

State of California  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION  
320 West 4<sup>th</sup> Street, Los Angeles

**FACT SHEET**  
**WASTE DISCHARGE REQUIREMENTS**  
for  
**EXXONMOBIL OIL CORPORATION**  
**(Torrance Refinery, Torrance)**

NPDES Permit No.: CA0055387  
Public Notice No.: 01-006

FACILITY ADDRESS

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**I. PUBLIC PARTICIPATION**

**A. Written Comments**

The staff determinations are tentative. Interested persons are invited to submit written comments upon these tentative Waste Discharge Requirements (WDRs). Comments should be submitted either in person or by mail to:

Executive Officer  
California Regional Water Quality Control Board, Los Angeles Region  
320 West 4<sup>th</sup> Street, Suite 200  
Los Angeles, CA 90013

To be fully responded to by staff and considered by the Board, written comments should be received by August 31, 2001.

**B. Comments Received**

ExxonMobil submitted comments to the RWQCB based on previous tentative permit. Regional Board staff have incorporated some of the Discharge's comments into this tentative. We will address all comments prior to the Board Meeting on September 19, 2001.

**C. Public Hearing**

The Board will hold a public hearing on September 19, 2001 to consider final determinations regarding the tentative requirements and monitoring program. The hearing will be held at the Metropolitan Water District (MWD), 700 North Alameda Street, Los Angeles, CA, and will begin at 9:00 a.m.

**D. Waste Discharge Requirement Appeals**

Any person may petition the State Board to review the decision of the Regional Board regarding the final Waste Discharge Requirements. A petition must be made within 30 days of the Regional Board's public hearing.

**E. Information And Copying**

The Report of Waste Discharge (ROWD), related documents, tentative effluent limitations and special conditions, comments received, and other information are on file and may be inspected at 320 West 4<sup>th</sup> Street, Suite 200, Los Angeles, California 90013, at any time between 8:00 am and 5:00 p.m., Monday through Friday. Copying of documents may be arranged through the Los Angeles Regional Board by calling (213) 576-6600.

**F. Register Of Interested Persons**

Any person interested in this particular application or National Pollutant Discharge Elimination System (NPDES) permit may leave his name, address, and phone number with the Board as a part of the Board's file.

**II. PURPOSE OF ORDER**

ExxonMobil Oil Corporation (ExxonMobil hereinafter) owns and operates a petroleum refinery in Torrance (hereinafter Torrance Refinery), Los Angeles County. Waste discharge from the Torrance Refinery is regulated by Order No. 93-003 NPDES Permit No. CA0055387) issued by the Regional Board on January 25, 1993. Order No. 93-003 expired on January 25, 1998. ExxonMobil has filed a ROWD and has applied for renewal of its WDRs and NPDES permit. The tentative order is the reissuance of the WDRs and NPDES permit for discharges from Torrance refinery.

**III. FACILITY AND WASTE DISCHARGE DESCRIPTION**

The Torrance Refinery is a fully integrated refinery (SIC 2911) with a daily average crude throughput of 160,000 barrels per day. Crude oil is cracked and processed to produce gasoline, diesel, and jet fuel. Sulfur, and petroleum cokes are produced as by-products. The refinery processes include crude cracking, flashing, coking, hydrotreating, alkylation, reforming, and sulfur recovery. Figures 1 through 4 show the facility's location map, groundwater flow diagram, general wastewater flow diagram, and the facility's detailed map, respectively.

The United States Environmental Protection Agency (USEPA) and the Regional Board have classified the Torrance Refinery as a major discharger.

Petroleum refining is the physical, thermal, and chemical separation of crude oil into its major distillation fractions that are then further processed through a series of separation and conversion steps into finished petroleum products. These processes can be separated into two phases. The first phase includes desalting of crude oil and the subsequent distillation into various components/fractions. The second phase includes downstream processes to convert the distillation fractions into petroleum products through any combination of different cracking, coking, reforming, and alkylation processes.

**Desalting** – Before separation into fractions, crude oil must first be treated to remove corrosive salts. Desalting involves the mixing of heated crude oil with water so that the salts are dissolved in the water. The water must then be separated from the crude oil in a separating vessel by adding demulsifier chemicals to assist in breaking the emulsion.

**Distillation** – The desalted crude oil is then heated in a heat exchanger and furnace to about 750°F and fed to distillation column at atmospheric pressure where most of the feed is vaporized and separated into its various fractions (atmospheric distillation). The light fractions condense and are collected at the top of the column. The heavier fractions are collected at the bottom of the column and are further separated by distillation at a very low pressure to increase volatile and separation (vacuum distillation).

**Cracking** – Thermal cracking, or visbreaking, uses heat and pressure to break large hydrocarbon molecules into smaller, lighter molecules. This process has been largely replaced by catalytic cracking that uses catalyst in addition to heat and pressure to break large hydrocarbon molecules into smaller, lighter molecules. Catalytic cracking is able to produce gasoline with higher octane.

**Catalytic Hydrocracking** – Catalytic hydrocracking utilizes a fixed-bed catalytic reactor under substantially high pressure (1,200 to 2,000 psig) with the presence of hydrogen. This process is used to break crude oil fractions that are the most difficult to crack or cannot be cracked effectively in catalytic cracking units.

**Coking** – Coking is a cracking process used to reduce refinery production of low-value residual fuel oils to gasoline and diesel. Coking also produces petroleum coke, a solid carbon used as a fuel for power plants.

**Hydrotreating** – Hydrotreating is a process used to remove impurities such as sulfur, nitrogen, oxygen, halides, and trace metal impurities that may deactivate process catalysts. Hydrotreating also increases the quality of fractions by converting olefins and diolefins to paraffins for the purposes of reducing gum formation in fuels.

**Alkylation** – Alkylation is used to produce a high-octane gasoline from isobutane formed primarily during catalytic cracking and coking operations. Alkylation joins an olefin and an isoparaffin compound using either a sulfuric acid or hydrofluoric acid as a catalyst.

Catalytic Reforming – Catalytic reforming uses catalytic reactions to process low octane gasoline and naphtha into high-octane aromatics (including benzene). There are four major types of reactions that occur during reforming processes: (1) dehydrogenation of naphthenes to aromatics; (2) dehydrocycclization of paraffins to aromatics; (3) isomerization; and (4) hydrocracking.

Chemical treating – Chemical treating is used to remove or change the undesirable properties associated with sulfur, nitrogen, or oxygen compound contaminates in petroleum products. This can be done by either extraction or oxidation.

Wastes that might be discharged to surface waters include:

**Groundwater** generated from groundwater remediation project as required by Board Cleanup and Abatement Order Nos. 89-136 and 95-116. Groundwater recovered from on-site and off-site extraction wells perforated in the Gardena Aquifer is treated with a biological treatment system followed by activated carbon absorption to remove petroleum hydrocarbons. Treated groundwater is monitored at Outfall 001a prior to discharge to the Torrance Lateral.

The ROWD, Form 2E, describes the effluent characteristics as follows:

<u>Constituent</u>	<u>Units</u>	<u>Concentration</u>	
		<u>Daily Maximum</u>	<u>Monthly Average</u>
Flow (million gallons per day)	mgd	1.43	0.59
BOD <sub>5</sub> 20°C	mg/L	3	2.3
Suspended solids	mg/L	16	4.1
Oil and grease	mg/L	4.4	1.2
pH	Standard Unit	5.4 – 8.6	
Benzene	µg/L	ND	
Toluene	µg/L	ND	
Ethylbenzene	µg/L	ND	
Xylene	µg/L	ND	

A flow of 3 mgd reported by the Discharger was used to calculate the mass limits for the discharge of treated groundwater.

**Storm water runoff** from the refinery and tank farm areas (total 734 acres) and the offsite area (120 acres) west of Prairie Avenue (“Pioneer Basin”) is collected into a 24-million gallon unlined retention basin and a 12.6-million gallon reclamation basin. The water is then discharged to the County Sanitation Districts of Los Angeles County sewer system. Discharge to surface water occurs when both basins are full and flooding of the facility is imminent. Storm water from the Pioneer Basin drains onto the refinery and mixes with on-site storm water. This storm water contributes nearly 18% to 25% of the total storm water discharged by the refinery. Pioneer Basin is managed by the City of Torrance which directs off-site municipal storm water flow from Crenshaw Boulevard to the East Tank farm of the refinery property. The City of Torrance contends they have a common right to discharge rainwater through the refinery drainage system which they believe is the natural drainage for this area. The

storm water is monitored at Outfall 001b prior to discharge through a 36-inch Parshall flume to the Torrance Lateral and to Dominguez Channel. This flume is calibrated for a maximum flow of 27,776 gpm or 40 mgd. The last discharge to surface water occurred in February 1998.

The Discharge Monitoring Report for February 1998, describes the effluent characteristics for the 1998 discharge as follows:

<u>Constituent</u>	<u>Units</u>	<u>Concentration</u>
Biochemical oxygen demand (BOD)	mg/L	22
Total suspended solids (TSS)	mg/L	139
Total Recoverable petroleum hydrocarbons	mg/L	2.0
Hardness	mg/L	82
Xylene	µg/L	1.4
Copper	µg/L	60
Zinc	µg/L	200

Other priority pollutants such as pesticides and PCBs were reported as non-detected.

The refinery discharges storm water through a 36-inch Parshall flume to the Torrance Lateral. This Flume is calibrated for a maximum flow of 27,776 gpm or 40 mgd. The mass limits for storm water discharge were calculated based on 40 mgd.

The combined waste stream consisting of treated groundwater and storm water runoff is monitored at Outfall 001 prior to discharge to a concrete channel underneath Van Ness Avenue (Discharge Serial No. 001, Lat. 33°50'59", Long. 118°19'01"). The waste then flows to the Los Angeles County Flood Control Channel 587, known locally as Torrance Lateral, for about 5 miles east thence to Dominguez Channel, a water of the United States, near Avalon Boulevard, within the estuary.

#### **IV. GENERAL RATIONALE**

The following documents are the bases for proposed requirements:

1. The federal Clean Water Act (CWA).
2. Code of Federal Regulations, Title 40 (40 CFR) – Protection of Environment, Chapter 1, Environmental protection Agency, Subchapter D, Water programs, Parts 122-125 and Subchapter N, Effluent Guidelines and Standards, Part 419, Petroleum Refining Point Source Category, Subpart B, Cracking Subcategory. These regulations provide effluent limits for conventional pollutants discharged from petroleum refineries based on best practicable control technology currently available (BPT), best available technology economically available (BAT), and best conventional pollutant control technology (BCT).

3. Water Quality Control Plan (Basin Plan) for the Coastal Watersheds of Los Angeles and Ventura Counties adopted June 13, 1994; The Plan provides water quality objectives and lists the following beneficial uses for Dominguez Channel Estuary.

Existing: water contact recreation, non-water contact recreation, commercial and sport fishing, estuarine habitat, marine habitat, wildlife habitat, preservation of rare and endangered species, migration of aquatic organisms, and spawning, reproduction, or early development.

Potential: navigation.

4. Water Quality Control Policy for the Enclosed Bays and Estuaries of California, adopted by State Water Resources Control Board in May 1974. The Policy provides that discharges of industrial process wasters to enclosed bays and estuaries shall be phased out at the earliest practicable date.
5. Water Quality Control Plan for Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California (Thermal Plan), adopted by the State Board on September 18, 1975. This Plan provides temperature objectives for the Los Angeles Harbor.
6. Technical Support Document (TSD) for Water Quality-Based Toxics Control, USEPA/502/2-90-001, March 1991.
7. The California Toxics Rule (CTR) promulgated by the USEPA on May 18, 2000 and the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) adopted by the State Board on March 2, 2000. The CTR establishes numerical criteria for priority pollutants for inland surface water as well as water in the enclosed bays and estuaries.
8. Valid existing Waste Discharge Requirements contained in Board Order No. 93-003, adopted by the Regional Board on January 25, 1993.

## **V. SPECIFIC RATIONALE**

Section 402(o) of the Clean Water Act and 40 CFR 122.44(l) require that water-quality based effluent limits in re-issued permits are at least as stringent as in the existing permit (anti-backsliding). Therefore, some of the requirements in the proposed Order are based on limits specified in the ExxonMobil's existing permit.

There are several other factors affecting the development of limitations and requirements in the proposed Order. These are discussed as follows:

### **1. Technology-Based Limitations**

40 CFR 125.3 (a) states that technology-based treatment requirements under section 301 (d) of the Clean Water Act represent the minimum level of control that must be imposed in a permit issued under section 402. In summary, permits shall

contain the following technology-based treatment requirements and effluent limitations for dischargers other than publicly-owned treatment works:

- i. BPT and BCT for conventional pollutants;
- ii. BPT and BAT for toxic, non-toxic, and non-conventional pollutants

40 CFR 122.44 states that each permit shall include conditions meeting requirements under sections 301, 304, 306, 307, 318 of CWA. In summary, if after technology-based limits are applied the receiving water concentrations still exceed the water quality standards, or the discharge may cause such exceedances, the permit must include Water Quality Based Effluent Limitations (WQBELs) to achieve water quality standards.

The limitations in the proposed Order are based on the USEPA's effluent limitation guidelines, which comprise of BPT, BCT, and BAT for some pollutants. For pollutants not subject to the effluent limitation guidelines, their reasonable potential was evaluated to determine whether or not WQBELs were required.

## 2. Water Quality-Based Limitations

The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria. These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water.

The CTR and SIP require dischargers to submit sufficient data to determine the priority pollutants requiring WQBELs and to calculate effluent limitations. To protect the beneficial uses of the Dominguez Channel estuary, the CTR criteria for saltwater or human health for consumption of organisms, whichever produce more stringent limitations, were used to prescribe the effluent limitations in this Order.

## 3. Reasonable Potential Analysis (RPA)

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include limits for pollutants that are or may be discharged at a level which cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard.

For toxic pollutants, according to the SIP, a WQBEL is required when:

- a. the maximum effluent concentration (MEC) is greater than or equal to the most stringent applicable water quality criteria in the CTR (C),
- b. the background water quality (B) is greater than C, or
- c. other available information entails it.

Sufficient effluent and ambient data are needed to conduct a complete RPA. If data are not sufficient, the Discharger shall be required to gather the appropriate data for the Regional Board's RPA. Upon review of the data, and if the Regional

Board determines that effluent limits are needed to protect the beneficial uses, the permit will be reopened for appropriate modification.

4. Impaired Water Bodies in 303 (d) List

The USEPA approved the State's 303(d) List of impaired water bodies (See Table 1). The list was prepared in accordance with Section 303(d) of the federal CWA to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. USEPA requires final effluent limits for all 303(d)-listed pollutants to be based on total maximum daily loads (TMDL) and waste loads allocation (WLA) results.

For 303(d) listed pollutants, the Regional Board plans to develop and adopt TMDLs. Following the adoption of TMDLs by the Regional Board, NPDES permits will be issued with effluent limitations according to applicable WLAs. In the absence of a TMDL, effluent limits for 303(d) listed pollutants, for which RPA indicates a "reasonable potential", were addressed in the following manner:

- If the impairment is due to bioaccumulation of a pollutant in tissue (e.g., fish) and/or elevated levels of the pollutant in sediment and effective numeric objectives/criteria protecting the beneficial use(s) are lacking, then the only final WQBEL which will not allow the discharge to cause or contribute to a violation of the narrative water quality objective protecting the beneficial use(s) is the mass-based effluent limit of "no net loading" of a pollutant discharged to the receiving water.

The "no net loading" approach is based on an analysis of effective water quality standards in the Basin Plan, including State and federal antidegradation policies (see SWRCB Resolution No. 68-16 and 40 CFR 131.12), and NPDES permitting regulations, including 40 CFR 122.44(d)(1) and 40 CFR 122.4(a). Any loading of a bioaccumulative/persistent pollutant to a receiving water with a beneficial use already impaired by that pollutant has the reasonable potential to cause or contribute to an exceedance of narrative water quality objective(s) in the Basin Plan (see 40 CFR 122.44(d)(1)(i)), and is in violation of State and federal antidegradation policies which require that existing instream beneficial uses and the level of water quality necessary to protect these uses be maintained and protected when a permit is issued by the Regional Board. The requirement that existing beneficial uses be protected is not satisfied if these uses are impaired. Where baseline water quality is less than the quality defined by the water quality objective, the antidegradation standard requires that water quality must be improved to a level which achieves the water quality objective (see page 4, Antidegradation policy implementation for NPDES permitting, SWRCB 90-004, Administrative Procedures Update, May 1990). Finally, 40 CFR 122.4(a) prohibits issuance of an NPDES permit when permit conditions do not provide for compliance with the Clean Water Act, or regulations promulgated under the Clean Water Act, including water quality standards and NPDES regulations. In the absence of a TMDL which provides that an alternative load can be assimilated by the receiving water, the only effluent limit for the pollutant which will ensure that the discharge does not cause or contribute to an exceedance of water quality standards and does comply with

water quality standards and NPDES regulations is no net loading.

A "no net loading" effluent limit may be met by:

- 1) reducing the effluent concentration below detectable levels through source control and/or treatment;
  - 2) reducing loads through recycling/reclamation;
  - 3) reducing loads elsewhere in the watershed by an amount at least equal to the discharge (and of equivalent bio-availability) through an offset program approved by the Executive Officer. Alternatively, in lieu of the "no net loading" effluent limit, a numeric site-specific objective that is protective of the beneficial use(s) listed as impaired may be developed and used as the basis for WQBELs.
- For pollutants for which there are numeric water quality objectives/criteria protective of the beneficial use(s), WQBELs are established for (1) concentration based on the most stringent applicable CTR criterion, and (2) mass emission based on the maximum discharge flow rate.
  - For 303(d)-listed non-priority pollutants (ammonia and coliform), water quality objectives developed and specified in the Basin Plan, and applicable to the receiving water were prescribed.

On June 12, 2001, ExxonMobil submitted a workplan for attainment of limits for copper, lead, and zinc based on the CTR. This workplan specifies various tasks and duration for each task necessary for ExxonMobil to achieve compliance with the final CTR limits for lead, copper, and zinc. According to this workplan, ExxonMobil requested seven years to achieve compliance. A compliance schedule of up to five years is granted to ExxonMobil. In the mean time, ExxonMobil is required to comply with the specified interim limitations. According to the SIP, section 2.2.1, "if the compliance schedule is within the term of the permit, the final effluent limitations shall be included in the permit provisions."

#### 5. Integrated Risk Information System (IRIS)

Updated reference doses or potency values are available in IRIS for some pollutants. USEPA uses these values to revise the water quality criteria for these compounds. This results in changes of limitations for some pollutants including benzene, halomethanes, heptachlor, heptachlor epoxide, hexachlorobenzene, and PAHs.

## **VI. REGULATORY BASIS FOR EFFLUENT LIMITATIONS**

### **A. Technology-Based Pollutants**

1. 40 CFR 419 specifies effluent limits for the discharge of process wastewater and storm water runoff from a petroleum refining facility. Since the storm water runoff is

not commingled or treated with the refinery's process wastewater, the more stringent of the following requirements were used to prescribe limits for oil & grease and total organic carbon in the storm water runoff stream:

CFR 419.22(e)(1) - BPT requirements  
CFR 419.23(f)(1) - BAT requirements  
CFR 419.24(e)(1) - BCT requirements

2. Chlorine or chlorine compounds are now used for algae control, and the limitation (0.1 mg/l daily maximum) required by the Basin Plan is prescribed for residual oxidants.

## **B. Water Quality-Based Pollutants**

1. Reasonable potential of a toxic pollutant:

Reasonable Potential Analysis (RPA) was developed for the conventional/non-conventional and toxic pollutants that had effluent data. For pollutants for which no background data were available, interim requirements, as described below, were assigned. For these pollutants, the Discharger shall submit to this Regional Board background concentration data, so that complete reasonable potential analyses can be performed and the need for effluent limitations can be determined.

Table 2 represents ambient monitoring data for Dominguez Channel (performed at Vermont Avenue) in storm events and also in dry weather conditions obtained under the Los Angeles County storm water program conducted from 1987 through 1994 for Dominguez Channel in storm events and in dry weather conditions, confirmed the elevated concentrations of heavy metals and bacteria that exceed the CTR water quality criteria for saltwater and Basin Plan criterion, respectively. Staff presented this information in a meeting with the Dominguez Channel Watershed Advisory Council (DCWAC) on August 1, 2001.

2. WQBEL for a toxic pollutant:

- a. For pollutants with non-detected monitoring data, when the lowest MDLs were lower than the adjusted applicable criteria, no limitations or monitoring requirements were assigned.
- b. For pollutants with non-detected monitoring data, when the lowest MDLs were higher than the adjusted applicable criteria, monitoring requirements were prescribed. No limitations were assigned.
- c. For pollutants with detected monitoring data, when the highest data points were lower than the adjusted applicable criteria, no monitoring requirements and no limitations were prescribed.
- d. For pollutants with detected monitoring data, when the highest data points were higher than the adjusted applicable criteria, monitoring requirements and CTR-based discharge limitations were prescribed. For pollutants for which the

discharger demonstrated that immediate compliance was not achievable, Interim limitations were prescribed.

3. Interim requirements for a toxic pollutant:

Interim Monitoring:

Interim requirements in the form of monitoring were prescribed for constituents for which monitoring data reported “non-detectable” (ND) and all of the reported detection limits were greater than or equal to the CTR criterion.

Interim Limitations:

Interim limitations were developed according to the 95<sup>th</sup> percentile occurrence probability method for monthly average limits and 99<sup>th</sup> percentile occurrence probability method for daily maximum limits. This method is based on the guidelines established in the *EPA/505/2-90-001; Technical Support Document For Water Quality-based Toxics Control – Appendix E; March 1991*. For ND data points, half of their respective MDL were used in calculations.

**C. Sample Limitation Calculation for a CTR Pollutant**

**Waste stream: Treated Groundwater**

**Constituent: Zinc**

- **SIP (1.3) RPA** – Zinc is on the 303(d) List for Dominguez Channel. Monitoring data indicate levels higher than the applicable criterion. Therefore, a WQBEL is required.

- **SIP (1.4)**

**Step 1.** Applicable Water Quality Criteria – Saltwater

Criterion (acute) = 90 µg/L

Criterion (chronic) = 81 µg/L

- **Adjust Criterion** – Convert from dissolved fraction to total recoverable  
ECA chronic = 81 µg/L ÷ 0.946 (conversion factor for saltwater criterion) = 85.6 µg/L  
ECA acute = 90 µg/L ÷ 0.946 (conversion factor for saltwater criterion) = 95.1 µg/L

- **Step 2.** Effluent Concentration Allowance (ECA)

No dilution credit allowed, therefore ECA = C

- **Step 3.** ECA Multipliers – Since the number of effluent data points is less than ten, set coefficient of variation (CV) to 0.6.

LTA acute = ECA acute \* ECA multiplier<sub>acute 99</sub> (from SIP, Table 1) =  
= (95.1)\*(0.321) = 30.5 µg/L

LTA chronic = ECA chronic \* ECA multiplier<sub>chronic 99</sub> (from SIP, Table 1) =  
= (85.6)\*(0.527) = 45.1 µg/L

- **Step 4.** Select the lowest of the LTAs:  
LTA = 30.5 µg/L
- **Step 5.** Average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL)  
Sampling frequency less than four times a year => n = 4  
  
AMEL<sub>aquatic life</sub> = LTA \* AMEL<sub>multiplier95</sub> (from Table 2) = = (30.5)\*(1.55) = 47.3 µg/L  
  
MDEL<sub>aquatic life</sub> = LTA \* MDEL<sub>multiplier99</sub> (from Table 2) = = (30.5)\*(3.11) = 94.9 µg/L
- **Step 6.** Human Health Criteria  
No criteria set for human health => not applicable
- **Step 7.**  
AMEL = 47.3 µg/L  
MDEL = 94.9 µg/L

#### E. Whole Effluent Toxicity

The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alterations in population, community ecology, or receiving water biota. These acute and chronic toxicity limits in the Basin Plan and the existing permit are necessary to ensure that this objective is protected.

**Table 1. Dominguez Channel and LA Harbor Consolidated Slip\* 1998 303(d) Listings**

Pollutant/Stressor	Type of Impairment			Basis of Listing	TMDL Consent Decree Deadline	Discharger is likely a significant contributor
	Water	Sediment	Biota/Tissue			
Aldrin			X	Toxic Substances Monitoring Program (TSMP) ('92): Maximum Tissue Residual Level (MTRL).	Not scheduled under Consent Decree (N/A)	
Ammonia	X			Basin Plan ammonia objectives.	N/A	
Benthic Community Effects			X	Benthic community considered "degraded" based on Bay Protection and Toxic Cleanup Program (BPTCP) data for LA Harbor Consolidated Slip.	N/A	
ChemA			X	TSMP ('92): MTRs for aldrin, chlordane and dieldrin (components of ChemA); Elevated Data Level (95 <sup>th</sup> percentile) (EDL95).	N/A	
Chlordane			X	TSMP ('92): MTRL, EDL95; BPTCP; State Mussel Watch Program (SMWP).	N/A	
Chromium		X		Elevated sediment chemistry concentrations (above background) that corresponded to benthic community effects in LA Harbor Consolidated Slip based on BPTCP.	N/A	
Copper	X			Aquatic life criteria (EPA, 1986 with updates); BPTCP.	N/A	
DDT		X	X	Elevated levels in sediment and tissue based on BPTCP and SMWP. Fish consumption advisory.	N/A	
Dieldrin			X	TSMP ('92): MTRL.	N/A	
Coliform	X			Basin Plan REC-1 fecal coliform objectives.	N/A	
Lead	X	X	X	Aquatic life criteria (EPA, 1986 with updates); Elevated sediment chemistry concentrations (above background) that corresponded to benthic community effects in LA Harbor Consolidated Slip based on BPTCP; TSMP ('92): EDL95.	N/A	
PAHs		X		Elevated sediment chemistry concentrations (above background) that corresponded to benthic community effects in LA Harbor Consolidated Slip based on BPTCP.	N/A	
PCBs			X	Elevated levels in sediment and tissue (BPTCP; SMWP; and TSMP ('92): MTRL, EDL95). Fish consumption advisory.	N/A	
Sediment Toxicity**		X		Poor survival rates in sediment toxicity tests, based on BPTCP.	N/A	
Tributyltin**			X	Elevated levels in tissue based on SMWP.	N/A	
Zinc		X		Elevated sediment chemistry concentrations (above background) that corresponded to benthic community effects in LA Harbor Consolidated Slip based on BPTCP. Elevated tissue levels based on SMWP.	N/A	

\*LA Harbor Consolidated Slip is hydrologically connected to the Dominguez Channel estuary.

\*\*It is not a 303 (d)-listed pollutant for Dominguez Channel.