

STATE OF CALIFORNIA

Energy Resources Conservation  
And Development Commission

In the Matter of:	)	Docket No. 00-AFC-14
	)	
Application for Certification	)	STAFF'S RESPONSE TO
of the EL SEGUNDO POWER	)	DIRECT WRITTEN TESTIMONY
REDEVELOPMENT PROJECT	)	
	)	
_____	)	

In accordance with the "Notice of Evidentiary Hearing" issued on January 17, 2003 by the assigned Committee in this matter (Commissioner Robert Pernell, Presiding, and Commissioner William Keese), the Energy Commission Staff hereby tenders its "Response To Direct Written Testimony" for the evidentiary hearing phase of this siting case proceeding. Staff anticipates that this written response testimony will be augmented by Staff's oral testimony and related exhibits at the evidentiary hearings (now scheduled for February 18-20, 2003).

At the present time all subject areas except Biological Resources and related Alternatives are uncontested between the Staff and the Applicant. Accordingly, Part I of Staff's Response, below, will set forth the Applicant's Direct Written Testimony on the contested Biological Resources/Alternatives issues, and then provide Staff's specific responses and/or rebuttal (highlighted in bold and blue font). Part II of Staff's Response will address all other issues in this case.

**I. RESPONSES TO BIOLOGICAL RESOURCES & RELATED ISSUES**

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**PART A. BIOLOGICAL RESOURCES ISSUES**

**1. Summary of The Applicant's Direct Testimony and Staff's Responses**

**a) The Applicant contends that existing studies indicate that the Santa Monica Bay ecosystem in general, and the fish populations in particular, are doing fine. There are some minor fluctuations in fish abundance but nothing has changed substantially in the last 30 years. Staff disagrees and finds that Santa Monica Bay**

is an impaired water body, with various relevant fish species showing serious and continuing declines in the last several decades.

b) The Applicant contends that Santa Monica Bay has been extensively studied, and that no further studies are needed to answer the “Biological Resources” issues presented in this case. Staff disagrees and finds that the studies cited by the Applicant are either irrelevant or scientifically inadequate to reliably answer the important “Biological Resources” issues in this case. Specifically, Staff finds that an appropriately designed, current, site-specific 316(b)-like study is needed to properly answer the “Biological Resources” issues in this case.

c) The Applicant contends that since power plants have been operating in Santa Monica Bay for 50 years, and the ecosystem and fish are doing fine, the power plants are therefore having no significant adverse impacts on the marine organisms of Santa Monica Bay. Staff disagrees and finds that Santa Monica Bay is an impaired water body; that power plants throughout this state have been recently shown to significantly and adversely impact marine organisms; that the proposed project in this case will withdraw an enormous amount and percentage of source water, and related marine organisms, from Santa Monica Bay each year; and that there are no reliable scientific studies to establish that this project will not have a significant adverse impact on the marine organisms of Santa Monica Bay.

d) The Applicant contends that the proposed project will not have a significant direct or cumulative adverse biological impact because of the specific annual and monthly “flow caps” which the Applicant has recently proposed. Staff disagrees and finds that the specific “flow caps” proposed by the Applicant will not maintain the *status quo ante*, and will do nothing to “restore and enhance where feasible” the marine organisms adversely impacted by this project, as required by the law in California.

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Below is the Applicant’s entire Direct Written Testimony on the “Biological Resources” issues, and Staff’s specific written responses to that testimony.

### **Marine Biology is the Only Contested Biological Issue**

**Applicant’s Testimony:** The only contested biological issue in this proceeding is the potential for significant effects on the aquatic marine environment of the Santa Monica Bay caused by the operation of the once through cooling system at ESGS.

**Staff’s Response:** Staff agrees that the adverse impacts on the aquatic marine environment of the Santa Monica Bay from the operation of the once-through cooling system at ESGS is the only “Biological Resources” issue contested at this time.

## **ESPR Will Use a Fully Permitted, Operational Cooling System**

**Applicant's Testimony:** ESPR makes use of an operating, permitted intake system without any increases in its permitted capacity or modifications that would require a new permit. Intake #1 at ESGS is authorized to use up to 207 MGD of ocean water for cooling purposes under its NPDES permit. The intake system thus complies with all requirements of the Clean Water Act, especially sections 316(a) and 316(b).

**Staff's Response:** The proposed El Segundo Redevelopment Project is not “fully permitted” at this time. As noted in Staff's Direct Written Testimony, the existing ESGS Units 1 and 2 no longer have a valid air quality permit from the South Coast Air Quality Management District (SCAQMD), and those units were legally required to cease all generation as of January 1, 2003. In addition, the proposed ESPR project does not have any permits to construct or operate at this time, and it is the Energy Commission's responsibility to determine whether the proposed project will, in fact, comply with all applicable LORS (e.g. the California Coastal Act) and the California Environmental Quality Act (CEQA), as required by the provisions of the Warren-Alquist Act (Public Resources Code Section 25000 *et seq.*)

## **Intake #1 Does Not Cause Significant Impacts**

**Applicant's Testimony:** The California Environmental Quality Act (CEQA) is satisfied by virtue of the NPDES permit. Because ESPR makes no changes to the permitted capacity of intake #1, there are no effects that fall within the scope of this project. Nevertheless, some parties have suggested that the effects of intake #1 should be considered in this proceeding. Even if this was the case, the effects of intake #1 are less than significant. Impingement is negligible, thermal effects are within temperature modeling requirements, and entrainment has less than a significant effect on the marine ecosystem. This is true even if maximum permitted flows through intake #1 are considered.

**Staff's Response:** As explained in the Final Staff Assessment (FSA), and further detailed in our specific responses to Mr. Mitchell's testimony (below), Staff finds that the entrainment, impingement and thermal effects of the proposed project will have significant adverse cumulative impacts on the marine resources of Santa Monica Bay. No site-specific entrainment studies have ever been done at the El Segundo Generating Station to evaluate the adverse entrainment impacts of that facility. Instead, the Applicant has submitted studies done over 20 years ago at other power plants as “proxies” to evaluate the entrainment impacts of ESGS. Staff finds this information to be scientifically inadequate and unreliable for many reasons, including the fact that recent studies of entrainment at other California coastal power plants have identified significant adverse impacts even though studies done in the late 1970s and early 1980s determined that entrainment effects were not significant. In addition, the large volumes of water which the project proposes to withdraw from Santa Monica Bay each year (i.e.

139 billion gallons annually) would constitute a significant percentage of the entire shallow source water in Santa Monica Bay and would adversely impact many of the fish species that have declined in Southern California during the last 20 years. In short, Staff finds that the proposed project will cause significant cumulative adverse biological impacts by cropping fish species that are already severely stressed in Santa Monica Bay, and will not satisfy the legal requirements of either CEQA or other applicable LORS.

### **Entrainment Effects of Intake #1 Are Well Understood**

**Applicant's Testimony:** Entrainment effects of ESGS were studied under the direction of the Los Angeles Regional Water Quality Control Board in the early 1980's. This study was found to be relevant and scientifically valid by the LARWQCB in reissuing the NPDES to the ESGS in June 2000 despite the hyperbola regarding distance and time. Numerous other information is available regarding the marine ecology of the Santa Monica Bay as well.

**Staff's Response:** Staff finds that the actual entrainment impacts of the existing ESGS cooling water intakes are not well understood by anyone. The 316(b) entrainment study to which the Applicant refers did not sample fish larvae actually entrained at the ESGS site, but instead used information collected at Ormond Beach, 55 miles to the north.

Entrainment impacts are directly related to the specific concentrations of organisms in the water column actually being entrained. Although the dominant species of fish larvae may be similar throughout Southern California, concentrations are extremely variable from place to place. Moreover the Southern California marine environment has changed considerably over the last 20 years since the Ormond Beach study was completed. Many of the species most vulnerable to intake effects have declined and thus are more sensitive to losses than they were 20 years ago. Finally, the techniques for determining entrainment impacts have advanced considerably since the Ormond Beach 316(b) proxy study was done. In short, the Ormond Beach proxy study does not account for any of these factors.

Currently, the LARWQB does not require monitoring of entrainment impacts at the existing ESGS or updating of the proxy study done at Ormond Beach. However, the U.S. Environmental Protection Agency (EPA), which administered the original requirements under Section 316(b) of the Clean Water Act, has recently reevaluated the serious adverse impacts of entrainment at cooling water intakes and issued highly revised and restrictive federal rules for "new" intakes in 2001. In addition, because determinations that existing intake technologies represent "Best Available Technology" (BAT) were made decades ago, they may no longer be true, and EPA has recently proposed new rules for "existing" intakes as well (EPA 2002).

## **Voluntary Flow Restriction Eliminates Entrainment Issue**

**Applicant's Testimony:** In an effort to eliminate concerns of other parties, Applicant has proposed to voluntarily restrict future flows at ESGS to that of the most recent five year period. By offering this flow restriction to the recent baseline there will be no flow increase caused by ESPR using the most conservative viewpoint. With no flow increase there will be no entrainment effect. That is clearly less than significant.

**Staff's Response:** **The flow caps proposed by the Applicant will not ensure that there are no adverse entrainment impacts from the project, nor will these specific flow caps ensure that adverse biological impacts from the proposed project are maintained, reduced and eliminated to the extent feasible, as required under both CEQA and applicable LORS such as the California Coastal Act.**

**The Applicant's proposed annual and monthly caps are based on intake volumes occurring at the ESGS from January 1998 through December 2002, and are not based on either the actual conditions that existed at the time AFC was filed (December 2000), nor on the newly changed conditions that now exist, namely the legal shutdown of ESGS Units 1 and 2 as of January 1, 2003. Hence neither the *status quo ante* nor the current *status quo* are "maintained" as required by law. In addition, neither the proposed annual cap, nor the specific monthly caps for February, March and April, will prevent withdrawal of great amounts of water from Santa Monica Bay during times of the year when particular species may have most of their larvae in the water. Hence, the adverse environmental impacts of the proposed project may actually *increase* under these proposed caps, and the caps will certainly not "restore and enhance" existing adverse intake-related impacts to the extent feasible, as required by law.**

### **2. Applicant's Specific Aquatic Biology Testimony of Charles T. Mitchell**

#### **A. Are you familiar with the cooling water systems at El Segundo Generating Station?**

**Applicant's Testimony:** Yes. The cooling water system at El Segundo Generating Station is similar to several other coastal generating stations in Southern California. ESGS has two cooling systems that utilize "once-through cooling" to dissipate heat generated in the process of generating electric power. Both systems bring seawater in from offshore via a pipeline into forebays one cooling system supplies cooling water to Units 3 and 4. The other system cools units 1 and 2. The following is a description of the once-through system in use at El Segundo Units 1 & 2.

Seawater is supplied to Units 1 & 2 via a 3.0-m (10-ft) inside diameter concrete conduit which extends approximately 790 m offshore to a depth of -30 ft Mean Lower Low Water. The cooling water system uses four pumps to convey a maximum of approximately 207 million gallons per day (mgd) to the generating station. The offshore intake terminus consists of a riser and velocity cap. The riser extends vertically from the seafloor such that water is withdrawn at a depth of approximately -20 ft. The velocity

cap sits on top of the riser, and its purpose is to direct intake waters horizontally into the intake structure, as fish are more capable of sensing and reacting to lateral flows than vertical flows.

Once at the generating station, the 3.0-m conduit opens up into a large forebay and screening structure. Bar racks and vertical traveling screens (3/8" mesh) serve to prevent debris, invertebrates, and fish larger than the mesh size from passing through the cooling water system. Screened items are washed off the traveling screens by high-pressure spray into a sluiceway that empties into a collection bin.

The seawater pumped through the screening facility travels to the condensers where it condenses steam, thus raising the temperature of the cooling water. When Units 1 & 2 are operating at full capacity the temperature differential across the condensers ( $\Delta T$ ) is approximately 12.2°C (22°F). This heated water is discharged through a 3.0-m inside diameter conduit, which terminates approximately 500-m offshore at a water depth of approximately -26 ft MLLW. The discharge structure resembles the intake structure, except there is no velocity cap on the discharge structure, so discharge flows are directed vertically to the sea surface for rapid oceanic and atmospheric mixing.

The cooling water system for Units 3 & 4 is similar to the one described for Units 1 & 2, except for the following differences: 1) the intake and discharge conduits are 3.6-m (12-ft) inside diameter, 2) the intake is 800 m offshore, 3) the discharge extends 640 m offshore, 4) maximum cooling water flow is approximately 400 mgd, and 5) the design  $\Delta T$  of the units is about 14.3°C.

**Staff's Response:** **The Applicant's description of the ESGS cooling system does not mention the periodic heat treatments which kill all of the fish and other marine organisms trapped in the forebay. The description also fails to mention the extremely high velocities in the intake pipe (4.1 feet per second) which will make it very difficult for marine organisms to escape entrainment if they come near the intake, and will make it virtually impossible for entrained organisms to escape once they are transported into the intake.**

**B. What type of environmental effects can a once-through cooling system -- like those at ESGS -- have?**

**Applicant's Testimony:** In general, the effects of such systems can be divided into entrainment, impingement, and thermal effects. Impingement and entrainment relate to the intake of seawater and harm that it can cause to organisms within the water. Thermal effects refer to the harm that heated water can have on the ecosystem and organisms that come in contact with the ecosystem.

**Staff's Response:** **We agree with the Applicant's statement.**

### **C. How well understood is the Santa Monica Bay?**

**Applicant's Testimony:** Santa Monica Bay is one of the most studied bodies of water in the on the Pacific Coast. It is adjacent to major urbanized areas that use the coastal environment for a wide range of industrial and recreational activities. To ensure that the beneficial uses of the Bay, and the health of the public users of the Bay, are protected State and Federal regulatory agencies have implemented and maintained detailed environmental monitoring programs since the mid 1950's. These programs and studies have provided a wealth of data on the marine environment.

**Staff's Response:** Staff is fully aware of the fact that many studies have been done concerning the marine resources of Santa Monica Bay. However, as explained below, these studies have little or no relevance to the issues of concern in this case.

For example, the vast majority of existing Santa Monica Bay marine resource studies have examined the adverse impacts of sewage discharges by sampling bottom dwelling (i.e. demersal) fish communities located in deeper waters than the ones most affected by the ESGS intake. Furthermore, no study has ever been done that directly assessed the entrainment impacts of the ESGS intakes, and no studies have been done concerning the entrainment impacts of any power plant in Santa Monica Bay for over 20 years.

### **D. What environmental studies have been conducted in the Bay?**

There are several categories of studies that have been conducted in the Santa Monica Bay.

#### ***Hyperion Treatment Plant Monitoring***

**Applicant's Testimony:** The City of Los Angeles has monitored the water quality of Santa Monica Bay since the 1950's (CLA 1993). Originally, the program was designed to determine if effluent discharged from the Hyperion Treatment Plant encroached on nearshore, recreational waters. Through time, the monitoring effort has become focused in emphasis and expanded in size in an attempt to determine impacts of the discharge of treated sewage on the marine environment in addition to determining the safety of recreational use of, and consumption of animals from Santa Monica Bay by humans.

The Hyperion Treatment Plant monitoring program represents one of the largest in the country in terms of area covered, frequency and numbers of samples collected, and the number of analyses performed (CLA 1993). This monitoring program includes otter trawl sampling to assess demersal fish assemblages to determine the influence, if any, of Hyperion's 5-mile effluent outfall. Starting in 1987, trawls were conducted quarterly at six stations along the 60-m isobath in Santa Monica Bay (CLA 1991). In 1989, four additional stations were added to the sampling regime along the 25-m and 15-m isobaths to assess seasonal inshore-offshore migrations of demersal fish. In 1993, five years of quarterly sampling from 1987 to 1992 were summarized to discern

distributional patterns and spatial and temporal trends of fish assemblages along the 60-m, 25-m and 15-m isobaths in Santa Monica Bay (CLA 1993). This information was used to establish similarities among stations (site-groups), strongly associated with station depth, particularly inshore (15-m or 25-m isobath) versus offshore (60-m isobath), or proximity to each other or the discharge.

Between 1987 and 1992, 41,529 individuals comprising 93 fish species were collected at the Hyperion Treatment Plant monitoring stations in Santa Monica Bay (CLA 1993). Flatfishes were the most abundant fish group collected, with hornyhead turbot the most widely distributed species. Pacific sanddab was also widely distributed and the most abundant species at the 60-m stations. Other abundant or commonly occurring species were bigmouth sole, gulf sanddab, speckled sanddab, California lizardfish, yellowchin sculpin, and longspine combfish. California scorpionfish was the only rockfish collected at all site-groups, although it did not occur in high abundance. Other species were collected either exclusively at certain site-groups or switched site-groups according to the season.

Fish assemblages were found to be similar at common depth regimes throughout Santa Monica Bay (CLA 1993). Fish distribution was patchy, mainly influenced by depth, recruitment, food availability and physical and chemical characteristics of sediments. Patchy distribution among fish species is common due to mobility and species-specific responses to natural changes in environmental and seasonal conditions. The demersal fish collected at the Hyperion Treatment Plant monitoring stations in Santa Monica Bay represented a diverse and abundant assemblage with a species composition similar to other studies in the area (Mearns et al. 1974, Johnson and Rooney 1988).

**Staff's Response: The Hyperion Treatment Plant monitoring studies discussed by the Applicant have little, if any, relevance to identifying the intake-related impacts of the ESGS or proposed project. The Hyperion program is designed to sample bottom dwelling fish at significantly greater depths than the ESGS intake.<sup>1</sup> The ESGS intake also tends to affect "water column" species of fish far more than the "bottom dwelling" species of concern in the Hyperion study. Simply stated, the Hyperion monitoring program is not sampling either the environment or the fish that are most impacted by the ESGS intake.<sup>2</sup>**

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<sup>1</sup> The ESGS intake is located in less than 33 feet (10 meters) of water depth and primarily impacts the shallow water fish community, an assemblage dominated by completely different kinds of fishes than those sampled in the Hyperion monitoring program. The shallowest station monitored by the Hyperion program is at 50 feet (15 meters) of water depth, considerably offshore of the ESGS intakes. The other stations, positioned at 83 and 200 foot (25 and 60 meter) depths, are located very far offshore of the intakes.

<sup>2</sup> As the Applicant notes in its written testimony, the most abundant or commonly occurring species collected in the Hyperion samples are Pacific sanddab, speckled sanddab, California lizardfish, yellowchin sculpin and longspine combfish. Not a single one of these species of fish is amongst the ten most abundant fish species impinged at the ESGS and nearby Scattergood Generating Station intakes between 1990 and 1999 (see Biological Resources Table 2 in the FSA), nor are any of these species amongst the most abundant fish larvae collected by the Applicant in limited sampling off ESGS in 2001 (Pondella 2001).



## **SCCWRP Regional Surveys**

**Applicant's Testimony:** In Southern California, existing monitoring programs are focused primarily near municipal or industrial outfalls. These programs have been conducted for many years, with results generally reported annually by various agencies. These monitoring programs are useful for assessing point-source impacts and temporal trends near specific outfalls, however less is known about the spatial and temporal variability and conditions of biological communities throughout the Southern California Bight (SCB). In 1994 the Southern California Coastal Water Research Project (SCCWRP) oversaw a coordinated program designed to sample randomly selected sites as a baseline survey of the marine fauna of the SCB. As part of the SCB 1994 Pilot Project, fish were collected from 114 trawl stations from Point Conception, California to the US-Mexico international border (Allen et al. 1998). Depths ranged from 10 to 200 m and all stations were sampled within about a one-month period to avoid seasonal variation. Thirteen of those trawl samples were collected within Santa Monica Bay, from depths of 14 to 83 m, sampling two depth zones (as defined in the report: inner shelf 10-25 m and middle shelf 26-100 m) in Santa Monica Bay.

A total of 1,874 individuals of 41 fish species were captured at Santa Monica Bay stations during the Pilot Project sampling. Three of the stations were located on the inner shelf of Santa Monica Bay, where 226 individuals of 14 fish species were found. Ten stations ranged from 42 to 83 m depth, characterized the middle shelf fish assemblages. A total of 1,648 individuals of 39 species were taken at the middle shelf stations of Santa Monica Bay. All but two species collected at inner shelf depths were also collected at middle shelf stations. Flatfishes were the most abundant fish group collected, with different sanddab species dominating each of the depth zones. Pacific sanddab was the most abundant fish species taken at the middle shelf stations, and the most abundant species overall for the Santa Monica Bay samples. Only three individuals were taken at inner shelf depths. Other abundant or commonly occurring species at middle shelf depths were yellowchin sculpin, speckled sanddab, California tonguefish, and longfin sanddab. Speckled sanddab dominated the inner shelf samples, alone accounting for over 60% of the individual fish captured at those depths. Speckled sanddab was also the most widely occurring species, found at all but one station in Santa Monica Bay. Hornyhead turbot was the only other fish found at all three inner shelf stations.

The general conclusion of the SCB 1994 Pilot Project, which included stations in Santa Monica Bay, was that demersal fish populations and assemblages appeared to be relatively healthy, with notable improvements since the early 1970's. No major changes to fish assemblages were noted, with minor changes observed probably related to warmer ocean temperatures resulting from an El Niño in 1994. Fish assemblages, abundance, and diversity were primarily determined by depth, with lower values found at inner shelf stations.

A second regional survey was conducted throughout the Bight in 1998; however, results from the demersal fish surveys are still unavailable.

**Staff's Response:** As is true of the Hyperion monitoring studies, the Southern California Bight Pilot Project focused on sampling bottom dwelling fish species at depths considerably offshore of the ESGS intakes. The shallowest Santa Monica Bay station in the Pilot Project study was positioned at the 47- foot depth level (14 meters), considerably deeper and further offshore than the location of the ESGS intake. Furthermore, for the Bight Project as a whole shallow water stations were underrepresented. As stated explicitly on p. 146 of Allen et al. (1998):

"Only a quarter of the trawl stations sampled in the 1994 survey were on the inner shelf and the inshore limit of these stations was at the 10 meter isobath. Hence the nearshore (very shallow) component of the demersal [bottom dwelling] fish community was not well sampled." (emphasis added.)

In addition, as is true of the Hyperion monitoring program, the SCCWRP surveys only sampled bottom dwelling fishes, not the water column species most affected by the ESGS intakes. The ten most abundant species collected by the Bight Project were Pacific sanddab, plainfin midshipman, slender sole, yellowchin sculpin, speckled sanddab, Dover sole, longfin sanddab, stripetail rockfish, California tonguefish, and splitnose rockfish (Allen et al. 1998 Table 11). Again, not a single one of these species of fish is amongst the ten most abundant fish species impinged at the ESGS and nearby Scattergood Generating Station intakes between 1990 and 1999 (see Biological Resources Table 2 in the FSA), nor are any of these species amongst the most abundant fish larvae collected by the Applicant in limited sampling off ESGS in 2001 (Pondella 2001). Therefore, the results of the Bight Project presented by the Applicant are irrelevant to an assessment of the impacts of the ESGS intake.

Furthermore, the statement by the Applicant that the Bight Project concluded that fish populations have improved since the early 1970s, and that no major changes in fish assemblages were noted, is misleading and irrelevant to an assessment of ESGS intake impacts. The specific improvements noted in the 1994 Bight Project were a decrease in the levels of DDT and PCB in flatfish livers and a decrease in epidermal tumors, fin erosion, lesions, and skeletal deformities in fish. These improvements were related to the banning of DDT and PCB in the early 1970s, and have no relevance at all to a determination of the impacts of power plant intakes (Allen et al. 1998 p. 141).

Finally, while Allen et al. note that "overall fish and invertebrate population metrics have not changed much during the past few decades", the report goes on to add that ". . . considerable changes have occurred in certain species and at certain sites." (Allen et al. 1998 p. 118, emphasis added). Since the Bight Project trawl samples were focused on depths much greater than the ESGS intake, the report's overall conclusion of "little change" only relates, at best, to bottom dwelling fish at depths considerably offshore of the ESGS intakes. Furthermore, the actual abundance of certain species can change, and in fact has changed,

without necessarily changing the sort of summary measures of fish assemblages reported in the Allen et al. study.

### ***Santa Monica Bay Sportfishing Revitalization Study***

**Applicant's Testimony:** In 1984, under Assembly Bill No. 2642, the California Department of Fish and Game initiated a special study to examine the existing long-term information on the biological health of Santa Monica Bay and the declining sport fishery. This study was set forth in an effort to formulate recommendations to increase sport fishing opportunities (MBC 1985). The prime objectives of the study were to document the status and trends for sport fishing and to examine potential links between these trends and urbanization. In an effort to determine whether long-term trends were unique to Santa Monica Bay or the reflection of regional or larger scale events, a reference area was selected for comparison. This area was that portion of the coastline from La Jolla to Oceanside, and area of similar topography and habitat but markedly different in land use. Fish catch data and effort was derived from CDFG catch block statistics for sport fishing vessels for the period 1936 to 1984. Additionally, a variety of other parameters such as population, industrial discharge rates, rainfall, and contaminant distribution, and dates of coastal modifications were examined as potential time-line correlates.

The industrial use of the Bay was addressed, and the effects of the once-through-cooling water systems at the Scattergood, El Segundo and Redondo Beach Generating Stations and the Chevron Refinery were examined because of fish losses due to entrainment and impingement. Three coastal generating stations in the Bay utilize seawater for condenser cooling and the disposal of various in-plant generated wastes. Combined, these facilities are permitted to circulate a maximum of approximately 2 billion gallons of seawater per day. The associated rise in temperature of the circulated water causes the immediate loss of some planktonic forms, including larval fishes, as well as the loss of adult fishes entrained or impinged in the cooling water flow. The number of fishes removed was large, it is less than one-third of the number taken by party boat fishermen and, for the most part, were not those species sought by sport fishermen. It was concluded the generating stations had operated under their present configuration since the mid-1950s with no apparent overall effect on the catch-per-unit effort (CPUE) or total catch by sport fishermen. Offshore intake and discharge structures act as artificial reefs to some degree and are favored fishing spots for both party and private boats. One discharge from the Redondo Generating Station terminates just inside King Harbor and has become very productive for shoreline fishermen seeking bonito on a year-round basis.

The results showed that most of the Santa Monica Bay populations were under extreme angling pressure and with few exceptions had been under decline for decades. It appeared that in fact the populations were at or exceeded their "maximum sustainable yield". The CPUE and total catches appeared to be relatively stable in the San Diego area, but had a rising trend in Santa Monica Bay. This was despite a decreasing trend for many of the traditional game species. The apparent contradiction was due to the

change in “consumption” patterns over four decades of monitoring. It appears that as the more valued fish became more difficult to catch because of lower stocks, less desirable species were retained to compensate.

**Staff’s Response:** The results of this “Sportfishing Revitalization Study” do not support the Applicant’s conclusion that the ESGS intake is doing no significant harm to the fish of Santa Monica Bay. To the contrary, as reported by the Applicant, this study actually supports Staff’s position that fish populations in Santa Monica Bay have changed, and many are in serious decline. Thus, as the Applicant itself states:

*"The results [of this study] showed that most of the Santa Monica Bay [sport fish] populations were under extreme angling pressure and with few exceptions had been under decline for decades. It appeared that in fact the populations were at or exceeded their 'maximum sustainable yield.'"*

If sports fish populations are declining in Santa Monica Bay, then any additional "predation” or “cropping” by the ESGS intake will have a significant adverse cumulative impact on the remaining populations because it will add to the loss of fish populations already in serious decline.

#### ***1993 Santa Monica Bay Characterization Study and 1988 State of the Bay Scientific Assessment***

**Applicant’s Testimony:** The objectives of the State of Santa Monica Bay report (MBC 1988) were to assemble all biological, oceanographic, and chemical data available to assess historic and present levels of pollutants and evaluate their impact.

Fish abundance has varied considerably in Southern California over the past 1,800 years, as evidenced by layers of fish scales in marine sediment cores from coastal basins (Soutar and Isaacs 1969). Periods of high abundance of Pacific sardines lasting as much as 200 years have been followed by low abundance periods for 80 years. The low abundance noted since 1940 is similar to the period of 1865 to 1885. Likewise, northern anchovy abundance peaked about 1,500 years ago and decreased into 1992. These fluctuations were evident when sport fish catch block data are analyzed. California Department of Fish and Game (CDF&G) catch block data from 1935 to 1985 showed that the CPUE initially was high in the mid-1930’s. Such data shows that the CPUE declined through World War II and did not reach pre-war levels until the 1960’s (with the exception of 1957 which had the greatest CPUE recorded). Since then the CPUE has gone up or down with the arrival or departure of El Niños, peaking in 1972 and 1979. Presumably the peak in CPUE was a result of higher numbers of fish in the nearshore waters, but may have been the result of improved fishing techniques or the effects of El Niños. Stephens noted that during the El Niños of 1972 and 1982-83, several species of warm-water reef fishes recruited into King Harbor where they were still abundant in 1988 (J. Stephens, personal communication 1988).

In 1987, there were 79,197 anglers on commercial sport fishing boats and they caught over 400,000 fish for an average of five fish per angler day. Projecting this value to include shore-based fishermen and private party boats (using National Marine Fisheries Service 1986 estimates of 37% for shore fishing, 22% for commercial party boats, and 41% for private fishing boats) yields an estimate of 360,000 anglers taking 1,800,000 fish from Santa Monica Bay each year. In 1987, the five most abundant species taken and their relative contribution to the total were Pacific bonito (25% of the catch), chub mackerel (19%), barred sand bass (18%), rockfish (16%), and kelp bass (10%).

In 1979-1980 an estimated 3.4 billion fish larvae were lost annually to the cooling water intake system of the Redondo Generating Station based on flow data from the generating station. Using this estimate and cooling water flow data from El Segundo and Scattergood generating stations, an additional 3 billion larvae would be lost for a total loss of about 6.4 billion larvae. Although this number appears high, most of the species that comprise this total have very high fecundities because in nature very few larvae survive to adulthood. For example, each white croaker female can spawn between 14,400 and 892,800 eggs per year (depending on their size) (Love et al. 1984). White croaker comprised 37% of the larvae taken. Queenfish produce an estimated 5 to 900 trillion eggs per kilometer of coast per year (equivalent to 305-54,900 trillion eggs per year in Santa Monica Bay). About 10% will die in the first 7 days from natural mortality (0.5 to 99 trillion). An estimated 250 billion northern anchovy larvae die each day (90 trillion per year). Therefore, the 6.4 billion larvae per year lost to cooling water intakes in Santa Monica Bay amounts to an insignificant percentage of the larvae in the nearshore waters (MBC 1988). This study was updated in 1993 with new data available since the original study.

**Staff's Response: The 1993 update of the Santa Monica Bay Characterization Study demonstrates a substantial decline in sports fish catches in Santa Monica Bay since 1982 indicating changing fish abundances and a reason to be concerned about additional fish losses caused by power plant intakes (Santa Monica Bay Restoration Project 1994, pp. 10-14 to 10-15). Although fish populations often fluctuate from year to year, the current trend in many species has been down for the last 20 years.**

**Staff disagrees with the Applicant's contention that, because fish produce trillions of larvae per year, the loss of billions of fish larvae to Santa Monica Bay power plant intakes is "insignificant." First, from an ecological perspective fish do not produce a "surplus" of larvae. If a fish species produced more larvae than it needed to perpetuate the species it would be wasting energy and over time would be outcompeted by more efficient species. Second, if any fish species really was producing far more larvae than were needed, that species would be rapidly *increasing* in Santa Monica Bay. Instead, the evidence suggests that many species in Santa Monica Bay are *declining*. Third, while most fish larvae do not grow to adulthood, they do become part of the food chain. Therefore, the "cropping" or "predation" of billions of fish larvae by power plant intakes not only directly contributes to the subsequent reduction of adult fish, it also serves**

to deplete the overall food chain within Santa Monica Bay as well. Fourth, while only fish larval losses may be well documented in entrainment studies, *trillions* of other small planktonic creatures are also entrained in power plant intakes as well. These intakes are essentially large, mechanized predators competing with all other species that eat plankton. The loss of plankton to the food chain is of particular concern because Southern California zooplankton biomass has declined dramatically since the 1970s. Roemmich and McGowan (1995) demonstrated that *the biomass of macrozooplankton in waters off Southern California has decreased by 80 percent since 1951*. Documented declines in plankton eating fish such as shiner perch are thought to be related to this declining food base (Stull and Tang 1996).

***Lavenberg, et al. 1986***

**Applicant's Testimony:** To establish a baseline of larval fish abundance and distribution for the Southern California Bight a Bight-wide plankton survey was initiated in August 1979. The program extended offshore sampling transects occupied since 1949 by the California Cooperative Fisheries Investigations (CALCOFI) into the nearshore area. Additional transects were added to the sampling array to provide characterization of the nearshore ichthyofauna at depths of 36m, 22m, 15m, and 8m along 20 transects from Point Conception to the Mexican border. Between June 1978 and December 1984 the station array was sampled 52 times. While more than 150 taxa were collected, the abundance and distribution of 6 taxa of sport and commercial value were discussed. Of the total larvae collected, northern anchovy comprised 67% of the total larvae collected, White croaker 6.6%, Pacific sardine 5.9%, queenfish 2.1%, California halibut 1.0%, and sea basses (*Paralabrax* spp.) 0.6%.

Northern anchovy were most abundant along the 75m isobath, and the remainder of the other species most abundant inshore of the 36m isobath. Anchovy, white croaker, and halibut spawned all year, but in were most abundant in late winter and spring. Larval queenfish were most abundant in spring and summer. Pacific sardine were most numerous in late summer and fall. *Paralabrax* spp occurred during the summer.

**Staff's Response:** **The Lavenberg et al. study is one of the relatively few studies that actually sampled fish larvae in the nearshore waters of Southern California. However, it was not designed to address power plant impacts and drew no conclusions regarding such impacts. Therefore, it can not be used to assess the impacts of the ESGS intake. In addition, it was done more than 15 years ago and, as demonstrated by the Roemmich and McGowan (1995) study discussed above, macrozooplankton, including fish larvae, have changed (declined) dramatically in Southern California in recent years.**

**The seasonality of the most abundant fish species observed in the Lavenberg et al. study demonstrates why the Applicant's proposal to cap flows *only during the months of February, March and April* will not ensure that the ESPR project would not have a significant impact on some fish species. For example, the Lavenberg**

**study found that Pacific sardine larvae were most numerous in late summer and fall and that kelp and sand bass larvae peaked in summer.**

**Other environmental studies conducted in the Bay include:**

**Applicant's Testimony:** Offshore the El Segundo Generating Station, environmental studies include the Thermal Effect Study, the 316(b) Demonstration (source water stations in Bay), the Dye Dispersion Study, and ongoing NPDES monitoring (water quality monitoring, sediment characteristics and chemistry monitoring, analysis of benthic infauna, bioaccumulation studies, fish and macroinvertebrate trawl studies, and fish and macroinvertebrate impingement studies).

Offshore the Scattergood Generating Station, environmental studies include the Thermal Effect Study, the 316(b) Demonstration, and ongoing NPDES monitoring (water quality monitoring, sediment characteristics and chemistry monitoring, analysis of benthic infauna, bioaccumulation studies, fish and macroinvertebrate trawl studies, and fish and macroinvertebrate impingement studies).

Offshore the Redondo Generating Station, environmental studies include the Thermal Effect Study, the 316(b) Demonstration, the Dye Dispersion Study, and ongoing NPDES monitoring (water quality monitoring, sediment characteristics and chemistry monitoring, analysis of benthic infauna, bioaccumulation studies, fish and macroinvertebrate trawls studies, and fish and macroinvertebrate impingement studies).

Offshore the Chevron El Segundo Refinery, environmental studies include the 316(b) Demonstration and ongoing NPDES monitoring (water quality monitoring, sediment characteristics and chemistry monitoring, analysis of benthic infauna, bioaccumulation studies).

Other relevant environmental studies conducted in Santa Monica Bay include the Santa Monica Bay Seafood Consumption Study, prepared for the Santa Monica Bay Restoration Project in 1994, ongoing ichthyoplankton monitoring in and near King Harbor by the Occidental College Vantuna Research Group, and a study documenting the distribution of juvenile halibut (*Paralichthys californicus*) in bay and coastal habitats of Los Angeles, Orange, and San Diego Counties in 1992, conducted by MBC Applied Environmental Sciences, from Carlsbad to Hermosa Beach, California.

**Staff's Response:** **As was true of the other studies cited by the Applicant, most of the studies cited in the Applicant's answer to this question are not relevant to a determination of the impacts of entrainment in the ESGS intake. Only the 316(b) "proxy" studies actually addressed entrainment impacts. Those entrainment studies are problematical because: 1) they were done over 20 years ago; 2) the Southern California marine environment has changed substantially since that time; 3) the identification of larval fishes has improved greatly; and 4) the techniques for assessing entrainment impacts have improved considerably. Therefore, entrainment studies done in the last few years are far more capable of**

accurately and reliably assessing impacts than studies done 20 years ago. These points are discussed in more detail below.

**E. What studies have been conducted regarding potential environmental effects from ESGS?**

**Applicant's Testimony:** Environmental monitoring offshore the El Segundo Generating Station commenced in the early 1970s and continues to the present. The Thermal Effect Study (Benson et al. 1973) was conducted in 1971, 1972, and 1973, and both the physical and biological effects of the discharge of heated cooling water were examined.

The Thermal Effect Study documented the vertical and areal extent of the thermal plume from the generating station. The biological studies focused on the benthic infauna, demersal fish and invertebrates, and intertidal communities. The benthic infauna community consisted of at least 230 species, and the distribution and abundance of organisms was most affected by depth, season, and sand grain size. The demersal fish community consisted of 47 species of fish. More species of fish were collected in the control area (2,743 m upcoast from the study area) than in the study area (offshore the generating station), but more individuals were usually taken in the study area. Two species of fish were exclusive to the study area, while 22 species were exclusive to the control area. There appeared to be an inverse relationship between bottom temperature and fish abundance, biomass, and species richness. Overall, nine species of fish comprised 95% of the total catch. The trawl-caught invertebrate community consisted of 52 species, 12 of which were exclusive to the control area, and 10 of which were exclusive to the study area.

The Thermal Effect Study also studied effects on the intertidal community both upcoast and downcoast from the discharge lines. Distance from the discharge lines did not influence abundance of the two dominant species (the sand crab *Emerita analoga* and the isopod *Exciorolana chiltoni*). Intertidal water temperature did not vary significantly with distance from the discharge lines, but did vary significantly with season, as expected. Species diversity was not affected by temperature or distance from the discharge line. Lastly, dive surveys documented 30 species of subtidal epifauna offshore El Segundo. As recorded in the benthic surveys, species diversity increased with depth.

Ongoing monitoring studies have continued since the first Thermal Effect Study, and include: physical water column monitoring, sediment grain size analysis, sediment chemistry analysis, mussel bioaccumulation studies, analysis of benthic infauna, and analysis of fish and invertebrate impingement. The monitoring program is done in accordance with NPDES permit requirements. Results of ongoing monitoring largely reflect the results of the Thermal Effect Study. For example, the two dominant infaunal organisms offshore El Segundo in 1971 and 1972 (the polychaete *Apoprionospio pygmaea*) and the bivalve *Tellina modesta*) rank first and fourth in abundance, respectively, offshore El Segundo from 1991 through 2001.



As required by Section 316(b) of the Clean Water Act, an entrainment and impingement study was conducted in the late 1970s and early 1980s to determine the operational effects of the El Segundo Generating Station. The original 316(b) study plan was accepted by the Los Angeles Regional Water Quality Control Board and the California Department of Fish and Game. The demonstration concluded that in no case was more than 0.8% of any fish species population affected by the operation of the El Segundo Generating Station. The authors of the report examined alternative intake technologies, but ultimately concluded that the existing technology represented the best technology available.

**Staff's Response:** Staff does not contend that the thermal or impingement impact information concerning this proposed project is inadequate. Staff does contend that the original Ormond Beach 316(b) "proxy" study is inadequate to address the entrainment impacts of the proposed project. Staff does not contend that earlier proxy studies were done in bad faith or that they did not represent reasonable science at the time, but the techniques for detecting entrainment impacts have improved greatly in the last 20 years, and the conditions in the natural environment have changed greatly as well.

The inadequacies of the Ormond Beach and other proxy studies cited by the Applicant are described in detail in the FSA. The main problems with these entrainment studies are summarized here:

1) Timing Concerns: As stated above, the marine environment of Southern California has changed substantially in the last 20 years. These changes have been documented in the peer-reviewed scientific literature and include substantial declines in zooplankton (Roemmich and McGowan 1995), declines in many species of croaker (Herbinson et al. 2001), and declines in several species of rockfish (Love et al. 1998). Therefore, studies done 20 years ago are not relevant to what the impacts of cooling water intakes may be today.

2) Location Concerns: The Ormond Beach 316(b) proxy study collected fish larvae samples from Ormond Beach, located 55 miles north of the ESGS, to estimate the impacts of the ESGS intakes. However, fish larvae concentrations are extremely variable geographically and the Ormond Beach study did not demonstrate that the concentrations of fish larvae collected off Ormond Beach were similar to that at El Segundo. In short, actual concentrations of fish larvae *in the waters actually drawn into the ESGS intake* are needed to reliably determine entrainment impacts of the proposed project, not merely the relative abundance of species in the plankton, which is all the Ormond Beach proxy study provided.

3) Species Identification Concerns: Techniques for assessing entrainment impacts have improved substantially in the last 20 years. For example, the ability to identify fish larvae to species has improved greatly since 1985 (Moser et al. 2001). Since 1985 there has been a 60% increase in the number of identifiable

Southern California fish larvae. Without knowing the actual species being entrained by a power plant intake, the impacts on those species cannot be assessed accurately. With the recent advances in fish larvae identification, those impacts are much more likely to be detected now than they were 20 years ago.

4) **Impact Assessment Concerns:** Very powerful techniques for detecting and assessing adverse impacts have been developed in recent years. These improved scientific assessment techniques have resulted in the identification of significant adverse entrainment impacts in recently conducted 316(b) studies, even though earlier 316(b) studies at the same power plant locations, done in the late 1970s, yielded assessments of no significant impacts. Examples of this situation include recent studies at Moss Landing and Diablo Canyon, both of which found significant adverse entrainment impacts even though earlier studies done in the late 1970s at these same facilities concluded that the intakes were not having a significant adverse effect on marine organisms (Tenera 2000 a and b).<sup>3</sup>

#### **F. What similar studies have been conducted at nearby power plants?**

**Applicant's Testimony:** The offshore monitoring requirements stipulated in the NPDES permits for the Scattergood and El Segundo Generating Stations are identical, since the generating stations discharge into the same waters. Studies conducted for the El Segundo Generating Station often include stations offshore the nearby Scattergood Generating Station.

Offshore the Scattergood Generating Station, located just north of the El Segundo Generating Station, environmental studies conducted since the 1970s include the Thermal Effect Study, the 316(b) Demonstration, and ongoing NPDES monitoring, which includes water quality monitoring, sediment characteristics and chemistry monitoring, analysis of benthic infauna, bioaccumulation studies, fish and macroinvertebrate trawl studies, and in-plant fish and macroinvertebrate impingement studies.

Offshore the Redondo Generating Station, located south of the El Segundo Generating Station, environmental studies conducted since the 1970s include the Thermal Effect Study, Dye Dispersion Studies, the 316(b) Demonstration, and ongoing NPDES monitoring, which includes water quality monitoring, sediment characteristics and chemistry monitoring, analysis of benthic infauna, SCUBA video surveys of fish and invertebrates, and in-plant fish and macroinvertebrate impingement studies.

**Staff's Response:** The only studies cited by the Applicant that are relevant to an assessment of the *entrainment* impacts of the proposed project are the 316(b) proxy studies done at the Scattergood and Redondo Beach Generating Stations.

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<sup>3</sup> It is important to note that the El Segundo Repower Project is the only proposal submitted to the Energy Commission within the past five years which seeks to directly withdraw large quantities of cooling water from an estuary, bay or ocean *without* performing or providing, as required, a recently "updated" 316(b)-like entrainment study.

Both of these studies suffer from many of the same deficiencies as the Ormond Beach 316(b) proxy study. Among these deficiencies are the following:

1) **Timing Problems:** Both Scattergood and Redondo Beach were done over 20 years ago and were assessing the significance of impacts on marine resources that have changed substantially in the past 20 years.

2) **Species Identification Problems:** The ability to identify larval fishes and to detect entrainment impacts were not nearly as well developed as currently. Specific problems with the Scattergood study are discussed in detail in the FSA. These problems included an inability to identify the species of many of the fish larvae and the fact that their sampling of entrainment appeared to underestimate the plankton concentration in the entrainment samples. In fact, the Scattergood report itself expressly states that for most of the species analyzed the entrainment estimates are "unrealistic" and "should be treated with caution."

3) **Impact Assessment Problems:** Finally, powerful models and other techniques to analyze entrainment impacts have been developed and applied in recent entrainment studies that were not available for these earlier studies.

**G. Does the El Segundo Power Redevelopment Project have the potential for significant biological effects?**

**Applicant's Testimony:** No. For the purposes of analysis of potential impacts related to the proposed project, we have assumed maximum allowable cooling water flow at the Units 1 & 2 intake. Even considering maximum flow throughout the year, biological effects are still considered insignificant.

**Staff's Response:** The Applicant has provided no adequate or reliable scientific data to support its claim of "no potential for significant biological effects" for this project. Staff has found that the El Segundo Redevelopment Project does have the potential for significant adverse biological impacts for the following reasons.

1) *The volume of water withdrawn by the ESGS intakes is not trivial.*

The volume of water which the Applicant proposes to withdraw for this project constitutes a substantial percentage of the source water in Santa Monica Bay. Based on oceanographic data collected by the Intersea Research Corporation for the Scattergood Generating Station 316(b) study, it was estimated that at intake volumes averaging 495 mgd, the Scattergood facility alone withdraws 4.4% of the upper 15 meters of water in Santa Monica Bay (Intersea Research 1981).<sup>4</sup> By comparison, the El Segundo project, when operating at the average annual intake volumes of 380 mgd (i.e. 139 billion gallons per year) proposed by the Applicant,

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<sup>4</sup> This calculation was based on the very conservative assumption that the waters in Santa Monica Bay are flows along the shore like a river, when in fact these waters actually continuously recirculate in a clockwise gyre within the bay.

would entrain 3.4% of the upper 15 meters of water in Santa Monica Bay. Cumulatively, the El Segundo and Scattergood generating facilities would entrain 7.8% or more of the sensitive waters of the bay. Adding the entrainment impacts from the Redondo generating station would raise the cumulative adverse entrainment impacts to Santa Monica Bay even further.

Thus, contrary to the Applicant, we find that the cumulative adverse entrainment impacts from the proposed El Segundo project will be significant. Moreover, we emphasize that the estimated percentage of entrained source water provided above is very conservative because, according to Intersea Research and numerous other oceanographic studies in the region, water in Santa Monica Bay does not flow along the nearshore like a river, but instead circulates repeatedly in a clockwise gyre around the bay. Such recirculation would further increase the total percentage of source water entrained by these generating facilities, and their cumulative adverse impacts on fish and other marine populations whose larvae are entrained.

*2) All recent, scientifically sound studies of power plant entrainment impacts have identified significant impacts. For example, an analysis of the impacts of the San Onofre Nuclear Generating Station off the open coast of Southern California determined that the intake losses were equivalent to 13% of the queenfish, 6% of the white croaker and 5% of the California grunion populations of the entire Southern California Bight (Murdoch et al. 1989).*

*3) Losses caused by the ESGS intake are adversely impacting marine organisms that are already in decline from a variety of factors. These declines are well documented in the scientific literature. Roemmich and McGowan (1995) have demonstrated a dramatic decline in the biomass of zooplankton, including fish larvae, in Southern California in the last 20 years. Herbinson et al. (2001) showed by analyzing power plant impingement data that the abundance of six croaker species frequently impinged on power plant intakes have declined substantially in Southern California since 1977. Similarly Love, Caselle and Herbinson (1998) used Southern California power plant impingement data to document substantial declines in several species of rockfish between 1977 and 1993. Boccacio, olive rockfish and blue rockfish, the species with the severest declines, were amongst the species most frequently impinged on power plant intakes. Other nearshore fish species, including sheephead, cabezon, and various species of surfperch, also have declined in recent years (Holbrook et al. 1997, CDFG 2000, Marx 2000).*

#### **H. Describe impingement, entrainment and thermal effects?**

**Applicant's Testimony:** Entrainment is the incorporation of all life stages of fish and invertebrates with cooling water flow entering and passing through a cooling water intake structure and into a cooling water system. Everything that flows into the cooling water system is "entrained". Entrained plankton are subject to mortality from 1) predation by organisms within the cooling water conduits such as mussels, barnacles,

and planktivorous fish species; 2) mechanical damage due to water turbulence, pressure differentials in the condensers, etc., and 3) thermal shock due to passage through the condensers.

Impingement is the entrapment of organisms on traveling screens for subsequent removal. Larger fishes, unable to pass through the traveling screens, generally become temporary residents (about 6 weeks) within the screen well until the next “heat treatment”, an operational procedure to reduce fouling organisms in the cooling water conduit and forebay. Impingement mortality includes 1) small daily losses of fatigued fishes and invertebrates unable to swim against the constant water flow, and 2) losses associated with heat treatments when the water temperature is elevated in the forebay and cooling water conduits.

Thermal Effects involve the heated seawater being discharged offshore. The water is discharged upwards toward the sea surface to allow: 1) dilution and mixing with surrounding waters; and 2) additional atmospheric cooling when waters reach the sea surface. The thermal effects of the operation of the generating station refer to the discharge of heated cooling water, which can translate into biological effects, and these effects have been studied since the early 1970s.

**Staff’s Response:** [We agree with the Applicant’s descriptions.](#)

**I. How do you define a significant effect to the aquatic environment for applying the California Environmental Quality Act to this project?**

**Applicant’s Testimony:** The word significant has numerous definitions. I use the following definitions to describe effects:

**None.** No entrainment or impingement losses at the intake.

**Insignificant.** Observed losses will have no effect on the dynamics of the nearshore fish population. Long-term population observations would reveal no significant differences in abundance or distribution.

**Significant.** Losses result in discernable statistical effect on population abundance and/or distribution that could lead to economic and/or ecological impacts.

This generally comports with CEQA guidelines for significance.

**Staff’s Response:** [While Staff finds the Applicant’s definitions above to be acceptable, a scientifically valid study is still needed to determine whether the direct entrainment impacts caused by the proposed cooling water intake system for this project will be “significant.” Specifically, since marine populations are variable in space and time, a carefully designed study is needed to identify any site-specific “discernable statistical effect” from the proposed cooling water intake system. The Applicant has not provided any scientifically reliable study to](#)

**determine whether the direct impacts of the ESGS intake would result in a statistically significant impact on affected populations.**

**J. Does operation of the El Segundo Generating Station have the potential for significant biological effects under that definition?**

**Applicant's Testimony:** The operation of ESGS does not have the potential for significant biological effects. The facility has been operating for decades as a fully permitted generating station with no significant effect on the marine environment.

**Staff's Response:** **The Applicant has provided no adequate or reliable scientific data to support this claim, and no scientifically valid study has been done to determine the entrainment impacts of the ESGS intake on affected fish species in Santa Monica Bay. As discussed above, the evidence presented by the Applicant to support this claim primarily consists of outdated "proxy" studies from other power plants or surveys of offshore bottom-dwelling fish species that are not affected by the ESGS intake.**

**K. Why do you say that potential impingement effects of ESGS are less than significant?**

**Applicant's Testimony:** Fish impingement losses at ESGS have been monitored since 1978 and generally are less than 2,000 lbs of fish per year. Under the existing NDPES permit such losses are considered acceptable.

From 1999 through 2002, normal operation impingement losses (attributed to the daily operation of Units 1 & 2) averaged 59 fish per year, with a maximum of 205 fish in 2000. Annual losses attributed to heat treatment (biofouling control) operations at Units 1 & 2 averaged 382 fish per year, with a maximum of 1,732 fish in 2001. To put these losses in context, the average annual catch of Santa Monica Bay sport fishing landings from 1992 through 1997 was 318,707 fish.

**Staff's Response:** **Staff finds that the direct impingement impacts of this project alone are unlikely to be significant. However, these impingement impacts will be cumulatively significant when added to the substantial losses of fish larvae resulting from entrainment and other causes.**

**L. Why do you say that potential thermal effects of ESGS are less than significant?**

**Applicant's Testimony:** During the early 1970s, Thermal Effect Studies were required at all coastal generating stations. These intensive studies examined all biological communities and a variety of thermal dispersion questions. The ESGS studies and continuing NPDES receiving water monitoring program have consistently demonstrated no significant adverse effects due to the discharge of thermal effluent. The operation of the facility meets the standards of the applicable Federal and State regulatory agencies.

**Staff's Response:** Staff finds that the direct thermal impacts of this project alone are unlikely to be significant. However, these thermal impacts will be cumulatively significant when added to the substantial losses of fish larvae resulting from entrainment and other causes.

**M. Why do you say that potential entrainment effects of ESGS are less than significant?**

**Applicant's Testimony:** Entrainment losses and potential effects were documented during the existing 316(b) demonstration and NPDES permit. The losses of larval forms do not have a significant effect on the standing stocks of Santa Monica Bay.

**Staff's Response:** As discussed above, the Ormond Beach 316(b) proxy study is not adequate to address the current impacts of the ESGS intake because: 1) it was done too long ago; 2) it was based on fish larvae concentrations at an intake over 55 miles away; and 3) it used species identification and impact assessment techniques that are far less powerful than techniques available today.

The existing NPDES permit for the ESGS only requires monitoring of temperature, impingement and bottom dwelling invertebrates. No monitoring of entrainment is required. Therefore, the current entrainment impacts of the intake are completely unknown.

**N. Are you familiar with the criticism that the original 316(b) study is too old and was conducted too far away to be of scientific value for evaluating potential impacts of ESGS?**

**Applicant's Testimony:** I am familiar with the CEC Staff position regarding the existing 316(b) data, and respectfully disagree. Regional characterization studies and existing 316(b) studies were the result of careful planning and study design involving the EPA, National Marine Fisheries Service, Regional Water Control Boards, and the California Department of Fish and Game. These studies, utilizing the same methodologies and sampling protocols as used presently by the California Cooperative Fisheries Investigations (CalCOFI) were successful in characterizing the nearshore ichthyoplankton populations. The CalCOFI database from 1947 to the present shows similar species lists and the numerically dominant members of the larval fish community remain the same. Continuous data on adult fish populations within Santa Monica Bay show a similar pattern. The fish community has remained basically the same over time, and is the source of the larval fish, therefore one would reasonably expect the larval fish community to be approximately the same.

**Staff's Response:** Although the Ormond Beach proxy study may have been developed with agency input and may have represented the best science at the time, as we discussed above the science of identifying species and analyzing

entrainment impacts has advanced considerably since the original 316(b) proxy studies were done approximately 20 years ago.

Although the plankton database which the Applicant relies on identifies similar species of fish larvae throughout Southern California, it does not indicate that the actual *concentrations* of these species are the same at Ormond Beach and at El Segundo. Because the actual concentrations of fish larvae drawn through the intake are *critical* to accurately quantifying impacts, using fish larval abundance from a distant location cannot provide reliable information about the impacts of the ESGS intake itself.

Finally, as we discussed above, the abundance of many of the species most vulnerable to power plant impacts have not remained the same over time. In fact, the Applicant has demonstrated these changes in larval abundance in the Supporting Impact Analysis of Entrainment and Impingement (ESPR December 2001). That document contains information on fish larvae abundances at King Harbor in Redondo Beach approximately 5 miles south of El Segundo. Appendix D shows the concentration of larvae in King Harbor samples between 1974 and 1998. Several species, including queenfish, white croaker, rockfish, and grunion, show a substantial decline during that period. It should be noted that queenfish, white croaker and grunion were all shown to suffer substantial impacts from entrainment at the San Onofre Nuclear Generating Station (Murdoch et al. 1989). Rockfish declines have been so severe that restrictions on rockfish fishing have recently been implemented in California.

**O. Does ESGS have a NPDES permit that authorizes it to use ocean water for cooling?**

**Applicant's Testimony:** Yes. The El Segundo Generating Station has consistently operated in accordance with its NPDES permit issued by the LARWQCB. The current permit was issued in 2000. The permit confirms compliance with the State Thermal Plan, and the Basin Plan which includes "cooling waters" as a Beneficial Use. With respect to the 316(b) demonstration, the permit states: "The study demonstrated that the ecological impacts of the intake system were of an environmentally acceptable order, and provided sufficient evidence that no modification for the location, design, construction or capacity of the existing systems was required. The design, construction, and operation of the intake structure was then considered Best Technology Economically Achievable (BAT) as required by Section 316(b) of the Clean Water Act (CWA)."

**Staff's Response:** The existing NPDES permit for the ESGS, which expires in 2005, relies on the Ormond Beach 316(b) proxy study from 20 years ago. Currently, the LARWQB does not require any monitoring of entrainment impacts at the existing ESGS or any updating of the original entrainment study done at Ormond Beach.



However, the U.S. Environmental Protection Agency (EPA), which administered the original requirements under Section 316(b) of the Clean Water Act, has recently reevaluated the serious adverse impacts of entrainment at cooling water intakes and issued highly revised and restrictive federal rules for “new” intakes in 2001. In addition, because determinations that existing intake technologies represent “Best Available Technology” (BAT) were made decades ago, they may no longer be true, and EPA has recently proposed new rules for “existing” intakes as well (EPA 2002).

**P. Does ESGS or this project have the potential for significant entrainment or other impacts to the Santa Monica Bay marine ecosystem?**

**Applicant’s Testimony:** No. The facility is a fully permitted and complies with all State and Federal requirements and has been determined to have no significant effect on the receiving waters of Santa Monica Bay.

**Staff’s Response:** The proposed El Segundo Redevelopment Project is not “fully permitted” at this time. As noted in Staff’s Direct Written Testimony, the existing ESGS Units 1 and 2 no longer have a valid air quality permit from the South Coast Air Quality Management District (SCAQMD), and those units were legally required to cease all generation as of January 1, 2003. In addition, the proposed ESPR project does not have any permits to construct or operate at this time, and it is the Energy Commission’s responsibility to determine whether the proposed project will, in fact, comply with all applicable LORS (e.g. the California Coastal Act) and the California Environmental Quality Act (CEQA), as required by the provisions of the Warren-Alquist Act (Public Resources Code Section 25000 et seq.)

The existing NPDES permit for ESGS requires no assessment or monitoring of entrainment impacts, and was issued based on the Ormond Beach proxy study. As we have discussed in detail above, and in the FSA, the Ormond Beach study is outdated and scientifically unreliable, and it does not provide a sound basis for the Energy Commission to determine that the proposed project will meet its legal obligations under CEQA and other applicable LORS.

**Q. How do you define cumulative impacts under CEQA relative to the Santa Monica Bay?**

**Applicant’s Testimony:** CEQA allows for consideration of the effects of the project to be considered with existing effects, and effects of other pending projects. In this circumstance, I already know that intake #1 has been operating for nearly 40 years and is thus really part of the baseline. In that sense it does not constitute new effect that needs to be added to a baseline.

If I were to consider this as a new effect, I would still conclude that this effect combined with other facilities does not reach the level of significance. Perhaps the easiest way to

explain this is that the cooling systems in Santa Monica Bay have remained unchanged for more than 30 years and they have not had a significant effect on the Santa Monica Bay. This project does not increase the permitted flows beyond that which the Bay has already shown it can sustain.

**Staff's Response:** As discussed above, there is no adequate or reliable scientific evidence that the cooling water systems in Santa Monica Bay are not having a direct significant adverse impact. However, it is well documented in the scientific literature (Roemmich and McGowan 1995, Herbinson et al. 2001, Love et al. 1998, Holbrook et al 1997, CDFG 2000, Marx 2000 etc.), as well as in information submitted by the Applicant (ESPR 2001 Appendix D), that many of the fish species subjected to entrainment and impingement at the ESGS intake have been in decline for the last 20 years. Since the proposed operation of Intake 1 will add to those losses, the project will have significant cumulative adverse impacts on these declining species.

**R. Do you understand the argument that a flow increase in intake #1 relative to recent history would likely occur because of this project?**

**Applicant's Testimony:** The CEC Staff has taken the position that the current NPDES permitted cooling water flow rate of 207 mgd for intake #1 represents an "increase" in flow since it is higher than the average flow rate of 72 mgd the facility has operated at during the last 5 years.

**Staff's Response:** In light of new information recently received by Staff, it is now an established fact that the ESGS Units 1 and 2 no longer possess a valid SCAQMD license to operate. Accordingly, the existing cooling water "baseline" for Intake #1 is zero (i.e. none), and the proposed project would *increase* the cooling water intake levels by 207 mgd above existing conditions.

**S. Does that flow increase have the potential to cause significant effects?**

**Applicant's Testimony:** The alleged "increase" does not have the potential to cause significant marine environmental effects. The ESGS has operated within its permitted cooling water flow rates for more than 3 decades with no significant adverse effects. The 316(b) study for ESGS shows that flows at 207 mgd will not have a significant effect on the marine ecosystem of the Santa Monica Bay. The current NPDES permit allows for flows at 207 mgd because they will not have a significant effect on the Santa Monica Bay.

**Staff's Response:** We have refuted the Applicant's contention at length, both above and in the FSA.

**T. Can you describe the concept of the flow restriction condition proposed by the Applicant?**

**Applicant's Testimony:** The Applicant is proposing to restrict the volume of seawater withdrawn from Santa Monica Bay for cooling purposes by the generating station. The restriction limits the total volume of seawater withdrawn from Santa Monica Bay within a year to 138.7 billion gallons per year (bgy). This restricted volume is the average volume withdrawn from the facility by both intakes from 1998 through 2002, and represents a 37% decrease in cooling water flow from the currently permitted volume.

Additionally, the restriction limits the total volume of seawater withdrawn from Santa Monica Bay on a monthly basis for three months (February, March, and April) during each year, corresponding to the months of highest fish egg and larval concentrations in Southern California (Moser et al. 2001). As with the annual flow restriction, the February-April monthly restrictions are based on the five-year averages (1998-2002). The total allowable flow would be 9.4 billion gallons per month (bgm) in February, 9.8 bgm in March, and 10.0 bgm in April.

The monthly voluntary flow restriction was offered to alleviate CEC Staff concerns over potential impacts to larval fish populations during periods of peak abundance. It is acceptable to merge the two intake systems together in this volume restriction since they withdraw water from the same source, and affect the same water mass.

**Staff's Response:** As indicated in our Direct Written Testimony, based on the facts in this case Staff accepts the Applicant's assertion that "it is acceptable to merge the two intake systems together in this volume restriction since they withdraw water from the same source, and affect the same water mass."

However, as we also explained in our Direct Written Testimony, we do not agree that a monthly cap applied for only three months (i.e. February, March and April), as proposed by the Applicant, will "maintain" the *status quo ante* because certain fish species impacted by this project spawn either in the summer or year round in the Southern California Bight. Therefore, we find that "maintenance" of existing conditions would, at a minimum, require two things: (a) the imposition of a monthly cap for every month of the year, based on an appropriate "baseline" and (b) an appropriate "baseline" reference point, consisting of the conditions actually existing at the time this AFC was filed (i.e. December 2000), as subsequently modified by the newly changed circumstances in which Units 1 and 2 have now ceased to legally operate entirely effective January 1, 2003.

Finally, even if an appropriate *monthly cap* were imposed for every month of the year to ensure that adverse impacts were "maintained" and not made worse by the project, this would not "restore and enhance to the extent feasible" the marine organisms adversely impacted by the operation of the ESGS cooling water intake system, as required for both LORS compliance and California Coastal Act conformity in this case. To comply with these legal requirements, an appropriate monthly cap would need to be coupled with a substantial funding commitment from the Applicant for restoration and enhancement programs to the extent feasible. The specific details of such enhancement and restoration

programs would need to be developed based on the results of an appropriately designed, current, site-specific 316(b)-like study.

**U. Does the flow restriction address CEC Staff’s “flow increase theory” of entrainment effects?**

**Applicant’s Testimony:** The proposed flow restrictions does not change my assessment of the potential effects of this project, they are less than significant. The flow restriction does directly respond to the CEC Staff’s theory. .

Under the proposed flow restriction, the generating station would operate both intakes in the same manner they were used in the previous five years. There would be no increase in flow, as suggested by CEC Staff, and the annual volume of water withdrawn from Santa Monica Bay would represent a 37% reduction compared with currently permitted volume. Thus the flow restriction adds an environmental benefit while also eliminating the CEC Staff’s argument that a potentially significant effect under CEQA might occur.

**Staff’s Response:** There is and will be absolutely no “environmental benefit” from the cooling water intake system currently proposed by the Applicant for this project. To the contrary, as now proposed by the Applicant the cooling water intake system will withdraw 139 billion gallons of water and trillions of marine organisms from Santa Monica Bay each year, and will likely increase adverse entrainment, impingement and thermal impacts on the marine organisms of Santa Monica Bay when compared with existing conditions.<sup>5</sup> In addition, the Applicant has proposed nothing to “restore and enhance to the extent feasible” the marine organisms adversely impacted by the existing ESGS system.

1) Voluntary Flow Restriction

(a) *Overview*

**Applicant’s Testimony:**

ESP II seeks to eliminate the potential for significant effects in the area of biological resources through the implementation of a voluntary flow restriction (“flow cap”). Using a conservative approach, the flow cap would limit the use of the once-through cooling system to a flow amount no greater than the historical actual use, which is less than the current permitted use contained in ESP II’s current NPDES permit. Through the voluntary flow cap as proposed by ESP II, there is no remaining potential for significant entrainment impacts.

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<sup>5</sup> For example, although peak larval abundance in general is greatest during the months the Applicant proposes a monthly flow cap, many species have their larval peak outside this period. In the Applicant’s own discussion of the results of the Lavenberg et al. 1986 study, it is noted that larval queenfish were most abundant in spring and summer. Pacific sardine were most numerous in late summer and fall, and kelp and sand bass larvae were found during the summer. Therefore, these species, as well as others, could be adversely affected if Intake 1 withdrew greater volumes of water during the summer, as allowed under the Applicant’s proposed annual cap.

In its November 7, 2002 Pre-Hearing Conference Statement, ESP II proposed that the entire El Segundo Generating Station (“ESGS”) operate under an annual maximum once through cooling limit based on actual ocean cooling water usage during the previous five years. This annual flow cap was proposed in a condition of certification, BIO-3, as one of several means of eliminating several parties’ concerns that ESPR was causing a flow increase that in turn would cause potentially significant impacts. During the December 18, 2002 Committee Workshop, ESP II found that CEC Staff and several agencies were receptive to the flow cap proposal but it was suggested that a monthly flow cap in the months of high larval productivity would provide further assurance against potential impacts to certain larval populations during those months. In response to this discussion, ESP II proposed both an annual flow cap and a monthly flow cap in the months of February, March and April. ESP II proposes specific numbers for the flow cap that reflect the most recent operational history for the entire ESGS.

As further discussed below, the purpose of the flow cap is to ensure that future flows from the combined outfalls 001 and 002 do not exceed an annual limit that is equal to the five-year average annual flow volume for the period ending December 2002. The flow cap also applies on a monthly basis during the three-month period of February through April.

The proposed flow cap is set forth in Applicant’s proposed Condition of Certification BIO-3, which states:

**Biology-3:**

The project owner shall take action to reduce entrainment impacts by implementing an annual cap on flow in the combined total of Intake #1 and Intake #2 of 139 billion gallons and shall also cap the monthly flow volumes in February at 9.4 billion gallons, March at 9.8 billion gallons and April at 10.0 billion gallons. The annual cap shall be in place for the first year that Intake #1 is operated to support the new facility.

If future NPDES permitting establishes that an annual flow cap is not necessary to avoid significant effects then the project owner shall obtain changes to this condition of certification that removes the annual flow cap.

If the NPDES permit for ESGS is changed to incorporate entrainment control technology that confirms less than significant effects then the project owner shall obtain changes to this condition of certification that removes the annual flow cap.

**Verification:**

Project owner shall report to the CPM all communication efforts with the LARWQCB regarding entrainment and NPDES permit renewal or compliance.

Project owner shall report, in its annual report, monthly flow volumes for both Intake #1 and Intake #2.

**Staff's Response:** For the reasons set forth earlier in this response, Staff finds that the "flow caps" proposed by the Applicant will not maintain the *status quo ante*, nor will these proposed flow caps in any way "enhance and restore to the extent feasible" the marine organisms which are adversely impacted by the ESGS cooling water intake system.

*(b) Annual Flow Cap Baseline Period*

**Applicant's Testimony:**

The voluntary annual cooling water facility flow cap was generated using the most current actual cooling water flow volumes from the 001 and 002 intake/discharge systems. The baseline period is calendar year 1998 through calendar year 2002, using the flow volumes as reported to the Los Angeles Regional Water Quality Control Board in the monthly and annual NPDES reports. This period is the most representative baseline for CEQA purposes as it includes all of the years during which the El Segundo Generating Station was operating as a merchant power producing facility and was owned and operated by El Segundo Power LLC. Previous to 1998, the facility was owned and operated by Southern California Edison and regulated by the California Public Utilities Commission. Since SCE operation and CPUC regulation is no longer representative of how the ESGS is operated today, it is appropriate for the baseline period to only include years when the facility operated as a merchant generator (1998-2002). The merchant mode of operation is also how the facility will be operated for future power generation for existing Units 3 & 4 and for the new Units 5, 6, & 7. Therefore, the facility-wide cooling water flow cap would be applicable to future operating scenarios.

ESP II derived the annual average flow from the actual reported flow volumes for the five-year baseline period. The five-year average for Discharge 001 was 26.2 billion gallons per year, and for Discharge 002 was 112.5 billion gallons per year. The average facility-wide volume is the sum of those two numbers, or 138.7 billion gallons per year, which is the average cooling water volume pumped for the year at the facility. The cooling water flow cap for Discharge 001 and 002 would therefore be 138.7 billion gallons per year and would ensure that cooling water volume is not increased as a result of the ESPR project.

The five-year average for Discharge 001 is 35% of the NPDES permitted flow, and approximately 35% of the total flow required by proposed new generation Units 5, 6, and 7 when operating at maximum generating capacity. When the AFC was filed, ESP II had assumed full operational capacity of the facility would be possible at all times. Reducing the plant site's potential capacity factor places a significant burden on the project.

Figure 1 illustrates the monthly flow volumes through the combined outfalls 001 and 002, in relation to the NPDES permit limit, during the most recent five-year period 1998-

2002. The NPDES daily flow limits are 207 MGD for Outfall 001 and 398 MGD for Outfall 002, for a combined total of 605 MGD. This translates into an annualized flow limit of 220.8 Billion Gallons per Year (BGY), excluding leap years that would have a limit of 221.4 BGY.

Figure 2 illustrates the total annual flows during this period. As shown in Figure 2, the average annual flow volume over the five year period 1998-2002 was 138.7 BGY. This number represents the annual flow cap.

The net effect of the annual flow cap is illustrated in Figure 3. Figure 3 shows the total annual allowable flow volume of 138.7 billion gallons compared to the NPDES limitation of 220.8 BGY. The flow cap restricts ESPR and Unit 3 and 4 combined operations to 63% of the potential flows available under the NPDES Permit. The daily, monthly, and annual average flow volumes are appended to this testimony.

**Staff's Response: For the reasons set forth earlier in this response, Staff finds that the annual "flow caps" proposed by the Applicant will not maintain the *status quo ante*, nor will these proposed flow caps in any way "enhance and restore to the extent feasible" the marine organisms which are adversely impacted by the ESGS cooling water intake system.**

*(c) Monthly Flow Caps*

**Applicant's Testimony:**

To address concerns raised by Staff regarding the seasonality of potentially higher concentrations of larval populations, ESP II has also proposed three separate monthly cooling water flow caps for each of the months of February, March, and April. The monthly cooling water flow caps are also derived from the 1998-2002 baseline period and is also founded on data from NPDES reports submitted to the LARWQCB. Total permitted flow would be limited to the averaged for the month in question for each of the baseline years. For February the flow cap would equal the five-year February average of 9.4 billion gallons; for March the flow cap would equal the five-year March average of 9.8 billion gallons; and for April the flow cap would equal the five-year April average of 10.0 billion gallons. These averages would be the combined Discharge 001 and 002 monthly flow caps for the stated months.

Figure 4 illustrates the net effects of the three monthly flow caps. February flows (excluding leap years) would be limited to 9.4 billion gallons, or 55% of the currently permitted flows; March flows would be limited to 9.8 billion gallons, or 52% of the permitted flows; and April flows would be limited to 10 billion gallons, or 55% of the permitted flows.

**Staff's Response:** For the reasons set forth earlier in this response, Staff finds that the limited monthly “flow caps” proposed by the Applicant will not maintain the *status quo ante*, nor will these proposed flow caps in any way “enhance and restore to the extent feasible” the marine organisms which are adversely impacted by the ESGS cooling water intake system.

*(d) Summary of Flow Cap Benefits*

**Applicant's Testimony:** The monthly and annual cooling water flow caps are hard caps that cannot be exceeded by the facility. At the end of the months of February, March, and April, total facility-wide cooling water volume cannot exceed the monthly cap amount. Similarly, at the end of each calendar year, total facility-wide cooling water flow cannot exceed the annual cap amount. This will effectively limit entrainment and impingement levels to pre-project levels and will ensure there are no increases in aquatic biology impacts caused by the project for the purposes of compliance with CEQA, the Warren Alquist Act, and the California Coastal Act.

There is no known NPDES permit or similar permit that uses anything other than a daily limit for once-through cooling systems. The annual limit and the three monthly limits complement the current daily limit which would remain unchanged. This voluntary flow limitation effectively ensures no increase in flows over recent historical baseline levels, thus there is no potential CEQA significant impacts related to continued use of the once-through cooling system.

The voluntary monthly limits during a period with potentially heightened larval populations is in response to an issue raised by CEC Staff and other agencies, and is an enhancement to the annual flow cap that ESP II is prepared to accept.

**Staff's Response:** For the reasons set forth earlier in this response, Staff finds that the the specific annual flow caps and the limited monthly flow caps proposed by the Applicant will not maintain the *status quo ante*, nor will these proposed flow caps in any way “enhance and restore to the extent feasible” the marine organisms which are adversely impacted by the ESGS cooling water intake system.

## V. Designated Documents in the Issue Area of Biology

**Applicant's Testimony:** In addition to the above written testimony for the area of Biological Resources, ESP II designates the following documents as further testimony in the issue area of biology:

- a) AFC Section 5.6; Appendix H
- b) Data Requests: 6-10; 45; 53-55; and, 78-85 docketed by ES II March 28, 2001; CCC-1; CCC-17; and CCC-25; USFWS-1, 2, and 3 docketed April 18, 2001; and, 156 – 161 docketed May 30, 2001
- c) Supplemental Responses: 6s-10s; 81s-84s; and 6ss docketed April 18, 2001;



and, 157s docketed May 7, 2002.

d) Figure 1. El Segundo Generating Station Monthly Ocean Outfall Flow Volumes, Combined Outfalls 001 and 002, 1998-2002.

e) Figure 2. El Segundo Generating Station Annual Ocean Outfall Flow Volumes, Combined Outfalls 001 and 002, 1998-2002.

f) Figure 3. Basic Illustration of Annual Flow Cap

g) Figure 4. Basic Illustration of Monthly Flow Cap for February, March and April

**Staff's Response:** The Applicant did not docket, and Staff did not receive, a table of authorities containing the specific references mentioned by the Applicant in its Direct Written Testimony until Tuesday, January 28, 2003, six days after the legal deadline for filing established by the Committee in this case. Staff submits the following complete list of references it has cited in its Written Response Testimony:

Allen, M.J., S.L. Moore, K.C. Schiff, S.B. Weisberg, D. Diener, J.K. Stull, A. Groce, J. Mubarak, C.L. Tang, and R. Gartman 1998 Southern California Bight 1994 Pilot Project: V. Demersal Fishes and Megabenthic Invertebrates.

CDFG (California Department of Fish and Game). 2000. Review of Some California Fisheries for 1999: Market Squid, Dungeness Crab, Sea Urchin, Prawn, Abalone, Groundfish, Swordfish and Shark, Ocean Salmon, Nearshore Finfish, Pacific Sardine, Pacific Herring, Pacific Mackerel, Reduction, White Seabass, and Recreational. Fisheries Review CalCOFI Rep. 41: 8-25.

EPA (United States Environmental Protection Agency). 2002. Environmental Protection Agency 40 CFR Parts 9 *et seq.* National Pollutant Discharge Elimination System - Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities; Proposed Rule. Federal Register Vol. 67. No. 68: 17121-17225.

ESPR (El Segundo Power Station). 2001a. El Segundo Power Redevelopment Project Supporting Impact Analysis of Entrainment and Impingement. Submitted to the California Energy Commission on December 28, 2001.

Herbinson, K. T., M. J. Allen, and S. L. Moore. 2001. Historical Trends in Nearshore Croaker (Family Scianidae) Populations in Southern California from 1977 through 1998. In S. B. Weisberg, ed. SCCWRP Annual Report 1999-2000: 253-264.

Holbrook, S. J., R.J. Schmitt, and J. S. Stephens, Jr. 1997. Changes in an Assemblage of Temperate Reef Fish Associated with a Climate Shift. Ecological Applications 7 (4): 1299-1310.

- Intersea Research Corp. 1981. Scattergood Generating Station Cooling Water Intake Study 316(b) Demonstration Program, 1978-1979. Prepared for Los Angeles Department of Water and Power.
- Love, M. S., J. E. Caselle, and K. Herbinson. 1998. Declines in Nearshore Rockfish Recruitment and Populations in the Southern California Bight as Measured by Impingement Rates in Coastal electrical power Generating Stations. Fishery Bulletin 96: 492-501.
- Marx, W. 2000. Trouble in the Nearshore Live Fish Fishery Adds to Worries. California Coast and Ocean 16.
- Moser, H.G., R.L. Charter, P.E. Smith, D.A. Ambrose, W. Watson, S.R. Charter and E.M. Sandknop 2001. Distributional Atlas of Fish Larvae and Eggs in the Southern California Bight Region: 1951-1998. CalCOFI Atlas No. 34.
- Murdoch, W.W., Fay, R.C. and Mechalas, B.J. 1989. Final Report of the Marine Review Committee to the California Coastal Commission. MRC Doc. No. 89-02, p. 346.
- Pondella, D. J. II. 2001. A Comparative Study of King Harbor and El Segundo Ichthyoplankton. Prepared for NRG Development Company Inc.
- Roemmich, D. and J. McGowan. 1995. Climatic Warming and the Decline of Zooplankton in the California Current. Science 267: 1324-1326.
- Stull, J.K. and C. Tang 1996. Demersal Fish Trawls off Palos Verdes, Southern California, 1973-1993. CalCOFI Rep. Vol. 37: 211-240.
- Tenera Environmental Services. 2000a. Moss Landing Power Plant Modernization Project 316(b) Resource Assessment. April 28, 2000. Prepared for Duke Energy Moss Landing, LLC.
- Tenera Environmental Services. 2000b. Diablo Canyon Power Plant 316(b) Demonstration Report. March 1, 2000. Document Number E9-055.0.

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## **PART B. ALTERNATIVES TO APPLICANT'S PROPOSED COOLING SYSTEM**

### **1. Summary of The Applicant's Testimony and Staff's Response on Alternatives**

In the FSA, Staff described the environmental benefits and feasibility of the proposed project using reclaimed wastewater obtained from the Hyperion Sewage Treatment Plant as an alternative to withdrawing cooling water from Santa Monica Bay. In the Applicant's Direct Written Testimony, filed on January 22, 2003, the reclaimed

wastewater cooling alternative is rejected as infeasible, primarily based on the assertion that the subsequent disposal of the heated reclaimed wastewater by the Applicant would constitute a “new” discharge which, in turn, would not meet the California Thermal Plan requirement that new discharges not exceed receiving water temperatures by more than 20 degrees Fahrenheit (F). The Applicant also raises potential concerns about the public health and chlorine-related impacts of the wastewater cooling alternative which might make the issuance of an NPDES permit for that alternative impossible to obtain. (See Applicant’s Direct Written Testimony at pages 36-44). For the reasons stated below, Staff finds that none of the issues raised by the Applicant in its written testimony is likely to render the wastewater cooling alternative infeasible, and we specifically find that the Applicant has overstated the difficulties in meeting the thermal, public health and chlorine-related regulatory requirements which may apply in this case.

## **2. The Thermal Discharge Issues Can Be Feasibly Addressed**

The Applicant devotes most of its direct written testimony on the wastewater cooling alternative to concerns about this option constituting a “new” discharge that would not meet the requirements of the California Thermal Plan and, therefore, would not be feasible. (See Applicant’s Direct Written Testimony at pages 37-43). Staff finds that the thermal discharge issues raised by the Applicant do not render the wastewater cooling alternative infeasible for the following reasons.

### *(a) Using The Existing Hyperion NPDES Permit Is Feasible*

Initially, we note that it is not clear that the Applicant would be required to obtain a “new” or “separate” NPDES permit for this cooling water alternative, as the Applicant has simply asserted in its testimony *without any citation of authority to support its claim*. (See Applicant’s Direct Written Testimony at page 37). Staff has reviewed the applicable Los Angeles Industrial Waste Control Ordinances (Article 4, Section 64.00 *et seq.*), and we find no reason that the Applicant could not legally obtain an industrial wastewater permit to discharge its cooling water directly under the Hyperion Treatment Plant’s existing NPDES permit.

Specifically, the existing Hyperion NPDES permit currently allows discharge temperatures of 100 degrees F, so it is possible that no amendment to the Hyperion permit would be necessary at all, because the cooling water discharge would meet the temperature limits in the current permit. However, as discussed in Staff’s analysis of cooling water alternatives in the FSA, there may be certain times when the Hyperion effluent itself is at its maximum temperature of 86 or 87 degrees F. Under these circumstances, discharge temperatures at the Hyperion outfall, after the heated wastewater from the ESGS is added to the remaining waste stream, could be as high as 105 degrees F.

Staff finds that even if this were the case, there are two feasible ways that the Applicant could still continue to operate under the Hyperion NPDES permit. First, an amendment

to the existing Hyperion permit could be obtained to allow for a discharge of 105 degrees F. It is likely that a 5 degree temperature rise at the Hyperion outfall location would not cause any significant additional harm to the marine environment, and therefore such an amendment would be granted. Second, as stated by the Applicant in its direct written testimony, this concern could be addressed "through short-term resumption of seawater cooling." (See Applicant's Direct Written Testimony at page 39). Staff would be willing to consider such limited seawater use as a reasonable backup to the reclaimed wastewater cooling system, and there is no evidence that such a "dual cooling system" is infeasible.

*(b) Obtaining A Separate NPDES Permit Is Feasible*

If, for reasons not currently apparent, the Applicant cannot discharge its reclaimed cooling water under the existing Hyperion NPDES permit, Staff still finds that the thermal impact issues will not render the reclaimed cooling water alternative infeasible for the following reasons.

First, if the Applicant seeks a separate cooling water discharge permit through the 5-mile pipeline near Hyperion, this may not be subject to the requirements of the California Thermal Plan at all. In this situation, the heated waters would be discharged into the ocean at a location five miles off the California coast. This is two miles beyond of the State's jurisdictional limit, and there is currently no evidence that the discharge would actually result in a thermal plume entering State waters.

Second, even if the Applicant's discharge is subject to the California Thermal Plan, the Thermal Plan itself provides a process for obtaining a variance to the prescriptive thermal limits in the Plan. Specifically, requests for exceptions to the Thermal Plan's prescriptive limits must demonstrate that the discharge in question will still conform to the provisions of federal Clean Water Act Section 316(a). That section of federal law requires an applicant for an exception to thermal discharge limitations to demonstrate that the *existing limitations are more stringent than necessary to protect and maintain balanced indigenous communities in the affected water body*, taking into account the interaction of the thermal component with other pollutants. Title 40, Federal Code of Regulations, Section 125.73 requires that the applicant for such an exception demonstrate either "that no appreciable harm has resulted" from the discharge, or that "despite the occurrence of such previous harm, the desired alternative effluent limitations will nevertheless assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made."

Staff believes that an exception to any applicable Thermal Plan prescriptive limits is likely to be granted in this case for several reasons:

- (1) The Applicant's heated discharge will rapidly mix with the ambient ocean waters into which it will be dispersed. As a result, any discharge

temperatures high enough to cause adverse effects on marine organisms will be limited to the immediate vicinity of the diffuser ports at the outfall.

This outcome is reasonable to expect because the diffuser sections of the Hyperion Treatment Plant 5-mile outfall are designed to provide rapid mixing. In addition, all discharges from these diffusers will occur at a bottom depth of almost 200 feet (60 meters), and will mix rapidly with cold ocean waters that are 55 degrees F or lower, resulting in a very rapid cooling of the Applicant's discharge stream.<sup>6</sup> In short, Staff considers it highly likely that there will be "no appreciable harm" from the Applicant's thermal discharge, and we are currently modeling the prospective thermal discharge to further confirm this.

(2) The Hyperion Treatment Plant is currently allowed to discharge at a temperature of 100 degrees F. Hyperion has conducted extensive monitoring over many years which demonstrates that its thermal discharge is not harming the marine environment of Santa Monica Bay, and that a balanced indigenous community of organisms occurs in the waters near the discharge. The Applicant has actually cited these studies in its direct written testimony on Biological Resources. Conversely, there is no evidence that an additional 5 degree F increase in the discharge plume would alter this outcome.

(3) The granting of exceptions to the prescriptive standards in the California Thermal Plan is not unusual, and such exceptions have been issued for other power plants along the entire California coast. Examples include the Moss Landing Power Plant, the San Onofre Nuclear Generating Station, and the Contra Costa Power Plant on the San Joaquin River. Some of the thermal discharges for which exceptions have been granted are occurring in marine locations that are much more sensitive to aquatic life than the Hyperion 5-mile discharge location. Representatives from the Los Angeles Regional Water Quality Control Board have attended all meetings held between Staff and the Applicant on the topic of using cooling water from the Hyperion Treatment Plant, and these representatives have never indicated that the thermal discharge issue would render this alternative infeasible.

(4) Using reclaimed wastewater from the Hyperion Treatment Plant for cooling purposes would entirely eliminate the adverse environmental impacts caused by the withdrawal of huge volumes of seawater on a daily basis, as now proposed by the Applicant. Therefore, any adverse thermal

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<sup>6</sup> Hydrothermal vents in which very hot water from the earth's core is released into deep waters have been extensively studied and these heated waters have been found to disperse extremely rapidly. See, e.g., Van Dover, C.L. 2000. The Ecology of Deep-sea Hydrothermal Vents. Princeton University Press, Princeton, NJ. 424 pp.

impacts caused by the reclaimed wastewater alternative, would be more than offset by complete elimination of the project's adverse entrainment and impingement impacts associated with the use of ocean water for once-through cooling.

## **2. The Public Health Issue Can Be Feasibly Addressed**

Without citing any scientific data, the Applicant has raised the specter of public health concerns by asserting that the addition of heated water to the existing Hyperion discharge stream might result in pathogens reaching area beaches. (See Applicant's Direct Written Testimony at page 43). Staff has considered the Applicant's public health claim and does not find that it would render the reclaimed wastewater alternative infeasible for the following reasons.

First, for our FSA for this project, we modeled the Applicant's existing ESGS outfall, which is located approximately 2000 feet offshore. With a modeled discharge temperature of 105 degrees F, the 4-degree isotherm plume extended for a maximum distance of 8,900 feet. In light of this existing modeling information, we find that a heated discharge that would occur five miles offshore is virtually certain not to reach the shoreline. (See El Segundo FSA at page 4.13-23).

Second, although warm water is more buoyant than cooler water, salinity has a much greater effect on buoyancy than temperature. The prospective wastewater alternative discharge would not change the salinity ratios of the Hyperion discharge. Therefore, any increased temperature effects on the plume behavior would be very small relative to salinity, and would likely be non-existent in terms of shoreline impacts.

Finally, Hyperion is currently permitted to discharge at 100 degrees F without causing any unacceptable public health impacts. We find it unlikely that a five-degree F increase in discharge temperatures at this particular location would alter that result. Staff is currently modeling the prospective plume behavior to further confirm these public health findings.

## **3. The Chlorine Discharge Issue Can Be Feasibly Addressed**

Without citing any data the Applicant also asserts in its direct written testimony that using reclaimed wastewater from the Hyperion Treatment Plant for cooling will require unacceptable levels of chlorination to avoid "biofouling." (See Applicant's Direct Written Testimony at pages 43-44). Staff finds that the Applicant's undocumented assertion is not correct for the reasons provided below.

The Applicant asserts that "shock chlorine" treatment (i.e. the short-term, high level application of chlorine) is the only way to control biofouling that may result from the use of nutrient enriched Hyperion effluent in the cooling system. The Applicant also asserts that such "shock" treatment will result in the use of large volumes of chlorine due to the

large volumes of cooling water, and will require neutralization prior to discharge to meet NPDES effluent limits.

Staff recognizes that any use of “shock chorine” concentrations to control biofouling in the Applicant’s cooling system will need to comply with all applicable chlorine effluent limits. However, there are well-established precedents for the use of chlorination, and subsequent dechlorination, in power plant applications throughout California. For example, the Energy Commission licensed the Sacramento Municipal Utility District’s (SMUD) Carson Ice-Gen power plant that uses reclaimed wastewater from the Sacramento Region’s Publicly Owned Water Treatment Plant (POWTP). SMUD installed and is now successfully using its chlorination/dechlorination system in full compliance with the law, as are other power plants using reclaimed wastewater for cooling purposes in California.

Another example involving the successful use of chlorination and dechlorination for biofouling treatment in this state is a power plant successfully operated by the City of Burbank. That facility has used continuous chlorination at just 3 to 4 parts per million (ppm) free chlorine residual on reclaimed water. In the case of the Burbank power plant, minimal chlorination has proven so adequate in controlling biofouling that other supplemental maintenance procedures are required no more than once per year. At this annual frequency, the condenser tubes are ‘washed’ by injecting brushes through the tubes with compressed air – a standard means of tube cleaning. City of Burbank managers report that the deposits cleaned off are only a soft algae growth; no hard scale has ever been experienced.<sup>7</sup>

Staff is aware that the reclaimed water in use at the Burbank power plant is tertiary rather than secondary treated, but the difference with El Segundo would only increase the frequency of maintenance cleaning by the Applicant in this case, and would not require any other “impractical” options. In a “worst case” scenario, maintenance cleaning by the Applicant at El Segundo might have to occur on a weekly basis, such as every Saturday night or Sunday morning. However, even a weekly supplemental maintenance schedule such as this would result in costs of \$190,000 per year or less, a cost which would certainly not render the reclaimed wastewater alternative at El Segundo infeasible.

The current limits on chlorine for the Hyperion NPDES permit are 5.1 ppm maximum, with average weekly limits of 0.68 ppm, and average monthly limits of 0.17 ppm. At this time, Hyperion does not chlorinate its discharges at all. Therefore, any chlorine-treated discharges from El Segundo would mix with the *unchlorinated* discharges from Hyperion. By using short-term “bursts” of high chlorination, it would be possible for the

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<sup>7</sup> ROC, dated November 6, 2002, between James L. Schoonmaker and Wayne Smith, Power Test Supervisor, City of Burbank.

Applicant to avoid dechlorination altogether, while still never exceeding Hyperion's existing chlorine limits.<sup>8</sup>

In addition, there are other facts that would reduce the potential for the Applicant's free chlorine to reach the ocean. At 350 mgd, the water flow in the Hyperion 5-mile outfall takes slightly more than one hour from shore to discharge. During this transit period, the Applicant's chlorinated discharge would react with the unchlorinated Hyperion discharge, as well as continuing action on the El Segundo discharge. In this hour's time, it is reasonable to expect that the free chlorine in the El Segundo wastewater would be totally consumed, so that no free chlorine would exist when that wastewater was finally discharged into the ocean.<sup>9</sup>

Finally, it should be noted that the existing ESGS has a variance for chlorine on its existing NPDES discharge permit. Moreover, there are other non-chlorinated means for controlling biofouling that might be considered in this case. For example, the occasional use of ocean water for cooling would be expected to effectively kill any algae growth that was supported by the reclaimed water.

Staff concludes that, contrary to the Applicant's undocumented assertions, there are many feasible engineering options available for the control of any biofouling that may result from the reclaimed wastewater alternative. Therefore, we find that no violation in chlorine limits need occur if this cooling alternative is adopted, and the methods for chlorine-compliance are entirely feasible in this case.

## **II. STAFF'S RESPONSES TO OTHER SUBJECT AREAS IN THIS CASE**

### **STAFF'S RESPONSE TO AIR QUALITY DIRECT TESTIMONY**

Technical Staff Author: **Joseph M. Loyer**

#### **EXCERPT OF P. OCHS' TESTIMONY OF JANUARY 15, 2003**

"If the plant is allowed to exceed pollution standards, I believe this will cause physical and economic injury to the residents of the area. The potential idea of purchasing credits instead of mitigating and cleaning up it's own pollution does nothing to protect the citizen's of El Segundo, Hawthorne nor Manhattan Beach. I don't believe it's the moral nor ethical way to handle the problem. In fact, there is no guarantee credits will reduce air pollution elsewhere. Local pollution and mitigation should be done on site."

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<sup>8</sup> For example, if the Applicant were to shock chlorinate during a period when it only needed a 100 mgd flow rate for power generation, and Hyperion's total discharge flow was 350 mgd at that time, then the Applicant's release into the 5 mile discharge pipe would be diluted by a ratio of 100 to 350, and a shock feed of 17 ppm could be used without violating the maximum limit of 5.1 at the combined effluent.

<sup>9</sup> A similar reaction/time effect of course would occur in the transit from ESGS to Hyperion. That pipe is not yet sized, but if similar flow velocity values (approximately 7 feet per second) are used in design, then the time for a one mile transit should be on the order of 1/5<sup>th</sup> the above, or over 12 minutes.



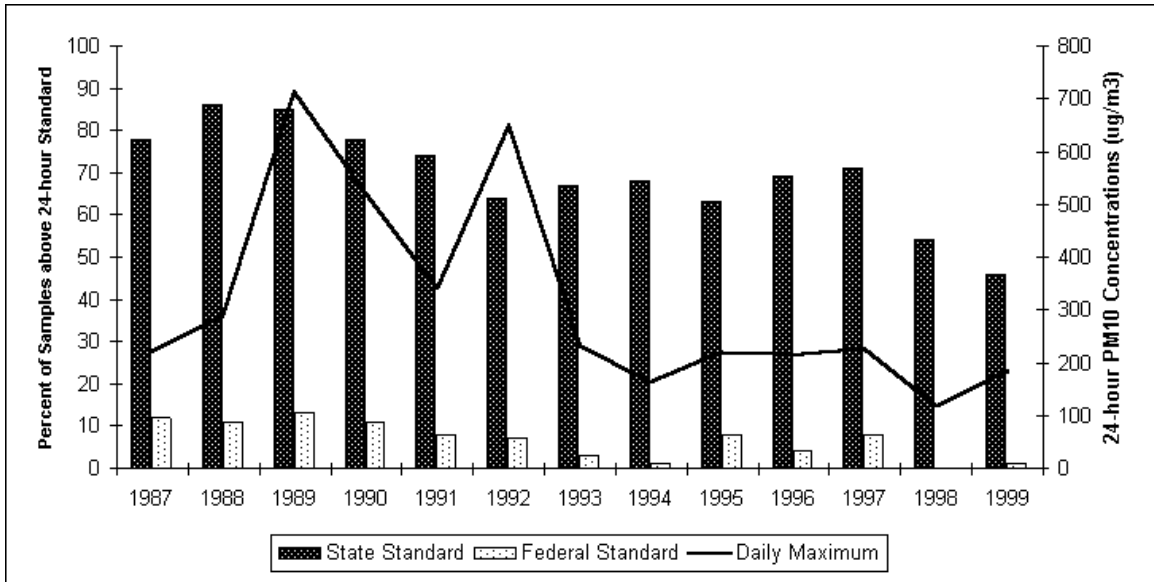
## **STAFF RESPONSE**

The project emissions themselves will not cause an exceedance of the ambient air quality standards (federal or state, annual or daily), referred to as a direct impact. However, in combination with the measured background at the Hawthorne monitoring station, the addition of the project emissions will contribute to an existing exceedance of the PM10 ambient air quality standards (state only). This is referred to as a cumulative impact. Since the project has a cumulative impact, it is required to mitigate that impact to less than significant levels. The project is also allowed to use existing banking or crediting systems as the source of mitigation as long as those systems can be shown to be effective in reducing the background concentrations of pollution.

In this case ESPR has a cumulative impact for PM10 and ozone and thus must mitigate their precursor NOx, VOC, SOx, PM10 and CO emissions. The ESPII is proposing to use the existing emission reduction credit banking system in the District to provide that mitigation. Staff testimony has shown that the District banking system has been effective in reducing PM10 ambient air concentrations not only in the South Coast Basin in general, but also at the Hawthorne monitoring station (see graphs from the Final Staff Assessment, reproduced below for convenience).

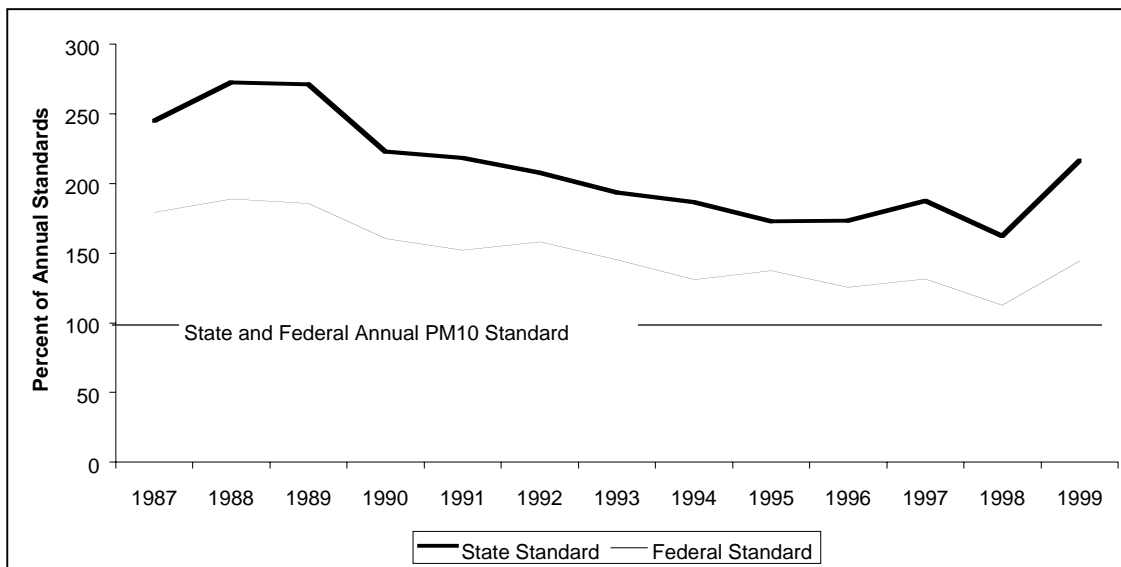
The banking program, not the individual credits within the program, is what will mitigate the project impacts in the South Coast Air Basin.

**AIR QUALITY Figure 7**  
**Historic 24-hour PM10 Concentrations within the South Coast Air District**  
**1987 to 1999**



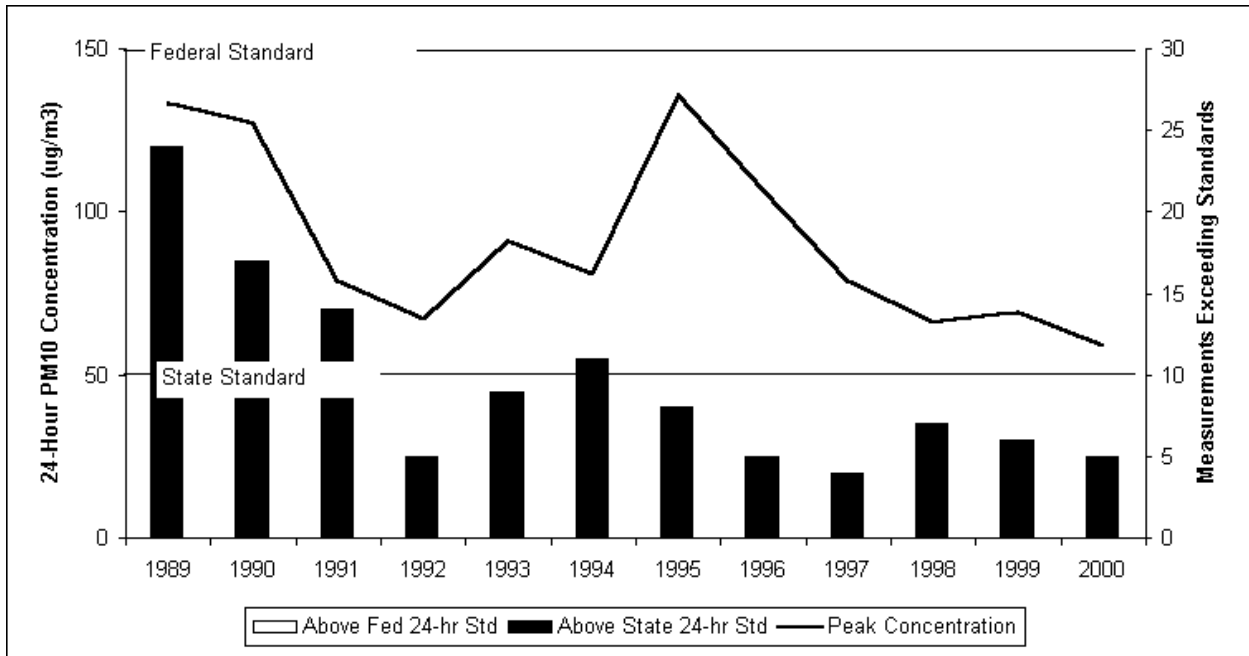
Source: California Air Resources Board

**AIR QUALITY Figure 8**  
**Historic Annual Average PM10 Concentrations in the South Coast Air Basin**  
**1987 to 1999**



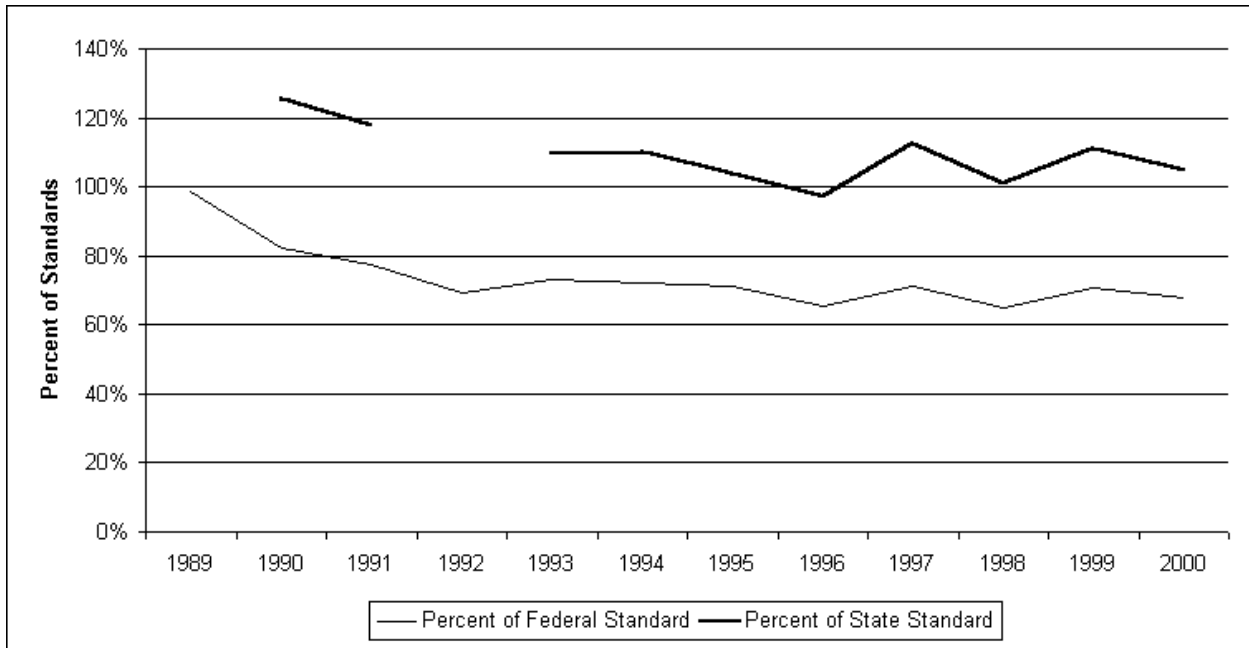
Source: California Air Resources Board

**AIR QUALITY Figure 9**  
**Historic 24-hour PM10 Measurements**  
**Hawthorne Monitoring Station**  
**1989 to 2000**



Source: California Air Resources Board

**AIR QUALITY Figure 10**  
**Historic Annual PM10 Measurements**  
**Hawthorne Monitoring Station**  
**1989 to 2000**



Source: California Air Resources Board

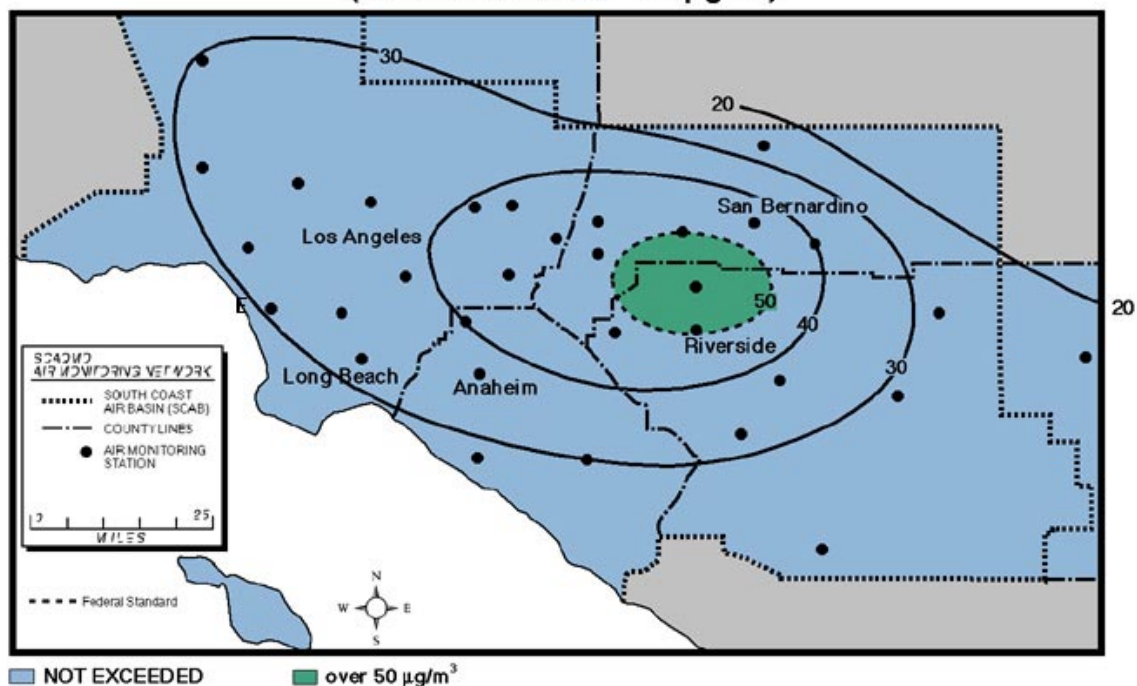
### SUMMARY OF MS. MICHELLE MURPHY'S TESTIMONY OF JANUARY 21, 2003

Ms. Murphy indicates that while the health effects of elevated ambient air concentrations of PM10 are not currently uppermost on the minds of perspective homebuyers, they may in the future consider air pollution as a cause for concern when purchasing a home. Thus the PM10 emissions from the El Segundo Power Plant may negatively impact home sales and property values as well as human health. Ms. Murphy concludes that the use of the District emission reduction banking system does nothing to mitigate the human or economic impacts of the project emissions.

### STAFF RESPONSE

Air Quality staff can not comment as to whether homebuyers in the future will take air pollution into consideration when purchasing a home, though the issue of property values is addressed in the Socioeconomics section of staff's rebuttal testimony. As staff has shown in testimony, the area near the ESPR site (the E on AIR QUALITY Figure 6 reproduced from the FSA for convenience below) has recorded some of the cleanest air in the South Coast Air Basin.

**AIR QUALITY Figure 6**  
**PM10 – 1998**  
Annual Arithmetic Mean,  $\mu\text{g}/\text{m}^3$   
(Federal Standard =  $50 \mu\text{g}/\text{m}^3$ )



### SUMMARY OF R. PERKINS' TESTIMONY OF JANUARY 22, 2003

Mr. Perkins first requests that all District permits are entered as exhibits in the Commission AFC Hearing Record. Mr. Perkins suggests that the Commissioners not defer to the District Determination of Compliance as the final assessment for the ESPR, particularly in connection with the mitigation requirements. Mr. Perkins states that the

peak construction impacts will be 494% of the California 24-hour PM10 ambient air quality standard and that the operational impacts will be a maximum of 157% of the same standard. Mr. Perkins suggests that the staff assumption that the Hawthorne monitoring station is representative of the ambient air in the Chevron Refinery must underestimate the current ambient PM10 concentrations there. Mr. Perkins states that the proposed project will emit significantly more PM10 and SO2 than the original boiler systems (Units 1 and 2). Mr. Perkins suggests that the ESPII has failed to comply with BACT requirements by failing to install PM10 post-combustion controls (fabric filters). It is Mr. Perkins preference that local mitigation be performed for the ESPR emission impacts, including but not limited to tugboat retrofits. In closing Mr. Perkins attempts to draw a correlation between the median home prices of the Cities of Hawthorne, El Segundo and Manhattan Beach and the economic cost of the ESPR air emission impacts.

### **STAFF RESPONSE**

To date, the District has issued no permits for the ESPR. The Final Determination of Compliance is not a District Permit and neither the ESPII nor the District is bound to the conclusions or conditions reached therein. However, because the Commission reiterates the conditions published in the FDOC, the ESPII will be bound by those conditions. Therefore, it is staff's opinion that the ESPR will be issued a Permit to Construction and Permit to Operate equivalent to the Conditions of Certification.

Staff performs an assessment independent from all parties including the ESPII, the District and all intervenors. Prior to the District confirming that it would provide further mitigation for the ESPR, staff was prepared to recommend denial or further mitigation (specifically tugboat retrofits). However, following the District confirmation, staff finds that the ESPR is fully mitigated.

Staff is requiring that the ESPII perform significant mitigation measures to reduce the construction emission impacts in Conditions of Certification **AQ-C1** through **AQ-C4**. It is staff's opinion that these measures will reduce the PM10 impact to less than significant levels.

The ESPII is required to fully mitigate the ESPR PM10 emission impacts. The ESPII will purchase and surrender PM10 emission reduction credits (ERCs) and priority reserve credits (PRCs). The District will provide additional PM10 PRCs and additional ERCs from the District Account (for the exempted emissions). It is staff's opinion that this mitigates the ESPR PM10 emission impacts to a level of less than significant.

The ambient PM10 concentrations within the Chevron Refinery are likely to be lower on average than those measured at the Hawthorne monitoring station due to the convergence of PM10 sources towards a single, downwind location. That is, the combination of various upwind industrial, commercial, residential and transportation PM10 emission sources contribute to the PM10 concentrations seen at the Hawthorne monitoring station. The further towards the coast from the Hawthorne monitoring station, the fewer of these sources exist and thus the PM10 concentrations are likely to be lower.

The District is encouraging the replacement of boiler systems with turbine systems to facilitate more efficient fuel use and significant NOx controls. Boiler units 1 and 2 at the El Segundo Power Plant were emitting NOx at 94 ppm and 57 ppm (respectively), while the proposed combined cycle gas turbines will emit NOx at 2.5 ppm. The only drawback to this arrangement is that the ESPR gas turbines will emit more PM10 and SOx than the boiler systems. However, the ESPII has fully mitigated the impact from the PM10 and SOx emission increases.

Mr. Perkins sites a document Titled "State of the Art Manual for Boilers" in regards to his suggestion that the ESPR is not complying with best available control technology (BACT) requirements. This document suggests that the BACT control for natural gas fired boilers will be satisfied by the exclusive use of natural gas (Table 5, Page 3.12-7). This document goes on to state that the BACT control for coal fired boilers will be satisfied with the use of fabric filters (Table 8, Page 3.12-8). According to the United States Environmental Protection Agency, The California Air Resources Board and the District, the recommended PM10 control technology for new and existing power plants is the exclusive use of natural gas. As far as staff is aware, there are no further technologies for controlling PM10 emissions from a natural gas power plant (boiler or turbine based).

Staff has discussed their position regarding the proposed mitigation for the ESPR in the previous Response to Comments. Finally, Air Quality staff has no expertise to offer Mr. Perkins regarding median home prices and the potential economic costs of the ESPR PM10 emission impacts, though the issue of property values is addressed in the Socioeconomics section of staff's rebuttal testimony.

### **SUMMARY OF R. NICHELSON'S TESTIMONY OF JANUARY 20, 2003**

Mr. Nickelson summarizes his concerns as previously docketed with the Commission on October 13, 2002 and November 22, 2002. Mr. Nickelson's opinion is that the citizens of Manhattan Beach and El Segundo (and other local cities) will not be afforded the protection they desire if additional constraints are not imposed on the ESPR by the Commission.

As further evidence of the ESPR impacts, Mr. Nickelson cites an U.S. Navy Environmental Assessment (dated November 2002) which estimates the emissions from a 545-unit housing development (plus 2 retail stores) on 121 acres of land. From this assessment, Mr. Nickelson estimates that the PM10 emissions from the ESPR would be equivalent to 54 such developments.

Mr. Nickelson closes by asking for constraints on the ESPR that will benefit the local residences perhaps by incorporating all or part of the lists of measures proposed by the City of El Segundo.

### **STAFF RESPONSE**

Staff has not had the opportunity to review the Navy Assessment, and thus cannot comment on its use here. Staff has discussed their position regarding the proposed

mitigation for the ESPR in the previous Response to Comments. Staff has not, and will not, state a position regarding the measures proposed by the City of El Segundo, as they are not necessary for the purpose of mitigating the ESPR emission impacts. However, staff has no objection to the implementation of these measures as “good neighbor” measures on the part of ESPII.

## **STAFF’S RESPONSE TO LAND USE DIRECT TESTIMONY**

Technical Staff Author: **Mark R. Hamblin**

### **CITY OF EL SEGUNDO - PUBLIC USE AREA COMMENTS – JANUARY 23, 2003**

The City of El Segundo in its written testimony dated January 23, 2003, pg. 2 supports a proposal for a 1.2-acre public use area on the southwest corner of the El Segundo Generating Station property.

The project owner states in its written testimony dated January 22, 2003, pg. 31 that it is going to *“create an accessible, landscaped corner at the southwest corner adjacent to the bike path.”* The project owner has not provided specific details for the on-site development of this “public use area” at this time. The project owner will also be establishing additional public use area(s) along the Beach Bicycle Trail that borders the facility. Its testimony states that they will recess the perimeter fence at locations on the power plant property in order to *“provide some park benches along the bike path where the fence or seawall is set back”* for public use.

Staff has previously stated in its Supplemental Land Use Testimony, that Section 25529 does not prescribe an acreage formula to be used by the Energy Commission for the calculation of the “public use” land requirement or prescribe how the land is to be developed (e.g., park, rest area, hiking trail, pedestrian path). The project owner may dedicate the land area to a public agency. These items have been resolved on an individual project basis subject to the approval of the Energy Commission.

Staff supports the establishment of a public use land area on the southwest corner of the El Segundo Generating Station as stated in the project owner’s and the City of El Segundo’s written testimony. Staff believes that the proposed Condition of Certification **LAND-9**, published in the 00-AFC-14 2<sup>nd</sup> Response To Comments And Errata To The Final Staff Assessment – Land Use, dated January 7, 2003, provides an appropriate mechanism for establishing the public use area. The parties agreed to the fundamental language of this Condition of Certification.

### **M. MURPHY, INTERVENOR - PUBLIC USE AREA COMMENTS - JANUARY 21, 2003**

During the November 7, 2002 Pre-Hearing Committee Conference, Michelle Murphy verbally explained that the bicycle path (Beach Bicycle Trail) did not permit pedestrian use and suggested consideration for the construction of a pedestrian path adjoining the bicycle path.

Staff confirmed the prohibition on pedestrian use of the bicycle path on December 18, 2002 with a representative of the Los Angeles Department of Beaches and Harbors. Staff has not been able to determine exactly who prohibits it (i.e., the Los Angeles Department of Beaches and Harbors, County of Los Angeles or the California Department of State Parks).

Ms. Murphy explains again in her written testimony dated January 21, 2003 that pedestrian use of the bicycle path bordering the El Segundo power plant property is prohibited.

Staff researched three options in response to Ms. Murphy's comment.

Option 1. On December 18, 2002, the Department of Beaches and Harbors representative informed staff that in other cities within the County of Los Angeles, the Beach Bicycle Trail has been designated for multi-use to legally allow pedestrian traffic. Within the Cities of Redondo Beach and Torrance the trail has a painted stripe on it to show the pedestrian use portion of the path.

A 4-6 foot pedestrian use area on the approximate 15-foot wide path could be accommodated along the portion of the path fronting the power plant. The City of El Segundo and/or other interested individuals may wish to contact the Los Angeles County Department of Beaches and Harbors to discuss the procedure for having the portion of the bicycle path within the City of El Segundo designated as a multi-use path. The Los Angeles County Department of Beaches and Harbors maintains the Beach Bicycle Trail, the state owned beaches including rock barriers, and the beach access public parking areas within the County of Los Angeles on the behalf of the California Department of State Parks.

The Beach Bicycle Trail is one of several countywide trails identified in the Los Angeles County Plan of Bikeways. The Los Angeles County Plan of Bikeways sets forth a coordinated framework for bike routes throughout the County while allowing room for each of the cities within the County to incorporate city routes and unique features of their own such as pedestrian options. The Plan anticipates that each city will adopt a more detailed bicycle feeder system to supplement the agreed upon countywide network.

Option 1 may allow the project owner to qualify under the Section 25529 requirement. Though this option does not involve a dedication of an actual land area for public use since it would consist of a text amendment to a policy or regulation, its implementation would legally allow pedestrian use of the trail, thereby increasing public access. This option requires approval by the County of Los Angeles and its implementation in order for the project owner to fulfill their Section 25529 requirement.

Option 2. A second option involves the project owner relocating their existing perimeter fence bordering the bicycle path to create a 4-6 foot wide pedestrian path on the El Segundo power plant property. At this time, the project owner is proposing to move this section of perimeter fence in order to install benches, landscaping and a seawall within



this area as shown on their Landscape Concept Plan, dated January 10, 2003. The choices to consider in this situation are visual enhancement of the facility along the bicycle path vs. the creation of a pedestrian path. The California Coastal Commission may be more interested in addressing the adverse visual effects of the proposed project as required by California Coastal Act, Section 30260 and explained on page 8 in their March 5, 2002 letter.

It is also noted that the existing 15 foot (approx.) bicycle path appears to have been constructed on land that was originally a portion of the El Segundo Generation Station when it was owned by Southern California Edison (SCE) (Parcel 4, Instrument No. 4670 O.R., recorded October 21, 1964). Subsequently, this area became Parcel 3 created by a lot line adjustment (Certificate of Compliance) recorded on December 17, 1997. An easement for the bicycle trail is not shown on Exhibit "B" of the Certificate of Compliance. Staff was not able to determine if SCE granted an easement across their property for the bicycle trail or allowed the trail by some other agreement with the County of Los Angeles to cross their land.

Option 3. A third option would consist of constructing a 4-6 foot pedestrian path on the beach side of the existing bicycle trail. This option would require constructing the path on State owned property and requires the approval of the Los Angeles County Department of Beaches and Harbors. Also, the pathway would require the California Coastal Commission's approval.

The construction of the pedestrian path would require removing a portion of the existing dune and possibly the rock riprap barrier bordering the bicycle path on Dockweiler State Beach. The dune and rock barrier prevent shoreline erosion and flooding by storm waves and storm surges that may damage the bicycle path and the El Segundo Generating Station property.

## **STAFF'S RESPONSE TO PUBLIC HEALTH DIRECT TESTIMONY**

Technical Staff Author: **Obed Odoemelam, Ph.D.**

### **SUMMARY OF P. OCHS' JANUARY 15, 2003 TESTIMONY ON PUBLIC HEALTH**

In this testimony, the intervenor, Mr. Paul Ochs expressed his opposition to the proposed El Segundo Power Plant by noting that its operation would pose a health hazard to area residents given that the offsetting emission reductions would not all be made at the local level.

### **STAFF RESPONSE**

As more fully discussed in the supplemental **Air Quality** testimony, staff has determined that the proposed emission control and offsets plan would be adequate to reduce any project-related contribution to levels of insignificance. The plan in question was formulated by the applicant in compliance with the applicable rules and regulations of the area's Air District (the South Coast Air Quality Management District) for the proposed and similar projects. This source-specific emission management approach has been shown effective within the South Coast Air Basin in reducing the levels of the

problem pollutants at issue, as reflected in Figure 7 in the supplemental **Air Quality** testimony. As noted in staff's **Public Health** testimony, the pollutants of specific concern to Mr. Ochs are known as criteria pollutants for which there are specific public and environmental health-protective air quality standards. Since the **Air Quality** staff has concluded that the project would not add significantly to the area's air pollution levels, the **Public Health** staff does not regard further mitigation to be necessary. Specific conditions of certification have been recommended by the **Air Quality** staff to ensure implementation of all necessary measures.

## **SUMMARY OF M. MURPHY'S TESTIMONY OF JANUARY 22, 2003 ON PUBLIC HEALTH**

Ms. Murphy expressed her opposition to the proposed project by stating that while the health effects of elevated ambient air concentrations of PM10 are not currently uppermost on the minds of prospective area homebuyers, they may in the future consider air pollution as a cause for concern when purchasing a home. Thus, the potential exists for PM10 concerns to negatively affect home sales and property values. Ms. Murphy then concludes that the proposed use of the Air District's emission reduction approach would be inadequate to mitigate the human or economic impacts of the project's emissions.

### **STAFF RESPONSE**

As more fully discussed in the supplemental **Air Quality** testimony, the Air Quality staff has found that the Air District's pollution management approach has been effective at reducing the emissions of specific concern to Ms. Murphy at the local and basin-wide levels. Indeed, the **Air Quality** staff has noted the available evidence as showing the air pollution in the immediate project area to be significantly lower than in the areas further inland. As noted in connection with Mr. Ochs' concerns, the **Air Quality** staff's assessment has shown that the project would not add significantly to the area's pollution levels. In addition, staff's **Socioeconomics** response testimony addresses concerns relating to possible impacts to property values.

## **SUMMARY OF R. PERKINS' TESTIMONY OF JANUARY 22, 2003 ON PUBLIC HEALTH**

In discussing his opposition to the proposed project, Mr. Perkins correctly concludes that the project's emission of specific criteria pollutants would significantly add to the area's pollutant levels if unmitigated, thereby posing a significant public and environmental health hazard to area residents. The areas of specific concern to Mr. Perkins are more fully identified in staff's Air Quality rebuttal testimony together with the specific criteria pollutants involved. Mr. Perkins then concludes that the Air Quality staff did not adequately assess the adequacy of the applicant's proposed mitigation measures in reaching its conclusions about its adequacy in preventing specific health effects as well as impacts on property values.

### **STAFF RESPONSE**

As more fully discussed in the **Air Quality** rebuttal testimony, the **Air Quality** staff's concern about the project's emissions were expressed in staff's testimony filed before

the plan was refined by the applicant to ensure compliance with all applicable Air District rules and regulations. As noted in connection with Mr. Ochs' testimony, staff has found the applicant's proposed pollution control and offset plan in combination with staff's recommended Air Quality Conditions of Certification (details of which are presented in staff's **Air Quality** rebuttal testimony) to be adequate to ensure that the project would not add significantly to the area's pollution levels during construction and operation. This means that staff considers further mitigation to be unnecessary to protect against the health impacts of concern to Mr. Perkins.

## **STAFF'S RESPONSE TO SOCIOECONOMIC DIRECT TESTIMONY**

Technical Staff Author: **Michael Fajans and Amanda Stennick**

### **STAFF RESPONSE TO TESTIMONY OF ROBERT PERKINS**

In Section (d) of his testimony, Mr. Perkins states that pollution "hurts property values." To make his point, he compares median home prices in Manhattan Beach, El Segundo, and Hawthorne, three communities that each has a "good locally controlled public school system... and proximity to jobs." "Manhattan Beach has an advantage in that a small strip of its homes have easy beach access. Otherwise, the only significant difference between these towns in pollution. Hawthorne, sitting downwind of El Segundo, has the worst pollution. El Segundo is next, and Manhattan Beach has the least."

He cites a Los Angeles Times November 24, 2002 article that median home prices were \$284,000 in Hawthorne, \$505,000 in El Segundo, and \$853,000 in Manhattan Beach, and that this indicates that "Obviously, pollution has huge economic consequences."

Since this analysis does not utilize any measures to quantify pollution levels that he correlates with property value, it is not possible to verify his conclusion. While it certainly would be anticipated that air pollution levels would have an adverse relationship with property values, a more analytical approach would recognize that many other variables might have a higher correlation.

Studies reviewed by the California Energy Commission indicate that locally undesirable land uses (LULUs) such as nuclear power plants, natural gas power plants, landfills, and high voltage transmission lines can have adverse impacts on property values. Most studies, however, if they find any impact, conclude that the impacts vary considerably with distance, and that property values several miles from a site would be little impacted by an undesirable use.

M. Cubed reviewed 45 studies on the property value impacts from "noxious facilities" or "locally undesirable land uses (LULUs)." The types of activities included in the survey were: fossil-fueled power plants; nuclear-powered generating plants; industrial facilities; waste incinerators; solid waste landfills; toxic waste / Superfund sites; and transmission lines.

This review attempts to place the studies in a common context and to identify those that present the most credible results. This analysis evaluates what constitutes the most reliable economic and statistical methods that are consistent with economic theory and practice. In addition, this review assesses the expected relative impact among the types of land uses included in these reports. In other words, we assess the likelihood that a natural gas-fired plant will have a greater or lesser impact than, say, a nuclear plant or a landfill. We base this assessment on a combination of opinion surveys and the range of impacts found in several studies for a particular land use.

Of the 44 studies reviewed, only seven were sufficiently well designed and conducted to provide reliable, consistent and appropriate results. Based on these analyses, we can come to the following preliminary conclusions:

- Industrial plants may reduce property values by 2 to 4% each mile closer to the plant within a radius of two to two and a half miles of the facility.
- Contaminated property, particularly that listed under Superfund, can reduce property values within a radius of two miles by \$300 to \$1,200 each mile closer to the site. Clean up generally leads to a substantial rebound in property values.
- Landfills reduce property values by 1.5 to 5% per mile closer to the site, up to four miles away.
- Nuclear plants can reduce property values by 5% each mile closer to the plant, but the limit of the effect is unknown and being able to see the plant may actually add value to surrounding homes.

Based on an opinion survey ranking the relative undesirability of various facilities, and a nationwide analysis of property value impacts from a range of facilities, natural-gas-fired power plants, even of the older steam-boiler variety, are among the least noxious industrial land uses. Older-technology natural gas plants are expected to reduce property values by about one-quarter of the impact from nuclear power plants and less than 15% of the effect from petroleum refineries. No studies prior to those submitted in this siting case (CEC Docket 99-AFC-3) were available to compare the effect of the newer, combined-cycle gas plants to other types of facilities (McCann).

It is true, as cited by Mr. Perkins that coastal property is worth more than inland land, but it cannot be stated that that “a major reason why coastal property is worth more than inland land, in Southern California at least, is that the air is generally cleaner near the coast.” There are many other amenities associated with coastal property in Southern California, including proximity to the recreational opportunities and views associated with the beach and ocean.

Investigating similar home sales data produced by Dataquick Corporation and cited in the Los Angeles Times ([www.dqnews.com/ZIPLAT2002](http://www.dqnews.com/ZIPLAT2002)) indicates that median home prices are often higher in Los Angeles coastal communities but this is not universal. A better comparative statistic is the median home price per square foot, rather than just median home price. For example, while Mr. Perkins cites that the average home price

in Manhattan Beach is three times the home price in Hawthorne, the difference is reduced to double if standardized by home size.

To cite several other examples, the average home price in coastal Long Beach was \$224 per square foot in 2002, while comparable prices for inland Burbank and Pasadena were \$263 and \$258 respectively, both communities considered to have worse air quality than the coastal zone. Inland San Marino, adjacent to Pasadena, had a median home price of \$338 per square foot, much higher than the price in Pasadena, while the air quality of the two communities is probably equal. Arcadia and San Gabriel, two nearby independent communities, had average prices per square foot of \$261 and \$221 respectively, again with comparable air quality conditions.

Coastal views and beaches clearly have value to homeowners. However, other factors clearly influence property values, and proximity to LULUs has surprisingly little impact. For example, El Segundo is adjacent to two power plants, the Chevron Refinery, the Hyperion Sewage Treatment Plant, and to the Los Angeles International Airport. In 2002, El Segundo had a median home price of \$322 per square foot, comparable to that in Playa del Rey and Westchester (\$338 and \$335 respectively), similarly located with respect to the airport but closer to Westwood, Santa Monica, and not located near the power plants, refinery, and sewage treatment plant.

Westchester and Playa del Rey, however, are neighborhoods of the City of Los Angeles, and more specifically in the Los Angeles Unified School District. Just examining a few comparative STAR test scores indicates that high schools serving these communities have much lower test scores than the schools in El Segundo and Manhattan Beach. Further consideration of test scores shows very low-test scores for Hawthorne High School compared to Manhattan Beach and El Segundo high schools. We believe that this factor, and not downwind situation relative to the refinery and power plants, is a more significant factor in relative home prices.

**2002 Home Sale Prices**

Community	Zip Code	Median home price	Median home price/ square foot
Manhattan Beach	90266	\$850,000	\$451
Redondo Beach	90277	\$615,000	\$393
El Segundo	90245	\$488,000	\$322
Hawthorne	90250	\$255,000	\$215
Culver City	90232	\$424,000	\$336
Playa del Rey	90293	\$711,000	\$338
Westchester	90045	\$469,000	\$335

Source: Dataquick Corporation 2002

In conclusion, Mr. Perkins' linkage of home prices and pollution in southwestern Los Angeles County is an oversimplification that does not justify his proposed remedy. He does not quantify his claims of pollution differences he correlates with property values.

Mitigation measures commonly adopted to shield neighbors from air quality, noise, visual, and traffic impacts of power plants will also mitigate potential property value impacts.

## **REFERENCES**

California Department of Education, 2002. STAR (Standardized Testing and Reporting) Results. ([www.star.cde.ca.gov](http://www.star.cde.ca.gov))

Dataquick Corporation, Southern California Home Sale Activity, 2002. ([www.dqnews.com/ZIPLAT2002.shtm](http://www.dqnews.com/ZIPLAT2002.shtm))

McCann, Richard. M.Cubed, A review of the Literature on Property Value Impacts from Industrial activities, 1999.

## **STAFF'S RESPONSE TO VISUAL RESOURCES DIRECT TESTIMONY**

Technical Authors: **William Kanemoto and Eric Knight**

### **INTRODUCTION**

As described in detail in the Final Staff Assessment, Visual Conditions of Certification have been recommended by staff to achieve conformance with the California Coastal Act and with 'specific provisions' (pursuant to Sec. 25523(b) of the Warren-Alquist Act) set forth by the Coastal Commission in its findings related to visual issues of the ESPR project on March 6, 2002. These provisions have been reproduced in the FSA as Staff Recommended Condition **VIS-1**, and are implemented in detail in Conditions **VIS-2** through **VIS-5**.

Among the requirements of Condition **VIS-1**, the most contentious has been architectural screening of mechanical equipment of existing and proposed generation units below elevation 125 feet. It has been the position of both Staff and the Coastal Commission that such exposed equipment at the ESGS site is the principal cause of the existing degraded visual condition of the El Segundo coastline, and that this condition of the ESGS site does not currently conform with extant visual standards of other industrial facilities of the El Segundo coastline. Consequently, screening of this exposed equipment has been required unless such screening is clearly demonstrated to be infeasible, in which case the Applicant "may instead propose other measures such as landscaping, berms, or fencing to provide the necessary screening."

Over the past several months, staff's own site reconnaissance and various Applicant data responses have established that such screening of existing Units 3 and 4 is essentially infeasible. To remedy these units in accordance with Condition **VIS-1**, staff has consequently recommended feasible landscape screening measures.

While staff is confident that substantial, though not total, screening of both existing and proposed units could be achieved through landscaping, concerns have been raised by

the City of El Segundo, the California Coastal Commission, and others, regarding preservation of Bay view corridors for the estimated 9.5 million motorists passing the site on Vista del Mar each year. At the Visual Issues workshop of December 18, 2002, staff presented analysis and possible design concepts for balancing view preservation and screening. The results of this analysis of site conditions and the design implications are presented below (A). This discussion attempts to respond to concerns expressed by various Intervenors in their initial pre-hearing testimony.

In addition, a satisfactory landscape design solution must meet requirements of the Coastal Commission, described in Condition **VIS-1**, which specify that landscaping at the site shall consist preferably of native species or, at a minimum, species determined to be non-invasive. This constraint has elicited concern by Intervenors in their pre-hearing testimony. A discussion to help clarify this issue, along with a recommended procedure for its resolution, is presented below (**B**).

Following that discussion, a proposed procedure for resolving all of these issues associated with details of the final landscape plan during the post-certification phase is described for consideration by the Commission and parties (**C**).

Finally, other miscellaneous issues that have arisen in pre-hearing testimony are addressed (**D**).

## **RESPONSE DISCUSSION**

### **(A) VIEW CORRIDORS OF THE ESGS FRONTAGE ON VISTA DEL MAR.**

As summarized in the exhibit 'View Corridors' docketed by staff on December 30, 2002, substantial view corridors to the Bay would exist for either north or southbound motorists on Vista del Mar in roughly the northern one-third and the southern one-third of the ESGS frontage. Where these views would be the best, staff recommends that perimeter landscape screening be designed to allow Bay views for motorists. This could be achieved to some substantial degree with perimeter screening consisting of trees with high canopies, and shrub plantings below the height of motorist's views of the Bay. This concept is based on the belief that the view of the Bay and horizon themselves are the important portion of Bay views, and that screening of portions of the sky in these view corridors in order to partially screen the power plant structures, represents an acceptable design compromise.

Intervenors Murphy, Perkins, Nickelson, and Ochs, in their pre-hearing testimony, have expressed the belief that total landscape screening would be necessary on the southern portions of the Vista del Mar frontage to screen the Cutter Tank and other power plant features, including the staging area created by the proposed removal of existing storage tanks in the southern 'Tank Farm' area.

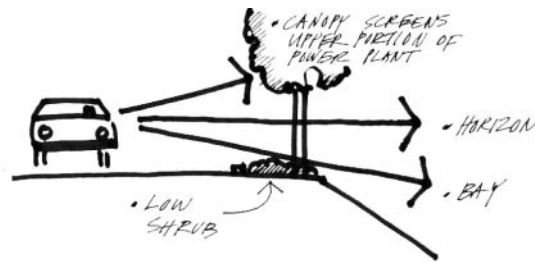
Staff has no objection to dense tree planting along any portion of the Vista del Mar frontage, as suggested by the Intervenors. Staff does not agree that total screening along *all* southern portions of the Vista del Mar frontage is needed to mitigate for views from any residences in Manhattan Beach. However, staff has no objection to total

screening in the vicinity of the Chevron station and Cutter Tank; staff believes such screening addresses the concerns stated by the Intervenors, as depicted in **Figure VR-2c**, below. In some segments *north* of the Cutter Tank, staff would simply stipulate that tree canopies be specified to begin *above* the views of passing motorists (approximately 5 to 6 feet minimum) and that shrub plantings in those segments not exceed 3 feet in height, in order to avoid blocking views of the Bay and horizon, as illustrated in **Figure VR-1**). This measure, applied in portions of the Vista del Mar frontage to the north of the Cutter Tank only, would have no perceptible effect on views from any residences in Manhattan Beach. They would, however, preserve some substantial view corridors to the Bay for southbound motorists.

In addition, restricting the height of trees in the vicinity of the Chevron station would accomplish screening of views into the site, while preserving newly created white water views from residences. Such a tree planting (roughly 15 foot maximum height) in this area of the site perimeter, in combination with tall shrub planting (8 to 10 feet), could accomplish essentially total screening into the site from residences east of Highland on 45th Street. **Figures V-2a, b, c** show the existing and simulated after-project-construction view from 318 45th Street, Manhattan Beach, illustrating the effect of the recommended screening concept in the southern third portion of the Vista del Mar frontage, at a point in time approaching landscape maturity. It should be clear from this exhibit that the potential exposure to views into the project site from residences in Manhattan Beach as a result of recommended low shrub plantings in the 'View Preservation Segment' of Vista del Mar (i.e., north of the Cutter Tank) would be scarcely detectable to nearby residents. Upper tree canopies in these segments could provide the maximum feasible screening of the power plant site from both the road and residences, while accompanying low shrub plantings would still preserve important motorist views from the road. Such a combination of design specifications would thus, in staff's opinion, address the concerns of both Intervenors from Manhattan Beach, and those of staff, the City of El Segundo and the Coastal Commission.



Figure V-1



Figures (V-2a, b, c)

(Attached)

## (B) PLANT PALETTE RESTRICTIONS OF CONDITION VIS-1.

Condition **VIS-1** requires that landscaping for the ESPR project consist of native plant species or, at a minimum, non-invasive species. Intervenors have expressed a concern that such a restriction could prevent fulfillment of the visual objectives of the conditions, and Mr. Perkins has also presented a list of recommended plant species to be used. Staff acknowledges this legitimate concern of the Intervenors.

The requirement for native or non-invasive landscape plantings is the expression by the Coastal Commission of growing concern among some biologists and State and local agencies about exacerbating habitat degradation through the introduction of invasive, habitat-destroying species through projects under their authority. This is a concern at the El Segundo site, which is located in proximity to both a sensitive habitat type (coastal habitat) and a major habitat restoration project (City of Los Angeles' El Segundo Dunes Preserve on Western Avenue). Staff is confident that this biological concern and landscape performance concerns can both be met, as discussed below.

Condition **VIS-2** as amended by Staff on December 31, 2002, requires that the plant selection of the approved landscape plan be submitted to representatives of California Exotic Pest Plant Council (CalEPPC) for review and comment. CalEPPC is the most active interagency group in the state involved in this issue, and is soon to publish a major report describing a standardized screening procedure for evaluating habitat threats of particular plants in sensitive habitats. In conversations with staff of CalEPPC and California Native Plant Society, staff has determined that the number of ornamental, horticultural plants likely to be ruled out by this process is relatively small, and will leave an ample selection to draw from and still achieve design objectives. However, it is also worth noting that a number of the horticultural species listed in both the Applicant's original plant lists (Conceptual Landscape Plans (April 23, 2002 and January 10, 2003,)) as well as the plant list submitted by Mr. Bob Perkins, are classified as invasive in the coastal habitat (e.g.: *Myoporum*; *Drosanthemum* and *Carpobrotus* (iceplant)). Staff is

prepared to assist the parties in working with CalEPPC to devise an acceptable plant palette. Staff's recommended approach described here thus emphasizes non-invasive commercial, horticultural species, rather than native species per se, at the recommendation of the experts with whom staff has consulted.

**(C) POST-CERTIFICATION PROCEDURE FOR RESOLVING LANDSCAPE ISSUES.**

Several pre-hearing comments from Intervenor related to the fact that details of the landscape plan have not yet been finalized. For example, Mr. Nickleson stated that without simulations of landscaping called for under Condition **VIS-2**, 'it is not possible to understand the magnitude or scope of the landscape screening as proposed ....' Mr. Perkins referred to call-out descriptions of plantings on the 45th Street berm remaining on the Landscape Concept Plan dated January 10, 2003 that appear to be inaccurate and would not meet the screening objectives in that area. Staff agrees with these comments. However, the issues cited by the Intervenor are a result of the timing incorporated into the process described in the agreed-to conditions, as discussed below.

In its decision of March 2002 (presented in proposed Condition **VIS-1**), the Coastal Commission stated that the final landscape plan could be finalized in the post-certification phase with the approval of the Energy Commission. All of the agreed-to visual conditions call for review and comment on the various submittals from the Applicant by the concerned parties. However the process by which the plans are to be developed has not been described in detail in the conditions. Until the plans are finalized, their effectiveness in accomplishing the various complementary objectives of this plan will not be known with certainty, although staff remains confident that such effectiveness is achievable.

Staff therefore recommends that a procedure used successfully in other siting cases (e.g., Los Esteros) to resolve similar issues should be applied here. That is, staff recommends that an ad hoc design committee representing the concerned parties should be formed to coordinate, develop and finalize the specifics of the landscape plan and other required submittals called for in Condition **VIS-2**. It is important that the workings of this committee adhere to a specific and timely schedule to avoid unnecessary delay. Therefore, at an agreed-upon time the parties shall be required to finalize input to the final submittals. Staff proposes that the following language be added to **VIS-2**:

- Add after second paragraph of **VIS-2**:

The project owner shall establish a Landscape Committee to develop the final landscape plan that will be submitted to the CPM for review and approval, and other parties for review and comment. The Landscape Committee will be comprised of two voting members from the City of El Segundo, two voting members from the City of Manhattan Beach, and two members (one vote) representing the project owner. Energy Commission and Coastal Commission staff will participate on the Committee in an advisory role. The project owner shall submit to the CPM for review and approval a detailed

schedule for the Landscape Committee meetings that will ensure that the final landscape plan is provided to the CPM in accordance with the timeline established in the condition.

- Add as first sentence of the Verification to **VIS-2**:

At least 30 days prior to the first scheduled Landscape Committee meeting, the project owner shall submit the Committee schedule to the CPM for review and approval.

## **(D) OTHER ISSUES RAISED IN DIRECT WRITTEN TESTIMONY**

### **TESTIMONY OF APPLICANT**

In its Direct Written Testimony (page 31, paragraph 2, Section K, Visual Resources), the Applicant states that 'Architectural treatment of the new units (5, 6 &7) is required *with an exception; that the project owner must show the CPM that it is infeasible to treat the new units as described in the condition* (italics added).'

### **STAFF'S RESPONSE**

It is important here to clarify the intent of Staff's wording of Condition **VIS-4** as amended on December 31, 2002. The revised wording of **VIS-4** is "Such screening shall use as a baseline the applicant's Visual Enhancement Proposals as of June 24, 2002 ..." The intent of this statement is that the screening shall, AT A MINIMUM, conform to the applicant's proposals of June 24, 2002 (horizontal banner screening), which have been represented in prior testimony by the Applicant to be feasible, and which Staff consequently understands to be feasible. The issue of evaluating feasibility in the post-certification phase applies to desired screening beyond that portrayed by the Applicant in its prior submittals.

### **TESTIMONY OF M. MURPHY REGARDING LANDSCAPE MAINTENANCE**

Ms. Murphy expressed concern over adequate landscape maintenance by the Applicant, and recommended requiring a permanent gardener as a condition of certification.

### **STAFF'S RESPONSE**

Staff believes the maintenance and reporting requirements of Condition **VIS-2** already guarantee adequate landscape maintenance and a means of registering complaints if maintenance is not performed.

Condition **VIS-2**, item 5) calls for 'Maintenance procedures for the entire project site, including any needed irrigation and a plan for routine and regular debris removal as needed to preserve a neat and well-maintained appearance, for the life of the project.' Item 6) calls for 'a procedure for monitoring and replacement of all unsuccessful

plantings for the life of the project.' As a means of verification, the 'project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report.'

Finally, provisions for a Complaint Hotline are established under Condition **COM-11** (General Conditions of the FSA). Complaints regarding landscape maintenance problems could be submitted through this number, which will be posted around the site for use by residents and other members of the public. The project owner also is required to provide the phone number to the Energy Commission Compliance Project Manager, who will post it on the Energy Commission's web page. The public may use this point of contact for notifying the project owner of lighting complaints or landscape-related concerns.

### **III. CONCLUSION**

This completes Staff's Written Response Testimony in this case. Staff will provide witnesses at the evidentiary hearings on all items addressed herein.

February 10, 2003

Respectfully submitted,

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