5.6 BIOLOGICAL RESOURCES

El Segundo Power II LLC (ESPII) proposes to upgrade the efficiency and capacity of the existing El Segundo Generating Station (ESGS) in El Segundo, California. ESGS has been operating as an electric generating station since 1955. ESPR involves the demolition of existing Units 1 and 2 and construction of a combined-cycle plant, Unit 5, 6, and 7, within the footprint of the demolished units using most of the existing support systems that are already installed and serving Units 1 and 2.

The project includes new or modified offsite facilities that may affect terrestrial or marine biological resources including two alternate water supply lines, a sanitary waste line, an aqueous ammonia pipeline, and equipment laydown and parking sites. Nearly all work will occur within or on paved streets or existing industrial paved and/or graded, barren property. ESPR will utilize the existing operating sea-water cooling system within the existing permitted environmental envelope for the system. Moreover, ESPR is removing the existing discharge of sanitary waste of ESGS from the ocean and directing it to a municipal treatment facility.

Other key positive aspects of ESPR include:

- ESPR provides a prepared CEC data adequacy checklist with locations filled in where information meeting each requirement can be found.
- ESPR includes stipulation to all standard CEC conditions applying to biological resources.
- Enhancements are offered through three additional conditions that ESP II stipulates to in concept. The ESPR team looks forward to developing these conditions and any other appropriate enhancements identified by agencies.

The purpose of this section is to describe existing terrestrial and marine biological resources within the study area, which includes the project components listed above, a one mile radius around the plant site, and a 1,000 foot buffer on either side of the pipeline routes, to assess the potential impacts of the proposed project on biological resources, and to recommend mitigation to reduce any significant adverse impacts to less than significant levels. Refer to Figure 5.6-1 provides a regional map for ESPR.

5.6.1 Affected Environment

Historically, the proposed project location and adjacent terrestrial habitat may have included sand beach, southern dune scrub, coastal salt marsh and coastal sand dune habitat adjacent to the ocean. Only small isolated patches of natural vegetation and associated wildlife remain as a result of heavy industrial development. The reduction in coastal wetland habitat

consequently altered the biological productivity of the marine environment. In summary, the proposed project site and ancillary facilities are located in a highly industrialized setting with the exception of the adjacent marine environment. There are only a few small areas of ornamental plantings (e.g., shrubs and freeway windrows) and isolated ruderal patches throughout the study area. Surrounding lands are also highly industrialized or developed and do not support native habitats.

The affected environment for the ESPR Project is described in the following section based on onshore field surveys to define terrestrial biological resources. A detailed evaluation of existing marine-related studies conducted at both the existing ESGS and nearby research and monitoring sites is also described.

5.6.1.1 Survey Methods

5.6.1.1.1 Terrestrial Survey Methods. Survey methods for terrestrial biological resources were conducted in accordance with California Energy Commission (CEC) regulations (CEC, 2000) and were managed by Ms. Anne Knowlton of URS. The "project area" is defined as the area that may be directly disturbed during construction of the project, and include the power plant site and construction laydown areas, and construction rights of way. The "project survey area" includes the project area plus a buffer where both botanical and wildlife resource surveys were conducted. The project buffer includes a 1-mile area surrounding the power plant site and a 1000-foot wide zone on either side of potential construction rights of way along all pipeline routes and construction laydown areas.

Prior to conducting field surveys, office investigations were performed to gather existing information on sensitive wildlife and botanical species that are known or that could occur in the project survey area. These investigations consisted of: (1) a review of available literature, publications and status reports, and other available materials; (2) a review of county documents including the general plan; (3) a review of the maps, files and reports from California Department of Fish and Game (CDFG), California Natural Diversity Data Base (NDDB) as attached in Appendix H; and (4) a review of the California Native Plant Society (CNPS) Rare Plant Database. In addition, other biologists conducting surveys in nearby locales at the El Segundo Dunes and the Chevron Preserve were consulted, including Mr. Rudi Matoni and Ms. Stacy Cavote.

A two-day reconnaissance survey of the existing ESGS plant site and the proposed ESPR Project construction laydown, linear facilities, and areas within the project buffer was conducted on October 9, 2000 and November 3, 2000 to characterize plant communities and identify potential habitat for the potentially occurring special-status species listed in Table 5.6-1. The reconnaissance survey consisted of walking or driving the entire linear components, including the offsite pipeline routes and construction laydown and parking areas to assess suitable habitat for target species. Portions of the route that occur in industrial or

TABLE 5.6-1

SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING AT THE ESPR PROJECT

	Scientific Name	Status[1]	Occurrence
Birds			
Belding's Savannah Sparrow	*Passerculus sandwichensis beldingi*	SE	Presumed Extant; Last seen in 1991 at Playa Del Rey
Burrowing Owl (Burrow Sites)	*Athene cunicularia*	CSC	Presumed Extant; Last seen in 1981 at Marina Del Rey
California Black Rail	*Laterallus jamaicensis coturniculus*	ST	Presumed Extant; Last seen in 1928 at Playa Del Rey
California Least Tern	*Sterna antillarum browni*	FE/SE	Nesting population presumed Extant; Last nesting colony seen in Playa Del Rey in 1996
Coastal California Gnatcatcher	*Polioptila californica californica*	FE/CSC	Presumed Extant; Last seen in 1980 at Baldwin Hills
Western Snowy Plover	*Charadrius alexandrinus anatum*	FE/SE	Nesting population Extirpated from the coastal environment in the El Segundo region
Invertebrates			
El Segundo Blue Butterfly	*Euphilotes battoides allyni*	FE	El Segundo Dunes at LAX, Chevron Preserve
Plants			
Ballona Cinquefoil	*Potentilla multijuga*	FSC	Extirpated from the coastal environment in the El Segundo region
Beach Spectaclepod	*Dithyrea maritima*	FSC/ST	Presumed Extant; Last seen in 1998 at Hermosa Beach
Coastal Dunes Milk Vetch	*Astragalus tener* var *titi*	FE./SE	Possibly Extirpated; Last seen in 1903 in Inglewood
Coulter's Goldfields	*Lasthenia glabrata* ssp. *coulteri*	FSC	Extirpated from the coastal environment in the El Segundo region
San Fernando Valley Spineflower	*Chorizanthe parryi* var *fernandina*	FC/CSC	Presumed Extant; Last seen in 1901 in vicinity of Ballona Creek and Marina Del Rey
Southern Tarplant	*Hemizonia parryi* spp. *Australis*	FSC	Presumed Extant; Last seen 1997 at Ballona Marsh
Ventura Marsh Milk-Vetch	*Astragalus pycnostachyus* var *lanosissimus*	SE	Extirpated from the coastal environment in the El Segundo region
Fish			
Steelhead	*Oncorhynchus mykiss*	FE	Known to inhabit Malibu Creek. Not known to utilize Santa Monica Bay
Tidewater Goby	*Eucyclogobius newberryi*	FE	Occurs in estuaries and brackish water lagoons but not known in Santa Monica Bay
Marine Reptiles			
Green Sea Turtle	*Chelonia mydas*	FT	More common along the Baja California coast: infrequently utilizes Santa Monica Bay
Leatherback Sea Turtle	*Dermochelys coriacea*	FT	Found in eastern Pacific Ocean from Chile to Alaska
Loggerhead Sea Turtle	*Caretta caretta*	FT	Found in eastern Pacific Ocean: known to infrequently utilize Santa Monica Bay
Olive Ridley Sea Turtle	*Lepidochelys olivacea*	FE	Distributed throughout the eastern Pacific Ocean.

U.S. Fish and Wildlife Service (Federal)
FE = Endangered (In danger of becoming extant throughout all or a significant portion of its range) **FT** = Threatened (Likely to become endangered in the foreseeable future in the absence of special protection).
FC = Federal Candidate (candidate for FT or FE listing) **FSC**=Species of Concern (Sufficient information exists which warrants concern over that species status and warrants study)
California Department of Fish and Game (State)
SE = Endangered (In danger of becoming extant throughout all or a significant portion of its range) **CSC** = Species of Concern (Information exists which warrants concern over that species' status and may warrant future listing)

urban areas were driven, with isolated areas of more natural habitat examined in greater detail. The plant community classification system was based on a modified version of Holland (1986).

5.6.1.1.2 Marine Survey Methods. A detailed evaluation of existing fish and invertebrate marine-related studies was conducted by consulting biologist, Mr. Steve Le Page with M-REP. An analysis of existing marine mammal and marine reptile related studies was conducted by URS biologist, Dr. Bill Magdych. The proposed project will not result in changes to the existing cooling water intake and out flow system. Moreover, an abundance of data is available to characterize the marine environment. The data defines the environmental baseline as well as future conditions. The basis for use of the data is summarized below.

Summary of Circumstances Forming Basis for Data Use.

- The project will use existing and currently permitted intake and discharge structures. There are no modifications or additions to the existing Units 1 and 2 intake and discharge structures associated with the proposed project, thus, existing data will apply to both baseline and proposed conditions.

- Existing ESGS monitoring data can be correlated to the existing Units 1 and 2 operating level. Thus, utilizing this data as part of the ESPR Project analysis accurately provides baseline conditions.

- The velocity cap installed on the intake structure is classified as best available technology (BAT). Thus, the existing ESGS and proposed ESPR comply with proposed requirements set forth in the Federal Register (FR) which requires intake structures to minimize fish impingement via the installation of best available technologies.

- The physics pertaining to existing and proposed water movement and the thermal discharge will remain the same (refer to Section 5.5 Water Resources), allowing, accurate qualification of both baseline and proposed ESPR Project conditions.

- Maximum flow rates in the cooling system will not increase, allowing existing data to quantify both baseline and proposed ESPR Project conditions.

- Thermal discharge limits will also remain unchanged and the existing NPDES permit for ESGS will not need to be modified as a result of the ESPR Project.

- In development of this evaluation, there has been ongoing coordination with agencies including, but not limited to, the Regional Board, the California Energy Commission (CEC), the California Coastal Commission, the California Department of Fish and Game

(CDFG), the U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS). Verbal approvals were obtained regarding the use of applicability of additional data sources. The purpose of this coordination has been to identify the concerns and interests of the resource agencies and to assure that adequate data and working assumptions were used for this Application for Certification (AFC).

For these reasons, the results of the original impact studies, along with the current data collected for the NPDES monitoring, provide an excellent baseline for ESPR Project-related evaluations.

Value of Additional Data Sources from Adjacent Complement Facilities. Additional data are derived from current studies and on-going monitoring for ESGS Units 3 and 4, and at the Los Angeles Department of Water and Power (DWP) Scattergood Generating Station. These two sites are relevant data sources because of their close proximity (approximately 250 feet to the south and 3,350 feet to the north respectively), comparable marine habitats, and similar design of the intake and discharge structures (see Table 5.6-2 for design specifications). Refer to Table 5.6-3 for operational conditions for comparison of intake and discharge temperatures. For these reasons, this additional data has been used to increase the accuracy of biological impact assessment.

TABLE 5.6-2

DESIGN SPECIFICATIONS OF INTAKE CONDUITS FOR ESGS UNITS 1 AND 2/UNITS 3 AND 4; AND SCATTERGOOD [1]

Intake Structure	Inside Pipe Diameter (meters/feet)	Pipe Terminus Depth (meters/feet)	Maximum Flow (mgd)	Intake Design Technology
ESGS Units 1 and 2	3 meters/10feet	10 meters/32 feet	207.4	Velocity Cap
ESGS Units 3 and 4	3.6 meters/12 feet	10 meters/32 feet	398.8	Velocity Cap
Scattergood	3.6 meters/12 feet	10 meters/32 feet	495.4	Velocity Cap

[1] MBC,1999.

In an effort to use all available data, an on-going zooplankton and ichthyoplankton study from King Harbor conducted by the Vantuna Research Group was evaluated as part of the ESPR Project analysis. These data were used to provide additional information to evaluate potential entrainment affects for the ESPR Project. The use of King Harbor data is justified in that the data represents a region that would generate equal or greater impacts, thus ensuring impact estimates are improved with error towards increasing rather decreasing impacts.

List of Onsite and Adjacent Data Sources for AFC Baseline and Impact Analysis. Programs and reports that provide baseline environmental data for the ESPR Project are provided in Appendix H of this AFC. These data sources include:

1. NPDES 1997, 1998, and 1999 Receiving Water Monitoring Reports for El Segundo and Scattergood Generating Stations. Los Angeles County, California. Prepared by MBC Applied Environmental Sciences.

2. 316(B) Document for Scattergood, Haynes, And Harbor Generating Stations, 1997. Prepared For LADWP by MBC Applied Environmental Science.

3. Southern California Edison Company, El Segundo Generating Station 316 (B) Demonstration. Prepared for California Regional Water Quality Control Board, Los Angeles Region. Dated September 20, 1982.

4. Southern California Edison Company, El Segundo Generating Station 316 (B) Demonstration. Technical Appendix: Impact Assessment Model/Bight-Wide Plankton Investigations. Prepared for California Regional Water Quality Control Board, Los Angeles Region. Dated September 20, 1982.

5. Southern California Edison Company, El Segundo Generating Station Thermal Effect Study Final Report. Dated July 1973.

6. Zooplankton/ichthyoplankton data collected at King Harbor by Vantuna Research Group.

Onsite and Adjacent Data Survey Methods.

NPDES Receiving Water Monitoring Report (1997-1999) Methods. Extensive environmental monitoring has occurred during the 50-year operation of the existing ESGS power production facility. The Los Angeles Regional Water Quality Control Board (LARWQCB) permitted and continuously reviewed (every 5 years) the existing facility's cooling water system intake and discharge by issuance of a National Pollutant Discharge Elimination System (NPDES) permit. The existing ESGS NPDES permit was recently renewed on June 29, 2000. As required by the RWQCB, the Applicant has historically monitored and continues to monitor the following parameters:

TABLE 5.6-3

INTAKE AND DISCHARGE TEMPERATURES AT THE EXISTING ESGS AND SCATTERGOOD OUTFALLS (1997-1999)[1]

Sample/Date	Outfall Source	Intake Temperature (F)/(°C)	Discharge Temperature (F)/(°C)	Average Flow Rate (mgd)	Maximum Flow Rate (mgd)
Winter 1999 February 24	Units 1 & 2	60.08/15.6	60.98/16.1	0.07	207.40
	Units 3 & 4	62.06/16/7	71.06/21.7	162.5	398.80
	Scattergood	57.92/14.4	81.86/27.7	256.0	495.36
Summer 1999 August 13	Units 1 & 2	66.92/19.4	86/30.0	103.7	207.40
	Units 3 & 4	68/20.0	82.94/28.3	398.6	398.80
	Scattergood	60.08/15.6	85.1/29.5	390.0	495.36
Winter 1998 April 10	Units 1 & 2	63.32/17.4	N/A	0.0	207.40
	Units 3 & 4	63.32/17.4	67.46/19.7	168.4	398.80
	Scattergood	64.04/17.8	71.96/22.2	181.1	495.36
Summer 1998 August 11	Units 1 & 2	69.98/21.1	84.02/28.9	103.7	207.40
	Units 3 & 4	68.72/20.4	87.26/30.7	389.3	398.80
	Scattergood	71.96/22.2	91.94/33.3	436.0	495.36
Winter 1997 April 28	Units 1 & 2	57.02/13.9	62.06/16.7	51.8	207.40
	Units 3 & 4	57.02/13.9	74.48/23.6	194.8	398.80
	Scattergood	55.94/13.3	68/20.0	112.0	495.36
Summer 1997 July 29	Units 1 & 2	60.08/15.6	63.14/17.3	194.8	207.40
	Units 3 & 4	59.9/15.5	79.52/26.4	398.6	398.80
	Scattergood	57.02/13.9	71.96/22.2	304.0	495.36

[1] Data was provided by MBC.

Notes:

- Discharge water rapidly mixes with cold bottom water entrained by the upward displacement of the discharged water. This entrainment of cold water is dependent on the velocity of the ejected thermal water but the volume is a least equal to the volume discharged and can be up to 10 times the discharged volume (Harleman, 1972).
- Units 1 & 2 or Units 3 & 4 refer to the existing ESGS facility.
- mgd = million gallons per day.

- Water column monitoring – thermal, dissolved oxygen, and pH.

- Sediment monitoring - grain size and chemistry.

- Mussel bioaccumulation.

- Biological monitoring - Benthic infauna, and fish/invertebrate impingement during normal operations and heat treatments.

- Impingement data - The existing ESGS NPDES permit (2000) requires collection of impingement data. The permit protocol requires monthly collection of a 24-hour sample during normal operations. Operating levels must be correlated with impingement to calculate estimated total impingement for the number of operational days and flow rates over the one-year sampling period. In monitoring for impingement, all material impinged onto the traveling screens is removed from the forebay. The fish and macroinvertebrates are then separated from incidental debris, sorted by species, identified, and counted. Fish are measured for standard length, total length, or disk width (as appropriate), and examined for external parasites, anatomical anomalies, and other abnormalities.

  In addition to monitoring impingement during existing normal operations, impingement associated with heat treatment is quantified. Heat treatment is an operational procedure designed to eliminate mussels, barnacles, and other fouling organisms, which grow in and occlude the generating station conduits. During a heat treatment, heated effluent water from the discharge conduit is re-entrained via cross connecting tunnels to the intake conduit until the water temperature rises (Figure 5.6-2). The temperature rise is maintained for a period of at least one hour during which time all mussels, barnacles, and incidental fish and invertebrates living within the intake conduit and forebay may succumb to the heated water and may become impinged onto the traveling screens.

- Benthic data: Copies of the last three years of the ESGS NPDES monitoring reports are provided for review in Appendix H. Benthic infaunal samples are collected at eight stations using hand held diver box cores. Refer to Figure 5.6-3 for the sampling station locations. All organisms are identified and weighed. Evaluations of the data consist of species richness, diversity, and statistical cluster analysis. Cluster analysis (cluster grouping) is a method of grouping similar stations based on species composition and evaluating species that are found in association with other species (species affinity).

Scattergood 316 (b) (1997) Methods. The methods for the 316 (b) study were designed to determine potential impacts resulting from flow rates/volume from the existing Scattergood intake structure on phytoplankton/zooplankton populations. Phytoplankton/ ichthyoplankton impacts were based on the volume of intake structure source water required to affect a 5 percent or less population loss on its associated species abundance. Intake structure source

water is defined as the maximum distance (40 feet) from the intake that is affected by the suction of the intake. This water represents the minimum potential source water volume that would support the continuous loss and allow the population to remain in equilibrium. This intake source water volume was then compared to the volume of the species geographical range source water to determine the intake structure affect on the population as a whole.

The evaluation for potential impacts to ichthyoplankton species was based on two approaches. One approach, was identical to that utilized for the zooplankton and phytoplankton evaluation, since fish eggs and larvae are part of the zooplankton community. Period of maximum impact is defined as the maximum period one generation of a given population is susceptible to entrainment loss. The second approach evaluated the "equivalent adult losses". This method relates to the number of eggs and larvae that would have survived to adult had they not been lost due to entrainment.

ESGS 316 (b) and Technical Appendix (1982) Methods. Data used to evaluate entrainment was based on the representative site concept. This approach evaluated physical and biological characteristics of other power generation station intakes and then identified a representative site for intensive study. In this case, Ormond Beach Generation Station was used as the representative site. Entrainment data are then adjusted for flow rate differences.

The impact analysis approach utilized in the 316 (b) study was developed by MacCall et al. (1982) for the assessment of intake losses of Southern California coastal fish species. This approach calculates the strength of a stock of fish under some regime of cropping pressure. This regime includes loss of early live stages as well as older fish. The analysis produces the probability (expressed as a R_c value. See SCE 316(b) demonstration Appendix H for the formula) of a fish surviving entrainment and impingement mortality through a specific age. In this case, it was determined to be five years. Therefore a R_c value of 99 percent indicates that a members of a given species has a 99 percent chance of not being entrained or impinged through five years of its life.

ESGS Thermal Effects Study (1973) Methods. The biological component of the thermal effect study consisted of four separate surveys. Methods for each survey are summarized below:

- Benthic Surveys – Nine benthic grab stations were sampled. Stations were located along three transects perpendicular to the shore at 300 and 600 feet north and 1200 feet south of and parallel to the outfall lines. Depths followed the 15, 30, and 45-foot isobaths (see figure on page 20 of thermal effects study in Appendix H).

- Trawl Surveys – Eight sampling trawls per quarterly survey were conducted parallel and perpendicular to the shoreline within the study and control area (see figure on page 22 of thermal effect study Appendix H).

- Intertidal Surveys – Ten intertidal transects oriented perpendicular to the shore were sampled. Locations of the transects started at 100 feet north and south of the power plant outfall line and progressed north and south at 300 feet increments (see figure on page 25 of thermal effects study Appendix H).

- Dive Surveys – Dive surveys were conducted at all benthic grab stations. Data collected consisted of photographs, species present, organism collection, depth and temperature, sediment description (ripple mark height and period and presence or absence of oil), and core samples.

King Harbor Zooplankton/Ichthyoplankton Study Raw Data Methods (1996-1998). Zooplankton/Ichthyoplankton samples have been collected monthly since 1975. The five sampling locations are in and around King Harbor, California, located 5 miles to the south within the Santa Monica Bay, (Figure 5.6-5). The sampling device is a plankton net with a mesh size of 3.33 millimeters. The volume sampled is measured with a flow meter and all plankton concentrations are standardized to abundance per meter cubed.

The ESPR and King Harbor are separated by approximately 5 miles of sandy ocean bottom with similar depth contours with one exception: the Redondo Canyon. This canyon comes very close to the harbor entrance. During times of upwelling near King Harbor, deep nutrient-rich water from the bottom of the canyon moves to the surface providing quality growing conditions for phytoplankton, which is fed upon by zooplankton. As a result, the effects of upwelling would periodically make the water surrounding King Harbor more productive than the area in the vicinity of ESPR. Therefore, it is important to note that King Harbor data does and will continue to overstate probable impacts of ESPR impingement/entrainment forecast assumptions. The King Harbor data serves as a guideline for worst-case scenario impacts.

To evaluate the applicability of the King Harbor data to describe the conditions found in and around the ESGS intake structures a validation study has commenced, and preliminary conclusions have been obtained. The sampling locations for the validation study include one site at King Harbor (Station 1), as shown on Figure 5.6-5 and one site located next to the intake structure for Units 1 and 2. The fall season was chosen for the sampling period since historical data indicates that this timeframe corresponds to one of the periods of peak plankton abundance (VRG, unpublished). A comparison of species and species abundance at both locations is based on three sampling events. During each sampling event four replicate samples per site are taken.

ESGS Record Search Methods. Personnel at the existing ESGS facility have been recording marine mammal encounters since 1978, under permits with National Marine

Fisheries Service (NMFS) that allow small take of marine mammals. Data are recorded and maintained onsite, and have been evaluated by staff for analysis in this AFC.

5.6.1.1.4 Methods to Evaluate Economically Important Species Occurrence. The rationale used to determine the seventeen species for DWP's 1997 316(b) document was based on impingement records at Scattergood Generating Station, which were correlated to those species that have sport or commercial fishing value, or species that are comprised of lower trophic level species that support other higher level species (MBC, 1997a). One species, Walleye surfperch (*Hyperprosopon argenteum*) that has viviparous reproduction (internal fertilization and development resulting in juvenile fish with no free-swimming larval form), was also added to the list. Standing crop of individual species was based on 96 trawls conducted in winter and summer of 1986 and 1989, and 53 trawls during the years 1990-1992 and 1994-1996 (MBC, 1997a). All trawls were performed between Santa Monica Beach to the north and ESGS to the South. Depth range varied from 20 to 200 feet. Unknown population estimate value result from insufficient numbers of individual fish being caught in surveys to calculate a statistically significant estimate. Commercial sport fish landing is derived from the 1999 "Annual Report of Statewide Fish Landings" produced by CDFG. The commercial statistics were derived from the 1999 "Freshwater and Marine Commercial Landings, Preliminary Report" produced by National Marine Fisheries Service.

5.6.1.2 Terrestrial Plant Community Setting

Most of the existing ESGS facility consists of previously constructed power plant equipment and asphalt surfaces. Vegetation in the project area is limited to a small employee area planted two years ago on the west side of the plant boundary, facing the ocean. This area, which is less than 500 feet long and 50 feet wide, consists of a bermuda grass (*Cynodon dactylon*) lawn with ornamental plantings along the perimeter. This area does not constitute habitat for native plant or animal species.

A vegetated slope between the east boundary of the existing ESGS and the Vista del Mar Boulevard is also present. Vegetation is limited to ornamental plantings, typical of the ornamental planting mix used by various industries in the area. The existing ESGS facility is surrounded by industry with the exception of the beach on the west side separating the existing power plant facility from the Pacific Ocean. The developed and industrial environment does not support native vegetation and contains only artificial structures and minimal ornamental landscaping plants. Refer to Figure 5.6-6 for biological resources in the 1-mile study area.

Eight off-site worker parking and construction laydown sites have been identified as potentially suitable to support ESPR project construction activities. Figure 5.6-1 presents a regional map of the project area and includes biologic resources within the region. Figure 5.6-7 presents a detailed map of biological resources within the parking and construction

laydown sites. Four of the eight sites are existing paved lots and are void of biological resources. The Kramer, FedEx, and Chevron sites are mostly undeveloped lots surrounded by industrial development. Plant communities at each site are described below:

- Kramer area is an 11.5 acre-vacant parcel that is located between the Southern Pacific Railroad and the Atchison Topeka and Santa Fe Railroad, approximately two miles east of ESGS. Asphalt paving covers a portion of the site; ruderal species, including Russian thistle (*Salsola tragus*), Bermuda grass, pampas grass (*Cortaderia jubata*), and tree tobacco (*Nicotiana glauca)* are present within the unpaved area. The boundary of the site is fenced; access by the general public is not permitted.

- The FedEx Site is a 46-acre ruderal field that is delineated by a perimeter fence. Site vegetation is dominated by a mixture of non-native grasses, exotic herbs and scattered native and non-native perennial species, such as telegraph weed (*Heterotheca grandiflora*), horseweed (*Conyza* sp.), pampas grass, and coyote bush (*Baccharis pilularis*).

- The Chevron Laydown Site is approximately 30 acres located on the north side of the existing ESGS in a graded lot. The lot is fenced and vegetation is limited to four palm trees and a weedy understory at a small drain outlet.

Linear facilities associated with the proposed ESPR include new water supply lines, a sanitary waste line, and an aqueous ammonia supply line. Water supply and sanitary discharge lines will be constructed in existing paved roadways. The proposed aqueous ammonia pipeline will be constructed aboveground on existing pipe support structures on the Chevron El Segundo Refinery property. The ESPR will use existing cooling water intake and outfall structures located in Santa Monica Bay.

No wetlands or waterways were observed within the ESPR Project study area.

5.6.1.3 Terrestrial Wildlife Setting

The ESPR Project and the adjacent areas support few wildlife species because of the highly developed and industrialized nature of the region and the lack of vegetated habitats. Common urban bird species, such as pigeons (*Columba livia),* mourning doves (*Zenaida macroura*), European starlings (*Sturnus vulgaris),* and house sparrows (*Passer domesticus)* occur in the vicinity of ESGS, linear facilities, construction laydown, and parking areas.

5.6.1.4 Marine Setting

5.6.1.4.1 Characteristics of the Marine Environment.

Project Area Within a 1,000 Foot Area. The intake and discharge pipes for Units 1 and 2 are located in Santa Monica Bay (Figure 5.6-3). These structures extend 2,079 feet offshore to a depth of 32 feet mean lower low water (refer to Figure 5.6-4)). Topography in the immediate vicinity and extending in a 1000-foot radius from the intake terminus consists of sandy substrate with a relatively flat slope. The pipe itself is below the substrate level and provides no structure for habitat utilization. A 10-foot-wide submerged riprap surrounds both the intake and discharge terminus and provides the only hard bottom reef structure in the area. No other subtidal, natural or anthropogenic hard bottom substrate is found within a 1000-foot radius. Kelp and other macro-algae associated with rocky environment are absent (Curtis, 2000). Refer to Figure 5.6-8 for nearshore environments within the project study area.

Nearshore Environment of Santa Monica Bay. Santa Monica Bay is an open embayment delineated from Point Dume, which is located to the northwest and Palos Verdes Point, which is located approximately 30 miles to the southeast (Figure 5.6-1). The nearshore environment within Santa Monica Bay consists mainly of a sandy bottom with a relatively flat slope (Figure 5.6-8). Natural rocky outcrops are confined to the northern and southern portions of the bay, approximately 15 miles and 8 miles from ESGS, respectively. These areas include Point Dume to the Malibu coast to the north, and the Palos Verdes point area to the south (MBC, 1997b). Anthropogenic hard-bottom substrates include three outfall pipes from Hyperion Treatment Plant, one outfall structure from the Chevron refinery, and the Scattergood intake and discharge structure. Artificial hard-bottom structures can also be found in the form of jetties, breakwaters, groins, and artificial reefs.

Anthropogenic Affects. Santa Monica Bay is located in a highly urbanized setting. Potential existing effects on the Santa Monica Bay marine environment include effects from industrial cooling for power plants and discharge from treatment plants which are considered beneficial uses of the bay (State Water Resource Control Board, 1978*)*. In addition to the existing ESGS, which circulates a maximum of 607 million gallons per day of seawater, two other generating stations use the bay for once-through cooling purposes. Scattergood Generating Station located approximately 3500 feet to the north circulates a maximum of 495 million gallons per day of cooling water and the Redondo Generating Station located approximately 5 miles to the south of ESGS circulates up to 1193 million gallons per day. Other discharges to Santa Monica Bay include the Hyperion Treatment Plant outfall located north of the Scattergood Generating Station, which discharges primary and secondary treated effluent at a distance of 5 miles offshore, and the Chevron outfall located just upcoast of ESGS that discharges minor amounts of treated effluent. Chevron also uses the bay to transport crude oil and refined petroleum products to a shoreline facility. Located just outside the southeast point of the Santa Monica

Bay is the Los Angeles County Sanitation Districts Joint Water Pollution Control Plant, which discharges approximately 325 million gallons per day of treated municipal wastewater onto the Palos Verdes Ocean Shelf.

Currents. Currents in the Santa Monica Bay are influenced by the California Current, which is a diffuse current flowing generally toward the southeast. South of Point Conception, this current diverges with one branch continuing southward and the other, now called the Southern California Countercurrent, turning northward and flowing inshore of the Channel Islands (Jones, 1971). This current refracts off a variety of banks and islands creating eddies that fluctuate seasonally both in direction and speed. Superimposed on this model are variations resulting from winds and tides. However, the general flow of water enters Santa Monica Bay from the south and moves in a counterclockwise eddy. Exceptions to this flow occur during the winter months when a clockwise gyre may form (Jones, 1971). Figure 5.6-9 provides a map of currents in the Santa Monica Bay.

Tides. The California coast is dominated by a mixed-semidiurnal tide, with two unequal high and low tides during each 25-hour period. Flood tide currents flow in a northerly direction and ebb tides flow in a southerly direction.

Upwelling. Upwelling occurs mainly during the months of February to October as a result of the predominantly northwesterly winds that induce offshore movement of the nearshore waters (Dailey et. al. 1993). This water is replaced by deeper water that is colder, more saline, lower in oxygen, and higher in nutrient concentrations than surface waters. This event is an important component for phytoplankton blooms.

5.6.1.4.2 Fishes and Invertebrate Species. A master species list of fishes and invertebrates found in the vicinity of ESGS is contained in the NPDES monitoring reports supplied in Table 5.6-4. Common inhabitants found in the vicinity of Santa Monica Bay include representatives of all major taxonomic groups. Examples include jellyfish, clams and snails, crabs, and a variety of fish species. Common fish species include Croakers, Northern anchovy, Pacific sardine, and surfperches. Bottom-dwelling species likely to occur the Santa Monica Bay include California halibut, Specklefin midshipman, and Sand Bass.

Plankton present in the Santa Monica Bay include phytoplankton, which are primary producers (microscopic algae) composing the lowest trophic level of the marine food chain. The phytoplankton are preyed upon by the second group of plankton called zooplankton. Zooplankton are also microscopic animals, some of which spend their entire lives as plankton, while others, including larval forms of invertebrates and fish, spend relatively short periods of time in the plankton stream before settling out as juveniles. Ultimately, the majority of marine life depends on the photosynthesis of phytoplankton, hence, variation in phytoplankton populations can affect successive parts of the food chain.

TABLE 5.6-4

FISH AND INVERTEBRATE SPECIES KNOWN TO OCCUR IN THE VICINITY OF THE ESPR[1]

PHYLUM **Class** **Family** **Species**	**Common Name**
CNIDARIA	
Scyphozo	
Pelagiidae	
Pelagia colorata (=noctiluca, =panopyra)	purple jellyfish
MOLLUSCA	
Gastropoda	
Aglajidae	
Navanax inermis	Navanax
Cephalopoda	
Loliginiidae	
Loligo opalescens	California market squid
Octopodidae	
Octopus bimaculatus/bimaculoides	California two-spot octopus
CRUSTACEA	
Malacostraca	
Alpheidae	
Alpheus sp.	snapping shrimps
Betaeus longidactylus	visored shrimp
Hippolytidae	
Heptacarpus palpator	tiger shrimp
Lysmata californica	red striped shrimp
Palinuridae	
Panulirus interruptus	California spiny lobster
Majidae	
Loxorhynchus grandis	sheep crab
Pugettia producta	northern kelp crab
Pyromaia tuberculata	tuberculate pear crab
Cancridae	
Cancer amphioetus	bigtooth rock crab
Cancer antennarius	Pacific rock crab
Cancer anthonyi	yellow rock crab
Cancer gracilis	graceful rock crab
Cancer jordani	hairy cancer crab
Cancer productus	rock crab
Portunidae	
Portunus xantusii	Xantus swimming crab
Pilumnidae	
Lophopanopeus sp.	crestleg crabs
Pilumnus spinohirsutus	retiring hairy crab
Grapsidae	
Pachygrapsus crassipes	striped shore crab

TABLE 5.6-4
(CONTINUED)

PHYLUM Class Family Species	Common Name
ECHINODERMATA	
Asteroidea	
Asteriidae	
Pisaster giganteus	giant-spined sea star
Pisaster ochraceus	ochre star
Holothuroidea	
Stichopodidae	
Parastichopus californicus	California sea cucumber
Parastichopus parvimensis	warty sea cucumber
VERTEBRATA	
Elasmobranchiomorphi(=Chondrichthyes, Elasmobranchii	
Heterodontidae	horn shark
Heterondontus francisci	
Carcharinidae	
Mustelus californicus	gray smoothhound
Triakis semifasciata	leopard shark
Rhinobatidae	
Platyrhinoidis triseriata	thornback
Rhinobatos productus	shovelnose guitarfish
Myliobatidae	
Myliobatis californica	bat ray
Urolophidae (Dasyatidae, in part)	
Urolophus halleri	round stingray
Octeichthyes (=Actinopterygii)	
Clupeidae	
Sardinops sagax	Pacific sardine
Engraulidae	
Anchoa compressa	deepbody anchovy
Engraulis mordax	northern anchovy
Ophidiidae	
Chilara taylori	spotted cusk-eel
Ophidion scrippsae	basketweave cusk-eel
Batrachoididae	
Porichthys myriaster	specklefin midshipman
Porichthys notatus	plainfin midshipman
Atherinidae	
Atherinops affinis	topsmelt
Atherinopsis californiensis	jacksmelt
Leuresthes tenuis	California grunion
Scorpaenidae	
Scorpaena guttata	California scorpionfish
Sebastes auriculatus	brown rockfish
Sebastes rastrelliger	grass rockfish
Cottidae	
Scorpaenichthys marmoratus	cabezon

TABLE 5.6-4
(CONTINUED)

PHYLUM Class Family Species	Common Name
Serranidae	
Paralabrax clathratus	kelp bass
Paralabrax maculatofasciatus	spotted sand bass
Paralabrax nebulifer	barred sand bass
Stereolepsis gigas	giant sea bass
Carangidae	
Trachurus symmetricus	jack mackerel
Haemulidae (=Pomadasyidae)	
Anisotremus davidsonii	sargo
Xenistius californiensis	salema
Sciaenidae	
Atractoscion nobilis	white seabass
Cheilotrema saturnum	black croaker
Genyonemus lineatus	white croaker
Menticirrhus undulatus	California corbina
Seriphus politus	queenfish
Umbrina roncador	yellowfin croaker
Kyphosidae (includes Girellidae and Scorpididae)	opaleye
Girella nigricans	halfmoon
Medialuna californiensis	
Embiotocidae	
Cymatogaster aggregata	shiner perch
Damalichthys vacca	pile perch
Embiotoca jacksoni	black perch
Hyperprosopon argenteum	walleye surfperch
Phanerodon furcatus	white seaperch
Rhacochilus toxotes	rubberlip seaperch
Pomacentridae	
Chromis punctipinnis	blacksmith
Sphyraenidae	
Sphyraena argentea	California barracuda
Labridae	
Halichoeres semicinctus	rock wrasse
Oxyjulis californica	senorita
Clinidae	
Heterostichus rostratus	giant kelpfish
Blenniidae	
Hypsoblennius gentilis	mussel blenny
Hypsoblennius gilberti	rockpool blenny
Scombridae	
Scomber japonicus	chub mackerel
Stromateidae	
Peprilus simillimus	Pacific butterfish
Bothidae (=Paralichthyidae)	
Citharichthys stigmaeus	speckled sanddab
Paralichthys californicus	California halibut

TABLE 5.6-4
(CONTINUED)

PHYLUM **Class** **Family** **Species**	**Common Name**
Pleuronectidae	
Pleuronichthys ritteri	spotted turbot

[1] Source: ESGS NPDES (1997).

5.6.1.4.3 Marine Mammals. Common marine mammals found in the eastern Pacific Ocean include the California sea lion (*Zalophus californicus*), the harbor seal (*Phoca vitulina*), the gray whale (*Eschrichtius robustus*), and several species of dolphin. Although many of the whale and dolphin species may make use of coastal habitat, they are transitory in nature and are found in both the offshore and nearshore environments. Seals and sea lions are also rather transitory in nature, but use coastal habitat more extensively, and are known to occur in the nearshore environments of Santa Monica Bay. They may take up residency in the nearshore environment but breed on offshore islands and occur infrequently in the vicinity of the project study area.

5.6.1.5 Special-Status Species Occurrence

5.6.1.5.1 Terrestrial. The NDDB and the CNPS were searched for special-status species in the area. The NDDB identifies several species potentially present within the project vicinity. Refer to Appendix H for a copy of the applicable NDDB forms. These species are described in the following paragraphs and listed in Table 5.6-1.

Plants. The NDDB identifies the following seven special-status species as historically present in the project vicinity: Ballona cinquefoil (*Potentilla multijuga),* beach spectaclepod (*Dithyrea maritima),* coastal dunes milk vetch (*Astragalus tener* var. *titi),* Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri),* San Fernando valley spineflower (*Chorizanthe parryi* var *fernandina),* southern tarplant (*Hemizonia parryi* spp. *australis),* and Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus).* These species are likely to be extirpated from the project study area. Extirpation has occurred within the study area due to the highly disturbed and developed nature of the region and the lack of native vegetative cover. Thus, it is extremely unlikely that these species would occur in the project study area.

Animals. The NDDB identifies nine special-status animal species as potentially occurring near the project site: Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), burrowing owl (*Athene cunicularia),* California black rail (*Laterallus jamaicensis coturniculus),* California least tern (*Sterna antillarum browni),* coastal California gnatcatcher (*Polioptila californica californica),* western snowy plover (*Charadrius alexandrinus*

anatum), and El Segundo blue butterfly (*Euphilotes battoides allyni*). However, most of these species are either extirpated or presumed extant, as noted in Table 5.6-1. The following species are discussed in detail because of their potential presence or more recent occurrences in the project vicinity.

El Segundo Blue Butterfly. This federally-listed endangered butterfly is a subspecies of the square-spotted blue butterfly and is unique to a few locations in Los Angeles County. Distribution of the El Segundo blue butterfly is dependent on the occurrence of its food plant, coastal buckwheat (*Eriogonum parvifolium*) which is a key indicator of primary, undisturbed coastal and dune sites. This butterfly is limited by requiring habitat with a biological community of sand dunes adapted to continuously moving sand and extreme aridity. These sites historically consisted of the El Segundo sand dunes, including interrupted extensions to the north into what is present day Ocean Park, and southerly to Malaga Cove in Palos Verdes. The active El Segundo dunes historically covered about 4.5 miles (Mattoni, 1990).

The El Segundo dunes were relatively undisturbed until the 1880s when the development of the City of Redondo Beach separated the main dunes from the southern dunes. The growth of Venice eliminated the dunes north of the mouth of Ballona Creek. Conversion of the central dunes began in 1911 when Chevron constructed the refinery, separating the dunes into two fragments. Habitat values of the southern section were completely destroyed by the 1970s as a result of housing developments that began arising at the turn of the century. Development of the northern fragment exploded as well, and by 1960 only 80 acres of dunes habitat remained. In 1992 the City of Los Angeles delineated 200 acres of the El Segundo dunes as a habitat preserve. This habitat, located at the west end of the LAX, is being restored for the El Segundo blue butterfly which is believed to function as an “umbrella species” for the other endemic invertebrate species.

The El Segundo blue butterfly is currently restricted to three locations: the LAX dunes, the Chevron Refinery dunes, and Malaga Cove. In 1991, the LAX dunes had the largest population of the butterfly in terms of area (4 acres of moderate density butterfly populations and 20 acres of low density butterfly populations), number of adults (5,000 individuals), and number of food plant species (3,358 individual plants). In 1986, the Chevron Refinery dunes had an area of 1.6 acres, about 400 adult El Segundo blue butterfly, and about 240 native plants plus another 1,000 introduced seedlings. This site is fenced as a butterfly preserve. In 1990 the Malaga Cove population, covering an area of one acre with 50 food plants, had a one-day count population of 60 butterflies. Ownership of this fenced area is undetermined, nevertheless development is impossible due to geology and landform characteristics.

The entire life cycle of the El Segundo blue butterfly is dependent on its food plant, coastal buckwheat. Adults find their mate, usually nectar, lay eggs, perch and possibly die on this species of coastal buckwheat. During pupation larvae crawl or drop off the food plant and

burrow into the soil. Larvae typically stay within the root and debris zone of the plant where they are protected from desiccation and insulated from extreme temperatures (Mattoni,1990).

The El Segundo Blue reproduces one time per year under natural conditions. Depending on the flowering cycle of the food plant, adults typically fly from mid-June through the end of August. Females live for an average of four days and produce 15 to 20 eggs per day. Eggs hatch within 5 to 7 days and larvae go through four growth forms (called instars), taking between 18 and 25 days to complete growth. Mature larvae are highly polymorphic, varying from almost pure white or pure dull yellow to strikingly marked individuals with a dull red-to-maroon background broken by a series of yellow or white dashes or chevrons. Larvae prefer to feed on young seeds, which are consumed preferentially to other flower parts (Mattoni, 1992).

The population decline of the El Segundo blue butterfly can be attributed to the loss and degradation of its habitat due to development. Evidence indicates the majority of native flora is not spreading, but being replaced by exotic, non-native plant species. Urbanization has introduced exotic species that further degrade habitat and provide a competitive edge for other invertebrates.

Belding's Savannah Sparrow. Belding's savannah sparrow, a state endangered species, primarily occupies grassland, saline emergent wetland, and wet meadow habitats. Coastal breeders are restricted to saline emergent wetlands and prefer the upper littoral zone of tidal marshes. Generally, wintering populations arrive in southern California from August to October and depart in April or May. This sparrow frequents pickleweed in a few scattered saline emergent wetlands as far north as Santa Barbara County, and is a permanent resident of San Diego County, with only a few thousand individuals remaining. The Belding's savannah sparrow eats mostly grass and other seeds, insects, snails, and spiders. Invertebrates predominate their forage base during the breeding season while seeds are more important during the remainder of the year. The bird scratches and gleans on the ground, and picks food directly from low plants.

This sparrow, presumed extant, was last seen in 1981 in the Ballona area, located 5 miles north of the existing ESPR Project facility. There is no habitat for the Belding's savannah sparrow in the project study area and it is therefore unlikely to occur.

Burrowing Owl. The burrowing owl, a state species of concern, is a bird of open grasslands, prairies, deserts, and farms; it is also common on golf courses, road cuts and ruderal sites in arid habitats. It breeds from southern Canada south throughout much of the United States west of the Mississippi and Mexico, typically wintering in warmer areas. Nesting occurs primarily in burrows built by other species, including ground squirrel, kit fox, badger and desert tortoise. Because the last siting in 1981 at Marina del Rey was over 5 miles away, the burrowing owl is presumed extirpated in the project area and is unlikely to occur.

Coastal California Gnatcatcher. The coastal California gnatcatcher, a federal threatened and state species of concern, is a non-migratory, small passerine, that inhabits coastal sage scrub vegetation. The bird's range includes Ventura County south to El Rosario in Baja California, Mexico. The California gnatcatcher defends breeding territories ranging in size from approximately two to thirty acres. The breeding season extends from late February through July with the peak of nest initiations occurring from mid-March through mid-May. Nests are usually constructed in coastal sage scrub vegetation approximately three feet above the ground. The gnatcatcher feeds primarily on insects. The species is presumed extant from the project area as the last siting was in 1980 at Baldwin Hills, in the vicinity of Culver City located approximately 10 miles northeast of the project site. The coastal California gnatcatcher is unlikely to occur in the project area based on a lack of habitat and lack of recent sitings.

California Least Tern. The California least tern is a state and federally-listed endangered species and is the smallest member of the tern family. Migratory in California, it arrives at its breeding territory in southern California in April and departs south by October. Least terns nest in colonies on bare or sparsely vegetated flat substrates near the coast. The historical nesting habitats of this species have been largely eliminated by development and recreational use. This tern requires nearby feeding habitat of unpolluted, shallow estuaries or lagoons where small fish are abundant. Typical nesting sites are now on isolated or specially protected sand beaches or on natural or man-made open areas in remnant coastal wetlands. Adults nest primarily on the ground, preferring undisturbed nest sites on open, sandy or gravelly shores.

The last known nesting birds in the project region were observed in 1996 at the end of Venice Beach north of Ballona Creek, approximately 8 miles north of the project site. This species is not known to nest in the project study area nor is it likely to nest there due to lack of recent observations and the level of human disturbances in the area. Additionally, remnant coastal wetlands and protected beaches are non-existent in the study area.

Western Snowy Plover. The western snowy plover, a state and federal endangered species, is a migrant and winter visitor of southern California and a localized breeding resident between April 1 and September 15. It can be found primarily on sandy ocean beaches and around the drying margins of lagoons; smaller numbers visit tidal mudflats during migration and in the winter. The plover nests near or under objects such as driftwood, rocks, or defoliated bushes in shallow depressions. Western snowy plovers forage primarily on the wet sand at the beach-surf interface where they feed on small crustaceans, marine worms, insects, and amphipods. Although this plover could potentially use beach habitat adjacent to the project site for foraging, the last known nesting birds was observed in 1914 near Playa Del Rey located outside the study area approximately 5 miles north of the existing ESGS. Thus, the only potential for occurrence would be as a rare forager.

5.6.1.5.2 Marine Reptiles. Several special-species of sea turtle are distributed throughout the eastern Pacific Ocean and off the California coast. These species include green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*). These marine turtles are described below:

Green Sea Turtle. Green sea turtles are found in the highest density in northern Baja California and southern California; however, they are not known to nest on the U.S. Pacific Mainland. Nesting occurs in the islands around Hawaii, Mexico, Palau, and the Philippines. The breeding populations in Florida and Mexico are federally-listed endangered species, and all other green sea turtle populations are federally-listed threatened species (Eckert, 1993).

Leatherback Sea Turtle. The distribution of Leatherback sea turtles in the eastern Pacific Ocean ranges from Chile to Alaska. Extensive nesting occurs on the Pacific coast of Mexico and further south in Baja California from November to February. This species is the most common sea turtle along the eastern Pacific coast. Leatherback sea turtles are a federally-listed threatened species (Eckert, 1993).

Loggerhead Sea Turtle. Loggerhead sea turtles are found in warm temperate and tropical waters of the Atlantic, Pacific and Indian Oceans, and are found in the pelagic habitat from Chile to Alaska in the eastern Pacific Ocean. This species does not nest on the eastern Pacific coast (Eckert,1993). Loggerhead sea turtles are a federally-listed threatened species.

Olive Ridley Sea Turtle. Olive Ridley sea turtles are common around the globe. The limit of the range of this species in the eastern Pacific Ocean is defined by the California current. This species nests in Mexico, and also from Baja California to the south. The breeding colonies on the Pacific coast of Mexico are federally-listed endangered colonies; all other populations are federally-listed threatened (Eckert, 1993).

At the existing ESGS, a velocity cap, installed on the intake structure in the 1950s, changes the incoming current from vertical to horizontal allowing marine reptiles (and mammals) to swim by without impact. The pipe is at a depth of 30 feet and leads into a forebay area on the plant site, where water collects before reaching the cleansing screens before continuing on to the condensers in the plant. Although the above mentioned special-status species are noted as potentially occurring in the region of the ESGS, they occur infrequently and generally pass the existing facility structures due to the placement of the velocity cap on the intake.

5.6.1.5.3 Special-Status Fish and Invertebrates. There are no geographical ranges for any state or federally listed endangered or threatened marine fish or invertebrate that come within 15 miles from the project site. There are two special-status species occurring beyond 15 miles of the proposed project, which are discussed below:

Steelhead. The steelhead (*Oncorhynchus mykiss*), a federally-listed endangered species, is known to inhabit Malibu Creek, located approximately 15 miles to the north of the ESGS (CDFG, 1999). This is an anadromous fish that spawns in fresh water and spends its adult life at sea. With the exception of entering and leaving Malibu Creek, steelhead are not found in shallow nearshore waters of Santa Monica Bay.

Tidewater Goby. Tidewater goby (*Eucyclogobius newberryi*) is a federally-listed species found in shallow, slow flowing, brackish water areas in streams, marches, lagoons, and estuaries. This fish is a predator, feeding on benthic invertebrates and aquatic insect larvae. Peak reproductive activity begins in late April through early May. Eggs are laid in burrows that are guarded by the males. The range of this fish extends past Santa Monica Bay, but appropriate habitat (i.e. estuarine, brackish water (Swenson, 1998) is not found in the Santa Monica Bay.

5.6.1.6 Economically Important Species Occurrence

5.6.1.6.1 Economically Important Marine Fish. Although the preferred habitat of many of the fishes listed below does not coincide with the vast expanses of sandy bottom habitat found in the marine environment near the ESPR Project, representative individuals have been recorded in the vicinity of ESGS during impingement and benthic trawl surveys. This is more than likely the result of the limited rocky/hard bottom habitat which is comprised of anthropogenic substrate in the ESGS vicinity. Therefore, they have been included as economically important fish for ESGS. Refer to Table 5.6-5 for a list of economically important species. The following text provides a description of the resources. Unless otherwise noted all information is based on Love, 1991; MBC, 1997b; and Eschmeyer et. al., 1983.

TABLE 5.6-5

POPULATION ESTIMATES AND RELATED FISHING INDUSTRY IMPACTS FOR ECONOMICALLY IMPORTANT SPECIES IN THE ESPR PROJECT VICINITY

Economically Important Species				Commercial Landings[3]	
Latin Name	**Common Name**	**Standing Crop[1]**	**Sport Landing[2]**	**Total Pounds**	**Dollars ($)**
Paralabrax clathratus	Kelp bass	0.71 to 2.94x10^6	15,910	Not commercially fished	Not commercially fished
Paralabrax nebulifer	Barred sand bass	1.77 to 7.36x10^6	38,000	Not commercially fished	Not commercially fished
Atractoscion nobilis	White seabass	0.57 to 2.36 x10^5	308	246,871	$410,131
Paralichthys californicus	California halibut	1.21 to 5.06x10^7	3,116	1,327,233	$3,252,993
Scomber japonicus	Chub mackerel	Unknown	17,004	19,051,155	$ 1,074,595
Trachurus symmetricus	Jack mackerel	Unknown	22	2,095,855	$187,210
Genyonemus lineatus	White croaker	0.82 to 3.42x10^8	Not reported	163,434	$131,096*
Umbrina roncador	Yellowfin croaker	0.53 to 2.18x10^6	Not reported	163,434	$131,096*
Anisotremus davidsonii	Sargo	Unknown	Not reported	Not commercially fished	Not commercially fished
Hyperprosopon argenteum	Walleye surfperch	0.54 to 2.24x10^6	Not reported	49,260	$67,661*
Engraulis mordax	Northern anchovy	2.08 to 8.67x10^8	Not applicable[4]	11,520,040	$1,292,912
Atherinopsis californiensis	Jacksmelt	Unknown	Not applicable[4]	564,096	$169,880
Sardinops sagax	Pacific sardine	Unknown	Not applicable[4]	130,443,236	$5,177,570
Seriphus politus	Queenfish	0.99 to 4.12x10^8	Not applicable[4]	Unknown	Unknown
Atherinops affinis	Topsmelt	Unknown	Not applicable[4]	Unknown	Unknown
Xenistius californiensis	Salema	Unknown	Not applicable[4]	Unknown	Unknown
Chromis punctipinnis	Blacksmith	1.30 to 5.42x10^6	Not applicable[4]	Unknown	Unknown
Leuresthes tenuis	Grunion	Unknown	Not reported	Unknown	Unknown
Panulirus interruptus	California spiny lobster	Unknown	Not reported	489,254	$3,613,612

* Commercial Landings report does not separate the different species of Surfperch and Croaker.

1 Standing crop = number of individuals estimated in Santa Monica Bay.

2 Sport landing = number of individuals caught at the sport landing.

3 Commercial landing = number of individuals caught, based on National Marina Fisheries Service 1999 Freshwater and Marine Commercial Landings.

4 Not applicable = because species are caught as baitfish only.

Kelp Bass (*Paralabrax clathratus*). The kelp bass ranges from Washington to southern Baja California. It is a solitary fish found mainly in or near kelp beds at depths between 8 to 70 feet. Prey items include anchovies, octopi, squid, crabs, and shrimp. The kelp bass is an important sport fishing resource.

Barred sand bass (*Paralabrax nebulifer*). The barred sand bass ranges from Central California to southern Baja California and is usually found on sand bottoms near rocks in waters less than 100 feet deep. Prey items include small fish and invertebrates. The barred sand bass is an important sport fishing resource and is one of the most common fish caught in the industry.

White seabass (*Atractoscion nobilis*). The white seabass ranges from Alaska to southern Baja California and is also found in the northern regions of the Gulf of California at a depth of 400 feet. This fish prefers schooling over rocky bottoms and in kelp beds. Juveniles can be found in bays and along sand beaches. Spawning occurs from March to August. Prey items include small fish such as anchovies and squid. The white seabass is an important resource to the sport fishing industry. Heavy fishing pressure in Southern California has prompted Hubbs/SeaWorld to try to reestablish this fish.

California halibut (*Paralichthys californicus*). The California halibut ranges from Washington to southern Baja California and is found mostly on sand bottoms or near rocks from the surf zone to a depth of 600 feet. Juveniles mainly inhabit sandy or mud bottoms of bays and estuaries. Prey items consist of anchovies, queenfish, and other small fish species. This species will move inshore during late winter and early spring to spawn. The California halibut is an important resource to both the sport and commercial fishing industries.

Chub mackerel (*Scomber japonicus*). The chub mackerel ranges worldwide in temperate and subtropical seas. It is a pelagic schooling fish that moves inshore from July to November, and offshore during the rest of the year. It exhibits vertical diel migration, moving up in the water column at night. It is preyed upon by larger predators, including marine mammals, sharks, and large fish. The chub mackerel is an important resource to both the sport and commercial fishing industries.

Jack mackerel (*Trachurus symmetricus*). The jack mackerel ranges from Alaska to southern Baja California. Although adult stages are pelagic offshore fish, juveniles will school near kelp beds and piers. Spawning occurs inshore and offshore. Prey items include small fish and crustaceans. The jack mackerel is an important resource to the sport fishing industry.

White croaker (*Genyonemus lineatus*). The white croaker ranges from British Columbia to southern Baja California and is found at depths of up to 600 feet but is generally found at depths shallower than 100 feet. They prefer muddy or sandy bottoms and are

considered a schooling fish. Prey items include anchovies and crustaceans. White croaker is an important sport fishing resource and is commonly fished from piers and boats.

Yellowfin croaker (*Umbrina roncador*). Yellowfin croaker ranges from Point Conception to the Gulf of California. This is a shallow water species found mostly at depths no greater than 25 feet. It is commonly found near the surf zone, bays, and tidal sloughs feeding on anchovies and crustaceans. The yellowfin croaker is an important sport fishing resource for surf zone fishermen.

Sargo (*Anisotremus davidsonii*). The sargo ranges from Central California to southern Baja California and inhabits rocky to rock-sand bottoms, often near kelp beds. They tend to school, feeding on crustaceans and mollusks. The sargo is an important sport fishing resource.

Walleye surfperch (*Hyperprosopon argenteum*). The walleye surfperch ranges from British Columbia to central Baja California. Fertilization is internal in these fish and they are viviparous. Habitat includes sandy areas near shore and around rocks and piers. At night they migrate into deeper waters. The walley surfperch is an important sport fishing resource.

Northern Anchovy *(Engraulis mordax*). The northern anchovy ranges from British Columbia to the tip of Baja California and is a pelagic schooling fish that can be found in large numbers both offshore and in nearshore waters. This species is one of the main prey items for many fish and marine birds. This species supports a bait fishery and is also caught commercially for processing into fishmeal and oil.

Jacksmelt *(Atherinopsis californiensis*). The jacksmelt ranges from Oregon to southern Baja California and is found in large schools nearshore over sandy bottoms. Jacksmelt maybe found near intake structures feeding on zooplankton. Other fish prey on this species. It is an important resource to the commercial fishing industry.

Pacific sardine *(Sardinops sagax*). The Pacific sardine ranges from the former USSR to the Gulf of California and is a pelagic schooling fish that preys mainly on plankton. Sardines are an important part of the diet of many marine fish, birds, and mammals. Historically, it is a very important commercial fish and is still valued as a bait fish.

Queenfish *(Seriphus politus*). The queenfish ranges from Oregon to south central Baja California and is a schooling fish found mainly over shallow sandy bottoms. Schools remain nearshore during the day but tend to seek deeper water at night. This species is an important prey item for the California halibut and other fishes. Historically, it has been one of the most abundant species trawled at several shallow sites within Santa Monica Bay.

Topsmelt *(Atherinops affinis*). Topsmelt range from British Columbia to the Gulf of California and are commonly found in bays, rocky areas, and in kelp beds. This is a schooling fish that is preyed upon by larger fish. The topsmelt provides an important sport fishing resource.

Salema *(Xenistius californiensis*). The salema ranges from Monterey, California to Peru. Salema school in loose aggregations around rocks and kelp. Depth range is from 4 to 35 feet. Spawning occurs in spring and summer. This species maybe preyed upon by California halibut and other larger predators. The salema provides an important sport fishing resource.

Blacksmith (*Chromis punctipinnis*). The blacksmith ranges from Monterey, California to central Baja California. This is an abundant fish found mainly over shallow rocky areas. They are schooling fish that form dense aggregations in mid-water. Blacksmith has been seen feeding on zooplankton around intake structures at other generating plants. It exhibits positive rheotaxis, and maintains position with the flow of water (Helvey and Dorn, 1981). The blacksmith provides an important sport fishing resource.

California grunion (*Leuresthes tenuis*). The California grunion is found in the vicinity of ESPR Project. The range of this species extends from San Francisco to Southern Baja California. These are a small fish that form large schools in the nearshore area. Late at night, during the spring and summer, adults cast themselves onto the beach and spawn in the sand. Observing this event has become a popular outing for many people. Impingement of this species was not recorded at ESGS in the last three years of data collection (MBC, 1999,1998,1997).

5.6.1.6.2 Economically Important Marine Invertebrates. The California lobster (*Panulirus interruptus*) is the only marine invertebrate of economic importance that has been found in the ESPR Project vicinity. It is listed in Table 5.6-5 and summarized below:

California spiny lobster (*Panulirus interruptus*). The California spiny lobster ranges from Central California to Central Baja California and is found mainly in rocky subtidal areas where it seeks shelter during the day. It is a primarily nocturnal, omnivorous feeder that will feed on fresh or decaying animals and plants (Ricketts et. al., 1994). The spiny lobster is an important sport and commercial fishing resource.

5.6.1.7 Special Environmental Areas in the Project Vicinity

Chevron Preserve. In 1986 Chevron set aside a butterfly preserve, specifically to protect and enhance habitat for the El Segundo blue butterfly. The preserve consists of a fenced 1.6-acre parcel located on the northwest side of the Chevron plant in El Segundo. This site is a highly degraded coastal dune remnant. The preserve provides a refuge for the blue with its required food plant, coastal buckwheat (*Eriogonum parvifolium*). The El Segundo blue

butterfly population here is estimated at about 400 individuals and 240 native food plants are present at the site. Chevron has introduced more food plants to improve the habitat degraded by disturbance and the presence of ornamental shrubs and nonnative weeds such as iceplant, tree tobacco, Russian thistle, and ripgut grass. Other native plants at this site include coyote brush, goldenbush, bladderpod, sand verbena and telegraph weed.

Ballona Wetlands. Ballona Creek, located approximately 4.5 miles to the north of ESGS, is a special wetland resource but is located outside of the ESPR Project study area (refer to Figure 5.6-1 for a depiction of the study area).

5.6.2 Environmental Consequences

Impacts on terrestrial and marine biological resources are discussed below. Biological impacts would be considered significant if they involved the loss of sensitive plant or animal species, or degradation of their habitat. The project would have a significant impact on vegetation and wildlife if it would:

- Cause a fish or wildlife population to drop below self-sustaining levels (CEQA Guidelines, Section 15065 (a)).

- Threaten to eliminate a plant or animal community (CEQA Guidelines, Section 15065 (a)).

- Substantially affect, reduce the number, or restrict the range of unique, rare, or endangered species of animal or plant, or the habitat of the species (CEQA Guidelines, Section 15065 (a), Appendix G (c), Appendix I (II.4.b) and (II.5.b)).

- Substantially diminish or reduce habitat for fish, wildlife, or plants (CEQA Guidelines, Section 15065 (a), Appendix G (t)).

- Interfere substantially with the movement of resident or migratory fish or wildlife species (CEQA Guidelines, Appendix G(d)).

- Change the diversity of species, or number of any species of plants (including trees, shrubs, grass crops, and aquatic plants) or animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects) (CEQA Guidelines, Appendix I (II.4.1) and (II.5.a)).

- Introduce new species of plants or animals into an area, or act as a barrier to the normal replenishment of existing species (CEQA Guidelines, Appendix I (II.4.c) and (II.5.c)).

- Deteriorate existing fish or wildlife habitat (CEQA Guidelines, Appendix I (II.5.d)).

These criteria have been used to evaluate the project's effects on plant communities, terrestrial wildlife, and marine resources. Impacts to biological resources (due to the construction and operation from the ESPR) are discussed below.

5.6.2.1 El Segundo Plant Site

5.6.2.1.1 Site Preparation and Construction Impacts. All of the ESPR construction activities will take place on land; no impacts to marine resources are anticipated. The proposed project will replace existing ESGS power generators with improved equipment. In order to modify the existing ESGS facility with improved equipment, the landscaped embankment located between the east side of the ESGS facility and Vista del Mar Boulevard may be graded. Any graded areas on the embankment will be landscaped with similar ornamental vegetation following construction grading activities. Refer to BIO-1 in Section 5.6.4 for further details regarding landscaping activities. Because the plant site area is void of native biological resources, construction activities including the grading (and re-landscaping) of ornamental vegetation, would not result in a significant impact to biological resources.

Air Emissions and Noise. Increases in air emissions (Section 5.2) and noise (Section 5.12) during construction of the proposed power plant will not cause significant affects to wildlife species. Wildlife species, such as bird species that fly overhead or rest on nearby transmission lines or ornamental trees have adapted to the existing noise levels at the existing ESGS.

5.6.2.1.2 Operations and Maintenance Impacts. Potential operations and maintenance impacts on biological resources are limited to air emission and noise impacts and collision hazards from the existing exhaust stacks. All of the potential effects would be on the terrestrial environment and are discussed below.

Air Emissions. Operation of the plant site will generate air emissions from fuel burning and will slightly increase existing ESGS annual emissions. This potential impact is considered less than significant because the plant site is already in an industrialized setting and wildlife species are adapted to the existing ESGS. Modeled ground-level concentrations of criteria air pollutants (e.g., particulate matter, nitrogen oxides, sulfur dioxide and carbon monoxide) resulting from emissions from the equipment at the ESPR Project, are below significance levels as discussed in Section 5.2 Air Quality. These significance levels, together with ambient air quality standards are set to protect public health and ecosystems. Because native vegetation is lacking within a 1-mile radius of the plant site (with the exception of the preserve discussed in the following sub-section), there are no impacts on vegetation and wildlife associated with air emissions and subsequent ground deposition. An analysis of nitrogen deposition is presented in the next section.

Air Emissions and the El Segundo Blue Butterfly. Populations of the El Segundo blue butterfly could be affected indirectly by changes in air emissions from the upgraded power plant. In a recent study, Weiss (1999) found that increased nitrogen levels were responsible for a change in the biodiversity of nearby nitrogen-limited serpentinite grasslands. Specifically, his findings indicated that increased nitrogen emissions resulted in increased nitrogen deposition, causing an increase in introduced (non-native) annual grasses. The additional nitrogen inputs benefited annual grasses at the expense of coastal buckwheat. Coastal buckwheat populations are an essential food plant for the El Segundo blue butterfly.

In his paper to Conservation Biology (1999), Weiss compared estimates of wet and dry nitrogen deposition in the Jasper Ridge Biological Preserve to those in south San Jose, California and related changes to habitat for the Checkerspot butterfly (*Euphydryas editha bayensis*), an endangered species. Nitrogen deposition at the Jasper Ridge locality was found to be much lower than that of the more industrialized south San Jose area. Jasper Ridge is upwind of most pollution sources and receives much of its air as northwest winds off the Pacific Ocean that pass over the virtually undeveloped Santa Cruz Mountains. Nitrogen deposition on Jasper Ridge soils was estimated at 4 to 6 kilograms per hectare per year (kg/ha/yr), whereas nitrogen deposition on soils in south San Jose are believed to be in excess of 10 to 15 kg/ha/yr. The relatively high deposition rate at south San Jose is believed to act as fertilizer that enhances the growth of annual grasses at the expense of native annual forbs such as coastal buckwheat. Increases in the production of annual grasses and corresponding decreases in native forbs (i.e., coastal buckwheat) can be reversed by the introduction of cattle which selectively graze on grasses, break up thatch by trampling, and cause soil disturbance which favors the growth of forbs.

Modeling results for the ESPR Project indicate that maximum nitrogen deposition levels adjacent to the ESGS facility would be 4.47 kg/ha/yr. As indicated in Figure 5.6-10, ESPR deposition rates are reduced to nearly undetectable levels within 1000 feet of the source. The deposition rate estimates are considered to be conservative as they reflect the worst case deposition rate. Several photochemical reactions must take place for the gaseous nitric acid, nitrogen dioxide, and ammonia to convert to aerosols that can deposit on the ground. The models assume these reactions will occur within the stack, when in fact, they take hours to occur within the atmosphere, by which time the plume has significantly dispersed. Blanchard et al. (1996) reported that the 1994 annual nitrate (the sum of gas phase HNO_3, NO_2, NH_3, NO_3, and particulate NH_4) deposition in Long Beach, an area with a coastal influence similar to El Segundo, was 13.46 kg/ha/yr.

The El Segundo blue butterfly is presently restricted to the LAX Dunes (El Segundo Blue Butterfly Preserve), the Chevron refinery dunes (Chevron El Segundo Blue Butterfly Preserve), and Malaga Cove. Results of air emissions modeling for the ESGS facility indicate that maximum annual nitrogen dioxide levels at the LAX dunes and Chevron Refinery dunes

will not exceed 0.03 kg/ha/yr, which represents less than 0.3 percent of the 1994 levels of nitrogen deposition reported for Long Beach. Malaga Cove, over 12 miles south of the project site, will not be affected by air emissions from the El Segundo facility. Deposition levels at the Chevron Preserve are well within the tolerance range of both vegetation and wildlife and impacts are not anticipated. Refer to Figure 5.6-10 for a graphic representation of nitrogen deposition isopleths.

Noise. Industrial sites adjacent to the existing ESGS, including the Chevron El Segundo Refinery, currently generate noise within the project study area. The proposed power plant redevelopment will generate noise similar to what already exists in the project area. These potential impacts are considered less than significant because the proposed plant site is located in an industrial, mostly unvegetated area.

Collision Hazards. Structures that may present a collision hazard to birds include two existing 210-feet high exhaust stacks that will be replaced with two 250-feet high stacks. The potential for collisions would be highest for migrating waterfowl or other species of birds, especially small insect-eaters that migrate at night. In many cases birds migrating at night are guided in part by constellations and can become confused by brightly-lighted tall structures. Fog or low cloud cover can further add to collision potential. The exhaust stacks may be lighted if the Federal Aviation Administration requires lighting for aviation safety. Birds collision hazard in the area of the project site are already high due to the existing high numbers of stacks. The number of potential collisions associated with the stacks at the proposed project facility cannot be quantified but are expected to be low because the existing and proposed taller stacks currently blend in with other existing tall structures. Additionally, there are no documented collisions in ESGS facility records.

5.6.2.1.3 Biological Consequences of Cooling Water Supply.

Existing Impacts of Entrainment on Fish and Invertebrates. Conclusions of the original 316(b) study completed in 1982 found that losses from entrainment and impingement will have no effect on the dynamics of the nearshore population (SCE, 1982). Results of the entrainment collections revealed that the top ranked species entrained were three 316(B) targeted species, comprising 83.8 percent of the total estimated larval entrainment. These three species listed in order of abundance, were the northern anchovy *(E. mordax)* comprising 41.8 percent, white croaker *(G. lineatus)* comprising 33.8 percent, and Queenfish *(S. politus)* comprising 8.2 percent of the total estimated larval entrainment. Other target species were insignificant in entrainment collections and comprised 0.3 percent of all entrained larvae. Species not listed as targeted species, which was comprised of 59 taxa, represented 14.2 percent of total entrained larvae. Larval entrainment peaked in the spring and in the early fall, with minimum entrainment occurred during the months of June and July. The magnitude of daily ichthyoplankton entrainment was effected by the time of day.

Peak entrainment occurred during dusk and early morning hours (pre-sunrise) and minimum entrainment occurred during mid-day.

Long-term population observations revealed no significant difference in abundance or distributions resulting from the operations at the existing ESGS. This result was based on the probability of survival for all targeted species populations being greater than 99.2 percent. Furthermore, it found that after a review and modeling of other best available technology for intake structures, and or modification of the existing velocity cap, that the incremental improvement in the probabilities of survival for alternative technologies, is less then 0.7 percent, with the majority less than 0.3 percent. Cost to achieve this incremental improvement, given the high existing probabilities of survival, was not justified.

In a more recent related study, DWP's 1997 316(b) document for the Scattergood Generating Station, which is located approximately 3500 feet to the north, also concluded that there was no adverse environmental impact on impingement and entrainment of fishes resulting from once-through cooling system (MBC, 1997a). Results of the entrainment portion of this study are presented below.

- **Phytoplankton/Zooplankton -** When the results of the required volume of water needed to entrain 5 percent of the source population were related back to the annual flow volumes it was concluded that the entrainment loss measured had no effect on selected zooplankton and phytoplankton populations (results are supplied in DWP 1997 316 (b) document for Scattergood, Haynes, and Harbor generating stations Appendix H). This result was supported by EPRI (1979), which reviewed 75 power plants nation wide and concluded the following:

  1) Entrainment had little impact on zooplankton and phytoplankton, and the local eco-system.

  2) Entrainment effects, when compared to source water volumes, would not be observable with reasonable sampling programs.

  3) Changes in intertrophic-level pathways would be negligible and system stability would not be disrupted.

  4) The existing database documents that the effects of entrainment are generally small and unlikely to cause ecosystem-wide effects.

  5) Zooplankton and phytoplankton studies are not necessary when the volume of water used is small in relation to the source body, such as those sited along the ocean or Great Lakes.

- **Ichthyoplankton -** Results for ichthyoplankton entrainment are presented in Table 5.6-6. The period of maximum impact is defined as the maximum period one generation of a given population is susceptible to entrainment loss. This period for the listed fish ranged from two to thirty days during which time 9,668 million gallons and 228,243 million gallons, respectively, of water would be needed to be entrained to support a 5 percent loss in the species population. All projected source water volumes represent only a small portion of estimated source water in Santa Monica Bay. Since total maximum flow at ESGS cannot exceed 607 million gallons per day no adverse effects are anticipated.

  Results of the approach that evaluated the "equivalent adult losses" of ichthyoplankton source water population are presented Table 5.6-7. Equivalent adult losses for abundant species varied from 9,880 to 94,600 individuals per species, and it was concluded that these losses were exceptionally small compared with populations within Santa Monica Bay. For source water population abundance refer to Table 5.6-8.

In conclusion, the study indicated that the entrainment losses measured had no detectable effects on selected zooplankton and phytoplankton source water populations (source waters were defined as the volume of water in Santa Monica Bay shoreward of the 90-foot depth contour).

TABLE 5.6-6

PROJECTED SOURCE WATER VOLUMES REQUIRED TO SUPPORT A 5% ICHTHYOPLAKTON ENTRAINMENT MORTALITY RATE AT SCATTERGOOD[1]

Fish Taxa	Period of Maximum Impact	Project Source Water Volume (m^3) at a 5% Impact Level
Fish Eggs		
Engraulis mordax	2 days	57,600,000
Sciaenid Species Complex	2 days	36,600,600
Pleuronichthys spp.	2 days	42,300,000
Fish Larvae		
Atherinid Species Complex	14 days	403,000,000
Engraulid Species Complex	28 days	791,000,000
Genyonemus lineatus	30 days	864,000,000
Seriphuys politus	25 days	720,000,000
Pleuronichthys spp.	28 days	806,000,000

[1] Source of table is from MBC (1997a).

TABLE 5.6-7

EQUIVALENT ADULT FISH LOSSES ASSOCIATED WITH AN ESTIMATED 5% ICHTHYOPLAKTON ENTRAINMENT MORTALITY RATE AT SCATTERGOOD[1]

Fish Taxa (Latin Names Only)	Equivalent Adult Fish Loss[2]
Fish Eggs	
Engraulis mordax	13,300
Sciaenid Species Complex	64,600
Fish Larvae	
Atherinid Species Complex	84,600
Engraulid Species Complex	9,880
Genyonemus lineatus	23,200
Seriphus politus	25,100
Total Equivalent Adult Loss	***250,680***

[1] Source of table is from MBC (1997a).
[2] Fish loss is measured by a number of individuals.

Existing Impacts of Impingement on Fish and Invertebrates. Impingement issues were dealt with shortly after the existing ESGS came on line. From July 1956 to June 1957 (before the installation of the velocity cap) 272.2 tons of fish were impinged. Within the year following the installation of the velocity cap, fish impingement dropped to 14.95 tons (Weight, 1958). The change was immediate and represented a reduction of 95 percent. On-going impingement monitoring data attest to the effectiveness of the velocity cap. Ongoing monitoring demonstrates that impingement is approximately 14.95 tons per year.

An in-depth analysis of fish and invertebrate impingement monitoring for 1999, 1998, and 1997 are contained in the NPDES monitoring reports supplied in Appendix H. Excerpts from the most recent findings for Units 1 and 2 and Units 3 and 4 once-through cooling systems are presented in Tables 5.6-8 through 5.6-12. Increased impingement for Units 3 and 4 are a result of a higher flow rate, and increased operational days per year compared to Units 1 and 2. Historically (from 1997 through 1999), seven species out of 53 species comprised 96 percent of total individuals impinged during heat treatment and normal operations at ESGS (Units 1 and 2, and Units 3 and 4 combined). Table 5.6-13 relates this information to commercial fishing, sport fishing, or standing crop figures. Units 3 and 4 data are included here to reflect the ESGS Repower Project, since the new units are projected to operate at a

greater capacity and operational days per year will increase. A discussion of project annual flow vs. current flow volumes is described below.

Projected Impacts of Entrainment and Impingement Resulting from the ESPR on Fish and Invertebrates. After the removal of Units 1 and 2, the proposed combined cycle plant that consists of Unit 5, 6, and 7 (referred to as the ESPR Project) will utilize the same once-through cooling system previously utilized by Units 1 and 2. The ESPR is designed to generate nearly twice the amount of megawatts compared to the defunct Units 1 and 2, while utilizing the same amount of cooling water. As a result, water volume used for equal megawatts generated, will be reduced by almost 50 percent. The ESPR Project will not include any modifications to this once-through cooling system. Location, flow rates, number of in-use circulating pumps, type of circulating pumps and maximum capacity (207 million gallons per day) will remain the same. The existing intake structure uses and will continue to use a velocity cap (refer to Figure 5.6-4 for a visual depiction of the intake structure and velocity cap). The velocity cap is recognized as one of the best technologies available to minimize impacts to marine resources, as set forth in the proposed regulations for cooling water intake structures for new facilities published in the August 10, 2000 Federal Register on page 49078.

As a result of increased efficiency of ESPR, the new units will essentially become baseload units for ESGS and Units 3 and 4 will be used when power demand dictates. The baseload units are therefore projected to increase in operational days per year compared to the yearly operational days for Units 1 and 2, (see Section 5.5 Water Resources for projection statistics). This will result in an overall increase in volume on an annual base for the ESPR even though daily volumes will not exceed the permitted 207 million gallons per day. This increase will be partially offset by a predicted decrease in operational days per year for Units 3 and 4 (as forecasted by power demands which are subject to change), which uses approximately two times the daily water volume (398million gallons per day) compared to the ESPR. Even if this offset were not to occur, any increase in annual volume is within existing NPDES permit requirements and does not cause any significant impacts.

As detailed in Section 5.5, Water Resources, and Table 5.5-4, projected water volume for the ESPR (with all units running 93 percent of the year) and Units 3 and 4, is 153,846 million gallons per year, which equates to a mean daily flow of 421 million gallons per day. When compared to the current permitted volume of 220,825 million gallons per year or 607 million gallons per day, this operational level is 30 percent under the current permitted annual flow. Annual volume for 1999 was 140,430 million gallons per year (mean volume of 385 million gallons per day). In comparison to the annual volume for 1999, the ESPR is projected to have an increase flow of 10 percent. This small incremental increase in projected annual volume

TABLE 5.6-8

ABUNDANCE AND BIOMASS OF FISH IMPINGEMENT DURING HEAT TREATMENT AND NORMAL OPERATIONS AT ESGS UNITS 1 AND 2 INTAKE STRUCTURES (1999)[1]

Species (Latin Name)	Units 1 and 2 Heat Treatment		Units 1 and 2 Monitored Normal Operations		Units 1 and 2 Extrapolated Normal Operations		Units 1 and 2 Combined Normal Operations and Heat Treatment	
	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]
Fish								
Cheilotrema saturnum	33	6.774	-	-	-	-	33	6.744
Porichthys notatus	-	-	1	0.052	31	1.588	31	1.588
Paralabrax clathratus	25	8.357	-	-	-	-	25	8.357
Xenistius californiensis	24	1.678	-	-	-	-	24	1.678
Umbrina roncador	21	3.588	-	-	-	-	21	3.588
Atherinops affinis	8	0.120	-	-	-	-	8	0.120
Phanerodon furcatus	7	1.698	-	-	-	-	7	1.698
Paralabrax nebulifer	5	4.070	-	-	-	-	5	4.070
Embiotoca jacksoni	4	1.969	-	-	-	-	4	1.969
Rhacochilus vacca	2	0.843	-	-	-	-	2	0.843
Anisotremus davidsonii	1	0.134	-	-	-	-	1	0.1334
Balistes polylepis	1	2.000	-	-	-	-	1	2.000
Chromis punctipinnis	1	0.104	-	-	-	-	1	0.104
Hermosilla azurea	1	0.478	-	-	-	-	1	0.478
Myliobatis californica	1	7.000	-	-	-	-	1	7.000
Rhacochilus toxotes	1	0.596	-	-	-	-	1	0.596
Survey Totals	**135**	39.401	1	0.052	31	1.588	166	40.997
Number of species	**15**		1		1		16	
Invertebrates								
Cancer antennarius	2	0.008	11	1.640	336	50.086	338	50.094
Polyorchi penicillata	-	-	1	0.500	31	15.270	31	15.270
Lysmata californica	10	0.022	-	-	-	-	10	0.022

TABLE 5.6-8
(CONTINUED)

Species (Latin Name)	Units 1 and 2 Heat Treatment		Units 1 and 2 Monitored Normal Operations		Units 1 and 2 Extrapolated Normal Operations		Units 1 and 2 Combined Normal Operations and Heat Treatment	
	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]
Invertebrates								
Panilirus interruptus	10	5.420	-	-	-	-	10	5.420
Pachygrapsus crassipes	4	0.010	-	-	-	-	4	0.010
Parastichopus sp.	1	0.068	-	-	-	-	1	0.068
Survey Totals[1,2,& 3]	**27**	**5.528**	**12**	**2.140**	**366**	**65.356**	**393**	**70.884**
Total Species	**5**		**2**				**6**	

Note: Extrapolation based on flow data, using a multiplier (30.54) based on the number of sample days and monthly flow information.

1. Source of table is from NPDES (1999).
2. Abundance is measured in numbers of individuals.
3. Biomass is measured in tons.

TABLE 5.6-9

ABUNDANCE AND BIOMASS OF FISH IMPINGEMENT DURING HEAT TREATMENT AND NORMAL OPERATIONS AT ESGS UNITS 3 AND 4 INTAKE STRUCTURES (1999)[1]

Species (Latin Name)	Units 3 and 4 Heat Treatment		Units 3 and 4 Monitored Normal Operations		Units 3 and 4 Extrapolated Normal Operations		Units 3 and 4 Combined Normal Operations and Heat Treatment	
	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]
Fish								
Anisotremus davidsonii	310	179.020	-	-	-	-	310	179.020
Sardinops sagax	250	11.180	-	-	-	-	250	11.180
Xenistius californiensis	124	7.260	2	0.030	55	0.818	179	8.078
Paralabrax clathratus	126	50.410	-	-	-	-	126	50.410
Cheilotrema saturnum	87	21.760	-	-	-	-	87	21.760
Umbrina roncador	30	7.856	-	-	-	-	30	7.856
Heterostichus rostratus	-	-	1	0.028	27	0.764	27	0.764
Porichthys notatus	-	-	1	0.063	27	1.719	27	1.719
Paralabrax nebulifer	16	7.092	-	-	-	-	16	7.092
Scomber japonicus	15	1.006	-	-	-	-	15	1.006
Embiotoca jacksoni	14	6.318	-	-	-	-	14	6.318
Rhacochilus vacca	14	6.790	-	-	-	-	14	6.790
Chromis punctipinnis	13	0.828	-	-	-	-	13	0.828
Atherinopsis californiensis	12	0.800	-	-	-	-	12	0.800
Medialuna californiensis	12	5.050	-	-	-	-	12	5.050
Rhacochilus toxotes	12	6.620	-	-	-	-	12	6.620
Hypsoblennius gilberti	10	0.040	-	-	-	-	10	0.040
Scorpaena guttata	3	0.678	-	-	-	-	3	0.678
Menticirrhus undulatus	2	1.333	-	-	-	-	2	1.333
Atractoscion nobilis	1	0.799	-	-	-	-	1	0.799
Cephaloscyllium ventriosum	-	-	1	2.500	1	2.500	1	2.500
Heterodontus francisci	1	5.520	-	-	-	-	1	5.520
Rhinobatos productus	1	4.500	-	-	-	-	1	4.500
Triakis semifasciata	1	8.000	-	-	-	-	1	8.000
Survey Totals	**1054**	**332.860**	**5**	**2.621**	**110**	**5.801**	**1164**	**338.661**
Total Species	**21**		**4**		**4**		**24**	

TABLE 5.6-9
(CONTINUED)

Species (Latin Name)	Units 3 and 4 Heat Treatment		Units 3 and 4 Monitored Normal Operations		Units 3 and 4 Extrapolated Normal Operations		Units 3 and 4 Combined Normal Operations and Heat Treatment	
	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]
Invertebrates								
Cancer antennarius	1	0.037	1032	94.850	28153	2587.508	28154	2587.545
Thetys vagina	-	-	2032	91.500	6096	274.500	6096	274.500
Cancer anthonyi	1127	25.250	4	0.300	109	8.184	1236	33.434
Panulirus interruptus	28	15.640	2	0.500	55	13.640	83	29.280
Navanax inermis	3	0.015	2	0.007	55	0.191	58	0.206
Octopus bimaculatus/ bimaculoides	10	9.250	1	1.200	27	32.736	37	41.986
Portunus xantusii	-	-	1	0.018	27	0.491	27	0.491
Pyromaia tuberculata	18	0.056	-	-	-	-	18	0.056
Heptacarpus palpator	10	0.015	-	-	-	-	10	0.015
Penaeus californiensis	1	0.023	-	-	-	-	1	0.023
Survey Totals	**1198**	**50.286**	**3074**	**188.375**	**34522**	**2917.250**	**35720**	**2967.536**
Total Species	**8**		**7**				**10**	

Note: Extrapolation based on flow data, using a multiplier (30.54) based on the number of sample days and monthly flow information.

[1.] Source of table is from NPDES (1999).

[2.] Abundance is measured in numbers of individuals.

[3.] Biomass is measured in tons.

TABLE 5.6-10

ABUNDANCE AND BIOMASS OF FISH IMPINGEMENT DURING HEAT TREATMENT AND NORMAL OPERATIONS AT ESGS UNITS 1 AND 2 INTAKE STRUCTURES (1998)[1]

	Units 1 and 2 Heat Treatment		Units 1 and 2 Monitored Normal Operations		Units 1 and 2 Extrapolated Normal Operations		Units 1 and 2 Combined Normal Operations and Heat Treatment	
Species	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**
Invertebrates								
Cancer antennarius	-	-	2	0.550	28	7.633	28	7.633
Octopus bimaculatus/ bimaculoides	-	-	1	2.000	14	27.758	14	27.758
Survey Totals	0	0	3	2.550	42	35.391	42	35.391
Total Species	0		2				2	

Note:

- No heat treatments occurred at Units 1 and 2 during the survey year.
- Extrapolation based on flow data, using a multiplier (30.54) based on the number of sample days and monthly flow information.

1. Source of table is from NPDES (1998).
2. Abundance is measured in numbers of individuals.
3. Biomass is measured in tons.

TABLE 5.6-11

ABUNDANCE AND BIOMASS OF FISH IMPINGEMENT DURING HEAT TREATMENT AND NORMAL OPERATIONS AT ESGS UNITS 3 AND 4 INTAKE STRUCTURES (1998)[1]

Species (Latin Name)	Units 3 and 4 Heat Treatment		Units 3 and 4 Monitored Normal Ops		Units 3 and 4 Extrapolated Normal Ops		Units 3 and 4 Combined NO and HT	
	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]	Abundance[2]	Biomass[3]
Fish								
Aterinepsis californiensis	978	94.550	10	0.472	216	10.174	1194	104.724
Seriphus politus	1027	13.920	1	0.036	222	0.776	1049	14.696
Xenistius californiensis	1031	15.840	-	-	-	-	1031	
Sardinops sagax	185	11.250	1	0.037	22	0.798	207	12.048
Anisotremus davidsonii	204	92.322	-	-	-	-	204	92.322
Cheilotrema saturnum	155	13.260	1	0.150	22	3.233	177	16.493
Oxyjulis californica	66	18.386	-	-	-	-	66	18.386
Peprillus simillimus	1	0.333	3	1.309	65	28.215	66	28.548
Embiotica jacksoni	25	0.281	1	0.042	22	0.905	47	1.186
Paralabrax clathratus	46	7.500	-	-	-	-	46	7.500
Heterostichus rostratus	44	1.306	-	-	-	-	44	1.306
Hyperprosopon argenteum	38	11.890	-	-	-	-	38	11.890
Genyonemus lineatus	29	26.130	-	-	-	-	29	26.130
Porichthys notatus	7	3.228	1	0.374	22	8.061	29	11.289
Heterodontus francisci	3	0.107	1	0.032	22	0.690	25	0.797
Pleuronichthys verticalis	3	0.590	1	0.318	22	6.854	25	7.444
Menticirrhus undulatus	2	0.800	1	0.285	22	6.143	24	6.943
Atherinops affinis	-	-	1	0.040	22	0.862	22	0.862
Pleuronichthys ritteri	-	-	1	0.195	222	4.203	22	4.203
Chromis punctipinnis	21	0.260	-	-	-	-	21	0.260
Scorpaena guttata	21	5.660	-	-	-	-	21	5.660

TABLE 5.6-11
(CONTINUED)

Species (Latin Name)	Units 3 and 4 Heat Treatment		Units 3 and 4 Monitored Normal Ops		Units 3 and 4 Extrapolated Normal Ops		Units 3 and 4 Combined NO and HT	
	Abundance[2]	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**
Atractoscion nobilis	18	2.445	-	-	-	-	18	2.445
Rhacochilus toxotes	18	6.372	-	-	-	-	18	6.372
Scomber japonicus	9	0.935	-	-	-	-	9	0.935
Urolophus halleri	5	3.700	-	-	-	-	5	3.700
Umbrina roncador	4	0.236	-	-	-	-	4	0.236
Paralabrax nebulifer	3	1.580	-	-	-	-	3	1.580
Scorpaenichthys marmoratus	3	1.271	-	-	-	-	3	1.271
Damalichthys vacca	2	0.911	-	-	-	-	2	0.911
Platyrhinoidis triseriata	2	0.012	-	-	-	-	2	0.012
Engraulis mordaxi	1	0.095	-	-	-	-	1	0.095
Girella nigricans	1	0.082	-	-	-	-	1	0.082
Medialuna californiensis	1	0.033	-	-	-	-	1	0.033
Myliobatis californica	1	0.070	-	-	-	-	1	0.070
Paralichthys californicus	1	0.040	-	-	-	-	1	0.040
Sebastes auriculatus	1	0.461	-	-	-	-	1	0.461
Sphoeroides annulatus	-	-	1	0.050	1	0.050	1	0.050
Shyraena argentea	1	0.018	-	-	-	-	1	0.018
Survey Totals	**3957**	**335.874**	**24**	**3.340**	**497**	**70.964**	**4454**	**406.838**
Total Species	**35**		**13**				**38**	
Invertebrates								
Cancer antennarius	10	0.030	194	6.050	4182	130.405	4192	130.435
Cancer anthonyi	842	47.150	15	0.380	323	8.191	1165	55.341
Lysmata californica	53	0.077	-	-	-	-	53	0.077
Octopus bimaculatus/bimaculoides	4	2.070	1	0.220	22	4.742	26	6.812
Pachygrapsus crassipes	30	0.331	-	-	-	-	30	0.331

TABLE 5.6-11
(CONTINUED)

Species (Latin Name)	Units 3 and 4 Heat Treatment		Units 3 and 4 Monitored Normal Ops		Units 3 and 4 Extrapolated Normal Ops		Units 3 and 4 Combined NO and HT	
	Abundance[2]	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**	**Abundance[2]**	**Biomass[3]**
Panulirus interruptus	9	7.000	-	-	-	-	9	7.000
Portunus xantusii	12	0.046	1	0.034	22	0.733	34	0.779
Pyromaia tuberculata	-	-	1	0.012	22	0.259	22	0.259
Strongylocentrotus purpuratus	1	0.001	-	-	-	-	1	0.001
Survey Totals	**961**	**56.705**	**212**	**6.696**	**4570**	**144.329**	**5531**	**201.034**
Total Species	**8**		**5**				**9**	

Notes:

- Extrapolation based on flow data, with 237.1 operating days of flow calculated from monthly flow information.
- Note: Extrapolation based on flow data, using a multiplier (30.54) based on the number of sample days and monthly flow information.

1. Source of table is from NPDES (1998).
2. Abundance is measured in numbers of individuals.
3. Biomass is measured in tons.

TABLE 5.6-12

ABUNDANCE AND BIOMASS OF FISH AND INVERTEBRATE IMPINGEMENT DURING HEAT TREATMENT AT ESGS UNITS 1 AND 2 AND UNITS 3 AND 4 INTAKE STRUCTURES (1997)[1]

Species (Latin Name)	Units 1 and 2		Units 3 and 4		Total		% Comp.	
	Abundance	Biomass	Abundance	Biomass	Abundance	Biomass	Abundance	Biomass
Fish								
Aterinepsis californiensis	7	1.257	6723	687.915	6730	689.172	32.07	40.29
Seriphus politus	13	1.097	4829	124.028	4842	125.125	23.07	7.32
Xenistius californiensis	10	0.564	2826	150.836	2836	151.400	13.51	8.85
Hyperprosopon argenteum	2	0.144	1262	68.951	1264	69.095	6.02	4.04
Genyonemus lineatus	-	-	1174	64.760	1174	64.760	5.59	3.79
Sardinops sagax	8	0.578	1149	27.066	1157	27.644	5.51	1.62
Engraulis mordax	7	0.153	952	13.607	959	13.760	4.57	0.80
Leuresthes tenuis	-	-	484	7.800	484	7.800	2.31	0.46
Paralabrax clathratus	40	1.466	436	180.488	476	181.954	2.27	10.64
Atherinops affinis	-	-	240	8.329	240	8.329	1.14	0.49
Cheilotrema saturnum	1	0.108	128	20.459	129	20.567	0.61	1.20
Chromis punctipinnis	19	0.728	83	7.370	102	8.098	0.49	0.47
Umbrina roncador	1	0.420	87	11.475	88	11.895	0.42	0.70
Myliobatis californica	2	0.850	76	189.240	78	190.090	0.37	11.11
Paralabrax nebulifer	7	0.276	53	19.9633	60	20.239	0.29	1.18
Damalichthys vacca	2	0.459	56	15.593	58	16.052	0.28	0.94
Anisotremus davidsonii	-	-	48	18.879	48	18.879	0.23	1.10
Scorpaena guttata	1	0.599	38	12.660	39	13.259	0.19	0.78
Cymatogaster aggregata	-	-	30	0.607	30	0.607	0.14	0.04
Rhacochilus toxotes	-	-	27	12.096	27	12.096	0.13	0.71
Phanerodon furcatus	9	0.410	17	1.057	26	1.467	0.12	0.09
Embiotoca jacksoni	5	0.925	16	5.674	21	6.599	0.10	0.39

TABLE 5.6-11
(CONTINUED)

Species (Latin Name)	Units 1 and 2		Units 3 and 4		Total		% Comp.	
	Abundance	Biomass	Abundance	Biomass	Abundance	Biomass	Abundance	Biomass
Atractoscion nobilis	-	-	17	3.995	17	3.995	0.08	0.23
Medialuna californiensis	-	-	15	5.263	15	5.263	0.07	0.31
Peprillus simillimus	-	-	14	0.488	14	0.488	0.07	0.03
Oxyjulis californica	6	0.181	3	0.253	9	0.434	0.04	0.03
Rhinobatos productus	-	-	8	7.844	8	7.844	0.04	0.46
Menticirrhus undulatus	-	-	7	2.374	7	2.374	0.03	0.14
Halichoeres semicinctus	1	0.375	5	1.764	6	2.139	0.03	0.13
Paralichthys californicus	-	-	6	5.630	6	5.630	0.03	0.33
Urolophus halleri	-	-	6	3.221	6	3.221	0.03	0.19
Girella nigricans	-	-	5	3.960	5	3.960	0.02	0.23
Pleuronichthys ritteri	1	0.088	4	0.298	5	0.386	0.02	0.02
Scomber japonicus	-	-	5	0.612	5	0.612	0.02	0.04
Hypsoblennius gilberti	2	0.020	1	0.007	3	0.027	0.01	0.00
Trachurus symmetricus	-	-	3	0.581	3	0.581	0.01	0.03
Scorpaenichthys marmoratus	1	2.636	1	0.510	2	3.146	0.01	0.18
Sebastes auriculatus	2	0.205	-	-	2	0.205	0.01	0.01
Heterodontus francisci	-	-	1	2.6990	1	2.690	0.00	0.16
Mustelus californicus	-	-	1	1.200	1	1.200	0.00	0.07
Paralabrax maculatofasciatus	-	-	1	0.020	1	0.20	0.00	0.00
Platyrhinoidis triseriata	-	-	1	0.841	1	0.841	0.00	0.05
Sebastes rastrelliger	-	-	1	0.373	1	0.373	0.00	0.02
Sphyraena argenta	-	-	1	0.046	1	0.046	0.00	0.00
Stereolepsis gigas	-	-	1	6.100	1	6.100	0.00	0.36
Survey Totals **Total Species**	147 22	13.539	20841 44	1696.923	20988 45	1710.462		
Invertebrates								
Lysmata californica	2704	14.400	177	0.363	2881	14.763	36.45	9.46
Pisaster ochraceus	76	3.757	2132	21.460	2208	25.217	27.94	16.16

TABLE 5.6-11
(CONTINUED)

Species (Latin Name)	Units 1 and 2		Units 3 and 4		Total		% Comp.	
	Abundance	Biomass	Abundance	Biomass	Abundance	Biomass	Abundance	Biomass
Cancer anthonyi	223	37.370	1138	25.385	1351	64.755	17.09	40.21
Pyromaia tuberculata	-	-	704	1.750	704	1.750	8.91	1.12
Cancer antennarius	53	10.550	221	3.530	274	14.080	3.47	9.02
Pachygrapsus crassipes	13	0.178	193	1.396	206	1.576	2.61	0.01
Cancer gracilis	6	0.307	90	1.032	96	1.339	1.21	0.86
Betaeus longidactylus	56	0.096	-	-	56	0.096	0.71	0.06
Octopus bimacul(atus)/loides	16	2.334	19	12.150	35	14.484	0.44	9.28
Panulirus interruptus	4	0.194	24	17.020	28	17.2154	0.35	11.03
Heptacarpus palpator	4	0.004	11	0.082	15	0.086	0.19	0.06
Cancer amphioetus	-	-	12	0.060	12	0.060	0.15	0.04
Portunus xantusii	-	-	10	0.083	10	0.083	0.13	0.05
Loxorhynchus grandis	-	-	6	2.034	6	2.034	0.08	1.30
Parastichopus californicus	5	0.239	1	0.031	6	0.270	0.08	0.17
Navanax inermis	-	-	5	0.041	5	0.041	0.06	0.03
Alpheus sp.	4	0.004	-	-	4	0.004	0.05	0.00
Parastichopus parvimensis	-	-	4	0.124	4	0.124	0.05	0.08
Cancer productus	-	-	2	0.095	2	0.095	0.03	0.06
Cancer jordani	-	-	1	0.004	1	0.004	0.01	0.00
Survey Totals **Total Species**	**3164** **12**	**69.433**	**4740** **18**	**86.640**	**7904** **20**	**156.073**		

Note: 0.00 < 0.005.
No data for normal operation.

TABLE 5.6-13

IMPINGEMENT RESULTS PER AVERAGE NUMBER OF FISH AND BIOMASS[1]

Species (Latin Name)	Average Impinged/Year[3]	Average Biomass/Year (lb)[3]	Number of Fish Caught Per Fishing Industry			Percent (%) Impinged Commercially
			Commercial Take[4]	Standing Crop[5]	Sport Fishing[6]	
Atherinopsis californiensis	2645	583	564,096	none	none	0.10%
Seriphus politus	2047	112	none	≈100,000,000	none	>0.01%
Xenisitius californiensis	1357	130	unknown	unknown	unknown	unknown
Hyperprosopon argenteum	434	35	49,260	≈100,000,000	none	>0.04%
Genyonemus Lineatus	420	66	163,434	none	none	0.04%
Engraulis mordax	320	37	11,520,040	none	none	>0.01%
Sardinops sagax	161	9	130,443,236	none	none	>0.01%

1 Table provides an average of impinged fish species at the ESGS for years 1997, 1998, and 1999; the numbers are correlated to statistics on commercially important species.
2 Most dominate species that comprise 96% of all species impinged.
3 Data extrapolated to reflect total flow per year.
4 Standing crop = number of individuals estimated in Santa Monica Bay.
5 Sport landing = number of individuals caught at the sport landing.

of water used for the once through cooling system resulting from the ESPR is not anticipated to effect the results and conclusions drawn from the existing environmental baseline, and therefore, will not have adverse or significant effects on fish or invertebrates. The existing operation at ESGS has also been carefully evaluated over the past years and its operations have been determined to not have an adverse or significant effect on fish or invertebrates.

Fish populations have been demonstrated to support high levels (20 to 25 percent of the standing crop per year) of continuous fishery pressure (Roedel, 1975). ESGS 316 (b) document concluded that: combined with a natural mortality rate of 35 percent, A typical R_c (probability of survival) value calculated for the fisheries industry would equate to a range from 1 to 21 percent. In comparison, the R_c values calculated during the ESGS 316 (b) study for all targeted species at ESGS were greater then 99 percent. It was estimated that even a 10-fold increase in intake loss would result in an only R_c value near 82 percent. Thus, intake losses resulting from a 0.1- fold increase in annual flow produced from the ESPR project are insignificant in comparison to potential fishery impacts.

The DWP's 1997 316(b) document for Scattergood concluded that there are no significant impacts to ichythoplankton, zooplankton, and phytoplankton populations resulting from their operations. Scattergood Generating Station and ESGS are directly comparable based on: (1) similar annual volumes (Scattergood intake volume of 495 million gallons per day vs. ESGS projected volume of 421million gallons per day which includes the new and the old station flow rate), (2) close proximity of Scattergood and ESGS, (3) similar design of the once-through cooling water system, and (4) similar habitat surrounding the intake structure. Therefore, DWP's results indicate that the ESPR will not likely have significant adverse effects on entrainment and impingement of fish and invertebrates.

Results of current NPDES monitoring have continually shown that fish and invertebrate impingement for all units at ESGS do not effect the beneficial resources of Santa Monica Bay. Impingement resulting from heat treatments is generally higher for Units 3 and 4 compared to Units 1 and 2. This result can be attributed to greater utilization of these units and frequency of heat treatments. When the ESPR becomes the baseload unit, the resulting increase in utilization and frequency of heat treatments may increase impingement for the ESPR. Based on Units 3 and 4 data, it is not projected to have an adverse effect on the beneficial resources of Santa Monica Bay. However, mitigation measures deigned to reduce this impingement are presented in BIO-2 and BIO-3 of Section 5.6.4.

Preliminary results of the validation study indicate that the diversity value and concentrations of larvae appear to be similar between King Harbor and the area around ESGS (Vantuna Research Group, 2000). Completion of the validation study is expected by early January 2001. Table 5.6-14 is an excerpt of the King Harbor data. Compiled here are the species

TABLE 5.6-14

ECONOMICALLY IMPORTANT ICHTHYOPLANKTON CONCENTRATIONS FOUND IN KING HARBOR[1,2]

Species	Common Name	Number of Individuals/ km^3	Date of Sample
Atherinops affinis	Topsmelt	11.50	6/4/97
Atherinops affinis	Topsmelt	18.14	5/21/97
Atherinopsis californiensis	Jacksmelt	10.74	1/21/98
Atherinopsis californiensis	Jacksmelt	37.10	5/21/97
Atherinopsis californiensis	Jacksmelt	40.80	3/27/97
Atherinopsis californiensis	Jacksmelt	251.13	9/18/96
Atherinopsis californiensis	Jacksmelt	143.31	7/30/96
Atherinopsis californiensis	Jacksmelt	16.25	4/16/96
Atherinopsis californiensis	Jacksmelt	7.96	3/19/96
Atherinopsis californiensis	Jacksmelt	4.16	2/27/96
Engraulis mordax	Northern Anchovy	12.79	3/2/98
Engraulis mordax	Northern Anchovy	9.60	1/21/98
Engraulis mordax	Northern Anchovy	12.68	12/16/97
Engraulis mordax	Northern Anchovy	12.79	11/18/97
Engraulis mordax	Northern Anchovy	14.57	10/14/97
Engraulis mordax	Northern Anchovy	47.09	9/9/97
Engraulis mordax	Northern Anchovy	12.00	7/8/97
Engraulis mordax	Northern Anchovy	22.80	5/21/97
Engraulis mordax	Northern Anchovy	121.81	11/13/96
Engraulis mordax	Northern Anchovy	31.90	3/19/96
Engraulis mordax	Northern Anchovy	17.94	2/27/96
Engraulis mordax	Northern Anchovy	7.35	1/25/96
Genyonemus lineatus	White Croaker	28.90	3/2/98
Genyonemus lineatus	White Croaker	48.01	1/21/98
Genyonemus lineatus	White Croaker	22.67	5/21/97
Genyonemus lineatus	White Croaker	59.08	11/13/96
Genyonemus lineatus	White Croaker	20.88	4/16/96
Genyonemus lineatus	White Croaker	30.15	3/19/96
Genyonemus lineatus	White Croaker	8.33	2/27/96
Genyonemus lineatus	White Croaker	29.41	1/25/96
Paralabrax sp.	No Common Name	13.21	9/9/97
Paralabrax sp.	No Common Name	48.01	7/8/97
Paralabrax sp.	No Common Name	15.70	6/4/97
Paralichthys californicus	California halibut	13.05	3/2/98

TABLE 5.6-14
(CONTINUED)

Species	Common Name	Number of Individuals/ km^3	Date of Sample
Paralichthys californicus	California halibut	*12.85*	*12/16/97*
Paralichthys californicus	California halibut	*10.60*	*10/14/97*
Paralichthys californicus	California halibut	*15.24*	*9/9/97*
Paralichthys californicus	California halibut	*10.33*	*3/19/96*
Paralichthys californicus	California halibut	*7.35*	*1/25/96*
Sardinops sagax	Pacific Sardine	*8.42*	*3/27/97*
Seriphus politus	Queenfish	114.95	7/8/97
Seriphus politus	Queenfish	9.64	9/17/96

[1] Source of table is based on unpublished data from Vantuna Research Group. The data provided includes results from January 1996 through March 1998 surveys.

[2] Data analysis is ongoing for years 1998-2000 and is currently unavailable.

found in the ichthyoplankton that belong to the seventeen targeted species as called out by the Scattergood 1997 update document. Since 1996, eight of the seventeen targeted species were found. The abundance and occurrence were variable, but higher densities were generally recorded during spring and fall. The timing of this increase corresponds to timeframes when it is projected that the operations of the ESGS would be lower, thus minimizing the probability of decreased population survival resulting from the proposed ESPR facility.

Projected Impacts on Economically Important Resources. As a result of using existing intake and discharge structures with no change to daily flow rates or thermal discharge, existing marine habitats are expected to remain unchanged as a result of the proposed ESPR. Ongoing monitoring as required by the LARWQCB NPDES requirements has demonstrated that beneficial uses of Santa Monica Bay are not adversely affected by the existing ESGS and consequently should apply to the proposed ESPR. Impingement data for normal and heat treatments further demonstrates that the abundance of economically important species impinged represents in insignificant percentage of the standing crop and/or sport and commercial take (Table 5.6-12). Thus, intake losses are nearly undetectable and, therefore, insignificant in comparison to potential fishery impacts.

Impacts on Marine Mammals. Current impacts to marine mammals from the existing ESGS intake structure are described and listed below and used to estimate ESPR impacts. Existing impacts from the ESGS to marine mammals include an occasional marine mammal found in the forebay area of the intake structure. Although the existing pipe is unobstructed and an animal would typically swim away from the structure unaided, personnel at the ESGS are instructed to manually remove any stranded animal. Under the existing operating conditions of the ESGS

power plant, a total of 15 marine mammals have been found in the forebay over the past 22 years. One third, or five of these animals were found alive and were released unharmed. The remaining ten animals were found dead, and it appears that these animals were likely dead when they entered the intake pipe, as documented in ESGS records that describe each incident in a report by the NMFS. It is not possible to determine the exact cause of their deaths using these records. The following bullets list existing impacts to marine mammals:

- Five harbor seals have been entrained at or found on the grounds of the existing ESGS facility since 1978, three of which were released unharmed. One of these harbor seals entered the station on land under the fence, and was returned to the beach. One harbor seal was found dead and removed from the screenwell on April 21, 1981. On August 24, 1992, a harbor seal carcass was found in the forebay.

- A total of ten California sea lions have been potentially entrained at or found on the grounds of the ESGS facility since 1979. One was found in the garage and released unharmed on January 24, 1979. A second sea lion was found and released on January 12, 1998. The remaining eight California sea lions were found dead. Two sea lions were found dead in the forebay, and others were found dead near the screens, two of which were dead for more than two days (as described in the ESGS incident report). An animal that was reported as dead for more than two days suggests that it was already dead in the ocean, and was entrained in through the intake structure.

The intake structure and intake velocities will not be modified from the current NPDES permitted conditions, which include intake flow rates at a maximum of 207 million gallons per day. Because there are no changes to the daily flow rate or daily volume of water taken into the intake structure, there will not be changes from the environmental baseline, which in itself is not significant. Annual volumes will experience a slight increase from 140 billion gallons to 153 billion gallons. This slight increase is not expected to cause additional impact. Also, the few dead animals observed over the past 22 years were probably not due to plant operations. Even if some were, they are consistent with existing permits and do not have a significant effect on local or regional populations of marine mammals. Therefore, the project will not have significant adverse effects on marine mammals.

Impacts on Special-Status Species. Existing impacts from the ESGS to special-status species are limited to the following species accounts: (1) one green sea turtle was found alive at the ESGS on July 31, 1985 with minor abrasions and was transferred to Marineland. It is not known how the abrasions occurred or their specific magnitude; and (2) a loggerhead sea turtle was found on September 28, 1995 at the ESGS and was released in good health at Redondo Beach by the Harbor Patrol.

The proposed ESPR Project intake structure and intake velocities will not be modified from the current NPDES permitted conditions, which include intake flow rates at a maximum of 207 million gallons per day. Because there are no changes to the daily flow rate taken into the intake structure, there will not be changes from the environmental baseline in the future operation of the power plant, which in itself is not significant. Annual volumes will experience a slight increase from 140 billion gallons to 153 billion gallons. This overall slight increase is not expected to cause additional impact. A total of two sea turtles were encountered and resulted in unharmed release over the past 22 years. Therefore, no significant adverse effects on sea turtles are expected from future operation of the power plant.

5.6.2.1.4 **Water Discharge**. The once-through cooling water is discharged at a single point vertical riser. Discharged water is ejected upward from 10 feet above the seafloor in 30 feet of water (refer to Section 5.5 Water Resources for more detail). This method of discharge effectively minimizes the thermal plume by the rapid mixing of cold bottom water entrained by the upward displacement of the discharged water. This entrainment of cold water is dependent on the velocity of the ejected thermal water but the volume is at least equal to the volume discharged and can be up to ten times the discharged volume (Harleman, 1972). This entrainment is evident by the surface manifestations and from their temperatures, which may be only 5 degrees Fahrenheit above ambient (Benson et al., 1973). This is the primary reason why the thermal discharge does not come in contact with the substrate surface.

The proposed ESPR Project will not include any modifications to the once-through cooling system. Flow rates, number of in-use circulating pumps, type of circulating pumps and maximum capacity (207 million gallons per day) will remain the same. Thermal discharge limits as set forth in the current NPDES permit for the existing ESGS will not need to be modified as a result of the proposed ESPR Project. As a result, the physics acting upon the discharge and receiving waters will remain the same as a result of the proposed ESPR Project (See Section 5.5 Water Resources for ESPR thermal modeling). Therefore, it is anticipated that the original thermal effect study and the on going monitoring for NPDES requirements are applicable in the assessment for the ESPR Project as summarized below.

Thermal Effects Study Impact Summary. Biological monitoring for the thermal effects study included:

- Benthic Surveys – Results indicated that species diversity values were affected by depth, temperature (which is highly correlated to depth) and sediment grain size, but were not affected by distance from the outfall. Abundance and distribution of individuals of the dominant species were affected by depth, season, and sediment grain size. It was also determined that sediment surface temperatures were not affected by distance from the outfall.

- Trawl Surveys – Results indicated that number of species were greater at the control site compared to the study site, however this difference was attributed to the closeness of nearby hard bottom substrates (other outfalls and groins) in the control area compared to the study area. Of the common species sampled, no apparent size class difference, fish abnormalities, or parasitized fish were found at the control site compared to the study site. Only very small numbers of highly mobile macroinvertebrates were sampled at the control site and study site.

- Intertidal Surveys – Results indicated that distance from the outfall had no affect on intertidal water temperature, species diversity and abundance, or median sand grain size.

- Dive Surveys – Results of the dive survey were consistent with the benthic survey. No visual effects of the outfall were noted.

Based on these findings, it was determined that the outfall structure associated with water discharge had no adverse affect on the surrounding environment and was in full compliance with state water quality objectives. These findings and results also apply to the proposed ESPR Project since discharge parameters will remain essentially the same.

Current NPDES Benthic Monitoring Impact Summary. Copies of the last three years of the NPDES monitoring reports are provided for review in Appendix H. Results of the past three years are presented in Table 5.6-15. Long term analysis is presented in chart form in Figure 5.6-11.

Results indicate that species richness and diversity have remained relatively constant over time. An exception to this trend is a drop in diversity at station B5, located at the far north station on the 40-foot isobath. This drop was attributed to a high occurrence of individuals of one species relative to the number of individuals of other species. Since the onset of the NPDES monitoring, no adverse affects on the benthic communities has been documented. It is anticipated that no change will result from the proposed ESPR Project, since discharge parameters will remain the same.

Impacts to Marine Mammals. Marine mammals occurring in the area are not at risk from elevated discharge temperatures, and no marine mammal species has been observed to be affected by the change in temperature relative to expected ambient ocean temperature from the existing ESGS outfall structures. Although marine mammals may be attracted to the warmer water from the outfall structure, it is not expected to result in adverse effects. The future impacts from the outfall structure at the existing ESGS are expected to be the same as the environmental baseline, which causes no adverse effects on marine mammals.

TABLE 5.6-15

RESULTS OF NPDES BENTHIC SAMPLING FOR ESGS (1997–1999)

Year	Station	Species Richness[1]	Diversity (H')[2]	Cluster Grouping[3]
1999	B1	38	3.13	1
	B2	28	2.57	1
	B3	44	3.14	1
	B4	40	2.94	1
	B5	28	2.56	1
	B6	48	2.79	2
	B7	33	2.36	1
	B8	60	3.44	2
1998	B2	40	1.49	1
	B3	29	2.09	1
	B6	61	1.56	2
	B7	41	3.13	2
1997	B1	50	3.02	1
	B2	50	3.18	1
	B3	41	3.34	1
	B4	33	2.58	1
	B5	67	0.98	3
	B6	45	2.53	2
	B7	55	3.38	2
	B8	64	3.48	2

[1] Species richness indicates the number of species found at each sampling station.

[2] Shannon Weiner diversity index where $H' = \sum$ of $P_i \log P_i$

[3] Stations with the same value in the "cluster grouping" column are considered to be closely associated with each other.

Impacts to Special-Status Species. Impacts to special-status species due to once-through cooling water discharge are described below:

California Least Tern. The California least tern forages on northern anchovy in the Santa Monica Bay. As indicated by its range, the northern anchovy is adaptable to warm sub-tropical waters. Results of fish trawl data contained in the thermal effects study (Benson et. al., 1973) found no difference in the abundance of this species at a site located near the outfall compared to the control site. Therefore, since no changes are anticipated in the discharge parameters, no effect to the foraging area to the least tern is anticipated.

Sea Turtles. No records exist of the federally-listed green sea turtle using the thermal effluent from the outfall structure at ESGS; however, sea turtles are known to be drawn to the warmer waters of power plant thermal effluent. The San Diego Gas and Electric power plant effluent channel on San Diego Bay has been an apparent refuge to a small population of green sea turtles since it was built in 1960 (Dutton and McDonald, 1990). Therefore, this discharge provides an environmental benefit. The future impacts from the outfall structure at ESPR Project are expected to be the same as the environmental baseline, which causes no significant adverse effects on sea turtles.

5.6.2.2 Pipelines

5.6.2.2.1 Potable and Reclaimed Water Supply. New supplies of potable and reclaimed water will be delivered through interconnections with the City of El Segundo's existing potable water distribution system and from the West Basin Municipal Water District, respectively. The service water will be connected to a 450,000 gallon Service/Fire Water Storage Tank for onsite distribution. A 12-inch diameter HDPE pipeline is needed to interconnect the plant to the city water lines. The reclaimed water line will be constructed using 8-inch-diameter HDPE pipe. The new water lines were originally proposed to exit the plant site from the north, before turning to the west to parallel the northern boundary of the Chevron El Segundo Refinery. The final route was modified to an alignment that would avoid the El Segundo Blue Butterfly Chevron Preserve (refer to Figure 5.6-6). The modified route is approximately 1.5 miles long.

Minimal biological resources are found along the proposed water line route. The portion of the route that parallels Del Mar Drive and Dockweiler Beach State Park would be constructed within a utility corridor that has been previously disturbed and is devoid of vegetation. The remainder of the route, including the segment that was modified to avoid the butterfly preserve, would be constructed within, or parallel to, city streets. In the absence of vegetation communities, adverse construction-related or operations-related impacts to biological resources in the area are not anticipated.

5.6.2.2.2 Sanitary Discharge Pipeline. The ESPR Project will require a new sanitary discharge pipeline to connect to the municipal sanitary sewer. The connection to this existing sanitary sewer will be on the south end of the existing ESGS. Connection to the city sewer will necessitate construction of a lift station on the plant site, the routing of pipe onsite to the south property line, and the routing of approximately 150 feet of forced flow sewer line from the site to an existing manhole at the intersection of The Strand and 45th Street. No vegetation would be disturbed and thus, there are no impacts to biological resources.

5.6.2.2.3 Aqueous Ammonia Supply Line. Aqueous ammonia is currently in use at the existing ESGS in a selective catalytic NO_x reduction (SCR) system that is in service on one of the existing thermal units and will be installed on proposed Units 5 and 7. The ammonia

solution is currently trucked to the facility and stored on site, in a 20,000-gallon tank that is located on the southeast corner of the switchyard. A new pipeline will be constructed from the Chevron Refinery to the ESGS to meet all aqueous ammonia requirements. The new pipeline will originate from a tie-in point within the refinery and will be routed to the north perimeter fence of the existing ESGS facility via the Vista Del Mar Boulevard overpass. The 3-inch diameter carbon steel pipe will be constructed on existing pipe racks within the plant to the greatest extent practicable. When pipe racks are not available, the new pipeline will be buried in existing roadways or disturbed surfaces on the Chevron Refinery.

Potential impacts on biological resources along the proposed aqueous ammonia pipeline route are not anticipated. The proposed alignment is entirely within industrial property or structures owned/managed by The Chevron Refinery or the existing ESGS. Due to heavy industrialization, there are no biological resources along the proposed route and, therefore, no impacts.

5.6.2.3 Parking and Laydown Sites

Use of the FedEx and Chevron Marine Terminal sites would require some grading and paving to accommodate worker parking and/or equipment staging. Approximately 46 acres of the FedEx Site, and 33 acres of the Chevron Marine Terminal Site could be paved for project use. The potential acreage of the LAX Site is not presently known. Paving of any of the three sites would result in the loss of ruderal vegetation that is comprised of telegraph weed, horseweed, pampas grass, and coyote bush that would result in a loss of marginal habitat to passerine avian species, small mammals, and reptiles. Federally-listed or state-listed threatened or endangered species or other species of concern would not be affected. The removal of ruderal vegetation in previously disturbed ground surfaces in an industrial surrounding is a less than significant impact. No grading or paving is required for use of the Kramer Site.

The Marina del Rey Boat Launch, LAX, Dockweiler State Park, Hyperion, Grand Avenue, and power plant sites are presently paved and absent of biological resources and no impacts to biological resources would occur.

5.6.2.4 Cumulative Impacts

Two other once through cooling water systems are found within a one-mile radius of ESGS Units 1 and 2 (ESGS Units 3 and 4 and DWP's Scattergood Generating Station). Within this one mile radius, Chevron USA El Segundo Refinery discharges a permitted maximum volume of 8.8 mgd during dry weather and 23.0 mgd during wet weather of freshwater effluent (LARWQCB, 1997)(Table 5.6-3). Since Chevron USA only discharges relatively small amounts of non-thermal loading freshwater and their operations has no cumulative effects on entrainment/impingement of marine species, Chevron's discharge has been excluded from the

analysis. The ESPR project will not increase the cumulative daily use of water through the once through cooling system. NPDES monitoring station locations encompass all three discharge pipes. Summer sampling efforts have shown the effects of maximum flow rates for all thermal discharge pipes including Units 1 and 2 and no adverse impacts have ever been documented. Entrainment results from the Scattergood's 1997 316 (b) update study and NPDES impingement monitoring at ESGS have also found no adverse impacted as a result of the intake structures. Furthermore, these studies concluded that a large increase (order of magnitude of 10 or greater) in water consumption would be needed to effect species dynamics. On an annual base, cooling water usage is expected to increase by 10% for ESGS from 140,430 to 153,846 million gallons per year. Scattergood Generating Station is permitted to use 495 mgd or 180,675 million gallons per year. When combining Scattergood and the projected flow for ESGS with the ESPR, the total flow will be 334,521 million gallons per year (153,846 + 180,675 million gallons). For 1999 the combined total was approximately 321,105 million gallons per year. Therefore, the cumulative increase considering ESGS and Scattergood is projected to be only a 4% increase in cumulative flows. Given this small increase and the fact that thermal effects will remain the same, no cumulative impacts are anticipated (LARWQCB) Regional Water Quality Control Board. LA Region. 1997. Order No. 97-112. NPDES CA0000337. Water discharge requirement for Chevron, USA INC. (El Segundo Refinery).

5.6.3 Stipulated Conditions

As a means of cooperating with the CEC and establishing a conciliatory relationship, and an open efficient AFC process that allows the Commission to utilize its resources in the most efficient manner possible, ESPR expresses a willingness to stipulate to and accept the following CEC standard general conditions as promulgated by the CEC that apply to the issue area of Biological Resources.

BIO-1: The project owner will implement the mitigation measures identified in Application for Certification. The project owner's proposed mitigation measures will be incorporated into the final Biological Resources Mitigation Implementation and Monitoring Plan (see Condition of Certification BIO-8, below) unless the mitigation measures conflict with mitigation required by the U. S. Fish and Wildlife Service and the California Department of Fish and Game that is contained in any Biological Opinions, Incidental Take Permit, advice letters, or comments rendered by these agencies.

Protocol: The project owner will:

1. Site generator line poles, access roads, pulling sites, and storage and parking areas to avoid sensitive resources whenever possible.

2. Design and construct generator lead poles and lines to reduce the likelihood of electrocutions of large birds.

3. Implement a Worker Environmental Awareness Program.

4. Hire a qualified biologist, who is acceptable to Energy Commission, USFWS, and CDFG staff, to conduct pre-construction surveys no more than fourteen (14) days prior to initiation of construction in any portion of the project area.

5. Clearly mark construction area boundaries with stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction. All equipment storage will be restricted to designated construction zones or areas that are currently not considered sensitive species habitat.

6. Post signs and/or fence the power plant site and laydown areas to restrict vehicle access to designated areas.

7. Designate a specific individual as a contact representative between La Paloma, USFWS, Energy Commission, and CDFG to oversee compliance with mitigation measures detailed in the Biological Opinion.

8. Provide a qualified wildlife biologist to monitor all activities that may result in incidental take of listed species or their habitat.

9. Provide a post-construction compliance report, within forty-five (45) calendar days of completion of the project, to the USFWS, CDFG, and the Energy Commission.

10. Make certain that all food-related trash will be disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited.

11. Prohibit firearms except for those carried by security personnel.

12. Prohibit pets from the project site.

13. Minimize the use of rodenticides and herbicides in the project area.

14. Consult with USFWS, CDFG, and Energy Commission regarding appropriate protection measures for sensitive species following resolution of any emergency situation that takes place in sensitive habitat during clean-up activities.

At least sixty (60) days prior to start of any project related ground disturbance activities, the project owner shall provide the Energy Commission Compliance Project Manager (CPM) with the final version of the BRMIMP for this project, and the CPM will determine the plan's acceptability within fifteen (15) days of receipt of the final plans. Implementation of the above measures shall be included in the BRMIMP (See BIO-7).

BIO-2: **Approved Designated Biologist**. Construction site and/or ancillary facilities preparation shall not begin until an Energy Commission Compliance Project Manager (CPM) approved designated biologist is available on site. The CPM approved designated biologist shall perform the following duties: 1) advise the project owner's supervising construction or operations engineer on the implementation of the biological resource Conditions of Certification; 2) supervise or conduct mitigation, monitoring, and other biological resource compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special statues species; and 3) notify the project owner and the CPM of any non-compliance with any Condition.

Protocol: The designated biologist must meet the following minimum qualifications:

- A bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field

- Three years of experience in field biology or current certification of a nationally recognized biological society, such as the Ecological Society of America or The Wildlife Society

- One year of field experience with resources found in or near the project area

- Ability to demonstrate to the satisfaction of the CPM the appropriate education and experience for the biological resource tasks that must be addressed during project construction and operation.

If the CPM determines the proposed designated biologist to be unacceptable, the project owner shall submit another individual s name and qualifications for consideration.

If the approved designated biologist needs to be replaced, the project owner shall obtain approval of a new designated biologist by submitting to the CPM the name, qualifications, address, and telephone number of the proposed replacement. No disturbance will be allowed in any designated sensitive area(s) until the CPM approves a new designated biologist and that designated biologist is on site.

Verification: At least 30 days prior to the start of surface disturbing activities at the project site and/or at ancillary facilities, the project owner shall submit to the CPM for approval, the name, qualifications, address, and telephone number of the individual selected by the project owner as the designated biologist. If a designated biologist is replaced, the information on the proposed replacement as specified in the condition must be submitted in writing to the CPM.

If the project owner is not in compliance with any aspect of this condition, the CPM will notify the project owner of making this determination within 14 days of becoming aware of the existence of any noncompliance. Until the project owner corrects any identified problem, construction activities will be halted in areas specifically identified by the CPM or designee as appropriate to assure the potential for significant biological impacts is avoided.

For any necessary corrective action taken by the project owner:

- The CPM shall make a determination of success or failure of such action after receipt of notice that corrective action is completed, or

- The CPM shall notify the project owner that coordination with other agencies will require additional time before a determination can be made.

BIO-3: **Designated Biologist Duties**. CPM approved designated biologist shall perform the following duties: 1) advise the project owner's supervising construction or operations engineer on the implementation of the biological resource Conditions of Certification; 2) supervise or conduct mitigation, monitoring, and other biological resources, such as wetlands and special statutes species; and 3) notify the project owner and the CPM of any non-compliance with any Condition.
Verification: The designated biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM.

BIO-4: **Utilize Designated Biologist**. Project owner supervising and operating engineer shall act on the advice of the designated biologist to ensure conformance with the biological resources Conditions of Certification. The designated biologist shall: 1) tell the project owner and the supervising construction and operating engineer when to resume construction and; 2) advise the CPM if any corrective actions are needed or have been instituted.

Protocol: The project owner's supervising construction and operating engineer shall halt, if needed, all construction activities in areas specifically identified by the designated biologist as sensitive to assure that potential significant biological resource impacts are avoided. The designated biologist shall:

- Tell the project owner and the supervising construction and operating engineer when to resume construction

- Advise the CPM if any corrective actions are needed or have been instituted.

Verification: Within two working days of a designated biologist's notification of non-compliance with a Biological Resources Condition or a halt of construction, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a Condition. For any necessary corrective action taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

BIO-5: Implementation of Worker Environmental Awareness Program. Project owner to develop and implement a Worker Environmental Awareness Program in which each of its own employees, as well as employees of contractors and subcontractors who work on the project site or related facilities during construction and operation, are informed about biological resources sensitivities associated with the project.

Protocol: The Worker Environmental Awareness Program:

- Shall be developed by the designated biologist and consist of an onsite or classroom presentation in which supporting written material is made available to all participants

- Must discuss the locations and types of sensitive biological resources on the project site and adjacent areas

- Must present the reasons for protecting these resources

- Must present the meaning of various temporary and permanent habitat protection measures

- Must identify whom to contact if there are further comments and questions about the material discussed in the program.

Verification: At least 30 days prior to the start of rough grading, the project owner shall provide copies of the Worker Environmental Awareness Program and all supporting written materials prepared by the designated biologist and the name and qualifications of the person(s) administering the program to the CPM for approval. The project owner shall state in the

Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

BIO-6: **USFWS Consultation**. Prior to construction the project owner shall provide to the CPM final copies of the final comment or opinion obtained from the U.S. Fish and Wildlife Service (UFWS) and incorporate the terms of the agreement into the Biological Resources Mitigation Implementation and Monitoring Plan.

Verification: At least 60 days prior to the start of rough grading, the project owner shall submit to the project CPM copies of the final USFWS comment or opinion.

BIO-7: **Approval of BRMIMP**. Submit to the CPM for review and approval a final copy of the Biological Resources Mitigation Implementation and Monitoring Plan.

Protocol: The Biological Resources Mitigation Implementation and Monitoring Plan shall identify:

- All sensitive biological resources to be impacted, avoided, or mitigated by project construction and operation
- All conditions agreed to in the USFWS Consultation and CDFG Consultation
- All mitigation, monitoring and compliance conditions included in the commission's final decision
- All conditions agreed to in the USACE clean water act permits
- All conditions specified in the CDFG streambed alteration permit, if required
- Required mitigation measures for each sensitive biological resource
- Required habitat compensation, including provisions for acquisition, enhancement and management, for any loss of sensitive biological resources
- A detailed plan for protecting the existence and monitoring the integrity of the wetlands remaining onsite
- A detailed description of measures that will be taken to avoid or mitigate temporary disturbances from construction activities

- All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction

- Aerial photographs of all areas to be disturbed during project construction activities - one set prior to site disturbance and one set subsequent to completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen

- Monitoring duration for each type of monitoring and a description of monitoring methodologies and frequency

- Performance standards to be used to help decide if/when proposed mitigation is or is not successful

- All remedial measures to be implemented if performance standards are not met

- A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.

Verification: At least 45 days prior to rough grading, the project owner shall provide the CPM with the final version of the Biological Resources Mitigation Implementation and Monitoring Plan for this project, and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. The project owner shall notify the CPM five working days before implementing any modifications to the Biological Resource Mitigation Implementation and Monitoring Plan.

Within 30 days after completion of construction, the project owner shall provide to the CPM, for review and approval, a written report identifying which items of the Biological Resource Mitigation Implementation and Monitoring Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which condition items are still outstanding.

BIO-8 **Facility Closure** The project owner will incorporate into the planned permanent or unexpected permanent closure plan measures that address the local biological resources. The biological resources facility closure measures will also be incorporated into the BRMIMP. (See Condition of Certification BIO-7, above)

The planned permanent or unexpected permanent closure plan will address the following biological resources related mitigation measures:

1. Removal of transmission conductors when they are no longer used and useful

2. Removal of all power plant site facilities, and

3. Measures to restore wildlife habitat to promote the re-establishment of native plant and wildlife species.

Verification: At least twelve (12) months (or a mutually agreed upon time) prior to the commencement of closure activities, the project owner shall address all biological resources related issues associated with facility closure in a Biological Resources Element. The Biological Resources Element will be incorporated into the Facility Closure Plan and include a complete discussion of the local biological resources and proposed facility closure mitigation measures.

5.6.4 Mitigation Measures

In addition to standard CEC biological conditions, ESP II identifies the following additional mitigation measures to ensure that ESPR is an environmentally conscious, low impact project. These additional measures are more accurately described as enhancements, since they arise not out of legally obligated mitigation requirements, but rather out of ESP II's desire to provide benefits to the biological community and environment.

BIO-9 Any impacts on ornamental vegetation on the cut slope on the north side of the existing ESGS facility will be mitigated via re-landscaping following disturbance.

BIO-10 Continue use of the existing intake structure, maintain the velocity cap, and continue to monitor and report fish impingement. Continue to monitor for the presence/absence of the federally listed green sea turtle in the vicinity of the intake structure as required under the current program.

BIO-11 Initiate a pilot project to investigate the feasibility for a fish removal method prior to heat treatment. The method to be evaluated will be the deployment of a modified beach seine net in attempt to scoop out and return fish residing in the forebay to the ocean. Evaluation of the success of this program will be based on comparisons from present and historical fish and invertebrate impingement data during heat treatments. If a statistically significant decrease in impingement can be quantified, the method and technique will be incorporated in the appropriate heat treatment protocols.

5.6.5 Applicable Laws, Orders, Regulations, and Standards

The following LORS are applicable or potentially applicable to the proposed project in the context of biological resources. A summary of applicable LORS is provided in Table 5.6-16.

TABLE 5.6-16
LORS FOR BIOLOGICAL RESOURCES

AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance.
Sections 5.6.2.1, 5.6.3, 5.6.4 and 5.6.5.1	Federal	Endangered Species Act of 1973; 16 USC § 1531 et seq.; 50 CFR Parts 17 and 222.	US Fish and Wildlife Service (USFWS)	Protection and management of federally-listed threatened or endangered plants and animals and their designated critical habitats (terrestrial and avian species). Section 7 Endangered Species Act consultation with USFWS (or Section 10A).
Sections 5.6.3 and 5.6.5.1	Federal	National Environmental Policy Act; 42 SC § 4321 et seq.	USFWS	Analysis of impacts of Federal action.
Section 5.6.2.1.3, 5.6.2.1.4, 5.6.5.1	Federal	Marine Mammal Protection Act 16 USC 1 §361 et seq.; 50 CFR Part 216	National Marine Fisheries Service	Place a moratorium on the taking of any marine mammal or derivative of said mammal when there are no permits issued for such taking.
Section 5.6.5.1	Federal	Migratory Bird Treaty Act; 16 USC §§ 703 - 711; 50 CFR Subchapter B.	USFWS	Protection of migratory birds.
Sections 5.6.2.1.3 and 5.6.5.1	Federal	Fish and Wildlife Coordination Act; 16 USC §§ 661 - 666	USFWS	Conservation of fish and wildlife.
Sections 5.6.1.5.1 and 5.6.5.2	State	California Endangered Species Act of 1984; California Fish & Game Code §§ 2050 - 2098.	California Department of Fish and Game (CDFG)	Consultation Requirement
Sections 5.6.2.1 and 5.6.5.2	State	California Species Preservation Act of 1970; California Fish & Game Code §§ 900-903.	CDFG	Protection and enhancement of the birds, mammals, fish, amphibians and reptiles of California.

TABLE 5.6-16
(CONTINUED)

AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance.
Sections 5.6.5.2	State	California Coastal Act of 1976 §30230, §30231, and §30240	California Coastal Commission	Compliance with biological policies and coastal zone management.
Sections 5.6.2.1 and 5.6.5.2	State	California Fish & Game Code § 4700 & §5515	CDFG	No taking of mammals listed as fully protected
Sections 5.6.2.1 and 5.6.5.2	State	California Fish & Game Code § 3511 & §5050	CDGF	No taking of birds, reptiles, or amphibians listed as fully protected.
Sections 5.6.2.2, 5.6.2.3, and 5.6.5.2	State	California Fish & Game Code § 3503.	CDFG	No taking or possessing of the nests or eggs of birds.
Sections 5.6.2 and 5.6.5.2	State	California Environmental Quality Act; California Public Resources Code § 21000 et seq.	CEC	Protection of environment.
Section 5.6.5.3	Local	Land Use Element, Open Space and Recreation Element, and Conservation Element of the City of El Segundo General Plan.	City of El Segundo Community Economic and Development Services Department	Ensure that proposed development projects demonstrate a high degree of compatibility with any threatened or endangered species.
Section 5.6.5.4	Industry	None applicable.	--------	--------

5.6.5.1 Federal Authorities and Administering Agencies

Endangered Species Act of 1973; 16 USC § 1531 *et seq.*; 50 CFR Parts 17 and 222. The Act includes provisions for the protection and management of federally-listed threatened or endangered plants and animals and their designated critical habitats. The administering agency for the above authority for terrestrial and avian species is the USFWS. With the implementation of B10-1, ESPR will not violate the Endangered Species Act.

National Environmental Policy Act; 42 USC § 4321 *et seq.* The Act requires analysis of the environmental effects of federal actions. The administering agency for the above authority is the USFWS. With the implementation of B10-1, ESPR will not violate the National Environmental Policy Act.

Marine Mammal Protection Act, 16 USC 1§ 361 *et seq*.; 50 CFR part 216. The Marine Mammal Protection Act places a moratorium on the "taking" or importation of any marine mammal or any marine mammal derivative product during which time there are no permits issued for such taking or importing. While the Act is geared towards preventing such takings by fishing or other vessels under U.S. jurisdiction, the language of the taking prohibitions may be broadly construed to prohibit a taking by any person or "port, harbor, or other place" under U.S. jurisdiction. The regulations specify that it is illegal for any person to "take any marine mammal *in waters or on lands under the jurisdiction of the United States.*" The administering agency for the above authority is the NMFS. With the implementation of B10-1, ESPR will not violate the Marine Mammal Protection Act.

Migratory Bird Treaty Act; 16 USC §§ 703 - 711; 50 CFR Subchapter B. The Act includes provisions for protection of migratory birds, including basic prohibitions against any taking not authorized by federal regulation. The administering agency for the above authority is the USFWS. With the implementation of B10-1 and BIO-9, ESPR will not violate the Migratory Bird Treaty Act.

Fish and Wildlife Coordination Act; 48 Stat. 401, amended; 16 USC 661 *et seq*. This act requires federal agencies to coordinate federal actions with the USFWS to conserve fish and wildlife resources. The administering agency for the above authority is the USFWS. With the implementation of B10-1, BIO-6, BIO-10 and BIO-11, ESPR will comply with this Act.

Clean Water Act of 1977; 33 USC § 1251 - 1376; 30 CFR § 330.5(a)(26). The Act provides for the protection of wetlands and the limiting of thermal discharges to the marine environment. The administering agencies for the above authority are the U.S. Army Corps of Engineers (COE) and the RWQCB. With the implementation of B10-1 and BIO-6, ESPR will be in compliance with the Clean Water Act.

5.6.5.2 State Authorities and Administering Agencies

California Endangered Species Act of 1984; California Fish & Game Code §§ 2050 - 2098. The Act includes provisions for the protection and management of plant and animal species listed as endangered or threatened, or designated as candidates for such listing. The Act includes a consultation requirement "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species ... or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR § 670.2. Animals of California declared to be endangered or threatened are listed at 14 CCR § 670.5. The administering agency for the above authority is the California Department of Fish and Game (CDFG). With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Endangered Species Act.

California Species Preservation Act of 1970; California Fish & Game Code §§ 900 - 903. The Act includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California. The administering agency for the above authority is the CDFG. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Species Preservation Act.

California Fish & Game Code § 3503. This code section prohibits the taking and possessing of any bird egg or nest. The administering agency for the above authority is the CDFG. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Fish & Game Code.

California Fish & Game Code § 3511 and § 5050. These code sections prohibit the taking and possessing of birds or reptiles listed as "fully protected". The administering agency for the above authority is the CDFG. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Fish & Game Code.

California Fish & Game Code § 4700 and § 5515. These code sections prohibit the taking of mammals and fish, respectively, listed as fully protected in California. The administering agency for the above authority is the CDFG. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Fish & Game Code.

California Environmental Quality Act, Public Resources Code § 21000 *et seq*. The Act provides for protection of the environment. The administering agency for the above authority is the CEC. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Environmental Quality Act.

California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2, Subchapter 5, Article I, Appendix B, Part (i). These code and regulation sections require the CEC to assure protection of environmental quality. In the context of biological resources, a proposed project is generally considered to have a significant effect on the environment if it will substantially affect a rare or endangered species (20 CCR § 15380). The administering agency for the above authority is the CEC (with comment by the CDFG). With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Public Resources Code.

California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2, Subchapter 5, Article I, Appendix B, Part (l). These code and regulations provide for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and require submission of information to the CEC concerning proposed water resources and water quality protection. The administering agency for the above authority is the CEC. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Public Resources Code.

California Public Resources Code § 25523(a). This code section ensures that a project located in a coastal zone complies with the requirements of the California Coastal Act and report recommendations prepared pursuant to the California Coastal Act submitted by the California Coastal Commission as an advisory agency. The administering agency is the CEC. With the implementation of B10-1, BIO-6, and BIO-10, ESPR will be in compliance with the California Public Resources Code.

California Coastal Act of 1976 § 30230, § 30231, and § 30240. This act includes requirements that the biological productivity and quality of coastal waters, streams, wetlands and estuaries be maintained and, where feasible, restored. Section 30230 of the act states that the marine environment shall be used in a manner that will sustain the biological productivity of coastal waters and maintain healthy populations of marine organisms for the long term. Section 30231 of the act states that the biological productivity of coastal waters, streams, wetlands, estuaries, and lakes shall be maintained, including minimizing effects of wastewater discharges and entrainment. Section 30240 of the act protects environmentally sensitive habitat areas. Development under this section of the act must be sited and designed to prevent impacts that would significantly degrade such areas and be compatible with their continued use. The administering agency is the CEC, with advisory comment by the California Coastal Commission. With the implementation of B10-1 through BIO-10, ESPR will be in compliance with the California Coastal Act.

5.6.5.3 Local Authorities and Administering Agencies

The El Segundo General Plan. The City of El Segundo includes the following issues in the Conservation Element of the general plan; beach preservation, maintenance of a safe water

supply, protection of groundwater from contamination, improvement of the urban landscape, and protection of the El Segundo blue butterfly. The City of El Segundo's policy on the federally endangered El Segundo blue butterfly is to "develop and encourage environmental protection policies that protect sensitive habitat areas, including coordination with city, county, state, and federal agencies having jurisdiction over such areas." The administering agency is the City of El Segundo Planning and Development Department.

5.6.5.4 Industry Codes and Standards

No industry codes or standards are applicable for the ESPR.

5.6.5.5 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to biological resources are shown in Table 5.6-17.

Table 5.6-17

Agency Contacts

Agency	Contact	Title	Telephone
Federal			
US Fish and Wildlife Service	Kevin Clark	Biologist	(760) 431-9443
National Marine Fisheries	Bill Hoffman	Biologist	(562) 980-4643
State			
California Department of Fish and Game	Bill Paznokas	Biologist	(858) 467-4218
California Energy Commission	Rick York Jim Brownell	Staff Biologist Staff Biologist	(916) 654-4989
California Regional Water Quality Control Board	L.B. Nye, Ph.D	Biologist	(213) 576-6754
California Coastal Commission	Michael Bowen	Biologist	(415) 904-5249
State Water Resources Control Board	Paul Lilibo	Biologist	(916) 657-1031
Local	No Agencies are Identified		

5.6.5.6 Applicable Permits

Applicable permits related to biological resources are listed in Table 5.6-18.

TABLE 5.6-18

APPLICABLE PERMITS

Jurisdiction	Potential Permit Requirements
Federal	
U.S. Fish and Wildlife Service/National Marine Fisheries Service	Endangered Species Act Compliance[1]
State	
Los Angeles Regional Water Quality Control Board	Modified NPDES Permit[2]
California Department of Fish and Game	Endangered Species Act Compliance[1]
Local	
No permits have been identified	

[1] Discussions with these agencies are underway to identify required permits and/or approvals, if any.
[2] Refer to Section 5.5, Water Resources for a detailed discussion of ESPR NPDES requirements.

5.6.6 References

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Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sections 3.3 and 5.6.1 (Site Conditions) Sections 5.6.2, 5.6.3, and 5.6.4 (Impacts and Mitigation)		
Appendix B (g) (13) (A)	A regional overview and discussion of biological resources, with particular attention to sensitive biological resources near the project, and a map at a scale of 1:100,000 (or some other suitable scale) showing their location in relation to the project.	Sections 5.6.1.2, -.3, and -.4 Figure 5.6-1		
Appendix B (g) (13) (B)	A discussion and detailed maps at a scale of 1:6,000, of the biological resources at the site of the proposed project and related facilities, and in areas adjacent to them, out to a mile from the site and 1000 feet from the outer edge of linear facility corridors. Include a list of the species actually observed and those with a potential to occur. The discussion and maps shall address the distribution of community types, denning or nesting sites, population concentrations, migration corridors, breeding habitats, and the presence of sensitive biological resources.	Section 5.6.1.2, Figure 5.6-4, Figures 5.6-6 and -7.		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (13) (C)	A description of all studies and surveys used to provide biological information about the project site, including seasonal surveys and copies of the California Department of Fish and Game's Natural Diversity Data Base Survey Forms, "California Native Species Field Survey Forms", and "California Natural Community Field Survey Forms", completed by the applicant. Include the dates and duration of the studies, methods used to complete the studies, and the names and qualifications of individuals conducting the studies.	Section 5.6.1.1		
Appendix B (g) (13) (D)	A discussion of all permanent and temporary impacts to biological resources from site preparation, construction activities, and plant operation. Discussion of impacts must consider impacts from cooling tower drift, and from the use and discharge of water during construction and operation. For facilities which use once-through cooling or take or discharge water directly from or to natural sources, discuss impacts resulting from entrainment, impingement, thermal discharge, effluent chemicals, type of pump (if applicable), temperature, volume and rate of flow at intake and discharge location, and plume configuration in receiving water.	Section 5.6.2.1.2 (Cooling tower drift) Sections 5.6.2.1.3 (Impingement and entrainment), 5.6.2.1.4 and 5.6.2.2 (waster discharge) Figure 5.5-18 (Thermal Plume)		
Appendix B (g) (13) (E)	A discussion of the following:	--	--	--

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (13) (E) (i)	All measures proposed to avoid and/or reduce any adverse impacts;	Sections 5.6.3 and 5.6.4		
Appendix B (g) (13) (E) (ii)	All measures proposed to mitigate any adverse impacts, including any proposals for off-site mitigation; and	Section 5.6.3		
Appendix B (g) (13) (E) (iii)	Any educational programs proposed to enhance employee awareness in order to protect biological resources.	Section 5.6.3		
Appendix B (g) (13) (F)	A discussion of compliance and monitoring programs proposed to ensure the effectiveness of mitigation measures incorporated into the project.	Section 5.6.3		
Appendix B (g) (13) (G)	A discussion of native fish and wildlife species of commercial and/or recreational value that could be impacted by the project.	Sections 5.6.1.6 and 5.6.2.2.2		
Appendix B (g) (13) (H)	For purposes of this section, sensitive biological resources are one of the following:	--	--	--
Appendix B (g) (13) (H) (i)	Species listed under state or federal Endangered Species Acts;	--	--	--

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. ____ Date ____

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Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (13) (H) (ii)	Resources defined in sections 1702 (q) and (v) of Title 20 of the California Code of Regulations; and	--	--	--
Appendix B (g) (13) (H) (iii)	Species or habitats identified by legislative acts as requiring protection.	--	--	--
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Table 5.6-16		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Table 5.16-7		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Section 5.6.5		

Adequacy Issue: Adequate ____ Inadequate ____

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SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Table 5.6-17		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Section 5.6.5.6, Table 5.6-18		