APPENDIX H
WATER RESOURCES

ATTACHMENT H-8
California Department of Fish and Game
Natural Diversity Database Forms

ESGS Project
USGS Quadrangle: Venice, CA

LATERALLUS JAMAICENSIS COTURNICULUS
CALIFORNIA BLACK RAIL
Element Code: ABNME03041

List Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T1	CDFG Status:
State: Threatened	State: S1	

Habitat Associations

General: MAINLY INHABITS SALT-MARSHES BORDERING LARGER BAYS.
Micro: OCCURS IN TIDAL SALT MARSH HEAVILY GROWN TO PICKLEWEED; ALSO IN FRESH-WATER AND BRACKISH MARSHES, ALL AT LOW ELEVATION.

Occurrence No. 68 Map Index:01488
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WILBUR, S. 1974 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: PLAYA DEL REY.

Dates Last Seen
Element: 1928-02-25
Site: 1928-02-25

Lat/Long: 33°57'09" / 118°26'51"
UTM: Zone-11 N3757656 E366228
Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 154.1 ac

Township: 02S
Range: 15W
Section: 33 Qtr XX
Meridian: S
Elevation: 10 ft

Comments

Distribution:
Ecological:
Threat:
General: ONE RAIL FOUND DEAD.
Owner/Manager: DPR-DOCKWEILER SB, PVT

CHARADRIUS ALEXANDRINUS NIVOSUS (NESTING)
WESTERN SNOWY PLOVER
Element Code: ABNNB03031

List Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G4T2	CDFG Status: SC
State: None	State: S2	

Habitat Associations
General: FEDERAL LISTING APPLIES ONLY TO THE PACIFIC COASTAL POPULATION.
Micro: SANDY BEACHES, SALT POND LEVEES & SHORES OF LARGE ALKALI LAKES. NEEDS SANDY, GRAVELLY OR FRIABLE SOILS FOR NESTING.

Occurrence No. 36 Map Index:01488 — Dates Last Seen —
Occ Rank: None — Element: 1914-XX-XX
Origin: Natural/Native occurrence — Site: 1914-XX-XX
Presence: Extirpated
Trend: Unknown
Main Source: PAGE, G. & L. STENZEL 1981 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: PLAYA DEL REY.

Lat/Long: 33°57'09" / 118°26'51"
UTM: Zone-11 N3757656 E366228
Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 154.1 ac

Township: 02S
Range: 15W
Section: 33 Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution:
Ecological:
Threat:
General: ONE EGG SET COLLECTED IN 1914 BY U.S. NATIONAL MUSEUM.
Owner/Manager: DPR-DOCKWEILER SB, PVT

Occurrence No. 37 Map Index:36797 — Dates Last Seen —
Occ Rank: None — Element: 1904-XX-XX
Origin: Natural/Native occurrence — Site: 1904-XX-XX
Presence: Extirpated
Trend: Unknown
Main Source: PAGE, G. & L. STENZEL 1981 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: BALLONA BEACH (DOCKWEILER STATE BEACH).

Lat/Long: 33°57'59" / 118°27'26"
UTM: Zone-11 N3759198 E365366
Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 31.6 ac

Township: 02S
Range: 15W
Section: 28 Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution: MAPPED AT THE BEACH NORTH OF BALLONA CREEK.
Ecological:
Threat:
General: FORTY-SIX EGG SETS COLLECTED BY THE NATIONAL MUSEUM OF NATURAL HISTORY BETWEEN 1894-1904.
Owner/Manager: DPR-DOCKWEILER SB

STERNA ANTILLARUM BROWNI (NESTING COLONY)
CALIFORNIA LEAST TERN
Element Code: ABNNM08103

List Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G4T2T3	CDFG Status:
State: Endangered	State: S2S3	

Habitat Associations
General: NESTS ALONG THE COAST FROM SAN FRANCISCO BAY SOUTH TO NORTHERN BAJA CALIFORNIA.
Micro: COLONIAL BREEDER ON BARE OR SPARSELY VEGETATED, FLAT SUBSTRATES: SAND BEACHES, ALKALI FLATS, LAND FILLS, OR PAVED AREAS.

Occurrence No. 12 Map Index:01439 | Dates Last Seen | Lat/Long: 33°58'03" / 118°27'28" | Township: 02S
Occ Rank: Unknown | Element: 1996-XX-XX | UTM: Zone-11 N3759345 E365300 | Range: 15W
Origin: Natural/Native occurrence | Site: 1996-XX-XX | Precision: NON-SPECIFIC | Section: 28 Qtr XX
Presence: Presumed Extant | Symbol Type: POLYGON | Meridian: S
Trend: Stable | Area: 4.6 ac | Elevation: 10 ft
Main Source: ATWOOD, J. ET AL 1977 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: Marina del Rey
Location: VENICE BEACH SITE. SOUTHERN END OF VENICE BEACH, NORTH OF BALLONA CREEK, PART OF DOCKWEILER STATE BEACH.

Comments
Distribution: HISTORICALLY, BIRDS NESTED ALONG THIS ENTIRE BEACH STRAND. RECORDS FROM "DEL REY", "MARINA DEL REY" AND "DEL REY LAGOON". BIRDS ALSO NESTED ON FILL SITE FOR HARBOR. UCLA #32595. NESTING RECORDS FROM VENICE BEACH GO BACK TO 1898.
Ecological: PRIOR TO THE 1988 SEASON, NEST SITE WAS ENLARGED, AND A NEW FENCE ELIMINATED MUCH OF THE PREDATION AND DISTURBANCE.
Threat: 1990 CAT PREDATION, ATTEMPTS MADE TO TRAP. VEGETATION OVERGROWTH. NESTING FAILURE DUE TO LOCAL FOOD SHORTAGE.
General: 1973-84: MEAN OF 106 PR/YR, GOOD FLEDGING; 1985: 107 NESTS, 113 FLEDGED; 1987: 109 PR, 82 FLEDGED. 1988: 165 PR, 192 FLEDGED. 1990: 206 PR, 279 FLEDGED. 1991: 198 PR, 200 FLEDGED, 1992: 229 PR, 245 FLEDGED. 1996: 271 PR, 92 FLEDGED.
Owner/Manager: DPR-DOCKWEILER SB

Occurrence No. 13 Map Index:01562 | Dates Last Seen | Lat/Long: 33°58'47" / 118°25'31" | Township: 02S
Occ Rank: None | Element: 1977-XX-XX | UTM: Zone-11 N3760646 E368322 | Range: 15W
Origin: Natural/Native occurrence | Site: 1978-XX-XX | Precision: NON-SPECIFIC | Section: 23 Qtr XX
Presence: Extirpated | Symbol Type: POLYGON | Meridian: S
Trend: Unknown | Area: 3.5 ac | Elevation: 10 ft
Main Source: ATWOOD, J. ET AL 1977 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: BEETHOVEN ST FILL. BALLONA CR.

Comments
Distribution:
Ecological: NESTING AREA TRIANGULARLY BORDERED BY BALLONA CREEK, FLOOD CONTROL CHANNEL, AND A FENCE. SUBSTRATE IS LIGHT COLORED, SANDY DREDGE MATERIAL WITH SPARSE VEGETATION COVER.
Threat:
General: FIRST YEAR OF CONFIRMED NESTING HERE; POTENTIAL GOOD, EVEN THOUGH 3 PAIR FLEDGED 0. IN 1978 LARGE MOUNDS OF SANDY DREDGE MATERIAL WERE PLACED ON THE SITE RENDERING THE AREA UNSUITABLE FOR NESTING.
Owner/Manager: UNKNOWN

Occurrence No. 14 Map Index:01492 | Dates Last Seen | Lat/Long: / | Township:
Occ Rank: None | Element: 1981-00-00 | UTM: | Range:
Origin: Natural/Native occurrence | Site: 1987-XX-XX | Precision: | Section: Qtr
Presence: Possibly Extirpated | Symbol Type: | Meridian:
Trend: Unknown | Radius: | Elevation:
Main Source: ATWOOD, J. ET AL 1979 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: Marina del Rey
Location: PLAYA DEL REY. MARSH BOUNDED BY CULVER BLVD & VISTA DEL MAR RD & BALLONA CR.

Comments
Distribution: 1965 OBSERVATION FROM MARINA DEL REY NEAR HARBOR AREA AND BALLONA CREEK. IN 1970'S-80'S TERNS USED SALT/MUD FLATS WITHIN MARSH. BREEDING AREAS ARE SUBJECT TO FLOODING IF BALLONA CREEK TIDE GATES ARE OPENED DURING BREEDING SEASON.
Ecological: TERNS NEST AND ROOST ON SALT/MUD FLATS; FEED IN THE MARINA, BALLONA CREEK, BALLONA LAGOON, AND CANALS IN THE AREA.
Threat: EQUESTRIANS, MOTORCYCLES, FLOODING OF NESTING AREAS.
General: 1965: BIRDS OBS. 1973-75 & 79-84: MEAN OF 11 PRS/YR. 1976: SITE ABANDONED. 1977: NO NESTING. 1978: 25-30 PRS, 30 FLEDGED. 1981-82: BREEDING AREA FLOODED. 1987: NO NESTING. NO MENTION OF THIS AREA IN MONITORING REPORTS AFTER 1987.
Owner/Manager: PVT-SUMMA CORP

ESGS Project
USGS Quadrangle: Venice, CA

ATHENE CUNICULARIA (BURROW SITES)
BURROWING OWL
Element Code: ABNSB10010

List Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T2	CDFG Status: SC
State: None	State: S2	

Habitat Associations
General: FOUND IN OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 67 Map Index:36781
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHREIBER, R. ET AL 1981 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: Marina del Rey
Location: VICINITY PLAYA DEL REY AND AGRICULTURAL LANDS NEAR JUNCTION OF CULVER AND JEFFERSON BLVDS, LOS ANGELES.

Dates Last Seen
Element: 1981-XX-XX
Site: 1981-XX-XX

Lat/Long: 33°58'13" / 118°26'10"
UTM: Zone-11 N3759624 E367308
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 2/5 mile

Township: 02S
Range: 15W
Section: 27 Qtr XX
Meridian: S
Elevation: 5 ft

Comments
Distribution: PAIRS NEST IN BANKS ON NORTH SIDE OF BALLONA CREEK, WEST OF CULVER BLVD. ADDITIONAL OWLS PROBABLY NEST ON BLUFFS SOUTH OF THE AGRICULTURAL LANDS ON THE SOUTH SIDE OF BALLONA CREEK.
Ecological: FAIRLY COMMON RESIDENT IN DRY AGRICULTURAL LANDS AND BARE, OPEN AREAS WITH SOFT BANKS OR BLUFFS FOR NEST BURROWS.
Threat:
General:
Owner/Manager: PVT

POLIOPTILA CALIFORNICA CALIFORNICA
COASTAL CALIFORNIA GNATCATCHER
Element Code: ABPBJ08080

List Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G2T2	CDFG Status: SC
State: None	State: S2	

Habitat Associations
General: OBLIGATE, PERMANENT RESIDENT OF COASTAL SAGE SCRUB BELOW 2500 FT IN SOUTHERN CALIFORNIA.
Micro: LOW, COASTAL SAGE SCRUB IN ARID WASHES, ON MESAS & SLOPES. NOT ALL AREAS CLASSIFIED AS COASTAL SAGE SCRUB ARE OCCUPIED.

Occurrence No. 35 Map Index:01722
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ATWOOD, J. 1980 (LIT)

Dates Last Seen
Element: 1980-XX-XX
Site: 1980-XX-XX

Lat/Long: 33°59'26" / 118°22'55"
UTM: Zone-11 N3761774 E372359
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 14W
Section: 18 Qtr SE
Meridian: S
Elevation: 200 ft

Quad Summary: VENICE (3311884/090B)*, INGLEWOOD (3311883/090A), HOLLYWOOD (3411813/111D), BEVERLY HILLS (3411814/111C)
County Summary: LOS ANGELES
SNA Summary: Baldwin Hills
Location: BALDWIN HILLS, VICINITY CULVER CITY

Comments
Distribution:
Ecological: HABITAT IS COASTAL SAGE SCRUB, DOMINATED BY ARTEMISIA CALIFRONICA, ERIOGONUM FASCICULATUM, AND SALVIA MELLIFERA.
Threat: THREATENED BY ONGOING URBAN DEVELOPMENT, AS MANY MAJOR HABITAT AREAS ARE OWNED BY LAND COMPANIES.
General: ONE INDIVIDUAL OBSERVED; 1-3 PAIRS ESTIMATED.
Owner/Manager: UNKNOWN

PASSERCULUS SANDWICHENSIS BELDINGI
BELDING'S SAVANNAH SPARROW
Element Code: ABPBX99015

List Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T3	CDFG Status:
State: Endangered	State: S3	

Habitat Associations
General: INHABITS COASTAL SALT MARSHES, FROM SANTA BARBARA SOUTH THROUGH SAN DIEGO COUNTY.
Micro: NESTS IN SALICORNIA ON AND ABOUT MARGINS OF TIDAL FLATS.

Occurrence No. 7 Map Index:01492 — Dates Last Seen — Lat/Long: / Township:
Occ Rank: Fair — Element: 1991-XX-XX — UTM: — Range:
Origin: Natural/Native occurrence — Site: 1991-XX-XX — Precision: — Section: Qtr
Presence: Presumed Extant — Symbol Type: — Meridian:
Trend: Decreasing — Radius: — Elevation:
Main Source: U.S. FISH & WILDLIFE SERVICE 1987 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: Marina del Rey
Location: PLAYA DEL REY; SOUTH SIDE BALLONA CREEK WEST OF CULVER BLVD-JEFFERSON BLVD INTERSECTION.

Comments
Distribution: 1991: ALL TERRITORIES FOUND IN NON-TIDALLY INFLUENCED AREA ADJACENT TO THE CHANNELIZED BALLONA CREEK, INLAND FROM THE CHANNEL.
Ecological: 101 HA SALTMARSH WITH LITTLE TIDAL INFLUENCE. SOME OF THE PICKLEWEED DESSICATING IN 1991. RESTORATION POTENTIAL IS HIGH, AREA NEEDS TIDAL ACTION.
Threat: EXOTIC RED FOX, CAT & DOG SIGN OBS WITHIN MARSH, HUMAN DISTURBANCE, AIRPORT & HWY NOISE.
General: POPULATION ESTIMATES: 1973: 25 PRS; 1977: 37 PRS; 1979: 21 PRS; 1980: 18 PRS; 1981: 13 PRS; 1986: 32 PRS; 1987: 29-30 PRS; 1989: 31 PRS; 1990: 12 PRS; 1991: 5 PRS.
Owner/Manager: PVT-SUMMA CORP

Occurrence No. 37 Map Index:01504 — Dates Last Seen — Lat/Long: 33°58'25" / 118°26'19" Township: 02S
Occ Rank: None — Element: 1981-XX-XX — UTM: Zone-11 N3759952 E367101 Range: 15W
Origin: Natural/Native occurrence — Site: 1981-XX-XX — Precision: SPECIFIC Section: 27 Qtr XX
Presence: Extirpated — Symbol Type: POLYGON Meridian: S
Trend: Unknown — Area: 143.5 ac Elevation: 15 ft
Main Source: SCHREIBER, R. ET AL 1981 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: Marina del Rey
Location: BALLONA AREA. PARCEL BOUNDED ON E BY HWY 1, ON S BY BALLONA CRK, ON N & W BY FIJI WAY.

Comments
Distribution: SMALL BREEDING POPS IN HOMOGENEOUS STANDS OF SALICORNIA THROUGHOUT THIS PARCEL.
Ecological: SUBSEQUENT TO 1987 THIS POPULATION WAS EXTIRPATED. THIS AREA IS NOW INVADED BY UPLAND PLANTS AND IS PROPOSED FOR DEVELOPMENT.
Threat:
General:
Owner/Manager: PVT-SUMMA CORP

EUPHILOTES BATTOIDES ALLYNI
EL SEGUNDO BLUE BUTTERFLY
Element Code: IILEPG201B

List Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G5T1	CDFG Status:
State: None	State: S1	

Habitat Associations
General: RESTRICTED TO REMNANT COASTAL DUNE HABITAT IN SOUTHERN CALIFORNIA.
Micro: HOSTPLANT IS ERIOGONUM PARVIFOLIUM; LARVAE FEED ONLY ON THE FLOWERS AND SEEDS; USED BY ADULTS AS MAJOR NECTAR SOURCE.

Occurrence No. 1 Map Index:01535
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Main Source: ARNOLD, R. 1978 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: El Segundo Dunes
Location: EL SEGUNDO DUNES, JUST WEST OF LOS ANGELES INTERNATIONAL AIRPORT.

Dates Last Seen
Element: 1988-XX-XX
Site: 1988-XX-XX

Lat/Long: 33°56'16" / 118°25'58"
UTM: Zone-11 N3756001 E367584
Precision: SPECIFIC
Symbol Type: POLYGON
Area: 119.4 ac

Township: 03S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 140 ft

Comments
Distribution: 70% OF AN ESTIMATED 756 ERIOGONUM PARVIFOLIUM PLANTS ARE SENESCING. TWO OF THE 16 ERIOGONUM PATCHES SUPPORT 75% OF THE EL SEGUNDO BLUE POPULATION.IN 1988, FOUND ON ONLY 20 ACRES, <3 ACRES WITH HIGH DENSITY.
Ecological: LARVAL FOOD PLANT IS ERIOGONUM PARVIFOLIUM. IN 1988 LAX AIRPORT BOARD AUTHORIZED A CONTINUING 3 YR PROGRAM OF HABITAT RESTORATION.
Threat: POPULATION NUMBERS ARE LOW ENOUGH TO POSSIBLY CAUSE GENETIC PROBLEMS. INVASIVE NON-NATIVE PLANTS.
General: HABITAT QUALITY POOR DUE TO EXOTIC PLANTS STABILIZING THE SAND. POP EST 1984, 750; 1986, 800; 1987, 1600; 1988, 2500 (1029 ADULTS SEEN).
Owner/Manager: PVT-LAX AIRPORT

Occurrence No. 2 Map Index:01586
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Main Source: ARNOLD, R. 1978 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary: El Segundo Dunes
Location: EL SEGUNDO DUNES-CHEVRON REFINERY COLONY.

Dates Last Seen
Element: 1984-08-XX
Site: 1984-08-XX

Lat/Long: 33°54'58" / 118°25'14"
UTM: Zone-11 N3753568 E368677
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/5 mile

Township: 03S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 150 ft

Comments
Distribution: PRESERVE CONTAINS REMNANT DUNE HABITAT ON REFINERY PROPERTY
Ecological: ERIOGONUM PARVIFOLIUM IS THE MAJOR FOOD PLANT AND IT IS BEING REASTABLISHED, WEEDY PLANTS REMOVED.
Threat: NON-NATIVE PLANTS OUT COMPETING FOOD AND NATIVE DUNE PLANT.
General: EL SEGUNDO BLUE POPULATION AT THIS SITE HAS DECLINED DRAMATICALLY OVER THE EIGHT YEARS THAT ARNOLD HAS BEEN ANALYZING IT. 1984 POP EST 334 INDIVIDUALS, CAPTURE-RECAPTURE STUDY. POP EST 357, MAY BE LEVELING OUT, 1986.
Owner/Manager: DPR-MANHATTAN SB

LASTHENIA GLABRATA SSP COULTERI
COULTER'S GOLDFIELDS
Element Code: PDAST5L0A1

List Status	NDDB Element Ranks	Other Lists
Federal: Species of Concern	Global: G4T3	CNPS List: 1B
State: None	State: S2.1	R-E-D Code: 2-3-2

Habitat Associations
General: COASTAL SALT MARSHES, PLAYAS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.
Micro: USUALLY FOUND ON ALKALINE SOILS IN PLAYAS, SINKS, AND GRASSLANDS. 1-1400M.

Occurrence No. 27 Map Index:23785
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: ORNDUFF,R. 1966 (LIT)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: BALLONA MARSHES.

Dates Last Seen:
Element: 1934-04-03
Site: 1980-XX-XX

Lat/Long: 33°58'22" / 118°26'51"
UTM: Zone-11 N3759901 E366279
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution:
Ecological: GROWING IN SALT MARSH. ONE COLLECTION NOTES THAT POPULATION OCCURRED IN DENSE PATCHES IN OLD PLOUGHED GROUND NOW OVERGROWN.
Threat: NO LONGER OCCURING ON THE SITE ACCORDING TO 1981 R. SCHREIBER REPORT ON THE BALLONA REGION.
General: LAST COLLECTION FROM BALLONA MARSH APPARENTLY MADE PRIOR TO 1905 BY ABRAMS. 1934 COLLECTION REFERS TO "DEL REY HILLS SALT MARSH", A HISTORIC SITE WHICH IS PRESUMED TO CORRESPOND TO THE NUMEROUS "DEL REY" PLACE NAMES IN THE VICINITY.
Owner/Manager: UNKNOWN

DITHYREA MARITIMA
BEACH SPECTACLEPOD
Element Code: PDBRA10020

List Status: Federal: Species of Concern; State: Threatened
NDDB Element Ranks: Global: G2; State: S2.1
Other Lists: CNPS List: 1B; R-E-D Code: 3-3-2

Habitat Associations
General: COASTAL DUNES, COASTAL SCRUB. FORMERLY MORE WIDESPREAD IN COASTAL HABITATS IN SO. CALIF.
Micro: SEA SHORES, ON SAND DUNES, AND SANDY PLACES NEAR THE SHORE. 3-50M.

Occurrence No. 2 Map Index:01655
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: BRAUNTON, E. #285 CAS (HERB)
Quad Summary: REDONDO BEACH (3311874/090C)*, VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: HERMOSA BEACH, 2.0 MILES NORTH OF REDONDO.

Dates Last Seen — Element: 1902-05-25; Site: 1998-XX-XX
Lat/Long: 33°52'01" / 118°24'11"
UTM: Zone-11 N3748094 E370221
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 03S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 20 ft

Comments
Distribution:
Ecological: IN SAND DUNES.
Threat:
General: EXTIRPATED AT THIS SITE ACCORDING TO P. AIGNER (1998)
Owner/Manager: PVT

Occurrence No. 3 Map Index:01557
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: PURER, E. #2774 SD (HERB)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: EL SEGUNDO.

Dates Last Seen — Element: 1932-04-23; Site: 1932-04-23
Lat/Long: 33°54'54" / 118°25'38"
UTM: Zone-11 N3753459 E368062
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 03S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution:
Ecological: IN ESTABLISHED SAND DUNES.
Threat:
General:
Owner/Manager: UNKNOWN

Occurrence No. 4 Map Index:23785
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRAUNTON, E. #876 UNK HERB (HERB)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: BALLONA.

Dates Last Seen — Element: 1903-04-XX; Site: 1903-04-XX
Lat/Long: 33°58'22" / 118°26'51"
UTM: Zone-11 N3759901 E366279
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution: EXACT LOCATION NOT KNOWN, MAPPED IN THE VICINITY OF BALLONA MARSHES, NEAR MARINA DEL REY.
Ecological:
Threat:
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1903 COLLECTION BY BRAUNTON.
Owner/Manager: UNKNOWN

DITHYREA MARITIMA (cont.)
BEACH SPECTACLEPOD
Element Code: PDBRA10020

List Status	NDDB Element Ranks	Other Lists
Federal: Species of Concern	Global: G2	CNPS List: 1B
State: Threatened	State: S2.1	R-E-D Code: 3-3-2

Occurrence No. 11 Map Index:40194
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MAJOR, M. 1979 (PERS)
Quad Summary: BEVERLY HILLS (3411814/111C)*, VENICE (3311884/090B), TOPANGA (3411815/112D)
County Summary: LOS ANGELES
SNA Summary:
Location: DUNES OF COAST NEAR SANTA MONICA.

Dates Last Seen
Element: 1884-07-XX
Site: 1884-07-XX

Lat/Long: 34°00'46" / 118°29'23"
UTM: Zone-11 N3764382 E362430
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 15W
Section: 07 Qtr XX
Meridian: S
Elevation: 20 ft

Comments
Distribution: EXACT LOCATION NOT KNOWN; MAPPED NEAR THE BEACHES WEST OF SANTA MONICA.
Ecological: DUNES.
Threat:
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1884 SIGHTING (COLLECTION?) BY W.S. LYON REPORTED BY MAJOR (1979).
Owner/Manager: UNKNOWN

ASTRAGALUS PYCNOSTACHYUS VAR LANOSISSIMUS
VENTURA MARSH MILK-VETCH
Element Code: PDFAB0F7B1

List Status	NDDB Element Ranks	Other Lists
Federal: Proposed Endangered	Global: G3T1	CNPS List: 1B
State: Endangered	State: S1.1	R-E-D Code: 3-3-3

Habitat Associations
General: COASTAL SALT MARSH. HISTORICALLY IN COASTAL SOUTHERN CALIFORNIA; NOW KNOWN AT ONE SITE IN VENTURA COUNTY.
Micro: WITHIN REACH OF HIGH TIDE OR PROTECTED BY BARRIER BEACHES, MORE RARELY NEAR SEEPS ON SANDY BLUFFS. 1-35M.

Occurrence No. 4 Map Index:01453
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: CHANDLER, H. #2045 UC (HERB)
Quad Summary: VENICE (3311884/090B)*, BEVERLY HILLS (3411814/111C)
County Summary: LOS ANGELES
SNA Summary:
Location: BALLONA MARSHES AND RANCHO.

Dates Last Seen
Element: 1902-09-09
Site: 1981-XX-XX

Lat/Long: 33°59'10" / 118°27'22"
UTM: Zone-11 N3761377 E365501
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 5 ft

Comments
Distribution: VICINITY IS PRESENTLY MARINA DEL REY AND THE SOUTH PART OF VENICE. THIS SITE INCLUDES COLLECTIONS FROM "BALLONA HARBOR", "PLAYA DEL REY", "NEAR PALMS", AND COLLECTIONS FROM THE GENERAL VICINITY OF "LOS ANGELES COUNTY".
Ecological:
Threat: MARSHES NOW DRAINED.
General: NINE COLLECTIONS MADE BETWEEN 1888 AND 1902 ARE ATTRIBUTED TO THIS SITE. AREA SEARCHED BY BARNEBY (1964) AND SCHREIBER (1981); HISTORIC POPULATIONS ARE PRESUMED EXTIRPATED.
Owner/Manager: UNKNOWN

ASTRAGALUS TENER VAR TITI
COASTAL DUNES MILK-VETCH
Element Code: PDFAB0F8R2

List Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1T1	CNPS List: 1B
State: Endangered	State: S1.1	R-E-D Code: 3-3-3

Habitat Associations
General: COASTAL BLUFF SCRUB, COASTAL DUNES. KNOWN ONLY FROM A FEW EXTANT OCCURRENCES; MOSTLY HISTORICAL IN SOUTHERN CALIFORNIA.
Micro: MOIST, SANDY DEPRESSIONS OF BLUFFS OR DUNES ALONG AND NEAR THE PACIFIC OCEAN; ONE SITE ON A CLAY TERRACE. 1-50M.

Occurrence No. 4 Map Index:42744
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: ABRAMS, L. #2351 RSA (HERB)
Quad Summary: INGLEWOOD (3311883/090A)*, VENICE (3311884/090B), HOLLYWOOD (3411813/111D), BEVERLY HILLS (3411814/111C)
County Summary: LOS ANGELES
SNA Summary:
Location: HYDE PARK (NEAR PRESENT DAY INGLEWOOD).

Dates Last Seen
Element: 1903-04-12
Site: 1903-04-12

Lat/Long: 33°58'36" / 118°22'25"
UTM: Zone-11 N3760230 E373093
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 5 mile

Township: 02S
Range: 14W
Section: 20 Qtr XX
Meridian: S
Elevation: 150 ft

Comments
Distribution: EXACT LOCATION NOT KNOWN. MAPPED IN THE GENERAL VICINITY OF INGLEWOOD.
Ecological:
Threat:
General: MAIN SOURCE OF INFORMATION FOR THIS SITE IS 1903 COLLECTION BY L. ABRAMS. R. BARNEBY (1964) BELIEVES THIS SITE IS PROBABLY EXTIRPATED.
Owner/Manager: UNKNOWN

CHORIZANTHE PARRYI VAR FERNANDINA
SAN FERNANDO VALLEY SPINEFLOWER
Element Code: PDPGN040J1

List Status	NDDB Element Ranks	Other Lists
Federal: Candidate	Global: G2T1	CNPS List: 1B
State: Candidate	State: S1.1	R-E-D Code: 3-3-3

Habitat Associations
General: COASTAL SCRUB. FORMERLY KNOWN FROM SOUTHERN CALIFORNIA; PROBABLY EXTINCT.
Micro: SANDY SOILS. 1000-1700M.

Occurrence No. 9 Map Index:23785
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: ABRAMS, L. #1217 DS (HERB)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: BALLONA HARBOR.

Dates Last Seen
Element: 1901-04-01
Site: 1901-04-01

Lat/Long: 33°58'22" / 118°26'51"
UTM: Zone-11 N3759901 E366279
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution: MAPPED IN VICINITY OF THE MOUTH OF BALLONA CREEK AND MARINA DEL REY.
Ecological:
Threat:
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1901 COLLECTION BY L. ABRAMS.
Owner/Manager: UNKNOWN

POTENTILLA MULTIJUGA
BALLONA CINQUEFOIL
Element Code: PDROS1B120

List Status	NDDB Element Ranks	Other Lists
Federal: Species of Concern	Global: GX	CNPS List: 1A
State: None	State: SX	R-E-D Code: *

Habitat Associations
General: MEADOWS AND SEEPS. ENDEMIC TO LOS ANGELES COUNTY; APPARENTLY EXTINCT.
Micro: BRACKISH MEADOWS. 0-2M.

Occurrence No. 1 Map Index:23785
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: HASSE, H. SN DS #115419 (HERB)
Quad Summary: VENICE (3311884/090B)
County Summary: LOS ANGELES
SNA Summary:
Location: FLATS NEAR BALLONA (PRESENT DAY VENICE).

Dates Last Seen
Element: 1890-08-XX
Site: 1890-08-XX

Lat/Long: 33°58'22" / 118°26'51"
UTM: Zone-11 N3759901 E366279
Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 02S
Range: 15W
Section: XX Qtr XX
Meridian: S
Elevation: 10 ft

Comments
Distribution: BALLONA WAS NAME OF SPANISH LAND GRANT AND EXTENSIVE MARSH, NOW DESTROYED.
Ecological: HABITAT REPORTED BY MUNZ (1959) AS BRACKISH MEADOW IN COASTAL SAGE SCRUB.
Threat: EXTIRPATED BY DESTRUCTION OF SUITABLE HABITAT BY URBANIZATION.
General: TYPE LOCALITY.
Owner/Manager: UNKNOWN

APPENDIX H
WATER RESOURCES

ATTACHMENT H-9
Request for Determination of Existing Discharge Under the California Thermal Plan

EL SEGUNDO POWER II LLC

750 B STREET SUITE 2740
SAN DIEGO, CA 92101
(619) 615-6727
FAX (619) 615-7663

December 13, 2000

Ms. Deborah J. Smith
Assistant Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, California 90013

RE: Request for Determination of Existing Discharge under the California Thermal Plan

Dear Ms. Smith:

In our meeting on October 26, we presented an overview of the El Segundo Power Redevelopment Project (ESPR Project) to you and members of your staff. In this presentation, we described the proposed replacement of the existing generating units and the continued unmodified use of the once-through seawater cooling system. In addition, we expressed our interest in maintaining the "existing" classification of the thermal discharge for the ESPR Project under the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan).

At the conclusion of this meeting, you requested a letter describing the ESPR Project and why the Project qualifies as an "existing" discharge under the California Thermal Plan and requesting such a determination by the Los Angeles Regional Water Quality Control Board (Regional Board). This letter responds to that request.

Summary

We believe that the continued classification of the once-though cooling water discharges from the ESPR Project as an "existing" discharge under the California Thermal Plan is justified based on the following considerations:

- The proposed modifications to the generating units will not affect the maximum temperature or volume of the thermal discharge.
- The ESPR Project does not constitute a "material change" as defined in Cal. Code Regs., Title 23, §2210.

- The existing once-through cooling water system will remain unchanged except that a new single condenser will replace the two existing condensers.
- The existing discharge does not impact the beneficial uses of Santa Monica Bay.
- The existing and proposed discharge is consistent with State policy regarding the use of waters for powerplant cooling.
- Maintaining the "existing" classification is consistent with previous actions by the Regional Board to permit similar repowering projects.
- Maintaining the "existing" classification is consistent with the Governor's initiatives to expeditiously and responsibly address the State's energy emergency.

Description of Project

ESGS has been operating as an electric generating station since May 1955. ESGS consists of four steam-electric generating units. Seawater for once-through cooling is supplied to Units 1 and 2 via a 10-ft diameter intake and four pumps that circulate 207 million gallons/day (mgd). The cooling water system for Units 3 and 4 are separate from Units 1 and 2. The seawater for once through cooling is supplied to Units 3 and 4 via a 12 ft diameter conduit located approximately 240 ft. south of the conduits for Units 1 and 2 and four pumps circulate 398 mgd. Units 1 and 2 are rated at 175 MW each (total of 350 MW) and Units 3 and 4 are rated at 335 MW each (total of 670 MW).

The ESPR Project will involve the complete removal of Units 1 and 2 on the ESGS site. Following the removal phase of the redevelopment effort, a new combined cycle power plant nominally rated at 630 MW is to be constructed on site. These new units will be numbered 5, 6 and 7. Units 5 and 7 will be combustion turbine generators and Unit 6 will be a steam turbine generator. They will be located within the footprint of the existing units. The ESPR Project will continue the use of seawater once-through cooling system utilizing the same intake and outfall structures that have been utilized by Units 1 and 2 of the ESGS since 1955. The potential exists for operation of the ESPR Project without all pumps running when Unit 6 is not at full load. For example, two pump operation will likely occur at 50 percent load on Unit 6. Two pump operation will likely occur at 75 percent load on Unit 6.

As described above, the existing Units 1 and 2 generate a combined 350 MW, requiring 207 mgd of once-through cooling water from Santa Monica Bay. The ESPR Project will generate a peak of 646.8 MW, utilizing the same once-through cooling water system circulating 207 mgd of once-through cooling water. This represents an 85 percent

increase in the amount of power that can be generated with the same amount of once-through cooling water. This tremendous increase in the efficiency of use of water resources reflects a fundamental benefit of the ESPR Project.

Thermal Plan Requirements

The California Thermal Plan is a state policy document regulating the discharge of thermal wastes to receiving waters and was developed by the State Water Resources Control Board (State Board). The definitions of "existing" and "new" discharges are key to the application of the Thermal Plan.

Paul Lilibo (916/657-1031) is the lead State Board staff responsible for the administration of the Thermal Plan. The general guidance provided by Mr. Lilibo is that Regional Boards have considerable discretion in the interpretation and administration of the California Thermal Plan. This includes the classification of the once-through cooling water discharge from the ESPR Project as "new" or "existing". The definitions as provided in the California Thermal Plan are:

> *Existing Discharge – Any discharge (a) which is presently taking place, or (b) for which waste discharge requirements have been established and construction commenced prior to the adoption of the Thermal Plan, or (c) any material change in an existing discharge for which construction has commenced prior to the adoption of the Thermal Plan (1975). Commencement of construction shall include execution of a contract for onsite construction or for major equipment which is related to the condenser cooling system.*
>
> *New Discharge – Any discharge (a) which is not presently taking place unless waste discharge requirements have been established prior to adoption of the Thermal Plan or (b) which is presently taking place and for which a material change is proposed but no construction was initiated prior to adoption of the Thermal Plan.*

Thus, the determination of the classification of the once-though cooling water discharge as "new" or "existing" will be based on whether the ESPR Project constitutes a "material change" to the discharge. Whether or not a project constitutes a material change or not is primarily determined by the Regional Water Quality Control Board. As we discuss below, we believe that there will not be a "material change," as the ESPR Project will maintain and utilize the once-through cooling water discharge as currently permitted.

For existing discharges to coastal waters, elevated temperature wastes are required to comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance. These limitations are reflected in the Permit. However, for new discharges to coastal waters, the California Thermal Plan requires that the maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F. There are no provisions for the elevated temperature discharges required for heat treatment or gate adjustment.

The Thermal Plan also requires:

> *The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.*

The 316(a) study and ongoing monitoring have demonstrated that the existing discharge is in compliance with this requirement.

The Regional Board may establish thermal discharge limitations higher than those specified in the Thermal Plan. Item 4 of the General Water Quality Provisions of the Thermal Plan provides for variances:

> *Regional Boards may, in accordance with Section 316(a) of the Federal Water Pollution Control Act of 1972, and subsequent federal regulations including 40 CFR 122, grant an exception to Specific Water Quality Objectives in this Plan. Prior to becoming effective, such exceptions and alternative less stringent requirements must receive the concurrence of the State Board.*

<u>The ESPR Project Does Not Constitute a "Material Change"</u>

The State Water Resources Control Board's regulations regarding "material change" are contained in Cal. Code Regs., Title 23, section 2210, and provide that a material change in the character, location or volume of the discharge includes, but is not limited to, five specific criteria.

(a) *The addition of a new process or product by an industrial facility resulting in a change in the character of the waste.* As described above, more efficient combined-cycle generating units will replace the existing units. This is not a

new process or product and will not change the character of the waste. Cooling water will continue to be discharged.

(b) *A significant change in the disposal method (e.g., change from land disposal to a direct discharge to water), or a change in the method of treatment which would significantly alter the character of the waste.* The disposal method will remain the same – cooling discharge through Outfall No. 001 to Santa Monica Bay. There is no "treatment" of the thermal discharge.

(c) *A significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems.* Again, the disposal area will remain the same as it has since 1955 – Outfall No. 001 to Santa Monica Bay.

(d) *An increase in flow beyond that specified in the waste discharge requirements.* The proposed flow will remain the same – the facility is designed to operate within the existing flow and the same pumps will continue to be utilized. Thus, this criterion does not apply to the ESPR Project.

(e) *An increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements.* This does not apply to the ESPR Project.

<u>The Proposed Modifications to the Generating Units will not Affect Volume or Thermal Loading of the Thermal Discharge</u>

As noted in the description of the project presented above, the ESPR Project will continue the use of the existing once-through seawater cooling system utilizing the same intake and outfall structures and the circulating pumps that have been utilized by Units 1 and 2 of ESGS since 1955. Therefore, under peak operating conditions during the summer months, once-through cooling water needs will not exceed the <u>existing</u> maximum volume of 144,000 gallons per minute or 207 gpd. Moreover, the ESPR Project is designed to limit the temperature difference across the intake and outfall to 20°F and to decrease the maximum thermal loading from 46,448 MMBtu/day to 33,298 MMBtu/day. This will ensure that the thermal discharge characteristics will remain the same.

<u>The Existing Discharge Does Not Impact the Beneficial Uses of Santa Monica Bay</u>

The ESPR Project will continue the use of seawater for once-through cooling utilizing the same intake and outfall structures and circulating pumps that have been utilized by the ESGS since 1955. The maximum daily volume discharges proposed for the ESPR Project will not increase and the maximum temperature of the discharge will be significantly less than currently permitted by the Regional Board. This use has been studied at the ESGS[1] in compliance with specifications set forth by the Regional Board. Finding 16 of the NPDES Permit[2] states:

> *To determine compliance with the Thermal Plan and in accordance with Regional Board specifications, SCE conducted a thermal effect study that was completed in 1975. The study demonstrated that wastes discharged at temperature levels prescribed in this Order have no adverse impacts on the beneficial uses of the receiving waters. Thus, the power plant with temperature discharges prescribed in this Order is in compliance with the Thermal Plan.*

Neither ESGS, nor the Scattergood Generating Station, located approximately ½ mile north of the ESGS, have been modified since this study was completed.

Recognizing that the existing discharges to the Pacific Ocean were not impacting the beneficial uses of Santa Monica Bay, it was determined that the discharges from the ESPR Project would be designed to operate within the limits established in the NPDES Permit, using the existing cooling water circulating system.

The Existing and Proposed Discharge is Consistent with State Policy

The existing operations at ESGS are consistent with the preference hierarchy of the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling[3] (Policy) by virtue of the use of once-through seawater cooling water design and discharge location. The Policy establishes a preference for coastal power plants, using the ocean as a source of cooling water, rather than inland sites that require the use of limited supplies of fresh water. This Policy provides guidance in the planning and permitting of new power plants using inland waters for cooling and suggests methods

[1] El Segundo Generating Station, Thermal Effect Study Final Report, Lockheed Ocean Laboratory, July 1973.
[2] Order No. 00-84 (NPDES No. CA0001147), Waste Discharge Requirements for El Segundo Power, LLC.
[3] California State Water Resources Control Board Resolution No. 75-58: Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling, June 19, 1975.

for keeping the consumptive use of fresh water to a minimum. The first of the principles of the Policy describes this preference:

> *It is the Board's position that from a water quantity and quality standpoint the source of powerplant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical and economic feasibility consideration: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters.*

Statement three of the Basis of Policy justifies this preference as follows:

> *Although many of the impacts of coastal powerplants on the marine environment are still not well understood, it appears the coastal marine environment is less susceptible than inland waters to the water quality impacts associated with powerplant cooling. Operation of existing coastal powerplants indicate that these facilities either meet the standards of the State's Thermal Plan and Ocean Plan or could do so readily with appropriate technological modifications. Furthermore, coastal locations provide for application of a wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State's limited supply of inland waters. These technologies include once-through cooling which is appropriate for most coastal sites, potential use of saltwater cooling towers, or use of brackish water where more stringent controls are required for environmental considerations at specific sites.*

Maintaining the "Existing" Classification Under the Thermal Plan is Consistent with Previous Regional Board Actions

Since the adoption of the California Thermal Plan by the State Board in 1975, the Los Angeles Regional Board has approved two repowering projects similar to the proposed ESPR Project. In the late 1970's, the Long Beach Generation Station was repowered and in 1993 the Harbor Generating Station was repowered. In both instances, steam-electric generating equipment was replaced with combined cycle equipment and the existing once-through cooling water systems were retained. The Los Angeles Regional Board retained the "existing" classifications in permitting these discharges.

Maintaining "Existing" Classification Under the Thermal Plan is Consistent with the Governor's Initiatives to Expeditiously and Responsibly Address the Energy Emergency

California is experiencing power shortages throughout the state. This is due in part to the growing demands for energy in California and the neighboring states, aging of the power generation infrastructure, and the lack of sufficient power generation capacity within the state. To address this need, Governor Davis has signed two Executive Orders to facilitate the expeditious and environmentally responsible processing of applications for the construction and reconstruction of power generating facilities. Maintaining the "existing" classification of the once-through cooling water discharge is consistent with the intent of these directives. As noted above, the discharge does not and will not impact the beneficial uses of Santa Monica Bay. In addition, maintaining this classification will reduce delays in approval of the authorization to proceed with construction.

Reclassification of the once-through cooling water discharge as a "new" discharge under the California Thermal Plan may result in significant costs and delays to the implementation of the ESPR Project with little or no advances or benefits to the environment. Reclassification of the discharge may result in a requirement to conduct studies to revisit the Thermal Effects Study. Such studies may require many months to complete. In addition, as a "new" discharge variances would be required for heat treatment operations. Finally, reclassification may require a re-issuance of the chlorine discharge variance that was approved by USEPA Region IX in 1996. This is significant in that the application for this variance was initially submitted on August 11, 1983 and required thirteen years of studies and hearings before it was issued. This "need" for new power, of course, should not and cannot allow for waiver of legal requirements. Where regulatory determinations must reflect broad policy and environmental issues, however "need" is a very important component. In the case of ESPR, the need for electricity is complemented by legal justification for a determination that will allow greatly improved

efficiency in the use of water resources at ESGS for the generation of electricity in a timely manner.

Conclusion

Thank you for the opportunity to present this justification regarding the appropriate classification of the continued thermal discharge from the ESPR Project under the California Thermal Plan. We look forward to receiving your determination as to the appropriate classification of the thermal discharge. If you have any questions regarding this request, please contact me at (619) 615-6727 or Tim Hemig at (619) 615-6731.

Sincerely,

David Lloyd
Secretary

APPENDIX H
WATER RESOURCES

ATTACHMENT H-10
Waste Discharge Requirements - El Segundo Power, LLC
(El Segundo Generating Station) (NPDES Permit No. CA0001147, CI 4667)

California R ional Water Quality (ontrol Board
Los Angeles Region

Winston H. Hickox
Secretary for
Environmental
Protection

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640
Internet Address: http://www.swrcb.ca.gov/~rwqcb4

Gray Davis
Governor

August 11, 2000

Mr. Craig Mataczynski
President
El Segundo Power, LLC
Symphony Towers
750 "B" Street, Suite 2740
San Diego, CA 92101-8129

Dear Mr. Mataczynki:

WASTE DISCHARGE REQUIREMENTS – EL SEGUNDO POWER, LLC (EL SEGUNDO GENERATING STATION) (NPDES PERMIT NO. CA0001147, CI 4667)

Our letter dated May 16, 2000, transmitted a tentative order for renewal of the permit to discharge wastes under the National Pollutant Discharge Elimination System (NPDES).

Pursuant to Division 7 of the California Water Code, this Regional Board at a public hearing held on June 29, 2000, reviewed the tentative requirements, considered all comments received, and adopted Order 00-084 (copy enclosed) for your waste discharge. Order No. 00-084 serves as your permit under the National Pollutant Discharge Elimination System (NPDES) and expires on May 10, 2005. Section 13376 of the California Water Code requires that an application for a new permit must be filed at least 180 days before the expiration date.

Please note the changes made by the Board during the hearing:

1. The changes proposed by staff in the Change Sheets faxed to you prior to the hearing;

2. Reopener language added in Section II.O. (page 22) of the Requirements and Provisions;

3. Additional language in Section III.C. of the Monitoring and Reporting Program; and

4. Delete "when possible" in Section IV.C.2.

You are required to implement the *Monitoring and Reporting Program (M&RP)* on the effective date of Order No. 00-084. The dates that the monitoring and annual reports must be received at the Regional Board Office are provided in the *M&RP*. Submit all monitoring reports and annual reports to the Regional Board, Attn: Information Technology Unit. When submitting monitoring, technical reports, or any correspondence regarding the discharge under Order No. 00-084 to the Regional Board, please include a reference to our *Compliance File No. CI 4667* to

assure that the reports are directed to the appropriate staff and file. Please do not combine your discharge monitoring reports with other reports. Submit each type of report as a separate document.

Should you have any questions, please call me at (213) 576-6651, or Rosario Aston at (213) 576-6653.

Sincerely,

WINNIE D. JESENA, P. E.
Chief, Los Angeles Coastal
Watershed Unit

Enclosure

cc: See attached mailing list

MAILING LIST

Environmental Protection Agency, Region IX, Permit Section (WTR-5)
U.S. Army Corps of Engineer
U.S. Fish and Wildlife Services, Division of Ecological Services
NOAA, National Marine Fisheries Service
Jorge Leon, Office of Chief Counsel, State Water Resources Control Board (SWRCB)
John Youngerman, Division of Water Quality, SWRCB
California Department of Fish and Game, Marine Resources, Region 5
California Coastal Commission, South Coast District
Los Angeles County, Department of Public Works, Waste Management Division
Jack Petralia, Department of Health Services, Los Angeles County
Los Angeles County, Lifeguard Association
City of Los Angeles, Bureau of Engineering, Wastewater System Engineering Division
City of Los Angeles, Bureau of Sanitation, Industrial Waste Management
J. Alan Walti. Department of Water and Power, City of Los Angeles
Water Replenishment District of Southern California
City of El Segundo, Department of Public Works
City of Carson, Department of Public Works
City of Hermosa Beach, Department of Public Works
City of Manhattan Beach, Department of Public Works
City of Palos Verdes Estate, Department of Public Works
City of Rancho Palos Verdes, Department of Public Works
City of Redondo Beach, Department of Public Works
City of Rolling Hills, Department of Public Works
City of Rolling Hills Estate, Department of Public Works
City of Torrance, Department of Public Works
David Beckman, Natural Resources Defense Council
Joan Hartman, American Ocean Campaign
Mark Gold, Heal the Bay
Mel Nutter, League for Coastal Protection
Marina Del Rey Anglers
Terry Tamminen, Environment Now
Steve Fleischli, Santa Monica BayKeeper
Sierra Club
Surfriders Foundation
Southern California Coastal Water Research Project
Bill Gibson, L.A. Weekly
Audun Aaberg, El Segundo Power, LLC, 301 Vista Del Mar, El Segundo, CA 90245
Robert Collacott, URS Corporation, 2020 East First Street, Suite 400,
Santa Ana, CA 92705

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. 00-084
NPDES NO. CA0001147

WASTE DISCHARGE REQUIREMENTS FOR EL SEGUNDO POWER, LLC (El Segundo Generating Station)

The California Regional Water Quality Control Board, Los Angeles Region, (Regional Board) finds:

1. El Segundo Power, LLC, (Discharger) discharges wastewaters from the El Segundo Generating Station (Plant) under waste discharge requirements contained in Order No. 94-129, adopted by this Regional Board on December 5, 1994. This Order serves as the National Pollutant Discharge Elimination System (NPDES) permit (CA0001147). The permit was originally issued to Southern California Edison (SCE), the previous owner of the facility. El Segundo Power, LLC, acquired the El Segundo Generating Station in April 1998.

2. The Discharger has filed a Report of Waste Discharge and has applied for renewal of its waste discharge requirements and NPDES permit.

3. The Discharger operates the El Segundo Generating Station, a plant consisting of four steam electric generating units (Units 1 through 4) with a design capacity of 1,020 megawatts, located at 301 Vista del Mar, El Segundo, California. The Plant discharges up to 607 million gallons per day (mgd) of wastes consisting of once-through cooling water, treated chemical metal cleaning wastes, storm water, non-chemical metal cleaning wastes, low volume inplant wastes, and treated sanitary wastes into the Pacific Ocean (Santa Monica Bay), a water of the United States.

   Figure 1 shows the location map of the facility.

4. The wastes are discharged through two outfalls, Discharge Serial Nos. 001 and 002, described as follows:

   a. Discharge Serial No. 001: (Units 1 and 2) — Latitude: 33° 54' 30" Longitude: 118° 25' 50"

   Discharge Serial No. 001 consists of two conduits, each approximately 1,900 feet long which terminate at a depth of 20 feet Mean Lower Low Water (MLLW).

b. Discharge Serial No. 002: (Units 3 and 4) Latitude: 33° 54' 27" Longitude: 118° 25' 50"

Discharge Serial No. 002 consists of one conduit that extends approximately 2,100 feet long that terminate at a depth of 20 feet MLLW.

The cooling water intake structure consists of two conduits (Nos. 003 and 004), each providing cooling water for two generating units and extends about 2,600 feet offshore drawing water from a depth of 20 feet MLLW. The 003 and 004 conduits become the discharge points during heat treatment as described below in Finding No. 6.

The Outfalls and the nature of wastes discharged are summarized in Table 1.

LEFT BLANK INTENTIONALLY

TABLE 1
Outfalls and Nature of Wastes Discharged

Discharge Serial No.		001	002
Generating Units Served		1 & 2	3 & 4
Diameter		10 feet	11 feet
Distance Offshore (feet)		1,900	2,100
Depth of Terminus, (feet below Mean Lower Low Water)		20	20
Latitude		33° 54' 30"	33° 54' 27"
Longitude		118° 25' 50"	118° 25' 50"
Maximum Temperature, (°F)	Winter (October to April)	79	86
	Summer (May to September)	88	100
	Heat Treatment/Gate Adjustment	125/135	125/135
Waste Streams (maximum volume, mgd)	Once-through Cooling Water	207.00	398.00
	Chemical Metal Cleaning Wastes[1] (Units 1 to 4)		0.06
	Low Volume Wastes[1]		
	• Floor Drain Wastes		0.10
	• Boiler Blowdown	0.013 (Units 1& 2)	0.013 (Units 3&4)
	• Fireside and Air Preheater Wastes		0.6
	• Fuel Pipeline Hydrostatic Test Water		0.8
	• Condenser Sump		0.015
	• Storm Water Runoff	Negligible	Negligible
	• Chemical Laboratory Drains		Negligible
	Secondary Treated Sanitary Wastes	0.001 (Plant 1)	0.001 (Plant 2)
Total Maximum Flow, MGD		207.01	399.59

[1] These flows are intermittent.

5. The chemical metal cleaning wastes from all the units are collected in portable storage tanks and treated to remove metals through a contractor-owned mobile lime treatment unit. The contractor maintains a tiered treatment unit (TTU) permit from the Department of Toxic Substances Control that allows for treatment of hazardous wastes on-site. The chemical metal cleaning operations occur approximately once every five years per generating Unit and discharge occurs every two years. The duration of discharge is normally approximately thirty-six to forty-eight hours per generating unit. The treated metal cleaning wastes and other low volume wastes are stored in a retention basin prior to discharge to the Pacific Ocean through Discharge Serial No. 002.

   Storm water runoff and floor drain wastes are passed through oil/water separators before combining with the cooling water and treated sanitary wastes prior to discharge to the Pacific Ocean through Discharge Serial Nos. 001 and 002. However, stormwater runoff from upslope of the facility flows into an easement conveyance then to the beach without commingling with the industrial activity's associated run-off.

   Residues in the basins, pretreatment wastes, and oil sludges from oil/water separators are periodically hauled away to legal disposal sites.

   Figure 2 shows the Schematic Diagram of the Wastewater Flow.

6. The Discharger controls marine fouling of the cooling water conduits (intake and discharge) by temporarily recirculating (thus increasing the temperature) and reversing the flow of the once-through cooling water alternately in each offshore conduit (i.e., the discharge point becomes the intake point, and the intake point becomes the discharge point). This procedure (referred to as "heat treatment") is typically conducted every six (6) weeks and lasts for about six hours per conduit, with the high temperature lasting for one hour during gate adjustment. During the heat treatment, the temperature of the water discharged through the intake conduit must be raised to 125°F (except during gate adjustment) for two hours to kill the fouling organisms. During gate adjustments, the discharge temperature is allowed to reach 135°F for no more than 30 minutes. Gate adjustments control the temperature of the water recirculated in the intake and discharge points during heat treatment.

   Calcareous shell debris accumulates in the intake structure as a result of heat treatments. Approximately once a year, this shell debris is physically removed and disposed in the Ocean.

7. To control biological growths (defouling), the condenser tubes (arranged in two banks per generating unit, each bank is called condenser half) are treated by intermittently injecting chlorine (in the form of sodium hypochlorite), for a maximum of two (2) hours per generating unit per day, into the cooling water stream.

8. Section 316(b) of the Federal Clean Water Act (Clean Water Act) requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impacts. The U.S. Environmental Protection Agency (USEPA) is in the process of promulgating specific requirements for intake structures.

   In accordance with Federal and State guidelines, SCE conducted a study (completed in 1982) that addressed the important ecological and engineering factors specified in Section 316(b) guidelines. 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 Available Technology Economically Achievable (BAT) as required by Section 316(b) of the Clean Water Act (CWA).

9. On November 19, 1982, the USEPA promulgated Effluent Guidelines and Standards for "Steam Electric Power Generating Point Source Category" (40 CFR Part 423). These regulations prescribe effluent limitation guidelines for once-through cooling water and various inplant waste streams.

   40 CFR 423.12(a) provides that effluent limitations, either more or less stringent than the USEPA standards, may be prescribed if factors relating to the equipment or facilities involved, the process applied, or other such factors are found to be fundamentally different from the factors considered in the establishment of the standards.

10. On June 13, 1994, the Regional Board adopted a revised Water *Quality Control Plan for the Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan). The Basin Plan incorporates by reference the State Water Resources Control Board's Water Quality Control Plans and policies on ocean waters [*Water Quality Control Plan for Ocean Waters In California,* March 22, 1990], temperature [*Water Quality Control Plan for Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California,* amended September 18, 1975], and the antidegradation [*Statement of Policy with Respect to Maintaining High Quality Waters in California,* State Board Water Resources Control Board (State Board) Resolution No. 68-16, October 28, 1968].

11. The Basin Plan contains water quality objectives for and lists the following beneficial uses of waterbodies in the El Segundo/LAX sub-watershed area:

    Dockweiler Beaches (Hydrologic Unit 405.12)

    Existing: industrial service supply, navigation, water contact recreation, non-contact

water recreation, commercial and sport fishing, marine habitat, and wild habitat.

Potential: spawning, reproduction, and/or early development.

Nearshore Zone

Existing: industrial service supply, navigation, water contact recreation, non-contact water recreation, commercial and sport fishing, marine habitat, wild habitat, preservation of biological habitats, rare, threatened, or endangered species, and migration of aquatic organisms.

Offshore Zone

Existing: industrial service supply, navigation, water contact recreation, non-contact water recreation, commercial and sport fishing, marine habitat, wild habitat, migration of aquatic organisms, and spawning, reproduction, and/or early development.

12. The Santa Monica Bay Restoration Project *(SMBRP)* (1994) identified the pollutants of concern for the El Segundo sub-watershed to include heavy metals (cadmium, chromium, copper, lead, nickel, silver, zinc), debris, pathogens, oil and grease, and polycyclic aromatic hydrocarbons (PAHs).

13. The 1998 California 303(d) List of impaired water bodies, approved by the USEPA on May 1999, identified Santa Monica Bay (Offshore, Nearshore, and Dockweiler Beach) as impaired with regards to the following pollutants: dichloro-diphenyl trichloroethane (DDT), polychlorinated biphenyls (PCBs), PAHs, chlordane, heavy metals (cadmium, copper, lead, mercury, nickel, silver, zinc), debris, beach closure, and high coliform count.

14. In July 23, 1997, the State Board adopted a revised Water Quality Control Plan for the Ocean Waters of California (Ocean Plan). The revised plan contains water quality objectives for coastal waters of California. This Order includes effluent and receiving water limitations, prohibitions, and provisions that implement the objectives of the Ocean Plan.

15. On May 18, 1972 (amended on September 18, 1975), the State Board adopted a Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). The Thermal Plan contains temperature objectives for the Pacific Ocean. The narrative objectives of the Thermal Plan state that elevated temperature of wastes discharged shall comply with limitations necessary to assure protection of the beneficial uses.

16. To determine compliance with the Thermal Plan and in accordance with Regional Board specifications, SCE conducted a thermal effect study that was completed in 1975. The study demonstrated that wastes discharged at temperature levels prescribed in this Order have no adverse impacts on the beneficial uses of the receiving waters. Thus, the power plant with temperature discharges prescribed in this Order is in compliance with the Thermal Plan.

17. This Regional Board has implemented a Watershed Management Approach to address water quality protection in the region. The objective is to provide a comprehensive and integrated strategy towards water resource protection, enhancement, and restoration while balancing economic and environmental impacts within a hydrologically-defined drainage basin or watershed. It emphasizes cooperative relationships between regulatory agencies, the regulated community, environmental groups, and other stakeholders in the watershed to achieve the greatest environmental improvements with the resources available. This Order fosters the implementation of this approach.

18. The SMBRP developed the *Santa Monica Bay Restoration Plan,* 1994, (Plan) that serves as a blueprint for the restoration and enhancement of the Bay. The Regional Board plays a leading role in the implementation of the Plan. Two of the proposed priorities of the Plan are reduction of pollutants of concern at the source (which include power plants) and implementation of mass emission approach.

19. Several efforts are underway to develop and implement a comprehensive regional monitoring program for the Southern California Bight, in particular, the Santa Monica Bay. These efforts have the support and participation from regulatory agencies, dischargers and environmental groups. The goal is to establish a regional program to address public health concerns, monitor trends in natural resources and nearshore habitats, and assess regional impacts from all contaminant sources, at the same time assess compliance with the NPDES permit. The regional monitoring is projected to be completed in 2002.

    The monitoring program in this Order has not been changed from that of the 1994 permit. The Regional Board will conduct a comprehensive review of this monitoring program in conjunction with other monitoring efforts (e.g., Southern California Coastal Water Research Project, Santa Monica Bay Restoration Project, Los Angeles County Municipal Storm Water permit renewal) in 2001/2002. This review will be coordinated with the completion of the regional monitoring program for the Southern California Bight. To incorporate the results of this review and the regional program elements, the monitoring program in this Order will be revised.

20. At times of peak demand during defouling treatment, total residual chlorine (TRC) levels in the once-through cooling water have exceeded effluent limitations based on 40 CFR Part 423 guidelines (0.20 mg/L) and the 1983 Ocean Plan objectives (0.533 mg/L and 0.780

mg/L for Discharge Serial Nos. 001 and 002, respectively. The current Ocean Plan objectives are more stringent. However, chlorination bioassay studies (1988) performed by the Discharger showed no significant adverse impact on the receiving waters as a result of the discharge from the plant.

In 1983, SCE submitted an application for a variance under Section 301(g) of the CWA from the BAT requirements of TRC. In 1984, SCE also applied for a variance for TRC limitations from the 1983 Ocean Plan objectives. In July 1988, the State Board adopted Resolution No. 88-80 that granted an exception from the 1983 Ocean Plan for TRC. The Regional Board and the State Board approved the variance request for TRC and forwarded it to the USEPA in August 1988, for concurrence, pursuant to Section 301(g) of CWA.

21. In May 1996, the USEPA approved the Discharger's request for a variance from BAT for TRC pursuant to Section 301(g) of the CWA with the following conditions:

a) The effluent from Discharge Serial Nos. 001 and 002 must meet an alternate proposed modified effluent limitations (PMEL) of 0.4 mg/L TRC (instantaneous maximum) based on daily sampling at Discharge Serial Nos. 001 and 002 during periods of chlorination.

b) The effluent from Discharge Serial Nos. 001 and 002 must meet chronic toxicity daily maximum limits of 13 and 19 TUc, respectively. The chronic toxicity tests must be representative of actual discharge conditions (at a minimum) or of the alternate PMEL of 0.4 mg/L. This means that, at a minimum, the effluent samples must be chlorinated in the laboratory to levels consistent with the maximum TRC effluent concentration measured during the previous 3 months' chlorination events. This requirement to chlorinate samples in the laboratory applies only if the recorded effluent chlorine concentrations exceed the BAT limit of 0.2 mg/L during the previous 3 months.

c) In the event the effluent chronic toxicity limitations are exceeded at either Discharge Serial Nos. 001 or 002, the Discharger shall increase the monitoring frequency at the subject outfalls to monthly in accordance with the NPDES permit. If the chronic toxicity limit is exceeded again during the accelerated monitoring period, the Discharger shall conduct a toxicity reduction evaluation (TRE). The TRE shall be conducted in accordance with USEPA's most current TRE/toxicity identification evaluation (TIE) manuals.

d) The Discharger was required to conduct a chlorine residual receiving water study, as set forth in the NPDES permit (December 5, 1994), to assess the impacts of chlorine and chlorine byproducts within the receiving waters during periods of maximum chlorination.

e) The variance can be reviewed and revised by USEPA at any time if subsequent information indicates that the alternate PMEL will not result in compliance with all 301(g) criteria. This information includes but is not limited to subsequent chronic toxicity test results, receiving water monitoring data, and TIE/TRE findings indicating that the discharge of TRC at concentrations greater than the BAT limit of 0.2 mg/L results in exceedance of toxicity limit.

22. Before exercising the 301(g) variance, in 1996, the Discharger conducted chronic toxicity testing of effluent samples artificially spiked with chlorine in the laboratory for both the BAT level (0.2 mg/L) and the maximum chlorine level (0.4 mg/L) allowed by the 301(g) variance. The toxicity levels did not differ between the BAT and 301(g) spiked samples (3.25 TUc) and were below the Ocean Plan based limits of 13 and 19 TUc for Discharge Serial Nos. 001 and 002, respectively. In 1997 to 1999, the Discharger's average exceedance of the BAT limit was twice a month based on daily monitoring.

In 1987 in coordination with the City of Los Angeles Department of Water and Power, SCE conducted a study on the concentrations of chlorine measured in the receiving water during chlorination of the condensers. The study was done in response to State Board's concerns prior to the issuance of State Board's Resolution 88-80 (see Finding No. 20, paragraph 2). The study showed that chlorine was not detected outside the zone of initial dilution during a chlorination event.

23. Based on the 1996 chronic tests results, the infrequent exceedance of the BAT limit for TRC, and findings of the 1987 study on chlorine concentrations in the receiving water (all mentioned in Finding No. 23), the receiving water study on the impact of chlorine discharge required in the December 5, 1994 permit was determined to be no longer necessary.

24. In accordance with the December 5, 1994, NPDES permit (Footnote No. 3., Item II.A.1., Monitoring and Reporting Program CI-4667), the Discharger conducted a study on November 23, 1994, to determine the time during the chlorination cycle that the peak residual chlorine concentration occurs in the ocean discharge to ensure that compliance monitoring samples for TRC are collected at the time of highest chlorine level in the stations' combined effluent. The study indicated that the maximum (peak) levels of chlorine in the effluent occur about 35 minutes from the start of chlorination. After the study, the Discharger modified their sampling procedures in accordance with the above-

mentioned results to ensure that compliance monitoring samples are collected at or near (within few minutes of) the time of peak chlorine levels in the effluent.

However, subsequent testing done by the Discharger from the end of March to June 2000, indicates that at Discharge Serial No. 001, the highest chlorine level occurs between 20 to 30 minutes from the start of chlorination and at Discharge Serial No. 002, the highest chlorine level occurs between 25 to 35 minutes from the start of chlorination. The peak chlorine level can vary from day to day.

25. Effluent limitations based on Ocean Plan objectives were calculated using a minimum dilution ratio (i.e., parts seawater to one part effluent) of 12 to 1 for Discharge Serial No. 001, and 18 to 1 for Discharge Serial No. 002; except for residual chlorine which is 13 to 1 and 19 to 1 for Discharge Serial Nos. 001 and 002, respectively. These ratios were based on calculations made by SCE and approved by the State Board (transmitted to the Regional Board in a State Board memorandum dated February 4, 1985).

26. For toxic constituents regulated in the Ocean Plan (Table B) that the Discharger does not add or produce in the treatment process and/or waste streams, no numerical limits are prescribed. Also, no numerical limits are prescribed for toxic constituents that are added, but whose usage has shown that there is very low probability of causing, or contributing to exceedance of the water quality standards. However, a narrative limit to comply with all Ocean Plan objectives is provided. Also, the Discharger is required to monitor for all the priority pollutants once during the term of the permit.

27. Acute toxicity monitoring conducted over five years (1990 through 1994) demonstrated consistent compliance with, and no reasonable potential for exceeding the Ocean Plan objectives. As such, no numerical limits were prescribed for acute toxicity after 1994. However, a narrative limit to comply with all Ocean Plan objectives is provided.

28. Pursuant to Section 402(p) of the Clean Water Act and 40 CFR Parts 122, 123, and 124, the State Board adopted a general NPDES permit to regulate stormwater discharges associated with industrial activity (State Board Order No. 91-13-DWQ adopted in November 1991, amended by Order No. 92-12-DWQ adopted in September 1992, and renewed by Order No. 97-03-DWQ adopted on April 17, 1997). Storm water discharges from power plants are subject to requirements under this general permit. The Discharger has developed and implemented a Storm Water Pollution Prevention Plan (SWPPP) since 1992.

29. Effluent limitations and guidelines, national standards of performance, and toxic effluent standards established pursuant to Sections 208, 301, 302, 303, 304, 306, 307, and 316 of the Federal Clean Water Act, and amendments thereto, are applicable to the discharge.

30. The requirements contained in this Order, as they are met, will be in conformance or in compliance with the goals of the aforementioned water quality control plans and statutes.

31. Pursuant to California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition to the State Board. A petition must be sent to the State Water Resources Control Board, P.O Box 100, 901 P. Street, Sacramento, CA 95812, within 30 days of adoption of this Order.

32. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code in accordance with Water Code Section 13389.

The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Clean Water Act or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator, USEPA Region 9, has no objections.

IT IS HEREBY ORDERED that El Segundo Power, LLC, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

I. DISCHARGE LIMITATIONS

A. EFFLUENT LIMITATIONS

1. Wastes discharged shall be limited to those described in the findings only, as proposed.

2. The temperature of wastes discharged shall not exceed 105°F during normal operation of the facility. During heat treatment, the temperature of wastes discharged shall not exceed 125°F except during adjustment of the recirculation gate at which time the temperature of wastes discharged shall not exceed 135°F. Temperature fluctuations during gate adjustment above 125°F shall not last for more than 30 minutes.

3. The effluent pH shall at all times be within the range of 6.0 to 9.0 pH units.

4. The discharged of wastes from Discharge Serial Nos. 001 and 002 with constituents in excess of the following limits is prohibited:

a. Discharge Serial No. 001:

		DISCHARGE LIMITATIONS[1]	
Constituent	Units	Monthly Average	Daily Maximum
Arsenic	µg/L	68	380
Cadmium	µg/L	13	52
Chromium[2] (hexavalent)	µg/L	26	104
Copper	µg/L	15	132
Lead	µg/L	26	104
Mercury	µg/L	0.51	2.07
Nickel	µg/L	65	260
Selenium	µg/L	195	780

For footnotes, see page 13

a. Discharge Serial No. 001: (continued)

		DISCHARGE LIMITATIONS[1]	
Constituent	Units	Monthly Average	Daily Maximum
Silver	µg/L	7	35
Zinc	µg/L	164	944
Chronic toxicity[3]	TUc	---	13

Radioactivity Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30269 of the California Code of Regulations.

---

[1] Concentration limits are based on Ocean Plan objectives using a dilution ratio of 12 parts of seawater to 1 part effluent. Metals limits are for total recoverable form.

[2] The Discharger has the option to meet the hexavalent chromium limitations with a total chromium analysis. However, if the total chromium level exceeds the hexavalent chromium limitation, it will be considered a violation unless an analysis has been made for hexavalent chromium in a replicate sample and the result is in compliance with the hexavalent chromium limits.

[3] Expressed as Chronic Toxicity Units (TU_C)

$$TU_C = 100/NOEC$$

where: NOEC (No Observed Effect Concentration) is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism as determined by the result of a critical life stage toxicity test listed in Appendix II of the Ocean Plan adopted and effective on July 23, 1997, pages 23-24.

NOEC shall be determined based on toxicity tests having chronic endpoints.

b. Discharge Serial No. 002:

		DISCHARGE LIMITATIONS[4]	
Constituent	Units	Monthly Average	Daily Maximum
Arsenic	µg/L	98	554
Cadmium	µg/L	19	76
Chromium[5] (hexavalent)	µg/L	38	152
Copper	µg/L	21	192
Lead	µg/L	38	152
Mercury	µg/L	0.75	3.03
Nickel	µg/L	95	380
Selenium	µg/L	285	1,140
Silver	µg/L	10.4	50.3
Zinc	µg/L	236	1,376
Chronic toxicity[6]	TU_c	---	19

Radioactivity Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30269 of the California Code of Regulations.

[4] Concentration limits are based on Ocean Plan objectives using a dilution ratio of 18 parts of seawater to 1 part effluent. Metals limits are for total recoverable form.

[5] The discharger has the option to meet the hexavalent chromium limitations with a total chromium analysis. However, if the total chromium level exceeds the hexavalent chromium limitation, it will be considered a violation unless an analysis has been made for hexavalent chromium in a replicate sample and the result is in compliance with the hexavalent chromium limits.

[6] Expressed as Chronic Toxicity Units (TU_C)

$TU_C = 100/NOEC$

where: NOEC (No Observed Effect Concentration) is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism as determined by the result of a critical life stage toxicity test listed in Appendix II of the Ocean Plan adopted and effective on July 23, 1997, pages 23-24.

NOEC shall be determined based on toxicity tests having chronic endpoints.

5. The discharge of wastes from Discharge Serial Nos. 001 and 002 with constituents in excess of the following concentration limits is prohibited:

		DISCHARGE LIMITATIONS	
Constituent	Units	Daily Average	Daily Maximum
Total residual chlorine[7,8]	mg/L	---	0.4
Free available chlorine	mg/L	0.2	0.5

[7] Based on the U. S. EPA approved variance from BAT for TRC pursuant to Section 301(g) of the CWA based on daily sampling at Discharge Serial Nos. 001 and 002 during periods of chlorination. Total residual chlorine may not be discharged from any single generating unit for more than 30 minutes per condenser half per shift. For chlorine discharges of up to 30 minutes for Discharge Serial No. 001, and up to 35 minutes for Discharge Serial No. 002, the daily maximum limit is 0.4 mg/l. For chlorine discharges exceeding 30 minutes (Discharge Serial No. 001) and 35 minutes (Discharge Serial No. 002), the applicable total residual chlorine limitations shall be calculated using the same methodology as was used to support the State Ocean Plan exception (1983 Ocean Plan).

[8] If other oxidants are used, this shall be the total of all oxidants reported as residual chlorine.

6. Effluent Limitations for Inplant Waste Streams:

a. The discharge of Chemical Metal Cleaning Wastes[9] with constituents in excess of the following limits is prohibited:

		DISCHARGE LIMITATIONS	
Constituent	Units	Monthly Average	Daily Maximum
Suspended solids	mg/L	30	100
Oil and grease	mg/L	15	20
Copper, total	mg/L	1.0	1.0
Iron, total	mg/L	1.0	1.0

[9] For the purpose of these limitations, metal cleaning wastes shall mean any wastewater resulting from chemical cleaning of any metal process equipment including, but not limited to, boiler tube, boiler fireside, and air preheaters.

b. The discharge of Low Volume Wastes with constituents in excess of the following limits is prohibited:

		DISCHARGE LIMITATIONS	
Constituent	Units	Monthly Average	Daily Maximum
Suspended solids	mg/L	30	100
Oil and grease	mg/L	15	20

c. The discharge of an effluent from the Sanitary Wastewater Treatment Plant Nos. 1 and 2 with constituents in excess of the following limits is prohibited:

		DISCHARGE LIMITATIONS	
Constituent	Units	Monthly Average	Daily Maximum
$BOD_5 20^0C$	mg/L	30	45
Suspended solids	mg/L	30	45
Settleable solids	ml/L	0.1	0.3
Oil and grease	mg/L	10	15

d. In the event that waste streams from various sources (6-a and 6-b) are combined for treatment or discharge, the quantity of each pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

B. RECEIVING WATER LIMITATIONS

1. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the Regional Board, but including all kelp beds, the discharge shall not cause the following bacterial objectives through out the water column to be exceeded:

   a. Samples of water from each sampling station shall have a density of total coliform organisms less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any sampling station, in any Monthly period, may exceed 1,000 per 100 ml (10 per ml); and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 per ml).

b. The fecal coliform density based on a minimum of not less than five samples for any Monthly period, shall not exceed a geometric mean of 200 per 100 ml, nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml.

2. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Board, the discharge shall not cause the following bacteriological objectives throughout the water column to be exceeded:

   The median total coliform concentration for any 6-month period shall not exceed 70 per 100 ml, and not more than 10 percent of the samples during any 60-day period shall exceed 230 per 100 ml.

3. If a shore station consistently exceeds a total or fecal coliform objective or exceeds a geometric mean enterococcus density of 24 organisms per 100 ml for a Monthly period, or 12 organisms per 100 ml for a six-month period, the discharger shall conduct a sanitary survey to determine if the discharge is the source of the contamination.

4. Floating particulates and oil and grease shall not be visible as a result of wastes discharged.

5. Wastes discharged shall not alter the color of the receiving waters; create a visual contrast with the natural appearance of the water; nor cause aesthetically undesirable discoloration of the ocean surface.

6. The transmittance of natural light shall not be significantly reduced at any point outside the zone of initial dilution as a result of wastes discharged.

7. The rate of deposition and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded as a result of wastes discharged.

8. The wastes discharged shall not depress the dissolved oxygen concentration outside the zone of initial dilution at any time by more than 10 percent from that which occurs naturally, excluding effects of naturally induced upwelling.

9. The wastes discharged shall not change the pH of the receiving waters at any time by more than 0.2 units from that which occurs naturally outside the zone of initial dilution.

10. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions as a result of wastes discharged.

11. The wastes discharged shall not increase the concentrations, in marine sediments of toxic substances listed in Table B of the Ocean Plan, to levels that would degrade indigenous biota.

12. The concentration of organic materials in marine sediments shall not be increased above that which would degrade marine life as result of wastes discharged.

13. The wastes discharged shall not cause objectionable aquatic growths or degrade indigenous biota.

14. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded as a result of wastes discharged.

15. The concentration of organic materials in fish, shellfish, or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health as a result of wastes discharged.

16. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered as a result of wastes discharged.

17. The wastes discharged shall not cause objectionable odors to emanate from the receiving waters.

18. The wastes discharged shall not cause receiving waters to contain any substance in concentrations toxic to human, animal, plant, or fish life.

19. No physical evidence of wastes discharged shall be visible at any time in the water or on beaches, shores, rocks, or structures.

20. The salinity of the receiving waters shall not be changed by the wastes discharged to an extent such as to be harmful to marine biota.

21. The wastes discharged shall not contain an individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses.

II. REQUIREMENTS AND PROVISIONS

A. Discharge of unpermitted wastes to any point other than specifically described in this Order and permit is prohibited and constitutes a violation thereof.

B. The Discharger shall comply with all applicable effluent limitations, national standards of performance, and all federal regulations established pursuant to Sections 301, 302, 303(d), 304, 306, 307, and 316 of the Federal Clean Water Act, and 50 CFR 423, and amendments thereto.

C. In the determination of compliance with the monthly average limitations, the following provisions shall apply to all constituents:

1. If the analytical result of a single sample, monitored monthly or at a lesser frequency, does not exceed the monthly average limit for that constituent, the Discharger will have demonstrated compliance with the monthly average limit for that month.

2. If the analytical result of a single sample, monitored monthly or at a lesser frequency, exceeds the Monthly average limit for any constituent, the Discharger shall collect three additional samples at approximately equal intervals during the month. All four analytical results shall be reported in the monitoring report for that month, or 45 days after the sample was obtained, whichever is later.

   If the numerical average of the analytical results of these four samples does not exceed the monthly average limit for that constituent, compliance with the Monthly average limit has been demonstrated for that month. Otherwise, the monthly average limit has been violated.

3. If Item II.C.2. has not been implemented, and the result of one sample (Item II.C.1) exceeds the monthly average, then the Discharger is in violation of the monthly average limit.

4. In the event of noncompliance with a monthly average effluent limitation, the sampling frequency for that constituent shall be increased to weekly and shall continue at this level until compliance with the monthly average effluent limitation has been demonstrated.

D. The Discharger must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to storm drain systems or other water courses under their jurisdiction, including applicable

requirements in municipal storm water management programs developed to comply with NPDES permits issued by this Regional Board to local agencies.

E. This Order includes the attached "Standard Provisions and General Monitoring and Reporting Requirements (March 1, 1999)" (Standard Provisions, Attachment N). If there is any conflict between provisions stated hereinbefore and the attached "Standard Provisions", those provisions stated hereinbefore prevail.

F. This Order includes the attached Monitoring and Reporting Program (Attachment T). If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the Monitoring and Reporting Program prevail.

G. The Discharger shall comply with the applicable requirements, such as the SWPPP updates and Monitoring and Reporting Program, of State Board's general permit for Discharges of Storm Water Associated with Industrial Activities (State Water Resources Control Board Order No. 97-03-DWQ adopted on April 17, 1997).

H. The Discharger shall provide standby or emergency power facilities and/or wastewater storage capacity or other means at its sanitary water treatment plants so that in the event of a power outage due to power failure or other cause, discharge of raw or inadequately treated waste does not occur.

I. The wastes discharged shall comply with all Ocean Plan objectives.

J. The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to waters of the United States is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes. Discharge of chlorine for disinfection in plant potable and service water systems and in sewage treatment is authorized.

K. The Discharge of any waste resulting from the combustion of toxic or hazardous wastes to any waste stream that ultimately discharges to waters of the United States is prohibited, unless specifically authorized elsewhere in this Order.

L. There shall be no discharge of polychlorinated biphenyl compounds such as those once commonly used for transformer fluid.

M. The Discharger shall notify the Executive Officer in writing no later than six months prior to planned discharge of any chemical, other than chlorine or other product previously reported to the Executive Officer, which may be toxic to aquatic life. Such notification shall include:

- Name and general composition of the chemical,
- Frequency of use,
- Quantities to be used,
- Proposed discharge concentrations, and
- USEPA registration number, if applicable.

No discharge of such chemical shall be made prior to obtaining approval from the Executive Officer.

N. The Regional Board and USEPA shall be notified immediately by telephone, but no later than 24-hours, of the presence of adverse conditions in the receiving waters or on beaches and shores as a result of wastes discharge. Written confirmation shall follow as soon as possible but not later than five working days after the Discharger became aware of the incident.

O. This Order may be modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR Parts 122.44, 122.62, 122.63, 122.64, 125.62, and 125.64. Causes for taking such actions include, but are not limited to: failure to comply with any condition of this Order and permit, endangerment to human health or the environment resulting from the permitted activity; or acquisition of newly obtained information which would have justified the application of different conditions if known at the time of Order adoption and issuance.

Following submission of the intake benthic monitoring study, the Executive Officer shall either (1) propose to the Regional Board modifications to this permit, as appropriate, or (2) provide a report to the Board summarizing the results of the study and indicating why modifications to the permit are not proposed.

The filing of a request by the Discharger for an Order and permit modification, revocation and issuance, or termination; or a notification of planned changes or anticipated noncompliances does not stay any condition of this Order and permit.

III. EXPIRATION DATE

This Order expires on May 10, 2005.

The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

V. RESCISSION

Order No. 94-129, adopted by this Board on December 5, 1994, is hereby rescinded, except for enforcement purposes.

I, Dennis A Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on June 29, 2000.

Dennis A. Dickerson
Executive Officer

El Segundo Power, LLC.

May 1999

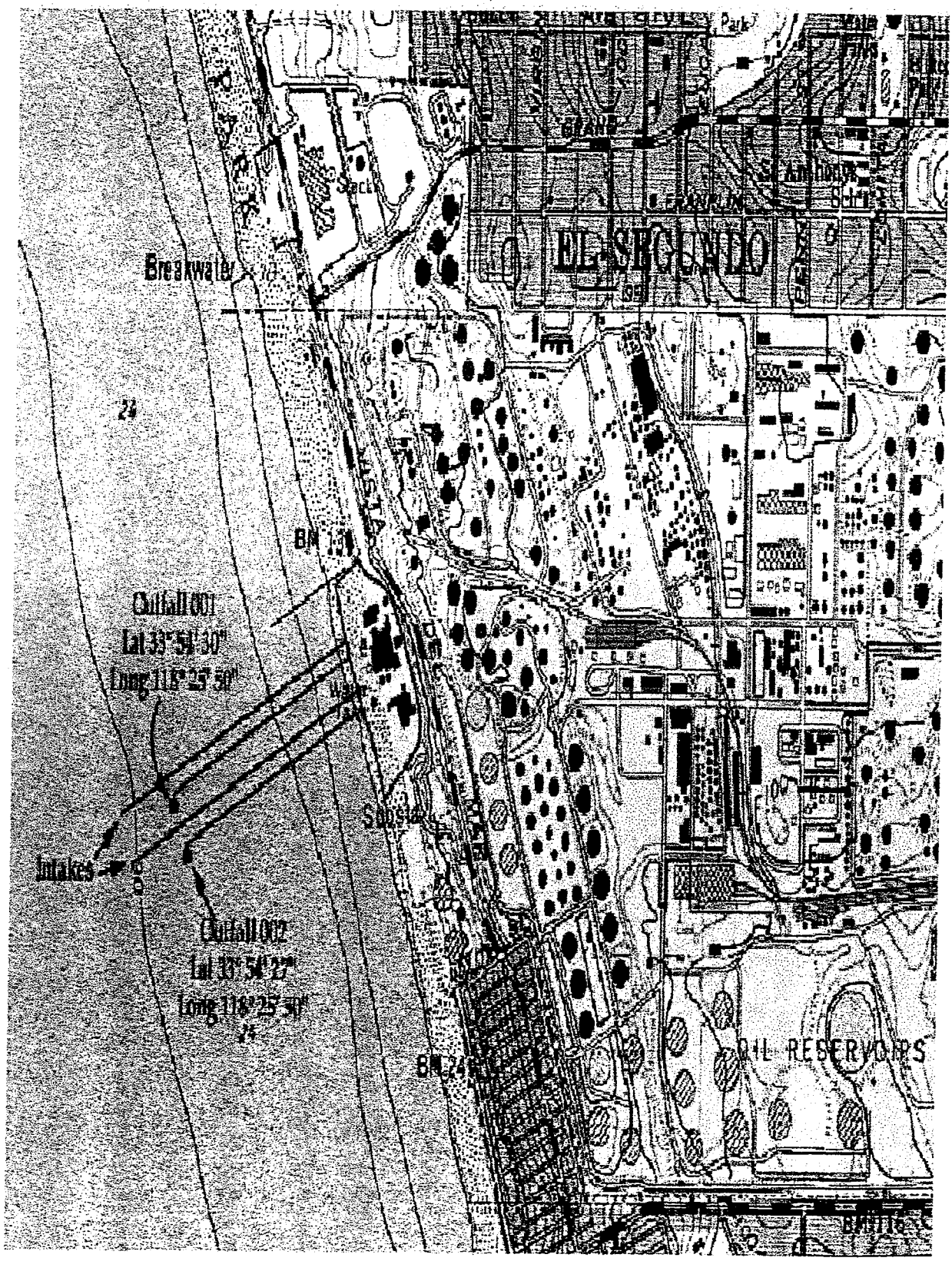
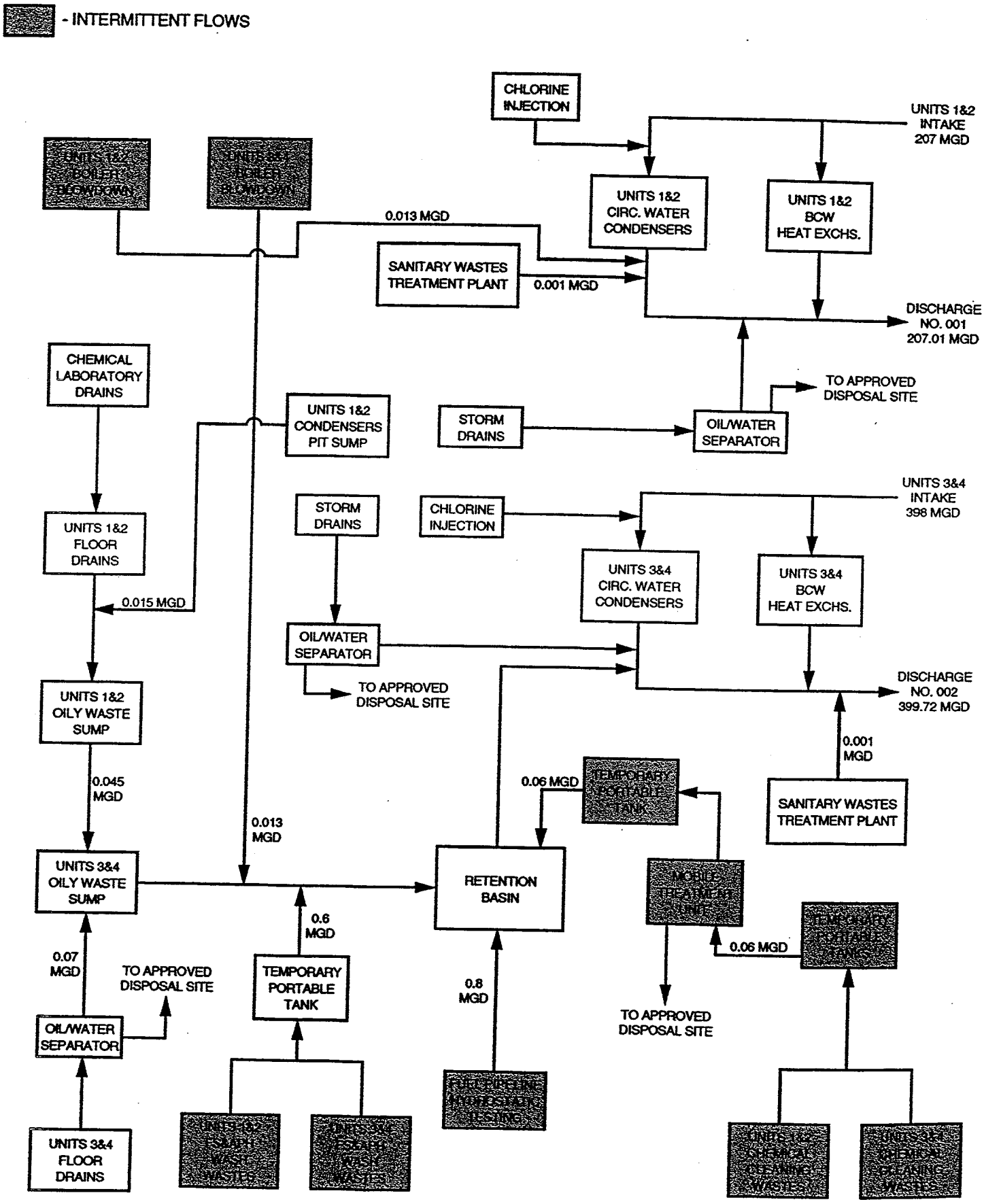


FIGURE 1 – LOCATION MAP

SCHEMATIC OF WATER FLOW
FIGURE 2
EL SEGUNDO POWER, L.L.C.
EL SEGUNDO, CALIFORNIA
MARCH, 1999



ATTACHMENT T

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. CI- 4667
FOR
EL SEGUNDO POWER, LLC
El Segundo Generating Station
(CA0001147)

I. MONITORING AND REPORTING PROGRAM

A. The Discharger shall implement this monitoring program on the effective date of this Order. Effluent monitoring reports shall be submitted monthly, by the first day of the second month following each monthly sampling period. The first monitoring report under this program shall be received by the Regional Board by September 1, 2000, covering the monitoring period of July 2000.

B. Quarterly effluent analyses shall be performed during the months of February, May, August, and November. Semiannual effluent analyses shall be performed during the months of May and November. Annual effluent analyses shall be performed during the month of May. Results of quarterly, semiannual, and annual analyses shall be reported in the appropriate monthly monitoring report following analyses. Should there be instances when monitoring could not be done during these specified months, the Discharger must notify the Regional Board, state the reason and obtain approval for an alternate schedule.

C. Laboratory analyses - all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) or approved by the Executive Officer. A copy of the laboratory certification shall be submitted with the Annual Report.

D. Water/wastewater samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136.3. All QA/QC items must be run on the same dates that samples were actually analyzed, and the results shall be reported in the Regional Board format and submitted with the laboratory reports. The Discharger shall make available for inspection and/or submit the QA/QC documentation upon request by Regional Board staff. Proper chain of custody procedures must be followed and a copy of that documentation shall be submitted with the report.

E. The report of analyses shall specify the U. S. Environmental Protection Agency (USEPA) analytical method used and its Method Detection Limit (MDL). For the purpose of

reporting compliance with effluent limitations, and receiving water limitations, analytical data shall be reported with an actual numerical value or "non-detected (ND)" with the MDL indicated for the analytical method used.

F. The MDLs must be lower than the permit limits established for a given parameter, unless the Discharger can demonstrate that a particular detection limit is not attainable and obtains approval for a higher detection limit from the Executive Officer. At least once a year, the Discharger shall submit a list of the analytical methods employed for each test and the associated laboratory quality assurance/quality control procedures.

G. The Discharger shall inform the Regional Board well in advance of any construction activity and/or operational change proposed that could potentially affect compliance with applicable requirements.

II. SUBMITTAL OF MONITORING AND ANNUAL REPORTS

A. All monitoring and annual summary reports must be addressed to the Regional Board, Attention: Information Technology Unit. Reference the reports to Compliance File No. CI-4667 to facilitate routing to the appropriate staff and file.

B. The Discharger shall submit an annual summary report containing a discussion of the previous year's effluent analytical results, as well as graphical and tabular summaries of the data. The data shall be submitted to the Regional Board on hard copy and on 3 1/2" computer diskette. The submitted data must be IBM compatible, preferably using Microsoft Excel software.

C. In the annual summary report, the Discharger shall discuss the compliance record and the corrective actions taken or planned which may be needed to bring the discharge into full compliance with waste discharge requirements. The annual summary report must be received at the Regional Board on or before March 1 of each year following the calendar year of data collection.

D. Database Management System - The Regional Board is developing a compliance monitoring database management system that may require the Discharger to submit the monitoring and annual reports electronically when it becomes fully operational.

III. EFFLUENT AND INTAKE COOLING WATER MONITORING

A. Sampling stations shall be established at each point of discharge and shall be located where representative samples of the effluent can be obtained. The following shall constitute the effluent monitoring program for Discharge Serial Nos. 001 and 002:

1. Wastewater Constituents/Parameters

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Total waste flow[1]	gal/day	---	daily
Temperature[1]	^{0}F	continuous	---
pH	pH units	grab	weekly
Total residual chlorine[2]	mg/L	grab[3]	daily
Free available chlorine[2]	mg/L	grab[3]	daily
Toxicity, chronic[4,5,6]	TU_c	grab	quarterly
Fecal coliform[7]	MPN/100ml	grab	quarterly
Total coliform	MPN/100ml	grab	quarterly
Enterococci[7]	MPN/100ml	grab	quarterly
Ammonia nitrogen	µg/L	grab	annually
Nitrate nitrogen	mg/L	grab	annually
Radioactivity[8]	pCi/ml	grab	annually
Priority pollutants (See page T-15)	µg/L	grab	[9]

[1] Where continuous monitoring of temperature, and flow is required, the following shall be included in the report:

Temperature: Only the maximum temperature for each calendar day shall be reported, except when temperatures exceed 105^{0}F, in which case the reason(s), time of day, and duration of such events shall also be reported.

Flow: Total daily flow.

[2] Monitoring is only applicable during periods of chlorine addition. A statement certifying that chlorination did not occur during the day may be submitted in lieu of an analysis.

[3] Multiple grab samples shall be collected following the start of chlorination at about:

- Discharge Serial No. 001: 20, 25, and 30 minutes; and
- Discharge Serial No. 002: 25, 30, and 35 minutes.

For each outfall, the highest value among the three readings shall be reported.

[4] Initial screening shall be conducted using a minimum of three test species with approved test protocols listed in the California Ocean Plan (State Water Resources Control Board, 1997) to determine the most sensitive test organism for chronic toxicity testing (other test species may be added to the Ocean Plan list when approved by the State Board). If possible, the test species used during the screening process should include a fish, an invertebrate, and an aquatic plant.

After the initial screening period, chronic toxicity testing may be limited to the most sensitive test species. However, the initial screening process shall be repeated annually, with a minimum of three test species with approved test protocols to ensure use of the most sensitive species for chronic toxicity testing.

Dilution and control waters should be obtained from an unaffected area of the receiving waters. Standard dilution water may be used if the above source exhibits toxicity greater than 1.0 TU_C. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each batch of bioassay tests and reported with the test results.

[5] Chronic toxicity shall be expressed and reported as toxic units, where:

$$TU_C = 100/NOEC$$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test described on Pages 23-24 of the Ocean Plan.

The effluent tests shall be conducted with concurrent reference toxicant tests. Both the reference toxicant and effluent test must meet all protocols. If the test acceptability criteria is not achieved, then the Discharger must re-sample and re-test within 14 days. The Discharger shall submit the data on a hard copy and on an electronic disk as specified in Suggested Standard Reporting Requirements for Monitoring Chronic Toxicity (State Water Resources Control Board, August 1993).

[6] In the event of an exceedance of the chronic toxicity effluent limitation, the sampling frequency shall be increased to monthly until compliance has been demonstrated for three consecutive months. If the discharge exceeds the chronic toxicity effluent limitation during the accelerated monitoring, a toxicity identification evaluation (TIE) shall be conducted. The TIE shall include all reasonable steps to identify the source(s) of toxicity. Once the source of toxicity is identified, the Discharger shall take all reasonable steps necessary to reduce toxicity to the required level.

The chronic toxicity test must be representative of actual discharge conditions (at a minimum) or of the alternate PMEL of 0.4 mg/L. This means that, at a minimum, the effluent samples must be chlorinated in the laboratory to levels consistent with the maximum TRC effluent concentration measured during the previous 3 months' chlorination events. Alternatively, the sample may be chlorinated to the alternate PMEL (unless the maximum TRC concentration from the previous 3 months exceeds this limit). This requirement to chlorinate samples in the laboratory applies only if the

recorded effluent chlorine concentrations exceed the BAT limit of 0.2 mg/L during the previous 3 months.

[7] If the analysis of these parameters exceed bathing standards (fecal – 200 MPN/100 ml, enterococci – 104 density/100ml), in the effluent, the Discharger shall then collect samples of the receiving water near the terminus of the Outfall at a depth of 10 feet.

[8] Radioactivity determinations of gross and net beta activity, in picocuries per liter, shall be made within 48 hours following preparation of samples. The overall efficiency of the counting system, size of sample, and counting time shall be such that radioactivity can be determined to a sensitivity of ten picocuries per liter with a 95% confidence limit not to exceed 50 percent.

A statement certifying that radioactive pollutants were not added to the discharge may be submitted in lieu of monitoring.

[9] Once every five years beginning in 2002.

2. Metals

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Antimony	µg/L	grab	semi-annually
Arsenic	µg/L	grab	semi-annually
Beryllium	µg/L	grab	semi-annually
Chromium (III)	µg/L	grab	semi-annually
Hexavalent chromium	µg/L	grab	semi-annually
Cadmium	µg/L	grab	semi-annually
Copper	µg/L	grab	semi-annually
Lead	µg/L	grab	semi-annually
Mercury	µg/L	grab	semi-annually
Nickel	µg/L	grab	semi-annually
Selenium	µg/L	grab	semi-annually
Silver	µg/L	grab	semi-annually
Thallium	µg/L	grab	semi-annually
Zinc	µg/L	grab	semi-annually

B. The effluent monitoring program for Inplant Waste Streams is as follows:

1. Treated Chemical Metal Cleaning Wastes:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis[10]
Flow	mgd	---	monthly
pH	pH units	grab	monthly
Suspended solids	mg/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Copper, total[10a]	mg/L	grab	monthly
Iron, total[10a]	mg/L	grab	monthly

2. Non-Chemical Metal Cleaning Wastes:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis[10]
Flow	mgd	---	monthly
pH	pH units	grab	monthly
Suspended solids	mg/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Copper, total[10a]	mg/L	grab	monthly
Iron, total[10a]	mg/L	grab	monthly

[10] If no discharge occurred during the month, the report shall so state.

[10a] Dissolved metal fraction only.

3. Low Volume Wastes[11] (except Sanitary Wastes):

Constituent	Units	Type of Sample	Minimum Frequency of Analysis[12]
Flow	mgd	---	monthly
pH	pH units	grab	monthly
Suspended solids	mg/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Priority pollutants (see page T-15)	µg/L	grab	annually[12a]

[11] Consist of wastes stored in the retention basin containing wastes from the treated chemical metal cleaning, non-chemical metal cleaning, floor drains, boiler blowdown, fireside and air preheater, fuel pipeline hydrostatic test water, condenser sump, stormwater runoff, and chemical laboratory drains.

[12] If no discharge occurred during the month, the report shall so state.

[12a] Sampling and analyses shall be on a quarterly basis during the first two years after the adoption of this Order, and annually thereafter.

4. Sanitary Wastes (Waste Water Treatment Plant Nos. 1 and 2):

Constituent	Units	Type of Sample	Minimum Frequency of Analysis[13,]
Flow	mgd	---	monthly
$BOD_5 20^0C$	mg/L	grab	monthly
Suspended solids	mg/L	grab	monthly
Settleable solids	ml/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Fecal coliform[14]	MPN/100ml	grab	monthly
Total coliform[14]	MPN/100ml	grab	monthly
Enterococci[14]	MPN/100ml	grab	monthly

[13] If no discharge occurred during the month, the report shall so state.

[14] Coliform samples shall be collected at the sampling point after the holding tank prior to pumping to the outfall and when the wastewater flow and characteristics are most demanding on the treatment facilities. The location(s) of the sampling point(s) and any proposed changes thereto must be approved by the Executive Officer, and the proposed changes shall not be made until such approval has been granted.

C. Intake cooling water monitoring program.

The intake cooling water shall be analyzed for metals semi-annually as listed in III.A.2. for a period of two years following the date of this permit. The sampling and analyses for both effluents and intake cooling water shall be performed at the same time. The Executive Officer is empowered to require continuation of such monitoring at his reasonable discretion.

IV. RECEIVING WATER MONITORING

A. Regional Monitoring Program

1. Pursuant to the Code of Federal Regulation [40 CFR §122.41(j) and §122.48(b)], the monitoring program for a discharger receiving a National Pollutant Elimination System (NPDES) permit must determine compliance with NPDES permit terms and conditions, and demonstrate that State water quality standards are met.

2. Since compliance monitoring focuses on the effects of a point source discharge, it is not designed to assess impacts from other sources of pollution (e.g., nonpoint source runoff, aerial fallout) nor to evaluate the current status of important ecological resources on a regional basis.

3. Several efforts are underway to develop and implement a comprehensive regional monitoring program for the Southern California Bight, in particular the Santa Monica Bay. These efforts have the support and participation from regulatory agencies, dischargers and environmental groups. The goal is to establish a regional program to address public health concerns, monitor trends in natural resources and nearshore habitats, and assess regional impacts from all contaminant sources. In general, the goal is a more efficient monitoring program that can be used for both compliance and regional bight-wide assessments.

4. The compliance monitoring programs for the El Segundo Power, LLC, and other major ocean dischargers will serve as the framework for the regional monitoring program. However, substantial changes to these programs will be required to fulfill the goals of regional monitoring, while retaining the compliance monitoring component required to evaluate the potential impacts from NPDES discharges.

5. Two pilot regional monitoring programs for the Southern California Bight were conducted, one in 1994, and another in 1998. The pilot monitoring allowed the USEPA and the Regional Board to test an alternative sampling design that incorporates aspects of regional monitoring into current compliance programs. These pilot programs were designed by USEPA, the State Water Resources Control Board, and three Regional Water Quality Control Boards (Los Angeles, Santa Ana, and San Diego) in conjunction with the Southern California Coastal Water Research Project and participating discharger agencies.

   The pilot regional monitoring programs included the following components: microbiology; water quality; sediment chemistry; sediment toxicity testing; benthic infauna; demersal fish; and bioaccumulation.

6. The two pilot regional monitoring programs were funded, in large part, by resource exchanges with the participating discharger agencies. During the year when pilot regional monitoring was scheduled, USEPA and this Regional Board eliminated portions of the routine compliance monitoring programs for that year, while retaining certain critical compliance monitoring elements. A certain percentage of the traditional sampling sites were also retained to maintain continuity of the historical record and to allow comparison of different sampling designs. The exchanged resources were redirected to complete sampling within the regional monitoring program design. Thus, the dischargers' overall level of effort for the 1994 and 1998 pilot programs remained approximately the same as the compliance monitoring programs.

   Future regional monitoring programs may be funded in a similar manner. Thus, revisions to the routine compliance monitoring program will be made under the direction of the USEPA and this Regional Board as necessary to accomplish the goal; and may include resource exchanges.

7. The results of the pilot programs are being evaluated and will be used to design future pilot monitoring programs and to develop a comprehensive regional monitoring program for the Southern California Bight. At the same time, the monitoring programs conducted by other dischargers and agencies will be integrated into this regional program. If predictable relationships among the biological, water quality, and effluent monitoring variables can be demonstrated, it may be appropriate to decrease the sampling effort. Conversely, the monitoring program may be intensified if it appears that the objectives cannot be achieved through the existing compliance monitoring program.

8. The Receiving Water Monitoring Program in this Order is similar to that in the 1994 NPDES permit. Until such time when a regional monitoring program is developed (projected for 2002), and with the exception of future pilot regional monitoring program sampling periods, the Discharger shall perform the analyses described in the following receiving water monitoring program.

B. Receiving Water Monitoring

The receiving water monitoring program shall consist of periodic biological surveys of the area surrounding the discharge, and shall include studies of those physical and chemical characteristics of the receiving waters which may be impacted by the discharge.

This program may be performed as a joint effort with the City of Los Angeles' Department of Water and Power in connection with the receiving water monitoring program for the Scattergood Generating Station.

Location of Sampling Stations (see Attached Figure 3):

1. Receiving water stations shall be located as follows:

a.	RWl	-	7,875 feet upcoast of the Scattergood discharge terminus, at a depth of 20 feet.
b.	RW2	-	1,000 feet upcoast of the Scattergood discharge terminus, at a depth of 20.
c.	RW3	-	1,750 feet downcoast of the El Segundo discharge terminus, at a depth of 20 feet.
d.	RW4	-	9,900 feet downcoast of the El Segundo discharge terminus, at a depth of 20 feet.
e.	RW5	-	directly offshore of Station RW1, at a depth of 40 feet.
f.	RW6	-	directly offshore of Station RW2, at a depth of 40 feet.
g.	RW7	-	directly offshore of station RW3, at a depth of 40 feet.
h.	RW8	-	directly offshore of Station RW4, at a depth of 40 feet.
i.	RW9	-	directly offshore of Station RW1, at a depth of 60 feet.
j.	RW10	-	directly offshore of Station RW2, at a depth of 60 feet.

k. RW11 - directly offshore of Station RW3, at a depth of 60 feet.

l. RW12 - directly offshore of Station RW4, at a depth of 60 feet.

2. Benthic stations shall be located as follows:

Stations B1 through B8 shall be located directly beneath Stations RW1 through RW8, respectively.

C. Type and Frequency of Sampling:

1. Temperature profiles shall be measured semi-annually (summer and winter) each year at Stations RW1 through RW12 from surface to bottom at a minimum of one meter intervals. Dissolved oxygen levels and pH shall be measured semi-annually at the surface, mid-depth and bottom at each station, at a minimum. All stations shall be sampled on both a flooding tide and an ebbing tide during each semi-annual survey.

2. Impingement sampling for fish and commercially important macroinvertebrates shall be conducted at least once every two months at intake Nos. 001 and 002. Impingement sampling shall coincide with heat treatments.

Fish and macroinvertebrates shall be identified to the lowest possible taxon. For each intake point, data reported shall include numerical abundance of each fish and macroinvertebrate species, wet weight of each species (when combined weight of individuals in each species exceeds 0.2 kg), number of individuals in each 1-centimeter size class (based on standard length) for each species and total number of species are collected. When large numbers of given species are collected, length/weight data need only be recorded for 50 individuals and total number and total weight may be estimated based on aliquots samples. Total fish impinged per heat treatment or sampling event shall be reported and data shall be expressed per unit volume water entrained.

3. Native California mussels (Mytilus Californianus) shall be collected during the summer from the discharge conduit, as close to the point of discharge as possible, for bioaccumulation monitoring. The mussels shall be collected and analyzed as described in Appendix A of the "California State Mussel Watch Marine Water Quality Monitoring Program 1985-86" (Water Quality Monitoring Report No. 87-2WQ). Mussel tissue shall be analyzed for copper, chromium, nickel, and zinc at a minimum.

4. Benthic sampling shall be conducted annually during the summer at Stations B1 through B8.

   a. One liter sediment core samples shall be collected by divers at each of the benthic stations for biological examination and determination of biomass and diversity, and for sediment analyses. Four replicates shall be obtained at each station for benthic analyses, and each shall be analyzed separately. A fifth sample shall be taken at each station for sediment analyses and general description.

   b. Each benthic replicate sample shall be sieved through a 0.5 mm standard mesh screen. All organisms recovered shall be enumerated and identified to the lowest taxon possible. Infaunal organisms shall be reported as concentrations per liter for each replicate and each station. Total abundance, number of species and Shannon-Weiner diversity indices shall be calculated (using natural logs) for each replicate and each station.

      Biomass shall be determined as the wet weight in grams or milligrams retained on a 0.5 millimeter screen per unit volume (e.g., 1 liter) of sediment. Biomass shall be reported for each major taxonomic group (e.g., polychaetes, crustaceans, mollusks) for each replicate and each station.

   c. Sediment grain size analyses shall be performed on each sediment sample (sufficiently detailed to calculate percent weight in relation to phi size). Sub samples (upper two centimeters) shall be taken from each sediment sample and analyzed for copper, chromium, nickel and zinc.

5. The following general observations or measurements at the receiving water and benthic stations shall be reported.

   a. Tidal stage and time of monitoring.

   b. General water conditions.

   c. Extent of visible turbidity or color patches.

   d. Appearance of oil films or grease, or floatable material.

   e. Depth at each station for each sampling period.

   f. Presence or absence of red tide.

g. Presence of marine life.

h. Presence and activity of the California least tern and the California brown pelican.

6. During the discharge of calcareous material (excluding heat treatment discharge) to the receiving waters, the following observations or measurements shall be recorded and reported in the next monitoring report:

a. Date and times of discharge(s).

b. Estimate of volume and weight of discharge(s).

c. Composition of discharge(s).

d. General water conditions and weather conditions.

e. Appearance and extent of any oil films or grease, floatable material or odors.

f. Appearance and extent of visible turbidity or color patches.

g. Presence of marine life.

h. Presence and activity of the California least tern and the California brown pelican.

LEFT BLANK INTENTIONALLY

SUMMARY OF RECEIVING WATER MONITORING

Constituent	Units	Station No.	Type of Sample	Minimum Frequency of Analysis
Temperature	°C	RW1-RW12	vertical profile	semi-annually (flood, ebb)
Dissolved oxygen	mg/L	RW1-RW12	vertical profile	semi-annually (flood, ebb)
pH	pH units	RW1-RW12	vertical profile	semi-annually (flood, ebb)
Fish and macro invertebrates	---	intakes No. 001 and 002	impingement	bimonthly
Mussels	---	Discharge	tissue	annually
Benthic infauna	---	B1-B8	grab	annually
Sediments	---	B1-B8	grab	annually

The receiving water monitoring report containing the results of semiannual and annual monitoring shall be received at the Regional Board on March 1 of each year following the calendar year of data collection.

V. STORMWATER MONITORING PROGRAM

The discharger shall implement the Monitoring and Reporting Requirements for individual dischargers contained in the general permit for Dischargers of Storm Water Associated with Industrial Activities (State Board Order No. 97-030-DWQ adopted on April 17, 1997. The monitoring reports shall be received at the Regional Board by July 1 of each year. Indicate in the report the Compliance File CI-4667.

Ordered By: Dennis A. Dickerson
Executive Officer

Date: June 29, 2000

PRIORITY POLLUTANTS

Metals

Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Miscellaneous

Cyanide
Asbestos (only if specifically required)

Pesticides & PCBs

Aldrin
Chlordane
Dieldrin
4,4'-DDT
4,4'-DDE
4,4'-DDD
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC
Toxaphene
PCB 1016
PCB 1221
PCB 1232
PCB 1242
PCB 1248
PCB 1254

Base/Neutral Extractibles

Acenaphthene
Benzidine
1,2,4-trichlorobenzene
Hexachlorobenzene
Hexachloroethane
Bis(2-chloroethyl) ether
2-chloronaphthalene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3'-dichlorobenzidine
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis(2-chloroisopropyl) ether
Bis(2-chloroethoxy) methane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodimethylamine
N-nitrosodi-n-propylamine
N-nitrosodiphenylamine
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
Benzo(a) anthracene
Benzo(a) pyrene
Benzo(b) fluoranthene
Benzo(k) fluoranthene
Chrysene
Acenaphthylene
Anthracene
1,12-benzoperylene
Fluorene
Phenanthrene
1,2,5,6-dibenzanthracene
Indeno (1,2,3-cd) pyrene
Pyrene
TCDD

Acid Extractibles

2,4,6-trichlorophenol
P-chloro-m-cresol
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
Pentachlorophenol
Phenol

Volatile Organics

Acrolein
Acrylonitrile
Benzene
Carbon tetrachloride
Chlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Chloroform
1,1-dichloroethylene
1,2-trans-dichloroethylene
1,2-dichloropropane
1,2-dichloropropylene
Ethylbenzene
Methylene chloride
Methyl chloride
Methyl bromide
Bromoform
Bromodichloromethane
Dibromochloromethane
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl chloride
2-chloroethyl vinyl ether
Xylene

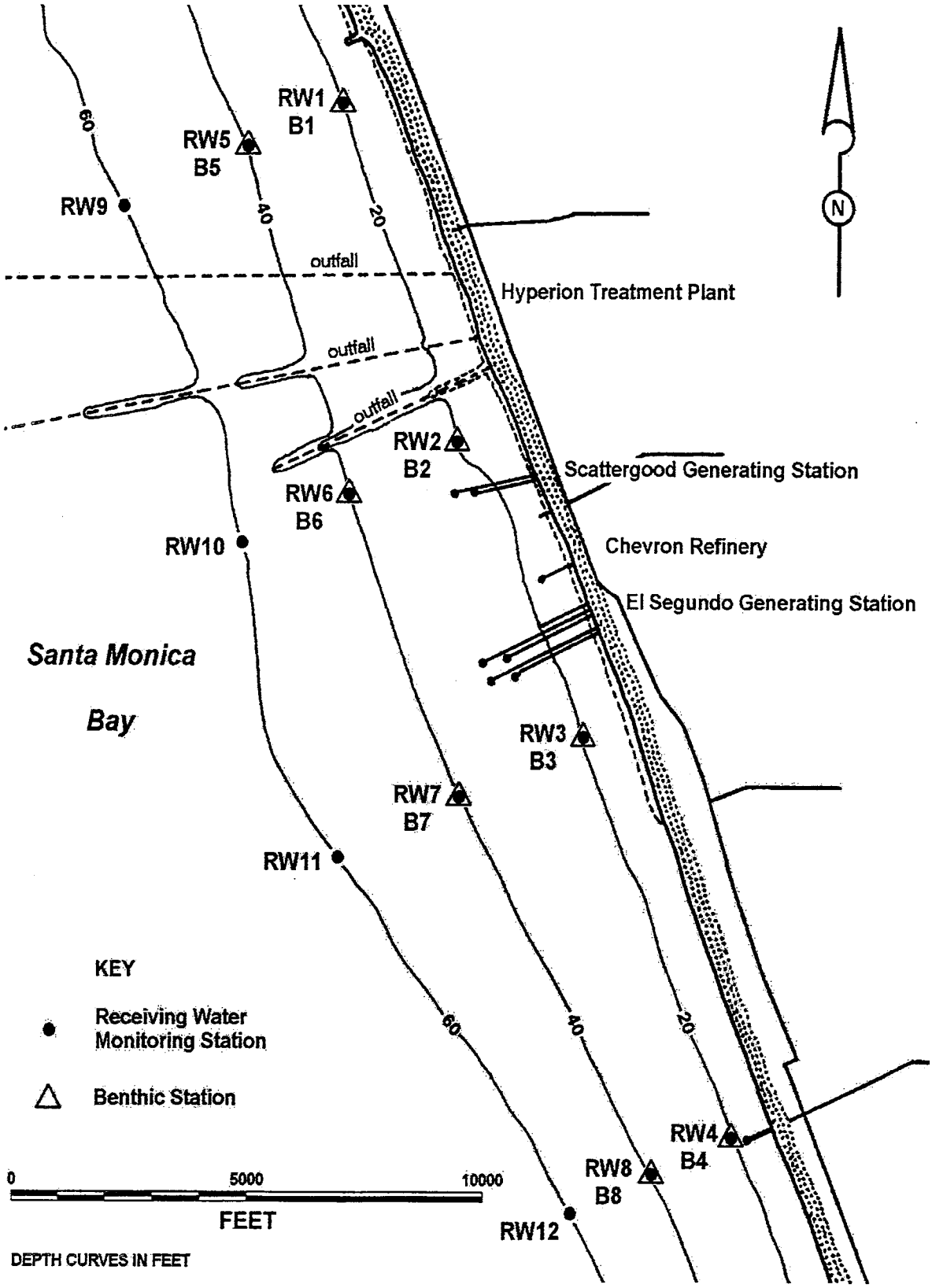


FIGURE 3 – RECEIVING WATER MONITORING STATIONS

APPENDIX H
WATER RESOURCES

ATTACHMENT H-11-1
Water Quality Policies

CALIFORNIA CODES
WATER CODE
SECTION 13550-13556

13550. (a) The Legislature hereby finds and declares that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the state board, after notice to any person or entity who may be ordered to use recycled water or to cease using potable water and a hearing held pursuant to Article 2 (commencing with Section 648) of Chapter 1.5 of Division 3 of Title 23 of the California Code of Regulations:

(1) The source of recycled water is of adequate quality for these uses and is available for these uses. In determining adequate quality, the state board shall consider all relevant factors, including, but not limited to, food and employee safety, and level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. In addition, the state board shall consider the effect of the use of recycled water in lieu of potable water on the generation of hazardous waste and on the quality of wastewater discharges subject to regional, state, or federal permits.

(2) The recycled water may be furnished for these uses at a reasonable cost to the user. In determining reasonable cost, the state board shall consider all relevant factors, including, but not limited to, the present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water forthese uses, and shall find that the cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water.

(3) After concurrence with the State Department of Health Services, the use of recycled water from the proposed source will not be detrimental to public health.

(4) The use of recycled water for these uses will not adversely affect downstream water rights, will not degrade water quality, and is determined not to be injurious to plantlife, fish, and wildlife.

(a) In making the determination pursuant to subdivision (a), the state board shall consider the impact of the cost and quality of the nonpotable water on each individual user.

(c) The state board may require a public agency or person subject to this article to furnish information which the state board determines to be relevant to making the determination required in subdivision (a).

APPENDIX H
WATER RESOURCES

ATTACHMENT H-11-2
Water Quality Control Policy on the Use and Disposal of Inland Waters Used in Powerplant Cooling

WATER QUALITY CONTROL POLICY

on the

USE and DISPOSAL of INLAND WATERS

USED for POWERPLANT COOLING

ADOPTED JUNE 19, 1975

TABLE OF CONTENTS

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 75-58

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

WHEREAS:

1. Basin Planning conducted by the State Board has shown that there is presently no available water for new allocations in some basins.

2. Projected future water demands, when compared to existing developed water supplies, indicate that general freshwater shortages will occur in many areas of the State prior to the year 2000.

3. The improper disposal of powerplant cooling waters may have an adverse impact on the quality of inland surface and groundwaters.

4. It is believed that further development of water in the Central Valley will reduce the quantity of water available to meet Delta outflow requirements and protect Delta water quality standards.

THEREFORE, BE IT RESOLVED, that

1. The Board hereby adopts the "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling".

2. The Board hereby directs all affected California Regional Water Quality Control Boards to implement the applicable provisions of the policy.

3. The Board hereby directs staff to coordinate closely with the State Energy Resources Conservation and Development Commission and other involved state and local agencies as this policy is implemented.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the forgoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 19, 1975.

Bill B. Dendy
Executive Officer

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

Introduction

The purpose of this policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for powerplants which depend upon inland waters for cooling. In addition, this policy should be particularly useful in guiding planning of new power generating facilities so as to protect beneficial uses of the State's water resources and to keep the consumptive use of freshwater for powerplant cooling to that minimally essential for the welfare of the citizens of the State.

This policy has been prepared to be consistent with federal, state, and local planning and regulatory statutes, the Warren-Alquist State Energy Resources Conservation and Development Act, Water Code Section 237 and the Waste Water Reuse Law of 1974.

Section 25216.3 of the Warren-Alquist Act states:

"(a) The commission shall compile relevant local, regional, state, and federal land use, public safety, environmental, and other standards to be met in designing, siting, and operating facilities in the State: except as provided in subdivision (d) of Section 25402, adopt standards, except for air and water quality,...."

Water Code Section 237 and Section 462 of the Waste Water Reuse Law, direct the Department of Water Resources to:

237. "...either independently or in cooperation with any person or any county, state, federal, or other agency, including, but not limited to, the State Energy Resources Conservation and Development Commission, shall conduct studies and investigations on the need and availability of water for thermal electric powerplant cooling purposes, and shall report thereon to the Legislature from time to time...."

462. "...conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to ... and cooling for thermal electric powerplants."

Decisions on waste discharge requirements, water rights permits, water quality control plans, and other specific water quality control implementing actions by the State and Regional Boards shall be consistent with provisions of this policy.

The Board declares its intent to determine from time to time the need for revising this policy.

Definitions

1. Inland Water – all waters within the territorial limits of California exclusive of the waters of the Pacific Ocean outside of enclosed bays, estuaries, and coastal lagoons.

2. Fresh Inland Waters – those inland waters which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife.

3. Salt Sinks – areas designated by the Regional Water Quality Control Boards to receive saline waste discharges.

4. Brackish Waters – includes all waters with a salinity range of 1,000 to 30,000 mg/l and a chloride concentration range of 250 to 12,000 mg/l. The application of the term "brackish" to a water is not intended to imply that such water is no longer suitable for industrial or agricultural purposes.

5. Steam-Electric Power Generating Facilities – electric power generating facilities utilizing fossil or nuclear-type fuel or solar heating in conjunction with a thermal cycle employing the steam-water system as the thermodynamic medium and for the purposes of this policy is synonymous with the word "powerplant".

6. Blowdown – the minimum discharge of either boiler water or recirculating cooling water for the purpose of limiting the buildup of concentrations of materials in excess of desirable limits established by best engineering practice.

7. Closed Cycle Systems – a cooling water system from which there is no discharge of wastewater other than blowdown.

8. Once-Through Cooling – a cooling water system in which there is no recirculation of the cooling water after its initial use.

9. Evaporative Cooling Facilities – evaporative towers, cooling ponds, or cooling canals, which utilize evaporation as a means of wasting rejected heat to the atmosphere.

10. Thermal Plan – "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California".

11. Ocean Plan – "Water Quality Control Plan for Ocean Waters of California".

Basis of Policy

1. The State Board believes it is essential that every reasonable effort be made to conserve energy supplies and reduce energy demands to minimize adverse effects on water supply and water quality and at the same time satisfy the State's energy requirements.

2. The increasing concern to limit changes to the coastal environment and the potential hazards of earthquake activity along the coast has led the electric utility industry to consider siting steam-electric generating plants inland as an alternative to proposed coastal locations.

3. Although many of the impacts of coastal powerplants on the marine environmental are still not well understood, it appears the coastal marine environment is less susceptible than inland waters to the water quality impacts associated with powerplant cooling. Operation of existing coastal powerplants indicate that these facilities either meet the standards of the State's Thermal Plan and Ocean Plan or could do so readily with appropriate technological modifications. Furthermore, coastal locations provide for application of a wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State's limited supply of inland waters. These technologies include once-through cooling which is appropriate for most coastal sites, potential use of saltwater cooling towers, or use of brackish water where more stringent controls are required for environmental considerations at specific sites.

4. There is a limited supply of inland water resources in California. Basin planning conducted by the State Board has shown that there is no available water for new allocations in some basins. Projected future water demands when compared to existing developed water supplies indicate that general fresh-water shortages will occur in many areas of the State prior to the year 2000. The use of inland waters for powerplant cooling needs to be carefully evaluated to assure proper future allocation of inland waters considering all other beneficial uses. The loss of inland waters considering all other beneficial uses. The loss of inland waters through evaporation in powerplant cooling facilities may be considered an unreasonable use of inland waters when general shortages occur.

5. The Regional Boards have adopted water quality objectives including temperature objectives including temperature objectives for all surface waters in the State.

6. Disposal of once-through cooling waters from powerplants to inland water is incompatible with maintaining the water quality objectives of the State Board's "Thermal Plan" and "Water Quality Control Plans."

7. The improper disposal of blowdown from evaporative cooling facilities may have an adverse impact on the quality of inland surface and ground waters and on fish and wildlife.

8. An important consideration in the increased use of inland water for powerplant cooling or for any other purpose in the Central Valley Region is the reduction in the available quantity of water to meet the Delta outflow requirements necessary to protect Delta water quality objectives and standards. Additionally, existing contractual agreements to provide future water supplies to the Central Valley, the South Coastal Basin, and other areas using supplemental water supplies are threatening to further reduce the Central Valley outflow necessary to protect the Delta environment.

9. The California Constitution and the California Water Code declare that the right to use water from a natural stream or watercourse is limited to such water as shall be reasonably required for beneficial use and does not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion. Section 761, Article 17.2, Subchapter 2, Chapter 3, Title 23, California Administrative Code provides that permits or licenses for the appropriation of water will contain a term which will subject the permit or license to the continuing authority of the State Board to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

10. The Water Code authorizes the State Board to prohibit the discharge of wastes to surface and ground waters of the State.

Principles

1. It is the Board's position that from a water quantity and quality standpoint the source of powerplant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical and economic feasibility consideration: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters.

2. Where the Board has jurisdiction, use of fresh inland waters for powerplant cooling will be approved by the Board only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound.

3. In considering issuance of a permit or license to appropriate water for powerplant cooling, the Board will consider the reasonableness of the proposed water use when compared with other present and future needs for the water source and when viewed in the context of alternative water sources that could be used for the purpose. The Board will give great weight to the results of studies made pursuant to the Warren-Alquist State Energy Resources Conservation and Development Act and carefully evaluate studies by the Department of Water Resources made pursuant to Sections 237 and 462, Division 1 of the California Water Code.

4. The discharge of blowdown water from cooling towers or return flows from once-through cooling shall not cause a violation of water quality objectives or waste discharge requirements established by the Regional Boards.

5. The use of unlined evaporation ponds to concentrate salts from blowdown waters will be permitted only at salt sinks approved by the Regional and State Boards. Proposals to utilize unlined evaporation ponds for final disposal of blowdown waters must include studies of alternative methods of disposal. These studies must show that the geologic strata underlying the proposed ponds or salt sink will protect usable groundwater.

6. Studies of availability of inland waters for use in powerplant cooling facilities to be constructed in Central Valley basins, the South Coastal Basins or other areas which receive supplemental water from Central Valley streams as for all major new uses must include an analysis of the impact of such use on Delta outflow and Delta water quality objectives. The studies associated with powerplants should include an analysis of the cost and water use associated with the use of alternative cooling facilities employing dry, or wet/dry modes of operation.

7. The State Board encourages water supply agencies and power generating utilities and agencies to study the feasibility of using wastewater for powerplant cooling. The State Board encourages the use of wastewater for powerplant cooling where it is appropriate. Furthermore, Section 25601(d) of the Warren-Alquist Energy Resources Conservation and Development Act directs the Commission to study, "expanded use of wastewater as cooling water and other advances in powerplant cooling" and Section 462 of the Waste Water Reuse Law directs the Department of Water Resources to "...conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to... and cooling for thermal electric powerplants."

Discharge Prohibitions

1. The discharge to land disposal sites of blowdown waters from inland powerplant cooling facilities shall be prohibited except to salt sinks or to lined facilities approved by the Regional and State Boards for the reception of such wastes.

2. The discharge of wastewaters from once-through inland powerplant cooling facilities shall be prohibited unless the discharger can show that such a practice will maintain the existing water quality and aquatic environment of the State's water resources.

3. The Regional Boards may grant exceptions to these discharge prohibitions on a case-by-case basis in accordance with exception procedures included in the "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California.

Implementation

1. Regional Water Quality Control Boards will adopt waste discharge requirements for discharges from powerplant cooling facilities which specify allowable mass emission rates and/or concentrations of effluent constituents for the blowdown waters. Waste discharge requirements for powerplant cooling facilities will also specify the water quality conditions to be maintained in the receiving waters.

2. The discharge requirements shall contain a monitoring program to be conducted by the discharger to determine compliance with waste discharge requirements.

3. When adopting waste discharge requirements for powerplant cooling facilities the Regional Boards shall consider other environmental factors and may require an environmental impact report, and shall condition the requirement in accordance with Section 2718, Subchapter 17, Chapter 3, Title 23, California Administrative Code.

4. The State Board shall include a term in all permits and licenses for appropriation of water for use in powerplant cooling that requires the permittee or licensee to conduct ongoing studies of the environmental desirability and economic feasibility of changing facility operations to minimize the use of fresh inland waters. Study results will be submitted to the State Board at intervals as specified in the permit term.

5. Petitions by the appropriator to change the nature of the use of appropriated water in an existing permit or license to allow the use of inland water for powerplant cooling may have an impact on the quality of the environment and as such require the preparation of an environmental impact statement or a supplement to an existing statement regarding, among other factors, an analysis of the reasonableness of the proposed use.

6. Applications to appropriate inland waters for powerplant cooling purpose shall include results of studies comparing the environmental impact of alternative inland sites as well as alternative water supplies and cooling facilities. Studies of alternative coastal sites must be included in the environmental impact report. Alternatives to be considered in the environmental impact report, including but not limited to sites, water supply, and cooling facilities, shall be mutually agreed upon by the prospective appropriator and the State Board staff. These studies should include comparisons of environmental impact and economic and social benefits and costs in conformance with the Warren-Alquist State Energy Resources Conservation and Development Act, the California Coastal Zone Plan, the California Environmental Quality Act and the National Environmental Policy Act.

APPENDIX H
WATER RESOURCES

ATTACHMENT H-11-3
Water Quality Control Plan for Control of Temperatures in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California

State Water Resources Control Board

WATER QUALITY CONTROL PLAN FOR CONTROL OF TEMPERATURE IN THE COASTAL AND INTERSTATE WATERS AND ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA[1]

DEFINITION OF TERMS

1. Thermal Waste - Cooling water and industrial process water used for the purpose of transporting waste heat.

2. Elevated Temperature Waste - Liquid, solid, or gaseous material including thermal waste discharged at a temperature higher than the natural temperature of receiving water. Irrigation return water is not considered elevated temperature waste for the purpose of this plan.

3. Natural Receiving Water Temperature - The temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge or irrigation return waters.

4. Interstate Waters - All rivers, lakes, artificial impoundments, and other waters that flow across or form a part of the boundary with other states or Mexico.

5. Coastal Waters - Waters of the Pacific Ocean outside of enclosed bays and estuaries which are within the territorial limits of California.

6. Enclosed Bays - Indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays will include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to the following: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

7. Estuaries and Coastal Lagoons - Waters at the mouths of streams which serve as mixing zones for fresh and ocean water during a major portion of the year. Mouths of streams which are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from

[1] This plan revises and supersedes the policy adopted by the State Board on January 7, 1971, and revised October 13, 1971, and June 5, 1972.

a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and saltwater occurs in the open coastal waters. The waters decribed by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge and appropriate areas of Smith River, Klamath River, Mad River, Eel River, Noyo River, and Russian River.

8. Cold Interstate Waters - Streams and lakes having a range of temperatures generally suitable for trout and salmon including but not limited to the following: Lake Tahoe, Truckee River, West Fork Carson River, East Fork Carson River, West Walker River and Lake Topaz, East Walker River, Minor California-Nevada Interstate Waters, Klamath River, Smith River, Goose Lake, and Colorado River from the California-Nevada stateline to the Needles-Topoc Highway Bridge.

9. Warm Interstate Waters - Interstate streams and lakes having a range of temperature generally suitable for warm water fishes such as bass and catfish. This definition includes but is not limited to the following: Colorado River from the Needles-Topoc Highway Bridge to the northerly international boundary of Mexico, Tijuana River, New River, and Alamo River.

10. Existing Discharge - Any discharge (a) which is presently taking place, or (b) for which waste discharge requirements have been established and construction commenced prior to the adoption of this plan, or (c) any material change in an existing discharge for which construction has commenced prior to the adoption of this plan. Commencement of construction shall include execution of a contract for onsite construction or for major equipment which is related to the condenser cooling system.

    Major thermal discharges under construction which are included within this definition are:

    A. Diablo Canyon Units 1 and 2, Pacific Gas and Electric Company.

    B. Ormond Beach Generating Station Units 1 and 2, Southern California Edison Company.

    C. Pittsburg No. 7 Generating Plant, Pacific Gas and Electric Company.

    D. South Bay Generating Plant Unit 4 and Encina Unit 4, San Diego Gas and Electric Company.

11. New Discharge - Any discharge (a) which is not presently taking place unless waste discharge requirements have been established and construction as defined in Paragraph 10 has commenced prior to adoption of this plan or (b) which is presently taking place and for which a material change is proposed but no construction as defined in Paragraph 10 has commenced prior to adoption of this plan.

12. Planktonic Organism - Phytoplankton, zooplankton and the larvae and eggs of worms, molluscs, and arthropods, and the eggs and larval forms of fishes.

13. Limitations or Additional Limitations - Restrictions on the temperature, location, or volume of a discharge, or restrictions on the temperature of receiving water in addition to those specifically required by this plan.

SPECIFIC WATER QUALITY OBJECTIVES

1. Cold Interstate Waters

   A. Elevated temperature waste discharges into cold interstate waters are prohibited.

2. Warm Interstate Waters

   A. Thermal waste discharges having a maximum temperature greater than 5°F above natural receiving water temperature are prohibited.

   B. Elevated temperature wastes shall not cause the temperature of warm interstate waters to increase by more than 5°F above natural temperature at any time or place.

   C. Colorado River - Elevated temperature wastes shall not cause the temperature of the Colorado River to increase above the natural temperature by more than 5°F or the temperature of Lake Havasu to increase by more than 3°F provided that such increases shall not cause the maximum monthly temperature of the Colorado River to exceed the following:

January	60°F	July	90°F
February	65°F	August	90°F
March	70°F	September	90°F
April	75°F	October	82°F
May	82°F	November	72°F

June 86°F December 65°F

D. Lost River - Elevated temperature wastes discharged to the Lost River shall not cause the temperature of the receiving water to increase by more than 2°F when the receiving water temperature is less than 62°F, and 0°F when the receiving water temperature exceeds 62°F.

E. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

3. Coastal Waters

A. Existing discharges

(1) Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.

B. New discharges

(1) Elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

(2) Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas.

(3) The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.

(4) The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

(5) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

4. Enclosed Bays

A. Existing discharges

(1) Elevated temperature waste discharges shall comply with limitations necessary to assure protection of beneficial uses.

B. New discharges

(1) Elevated temperature waste discharges shall comply with limitations necessary to assure protection of beneficial uses. The maximum temperature of waste discharges shall not exceed the natural temperature of the receiving waters by more than 20°F.

(2) Thermal waste discharges having a maximum temperature greater than 4°F above the natural temperature of the receiving water are prohibited.

5. Estuaries

A. Existing discharges

(1) Elevated temperature waste discharges shall comply with the following:

a. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

b. Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.

c. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.

d. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

(2) Thermal waste discharges shall comply with the provisions of 5A (1) above and, in addition, the maximum temperature of thermal waste discharges shall not exceed 86°F.

B. New discharges

(1) Elevated temperature waste discharges shall comply with item 5A(1) above.

(2) Thermal waste discharges having a maximum temperature greater than 4°F above the natural temperature of the receiving water are prohibited.

(3) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

GENERAL WATER QUALITY PROVISIONS

1. Additional limitations shall be imposed in individual cases if necessary for the protection of specific beneficial uses and areas of special biological significance. When additional limitations are established, the extent of surface heat dispersion will be delineated by a calculated 1 1/2°F isotherm which encloses an appropriate dispersion area. The extent of the dispersion area shall be:

   A. Minimized to achieve dispersion through the vertical water column rather than at the surface or in shallow water.

   B. Defined by the Regional Board for each existing and proposed discharge after receipt of a report prepared in accordance with the implementation section of this plan.

2. The cumulative effects of elevated temperature waste discharges shall not cause temperatures to be increased except as provided in specific water quality objectives contained herein.

3. Areas of special biological significance shall be designated by the State Board after public hearing by the Regional Board and review of its recommendations.

4. Regional Boards may, in accordance with Section 316(a) of the Federal Water Pollution Control Act of 1972, and subsequent federal regulations including 40 CFR 122, grant an exception to Specific Water Quality Objectives in this Plan. Prior to becoming effective, such exceptions and alternative less stringent requirements must receive the concurrence of the State Board.

5. Natural water temperature will be compared with waste discharge temperature by near-simultaneous measurements accurate to within 1°F. In lieu of near-simultaneous

measurements, measurements may be made under calculated conditions of constant waste discharge and receiving water characteristics.

IMPLEMENTATION

1. The State Water Resources Control Board and the California Regional Water Quality Control Boards will administer this plan by establishing waste discharge requirements for discharges of elevated temperature wastes.

2. This plan is effective as of the date of adoption by the State Water Resources Control Board and the sections pertaining to temperature control in each of the policies and plans for the individual interstate and coastal waters shall be void and superseded by all applicable provisions of this plan.

3. Existing and future dischargers of thermal waste shall conduct a study to define the effect of the discharge on beneficial uses and, for existing discharges, determine design and operating changes which would be necessary to achieve compliance with the provisions of this plan.

4. Waste discharge requirements for existing elevated temperature wastes shall be reviewed to determine the need for studies of the effect of the discharge on beneficial uses, changes in monitoring programs and revision of waste discharge requirements.

5. All waste discharge requirements shall include a time schedule which assures compliance with water quality objectives by July 1, 1977, unless the discharger can demonstrate that a longer time schedule is required to complete construction of necessary facilities; or, in accordance with any time schedule contained in guidelines promulgated pursuant to Section 304(b) of the Federal Water Pollution Control Act.

6. Proposed dischargers of elevated temperature wastes may be required by the Regional Board to submit such studies prior to the establishment of waste discharge requirements. The Regional Board shall include in its requirements appropriate postdischarge studies by the discharger.

7. The scope of any necessary studies shall be as outlined by the Regional Board and shall be designed to include the following as applicable to an individual discharge:

   A. Existing conditions in the aquatic environment.

B. Effects of the existing discharge on beneficial uses.

C. Predicted conditions in the aquatic environment with waste discharge facilities designed and operated in compliance with the provisions of this plan.

D. Predicted effects of the proposed discharge on beneficial uses.

E. An analysis of costs and benefits of various design alternatives.

F. The extent to which intake and outfall structures are located and designed so that the intake of planktonic organisms is at a minimum, waste plumes are prevented from touching the ocean substrate or shorelines, and the waste is dispersed into an area of pronounced along-shore or offshore currents.

8. All waste discharge requirements adopted for discharges of elevated temperature wastes shall be monitored in order to determine compliance with effluent or receiving water temperature (or heat) requirements.

Furthermore, for significant thermal discharges as determined by the Regional Board or State, Regional Boards shall require expanded monitoring programs, to be carried out either on a continuous or periodic basis, designed to assess whether the source continues to provide adequate protection to beneficial uses (including the protection and propagation of a balanced indigenous community of fish, shellfish, and wildlife, in and on the body of water into which the discharge is made). When periodic expanded monitoring programs are specified, the frequency of the program shall reflect the probable impact of the discharge.

9. The State Board or Regional Board may require a discharger(s) to pay a public agency or other appropriate person an amount sufficient to carry out the expanded monitoring program required pursuant to paragraph 8 above if:

A. The discharger has previously failed to carry out monitoring programs in a manner satisfactory to the State Board or Regional Board, or;

B. More than a single facility, under separate ownerships, may significantly affect the thermal characteristics of the body of water, and the owners of such facilities are unable to reach agreement on a cooperative program within a reasonable time period specified by the State Board or Regional Board.

APPENDIX H
WATER RESOURCES

ATTACHMENT H-12
Monthly Report of Recycled Water Quality for Landscape and Industrial Water Users West Basin WRP Title 22 Product Water

5.
L
M
L

MONTHLY REPORT OF RECYCLED WATER QUALITY
for
LANDSCAPE AND INDUSTRIAL WATER USERS
WEST BASIN WRP TITLE 22 PRODUCT WATER
Period Covered: 1999

Constituent	Unit	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	Annual Average
TDS	mg/L	680	770	810	730	750	740	700	800	720	790	720	750	747
pH	pH units	7.0	7.1	7.1	7.2	7.1	7.1	7.1	7.1	7.1	7.2	7.2	7.3	7.1
SODIUM	mg/L	189	190	180	156	130	141	135	173	145	141	142	154	164
CALCIUM	mg/L	40	54	76	74	46	53	52	55	55	62	55	61	59
MAGNESIUM	mg/L	15	19	26	27	16	20	20	21	19	9.8	21	24	20
SAR	meq/L	5.3	5.7	4.6	3.9	4.1	4.2	4.1	5.0	4.3	3.9	4.1	4.2	4.5
EC_w (TDS/640)	mmhos/cm	1.1	1.2	1.3	1.1	1.2	1.2	1.1	1.3	1.1	1.2	1.1	1.2	1.2
CHLORIDE	mg/L	181	197	205	180	170	179	163	196	177	212	170	177	182
BORON	mg/L	0.76	0.60	0.60	0.55	0.60	0.69	0.90	0.99	1.0	1.0	0.68	0.91	0.77
NITRATE (as N)	mg/L as N	1.8	4.2	4.8	5.6	4.0	2.8	2.5	3.5	2.9	3.6	2.1	2.3	3.3
AMMONIA (as N)	mg/L as N	25	27	23	20	21	26	26	31	30	27	37	36	28
TOTAL PHOSPHATE	mg/L as PO4	5.5	5.7	7.2	6.5	4.7	6.3	4.3	5.8	4.8	1.3	5.9	4.3	5.2
O-PHOSPHATE	mg/L as PO4	6.0	6.2	6.6	6.6	5.0	7.1	4.9	6.3	5.3	4.1	6.3	4.6	5.7
POTASSIUM	mg/L	16	16	18	18	13	15	15	16	16	15	15	15	15
TOT. ALKALINITY	mg/L as CaCO3	257	247	262	247	262	279	259	287	252	237	299	300	266
BICARBONATE	mg/L as CaCO3	257	247	262	247	262	279	259	287	252	237	299	299	265
BOD	mg/L	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	3	< 3	< 3	< 3
COD	mg/L	44	34	34	34	32	43	33	26	32	29	38	43	35
IRON	mg/L	0.60	0.30	0.47	0.60	0.49	0.47	0.50	0.51	0.43	0.23	0.36	0.33	0.44
HARDNESS	mg/L as CaCO3	168	214	305	297	187	216	209	224	217	242	222	251	229
MANGANESE	mg/L	0.040	0.053	0.055	0.054	0.058	0.072	0.051	0.065	0.047	0.055	0.052	0.052	0.054
SULFIDE	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SILICA	mg/L	26	29	27	24	23	25	25	25	27	17	27	22	25
SULFATE	mg/L	89	133	143	129	138	133	110	123	119	117	126	162	126
TOC	mg/L	10	11	11	11	11	12	11	11	9.8	9.2	12	12	11
TSS	mg/L	1	2	< 1	1	2	2	3	< 1	2	1	2	3	2

I:\data\labs\supplmnt99.xls

5
2
L

MONTHLY REPORT OF RECYCLED WATER QUALITY
for
LANDSCAPE AND INDUSTRIAL WATER USERS
WEST BASIN WRP TITLE 22 PRODUCT WATER
Period Covered: 2000

Constituent	Unit	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	Annual Average
TDS	mg/L	720	700	720	700	710	600	669	700	730	700			694
pH	pH units	7.0	7.1	7.3	7.2	7.2	7.2	7.3	7.2	7.2	7.1			7.2
SODIUM	mg/L	115	142	166	141	135	144	131	162	126	160			143
CALCIUM	mg/L	50	54	49	42	40	39	51	48	45	45			46
MAGNESIUM	mg/L	19	19	24	17	18	16	21	21	19	20.0			19
SAR	meq/L	3.5	4.2	4.6	4.8	4.4	4.9	4.1	4.9	4.0	5.0			4.4
EC_w (TDS÷640)	mmhos/cm	1.1	1.1	1.1	1.1	1.1	0.9	1.0	1.1	1.1	1.1			1.1
CHLORIDE	mg/L	169	161	169	183	169	164	166	164	137	167			167
BORON	mg/L	0.74	0.82	0.61	0.82	0.67	0.74	0.66	0.70	0.68	0.6			0.70
NITRATE (as N)	mg/L as N	2.1	1.6	2.0	1.4	1.1	0.9	0.8	0.7	0.6	0.6			1.2
AMMONIA (as N)	mg/L as N	35	35	30	33	31	30	32	25	30	29			31
TOTAL PHOSPHATE	mg/L as PO4	5.5	4.9	6.6	7.4	7.1	4.9	4.9	5.5	8.3	6.5			6.2
O PHOSPHATE	mg/L as PO4	6.4	5.0	7.7	6.8	7.1	6.0	5.1	5.3	7.6	7.0			6.4
POTASSIUM	mg/L	15	14	16	15	13	14	15	17	13	15			15
TOT ALKALINITY	mg/L as CaCO3	301	300	297	268	274	254	286	298	291	283			285
BICARBONATE	mg/L as CaCO3	301	300	291	268	274	254	286	298	291	283			284
BOD	mg/L	< 3	3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3			< 3
C O D	mg/L	37	32	40	39	33	33	31	30	41	39			36
IRON	mg/L	0.28	0.27	0.55	0.62	0.64	0.39	0.33	0.31	0.33	0.41			0.41
HARDNESS	mg/L as CaCO3	203	213	221	176	175	163	214	207	190	195			196
MANGANESE	mg/L	0.063	0.060	0.064	0.055	0.057	0.057	0.058	0.062	0.045	0.056			0.057
SULFIDE	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1
SILICA	mg/L	23	22	24	23	22	21	25	25	23	23			23
SULFATE	mg/L	121	114	126	119	119	101	105	112	104	126			116
T.O.C	mg/L	12	12	12	13	12	8	11	9	10	12			11
T S S.	mg/L	2	< 1	1	2	< 1	4	< 1	< 1	1	< 1			1

\\data\lab\supplant\99.xls
printed 1/19/00

MONTHLY REPORT OF RECYCLED WATER QUALITY
for
LANDSCAPE AND INDUSTRIAL WATER USERS
WEST BASIN WRP TITLE 22 PRODUCT WATER
Period Covered: 1998

Constituent	Unit	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	Annual Average
T.D.S.	mg/L	880	770	840	740	670	700	720	810	770	660	650	640	738
pH	pH units	6.8	6.9	7.0	6.8	6.9	7.0	7.1	6.9	7.0	7.0	7.1	7.2	7.0
SODIUM	mg/L	164	161	155	156	170	160	142	148	139	159	159	172	162
CALCIUM	mg/L	56	59	74	65	61	44	60	57	40	63	47	69	54
MAGNESIUM	mg/L	25	22	25	21	20	17	14	21	16	19	17	9	19
SAR	meq/l	5.1	4.6	4.0	4.6	5.1	5.2	4.5	4.4	5.7	4.8	5.1	5.5	4.9
LC_W (TDS/640)	mmhos/cm	1.4	1.2	1.3	1.2	1.0	1.1	1.1	1.3	1.2	1.031	1.0	1.0	1.2
CHLORIDE	mg/l	237	194	193	170	166	170	160	166	165	151	147	177	175
BORON	mg/L	0.55	0.60	0.64	0.63	0.86	0.93	0.61	0.50	0.53	0.64	0.74	0.75	0.66
NITRATE (as N)	mg/L as N	4.5	4.6	6.3	6.0	6.6	2.6	2.9	7.3	8.8	1.4	2.5	1.8	4.5
AMMONIA (as N)	mg/L as N	25	18	19	22	21	25	22	18	14	23	20	28	21
TOTAL PHOSPHATE	mg/L as PO4	8.6	10.5	7.7	12.3	10.6	8.7	2.9	7.1	6.2	6.9	6.2	3.1	7.5
O-PHOSPHATE	mg/L as PO4	7.0	6.5	7.4	7.3	7.1	5.4	2.9	6.3	6.2	5.1	6.1	2.6	5.8
POTASSIUM	mg/L	15	15	13	15	16	15	13	15	15	15	14	16	15
TOT. ALKALINITY	mg/L as CaCO3	263	237	270	245	233	258	239	209	173	241	249	263	240
BICARBONATE	mg/L as CaCO3	263	237	270	245	233	258	239	209	173	241	249	263	240
BOD	mg/L	< 3	< 3	3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
C.O.D	mg/L	33	39	39	37	33	42	38	36	36	35	47	30	37
IRON	mg/L	0.50	0.47	0.52	0.64	0.60	0.60	0.75	0.94	< 0.10	0.55	0.69	0.56	0.63
HARDNESS	mg/L as CaCO3	244	237	289	224	210	198	183	215	188	211	186	165	213
MANGANESE	mg/L	0.046	0.044	0.079	0.060	0.056	0.046	0.048	0.055	0.054	0.045	0.043	0.031	0.051
SULFIDE	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SILICA	mg/L	28	23	27	29	30	27	20	27	23	25	27	17	25
SULFATE	mg/L	140	131	104	132	112	109	119	115	108	110	108	100	123
T.O.C.	mg/L	10	12	12	13	13	13	11	12	11	12	14	11	12
T.S.S	mg/L	1	2	6	3	2	2	< 1	4	< 1	2	1	< 1	2

APPENDIX H
WATER RESOURCES

ATTACHMENT H-13
Discharge Water Quality Data

Southern California Edison Company
El Segundo Generating Station
1997

Discharge No. 001	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Effluent												
pH (Max)	8.21	8.06	8.16	8.09	8.01	8.12	8.10	8.18	8.14	8.26	8.17	8.23
pH (Min)	7.79	7.73	7.8	7.83	7.93	8.07	8.05	7.98	8.03	7.98	8.16	8.08
Chronic Toxicity												
Germination (TUc)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germ Tube Length (TUc)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorine												
Free Avail - Max (mg./l.)	0.21	0.09	0.28	0.08	0.15	0.35	0.26	0.36	0.33	0.20	0.24	0.20
Free Avail - Min (mg./l.)	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.08	0.13	0.14
Total - Max (mg./l.)	0.21	0.11	0.37	0.08	0.23	0.24	0.32	0.38	0.38	0.23	0.35	0.21
Total - Min (mg./l.)	0.03	0.05	0.03	0.03	0.02	0.03	0.05	0.04	0.03	0.02	0.15	0.17
Circ. Water Discharge												
Temp (Max) °F	62	62	81	75.8	94.3	76.3	105.3	120.9	111.3	89.4	71	87.2
Temp (Min) °F	62	62	62	65	62.7	68	63.1	68.8	66.4	65.7	62.4	60.2
Heat Treat Temp °F	N/A	N/A	N/A	N/A	107.4	N/A	N/A	N/A	105	N/A	N/A	N/A
Coliforms (MPN/100ml.)	N/A	9	N/A	N/A	8	N/A	N/A	2	N/A	N/A	2	N/A

Southern California Edison Company
El Segundo Generating Station
1997

Discharge No. 002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Effluent												
pH (Max)	8.21	7.95	8.16	7.98	7.97	8.21	8.17	8.11	8.11	8.24	8.12	8.16
pH (Min)	7.89	7.53	7.80	7.91	7.83	8.02	8.03	7.98	8.01	7.99	8.08	8.10
Chronic Toxicity												
Termination (TUc)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germ Tube Length (TUc)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorine												
Free Avail - Max (mg./l.)	0.21	0.18	0.28	0.11	0.06	0.13	0.23	0.33	0.33	0.34	0.40	0.18
Free Avail - Min (mg./l.)	0.03	0.01	0.03	0.03	0.02	0.03	0.04	0.03	0.02	0.03	0.17	0.11
Total - Max (mg./l.)	0.22	0.24	0.28	0.16	0.29	0.21	0.29	0.34	0.36	0.39	0.35	0.23
Total - Min (Mg./l.)	0.03	0.09	0.03	0.03	0.02	0.03	0.05	0.03	0.02	0.04	0.10	0.15
Circ. Water Discharge												
Temp (Max) °F	62	77.5	81	82	105	85.1	100.9	101.92	100.95	76.8	95.78	92
Temp (Min) °F	62	72	62	69	72.3	68	78.1	77.52	76.22	68.34	82.33	67.8
Heat Treat Temp °F	N/A	108	N/A	N/A	N/A	108	132.3	N/A	105	109.41	121.61	N/A
Coliforms (MPN/100ml.)	N/A	11	N/A	N/A	8	N/A	N/A	2	N/A	N/A	14	N/A.

El Segundo Power LLC
El Segundo Generating Station
1998

Discharge No. 002 Effluent	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
pH (Max)	8.3	8.0	8.2	8.1	8.1	8.1	8.1	8.2	8.3	8.1	8.1	8.1
pH (Min)	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	8.1	8.1	8.0	7.9
Flow (Max) MGD	199.3	199.3	398.6	199.3	199.3	398.6	398.6	398.6	398.6	398.6	398.6	199.3
Flow (Avg)MGD	199.3	199.3	276.21	188.43	157.55	234.73	356.81	366.8	366.96	294.07	306.92	156.04
Chronic Toxicity												
Germination (TUc)	N/A	1.00	N/A	N/A	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00
Germ Tube Length (TUc)	N/A	1.00	N/A	N/A	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00
Chlorine												
Free Avail - Max (mg./l.)	0.22	0.16	0.19	0.21	0.14	0.19	0.19	0.14	0.17	0.15	0.14	0.18
Free Avail - Min (mg./l.)	0.12	0.02	0.02	0.03	0.03	0.02	0.03	0.02	0.02	0.09	0.05	0.05
Total - Max (mg./l.)	0.29	0.17	0.19	0.30	0.18	0.22	0.4	0.16	0.2	0.17	0.15	0.19
Total - Min (Mg./l.)	0.12	0.03	0.02	0.05	0.04	0.04	0.02	0.02	0.02	0.10	0.03	0.07
Circ. Water Discharge												
Temp (Max) °F	91.7	89.6	94.2	84	87.2	136.2	103.8	100.9	95.7	110	80.5	95.6
Temp (Min) °F	73.9	71.6	60.4	60.8	63.4	70.4	74.0	73.6	72.5	82.7	64.6	62.6
Heat Treat Temp °F	N/A	N/A	N/A	N/A	N/A	136.2	N/A	N/A	N/A	110	N/A	N/A
Coliforms (MPN/100ml.)	N/A	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2	N/A

El Segundo Power, LLC
El Segundo Generating Station
1999

Discharge No. 001	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Effluent												
pH (Max)	8.1	8.2	8.2	8.2	8.1	8.0	8.0	8.4	8.2	8.1	8.0	NODI(c)
pH (Min)	8.1	8.2	8.2	8.1	7.9	8.0	8.0	8.1	8.1	8.0	8.0	NODI(c)
Flow (Max)	14.00	35.60	51.80	155.50	175.90	172.10	207.40	207.40	207.40	207.40	119.60	17.30
Flow (Avg)	2.14	2.80	12.71	77.05	41.50	66.19	201.40	151.99	131.90	166.30	28.50	1.20
Chronic Toxicity												
Germination (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germ Tube Length (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chronic Abalone Larval Development Bioassay (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chronic Silver Slides & Growth Bioassay												
Survival (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Growth (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorine												
Free Avail - Max (mg/l)	0.18	0.17	0.13	0.18	0.18	0.16	0.10	0.19	0.15	0.14	0.10	0.00
Free Avail - Min (mg/l)	0.15	0.04	0.04	0.02	0.05	0.08	0.02	0.03	0.02	0.02	0.10	0.00
Total Residual- Max (mg/l)	0.18	0.19	0.15	0.19	0.19	0.17	0.10	0.20	0.17	0.14	0.12	0.00
Total Residual- Min (mg/l)	0.18	0.04	0.05	0.02	0.07	0.09	0.03	0.03	0.03	0.03	0.12	0.00

El Segundo Power, LLC
El Segundo Generating Station
1999

Discharge No. 001 Continued	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Circ. Water Discharge												
Temp (Max) °F	68.2	61.7	62.3	83.5	72.4	97.4	102.5	104.9	111.2	118.0	98.5	81.4
Temp (Min) °F	60.5	60.6	57.5	59.6	61.4	61.5	76.1	77.1	75.5	66.1	63.2	61.8
Heat Treat Temp °F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	111.2	118.0	N/A	N/A
Coliforms												
Fecal Coliforms (MPN/100ml)	N/A	30	N/A	N/A	2	N/A	N/A	2	N/A	N/A	N/A	N/A
Total Coliforms (MPN/100ml)	N/A	30	N/A	N/A	2	N/A	N/A	2	N/A	N/A	N/A	N/A

Discharge No. 002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Effluent												
pH (Max)	8.1	8.2	8.3	8.7	8.0	8.1	8.1	8.4	8.2	8.0	8.2	8.1
pH (Min)	8.1	8.2	8.0	7.9	8.0	7.9	8.0	8.1	8.0	8.0	8.1	8.1
Flow (Max)	398.60	398.60	199.30	398.60	398.60	398.60	398.60	398.60	398.60	398.60	398.60	398.60
Flow (Avg)	282.30	291.90	194.27	199.30	317.80	366.00	365.99	380.99	384.10	384.60	351.50	352.80
Chronic Toxicity												
Germination (TUc)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germ Tube Length (TUc)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chronic Abalone Larval Development Bioassay (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

El Segundo Power, LLC
El Segundo Generating Station
1999

Discharge No. 002 Continued	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chronic Silver Slides & Growth Bioassay												
Survival (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Growth (TUc)	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorine												
Free Avail - Max (mg/l)	0.16	0.18	0.19	0.18	0.19	0.18	0.13	0.18	0.18	0.19	0.12	0.19
Free Avail - Min (mg/l)	0.02	0.06	0.03	0.03	0.03	0.04	0.03	0.02	0.10	0.09	0.08	0.07
Total Residual- Max (mg/l)	0.18	0.19	0.20	0.19	0.19	0.20	0.15	0.19	0.20	0.19	0.14	0.19
Total Residual- Min (mg/l)	0.04	0.06	0.04	0.04	0.05	0.05	0.04	0.05	0.10	0.11	0.08	0.07
Circ Water Discharge												
Temp (Max) °F	78.7	82.9	78.1	84.5	89.5	94.6	96.7	90.2	87.0	87.5	106.0	85.3
Temp (Min) °F	63.4	62.7	61.9	62.2	69.7	73.0	79.4	78.4	74.6	75.5	63.5	63.0
Heat Treat Temp °F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	106.0	N/A
Coliforms												
Fecal Coliforms (MPN/100ml)	N/A	2	N/A	N/A	2	N/A	N/A	2	N/A	N/A	N/A	N/A
Total Coliforms (MPN/100ml)	N/A	2	N/A	N/A	2	N/A	N/A	2	N/A	N/A	N/A	N/A

El Segundo Power, LLC
El Segundo Generating Station
1999

Low volume waste data

Chemical Metal Cleaning Wastes

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Se			C
pH (Min)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Max)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids - Max (mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids - Min (mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper - Max(mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper - Min(mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oil and Grease - Max (mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oil and Grease - Min (mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Flow Rate (Gal/Day)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

El Segundo Power, LLC
El Segundo Generating Station
1999

Low Volume Waste	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Effluent												
pH (Max)	8.7	9.2	9.2	8.9	8.9	9.1	9.1	9.5	9.3	8.1	8.6	8.7
pH (Min)	8.7	9.2	9.2	8.9	8.9	9.0	9.1	9.5	9.3	8.1	8.6	8.7
Total Suspended Solids-Max (mg/l)	18.0	21.9	28.6	28.0	18.1	20.7	5.3	14.0	12.6	13.0	11.3	8.5
Total Suspended Solids-Avg (mg/l)	17.5	21.9	28.6	28.0	18.0	20.7	5.3	14.0	12.6	13.0	11.3	8.5
Oil and Grease - Max (mg/l)	N/D	24.7	N/D	N/D	N/D	4.1	32.5	NODI(B)	3.0	NODI(B)	NODI(B)	NODI(B)
Oil and Grease - Avg (mg/l)	N/D	8.9	N/D	N/D	N/D	2.1	10.3	NODI(B)	3.0	NODI(B)	NODI(B)	NODI(B)
Flow Rate (Gal/Day)	152,000	152,000	152,000	152,000	152,000	152,000	152,000	152,000	152,000	152,000	152,000	152,000

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
Janaury 99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	18.0	mg/l	100	30	Monthly
Oil & Grease	ND	mg/l	20	15	Monthly
pH	8.7 at 18 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	10.2	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	3	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	200	MPN/100	N/A	N/A	Monthly
Total Coliform	800	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	11.2	mg/l	45	30	Monthly
Settleable Solids	0.3	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	4	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	24,000	MPN/100	N/A	N/A	Monthly
Total Coliform	24,000	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

E) NON-CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

F) HAZARDOUS WASTE

Type	Quantity	Name & Registration #	Location
Non RCRA hazardous waste liquid N.O.S.	2,500 gal	Demenno Kerdoon #92822585	Compton, Ca

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
Feb.'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	21.9	mg/l	100	30	Monthly
Oil & Grease	24.8	mg/l	20	15	Monthly
pH	9.2 at 21 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	11.2	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	ND	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	23	MPN/100	N/A	N/A	Monthly
Total Coliform	23	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	13.4	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	12	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	700	MPN/100	N/A	N/A	Monthly
Total Coliform	5,000	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

E) NON-CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

F) HAZARDOUS WASTE

Type	Quantity	Name & Registration #	Location

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
Mar.'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	28.6	mg/l	100	30	Monthly
Oil & Grease	ND	mg/l	20	15	Monthly
pH	9.2 at 21 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	7.0	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	3	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	>160,000	MPN/100	N/A	N/A	Monthly
Total Coliform	160,000	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	4.2	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	13	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	5,000	MPN/100	N/A	N/A	Monthly
Total Coliform	3,000	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

E) NON-CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

F) HAZARDOUS WASTE

Type	Quantity	Manifest #-Date	Location
Waste Flammable Solids	1200lbs	#98437482-4/16/99	Safety Klean
Waste Corrosive Liquids	40lbs	#98437482-4/16/99	Safety Klean
RQ Waste Flammable Liquids	400lbs	#98437482-4/16/99	Safety Klean
RQ Asbestos	150lbs	#98342666-4/16/99	Chem Waste
Non RQRA Haz Waste (waste oil/debris)	1500lbs	#98342666-4/16/99	Chem Waste
Non RQRA Haz Waste (grit/dust w/metals)	770lbs	#98342666-4/16/99	Chem Waste
RQ Asbestos	111yds	#99158821-4/22/99	Azusa Land

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
Apr.'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	28.0	mg/l	100	30	Monthly
Oil & Grease	ND	mg/l	20	15	Monthly
pH	8.9 at 20 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	11.3	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	2	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	11,000	MPN/100	N/A	N/A	Monthly
Total Coliform	30,000	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids 4/21/99	55.5	mg/l	45	30	Monthly
*Suspended Solids 4/23/99	44.8	mg/l	45	30	Weekly
*Suspended Solids 4/28/99	1.4	mg/l	45	30	Weekly
*Suspended Solids 5/4/99	7.5	mg/l	45	30	Weekly
Settleable Solids	0.20	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	42	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	300	MPN/100	N/A	N/A	Monthly
Total Coliform	1,600	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

E) NON-CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

F) HAZARDOUS WASTE

Type	Quantity	Manifest #-Date	Location
Waste Flammable Solids	1200lbs	#98437482-4/16/99	Safety Klean
Waste Corrosive Liquids	40lbs	#98437482-4/16/99	Safety Klean
RQ Waste Flammable Liquids	400lbs	#98437482-4/16/99	Safety Klean
RQ Asbestos	150lbs	#98342666-4/16/99	Chem Waste
Non RQRA Haz Waste (waste oil/debris)	1500lbs	#98342666-4/16/99	Chem Waste
Non RQRA Haz Waste (grit/dust w/metals)	770lbs	#98342666-4/16/99	Chem Waste
RQ Asbestos	111yds	#99158821-4/22/99	Azusa Land
Hazardous Waste, Liquid N.O.S.	48gals	#988000284-4/20/99	Safety Klean

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
June'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	20.7	mg/l	100	30	Monthly
Oil & Grease	4.1	mg/l	20	15	Monthly
pH	9.1 at 21 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	4.7	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	ND	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	1,100	MPN/100	N/A	N/A	Monthly
Total Coliform	1,100	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	4.6	mg/l	45	30	Monthly
Settleable Solids	0.10	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	ND	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	230	MPN/100	N/A	N/A	Monthly
Total Coliform	1,700	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

E) NON-CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

F) HAZARDOUS WASTE

Type	Quantity	Manifest #-Date	Location
There were no hazardous waste shipments for this period.			

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
July'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	5.3	mg/l	100	30	Monthly
Oil & Grease 7/2/99	32.5/21.2	mg/l	20	15	Monthly
Oil & Grease 7/9/99	ND/ND	mg/l			
Oil & Grease 7/23/99	12.6	mg/l			
Oil & Grease 7/29/99	ND/5.7	mg/l			
pH	9.1 at 26 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	1.5	mg/l	45	30	Monthly
Settleable Solids	0.10	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	3	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	1,300	MPN/100	N/A	N/A	Monthly
Total Coliform	2,300	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	23.2	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	5	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	23	MPN/100	N/A	N/A	Monthly
Total Coliform	30	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
August'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	14.0	mg/l	100	30	Monthly
Oil & Grease 7/2/99	ND	mg/l	20	15	Monthly
pH	9.5 at 26 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	7.4	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	1	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	5,000	MPN/100	N/A	N/A	Monthly
Total Coliform	5,000	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	11.6	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	4	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	5,000	MPN/100	N/A	N/A	Monthly
Total Coliform	5,000	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
September'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	12.6	mg/l	100	30	Monthly
Oil & Grease	3.0	mg/l	20	15	Monthly
pH	9.3 at 23 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	9.4	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	ND	mg/l	45	30	Monthly
Oil & Grease	1.00	mg/l	15	10	Monthly
Fecal Coliform	50	MPN/100	N/A	N/A	Monthly
Total Coliform	50	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	11.6	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	1	mg/l	45	30	Monthly
Oil & Grease	5.00	mg/l	15	10	Monthly
Fecal Coliform	50	MPN/100	N/A	N/A	Monthly
Total Coliform	50	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
October'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	13.0	mg/l	100	30	Monthly
Oil & Grease	ND	mg/l	20	15	Monthly
pH	8.1 at 22 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	5.4	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	1	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	<2	MPN/100	N/A	N/A	Monthly
Total Coliform	<2	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	16.9	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	4	mg/l	45	30	Monthly
Oil & Grease	4.10	mg/l	15	10	Monthly
Fecal Coliform	70	MPN/100	N/A	N/A	Monthly
Total Coliform	170	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
November'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	11.3	mg/l	100	30	Monthly
Oil & Grease	ND	mg/l	20	15	Monthly
pH	8.6 at 20 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	4.9	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	3	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	24,000	MPN/100	N/A	N/A	Monthly
Total Coliform	24,000	MPN/100	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	16.1	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	4	mg/l	45	30	Monthly
Oil & Grease	ND	mg/l	15	10	Monthly
Fecal Coliform	2,200	MPN/100	N/A	N/A	Monthly
Total Coliform	2,200	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

EL SEGUNDO POWER LLC
EFFLUENT MONITORING ANALYSIS DATA
LARWQCB ORDER NO. 94-129, NPDES NO. CA0001147
December'99

INPLANT WASTE STREAMS

I. LOW VOLUME WASTE

A) RETENTION BASIN - (LVW 1)

Constituent	Maximum Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow	150,000	GPD	N/A	N/A	Daily
Suspended Solids	8.5	mg/l	100	30	Monthly
Oil & Grease	ND	mg/l	20	15	Monthly
pH	8.7 at 22 deg C	pH	6.0 - 9.0	N/A	Monthly

B) SANITARY PLANT 1

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	16.0	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	6	mg/l	45	30	Monthly
Oil & Grease	1.00	mg/l	15	10	Monthly
Fecal Coliform	<2	100 ml	N/A	N/A	Monthly
Total Coliform	600	100 ml	N/A	N/A	Monthly

C) SANITARY PLANT 2

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
Daily Flow MAX	1,000	GPD	N/A	N/A	Monthly
Suspended Solids	56.0	mg/l	45	30	Monthly
Settleable Solids	ND	ml/l	0.3	0.1	Monthly
BOD5 @ 20C	19	mg/l	45	30	Monthly
Oil & Grease	2.00	mg/l	15	10	Monthly
Fecal Coliform	<2	MPN/100	N/A	N/A	Monthly
Total Coliform	1,400	MPN/100	N/A	N/A	Monthly

D) CHEMICAL METAL CLEANING WASTES

Constituent	Concentration	Units	Concentration Limit (Daily Max.)	30 Day Avg Limit	Frequency of Analysis
pH	N/A	pH	6.0 - 9.0	N/A	Monthly
Suspended Solids	N/A	mg/l	100	30	Monthly
Oil & Grease	N/A	mg/l	20	15	Monthly
Daily Flow MAX	N/A	GPD	N/A	N/A	Monthly
Copper, Total	N/A	mg/l	1.0	1.0	Monthly
Iron, Total	N/A	mg/l	1.0	1.0	Monthly

APPENDIX H
WATER RESOURCES

ATTACHMENT H-14
Mixing Zone Analysis

MIXING ZONE ANALYSIS

ABSTRACT

Thermal discharges from the El Segundo Generating Station are through two vertically oriented single port discharges. The effluent discharge flow rate for outfall 001 is 207 million gallons per day (MGD) and 398 MGD for outfall 002. A Froude number analysis indicates that with the given discharge flow rate, ambient intrusion could occur into the discharge ports. The EPA Plumes model was used to model dilution of the effluent. Near-field dilution for both outfalls 001 and 002 were estimated to be between 1.73 and 1.54 respectively, while for the proposed conditions for outfall 001, the model estimated dilution to be about 1.64. Since the heat rejection rate for the proposed facility is about the same as the existing facility, the far-field dilution should be about the same. The 1° C above ambient contour would cover approximately 30 acres.

OBJECTIVES AND SCOPE

The objective of this study is to estimate the dilution from two single port discharges from the El Segundo Generating Station, located at the western boundary of the City of El Segundo. The study involved the application of EPA's Plumes model with inputs on effluent conditions and ambient conditions. Based on an evaluation of the ambient conditions, the model was applied for two scenarios corresponding to winter and summer conditions.

SITE DESCRIPTION

Bathymetry

The El Segundo outfalls discharge into the Santa Monica Bay, between latitudes 33°56'N and 33°52'N; and longitudes 118°25'W and 118°28'W. Santa Monica Bay is characterized by a gently sloping (about 0.5°) continental shelf. The shelf steepens as it approaches Santa Monica Basin, at water depths of about 80 m (Terry et al. 1956 as cited in LADWP 1999). Within the Bay, the continental shelf ranges in width from a few hundred meters to about 19km, forming a large central plateau. Figure 1 shows the project location (Figure 1 from the LADWP 1999 report).

Tides and Currents

The tides in Santa Monica Bay are characterized as a mixed semi-diurnal with two unequal highs (referred to as higher high water (HHW) and high water (HW)) and two unequal lows (referred to as Lower Low Water (LLW) and Low Water (LW)) per lunar day (24 hours, 50 minutes). In the eastern North Pacific Ocean, the tides rotates in a counterclockwise direction, resulting in flood tide currents which flow upcoast and ebb tide current which flow downcoast.

Currents within the Santa Monica Bay originate from the California Current, a diffuse water mass flowing generally southeast. South of Point Conception, the California Current divides into with flows diverging northward towards the inshore of the Channel Islands as the Southern California Countercurrent. Current speeds range from approximately 5-10 cm/s. Small eddies around the Channel Islands complicate the general flow, with the effects being mostly seasonal, i.e. strong in summer and autumn and weak to non-existent in winter and spring. Water generally enters Santa Monica Bay from the south and movies in a slow counterclockwise eddy. During winter, however, a clockwise gyre may develop with longshore flow of 2 cm/s (SCCWRP 1973, Hendricks 1980, as cited in LADWP 1999).

Ambient Conditions (Temperature and Salinity)

During the winter and summer of 1999, water temperatures were measured at receiving water stations located at water depths up to 60 feet. The receiving water stations spanned the Santa Monica Bay from 7,875 feet upcoast of the Scattergood discharge terminus to 9,900 feet downcoast of the El Segundo discharge terminus. Natural surface water temperatures in Santa Monica Bay range from 11.7°C to 22°C annually.

Measured water temperatures indicated a weakly defined thermocline during winter, with a difference of 2°C or less between depths of 0 and 18 m during both flood and ebb tides. During summer, the thermocline is more pronounced with differences in temperature reaching 5.5°C between depths of 0 and 19 m. Salinities in Santa Monica Bay are relatively uniform, ranging from 33.0 to 34.0 parts per thousand (ppt).

EFFLUENT CONDITIONS

Flowrate and Temperature

The effluent discharge flow rate was assumed to be 207 million gallons per day (MGD) for outfall 001 and 398 MGD for outfall 002 (Personal communication email from, 2000). The discharge from both outfalls 001 and 002 is through a single port discharge. Each discharge consists of one riser extending approximately 7-10 feet above the bottom. The risers are about two times larger than the discharge pipe from shore. The discharge temperature for both outfalls was assumed to be 105°F (40.6°C) for both summer and winter, as only a single effluent temperature was reported for both outfalls (Personal communication, email from Robert Callacott, November 17, 2000). For dilution modeling, the ambient temperatures for summer ranged from 68.3°F (20.1°C) and 65.3°F (18.5°C) for depths of 0 and 10 m respectively. Winter ambient temperatures ranged from 56.5°F (13.6°C) to 54.5°F (12.5°C) for depths of 0 to 10 m respectively. The salinity of the discharge was assumed to be 33 ppt. Table 1 summarizes the effluent conditions, as well as the inputs required by the model to describe the discharge and the values used. The summer and winter seasons were simulated for the model.

Table 1. Effluent Parameters used in Dilution Model

Parameter	Units	Outfall No. 001[i]	Outfall No. 002
Flow	Million gallons per day	207 (320 cfs)	398 (616 cfs)
Salinity	Parts per thousand	33	33
Temperature	°F (°C)	105 (40.6)	105 (40.6)
Density	Kilograms per Cubic meters	1016.23	1016.23
Depth to Top of Riser	Feet	7.15	10
Length (offshore)	Feet	1,900	2,100
Size of Port	Feet	20 foot diameter	20'x25'
Angle	Degrees	90° (discharge directed toward surface)	90° (discharge directed toward surface)
Elevation (MLLW)	Feet	Elevation – 20.85	Elevation –21.1 ft.
Conduit Diameter	Feet	10 ft	12 ft

DILUTION MODEL DESCRIPTION

Dilution of a thermal discharge occurs during two distinct phases; near-field and far-field. Near-field dilution is determined by the characteristics of the discharge. This would include the number of ports, port size, the presence or absence of a velocity cap, flow rate, etc. It is relatively small in area and located near the discharge point. Far-field dilution is the dilution due to ambient conditions. This would include ambient velocity and turbulence, and in the case of a heated discharge, heat loss to the atmosphere. Far-field dilution can cover a large area and extend a large distance from the discharge point.

The EPA Visual Plumes model was used for the near-field analysis. Visual Plumes consists of several sub-models, of which the UM model within Plumes was used. UM provides three-dimensional simulation of single port discharges and is the most relevant model for discharges such as El Segundos'. In general, dilution in the far-field is much less than in the near field. For this analysis the only far-field mechanisms included was heat loss to the atmosphere. The size of the 'mixing zone' due to heat loss was based on analysis described in Edinger et al. (1974) and Adams, et al., (1981). The average temperature difference between the plume and the ambient water can be estimated from the equation below:

$$T_s - T_n = H_p/AK$$

Where:

T_s = average water temperature in the plume

T_n = ambient water temperature

H_p = rate of heat rejection

A = area of plume

K = surface heat exchange coefficient

The above model assumes a fully mixed heated layer of constant thickness.

PREVIOUS STUDY RESULTS

The dynamics of the El Segundo plant outfall were qualitatively assessed in the 1973 Southern California Edison Company El Segundo Generating Station Thermal Effect Study, Final Report. The water was initially heated to about 20°F (6.7°C) above ambient. The heat rejection rate was about 52 x 10^9 BTU per day. The observed effect for each outfall manifested itself as two circular areas of small-scale turbulence, 50-100 feet in diameter. The entrainment of cold water by the rising water was evident from the diameter of the surface contours and from their temperatures, estimated to be about 5°F above ambient. This area represented the near-field dilution. Therefore, the near-field mixing zone is expected to be about 50 to 100 feet in diameter with an average dilution of about 4 (twenty degrees divided by 5 degrees).

The area enclosed by surface contours 1°F above ambient are shown in Table 2 (Southern California Edison Company El Segundo Generating Station Thermal Effect Study Final Report, 1973). These areas represent the far-field dilution. The dilution factor was about 20. Currents did not play a major factor in the thermal dispersion of the plant outfall water since the surface contours were more circular rather than tongue or plume shaped.

Table 2. Area Enclosed by Surface Contours 1°F above Natural (from Southern California Edison Company El Segundo Generating Station Thermal Effect Study Final Report, 1973)

	Area in Acres		
Survey	**Ebb**		**Flood**
February 1972		16.4	32.0
		36.2	42.3
	Mean	26.3	37.1
May 1972		25.2	Not closed
		*620.0	*352.0
August		2.6	24.6
		6.3	13.6
	Mean	4.5	19.1
November 1972		79.0	34.2
		43.5	148.0
	Mean	61.2	91.1
Annual mean area (ebb and flood)			39.0
Annual median area (ebb and flood)			32.0

MODEL RESULTS

Froude Number Analysis

The densimetric Froude number provides a compact description of the discharge. Low densimetric Froude numbers discharges tend to be plume-like, mixing is driven by the temperature difference between the effluent and ambient water. High Froude numbers discharges are more jet-like and mixing is driven by the momentum of the discharge. A high Froude number discharge would generally provide more mixing than a low Froude number discharge. The densimetric Froude number is determined as:

$$\frac{V}{\sqrt{g' D}}$$ for circular discharge or

$$\frac{V}{\sqrt{g'(A)^{1/2}}}$$ for square discharge

Where:

V = velocity of discharge (Q/A)

Q = flow rate

A = area of discharge

$g' = (\Delta\rho / \rho_a)g$

$\Delta\rho = \rho_a - \rho_e$

ρ_a = density of ambient environment

ρ_e = density of effluent

g = acceleration due to gravity

D = diameter

Froude numbers were calculated for each outfall as well as the conduits leading to the discharge units. The calculated Froude numbers are given in Table 3. The Froude numbers for outfall 001 and 002 ranged between 0.43 and 0.52, signifying that the outflow is not high enough to prevent ambient water from entering into the discharging risers. To prevent ambient water intrusion into the discharge risers, the densimetric Froude number should be greater than 1. Froude numbers were also estimated for the conduits leading to the risers to check if ambient water was intruding into the conduits as well. Froude numbers for the conduits ranged from 2.45 to 3.29, indicating that ambient water does not enter the risers. Lastly, area and diameters needed to obtain a Froude number of 1 was estimated. This provides a measure of the active area of the discharge port. The remaining area is assumed to be occupied by the intruding ambient water. For outfall 001, an area of 161.5 square feet (15 square meters) or a diameter of 14.34 feet (4.37 m) was needed to be able to have a Froude number equal to 1, while the actual area equaled 314.34 square feet (29.2 square meters). An area of 286.24 square feet (26.59 square meters) was needed for Outfall 002 to obtain a Froude number equal to 1, while the actual area equaled 500 square feet (46.45 square meters) (Table 4).

Table 3. Densimetric Froude Numbers of El Segundo Discharges

Outfall	Case	Froude Number
	Discharge Units	
001	Summer	0.48
001	Winter	0.43
002	Summer	0.55
002	Winter	0.52
	Conduit	
001	Summer	2.69
001	Winter	2.45
002	Summer	3.29
002	Winter	3.00

Table 4. Calculated Area with Froude Number equal to 1

	Discharge Units		
Outfall	**Calculated Area**	**Actual Area**	**Equivalent Diameter**
001	161.5 ft^2 (15 m^2)	314.34 ft^2 (29.2 m^2)	14.34 ft (4.37 m)
002	286.24 ft^2 (26.59 m^2)	500 ft^2 (46.45 m^2)	19.1 ft (5.82 m)

Plumes Model Results

The plumes model was run using the discharge area back-calculated assuming a Froude number of 1. Modeled dilution factors are shown below in Table 6. The modeled dilution ranges from 1.54 to 1.73.

Table 6. Modeled Dilutions using Calculated Area with Froude Number equal to 1

Outfall	Case	Dilution	Plume Diameter (ft)
001	Summer	1.73	17.27
001	Winter	1.73	17.02
002	Summer	1.54	21.26
002	Winter	1.54	20.96
	Proposed Conditions		
001	Summer	1.64	20.0
001	Winter	1.64	20.61

Models output from the above analysis is included in Attachment 1.

The far-field dilution estimate is based upon the heat loss to the atmosphere of the rejected heat from the power plant. Assuming an increase in temperature of 20° F the heat rejection is about:

$$H_p = \rho c Q \Delta T$$

Where:

H_p rejected heat in watts

ρ = density of effluent

c = heat capacity of water (4186 J/kg/C)

Q = flow rate in m^3/s

ΔT = temperature increase of the discharge (20°F (6.7°C))

This results in a heat rejection rate of 2.60×10^8 watts (21×10^9 BTU/day) for outfall 001. The heat rejection rate for outfall 002 will remain unchanged. Since it contributes about two-thrids of the total flow, it will

contribute about two-thrids of the total rejected heat or 36 x 10^9 BTU/day. The total heat rejection rate will then be 57 x 10^9 BTU/day. This is about the same as the 54 x 10^9 BTU/day reported in the Thermal Effects Study. The far-field plume should be about the same size as reported in the Thermal Effects Study, between 30 and 40 acres.

REFERENCES

Adams E.E. et al. (1981). "Heat Disposal in the Water Environment." Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics, Department of Civil Engineering, Massachusetts Institute of Technology. Cambridge, Massachusetts.

Doneker R.L. et al. (1990). "Expert System For Hydrodynamic Mixing Zone Analysis of Conventional and Toxic Submerged Single Port Discharges (CORMIX 1)." Environ. Research Lab. Office of Research and Develop. US EPA. Athens, Georgia.

Edinger, J.E. et al. (1974). "Heat Exchange and Transport in the Environment." National Technical Information Service, U.S. Department of Commerce. Springfield, Virginia.

Fischer, H. B. et al. (1979). "Mixing in Inland and Coastal Waters." Academic Press. New York.

Jirka, G. H. et al. "Buoyant Surface Jets." *Journal of the Hydraulics Division.* ASCE. Vol. 107. No. HY11. Proc. Paper 16660. Nov. 1981. pp. 1467-1487.

National Pollutant Discharge Elimination System 1999 Receiving Water Monitoring Report El Segundo and Scattergood Generating Stations Los Angeles, California. Los Angeles Department of Water and Power, Southern California Edison Company and El Segundo Power L.L.C.

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

Personal Communications:

Fax received from George Persons November 17, 2000. Exhibit 1: Diagram of Unit 3&4

Fax received from George Persons November 17, 2000. Exhibit 2: Diagram of Unit 1&2

Email received from Robert Collacott November 17, 2000. Thermal Diffusion Modeling Input Data

ATTACHMENT 1
RESULTS FROM VISUAL PLUMES MODEL

EXISTING BASELINE FOR SUMMER FOR OUTFALL 001

```
/ Windows UM. 12/07/2000 5:05:55 PM
Case 1; ambient file C:\Plumes\Simple run.001.db; Diffuser table record
1: ---------------------------------
   P-dia  P-elev V-angle H-angle   Ports AcuteMZ ChrncMZ P-depth Ttl-flo
Eff-sal    Temp Polutnt
    (ft)    (ft)   (deg)   (deg)      ()     (m)     (m)    (ft)   (MGD)
(psu)     (C)   (ppm)
   14.34    7.15    90.0     0.0     1.0    10.0   100.0   20.85   207.0
33.0   40.56   100.0
Froude number:      1.055
     W Column  Amb-cur    P-dia  Polutnt   Dilutn   x-posn   y-posn
Step     (ft)    (m/s)     (ft)    (ppm)       ()     (ft)     (ft)
   0    20.85     0.01    14.34    100.0      1.0      0.0      0.0;
   1    20.12     0.01    14.48    98.04     1.02 0.000231      0.0;
   2    19.41     0.01    14.45    96.12     1.04 0.000671      0.0;
   3    18.69     0.01    14.45    94.23    1.061  0.00131      0.0;
   4    17.97     0.01    14.46    92.38    1.082  0.00215      0.0;
   5    17.26     0.01    14.49    90.57    1.103  0.00317      0.0;
   6    16.54     0.01    14.54     88.8    1.125  0.00437      0.0;
   7    15.82     0.01    14.59    87.06    1.147  0.00575      0.0;
   8    15.09     0.01    14.66    85.35     1.17   0.0073      0.0;
   9    14.37     0.01    14.73    83.68    1.193  0.00903      0.0;
  10    13.63     0.01    14.81    82.03    1.217   0.0109      0.0;
  11     12.9     0.01     14.9    80.43    1.241    0.013      0.0;
  12    12.16     0.01     15.0    78.85    1.266   0.0152      0.0;
  13    11.41     0.01     15.1     77.3    1.291   0.0176      0.0;
  14    10.66     0.01    15.21    75.79    1.317   0.0202      0.0;
  15    9.907     0.01    15.33     74.3    1.343   0.0229      0.0;
  16    9.145     0.01    15.45    72.84    1.369   0.0258      0.0;
  17    8.376     0.01    15.58    71.42    1.397   0.0288      0.0;
  18    7.602     0.01    15.71    70.02    1.424   0.0321      0.0;
  19    6.821     0.01    15.84    68.64    1.453   0.0355      0.0;
  20    6.032     0.01    15.99     67.3    1.482    0.039      0.0;
  21    5.237     0.01    16.13    65.98    1.511   0.0428      0.0;
  22    4.434     0.01    16.28    64.68    1.541   0.0467      0.0;
  23    3.624     0.01    16.44    63.42    1.572   0.0508      0.0;
  24    2.806     0.01     16.6    62.17    1.603   0.0551      0.0;
  25     1.98     0.01    16.76    60.95    1.635   0.0595      0.0;
  26    1.146     0.01    16.92    59.76    1.667   0.0642      0.0;
  27    0.303     0.01    17.09    58.59    1.701    0.069      0.0;
  28   -0.548     0.01    17.27    57.44    1.734    0.074      0.0;
surface,
```

EXISTING BASELINE FOR WINTER FOR OUTFALL 001

/ Windows UM. 12/07/2000 5:17:05 PM
Case 1; ambient file C:\Plumes\Simple run.001.db; Diffuser table record 1: ----------

P-dia (ft)	P-elev (ft)	V-angle (deg)	H-angle (deg)	Ports ()	AcuteMZ (m)	ChrncMZ (m)	P-depth (ft)	Ttl-flo (MGD)	Eff-sal (psu)	Temp (C)	Polutnt (ppm)
14.34	7.15	90.0	0.0	1.0	10.0	100.0	20.85	207.0	33.0	40.56	100.0

Froude number: 1.001

Step	Amb-cur (m/s)	P-dia (ft)	Polutnt (ppm)	Dilutn ()	x-posn (ft)	y-posn (ft)	
0	0.01	14.34	100.0	1.0	0.0	0.0;	
1	0.01	14.48	98.04	1.02	0.000231	0.0;	
2	0.01	14.42	96.12	1.04	0.000667	0.0;	
3	0.01	14.39	94.23	1.061	0.0013	0.0;	
4	0.01	14.38	92.38	1.082	0.00212	0.0;	
5	0.01	14.39	90.57	1.103	0.00312	0.0;	
6	0.01	14.42	88.8	1.125	0.00429	0.0;	
7	0.01	14.46	87.06	1.147	0.00563	0.0;	
8	0.01	14.51	85.35	1.17	0.00714	0.0;	
9	0.01	14.58	83.68	1.193	0.0088	0.0;	
10	0.01	14.65	82.03	1.217	0.0106	0.0;	
11	0.01	14.73	80.43	1.241	0.0126	0.0;	
12	0.01	14.82	78.85	1.265	0.0148	0.0;	
13	0.01	14.92	77.3	1.29	0.0171	0.0;	
14	0.01	15.02	75.79	1.316	0.0195	0.0;	
15	0.01	15.13	74.3	1.342	0.0222	0.0;	
16	0.01	15.25	72.84	1.369	0.0249	0.0;	
17	0.01	15.37	71.42	1.396	0.0279	0.0;	
18	0.01	15.5	70.02	1.424	0.031	0.0;	
19	0.01	15.63	68.64	1.452	0.0342	0.0;	
20	0.01	15.77	67.3	1.481	0.0377	0.0;	
21	0.01	15.91	65.98	1.51	0.0412	0.0;	
22	0.01	16.05	64.68	1.54	0.045	0.0;	
23	0.01	16.2	63.42	1.571	0.0489	0.0;	
24	0.01	16.36	62.17	1.602	0.053	0.0;	
25	0.01	16.52	60.95	1.634	0.0573	0.0;	
26	0.01	16.68	59.76	1.667	0.0617	0.0;	
27	0.01	16.85	58.59	1.7	0.0664	0.0;	
28	0.01	17.02	57.44	1.733	0.0712	0.0;	surface,

EXISTING BASELINE FOR SUMMER FOR OUTFALL 002

/ Windows UM.

Case 2; ambient file C:\Plumes\Simple run.001.db; Diffuser table record 2: ----------

P-dia (ft)	P-elev (ft)	V-angle (deg)	H-angle (deg)	Ports ()	AcuteMZ (m)	ChrncMZ (m)	P-depth (ft)	Ttl-flo (MGD)	Eff-sal (psu)	Temp (C)	Polutnt (ppm)
19.1	10.0	90.0	0.0	1.0	10.0	100.0	21.1	398.0	33.0	40.56	100.0

Froude number: 0.991

Step	W Column (ft)	Amb-cur (m/s)	P-dia (ft)	Polutnt (ppm)	Dilutn ()	x-posn (ft)	y-posn (ft)	
0	21.1	0.01	19.1	100.0	1.0	0.0	0.0	;
1	20.12	0.01	19.29	98.04	1.02	0.000284	0.0	;
2	19.17	0.01	19.2	96.12	1.04	0.000819	0.0	;
3	18.22	0.01	19.15	94.23	1.061	0.00159	0.0	;
4	17.27	0.01	19.13	92.38	1.082	0.0026	0.0	;
5	16.33	0.01	19.14	90.57	1.103	0.00382	0.0	;
6	15.38	0.01	19.17	88.8	1.125	0.00525	0.0	;
7	14.43	0.01	19.22	87.06	1.147	0.00689	0.0	;
8	13.47	0.01	19.28	85.35	1.17	0.00872	0.0	;
9	12.52	0.01	19.36	83.68	1.193	0.0108	0.0	;
10	11.55	0.01	19.45	82.03	1.217	0.013	0.0	;
11	10.59	0.01	19.56	80.43	1.241	0.0154	0.0	;
12	9.617	0.01	19.67	78.85	1.266	0.018	0.0	;
13	8.64	0.01	19.79	77.3	1.291	0.0208	0.0	;
14	7.657	0.01	19.93	75.79	1.317	0.0238	0.0	;
15	6.666	0.01	20.07	74.3	1.343	0.027	0.0	;
16	5.669	0.01	20.22	72.84	1.369	0.0303	0.0	;
17	4.663	0.01	20.38	71.42	1.397	0.0339	0.0	;
18	3.65	0.01	20.54	70.02	1.424	0.0377	0.0	;
19	2.629	0.01	20.71	68.64	1.453	0.0416	0.0	;
20	1.599	0.01	20.89	67.3	1.482	0.0458	0.0	;
21	0.559	0.01	21.07	65.98	1.511	0.0501	0.0	;
22	-0.489	0.01	21.26	64.68	1.541	0.0546	0.0	; surface,

EXISTING BASELINE FOR WINTER FOR OUTFALL 002

/ Windows UM.
Case 2; ambient file C:\Plumes\Simple run.001.db; Diffuser table record 2: ----------

P-dia (ft)	P-elev (ft)	V-angle (deg)	H-angle (deg)	Ports ()	AcuteMZ (m)	ChrncMZ (m)	P-depth (ft)	Ttl-flo (MGD)	Eff-sal (psu)	Temp (C)	Polutnt (ppm)
19.1	10.0	90.0	0.0	1.0	10.0	100.0	21.1	398.0	33.0	40.56	100.0

```
Froude number:        0.94
      Amb-cur    P-dia  Polutnt   Dilutn   x-posn   y-posn
Step    (m/s)     (ft)    (ppm)       ()     (ft)     (ft)
   0     0.01     19.1    100.0      1.0      0.0      0.0;
   1     0.01    19.29    98.04     1.02 0.000283      0.0;
   2     0.01    19.15    96.12     1.04 0.000813      0.0;
   3     0.01    19.06    94.23    1.061  0.00158      0.0;
   4     0.01    19.01    92.38    1.082  0.00256      0.0;
   5     0.01     19.0    90.57    1.103  0.00375      0.0;
   6     0.01    19.01     88.8    1.125  0.00514      0.0;
   7     0.01    19.04    87.06    1.147  0.00673      0.0;
   8     0.01    19.08    85.35     1.17  0.00851      0.0;
   9     0.01    19.15    83.68    1.193   0.0105      0.0;
  10     0.01    19.23    82.03    1.217   0.0126      0.0;
  11     0.01    19.32    80.43    1.241    0.015      0.0;
  12     0.01    19.43    78.85    1.265   0.0175      0.0;
  13     0.01    19.54     77.3     1.29   0.0202      0.0;
  14     0.01    19.67    75.79    1.316    0.023      0.0;
  15     0.01     19.8     74.3    1.342   0.0261      0.0;
  16     0.01    19.94    72.84    1.369   0.0293      0.0;
  17     0.01    20.09    71.42    1.396   0.0327      0.0;
  18     0.01    20.25    70.02    1.424   0.0363      0.0;
  19     0.01    20.42    68.64    1.452   0.0401      0.0;
  20     0.01    20.59     67.3    1.481   0.0441      0.0;
  21     0.01    20.77    65.98     1.51   0.0482      0.0;
  22     0.01    20.96    64.68     1.54   0.0526      0.0; surface,
```

PROPOSED FOR SUMMER FOR OUTFALL 001

```
/ Windows UM. 12/08/2000 3:28:16 PM
Case 1; ambient file C:\Plumes\Simple run.001.db; Diffuser table record
1: ---------------------------------
   P-dia  P-elev V-angle H-angle   Ports AcuteMZ ChrncMZ P-depth Ttl-flo
Eff-sal    Temp Polutnt
    (ft)    (ft)   (deg)   (deg)      ()     (m)     (m)    (ft)   (MGD)
(psu)     (C)   (ppm)
   14.34    7.15    90.0     0.0     1.0    10.0   100.0   20.85   207.0
33.0    24.7   100.0
Froude number:       2.058
      Amb-cur    P-dia  Polutnt   Dilutn  CL-diln   x-posn   y-posn
Step    (m/s)     (ft)    (ppm)       ()       ()     (ft)     (ft)
   0     0.01    14.34    100.0      1.0      1.0      0.0      0.0;
   1     0.01    14.48    98.04     1.02      1.0 0.000232      0.0;
   2     0.01    14.69    96.12     1.04      1.0 0.000704      0.0;
   3     0.01    14.89    94.23    1.061      1.0  0.00142      0.0;
   4     0.01     15.1    92.38    1.082      1.0  0.00239      0.0;
   5     0.01    15.31    90.57    1.104      1.0  0.00361      0.0;
```

```
   6       0.01     15.52      88.8     1.126       1.0   0.00509       0.0;
   7       0.01     15.73     87.06     1.148       1.0   0.00685       0.0;
   8       0.01     15.95     85.35     1.171       1.0   0.00887       0.0;
   9       0.01     16.17     83.68     1.195       1.0    0.0112       0.0;
  10       0.01     16.39     82.03     1.219       1.0    0.0138       0.0;
  11       0.01     16.61     80.43     1.243       1.0    0.0166       0.0;
  12       0.01     16.84     78.85     1.268       1.0    0.0198       0.0;
  13       0.01     17.07      77.3     1.293       1.0    0.0233       0.0;
  14       0.01      17.3     75.79     1.319       1.0    0.0271       0.0;
  15       0.01     17.53      74.3     1.345       1.0    0.0312       0.0;
  16       0.01     17.76     72.84     1.372       1.0    0.0356       0.0;
  17       0.01      18.0     71.42     1.399       1.0    0.0404       0.0;
  18       0.01     18.24     70.02     1.427       1.0    0.0455       0.0;
  19       0.01     18.49     68.64     1.456       1.0    0.0509       0.0;
  20       0.01     18.73      67.3     1.485       1.0    0.0567       0.0;
  21       0.01     18.98     65.98     1.515       1.0    0.0628       0.0;
  22       0.01     19.23     64.68     1.545       1.0    0.0693       0.0;
  23       0.01     19.48     63.42     1.576       1.0    0.0762       0.0;
  24       0.01     19.74     62.17     1.607       1.0    0.0834       0.0;
  25       0.01      20.0     60.95     1.639       1.0     0.091       0.0;
surface,
```

PROPOSED FOR WINTER FOR OUTFALL 001

```
/ Windows UM. 12/08/2000 3:25:17 PM
Case 1; ambient file C:\Plumes\Simple run.001.db; Diffuser table record
1: ---------------------------------
   P-dia  P-elev V-angle H-angle   Ports AcuteMZ ChrncMZ P-depth Ttl-flo
Eff-sal    Temp Polutnt
    (ft)     (ft)    (deg)    (deg)       ()      (m)      (m)     (ft)    (MGD)
(psu)      (C)    (ppm)
   14.34     7.15     90.0      0.0      1.0     10.0    100.0    20.85    207.0
33.0     19.7   100.0
Froude number:      2.389
      Amb-cur    P-dia  Polutnt   Dilutn  CL-diln   x-posn   y-posn
Step    (m/s)     (ft)    (ppm)       ()       ()     (ft)     (ft)
   0      0.01    14.34    100.0      1.0      1.0      0.0      0.0;
   1      0.01    14.48    98.04     1.02      1.0 0.000232      0.0;
   2      0.01    14.71    96.12     1.04      1.0 0.000707      0.0;
   3      0.01    14.94    94.23    1.061      1.0  0.00143      0.0;
   4      0.01    15.17    92.38    1.082      1.0  0.00241      0.0;
   5      0.01     15.4    90.57    1.104      1.0  0.00366      0.0;
   6      0.01    15.63     88.8    1.126      1.0  0.00518      0.0;
   7      0.01    15.87    87.06    1.148      1.0  0.00698      0.0;
   8      0.01    16.11    85.35    1.171      1.0  0.00907      0.0;
   9      0.01    16.35    83.68    1.195      1.0   0.0115      0.0;
  10      0.01     16.6    82.03    1.219      1.0   0.0142      0.0;
  11      0.01    16.85    80.43    1.243      1.0   0.0172      0.0;
```

12	0.01	17.1	78.85	1.268	1.0	0.0205	0.0;
13	0.01	17.35	77.3	1.293	1.0	0.0242	0.0;
14	0.01	17.61	75.79	1.319	1.0	0.0282	0.0;
15	0.01	17.87	74.3	1.345	1.0	0.0325	0.0;
16	0.01	18.13	72.84	1.372	1.0	0.0372	0.0;
17	0.01	18.39	71.42	1.4	1.0	0.0423	0.0;
18	0.01	18.66	70.02	1.428	1.0	0.0478	0.0;
19	0.01	18.93	68.64	1.456	1.0	0.0536	0.0;
20	0.01	19.2	67.3	1.485	1.0	0.0598	0.0;
21	0.01	19.48	65.98	1.515	1.0	0.0665	0.0;
22	0.01	19.76	64.68	1.545	1.0	0.0735	0.0;
23	0.01	20.04	63.42	1.576	1.0	0.081	0.0;
24	0.01	20.32	62.17	1.607	1.0	0.0889	0.0;
25	0.01	20.61	60.95	1.64	1.0	0.0972	0.0; surface,

EXISTING WINTER CONDITIONS FOR OUTFALL 001 AT 0°

APPENDIX H
WATER RESOURCES

ATTACHMENT H-15
Final Decision, Regional Administrator, Region 9
Pursuant to Section 301(g) of the Clean Water Act

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Re:

Southern California Edison Company EL Segundo Generating Station El Segundo, CA Application for Section 301(g) Variance from Best Available Technology Economically Achievable (BAT) Requirements of the Clean Water Act	)	FINAL DECISION, REGIONAL ADMINISTRATOR, REGION 9, PURSUANT TO SECTION 301(g) OF THE CLEAN WATER ACT

Based on the attached final evaluation, I am approving the Southern California Edison Company's (SCE) request for a variance from the Clean Water Act's Best Available Technology Economically Achievable (BAT) requirement for total residual chlorine for its El Segundo Generating Station. This decision is contingent upon SCE's compliance with the terms and conditions set forth in the attached document.

I issued a tentative decision to grant this variance request on April 23, 1995. A public notice addressing this decision was published in the Los Angeles Times on May 8, 1995. This final decision takes into consideration the two comment letters received during the 30-day public comment period.

This decision is based on evidence specific to the El Segundo Generating Station and is not intended to assess the need for BAT by other industrial facilities discharging to the aquatic environment. This decision is also subject to revision on the basis of subsequently acquired information relating to the impacts of the modified effluent limitations on the aquatic environment and human health.

Any person may contest this decision by submitting a timely request for a hearing in accordance with 40 CFR 124.74 or 124.114.

23 May 1996
DATE

for FELICIA MARCUS
REGIONAL ADMINISTRATOR

APPENDIX H
WATER RESOURCES

ATTACHMENT H-16
Final Analysis of 301(g) Variance Application for the Southern California Edison Company El Segundo Generating Station

FINAL ANALYSIS OF 301(g) VARIANCE APPLICATION

FOR

THE SOUTHERN CALIFORNIA EDISON COMPANY

EL SEGUNDO GENERATING STATION

Prepared by
Water Management Division
EPA Region 9
May 1996

SUMMARY OF THE 301(g) VARIANCE REQUEST FOR SOUTHERN CALIFORNIA EDISON COMPANY EL SEGUNDO GENERATING STATION EL SEGUNDO, CALIFORNIA

Will Southern California Edison Company's *Alternate* Proposed Modified Effluent Limitations[1] for Total Residual Chlorine:

1.	Meet the Best Practicable Technology (BPT)?	yes
2.	Meet the State Water Quality Standards?	yes
3.	Require additional treatment for any other point or non-point source?	no
4.	Protect downstream water supplies?	yes
5.	Allow recreational activities?	yes
6.	Assure protection and propagation of a balanced population of shellfish, fish and wildlife?	yes

Pose an unacceptable risk due to:

a.	bioaccumulation?	no
b.	persistence?	no
c.	acute toxicity?	no
d.	chronic toxicity?	no
e.	carcinogenicity?	no
f.	mutagenicity?	no
g.	teratogenicity?	no
h.	synergism?	no

---

[1]Southern California Edison's (SCE's) original variance application requested Proposed Modified Effluent Limits (PMELs) of 0.574 mg/l for Outfall 001 and 0.820 mg/l for Outfall 002. The National Pollutant Discharge Elimination System (NPDES) permit for the El Segundo Generating Station currently allows the facility to discharge at these *original* PMELs. This variance evaluation, however, is based on a review of a more stringent *alternate* PMEL of 0.4 mg/l for both outfalls. EPA's determination is based on this *alternate* PMEL because the chronic and acute toxicity data for the El Segundo facility are more representative of the *alternate* PMEL than of the *original* PMELs (i.e, the chlorine concentrations in the toxicity samples were less than the *original* PMELs).

TABLE OF CONTENTS

INTRODUCTION

The Southern California Edison Company (SCE) has requested a variance under Section 301(g) of the Clean Water Act (the Act) as amended, 33 USC Section 1311(g), from Best Available Technology Economically Achievable (BAT) effluent limitations for Total Residual Chlorine (TRC), required by Section 301(b)(2)(A), for its El Segundo Generating Station (ESGS) at 301 Vista Del Mar in El Segundo, CA. The National Pollutant Discharge Elimination System (NPDES) permit currently in effect for the ESGS allows the facility to discharge TRC from Outfalls 001 and 002 at the Proposed Modified Effluent Limitations (PMELs) originally requested by SCE, pending EPA's decision on this variance request. SCE's original PMELs are greater than the BAT limit of 0.2 mg/l. The NPDES permit (No. CA0001147) was reissued by the Los Angeles Regional Water Quality Control Board (RWQCB) on December 5, 1994; it's scheduled to expire on November 10, 1999. The previous NPDES permit, which was issued in February 1990, also included the PMELs originally requested by SCE.

In evaluating this variance request, EPA considered an alternate modified effluent limit (referred to in this report as the "alternate PMEL") of 0.4 mg/l, in addition to SCE's original PMELs of 0.574 and 0.820 mg/l. EPA's tentative decision is based on the alternate PMEL.

EPA has evaluated the applicant's variance request and other related information to determine whether the applicant's *alternate* PMEL (which is more stringent that SCE's *original* PMELs) satisfies the variance criteria. The variance request contains effluent and receiving water data and other empirical evidence. In addition, EPA reviewed more recent effluent acute and chronic toxicity data. In developing this decision, EPA referred to the draft technical guidance manuals for 301(g) variances, as well as the criteria set forth in Section 301(g) of the Act.

This document presents EPA's findings, conclusions, and recommendations regarding the SCE variance application for the ESGS. EPA has concluded that the *alternate* PMEL for the ESGS will comply with all the requirements of Section 301(g). EPA is therefore granting a Section 301(g) variance based on the *alternate* PMEL of 0.4 mg/l for TRC for Outfalls 001 and 002. The *alternate* PMEL is more stringent than ESCE's *original* PMELs, but less stringent than the BAT limit. (Because the *alternate* PMEL is more stringent or conservative than the *original* PMELs, all of the SWRCB's findings regarding the *original* PMELs also apply to the *alternate* PMEL.) The *alternate* PMEL was derived from the toxicity data for January 1991 through June 1994.

Throughout the remainder of this report, the terms "PMEL" and

well as to several other facilities, by SWRCB Resolution 88-80. SWRCB Resolution 88-80 was approved based on evidence submitted by the dischargers, including the results of toxicity tests on 3 species of indigenous marine organisms. The SWRCB concluded that the evidence showed that the dischargers' proposed modified TRC effluent limitations (i.e., PMELs) would be adequate to protect beneficial uses, would have a minimal impact on receiving waters, and should result in meeting the numeric receiving water quality objectives for chlorine. (It therefore follows that the *alternate* PMEL would also be adequate to protect beneficial uses, etc., since it is more stringent that SCE's *original* PMELs.) The SWRCB also concluded that the effluent limitation equation contained in the Ocean Plan did not consider the reduction of chlorine to a nontoxic state during initial dilution. EPA concurred with this exception on February 15, 1989.

When the SWRCB adopted Resolution 88-80 and granted the exception to the ESGS, the 1983 Ocean Plan was in effect. The Ocean Plan was subsequently amended in September 1988 and March 1990. The 1988 Ocean Plan contained the same equations as the 1983 Plan. The 1990 Ocean Plan, on the other hand, revised the equation for calculating the water quality objectives applicable to intermittent discharges of chlorine, making the objectives more stringent. However, SWRCB Resolution 88-80 is a "permanent" exception, and it therefore remains in effect despite the revisions to the Ocean Plan. As described above, Resolution 88-80 was approved based on biotoxicity data which indicated that the PMELs would have a minimal impact on receiving waters and would protect beneficial uses.

Note that the PMELs are expressed in terms of a maximum concentration, which also serves as the basis for BAT. In accordance with BAT and the effluent guidelines for the Steam Electric Power Generating category, chlorine discharges are limited to a total of two hours per day per generating unit. The Ocean Plan also stipulates that use of the water quality objective equation for "intermittent discharges" of chlorine applies to intermittent discharges not exceeding two hours. The exception to the Ocean Plan granted to the ESGS by the SWRCB is based upon SCE's *original* PMELs of 0.574 mg/l and 0.820 mg/l for Outfalls 001 and 002 and an uninterrupted chlorination duration of 30 minutes per discharge event. (In this case, discharge "event" means the uninterrupted chlorination of one condenser-half). This variance decision only addresses the conditions specific to SCE's El Segundo Generating Station.

DECISION CRITERIA

Section 301(g) of the Act provides for modification of otherwise applicable BAT limitations for nonconventional pollutants if certain substantive criteria are met. Filing

deadlines for Section 301(g) requests are specified in Section 301(j)(1)(B) of the Act and Code of Federal Regulations (40 CFR) 122.21(1)(2) and require submission of Section 301(g) variance requests within 270 days of the date of promulgation of the appropriate effluent limitation guideline. In this case, effluent limitation guidelines for the Steam Electric Category (40 CFR Part 423) were promulgated on November 19, 1982. SCE's initial request (August 11, 1983) was made within 270 days of the promulgation of these guidelines and is considered a timely request.[2]

On February 4, 1987, the Water Quality Act of 1987, P.L. 100-4 (WQA) was enacted. Section 302 of the WQA amended various provisions of Section 301(g) of the Act, including limiting the availability of Section 301(g) variance requests to five specifically listed nonconventional pollutants: ammonia, chlorine, color, iron, and total phenols (4AAP) (when determined to be a nonconventional pollutant by the Administrator). Provisions for listing additional nonconventional pollutants were established by the WQA in Section 301(g)(4) of the Act.

The Administrator of the EPA or his designee (e.g., the Regional Administrator) shall approve ESGS's request for a variance for BAT for TRC provided SCE demonstrates that the variance will comply with the following criteria listed in Section 301(g), as amended:

- TRC is a nonconventional pollutant. Section 301(g)(1).
- The State of California concurs with the variance. Section 301(g)(1).
- The PMEL will result in compliance with the State's Water Quality Standard (WQS) for TRC. Section 301(g)(2)(A).
- The PMEL will not result in any additional treatment requirements on any other point or nonpoint sources. Section 301(g)(2)(B).
- The PMEL will not interfere with the attainment and maintenance of water quality necessary to:

  -Protect public water supplies (ESGS uses ocean water as a source for cooling water and discharges the effluent back into the ocean);

  -Allow recreational activities in and on the water;

  -Assure protection and propagation of a balanced population

---

[2]Reference 3

of shellfish, fish, and wildlife. Section 301(g)(2)(C).

- The PMEL will not:

  -Result in the discharge of pollutants which may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment; acute and chronic toxicity (including carcinogenicity, mutagenicity, or teratogenicity), or synergistic propensities. Section 301(g)(2)(C).

SUMMARY OF FINDINGS

Based upon a review of the data, references, and additional sampling conducted by the applicant, EPA makes the following findings with regard to the alternate PMEL's compliance with the statutory criteria:

- TRC is a nonconventional pollutant.

- The State of California has concurred with the variance. This is documented in SWRCB Resolution 88-80, and the NPDES permit issued by the Los Angeles RWQCB.

- The original PMELs, and therefore the more stringent alternate PMEL, will result in compliance with the Ocean Plan WQS for TRC. This conclusion by the SWRCB is documented in SWRCB Resolution 88-80. EPA concurred with SWRCB Resolution 88-80 on February 15, 1989.

- The PMEL will not result in any additional treatment requirements on any other point or nonpoint sources.

- The PMEL should not interfere with the attainment and maintenance of water quality necessary to:

  -Protect public water supplies;

  -Allow recreational activities in and on the water;

  -Assure protection and propagation of a balanced population of shellfish, fish and wildlife.

- The PMEL should not:

  -Result in the discharge of pollutants which may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation; persistency in the environment; acute of chronic toxicity (including carcinogenicity, mutagenicity, teratogenicity);

or synergistic propensities.

DESCRIPTION OF THE FACILITY

The ESGS is located in El Segundo, CA. It discharges once-through cooling water, metal cleaning wastes, treated sanitary wastes, storm water runoff and low volume wastes into the Pacific Ocean (Santa Monica Bay) under NPDES permit No. CA0001147. To cool generating units 1 and 2, ocean water is supplied at a rate of about 144,000 gallons per minute (gpm). The intake water is brought through a concrete conduit which extends approximately 2,600 feet offshore to a depth of 20 feet Mean Lower Low Water (MLLW). A screening structure removes trash, algae, and marine organisms which enter the intake structure with the seawater. After passing through the screens, the seawater is pumped to the two steam condensers. The water temperature is increased 23° F when the units are operated at full capacity. The heated water is discharged through a 10-ft. diameter conduit which terminates approximately 1,900 ft. offshore at a depth of about 20 ft. MLLW.

Units 3 and 4 have a similar cooling water system. The intake conduit extends 2,600 ft. offshore at a depth of 20 ft. MLLW; it supplies water at about 295,000 gpm. The effluent is discharged to the ocean through Outfall 002 which extends about 2,100 feet offshore at a depth of about 20 ft MLLW. The temperature increase across the condensers is about 22° F.[3]

Effluent discharged through Outfall 001 (207 MGD) consists primarily of once-through cooling water from steam electric generating units 1 and 2. The effluent also includes 0.028 MGD of low volume wastes (primarily condenser sump wastes at 0.015 MGD, boiler blowdown at 0.013 MGD, and rainfall runoff); and 0.001 MGD of treated sanitary wastes from Wastewater Treatment Plant #1. Floor drain wastes and storm water runoff are passed through an oil/water separator before being discharged to a retention basin and then to the ocean.

Wastes discharged through Outfall 002 (398.6 MGD) consist primarily of once-through cooling water from steam electric generating units 3 and 4. The effluent also includes 1.603 MGD of low volume wastes; and 0.001 MGD of treated sanitary wastes from Wastewater Treatment Plant #2. The low volume wastes are comprised of floor drain wastes (0.07 MGD), boiler blowdown (0.013 MGD), fireside and air preheater wastes (0.6 MGD), units 1

---

[3] National Pollutant Discharge Elimination System 1993 Receiving Water Monitoring Report, El Segundo and Scattergood Generating Stations, Los Angeles County, CA, 1993 Survey; Prepared by MBC Applied Environmental Sciences.

- 4 metal chemical cleaning wastes (0.12 MGD), fuel pipeline hydrostatic testing water (0.8 MGD), and storm water runoff. Chemical metal cleaning wastes are routed to a chemical cleaning waste retention basin where they are treated by lime precipitation. Rainfall runoff and floor drain wastes are passed through oil/water separators. Except for rainfall runoff and the treated sanitary wastes, the pretreated metal cleaning wastes and other wastes are stored in a retention basin prior to discharge to the ocean. Sanitary wastes are treated in Treatment Plants 1 and 2, which are aerated activated sludge secondary treatment package plants.[4]

The condenser tubes are arranged in two banks per generating unit. Each bank is called a condenser half. According to the ESGS's NPDES permit and subsequent information provided by SCE by letter dated September 26, 1994, each condenser half is chlorinated for 30 minutes per chlorination cycle, and there is a maximum of one chlorination cycle per 24-hour period. This results in a maximum total chlorination time of 1 hour per day for each generating unit, or 2 hours per day per outfall. With four generating units, the total duration of chlorination is a maximum of 240 minutes or 4 hours per day. The cooling water from the four generators is not chlorinated on a daily basis, but is chlorinated an average of 65 days per quarter. The NPDES permit No. CA0001147 states for Outfall 001:

"Total residual chlorine may not be discharged from any single generating unit for more than 30 minutes per condenser half per shift. For chlorine discharges of up to 30 minutes, the daily maximum limit is 0.574 mg/l. For chlorine discharges exceeding 30 minutes, the applicable chlorine limitation shall be that calculated using procedures outlined in Table B "Toxic Material Limitations" of the Ocean Plan."

The NPDES permit (CA0001147) contains the same stipulation for Outfall 002, except the daily maximum TRC limit is 0.820 mg/l.

It's noted that Table B applies to continuous discharges of TRC.

RECEIVING WATER

Outfalls 001 and 002 discharge to the Pacific Ocean at Santa Monica Bay (Latitude 33° 54' 30", Longitude 118° 25' 50"; and Latitude 33° 54' 27", Longitude 118° 25' 50"). SWRCB has classified the discharges from the ESGS as ocean discharges, and as such, the ESGS discharges must comply with the CA Ocean Plan.

---

[4]References 9 and 10

SCE submitted an alternative dilution model based on a flux-weighted-average dilution method. In applying this model, SCE used heat as a tracer in determining dilution since both contaminants and heat will be diluted by the same mechanisms. Water temperature around the discharge point was plotted on a map as contours. This map was then used to plot the centerline temperature decay as a function of distance from the discharge point. Where the curve (temperature decay vs. distance) significantly changes slope, initial dilution is assumed complete. Since temperature isotherms correspond to pollutant isopleths, the distance corresponding to the this breakpoint temperature defines the ZID. Initial dilution can then be calculated using the breakpoint temperature and SCE's flux-weighted-averaged dilution methodology. In the case of ESGS, SCE calculated the initial dilutions to be 13 to 1 for Outfall 001 and 19 to 1 for Outfall 002.

The SWRCB did not accept this alternative method, but did approve an exception to the Ocean Plan's effluent limitation equation. The exception granted by the SWRCB specified alternative effluent limits for TRC for the El Segundo Generating Station, but cited the RWQCB's original dilution factors of 12 and 18. A chronology of the Ocean Plan exception is provided below.

Chronology of the Ocean Plan Exception

On September 7, 1984, SCE submitted a request for exception from the effluent limitations contained in the 1983 CA Ocean Plan in accordance with provisions contained in the Plan. At a hearing on June 24, 1985, the RWQCB adopted Order No. 85-35 which amended the discharge limitation for TRC and directed this Order to be forwarded to the SWRCB for its concurrence. The RWQCB based its determination on bioassay results obtained from the generating stations; receiving water data [including data on water quality, local benthic (infauna and epifauna) populations and underlying sediments, and local fish populations] collected at three of the generating stations; and a chlorine dissipation study conducted by SCE at the San Onofre Generating Station.[6]

On May 22, 1986, the SWRCB granted the applicant a temporary exception from the TRC effluent limitation calculated by the CA Ocean Plan. This temporary exception (Resolution No. 86-42) required further toxicity testing. EPA's concurrence with the SWRCB decision to grant the temporary request was also based on the understanding that SCE would be required to undertake additional toxicity testing.

---

[6]Reference 23

During 1987, SCE and the Los Angeles Department of Water and Power (LADWP) conducted a chlorine toxicity screening study at three power plants which were determined to be representative of discharge conditions at the other generating stations: a shoreline discharger (Haynes Generating Station); an open coast discharger (Scattergood Generating Station); and a harbor discharger (Long Beach Generating Station). Bioassays were performed on the early life stages of three indigenous species: a plant (giant kelp); an invertebrate (purple sea urchin, Strongylocentrotus purpuratus); and fish.

Based on this study, on July 21, 1988, SWRCB adopted Resolution No. 88-80 which grants a permanent exception to the CA Ocean Plan for TRC. On February 15, 1989, the SWRCB received EPA concurrence with its decision to grant the permanent exception to the CA Ocean Plan.[7] Because Resolution 88-80 granted a permanent exception to the Ocean Plan effluent limitation equation and specifically set forth alternate effluent limits for TRC, these alternate limits remain in effect even though the Ocean Plan was subsequently amended in 1990.

EFFLUENT LIMITATIONS

As discussed previously, the Ocean Plan contains an equation for calculating effluent limitations necessary to meet the water quality objectives for a particular parameter. The necessary inputs for the equation include the numeric water quality objective (or the concentration to be met at the completion of initial dilution) and the minimum probable initial dilution. However, SWRCB Resolution 88-80 granted the ESGS an exception to this equation, and specifically stated that alternate TRC effluent limitations (or PMELs) of 0.574 mg/l and 0.820 mg/l (daily maximum) are applicable to the ESGS's Outfall 001 and Outfall 002, respectively. SWRCB Resolution 88-80 concluded the following:[8]

"4. The Ocean plan method for calculating effluent limitations does not consider the reduction of chlorine to a nontoxic state during initial dilution.

5. Sufficient evidence exists to show that the proposed alternate total chlorine residual effluent limitations should result in meeting the numeric chlorine receiving water quality objectives at the edge of the zone of initial dilution allowed by the Ocean Plan.

---

[7]Reference 12 and Reference 13

[8]Reference 17

the permit limit (PMEL) in 1991, 1992, 1993 or through June 1994. It is also noted that during most days a significant portion of the TRC was in the form of free available chlorine (FAC).

Outfall 002: During 1991, BAT was exceeded during 2 months (0.45 mg/l and 0.5 mg/l). The effluent was not chlorinated (or there was no discharge) during 6 months.

During 1992, BAT was exceeded during 9 months; maximum TRC concentrations for each month ranged between 0.25 mg/l and 0.53 mg/l. For all remaining months, TRC concentrations varied from 0.05 mg/l to 0.18 mg/l.

For 1993, BAT was exceeded during 4 months. The maximum TRC concentrations for these 4 months ranged from 0.26 mg/l to 0.35 mg/l. During the remaining 7 months, TRC values ranged from 0.08 mg/l to 0.2 mg/l.

During 1994, BAT was exceeded during 2 months (0.5 mg/l and 0.25 mg/l). Maximum TRC values for the remaining 3 months were 0.09, 0.18 and 0.1 mg/l.

Based on available information, the permit limit for TRC for Outfall 002 (0.82 mg/l) was not exceeded during 1991, 1992, 1993 or 1994 (through June). As discussed above for Outfall 001, a significant percentage of the TRC was in the FAC form.

It should be noted that some reduction of the chlorine concentration is expected between the effluent monitoring point and the actual discharge to the receiving waters as a result of chlorine decay within the discharge pipe. Data collected in 1977 for Outfall 002 at the ESGS indicated a significant reduction in maximum total residual oxidant concentration between the condenser outlet and the end of Outfall 002. On February 8, 1977, maximum total residual oxidant was measured at about 3.25 mg/l at the outlet and 0.18 mg/l at the outfall. On January 18, 1977, the maximum total residual oxidant was measured at 1.36 mg/l at the condenser outlet and 0.18 mg/l at the outfall. For Outfall 001, the estimated transit time between the screenwell (NPDES permit monitoring point) and the discharge point is about 11 minutes. For Outfall 002, the estimated transit time is about 13.5 minutes.[9]

APPLICATION OF STATUTORY CRITERIA

I. The State must concur on the Section 301(g) variance request:

---

[9]Reference 16, Chapter 23

The Los Angeles RWQCB and SWRCB have recommended approval of SCE's section 301(g) variance request. This is documented by SWRCB Resolution 88-80 (as well as the previous SWRCB and RWQCB resolutions), and by RWQCB's inclusion of the original PMELs in the NPDES permit for ESGS.[10]

II. The pollutants for which a variance is sought must be nonconventional:

Under the WQA of 1987, a potential variance for chlorine is authorized under Section 301(g) of the Act.

III. The Modification must at a minimum result in compliance with BPT and State Water Quality Standards:

The Ocean Plan water quality objective or standard for intermittent discharges of TRC is calculated using a formula that incorporates the duration of chlorination. Another formula in the Ocean Plan calculates the maximum effluent limit for TRC based on the water quality objective and the minimum probable dilution.

The SWRCB approved minimum probable initial dilutions of 12 for ESGS Outfall 001 and 18 for ESGS Outfall 002. On September 7, 1984, SCE submitted a request for an exception to the California Ocean Plan based on minimum probable dilutions of 13 and 19 for calculating its TRC PMELs. An increase in the minimum probable dilution would increase the resultant effluent limitation for TRC.

Based on a review of bioassay results and receiving water quality data collected from 3 SCE generation stations, and a chlorine dissipation study conducted by the applicant, the LA RWQCB approved an exception to the Ocean Plan on June 24, 1985 by Order No. 85-35, and forwarded the Order to the SWRCB for approval. Based on additional biotoxicity data, on July 21, 1988, the SWRCB granted a permanent exception to the Ocean Plan by Resolution 88-80. The permanent exception to the Ocean Plan does not explicitly approve alternate minimum probable dilutions, but does approve alternate discharge limitations for TRC. The exception states that the initial dilutions are 12 for ESGS Outfall 001 and 18 for ESGS Outfall 002, and the effluent limits are 0.547 mg/l and 0.820 mg/l for 001 and 002 respectively. This was based on the SWRCB's finding that the Ocean Plan equation for calculating effluent limitations for TRC does not take into account the reduction of chlorine to a nontoxic state during initial dilution. Resolution 88-80 also concluded that the

---

[10]Reference 10

alternative effluent limits (PMELs) should allow compliance with the numeric water quality objective at the edge of the ZID.

The 1990 Ocean Plan establishes a Water Quality Objective for the intermittent discharge of TRC of 0.0146 mg/l during an uninterrupted discharge of 30 minutes. This State Water Quality Objective, which must be met at the edge of the ZID, is intended to protect from both acute and chronic toxicity. Without the exception granted by the SWRCB, the effluent limitations calculated by the 1990 Ocean Plan would be 0.190 mg/l for Outfall 001 and 0.278 for Outfall 002. As stated above, however, these effluent limits do not take into account the reduction of chlorine to a non-toxic state. Based on the 1990 Ocean Plan and the SWRCB-approved exception to the Ocean Plan, the effluent limits for TRC and the Water Quality Objective at the edge of the ZID are summarized in TABLE 1.

TABLE 1
SUMMARY OF CURRENT EFFLUENT LIMITATIONS

Outfall	FAC	TRC			
	BPT (mg/l)	BAT (mg/l)	WQS (mg/l)	PMEL (mg/l)	W.Q. EXPECTED AT MIXING ZONE EDGE (mg/l)
001	0.5 daily max.; 0.2 average	0.2 instan-taneous max.	0.0146	0.574	0.0146
002	Same as 001	Same as 001	0.0146	0.820	0.0146

IV. The Modification Does Not Result in Additional Requirements on Other Point and Nonpoint Sources:

SCE's 301(g) application indicates that there are other point and nonpoint sources within 5 miles of the ESGS discharges. These include the Los Angeles Department of Water and Power's Scattergood Generating Station. SCE's 301(g) application states that the effluent from ESGS may commingle with the discharge from the Scattergood Generating Station. SCE's 1993 Receiving Water

Monitoring Report[11] identified 2 other discharges within less than 5 miles: the Los Angeles Hyperion Wastewater Treatment Plant and the Chevron Refinery. The Hyperion Plant is north of the Scattergood Generating Station (less than 1 mile north) and the Chevron Refinery is located between the El Segundo and Scattergood generating stations.

Chlorine dissipation studies conducted at the SCE's San Onofre Generating Station during the late 1970's indicated that chlorine dissipates rapidly in the receiving water from the point of discharge, usually within 30 - 100 meters of the outfall.[12] There are no other sources within 100 meters of ESGSs outfalls.

Receiving water monitoring conducted on July 21 and August 4, 1987 at the Scattergood Generating Station (which is the "model" facility for the ESGS[13]) indicated that there was no detectable TRC concentration in the receiving water outside the discharge bubble on either day. The highest TRC concentrations in the Scattergood discharge bubble were 0.04 mg/l and 0.01 mg/l on July 21 and August 4, respectively. The discharge bubble was estimated to be between 50 and 75 feet across; the edge of the ZID was estimated to be 50 feet beyond the discharge bubble. However, it is not known whether this receiving water data fully represents the PMEL conditions since the study reported only one effluent TRC concentration. On August 4, the effluent TRC concentration measured 14 minutes after initiation of chlorination was 0.01 mg/l. (The Discharge Monitoring Reports or DMRs for the Scattergood Generating Station reported maximum daily TRC concentrations of 0.02 mg/l on both July 21 and Aug. 4, 1987.)

As addressed previously, the SWRCB determined that the PMEL for TRC will result in compliance with the State Water Quality Standard (WQS) at the edge of the mixing zone. As a result,

---

[11] National Pollutant Discharge Elimination system, 1993 Receiving Water Monitoring Report, El Segundo and Scattergood Generating Stations, Los Angeles County, CA, 1993 Survey; Prepared by MBC Applied Environmental Sciences.

[12]Reference 5 and 16

[13]The Southern California Edison Company and the City of Los Angeles Department of Water and Power submitted variance requests for a total of 11 power generating facilities. As a result, water quality sampling was conducted at 3 "model facilities" in order to provide representative water quality data for the facilities' discharges to three types of receiving waters - open ocean, shoreline, and harbor. The City of Los Angeles' Scattergood Generating Station, an "Open Coast" facility, is the model facility for the SCE ESGS.

there should be no effect on any other point and nonpoint sources.

As also stated previously, the ESGS's current NPDES Permit No. CA0001147 contains TRC limits of 0.574 and 0.820 mg/l for Outfalls 001 and 002, respectively. The permit was issued by the LA RWQCB, which is the authority for setting wasteload allocations in the Los Angeles region. The RWQCB has not imposed any additional requirements on other dischargers in the area as a result of the inclusion of the PMELs in the ESGS's NPDES permit.

Based on the preceding information, EPA has concluded that neither the original nor alternate PMELs for chlorine should impose additional requirements on other point and nonpoint sources.

V. The Modification Will Not Interfere with the Attainment or Maintenance of Water Quality which Shall Assure Protection of Public Water Supplies:

This facility uses ocean water as its source for cooling water, and discharges the effluent back into the ocean.[15] The Pacific Ocean is not used as a public water supply, therefore, the PMELs will not interfere with the protection of public water supplies.

VI. The Modification Will Not Interfere with the Attainment of That Water Quality Which Shall Allow Recreational Activities In and On the Water:

The PMELs will result in compliance with the Ocean Plan standard for TRC which is designed to protect water-contact and non-water-contact recreation.[16] In addition, the EPA draft human health criterion developed in December 1981 of 10.0 mg/l is well above both the original PMELs of 0.574 and 0.820 mg/l, and the alternate PMEL of 0.4 mg/l (maximum). Therefore, EPA has concluded that the PMELs will not interfere with the attainment of that water quality which shall allow recreational activities in and on the water.

VII. The Modification Will Not Interfere with the Attainment or Maintenance of That Water Quality Which Shall Assure the Protection and Propagation of Shellfish, Fish, and Wildlife:

As discussed in Section III, the SWRCB and RWQCB determined that the PMELs for TRC should result in compliance with the numeric State Water Quality Objective or Standard. The Water

---

[15]Reference 10

[16]Reference 12

Quality Objective for TRC is intended to maintain water quality which results in the maintenance and propagation of fish and other aquatic life.[17]

In addition, sampling conducted in the receiving waters at the discharge of the model facility, the Scattergood Generating Station, on July 21 and August 4, 1987, detected no TRC at the edge of the ZID (see Section IV above). For both surveys, TRC was detected only within the discharge bubble at a maximum of 0.04 mg/l.[18]

As stated previously, the initial Ocean Plan exception approved by the RWQCB in 1985 (Order No. 85-35) was based on a chlorine dissipation study conducted by SCE (discussed in Section IV above), receiving water data collected at the three generating stations "most in question" (Mandalay, Alamitos, Long Beach), and NPDES-related bioassay results. The receiving water data included data on water quality, local benthic (infauna and epifauna) populations and underlying sediments, and local fish populations, collected as part of a Thermal Effects Study conducted in 1971-72. Subsequent receiving water data was also collected in 1978 and 1980 in accordance with NPDES permit requirements. The RWQCB concluded that there were no significant changes in sediment conditions between the 1971-72 data and the 1978/1980 data, and that although there were slight changes in biology, there were no changes which could not be attributed to natural variations. The results of three-spine stickleback bioassay studies at the same three generating stations "indicated that the LC50 of the effluent in all cases is beyond 100 percent effluent. Typically, 80-100% of fish tested survive in 100% (undiluted) SCE chlorinated effluents." Based on this information, the RWQCB concluded that "it is evident that granting of the exception request to allow alternative limitations for chlorine will not compromise protection of the receiving waters for beneficial uses."[19] The RWQCB's conclusion was eventually confirmed by the SWRCB in Resolution 88-80, which was based on subsequent bioassay results.

In addition to the above, EPA also reviewed the ESGS's acute and chronic toxicity test results for the years 1991, 1992, 1993, and 1994 (through June). These results are reported in the applicant's Discharger Monitoring Reports (DMRs). EPA's findings are discussed below.

Acute Toxicity Results: As set forth in the Feb. 1990 NPDES

---

[17]Reference 12 and Reference 17

[18]Reference 14

[19]Reference 23

Outfall 002: For 1991, there were 4 test results for Outfall 002. Two of the results were reported as 5.56 TUc, which is well within the permit limit of 19 TUc. The other 2 results did not exceed the permit limit, but the reported values were relatively high (17.9 TUc). Corresponding TRC data was not available.

In 1992, ten values were reported for Outfall 002. The August results were based on composited samples from both outfalls. All TUc values were reported as 5.56 TUc. The maximum reported field TRC concentration was 0.3 mg/l (April), although TRC data for most months was not available.

In 1993, 24 results were reported for Outfall 002. All values were 5.6 TUc except for 2 values of 17.9 TUc for germ tube length (January and February). The reported TRC concentration of the January sample (at time sample collected) was <0.1 mg/l. TRC data for February was not available. For the remaining 10 months, the highest TRC concentration reported was 0.2 mg/l (for 2 months); the remaining TRC values were reported as 0.1 mg/l or less.

During 1994 (through September), all samples were collected from Outfall 002 except the September 1994 sample. All 1994 TUc results for Outfall 002 were reported as 5.6 TUc for both germination and germination tube length, with the exception of March 1994. March's results were 5.6 TUc for germination and 10 TUc for germination tube length. In March, the TRC concentration at the time of sample collection was 0.2 mg/l. The highest TRC concentration was 0.3 mg/l in April (corresponding TUc values were 5.6 TUc). All other TRC concentrations were less than 0.2 mg/l.

Issues Potentially Impacting the Toxicity Results: A review of the toxicity data from 1991 through 1994 indicates that the toxicity results may not be fully representative of either the original PMELs or the actual discharge concentrations. The TRC concentrations measured in the field for the toxicity samples (both acute and chronic) were always well below the original PMEL concentrations, were usually below the maximum TRC value for that month, and were often even below the BAT limit. In addition, toxicity samples were held for up to 24 hours prior to conducting the toxicity tests, resulting in potentially lower TRC concentrations. (The acute toxicity data confirms that the TRC concentrations measured in the laboratory are lower than the original concentrations measured in the field.)

The highest TRC concentration measured in a chronic toxicity sample was 0.38 mg/l in August 1991 (Outfall 001). The TUc values for this month were 3.13 TUc for both germination and germ tube length, which comply with the permit limit. The next highest TRC concentration measured in the chronic toxicity samples was 0.3 mg/l in April 1992 (Outfall 002), April 1994

(Outfall 002) and September 1994 (Outfall 001). The TUc values reported for all three months were 5.6 TUc (germination and germ tube length). The remaining TRC concentrations were reported as 0.2 mg/l (3 months), less than 0.2 mg/l (4 months), or 0.1 mg/l or less (20 months).

In regard to the acute toxicity samples, the TRC values measured in the field at the time of sample collection were always less than the BAT limit of 0.2 mg/l, and were usually less than or equal to 0.1 mg/l, with one exception of 0.21 mg/l (Outfall 002 in February 1993). The February 1993 TUa value reported for Outfall 002 was 0 TUa.

However, the maximum TRC values measured during each month as part of the regular NPDES compliance monitoring for Outfalls 001 and 002 exceeded the BAT limit much more frequently than indicated by the toxicity data. Considering both Outfall 001 and 002, the maximum monthly TRC values exceeded 0.3 mg/l during at least 20 months between January 1991 and June 1994, and exceeded 0.4 mg/l during at least 8 months. The highest TRC value reported for Outfall 002 was 0.53 mg/l. For Outfall 001, the highest TRC value reported was 0.43 mg/l.

Conclusion: There were very few violations of the chronic and acute toxicity limits during the years 1991 through September 1994. There was only 1 violation of the chronic limits during this time, and there were no violations after July 1991. The acute limits were only exceeded twice; both incidents occurred in 1992. All the chronic and acute violations were for Outfall 001. Although there were no violations for Outfall 002, the TUc values for 3 months approached the limit of 19 TUc.

Based on the above, EPA concluded that the toxicity data does not provide conclusive evidence that TRC discharged at the *original* PMEL concentrations will, or will not, cause toxicity. Therefore, approval of this variance is based on a more stringent *alternate* PMEL of 0.4 mg/l, which is better supported by the toxicity data. In addition, approval of this variance will also be contingent upon subsequent whole effluent toxicity monitoring by ESGS that is more representative of the maximum TRC concentrations being discharged. The terms of approval would also include a "re-opener" clause, which will allow EPA to re-assess and revise this variance decision if subsequent monitoring at actual maximum TRC effluent concentrations indicates toxicity.

VIII. The Modification Will Not Result in the Discharge of Pollutants in Quantities That May Reasonably Be Anticipated to Pose an Unacceptable Risk to Human Health or the Environment:

The SWRCB determined (and EPA concurred) that the *original* PMELs for TRC will result in compliance with Federally-approved State Water Quality Standards (WQSs) at the edge of the mixing

zone. It therefore follows that the *original* PMELs, as well as the more conservative *alternate* PMEL, should not pose an unacceptable risk to the environment or human health. As stated earlier, the Ocean Plan sets forth WQSs for ocean waters to ensure the reasonable protection of beneficial uses and the prevention of nuisance. The Ocean Plan contains WQSs which were developed to maintain the following beneficial uses: industrial water supply; water-contact and non-water-contact recreation, including aesthetic enjoyment; navigation; ocean commercial and sport fishing; mariculture; preservation and enhancement of Areas of Special Biological Significance; preservation of rare and endangered species; marine habitat; fish migration; fish spawning; and shellfish harvesting. Additional information regarding human health and environmental impacts of chlorine follows.

1. Persistency: Chlorine is highly soluble and reactive in water. Because of its high reactivity, chlorine is not persistent and does not bioaccumulate.[20] Free available chlorine (FAC) readily oxidizes inorganic and organic compounds. FAC will quickly oxidize bromide ion naturally present in ocean waters to form bromine, hypobromous acid (HOBr) and hypobromous ion (OBr). Because saltwater contains bromide and ammonia, the presence of chlorine can produce chloramines and bromamines. Mono- and dichloramine and the mono- and dibromamine byproducts of the reaction of chlorine with ammonia may be sufficiently persistent to represent a potentially significant threat to sensitive life stages of sensitive marine aquatic life under certain site-specific conditions. However, data from the applicant's March 1994 NPDES permit renewal application (Form 2c) indicated that the ammonia concentrations in both the intake water and the effluent were below the detection limit of 0.05 mg/l.

Chlorine will also rapidly react with inorganics present in the metal cleaning and low volume waste and more slowly react with organics to form chlorinated compounds through substitution and oxidation. The possible compounds formed range from metallic oxides to chlorinated organics, including halogenated aliphatic hydrocarbons or trihalomethanes (THMs). Although chlorine is not persistent and does not bioaccumulate, many chlorinated toxic organics may be very persistent and bioaccumulative. As discussed in "Description of the Facility", however, metal cleaning and low volume wastes are limited internally and are treated before commingling with the cooling water. These waste streams comprise less than one percent of the discharge through the outfalls.

The applicant's Form 2c NPDES permit application (March 1994) indicated that bromoform, the most commonly encountered

---

[20]Reference 11

trihalomethane under the existing conditions, was measured in the effluent at less than the detection limit of 0.01 mg/l for both Outfall 001 and 002. Chloroform was also reported at less than the detection limit of 0.005 mg/l for both outfalls.

Sampling of the discharge at the Scattergood Generating Station, the model facility for the El Segundo Station, was conducted on 6 days between April and August 1987 to determine levels of trihalomethanes and other priority pollutants in the effluent. The effluent was sampled during, and 30 minutes after, chlorination. The maximum concentration of bromoform detected in the effluent during chlorination was 1.0 ug/l, the minimum was nondetectable. This maximum concentration of 1.0 ug/l, which occurred on August 4, was the only result above the detection limit. Thirty minutes after chlorination, no bromoform was detected in the effluent during any of the 6 days. The detection limits ranged from 1.0 ug/l to 0.1 ug/l.

The study also analyzed for chloroform, dibromochloromethane and dichlorobromomethane. For five of the six days sampled, the chloroform concentrations were below detection limits. On the other day (July 21), the maximum chloroform concentration measured was 2.5 ug/l during chlorination. Thirty minutes after chlorination, no chloroform was detected at detection limits ranging from 1.0 ug/l to 0.1 ug/l. All results for dibromochloromethane and dichlorobromomethane were below detection limits. Detection limits for these parameters ranged from 1 ug/l to 0.1 ug/l.[21] The study also stated that all other priority pollutants listed in EPA method 624 and 625 were analyzed, but none were detected.

Additional sampling was conducted on July 21 and August 4, 1987 to monitor the receiving waters. Analysis of receiving water samples collected during chlorination revealed that bromoform, as well as chloroform, dibromochloromethane, and dichlorobromomethane, were not detected outside or inside the ZID at the Scattergood Generating Station.[22] It is noted that July 21 and August 4 correspond to the maximum levels of chloroform and bromoform measured in the effluent (as discussed above).

2. Bioaccumulation: According to the EPA criteria document for chlorine, no saltwater data on the bioconcentration of chlorine was found, or expected. Chlorine does not bioaccumulate in animal tissue and apparently is not magnified as a result of trophic transfer. As explained in the previous section, "Persistency," the breakdown product of most concern is bromo-

---

[21]Priority Pollutant Data, Scattergood Generating Station, March - August 1987.

[22]Reference 14

form. Bromoform is estimated to bioconcentrate by a factor of 50 for fish tissue with a 15 percent lipid content.[23] Bromoform is unlikely to bioaccumulate to any significant extent or to biomagnify via trophic transfer.[24] Using the rationale that data collected from the Scattergood Generating Station is representative of the ESGS's effluent, and also based on review of the Form 2c for the ESGS, it is reasonably expected that there will not be any unacceptable risk to human health or the environment due to bioaccumulation of bromoform.

3. Acute Toxicity: The aquatic criterion developed in the EPA chlorine criterion document is not appropriate for use in this variance evaluation since the criterion is intended to apply only to situations of continuous exposure to chlorine.[25] Resolution 88-80 issued by the SWRCB concluded that the PMEL will result in chlorine concentrations at the edge of the mixing zone which will be in compliance with the WQS designed to protect beneficial uses. Based on the SWRCB's findings, no acute toxicity at the edge of the ZID is anticipated when ammonia concentrations remain low.

A summary of the acute toxicity results for years 1991 through June 1994 was presented in Section VII above. To summarize, ESGS's previous NPDES permit contained effluent limits for acute toxicity of 0.65 TUa for Outfall 001 and 0.95 TUa for Outfall 002 (6-month median). These values, which were derived from the Ocean Plan, were exceeded twice for Outfall 001, and were never exceeded for Outfall 002. (Since the TUa limit is based on a 6-month median, exceeding the values of 0.65 TUa or 0.95 TUa only once, or more than once but nonconsecutively, does not necessarily constitute a violation of the permit limit.) It is noted that the TRC concentrations measured in the all these acute toxicity samples were always below the BAT limit of 0.2 mg/l, with one exception of 0.21 mg/l.

With regard to human health acute toxicity, the draft EPA human health chlorine criterion document cites 10 mg/l TRC as an acceptable level.[26] This concentration is well above the concentration of chlorine expected at the mixing zone edge (0.0146 mg/l) or in the discharge (0.4 mg/l). In addition, even though drinking water is not a designated beneficial use, it is anticipated that the PMEL will allow the receiving waters to meet the drinking water standard of 0.100 mg/l for THM (see the

---

[23]Reference 20

[24]Reference 16, Chapters 71 and 105

[25]Reference 1

[26]Reference 2

discussion under "Persistency" above).

Free available chlorine (FAC), which is a component of TRC, may also cause toxicity. The FAC component of TRC may be more toxic than the TRC component alone. The initial biomonitoring study conducted by SCE in 1987 as part of the variance application did not report FAC concentrations during the tests. It is unknown whether these toxicity tests represented the FAC concentrations that would be observed in the receiving water. In regard to more recent acute toxicity results, data for the years 1991 through June 1994 indicated that the effluent FAC concentrations measured at time of sample collection were all less than 0.2 mg/l. It is also noted that DMR data for years 1991 through June 1994 indicated that FAC was a significant component of the TRC measured in the effluent. As stated earlier, the TUa values representing the acute toxicity limits were only exceeded twice during this time period.

4. Chronic Toxicity: Early biomonitoring of the model facility's effluent predicted that discharges of TRC at the PMEL would meet the 1983 State Water Quality Objective (or Standard) of 1 TUc. This State Water Quality Objective is contained in both the 1983 and 1990 CA Ocean Plan and is intended to safeguard against aquatic impacts due to chronic toxicity.[27] As a condition to granting Resolution 88-80, the ESGS was required to monitor its effluent for chronic toxicity.

Using the State approved dilutions of 12 to 1 for Outfall 001 and 18 to 1 for Outfall 002, the 1990 Ocean Plan standard of 1 TUc (daily maximum), and the 1990 Ocean Plan effluent limitation equation, chronic toxicity limits of 13 TUc and 19 TUc were calculated. Monitoring data from 1991 through September 1994 showed most chronic toxicity results equal to or less than 5.6 TUc. Out of a total of 38 test results for Outfall 001 (most for 1991), only 1 test result was greater than the limit of 13 TUc. Out of 64 test results for Outfall 002, there were no violations of the limit of 19 TUc.

With regard to human health, there is no published evidence of chlorine toxicity to humans due to ingestion of water.[28] In addition, the concentration expected at the edge of the ZID (0.046 mg/l), as well as the concentrations in the effluent (0.4 mg/l), will not exceed the EPA draft human health criterion of 10 mg/l discussed in the previous section.

a. Mutagenicity: Data found in the National Institute for Occupational Safety and Health (NIOSH) Registry

---

[27]Reference 12 and Reference 17

[28]Reference 18

indicate that mutagenicity due to chlorine may occur at a concentration of 20 mg/l.[29] This is significantly greater than the TRC concentrations measured, or expected, in the discharge and receiving water.

Of the chlorine-generated products which may be formed during chlorination, only bromoform and chloroform were detected in the model facility's effluent during the 1987 study. Neither were detected in the receiving waters. (The 1987 effluent study stated that it looked at all volatile and non-volatile organics listed in EPA methods 624 and 625.) Available data indicates that mutagenicity due to bromoform may occur at a concentration of 0.11 mg/l.[30] Based on SCE's data, this is well above concentrations expected in the effluent or receiving water. In addition, there are no nearby drinking water stations, thus preventing this route of exposure to humans. Therefore, in light of the low levels of chlorine and chlorine by-products expected with the PMEL, and based on all available data, mutagenicity due to chlorine cannot be reasonably anticipated to pose an unacceptable risk to human health or the environment.

b. Teratogenicity: According to the draft EPA Human Health criterion document of December 1981, there is "no evidence of teratogenic effects of free chlorine in human beings." There is no available data on the teratogenicity of halomethanes, such as bromoform.[31] Therefore, considering the low levels of chlorine expected with the PMEL, teratogenicity due to chlorine cannot reasonably be anticipated to pose an unacceptable risk to human health or the environment.

c. Carcinogenicity: Data from the NIOSH Registry indicates no conclusive evidence that chlorine acts as a direct carcinogen or as a tumor initiator. In addition, there are no drinking water intakes located in the discharge area. Therefore, due to the low levels of chlorine expected with the PMELs, and the absence of drinking water intakes, carcinogenicity due to chlorine cannot reasonably be anticipated to pose an unacceptable risk to human health or the environment. While bromoform can bioconcentrate in fish and can penetrate human skin, the risks associated with consumption of fish caught in the vicinity of the discharge or with swimming in nearby waters cannot be demonstrated to represent an unacceptable lifetime increased cancer risk even

---

[29]Reference 18

[30]Reference 18

[31]Reference 8

to routinely exposed individuals.

5. Synergistic Propensities: Synergism, as defined in Casarrett and Doull's Toxicology text "is the situation in which the combined effect of two chemicals is much greater than the sum of the effect of each agent given alone (example 2+3=20)." Under the broad heading of synergistic propensities, a number of assessments can be made, including:

(1) measuring the combined effects of two or more pollutants (the sum of the effects must be greater than additivity);

(2) measuring the potential for increased toxicity of pollutants under varying physical conditions; and

(3) assessing the potential for pollutants to combine chemically and form more toxic substances.

To conduct the first assessment completely, an applicant would have to test chlorine for toxicity alone and then with each pollutant in an effluent and the receiving water. Since this is prohibitively costly, EPA has proposed that applicants review their Form 2c influent and effluent data and the latest available scientific literature to determine whether there are pollutants in significant concentrations which may contribute to synergism when present with chlorine in the same effluent or receiving stream. In the case of the three "model" facilities (Haynes, Scattergood, and Long Beach Generating Stations), EPA required the applicants to conduct additional chlorine monitoring because the literature review conducted indicated that trihalomethanes might be formed when chlorine is present in the effluent. Biomonitoring was also conducted as part of the assessments of these three generating stations. The data obtained in these studies in conjunction with data from the ESGS are used in the following assessments.

Assessment 1

Current scientific literature indicates that when chlorine is present with other pollutants, toxicological effects are not increased above additivity.[32] In addition, based upon a review of data submitted by the applicant,[33] EPA does not believe there are any pollutants in concentrations significant enough to contribute to toxicologically significant synergism in the presence of chlorine.

---

[32]Reference 2

[33]Reference 9

Assessment 2

The allowable chlorine concentration is based on the California Ocean Plan Water Quality Objective (or Standard) for the scheduled and intermittent discharge of chlorine. Assuming that the PMELs were approved by the SWRCB based upon anticipated compliance with WQSs which considered the effect of physical factors, synergism in this respect has been considered. The requirement to conduct acute and chronic whole effluent toxicity tests on representative samples of the effluents following chlorination events of the appropriate duration is intended to address the inherently site-specific toxicity of the complex mixture of chlorine, bromine, ammonia, chloramines, and bromamines.

Assessment 3

According to EPA's draft Pollutant-Specific 301(g) Guidance for Chlorine (Salt Water), if the concentration of ammonia in the effluent is significant (i.e., significantly greater than the detection limit of 0.1 mg/l), there is a strong possibility that formation of chloramines and bromamines can occur. These chlorinated and brominated compounds may be substantially more toxic than ammonia under identical physical conditions which exist at the discharge site. SCE reported in its Form 2c for ESGS (March 1994) that the concentration of ammonia in both the effluent and the intake water for Outfalls 001 and 002 were below the detection limit of 0.05 mg/l. In addition, effluent monitoring conducted during 1987 at the model facility, the Scattergood Generating Station, indicated ammonia concentrations ranging from 0.05 to 0.4 ug/l.

Water quality monitoring conducted in the receiving waters at the three model facilities in 1987 showed little variability between the three generating stations and the various sampling locations (i.e., in the discharge bubbles, at the ZIDs, at the reference stations) for ammonia and bromide concentrations. Looking at the data from all three facilities, ammonia concentrations ranged from <0.1 mg/l to 0.1 mg/l in the discharge bubbles, from <0.1 mg/l to 0.2 mg/l at the ZID, and from <0.1 to 0.1 mg/l at the reference stations. Specifically at the Scattergood station, the ammonia concentrations were <0.1 mg/l in the bubble, at the ZID and at the reference station. Bromide concentrations at the three facilities varied from 64.7 to 65.9 mg/l in the discharge bubbles, from 63.8 to 66.3 mg/l at the ZIDs, and from 64.4 to 66.8 mg/l at the reference stations (i.e., seawater). No trihalomethanes were detected at the receiving water stations for the Scattergood facility.[33]

---

[33]Reference 14

Southern California Edison Company
P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

September 26, 1994

Ms. Susan Johnson
U.S. Environmental Protection Agency
Water Management Division, W-5-3
75 Hawthorne Street
San Francisco, CA 94105

Dear Ms. Johnson:

SUBJECT: 301(g) VARIANCES FOR GENERATING STATIONS

Per your request, I have enclosed several folders containing the initial and final 301(g) variance applications for our seven fossil-fired generating stations in southern California. Since the applications in each group contained identical attachments, I have included only one set of attachments for each group.

You also requested the following information regarding chlorination schedules for three generating stations:

Ormond Beach Generating Station

Chlorination cycle twice per day, Each cycle consisting of 20 minutes per condenser half sequentially for each of Units 1 and 2, plus 20 minutes for the bearing cooling water heat exchangers (a side stream of the seawater cooling system). Total time per cycle: 100 minutes. Total time per day: 200 minutes.

Mandalay Generating Station

Chlorination cycle twice per day during November-February, and three times per day during March -October. Each cycle consisting of 10 minutes per condenser half sequentially for each of Units 1 and 2, plus 10 minutes for each of three bearing cooling water heat exchangers, sequentially. Total time per cycle: 60 minutes. Total time per day, 120 minutes or 180 minutes, depending on season.

El Segundo Generating Station

Chlorination cycle once per day. Each cycle consisting of 30 minutes per condenser half sequentially for each of Units 1-4. Total time per cycle and per day: 240 minutes. Frequency: approximately 65 days per quarter.

Please call me at (818) 302-2149 if you have any questions.

Sincerely,

DAVID W. KAY, D. Env.
Sr. Environmental Specialist

Enclosures