2.0 SITE CHARACTERISTICS

This chapter provides information on the geological, seismological, hydrological, and meteorological characteristics of the Diablo Canyon site and vicinity. Population distribution, land use, and site activities and controls are also discussed. This information, together with the detailed technical discussions provided in other chapters, shows the adequacy of the site for the safe operation of the nuclear power units.

2.1 GEOGRAPHY AND DEMOGRAPHY

2.1.1 SITE LOCATION

The Diablo Canyon site is adjacent to the Pacific Ocean in San Luis Obispo County, California, and is approximately 12 miles west southwest of the city of San Luis Obispo, the county seat. The reactor for Unit 1 is located at latitude 35°12'44" N and longitude 120°51'14" W. The Universal Transverse Mercator coordinates for zone 10 are 695,350 meters E and 3,898,450 meters N. The reactor for Unit 2 is located at latitude 35°12'41" N and longitude 120°51'13" W. The UTM coordinates are 695,380 meters E and 3,898,400 meters N. Figure 2.1-1 locates the site on a map of California.

2.1.2 SITE DESCRIPTION

The site consists of approximately 750 acres near the mouth of Diablo Creek. The parcel immediately south of the creek consists of 585 acres and is leased to the Company for a term of 99 years with an option to renew for an additional 99 years. The 165 acre parcel on the north side of the creek is owned by the Company. The site boundary and the location of principal structures are shown in Figure 2.1-2. As shown in Figure 2.1-2, a portion of the site is bounded by the Pacific Ocean. The Company has complete authority to determine all activities within the site boundary. This authority extends to the mean high

water line along the ocean. On land, the boundary of the exclusion area (as defined in 10 CFR 100) coincides with the site boundary. The distance from either reactor to the nearest site boundary on land exceeds one-half mile, which is the minimum exclusion distance. The minimum distance from either reactor to the ocean (mean high water) is 600 feet.

Exclusion Area Control

On land there are no activities unrelated to plant operation within the exclusion area. The exclusion area is not traversed by public highway or railroad. A stock-type fence defines the site land boundary. Access to the site is by private road which is fenced and posted. Guards stationed at the entrance to this road limit access to persons entering on official business.

The offshore area (below the mean high water line) within one-half mile of either reactor is not under the Company's control and the Company does not normally have authority to determine activities within this area. The shoreline of the site is rough and precipitous and the area below the mean high water line could be occupied only with great difficulty. As shown in the aerial photograph of the site, Figure 2.1-3, several rocks are exposed offshore in Diablo Cove and near its southern boundary. (Some of these rocks have since been incorporated in the breakwater.) There is no history of public access to these rocks.

The offshore area is at times entered by commercial or sports fishing boats. In the event of emergency, such boats could be notified and requested to leave the area. As described in Section 13.3, arrangements have been made with appropriate authorities for notification and removal of such boats and of persons occupying the breakwaters, offshore rocks, or shoreline in the event of emergency.

Boundaries for Establishing Effluent Release Limits

The boundary line of the restricted area (as defined in 10 CFR 20) coincides with the exclusion area boundary and is shown in Figure 2.1-2. Control of access to the land area within this boundary will be as described for exclusion area control. As therein described, no special provisions have been made for control of access to the offshore area below the mean high water line. Occupancy of this area by any member of the public is expected to be of short duration, resulting in exposures within the limits established by 10 CFR 20.106(b) and related low as practical provisions.

2.1.3 POPULATION AND POPULATION DISTRIBUTION

Population data are based on the 1970 Census and on projections prepared by the State of California Department of Finance. The portion of California which lies within 50 miles of the site is relatively sparsely populated, having approximately 210,000 residents in 1970. A circle with a 50-mile radius includes most of San Luis Obispo County, about one-third of Santa Barbara County, and a minor, sparsely-populated portion of Monterey County. The 1970 Census population of this region is less than had been projected in the PSAR, and the subsequent projections by the Department of Finance are also reduced.

About 55 percent of the area within the 50-mile circle is on land; the balance falling in the Pacific Ocean. Table 2.1-1 shows population trends for San Luis Obispo and Santa Barbara counties and for the State of California. Table 2.1-2 shows the growth since 1960 of the principal cities within 50 miles of the site. Table 2.1-3 lists all communities within 50 miles having a population of 1,000 or more, giving distance and direction from the site and population in 1970.

Population Within 10 Miles

Approximately 6,260 persons reside within 10 miles of the site. The nearest residence is 1-3/4 miles north, northwest of the site. Two persons occupy this dwelling. Figure 2.1-4 shows the 1970 population distribution within

a 10-mile radius. This area is divided into 22-1/2° sectors, with circles of radius 1, 2, 3, 4, 5, and 10 miles. Figures 2.1-5, -6, -7, and -8 show projected population distributions for 1980, 1990, 2000, and 2010, respectively. The distributions are based on the assumption that land usage will not change in character during the next 40 years, and that population growth within 10 miles will be proportional to growth in San Luis Obispo County as a whole. No major plans exist that would affect this assumption. Plans for a new community in the Los Osos Valley that was to have been financed under Title 4 of the 1968 Department of Housing and Urban Development Act (and referred to in the Unit 2 PSAR) did not materialize.

Population Between 10 and 50 Miles

Figure 2.1-9 shows the 1970 population distribution between 10 and 50 miles, with the sectors of 22-1/2° as before, and with circles of 10, 20, 30, 40, and 50 miles. Figures 2.1-10, -11, -12, and -13 show projected distributions for 1980, 1990, 2000, and 2010, respectively. These distributions, based on Department of Finance projections, are based also on the assumption that urban and rural populations will retain their same relative proportions. In 1970, some 88 percent of those persons within 50 miles of the site resided in the population centers listed in Table 2.1-3.

Low Population Zone

The population within a 6-mile radius is estimated to be 18. This number is derived from a survey of residences in this area, which approximates the low population zone as defined in 10 CFR 100. Six miles is the distance to the nearest residential community development at Los Osos, north of the site. It is assumed that population in this zone, which is mountainous and largely inaccessible, will increase in proportion to the population of San Luis Obispo County. On this basis, in the year 2010 the population in the low population zone will be about 40. The population in this zone is included in Figures 2.1-4 to 2.1-8.

Transient Population

In addition to the resident population represented in the tables and population distribution charts, there is a seasonal influx of vacation and weekend visitors, especially during the summer months. This influx is heaviest along the coast from Avila Beach to south of Oceano. During August, the heaviest month, the maximum overnight transient population in motels and State parks in this area is approximately 100,000 persons. There are no significant seasonal or diurnal shifts in population or population distribution within the low population zone, however. Table 2.1-4 lists transient population for recreational areas within 50 miles of the site for the most recent periods of record.

Within the low population zone, the maximum recorded number of persons at any single time is estimated to be 5,000. This figure is provided by the State Department of Parks and Recreation and corresponds to the maximum daytime use of Montana de Oro State Park. Overnight use is considerably less, an estimated maximum of 400. Evacuation of these numbers of persons from the park in the event of a radiation release could be accomplished as described in Section 13.3 with a reasonable probability that no injury would result. For all cases listed and analyzed in Chapter 15, there is a wide margin between exposures at the outer boundary of the low population zone for a 30-day period following the accident and the allowable doses given in 10 CFR 100.

Population Center

The population center distance as defined in 10 CFR 100 is approximately 10 miles, the distance to the nearest boundary of San Luis Obispo. Its population was 28,036 in 1970, and it is situated beyond the San Luis Range, east northeast of the site.

Public Facilities and Institutions

Several elementary schools are located within 10 miles of the site; near Los Osos and near Avila Beach. These serve the local community and do not draw from outlying areas. California State Polytechnic College is 12 miles from the site and has an enrollment of approximately 10,000.

Montana de Oro State Park is located north of the site. Its area of principal use is along the beach, between 4 and 5 miles north northwest of the site. An undeveloped and effectively inaccessible inland portion of this park lies within 1-3/4 miles north of the site. The total visitor days recorded at Montana de Oro during the 12-month period ending May 1972 was 310,000. There are no other public facilities or institutions within 10 miles of the site.

2.1.4 USES OF ADJACENT LANDS AND WATERS

The San Luis Range, attaining a height of 1,800 feet, dominates the region between the site and U.S. Route 101. This upland country is used to a limited extent for grazing beef cattle and, to a very minor extent, dairy cattle. The terrain east of U.S. Highway 101, lying in the mostly inaccessible Santa Lucia Mountains, is sparsely populated with little development. A large portion of this area is included within the Los Padres National Forest.

Agriculture

San Luis Obispo County has relatively little level land, except for a few small coastal valleys such as the Santa Maria and San Luis Valleys, and along the county's northern border in the Salinas Valley and Carrizo Plain areas. Farming is the predominant activity in these valleys. Principal crops include vegetables, poultry, and grain. The county's leading agricultural product is livestock, constituting over 40 percent of the $58,113,000 gross value of farm products sold in 1970. The total farm acreage in the county is approximately 1,500,000. The county contains a total of 2,128,640 acres.

Dairying

The nearest dairying activity is between 7 and 8 miles northeast of the site. These are two small operations yielding a total of approximately 1,500 gallons per day. One additional small dairy is located about 10 miles east of the site and produces about 800 gallons per day. The largest dairy in the vicinity (within 15 miles) is 12 miles north of the site and produces 2,200 gallons per day. Some replacement heifers and dry cows are sometimes pastured on property adjacent to the site.

Fisheries

The area adjacent to the plant is a small part of the larger coastal fishing grounds extending from slightly north of Point Buchon to Point San Luis. In 1966 the total annual combined sport and commercial catch from this fishery was estimated to be 621,000 pounds of abalone, 81,000 pounds of rockfish, and 21,000 pounds of other species. More recent data indicate a dramatic decrease in the abalone fishery, with approximately 200,000 pounds of abalone being taken in 1970. Additional data are included in the Environmental Report for the Diablo Canyon site. Diablo Cove in its undisturbed state probably contributed about one percent of the above catch.

Surface and Ground Water

As discussed in Section 2.4.1, there are no public water supply ground water basins within ten miles of the site. Property owners north and south of the site capture surface water from small intermittent streams and springs for private domestic use. Some of this water is used for cattle and for limited truck farming on the coastal terrace.

2.2 NEARBY INDUSTRIAL TRANSPORTATION AND MILITARY FACILITIES

Industry is mainly light and of a local nature serving the needs of agriculture in the area. Food processing and refining of crude oil are the area's major industries, although the numbers employed are not large. Less than 5 percent of the work force in San Luis Obispo County is engaged in manufacturing. The largest industrial complex is Vandenberg Air Force Base, located about 35 miles south southeast of the site. The Port San Luis tanker loading pier and the Point San Luis lighthouse and Coast Guard Reservation are 6-1/2 miles east southeast of the site.

2.2.1 LOCATIONS AND ROUTES

U.S. Highway 101 is the main arterial serving the coastal region in this portion of California. It passes about 10 miles to the east of the site, separated from it by the San Luis Mountains. State Route 1 passes 10 miles to the north and carries moderate traffic between San Luis Obispo and the coast. The nearest public access is by county roads in Clark Valley (5 miles north) and See Canyon (5 miles east). Access to the site is by a private road from Avila Beach.

The Southern Pacific Transportation Company provides rail service to the county by a route which roughly parallels U.S. Highway 101. There is no spur track into the site.

Coastal shipping lanes are approximately 20 miles offshore. However, local tankers coming into and out of Avila Beach and Estero Bay would come within 5 to 10 miles of the site. The following local tanker traffic is anticipated:

Avila Pier	8 to 10 per month
Estero Bay	15 to 18 per month
Morro Bay Power Plant	1 per month

Petroleum products and crude oil are stored at Avila Beach and at Morro Bay, 8 and 10 miles respectively from the site.

The San Luis Obispo County Airport is 12 miles east of the site. It handles some 90 scheduled landings and departures per week. The maximum size of aircraft is 14 passengers, about 12,500 pounds gross weight. The approach route for a portion of the traffic passes within approximately 4 miles of the site at an elevation of 3,000 feet. This is used infrequently; the approach route for visual landings passes 8 miles from the site, on the far side of the San Luis Range. There is a smaller airport near Oceano, 15 miles east southeast of the site, that accommodates private planes only. The Camp San Luis Obispo airfield, 8 miles northeast of Diablo Canyon, is not operational.

Vandenberg Air Force Base employs over 6,000 people in the area of Lompoc-Santa Maria. Missiles fired to the Western Pacific Missile Range are not directed north of west. Missile launch sites are some 36 miles due south of the plant. Polar orbit shots are launched in a southerly direction.

The closest U.S. Army installation is the Hunter-Liggett Military Reservation approximately 40 miles north of the site. The California National Guard maintains Camp Roberts, located to the east of the Hunter-Liggett Reservation, and Camp San Luis Obispo about 8 miles northeast of Diablo Canyon. A Coast Guard light station is located on Point San Luis, as described above.

2.2.2 DESCRIPTION

No products are manufactured, stored, or transported within 5 miles of Diablo Canyon. Materials manufactured, stored, or transported beyond 5 miles are not likely to be a significant hazard to the plant.

2.2.3 EVALUATIONS

Diablo Canyon is a remote site in a sparsely populated, essentially agricultural area. None of the activities described in Sections 2.2.1 and 2.2.2 could constitute a hazard to the plant.

Shipping does not approach within 5 miles of the site; coastal shipping lanes are 20 miles offshore. The intake structure is protected by massive breakwaters as described elsewhere in this chapter.