower Colorado River Authority~~	~~Buchanan~~	~~Burnet~~	~~WAT~~	-
~~6958~~	~~Garland City of~~	~~C E Newman~~	~~Dallas~~	~~NG~~	~~PL~~
~~7751~~	~~Guadalupe-Blanco River Auth~~	~~Canyon~~	~~Comal~~	~~WAT~~	-
~~54888~~	~~NRG Texas LLC~~	~~Cedar Bayou~~	~~Chambers~~	~~NG~~	~~PL~~
~~12632~~	~~Minnesota Mining & Mfg Co~~	~~Central Utility Plant~~	~~Travis~~	~~NG~~	~~PL~~
~~3370~~	~~Channel Energy Center~~	~~Channel Energy Center~~	~~Harris~~	~~NG~~	~~PL~~
~~15988~~	~~Reliant Energy Channelview LP~~	~~Channelview Cogeneration Plant~~	~~Harris~~	~~NG~~	~~PL~~
~~17729~~	~~Solutia Inc-Chocolate~~	~~Chocolate Bayou Plant~~	~~Brazoria~~	~~WH~~	-
~~54769~~	~~INEOS USA LLC~~	~~Chocolate Bayou Works~~	~~Brazoria~~	~~NG~~	~~PL~~
~~3775~~	~~Clear Lake Cogeneration LP~~	~~Clear Lake Cogeneration Ltd~~	~~Harris~~	~~NG~~	~~PL~~
~~54721~~	~~Viridis Energy~~	~~Coastal Plains~~	~~Galveston~~	~~LFG~~	~~PL~~
~~49862~~	~~Cogen Lyondell~~	~~CoGen Lyondell~~	~~Harris~~	~~NG~~	~~PL~~
~~3923~~	~~Coleman City of~~	~~Coleman~~	~~Coleman~~	-	-
~~54865~~	~~ANP-Coleto Creek~~	~~Coleto Creek~~	~~Goliad~~	~~SUB~~	~~RR~~
~~19323~~	~~TXU Generation Co LP~~	~~Collin~~	~~Collin~~	~~NG~~	~~PL~~
~~54702~~	~~Navasota Wharton Energy Partners LP~~	~~Colorado Bend Energy Center~~	~~Wharton~~	-	-
~~19323~~	~~TXU Generation Co LP~~	~~Comanche Peak~~	~~Somervell~~	~~NUC~~	~~TK~~
~~54721~~	~~Viridis Energy~~	~~Conroe~~	~~Montgomery~~	~~LFG~~	~~PL~~
~~2442~~	~~Bryan City of~~	~~Dansby~~	~~Brazos~~	~~NG~~	~~PL~~
~~1015~~	~~Austin Energy~~	~~Decker Creek~~	~~Travis~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~DeCordova Steam Electric Station~~	~~Hood~~	~~NG~~	~~PL~~
~~54779~~	~~AES Western Power LLC~~	~~Deepwater~~	~~Harris~~	~~NG~~	~~PL~~
~~4994~~	~~Deer Park Energy Center~~	~~Deer Park Energy Center~~	~~Harris~~	~~NG~~	~~PL~~
~~14254~~	~~Oxy Vinyls LP~~	~~Deer Park Plant~~	~~Harris~~	~~NG~~	~~PL~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~27470~~	~~USCE-Tulsa District~~	~~Denison~~	~~Grayson~~	~~WAT~~	~~-~~
~~54842~~	~~WM Renewable Energy LLC~~	~~DFW Gas Recovery~~	~~Denton~~	~~LFG~~	~~PL~~
~~1015~~	~~Austin Energy~~	~~Domain Plant~~	~~Travis~~	~~NG~~	~~PL~~
~~5338~~	~~Dow Chemical Co~~	~~Dow Chemical Texas Operation~~	~~Brazoria~~	~~NG~~	~~PL~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~Dunlap TP 1~~	~~Guadalupe~~	~~WAT~~	~~-~~
~~50053~~	~~Calhoun County Navigation District~~	~~E S Joslin~~	~~Calhoun~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Eagle Mountain~~	~~Tarrant~~	~~NG~~	~~PL~~
~~54682~~	~~Maverick Cnty Wtr Control & Imp. Dst No 1~~	~~Eagle Pass~~	~~Maverick~~	~~WAT~~	~~-~~
~~5744~~	~~Electra City of~~	~~Electra~~	~~Wichita~~	~~NG~~	~~PL~~
~~5761~~	~~Ennis Tractebal Power Co LP~~	~~Ennis Tractebel Power LP~~	~~Ellis~~	~~NG~~	~~PL~~
~~29925~~	~~Enterprise Products Optg LP~~	~~Enterprise Products Operating~~	~~Chambers~~	~~NG~~	~~PL~~
~~6035~~	~~Exelon Generation Co LLC~~	~~Exelon LaPorte Generating Station~~	~~Harris~~	~~NG~~	~~PL~~
~~6091~~	~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Refinery~~	~~Harris~~	~~NG~~	~~PL~~
~~6091~~	~~Exxon Mobil Refining and Supply Co.~~	~~ExxonMobil Baytown Turbine~~	~~Harris~~	~~NG~~	~~PL~~
~~11289~~	~~Lower Colorado River Authority~~	~~Fayette Power Project~~	~~Fayette~~	~~SUB~~	~~RR~~
~~6541~~	~~Formosa Plastics Corp~~	~~Formosa Utility Venture Ltd~~	~~Calhoun~~	~~NG~~	~~PL~~
~~6844~~	~~FPLE Forney LP~~	~~Forney Energy Center~~	~~Kaufman~~	~~NG~~	~~PL~~
~~22225~~	~~Imperial Sugar Co~~	~~Fort Bend Utilities~~	~~Fort Bend~~	~~NG~~	~~PL~~
~~5338~~	~~Dow Chemical Co~~	~~Freeport Energy Center~~	~~Brazoria~~	~~-~~	~~-~~
~~6763~~	~~Freestone Power Generation LP~~	~~Freestone Power Generation LP~~	~~Freestone~~	~~NG~~	~~PL~~
~~18715~~	~~Texas Municipal Power Agency~~	~~Gibbons Creek~~	~~Grimes~~	~~SUB~~	~~RR~~
~~7370~~	~~Gonzales City of~~	~~Gonzales Hydro Plant~~	~~Gonzales~~	~~WAT~~	~~-~~
~~19323~~	~~TXU Generation Co LP~~	~~Graham~~	~~Young~~	~~NG~~	~~PL~~
~~11269~~	~~Lower Colorado River Authority~~	~~Granite Shoals~~	~~Burnet~~	~~WAT~~	~~-~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~17566~~	~~South Houston Green Power LP~~	~~Green Power 2~~	~~Galveston~~	~~NG~~	~~PL~~
~~54888~~	~~NRG Texas LLC~~	~~Greens Bayou~~	~~Harris~~	~~NG~~	~~PL~~
~~7698~~	~~Guadalupe Power Partners LP~~	~~Guadalupe Generating Station~~	~~Guadalupe~~	~~NG~~	~~PL~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~H 4~~	~~Gonzales~~	~~WAT~~	~~-~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~H 5~~	~~Gonzales~~	~~WAT~~	~~-~~
~~19537~~	~~University of Texas at Austin~~	~~Hal C Weaver Power Plant~~	~~Travis~~	~~NG~~	~~PL~~
~~6035~~	~~Exelon Generation Co LLC~~	~~Handley~~	~~Tarrant~~	~~NG~~	~~PL~~
~~8155~~	~~Chambers Energy LP~~	~~Harris Energy Facility~~	~~Harris~~	~~-~~	~~-~~
~~1074~~	~~ANP Operations Co - Hays~~	~~Hays Energy Project~~	~~Hays~~	~~NG~~	~~PL~~
~~54904~~	~~High Prairie Wind Farm LLC~~	~~High Prairie Wind Farm~~	~~-~~	~~-~~	~~-~~
~~54888~~	~~NRG Texas LLC~~	~~Hiram Clarke~~	~~Harris~~	~~NG~~	~~PL~~
~~1015~~	~~Austin Energy~~	~~Holly Street~~	~~Travis~~	~~NG~~	~~PL~~
~~14254~~	~~Oxy Vinyls LP~~	~~Houston Chemical Complex Battleground~~	~~Harris~~	~~NG~~	~~PL~~
~~11269~~	~~Lower Colorado River Authority~~	~~Inks~~	~~Burnet~~	~~WAT~~	~~-~~
~~16604~~	~~San Antonio Public Service Bd~~	~~J K Spruce~~	~~Bexar~~	~~SUB~~	~~RR~~
~~16604~~	~~San Antonia Public Service Bd~~	~~J T Deely~~	~~Bexar~~	~~SUB~~	~~RR~~
~~2172~~	~~Brazos Electric Power Coop Inc~~	~~Jack Energy Facility~~	~~Jack~~	~~-~~	~~-~~
~~2172~~	~~Brazos Electric Power Coop Inc~~	~~Johnson County~~	~~Johnson~~	~~OG~~	~~-~~
~~13908~~	~~NRG South Central Operations Inc~~	~~Kaufman~~	~~Kaufman~~	~~-~~	~~-~~
~~19323~~	~~TXU Generation Co LP~~	~~Lake Creek~~	~~McLennan~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Lake Hubbard~~	~~Dallas~~	~~NG~~	~~PL~~
~~16604~~	~~San Antonio Public Service Bd~~	~~Leon Creek~~	~~Bexar~~	~~NG~~	~~PL~~
~~7806~~	~~Entergy Gulf States Inc~~	~~Lewis Creek~~	~~Montgomery~~	~~NG~~	~~PL~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~6958~~	~~Garland City of~~	~~Lewisville~~	~~Denton~~	~~WAT~~	-
~~54888~~	~~NRG Texas LLC~~	~~Limestone~~	~~Limestone~~	~~LIG~~	~~CV~~
~~54907~~	~~NuCoastal Power Corporation~~	~~Lon C Hill~~	~~Nueces~~	~~NG~~	~~PL~~
~~54759~~	~~Mesquite Wind Power LLC~~	~~Lone Star Wind Farm~~	~~Shackelford~~	~~WIND~~	-
~~11269~~	~~Lower Colorado River Authority~~	~~Lost Pines 1 Power Project~~	~~Bastrop~~	~~NG~~	~~PL~~
~~11269~~	~~Lower Colorado River Authority~~	~~Marble Falls~~	~~Burnet~~	~~WAT~~	-
~~16008~~	~~Ridge Energy Stor&Grid Serv LP~~	~~Markham Energy Storage Center~~	~~Matagorda~~	-	-
~~11629~~	~~Lower Colorado River Authority~~	~~Marshall Ford~~	~~Travis~~	~~WAT~~	-
~~11417~~	~~MC Energy Partners LP~~	~~MC Energy Project~~	~~Montgomery~~	~~NG~~	-
~~739~~	~~IPA Operations Inc~~	~~Midlothian Energy Facility~~	~~Ellis~~	~~NG~~	~~PL~~
~~12668~~	~~Mirant Corp~~	~~Mirant Texas Weatherford~~	~~Parker~~	-	-
~~54777~~	~~Signal Hill Wichita Falls Power LP~~	~~Mirant Wichita Falls LP~~	~~Wichita~~	~~NG~~	~~PL~~
~~16604~~	~~San Antonio Public Service Bd~~	~~Mission Road~~	~~Bexar~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Monticello~~	~~Titus~~	~~SUB~~	~~RR~~
~~2176~~	~~Brazos River Authority~~	~~Morris Sheppard~~	~~Palo Pinto~~	~~WAT~~	-
~~13034~~	~~Morton International Inc~~	~~Morton Salt Grand Saline~~	~~Van Zandt~~	~~NG~~	~~PL~~
~~6035~~	~~Exelon Generation Co LLC~~	~~Mountain Creek~~	~~Dallas~~	~~NG~~	~~PL~~
~~54695~~	~~Wharton County Power Partners~~	~~Newgulf Cogen~~	~~Wharton~~	~~NG~~	~~PL~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~Nolte~~	~~Guadalupe~~	~~WAT~~	-
~~19323~~	~~TXU Generation Co LP~~	~~North Lake~~	~~Dallas~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~North Main~~	~~Tarrant~~	~~NG~~	~~PL~~
~~2172~~	~~Brazos Electric Power Coop Inc~~	~~North Texas~~	~~Parker~~	~~NG~~	~~PL~~
~~16604~~	~~San Antonio Public Service Bd~~	~~O W Sommers~~	~~Bexar~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Oak Grove~~	~~Robertson~~	-	-

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~5374~~	~~Dow Chemical Company-Oyster Creek~~	~~Oyster Creek Unit VIII~~	~~Brazoria~~	~~NG~~	~~PL~~
~~54888~~	~~NRG Texas LLC~~	~~P H Robinson~~	~~Galveston~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Parkdale~~	~~Dallas~~	-	-
~~980~~	~~Air Products LP~~	~~Pasadena~~	~~Harris~~	~~NG~~	~~PL~~
~~11059~~	~~Pasadena Cogeneration LP~~	~~Pasadena Cogeneration~~	~~Harris~~	~~NG~~	~~PL~~
~~33106~~	~~Pasadena Paper Co LP~~	~~Pasadena Paper~~	~~Harris~~	~~BLQ~~	-
~~17583~~	~~South Texas Electric Coop Inc~~	~~Pearsall~~	~~Frio~~	~~NG~~	~~PL~~
~~22337~~	~~Alcoa World Alumina LLC~~	~~Point Comfort Operations~~	~~Calhoun~~	~~NG~~	~~PL~~
~~54759~~	~~Mesquite Wind Power LLC~~	~~Post Oak~~	~~Shackelford~~	-	-
~~17566~~	~~South Houston Green Power LP~~	~~Power Station 3~~	~~Galveston~~	~~NG~~	~~PL~~
~~17566~~	~~South Houston Green Power LP~~	~~Power Station 4~~	~~Galveston~~	~~NG~~	~~PL~~
~~7634~~	~~Greenville Electric Util Sys~~	~~Powerlane Plant~~	~~Hunt~~	~~NG~~	~~PL~~
~~50036~~	~~PPG Industries Inc Works 4~~	~~PPG Industries Works 4~~	~~Wichita~~	~~DFO~~	~~TK~~
~~6958~~	~~Garland City of~~	~~Ray Olinger~~	~~Collin~~	~~NG~~	~~PL~~
~~5063~~	~~Denton City of~~	~~Ray Roberts~~	~~Denton~~	~~WAT~~	-
~~15927~~	~~Rhodia Inc~~	~~Rhodia Houston Plant~~	~~Harris~~	~~OTH~~	~~WA~~
~~15941~~	~~Rice University~~	~~Rice University~~	~~Harris~~	~~NG~~	~~PL~~
~~18611~~	~~Tenaska Frontier Partners Ltd~~	~~Rio Nogales Power Project~~	~~Guadalupe~~	-	-
~~1015~~	~~Austin Energy~~	~~Robert Mueller Energy Center~~	~~Travis~~	-	-
~~16175~~	~~Robstown City of~~	~~Robstown~~	~~Nueces~~	~~NG~~	~~PL~~
~~16203~~	~~Rock-Tenn~~	~~Rock Tenn Dallas Mill~~	~~Dallas~~	~~NG~~	~~PL~~
~~16502~~	~~S&L Cogeneration Co~~	~~S&L Cogeneration~~	~~Galveston~~	~~NG~~	~~PL~~
~~54888~~	~~NRG Texas LLC~~	~~Sam Bertron~~	~~Harris~~	~~NG~~	~~PL~~
~~17583~~	~~South Texas Electric Coop Inc~~	~~Sam Rayburn~~	~~Victoria~~	~~NG~~	~~PL~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~54888~~	~~NRG Texas LLC~~	~~San Jacinto Steam Electric Station~~	~~Harris~~	~~NG~~	~~PL~~
~~16624~~	~~San Miguel Electric Coop Inc~~	~~San Miguel~~	~~Atascosa~~	~~LIG~~	~~TK~~
~~1015~~	~~Austin Energy~~	~~Sand Hill~~	~~Travis~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Sandow No. 4~~	~~Milam~~	~~LIG~~	~~TK~~
~~252~~	~~Alcoa Inc~~	~~Sandow Station~~	~~Milam~~	~~LIG~~	~~CV~~
~~54705~~	~~Seadrift Coke LP~~	~~Seadrift Coke LP~~	~~Calhoun~~	~~WH~~	~~-~~
~~17139~~	~~Shell Oil Co-Deer Park~~	~~Shell Deer Park~~	~~Harris~~	~~PUR~~	~~UN~~
~~11269~~	~~Lower Colorado River Authority~~	~~Sim Gideon~~	~~Bastrop~~	~~NG~~	~~PL~~
~~17345~~	~~Small Hydro of Texas Inc~~	~~Small Hydro of Texas~~	~~De Witt~~	~~WAT~~	~~-~~
~~22155~~	~~Texas State University - San Marcos~~	~~Southwest Texas State University~~	~~Hayes~~	~~NG~~	~~PL~~
~~6958~~	~~Garland City of~~	~~Spencer~~	~~Denton~~	~~NG~~	~~PL~~
~~18050~~	~~State Farm Mutual Auto Ins Co~~	~~State Farm Insur Support Center Central~~	~~Dallas~~	~~DFO~~	~~TK~~
~~19323~~	~~TXU Generation Co LP~~	~~Stryker Creek~~	~~Cherokee~~	~~NG~~	~~PL~~
~~25049~~	~~Gas Recovery Systems Inc~~	~~Sunset Farms~~	~~Travis~~	~~LFG~~	~~PL~~
~~22214~~	~~Sweeny Cogeneration LP~~	~~Sweeny Cogen Facility~~	~~Brazoria~~	~~NG~~	~~PL~~
~~54888~~	~~NRG Texas LLC~~	~~T H Wharton~~	~~Harris~~	~~NG~~	~~PL~~
~~18611~~	~~Tenaska Frontier Partners Ltd~~	~~Tenaska Frontier Generation Station~~	~~Grimes~~	~~NG~~	~~PL~~
~~39066~~	~~Union Carbide Corp-Texas City~~	~~Texas City Plant Union Carbide~~	~~Galveston~~	~~NG~~	~~PL~~
~~22652~~	~~Calpine Corp-Texas City~~	~~Texas City Power Plant~~	~~Galveston~~	~~NG~~	~~PL~~
~~18760~~	~~Texas Petrochemicals Corp~~	~~Texas Petrochemicals~~	~~Harris~~	~~NG~~	~~PL~~
~~11269~~	~~Lower Colorado River Authority~~	~~Thomas C Ferguson~~	~~Llano~~	~~NG~~	~~PL~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~TP 4~~	~~Guadalupe~~	~~WAT~~	~~-~~
~~19323~~	~~TXU Generation Co LP~~	~~Tradinghouse~~	~~McLennan~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Trinidad~~	~~Henderson~~	~~NG~~	~~PL~~

Table 9.3-2 ~~Existing Generation Facilities in Candidate Area (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~54891~~	~~Altura Power~~	~~Twin Oaks Power One~~	~~Robertson~~	~~LIG~~	~~TK~~
~~19450~~	~~Union Carbide Corp-Seadrift~~	~~Union Carbide Seadrift Cogen~~	~~Calhoun~~	~~NG~~	~~PL~~
~~21622~~	~~University of Texas at Dallas~~	~~University of Texas at Dallas~~	~~Collin~~	~~NG~~	~~PL~~
~~20838~~	~~Wim-Sam Inc~~	~~University of Texas at San Antonio~~	~~Bexar~~	~~NG~~	~~PL~~
~~20838~~	~~Wim-Sam Inc~~	~~UTSA TEP II~~	~~Bexar~~	~~-~~	~~-~~
~~16604~~	~~San Antonio Public Service Bd~~	~~V H Braunig~~	~~Bexar~~	~~NG~~	~~PL~~
~~21826~~	~~Valero Refining Co-Texas City~~	~~Valero Refining Texas City~~	~~Galveston~~	~~NG~~	~~PL~~
~~19699~~	~~Valero Refining Co – TX~~	~~Valero Refining Texas Houston~~	~~Harris~~	~~NG~~	~~PL~~
~~19323~~	~~TXU Generation Co LP~~	~~Valley~~	~~Fannin~~	~~NG~~	~~PL~~
~~54907~~	~~NuCoastal Power Corporation~~	~~Victoria~~	~~Victoria~~	~~NG~~	~~PL~~
~~6831~~	~~Ft Worth City of~~	~~Village Creek Wastewater Treatment~~	~~Tarrant~~	~~OBG~~	~~PL~~
~~54888~~	~~NRG Texas LLC~~	~~W A Parish~~	~~Fort Bend~~	~~NG~~	~~PL~~
~~16604~~	~~San Antonio Public Service Bd~~	~~W B Tuttle~~	~~Bexar~~	~~NG~~	~~PL~~
~~16510~~	~~STEAG Power LLC~~	~~Watermill Electric Generating~~	~~Ellis~~	~~-~~	~~-~~
~~20230~~	~~Weatherford Mun Utility System~~	~~Weatherford~~	~~Parker~~	~~-~~	~~-~~
~~54888~~	~~NRG Texas LLC~~	~~Webster~~	~~Harris~~	~~NG~~	~~PL~~
~~17052~~	~~Shell Chemical LP~~	~~Westhollow Technology Center~~	~~Harris~~	~~NG~~	~~PL~~
~~20588~~	~~Whitesboro City of~~	~~Whitesboro~~	~~Grayson~~	~~-~~	~~-~~
~~19449~~	~~USCE-Forth Worth District~~	~~Whitney~~	~~Bosque~~	~~WAT~~	~~-~~
~~21668~~	~~Wise County Power Co., LP~~	~~Wise County Power LP~~	~~Wise~~	~~NG~~	~~PL~~
~~313~~	~~Wolf Hollow I L P~~	~~Wolf Hollow I, L.P.~~	~~Hood~~	~~NG~~	~~PL~~

~~Source: Reference 9.3-4~~

Table 9.3-3 ~~Existing Fossil Facilities in Candidate Area (w/o Natural Gas or Landfill Gas facilities)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~33106~~	~~Pasadena Paper Co LP~~	~~Pasadena Paper~~	~~Harris~~	~~BLQ~~	~~-~~
~~252~~	~~Alcoa Inc~~	~~Sandow Station~~	~~Milam~~	~~LIG~~	~~CV~~
~~54891~~	~~Altura Power~~	~~Twin Oaks Power One~~	~~Robertson~~	~~LIG~~	~~TK~~
~~54888~~	~~NRG Texas LLC~~	~~Limestone~~	~~Limestone~~	~~LIG~~	~~CV~~
~~16624~~	~~San Miguel Electric Coop Inc~~	~~San Miguel~~	~~Atascosa~~	~~LIG~~	~~TK~~
~~19323~~	~~TXU Generation Co LP~~	~~Big Brown~~	~~Freestone~~	~~LIG~~	~~TK~~
~~19323~~	~~TXU Generation Co LP~~	~~Sandow No. 4~~	~~Milam~~	~~LIG~~	~~TK~~
~~19323~~	~~TXU Generation Co LP~~	~~Comanche Peak~~	~~Somervell~~	~~NUC~~	~~TK~~
~~6831~~	~~Ft Worth City of~~	~~Village Creek Wastewater Treatment~~	~~Tarrant~~	~~OBG~~	~~PL~~
~~2172~~	~~Brazos Electric Power Coop Inc~~	~~Johnson County~~	~~Johnson~~	~~OG~~	~~-~~
~~15927~~	~~Rhodia Inc~~	~~Rhodia Houston Plant~~	~~Harris~~	~~OTH~~	~~WA~~
~~17139~~	~~Shell Oil Co-Deer Park~~	~~Shell Deer Park~~	~~Harris~~	~~PUR~~	~~UN~~
~~54865~~	~~ANP-Coleto Creek~~	~~Coleto Creek~~	~~Goliad~~	~~SUB~~	~~RR~~
~~11289~~	~~Lower Colorado River Authority~~	~~Fayette Power Project~~	~~Fayette~~	~~SUB~~	~~RR~~
~~16604~~	~~San Antonia Public Service Bd~~	~~J T Deely~~	~~Bexar~~	~~SUB~~	~~RR~~
~~16604~~	~~San Antonio Public Service Bd~~	~~J K Spruce~~	~~Bexar~~	~~SUB~~	~~RR~~
~~18715~~	~~Texas Municipal Power Agency~~	~~Gibbons Creek~~	~~Grimes~~	~~SUB~~	~~RR~~
~~19323~~	~~TXU Generation Co LP~~	~~Monticello~~	~~Titus~~	~~SUB~~	~~RR~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~Abbott TP 3~~	~~Guadalupe~~	~~SUN~~	~~-~~
~~2176~~	~~Brazos River Authority~~	~~Morris Sheppard~~	~~Palo Pinto~~	~~WAT~~	~~-~~
~~5063~~	~~Denton City of~~	~~Ray Roberts~~	~~Denton~~	~~WAT~~	~~-~~
~~6958~~	~~Garland City of~~	~~Lewisville~~	~~Denton~~	~~WAT~~	~~-~~
~~7370~~	~~Gonzales City of~~	~~Gonzales Hydro Plant~~	~~Gonzales~~	~~WAT~~	~~-~~

Table 9.3-3 ~~Existing Fossil Facilities in Candidate Area (w/o Natural Gas or Landfill Gas facilities) (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~
~~7751~~	~~Guadalupe-Blanco River Auth~~	~~Canyon~~	~~Comal~~	~~WAT~~	~~-~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~Dunlap TP 1~~	~~Guadalupe~~	~~WAT~~	~~-~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~H 4~~	~~Gonzales~~	~~WAT~~	~~-~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~H 5~~	~~Gonzales~~	~~WAT~~	~~-~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~Nolte~~	~~Guadalupe~~	~~WAT~~	~~-~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~TP 4~~	~~Guadalupe~~	~~WAT~~	~~-~~
~~11269~~	~~Lower Colorado River Authority~~	~~Austin~~	~~Travis~~	~~WAT~~	~~-~~
~~11269~~	~~Lower Colorado River Authority~~	~~Buchanan~~	~~Burnet~~	~~WAT~~	~~-~~
~~11269~~	~~Lower Colorado River Authority~~	~~Granite Shoals~~	~~Burnet~~	~~WAT~~	~~-~~
~~11269~~	~~Lower Colorado River Authority~~	~~Inks~~	~~Burnet~~	~~WAT~~	~~-~~
~~11269~~	~~Lower Colorado River Authority~~	~~Marble Falls~~	~~Burnet~~	~~WAT~~	~~-~~
~~11629~~	~~Lower Colorado River Authority~~	~~Marshall Ford~~	~~Travis~~	~~WAT~~	~~-~~
~~54682~~	~~Maverick Cnty Wtr Control & Imp. Dst No 1~~	~~Eagle Pass~~	~~Maverick~~	~~WAT~~	~~-~~
~~17345~~	~~Small Hydro of Texas Inc~~	~~Small Hydro of Texas~~	~~De Witt~~	~~WAT~~	~~-~~
~~19449~~	~~USCE-Forth Worth District~~	~~Whitney~~	~~Bosque~~	~~WAT~~	~~-~~
~~27470~~	~~USCE-Tulsa District~~	~~Denison~~	~~Grayson~~	~~WAT~~	~~-~~
~~54759~~	~~Mesquite Wind Power LLC~~	~~Lone Star Wind Farm~~	~~Shackelford~~	~~WIND~~	~~-~~

~~Source: Reference 9.3-4~~

Table 9.3-4 ~~EXISTING GENERATION SITES IN CANDIDATE AREA - Potential Site Analysis~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~	~~SUITABLE FOR CANDIDATE SITE?~~	~~COMMENTS~~
~~33106~~	~~Pasadena Paper Co LP~~	~~Pasadena Paper~~	~~Harris~~	~~BLQ~~	~~-~~	~~N~~	~~Near population centers - within Houston metropolitan area~~
~~252~~	~~Alcoa Inc~~	~~Sandow Station~~	~~Milam~~	~~LIG~~	~~CV~~	~~Y~~	~~Carry forward for candidate site review~~
~~54891~~	~~Altura Power~~	~~Twin Oaks Power One~~	~~Robertson~~	~~LIG~~	~~TK~~	~~Y~~	~~Carry forward for candidate site review~~
~~54888~~	~~NRG Texas LLC~~	~~Limestone~~	~~Limestone~~	~~LIG~~	~~CV~~	~~Y~~	~~Carry forward for candidate site review~~
~~16624~~	~~San Miguel Electric Coop Inc~~	~~San Miguel~~	~~Atascosa~~	~~LIG~~	~~TK~~	~~Y~~	~~Carry forward for candidate site review~~
~~19323~~	~~TXU Generation Co LP~~	~~Big Brown~~	~~Freestone~~	~~LIG~~	~~TK~~	~~Y~~	~~Carry forward for candidate site review~~
~~19323~~	~~TXU Generation Co LP~~	~~Sandow No. 4~~	~~Milam~~	~~LIG~~	~~TK~~	~~Y~~	~~Carry forward for candidate site review~~
~~19323~~	~~TXU Generation Co LP~~	~~Comanche Peak~~	~~Somervell~~	~~NUC~~	~~TK~~	~~N~~	~~TXU has announced plans to build two new units; site at capacity~~
~~6831~~	~~Ft Worth City of~~	~~Village Creek Wastewater Treatment~~	~~Tarrant~~	~~OBG~~	~~PL~~	~~N~~	~~Near population centers - within Dallas/Fort Worth metropolitan area~~
~~2172~~	~~Brazos Electric Power Coop Inc~~	~~Johnson County~~	~~Johnson~~	~~OG~~	~~-~~	~~N~~	~~Near population centers - within Dallas/Fort Worth metropolitan area~~
~~15927~~	~~Rhodia Inc~~	~~Rhodia Houston Plant~~	~~Harris~~	~~OTH~~	~~WA~~	~~N~~	~~Near population centers - within Houston metropolitan area~~
~~17139~~	~~Shell Oil Co-Deer Park~~	~~Shell Deer Park~~	~~Harris~~	~~PUR~~	~~UN~~	~~N~~	~~Near population centers - within Houston metropolitan area~~

Table 9.3-4 ~~EXISTING GENERATION SITES IN CANDIDATE AREA - Potential Site Analysis (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~	~~SUITABLE FOR CANDIDATE SITE?~~	~~COMMENTS~~
~~54865~~	~~ANP Coleto Creek~~	~~Coleto Creek~~	~~Goliad~~	~~SUB~~	~~RR~~	~~Y~~	~~Carry forward for candidate site review~~
~~11289~~	~~Lower Colorado River Authority~~	~~Fayette Power Project~~	~~Fayette~~	~~SUB~~	~~RR~~	~~Y~~	~~Carry forward for candidate site review~~
~~16604~~	~~San Antonia Public Service Bd~~	~~J T Deely~~	~~Bexar~~	~~SUB~~	~~RR~~	~~N~~	~~Near population centers – within San Antonio metropolitan area~~
~~16604~~	~~San Antonio Public Service Bd~~	~~J K Spruce~~	~~Bexar~~	~~SUB~~	~~RR~~	~~N~~	~~Near population centers – within San Antonio metropolitan area~~
~~18715~~	~~Texas Municipal Power Agency~~	~~Gibbons Creek~~	~~Grimes~~	~~SUB~~	~~RR~~	~~Y~~	~~Carry forward for candidate site review~~
~~19323~~	~~TXU Generation Co LP~~	~~Monticello~~	~~Titus~~	~~SUB~~	~~RR~~	~~Y~~	~~Carry forward for candidate site review~~
~~7751~~	~~Guadalupe Blanco River Authority~~	~~Abbott TP 3~~	~~Guadalupe~~	~~SUN~~	~~-~~	~~N~~	~~Near population centers – within 5 miles of Seguin (pop 22,000) and 35 miles of San Antonio~~
~~2176~~	~~Brazos River Authority~~	~~Morris Sheppard~~	~~Palo Pinto~~	~~WAT~~	~~-~~	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations); lake adjacent to State Park; plant could adversely affect aesthetic and recreational resources~~
~~5063~~	~~Denton City of~~	~~Ray Roberts~~	~~Denton~~	~~WAT~~	~~-~~	~~N~~	~~50 miles from Dallas; pop density in county = 487/mi sq~~
~~6958~~	~~Garland City of~~	~~Lewisville~~	~~Denton~~	~~WAT~~	~~-~~	~~N~~	~~Near population centers – within Dallas/Fort Worth metropolitan area~~
~~7370~~	~~Gonzales City of~~	~~Gonzales Hydro Plant~~	~~Gonzales~~	~~WAT~~	~~-~~	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations)~~

Table 9.3-4 ~~EXISTING GENERATION SITES IN CANDIDATE AREA - Potential Site Analysis (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~	~~SUITABLE FOR CANDIDATE SITE?~~	~~COMMENTS~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~Canyon~~	~~Comal~~	~~WAT~~	-	~~N~~	~~Near population centers - San Antonio (40 miles); less than 20 miles from New Braunfels (pop > 35,000) and San Marcos (pop>40,000). Major regional recreational destination - high transient population.~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~Dunlap TP 1~~	~~Guadalupe~~	~~WAT~~	-	~~N~~	~~Near population centers - less than 10 miles from New Braunfels (pop > 35,000); 40 miles from San Antonio~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~H-4~~	~~Gonzales~~	~~WAT~~	-	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations)~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~H-5~~	~~Gonzales~~	~~WAT~~	-	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations)~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~Nolte~~	~~Guadalupe~~	~~WAT~~	-	~~N~~	~~Near population centers - within 5 miles of Seguin (pop 22,000); 40 miles from San Antonio~~
~~7751~~	~~Guadalupe-Blanco River Authority~~	~~TP-4~~	~~Guadalupe~~	~~WAT~~	-	~~N~~	~~Near population centers - less than 25 miles from San Marcos (pop> 40,000); 40 miles from San Antonio~~
~~11269~~	~~Lower Colorado River Authority~~	~~Austin~~	~~Travis~~	~~WAT~~	-	~~N~~	~~Near population centers - within Austin metropolitan area~~
~~11269~~	~~Lower Colorado River Authority~~	~~Buchanan~~	~~Burnet~~	~~WAT~~	-	~~Y~~	~~Carry forward for candidate site review~~

Table 9.3-4 ~~EXISTING GENERATION SITES IN CANDIDATE AREA - Potential Site Analysis (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~	~~SUITABLE FOR CANDIDATE SITE?~~	~~COMMENTS~~
~~11269~~	~~Lower Colorado River Authority~~	~~Granite Shoals~~	~~Burnet~~	~~WAT~~	-	~~N~~	~~Plant could adversely affect developed residential, commercial and recreational land uses at Lake LBJ (Granite Shoals, TX on banks of lake); vicinity of Marble Falls, TX and Lake Marble Falls; population density in immediate area > 800/mi sq~~
~~11269~~	~~Lower Colorado River Authority~~	~~Inks~~	~~Burnet~~	~~WAT~~	-	~~N~~	~~Plant could adversely affect aesthetic and recreational resources in vicinity; State Park on banks of lake; Inks Dam National Fish Hatchery located at lake~~
~~11269~~	~~Lower Colorado River Authority~~	~~Marble Falls~~	~~Burnet~~	~~WAT~~	-	~~N~~	~~Plant could adversely affect developed residential, commercial and recreational land uses at Lake Marble Falls (Marble Falls, TX on banks of lake); vicinity of Granite Shoals, TX and Lake LBJ; population density in immediate area > 800/mi sq~~
~~11629~~	~~Lower Colorado River Authority~~	~~Marshall Ford~~	~~Travis~~	~~WAT~~	-	~~N~~	~~Near population centers – within Austin metropolitan area~~
~~54682~~	~~Maverick Cnty Wtr Control & Imp. Dst No 1~~	~~Eagle Pass~~	~~Maverick~~	~~WAT~~	-	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations)~~
~~17345~~	~~Small Hydro of Texas Inc~~	~~Small Hydro of Texas~~	~~De Witt~~	~~WAT~~	-	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations)~~

Table 9.3-4 ~~EXISTING GENERATION SITES IN CANDIDATE AREA - Potential Site Analysis (Continued)~~

~~UTILITY ID~~	~~UTILITY NAME~~	~~PLANT NAME~~	~~COUNTY LOCATION~~	~~FUEL~~	~~TRANSPORT~~	~~SUITABLE FOR CANDIDATE SITE?~~	~~COMMENTS~~
~~19449~~	~~USCE Forth Worth District~~	~~Whitney~~	~~Bosque~~	~~WAT~~	~~-~~	~~N~~	~~45 miles from outskirts of Dallas/Ft. Worth Metropolitan area; plant could adversely affect aesthetic and recreational resources at site; State Park on banks of lake~~
~~27470~~	~~USCE Tulsa District~~	~~Denison~~	~~Grayson~~	~~WAT~~	~~-~~	~~N~~	~~Far from appropriate transmission infrastructure (e.g., substations)~~
~~54759~~	~~Mesquite Wind Power LLC~~	~~Lone Star Wind Farm~~	~~Shackelford~~	~~WIND~~	~~-~~	~~Y~~	~~Carry forward for candidate site review~~

~~Source: Reference 9.3-4~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Twin Oaks Power One~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100~~	~~Increased complexity of project associated with development and acquisition of land and water rights for nuclear development. Expansion of transmission corridors required.~~	~~No. Increased complications associated with land acquisition as well as potential impacts from new emissions preclude site.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~San Miguel~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100; 53 miles from center of San Antonio~~	~~Increased complexity of project associated with development and acquisition of land and water rights for nuclear development. Expansion of transmission corridors required, with acquisition of ROW.~~	~~No. Increased complications associated with land acquisition as well as potential impacts from new emissions preclude site.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Sandow No. 4~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~Requires acquisition of additional land; construction would alter land from vacant to industrial~~	~~Effects to terrestrial resources expected to be greater than STP impacts due to development of additional land; aquatic habitat may be affected~~	~~Meets 10 CFR 100~~	~~Part of former ALCOA site, available reclaimed mining areas used for agriculture and recreation. Increase in complexity of project to acquire land and water rights.~~	~~No. Increased complications from acquisition, new transmission lines and potential environmental effects preclude site. Proximity to population may cause issues for emergency planning and safety. Former mining areas around site now used for recreation and agriculture.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Sandow Station~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~Requires acquisition of additional land; construction would alter land from vacant to industrial~~	~~Effects to terrestrial resources expected to be greater than STP impacts due to development of additional land; aquatic habitat may be affected~~	~~Meets 10 CFR 100~~	~~Part of Sandow complex in Rockdale, Texas. Available reclaimed mining areas used for agriculture and recreation. Increase in complexity of project to acquire land and water rights.~~	~~No. Increased complications from acquisition, new transmission lines and potential environmental effects preclude site. Proximity to population may cause issues for emergency planning and safety. Former mining areas around site now used for recreation and agriculture.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Limestone~~	~~Minor consumptive use of ground and surface water~~	~~Occur in vicinity but not at the site~~	~~No record of spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100~~	~~Near substations for new transmission corridors. No acquisition of land or corridors necessary.~~	~~Yes. No site or ROW acquisition will complicate development of plant at site. Population near site. Recreational area approximately 5 miles from site.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Big Brown~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100~~	~~Reclaimed mining area adjacent to site is now a nature preserve. Nearby lake is site of fishing tournament. Public concerns about quality of life issues, as evidenced from reaction to proposals of new coal-fired generation in area. Acquisition issues for development at site.~~	~~No. Increased complications from acquisition, new transmission lines and potential environmental effects preclude site. Proximity to population may cause issues for emergency planning and safety. Former mining areas around site now used for recreation and agriculture.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Gibbons Creek~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100; 13.9 miles to College Station (pop > 25,000; population)~~	~~Increased cost and complexity of project due to land and water right acquisition. Transmission ROW to substations must be acquired and expanded.~~	~~No. Increased complications from acquisition, new transmission lines and tensional environmental effects preclude site. Potentially high transient population at cooling lake and proximity to population centers raise safety concerns.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Coleto Creek~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100; less than 20 miles from Victoria, TX (pop > 60,000)~~	~~Increased cost and complexity of the project due to land and water right acquisition. Transmission ROW would be expanded.~~	~~No. Increased complications from acquisition, new transmission lines and potential environmental effects preclude site. Potentially high transient population at cooling lake and proximity to population centers raise safety concerns.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Fayette Power Project~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100; 60 miles SE of Austin~~	~~Increased cost and complexity of the project due to land and water right acquisition. Transmission ROW would be expanded.~~	~~No. Increased complications from acquisition, new transmission lines and potential environmental effects preclude site. Potentially high transient population at cooling lake and proximity to population centers raise safety concerns.~~

Table 9.3-5 ~~Candidate Site Criteria Review for Existing Fossil Fuel Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects on Spawning Grounds~~	~~Effluent Discharge/ Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidates Site?~~
~~Monticello~~	~~Minor consumptive use of ground or surface water; electric generation providers may have already contracted or developed surplus water supplies to provide for future generation at existing site~~	~~Occur in county; if present at site, mitigation measures will be taken and construction and operation will not adversely impact protected species~~	~~No known spawning grounds at the site~~	~~Discharges anticipated to be within current regulatory limits~~	~~No preemption or additional land use expected~~	~~Effects to terrestrial resources expected to be similar to STP impacts; aquatic habitat may be affected~~	~~Meets 10 CFR 100~~	~~Increased cost and complexity of the project due to land and water right acquisition. Transmission ROW would be expanded.~~	~~No. Complications from acquisition, new transmission lines and potential environment effects preclude site. Potentially high transient population at cooling lake and proximity to population centers raised safety concerns.~~

Table 9.3-6 ~~Candidate Site Criteria Review for Greenfield and Brownfield Sites~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects of Spawning Grounds~~	~~Effluent Discharge Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidate Site?~~
~~Buchanan~~	~~Minor consumptive use of surface and/or groundwater~~	~~Occur in county, no known protected species at site~~	~~No known spawning grounds at site~~	~~Discharges anticipated to be within regulator limits~~	~~Construction would alter land from woodlands, agricultural or recreational to industrial~~	~~Existing aquatic habitat may be affected during construction; construction of plant will affect terrestrial habitat.~~	~~Meets 10 CFR 100; there may be a high recreational transient population in the region. Near population centers.~~	~~Increased complexity of project associated with development and acquisition of land and water rights for nuclear development. Expansion of transmission corridors required.~~	~~No. Increased complications associated with land acquisition as well as potential impacts from new emissions preclude site. Potentially high transient population at lake raises safety concerns.~~

Table 9.3-6 ~~Candidate Site Criteria Review for Greenfield and Brownfield Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects of Spawning Grounds~~	~~Effluent Discharge Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidate Site?~~
~~Lone Star Windfarm~~	~~Availability of water is problematic in ERCOT West planning region, however consumptive use will be minor~~	~~Occur in county, no known protected species at site~~	~~No known spawning grounds at site~~	~~Discharges anticipated to be within regulator limits~~	~~Construction would alter land from vacant or ranching land to industrial~~	~~Potential effects on aquatic and terrestrial ecology would be short term during construction.~~	~~Meets 10 CFR 100.~~	~~Increased complexity of project associated with development and acquisition of land and water rights for nuclear development. Expansion of transmission corridors required wit acquisition of ROW.~~	~~No. Increased complications associated with land acquisition as well as potential impacts from new emissions preclude site. Potential adverse affects due to predominant secondary use of area for agriculture.~~

Table 9.3-6 ~~Candidate Site Criteria Review for Greenfield and Brownfield Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects of Spawning Grounds~~	~~Effluent Discharge Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidate Site?~~
~~Generic Greenfield~~	~~Minor consumptive use of surface and/or groundwater~~	~~Assume that none occur at the site~~	~~Assume there is no record of spawning grounds at the site~~	~~Discharges anticipated to be within regulator limits~~	~~Construction would alter land from agricultural and woodland to industrial~~	~~Aquatic habitat may be affected; new transmission corridors may affect terrestrial habitats.~~	~~Meets 10 FRM 100.~~	~~Increase in complexity of project to acquire land and water rights. Additional issues from developing available water resources. Alternation from non-industrial to industrial use may require rezoning and other special use issues.~~	~~No. Increased complicatio ns from acquisition, new transmissio n lines and potential environmen tal preclude site.~~

Table 9.3-6 ~~Candidate Site Criteria Review for Greenfield and Brownfield Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects of Spawning Grounds~~	~~Effluent Discharge Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidate Site?~~
~~Allen's Creek~~	~~Minor consumptive use of surface and/or groundwater~~	~~Occur in vicinity but not at the site~~	~~No known spawning grounds at site~~	~~Discharges anticipated to be within regulator limits~~	~~Construction would alter land from vacant to industrial~~	~~Construction of plant will affect terrestrial habitat.~~	~~Meets 10 CFR 100.~~ ~~Area not considered for urban development because of flooding in basin area. Flooding not an issue at site.~~	~~New rights of way may increase complexity of development of site. No major acquisition required for purposes of development.~~	~~Yes. No land acquisition would complicated development of property.~~ ~~ROWS would need to be developed, but acquisition of corridors is not an issue.~~

Table 9.3-6 ~~Candidate Site Criteria Review for Greenfield and Brownfield Sites (Continued)~~

~~Site~~	~~Consumptive Use of Water~~	~~No Further Species Endangerment~~	~~Effects of Spawning Grounds~~	~~Effluent Discharge Water Quality~~	~~No Preemption or Adverse Impacts to Land Use~~	~~Potential Effects on Aquatic and Terrestrial Ecology~~	~~Population Characteristics~~	~~Other Significant Issues That Preclude Use of the Site~~	~~Is This Site a Candidate Site?~~
~~Malakoff~~	~~Minor consumptive use of surface and/or groundwater~~	~~Occur in vicinity and counties that would contain new transmission lines, but not at the site~~	~~No known spawning grounds at site~~	~~Discharges anticipated to be within regulator limits~~	~~Former lignite mine; construction would not alter valuable land resource~~	~~Length of transmission corridors may impact terrestrial habitats~~	~~Meets 10 CFR 100; site is within 60 miles of Dallas and in a medium population area~~	~~Near substations for new tramission corridors. No acquisition of land or corridors necessary.~~	~~Yes. No site or ROW acquisition will complicate development of plant at site.~~

Table 9.3-7 ~~Comparison of Proposed and Alternative Sites~~

~~**Topic Areas for Evaluation**~~	~~**STP**~~	~~**Limestone**~~	~~**Allen's Creek**~~	~~**Malakoff**~~
~~Land Use~~	~~SMALL~~ ~~Land use will not change.~~	~~SMALL~~ ~~Land use will not change.~~	~~SMALL TO MODERATE~~ ~~Land use will change from agricultural to industrial.~~	~~MODERATE~~ ~~Former industrial site; some loss of agricultural use.~~
~~Air Quality~~	~~SMALL~~ ~~Any construction and operation impacts will be mitigated.~~	~~SMALL~~ ~~Any construction and operation impacts will be mitigated.~~	~~SMALL~~ ~~Any construction and operation impacts will be mitigated.~~	~~SMALL~~ ~~Any construction and operation impacts will be mitigated.~~
~~Water~~	~~SMALL~~ ~~Surface water and water rights available for additional units.~~	~~SMALL~~ ~~Available water resources from surface and ground.~~	~~SMALL~~ ~~Ground water available for development; cooling water may also be provided by future reservoir.~~	~~SMALL~~ ~~Surface and ground water available for development.~~
~~Terrestrial Ecology~~	~~SMALL~~ ~~Listed and/or protected species present at site should not be impacted due to distance from construction site and limited duration of construction activities.~~	~~SMALL~~ ~~Use of mostly existing transmission corridors will limit impact on sensitive species.~~	~~SMALL~~ ~~Brevity of transmission corridor and low number sensitive species will limit impact on sensitive species.~~	~~SMALL~~ ~~If new pipelines and transmission corridors are needed federally listed species may be affected.~~

Table 9.3-7 ~~Comparison of Proposed and Alternative Sites (Continued)~~

~~Topic Areas for Evaluation~~	~~STP~~	~~Limestone~~	~~Allen's Creek~~	~~Malakoff~~
~~Aquatic Ecology~~	~~SMALL~~ ~~No listed, threatened or endangered species expected to be affected. Area to be disturbed is small and in a protected near shore area already dedicated to intake functions.~~	~~SMALL TO MODERATE~~ ~~Water consumption for operation may affect the aquatic environment.~~	~~SMALL~~ ~~No known sensitive species at the site. If water from the reservoir is used, necessary intake and discharge structures may affect reservoir habitat.~~	~~SMALL~~ ~~Possible makeup water intake and discharge structures may affect sensitive species.~~
~~Socioeconomics~~	~~SMALL TO MODERATE~~ ~~Impacts of construction workforce and increase in K-12 student population could have MODERATE impacts in Matagorda County.~~ ~~However, increased taxes and jobs in the country may have a MODERATE beneficial impact.~~	~~SMALL~~ ~~Population increases from workforce not likely to result in adverse socioeconomic effects. Increased taxes may result in MODERATE beneficial impact.~~	~~SMALL TO MODERATE~~ ~~Impacts of construction workforce could have MODERATE impacts in Austin County.~~ ~~However, increased taxes and jobs in the country may have a MODERATE beneficial impact.~~	~~SMALL TO MODERATE~~ ~~Impacts of construction workforce could have MODERATE impacts in Henderson County.~~ ~~However, increased taxes and jobs in the country may have a MODERATE beneficial impact.~~
~~Historic, Cultural, and Archeological Resources~~	~~SMALL~~ ~~No historic or cultural resources at site.~~	~~SMALL~~ ~~No historic or cultural resources at site.~~	~~SMALL~~ ~~Two historical sites, noted by a state marker, will be managed under SHPO supervision.~~	~~SMALL~~ ~~Site previously disturbed by lignite mining activities. Archaeological sites identified at site, but none eligible for federal listing.~~

Table 9.3-7 ~~Comparison of Proposed and Alternative Sites (Continued)~~

~~Topic Areas for Evaluation~~	~~STP~~	~~Limestone~~	~~Allen's Creek~~	~~Malakoff~~
~~Environmental Justice~~	~~SMALL~~ ~~No adverse impacts will disproportionately affect minority populations.~~	~~SMALL~~ ~~No adverse impacts will disproportionately affect minority populations.~~	~~SMALL~~ ~~No adverse impacts will disproportionately affect minority populations.~~	~~SMALL~~ ~~No adverse impacts will disproportionately affect minority populations.~~
~~Transmission Corridors~~	~~SMALL~~ ~~No new offsite transmission lines required.~~	~~SMALL TO MODERATE~~ ~~Requires two new transmission lines both can likely be installed within the existing 345 kilovolt transmission line ROWs. If new corridors are required, expected adverse impacts will be LARGE during construction, and SMALL during operation.~~	~~SMALL TO MODERATE~~ ~~Estimated to require approximately 60 miles of corridor and a 200-foot ROW to connect to ERCOT grid not expected to permanently affect agricultural areas or residents (due to low population density). Short term impacts of the new construction could be MODERATE TO LARGE, depending on the location of the new corridors.~~	~~SMALL TO MODERATE~~ ~~New transmission could be built in the existing ROW, but the ROW may need to be expanded for some or all new transmission lines. If expansion is required the short term adverse effects may be MODERATE due to clearing and grubbing.~~
~~Transportation~~	~~SMALL TO MODERATE~~ ~~Impacts during peak construction could be SMALL TO MODERATE because of congestion.~~	~~SMALL TO MODERATE~~ ~~Impacts during peak construction could be SMALL TO MODERATE because of congestion.~~	~~SMALL TO MODERATE~~ ~~Impacts during peak construction could be SMALL TO MODERATE because of congestion.~~	~~SMALL TO MODERATE~~ ~~Impacts during peak construction could be SMALL TO MODERATE because of congestion.~~
~~Is the Site Environmentally Preferable?~~	~~Proposed Site.~~	~~Impacts are greater than or equal to proposed site.~~	~~Impacts are greater than or equal to proposed site.~~	~~Impacts are greater than or equal to proposed site.~~

Figure 9.3-1 ~~Alternatives Analysis~~

Figure 9.3-2 ~~Region of Interest~~

~~Source: Reference 9.3-3~~

Figure 9.3-3 ~~Candidate Area~~

~~Source: Reference 9.3-3~~