STATE OF CALIFORNIA -- THE RESOURCES AGENCY GRAY DAVIS, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
FRANCISCO, CA 94105-2219
AND TDD (415) 904-5200

RECORD PACKET COPY

Tu 13d

STAFF REPORT AND RECOMMENDATION

ON CONSISTENCY CERTIFICATION

Consistency Certification No.	CC-010-02
Staff:	MPD-SF
File Date:	2/07/2002
3 Months:	5/07/2002
6 Months:	8/07/2002
Commission Meeting:	3/5/02

APPLICANT: **City of San Diego**

PROJECT LOCATION: Point Loma Wastewater Treatment Plant, City of San Diego, and offshore waters (Exhibit 1)

PROJECT DESCRIPTION: Reissuance of Secondary Treatment Waiver

FEDERAL AGENCY AND PERMIT: EPA (Environmental Protection Agency) Reissuance, under Section 301(h) of the Clean Water Act, of a modified National Pollutant Discharge and Elimination System (NPDES) Permit for Wastewater Treatment Plant Discharges

SUBSTANTIVE FILE DOCUMENTS: See page 18.

EXECUTIVE SUMMARY

Under the Clean Water Act, wastewater discharges from publicly owned treatment works (POTWs) are required to receive at least secondary treatment. However, Clean Water Act Section 301(h), sometimes referred to as the "ocean waiver" provision of the Clean Water Act, gives the EPA Administrator (with the concurrence of the RWQCB (Regional Water Quality

Control Board)) the authority to grant a waiver from otherwise applicable secondary treatment requirements. Such a waiver would authorize the City to continue to discharge effluent receiving less than full secondary treatment in terms of suspended solids, biochemical oxygen demand, and pH. The waivers need to be renewed every five years.

In reviewing past secondary treatment waiver and waiver renewal request for the City of Morro Bay, Goleta and Orange County, the Commission has historically concurred with consistency certifications and found applicable water quality and marine resource policies of the Coastal Act to be met when: (1) adequate monitoring is in place; and (2) when EPA and the appropriate RWQCB have determined that the discharger's effluent complies with the applicable Clean Water Act and Ocean Plan requirements.

Secondary treatment waivers are jointly issued by EPA and the RWQCB. EPA's independent Technical Evaluation determined that San Diego's discharges meet the applicable Clean Water Act standards for a waiver, and on March 13, 2002, the San Diego RWQCB is scheduled to hold a public hearing on whether the discharges would meet California Ocean Plan standards. Monitoring results for the past 5 years support San Diego's claim that the discharges comply with secondary treatment waiver requirements and would not adversely affect marine resources. The stringent monitoring as required under Section 301(h) will be continued. The City has upgraded its facilities since the waiver was originally granted, including adding wastewater reclamation facilities. The City's discharges would be consistent with the water quality, marine resources, commercial and recreational fishing, and public access and recreation policies (Sections 30230, 30231, 30234, 30234.5, 30213, and 30220) of the Coastal Act.

STAFF SUMMARY AND RECOMMENDATION:

I. Project Description. The City of San Diego has requested a waiver under Section 301(h) of the Clean Water Act (the Act), 33 U.S.C. Section 1311(h), from the secondary treatment requirements contained in Section 301(b)(1)(B) of the Act, 33 U.S.C. Section 1311(b)(1)(B). The waiver is being sought for the Point Loma Wastewater Treatment Plant (WWTP) and Outfall, which discharges 4.5 miles from Point Loma. The waiver would allow the discharge of wastewater receiving less-than-secondary treatment into the Pacific Ocean. The applicant has been operating under a waiver granted under a "special exception" to the 301(h) program, when Congress modified the Clean Water Act by adding in Section 301(j)(5). That section allowed San Diego to apply for a waiver after the deadline for such applications had passed (it also contained substantive requirements, which are discussed below). EPA and the RWQCB granted the initial waiver on December 12, 1995 (NPDES Permit No. CA0107409). On April 2001, the City applied to EPA for a renewal of the waiver.

The Point Loma WWTP, which serves the Metropolitan San Diego area, is located near the southern tip of Point Loma, and discharges wastewater from the City of San Diego through the Point Loma ocean outfall at a distance 4.5 miles from shore, west of Point Loma, in

approximately 100 meters of water. Existing wastewater flows in recent years (1999 and 2000) have been around 175 million gallons per day (MGD) (average flows). Projected flows for the year 2006 (the end of the 5-year permit) are estimated at 195 MGD. System capacity are 240 MGD (average) and 432 MGD (peak wet weather flow). (The project service area and facilities are further described in Exhibit 4.)

The City has made a number of upgrades to the treatment system since the previous waiver was granted in 1995, including: 1) the addition of two new sedimentation basins at the Point Loma plant; 2) construction of the Metro Biosolids Center (MBC) a regional solids handling facility; 3) construction of the North City Wastewater Reclamation Plant (NCWRP); and 4) construction of the South Bay Water Reclamation Plant (SBWRP).

Secondary treatment is defined in Clean Water Act implementing regulations (40 CFR Part 133) in terms of effluent quality for suspended solids (SS), biochemical oxygen demand (BOD) and pH. The secondary treatment requirements for SS, BOD and pH are as follows:

SS: (1) The 30-day average shall not exceed 30 mg/l (milligrams per liter). (2) The 7-day average shall not exceed 45 mg/l. (3) The 30-day average percent removal shall not be less than 85%;

BOD: (1) The 30-day average shall not exceed 30 mg/l. (2) The 7-day average shall not exceed 45 mg/l. (3) The 30-day average percent removal shall not be less than 85%;

pH: The effluent limits for pH shall be maintained within the limits of 6.0 to 9.0 pH units.

State water quality standards (i.e., the California Ocean Plan) require removal of 75% of suspended solids. The Ocean Plan does not have an effluent limitation for BOD; the comparable standard is for dissolved oxygen, and the Plan requires that "dissolved oxygen shall not at any time be depressed more than 10% from that which occurs naturally as a result of the discharge of oxygen-demanding waste materials."

The special legislation created for the City's application for a secondary treatment waiver (Ocean Pollution Reduction Act of 1994 (OPRA)/CWA Section 301(j)(5)/Public Law 103-431) requires:

1. 80% removal of TSS (monthly ave.);

2. 58% removal of BOD (annual ave.);

3. 45 MGD of water reclamation capacity by the year 2010; and

4. Reduction of TSS during the 5-year period of permit modification (EPA has interpreted this standard to require reduction of TSS from 15,000 to 13,600 metric tons/yr).

The following table compares the various statutory requirements:

Table 1. Comparison of treatment removal requirements. [Source: EPA Tentative Decision Document]

Requirement	Suspended Solids Removal	Biochemical Oxygen Demand Removal	pH Limitation
Primary	30% as 30-day average	30% as 30-day average	6-9
California Ocean Plan	75% as 30-day average	No Requirement	6-9
OPRA	80% as 30-day average	58% as annual average	
Secondary	85% as 30-day average	85% as 30-day average	6-9

The City's advanced primary system currently removes 80% of suspended solids. The City currently removes approximately 58% of BOD. The City is in the process of implementing reclamation: the NCWRP is now on line and handles 30 MGD, and the SBWRP is anticipated to go on line as soon as spring 2002, adding another 15 MGD of reclamation (Exhibit 2). Thus, the City anticipates achieving the "OPRA" requirement of 45 MGD of water reclamation up to eight years ahead of schedule.

The City is requesting a variance from secondary treatment standards for BOD and SS. The City is not requesting a waiver of pH requirements. The City's proposed effluent limits would require the removal of 80% of SS as a monthly average and the removal of 58% of BOD as an annual average. In addition, the upper limits suspended solids loadings to the ocean would be reduced to no more than 13,600 metric tons/year by the end of the 5-year permit period. Current suspended solids loadings are less than 1000 metric tons/yr.

The City has applied to the EPA and the RWQCB for reissuance of the 301(h) waiver. These waivers are independently reviewed but jointly issued by EPA and the RWQCB. EPA's independent Technical Analysis is attached as Exhibit 4. After EPA performs its technical review it issues a Tentative Decision to grant the 301(h) waiver of secondary requirements, which is then followed by RWQCB hearing (including public comments), and a final EPA decision (including responses to comments). On March 13, 2002, the RWQCB is scheduled to hold a public hearing on Order No. R9-2002-0025 on the permit; the RWQCB may or may not act on March 13, but in any event, final EPA action would not occur until 30 days after that time.

II. Previous Commission Reviews of Waivers. In 1979, and 1983-1985, the Commission reviewed a number of secondary treatment waiver applications under the federal consistency provisions of the Coastal Zone Management Act, and EPA ultimately granted many of these waivers. During these reviews the Commission expressed concern over the need for treatment meeting the *equivalent* of secondary treatment with respect to removal of toxics.

Nevertheless, at that time, the Commission consciously adopted a neutral position on the waivers. Since a position of "neutrality" is not an action that is recognized under CZMA regulations, the Commission's concurrence in the waivers was presumed pursuant to 15 CFR Section 630.63(a).

Section 301(h) waivers are only valid for 5 years, and three of the waivers initially granted subsequently came up for renewal: Morro Bay, Goleta, and Orange County (CSDOC). On January 13, 1999, and January 12, 1993, the Commission concurred with the City of Morro Bay's waiver renewals (CC-123-98 and CC-88-92). On January 8, 1997, and March 10, 1998, respectively, the Commission concurred with Goleta's and Orange County's Section 301(h) waiver renewals (CC-126-96 and CC-3-98).

On September 27, 1995, after a Commission public hearing, the Commission staff concurred with the previous submittal from the City of San Diego of a "No effects" letter (in lieu of a consistency certification) for the EPA-issued secondary treatment waiver (NE-94-95). That matter was reviewed as an administrative item due to unusual circumstances and history surrounding the waiver. The Commission normally reviews secondary treatment waivers and reissuances as consistency certifications, as is the case for the subject renewal.

III. Status of Local Coastal Program. The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If an LCP that the Commission has certified and incorporated into the California Coastal Management Program (CCMP) provides development standards that are applicable to the project site, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. The City of San Diego's LCP has been certified by the Commission and incorporated into the CCMP.

IV. Applicant's Consistency Certification. The City of San Diego certifies the proposed activity complies with the federally approved California Coastal Management Program and will be conducted in a manner consistent with such program.

V. Staff Recommendation:

The staff recommends that the Commission adopt the following motion:

MOTION. I move that the Commission concur with City of San Diego's consistency certification.

The staff recommends a **YES** vote on this motion. A majority vote in the affirmative will result in adoption of the following resolution:

Concurrence

The Commission hereby **concurs** with the consistency certification made by the City of San Diego for the proposed project, finding that the project is consistent with the California Coastal Management Program.

VI. Findings and Declarations:

The Commission finds and declares as follows:

A. Water Quality/Marine Resources

1. Regulatory Framework. The Environmental Protection agency (EPA) and the applicable RWQCBs (Regional Water Quality Control Boards) regulate municipal wastewater outfalls discharging into the Pacific Ocean under NPDES permits issued pursuant to the federal Clean Water Act. As enacted in 1972, the Clean Water Act required secondary treatment for all wastewater treatment nationwide. Amendments to the Clean Water Act in 1977 provided for Section 301(h) (33 USC Section 1311(h)) waivers of the otherwise applicable requirements for secondary treatment for discharges from publicly owned treatment works into marine waters.

Section 301(h) of the Clean Water Act provides that an NPDES permit which modifies the secondary treatment requirements may be issued if the applicant: (1) discharges into oceanic or saline, well-mixed estuarine waters; and (2) demonstrates to EPA's satisfaction that the modifications will meet those requirements specified in Section 301(h) (see pp. 7-9), including: (a) that the waiver will not result in any increase in the discharge of toxic pollutants or otherwise impair the integrity of receiving waters; and (b) that the discharger must implement a monitoring program for effluent quality, must assure compliance with pre-treatment requirements for toxic control, must assure compliance with water quality standards, and must measure impacts to indigenous marine biota. In California, the applicable water quality standards are embodied in the California Ocean Plan (see pp. 9-11 and Exhibit 5).

While the State of California (through the SWRCB and RWQCBs) administers the NPDES permit program and issues permits for discharges to waters within State waters, authority to grant a waiver and issue a modified NPDES permit under Section 301(h) of the Act is reserved to the Regional Administrator of EPA. Prior state concurrence with the waiver is also required.

Section 307(f) of the federal CZMA specifically incorporates the Clean Water Act into the California Coastal Management Program (CCMP). Commission consistency certification review is required for 301(h) applicants, because EPA NPDES permits are listed in California's program as federal licenses or permits for activities affecting land or water uses in the coastal zone. In reviewing the discharges, the Commission relies on the Clean Water Act and its implementing regulations, the California Ocean Plan, the Coastal Act (Chapter 3 policies), and

Water Code Section 13142.5 (incorporated into the Coastal Act by Section 30412(a)). These requirements, which are further described and summarized below, provide both specific numerical standards for pollutants, as well as general standards for protection of marine biological productivity.

a. <u>Clean Water Act/Section 301(h)</u>. Implementation of the Clean Water Act in California, for the most part, has been delegated to the applicable RWQCB for issuance of NPDES permits. Under an MOA between EPA and the State of California, NPDES permits for outfalls beyond 3 miles *and* for secondary treatment waivers (regardless of location) are issued jointly by EPA and the applicable RWQCB. The Clean Water Act divides pollutants into three categories for purposes of regulation, as follows: (1) conventional pollutants, consisting of total suspended solids (TSS or SS); biochemical oxygen demand (BOD, a measure of the amount of oxygen consumed during degradation of waste); pH; fecal coliform bacteria; and oil and grease; (2) toxic pollutants, including heavy metals and organic chemicals; and (3) non-conventional pollutants (a "catch-all" category for other substances needing regulation (e.g., nitrogen and phosphorus, chlorine, fluoride)).

Guidelines adopted under Section 403 of the Clean Water Act (40 CFR Part 125.120-124, Subpart M, "Ocean Discharge Criteria") specify that beyond an initial mixing zone, commonly referred to as the zone of initial dilution (ZID), the applicable water quality standards must be met. The zone of initial dilution is the boundary of the area where the discharge plume achieves natural buoyancy and first begins to spread horizontally. Discharged sewage is mostly freshwater, so it creates a buoyant plume that moves upward toward the sea surface, entraining ambient seawater in the process. The wastewater/seawater plume rises through the water column until its density is equivalent to that of the surrounding water, at which point it spreads out horizontally.

Section 301(h) of the Clean Water provides for secondary treatment waivers under certain circumstances. The following requirements must be met for EPA to grant a secondary treatment waiver:

> *(1) there is an applicable water quality standard specific to the pollutant for which the modification is requested, which has been identified under section 304(a)(6) of this Act;*
>
> *(2) such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced, indigenous population (BIP) of shellfish, fish and wildlife, and allows recreational activities, in and on the water;*
>
> *(3) the applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable,*

and the scope of the monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;

(4) such modified requirements will not result in any additional requirements on any other point or nonpoint source;

(5) all applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;

(6) in the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;

(7) to the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

(8) there will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;

(9) the applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) of the Clean Water Act after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged.

For the purposes of this subsection the phrase "the discharge of any pollutant into marine waters" refers to a discharge into deep waters of the territorial sea or the waters of the contiguous zone, or into saline estuarine waters where there is strong tidal movement and other hydrological and geological characteristics which the Administrator determines necessary to allow compliance with paragraph (2) of this subsection, and section 101(a)(2) of this Act. For the purposes of paragraph (9), "primary or equivalent treatment" means treatment by screening, sedimentation and skimming adequate to remove at least 30 percent of the biochemical oxygen demanding material and of the suspended solids in the

treatment works influent, and disinfection, where appropriate. A municipality which applies secondary treatment shall be eligible to receive a permit pursuant to this subsection which modifies the requirements of subsection (b)(1)(B) of this section with respect to the discharge of any pollutant from any treatment works owned by such municipality into marine waters. No permit issued under this subsection shall authorize the discharge of sewage sludge into marine waters. In order for a permit to be issued under this subsection for the discharge of a pollutant into marine waters, such marine waters must exhibit characteristics assuring that water providing dilution does not contain significant amounts of previously discharged effluent from such treatment works. No permit issued under this subsection shall authorize the discharge of any pollutant into marine estuarine waters which at the time of application do not support a balanced, indigenous population of shellfish, fish and wildlife, or allow recreation in and on the waters or which exhibit ambient water quality below applicable water quality standards adopted for the protection of public water supplies, shellfish and wildlife, or recreational activities or such other standards necessary to assure support and protection of such uses. The prohibition contained in the preceding sentence shall apply without regard to the presence or absence of a causal relationship between such characteristics and the applicant's current or proposed discharge. Notwithstanding any of the other provisions of this subsection, no permit may be issued under this subsection for discharge of a pollutant into the New York Bight Apex consisting of the ocean waters of the Atlantic Ocean westward of 73 degrees 30 minutes west longitude and westward of 40 degrees 10 minutes north latitude.

In addition, as discussed on page 3, Section 301(j)(5) of the Clean Water Act provides procedural and substantive requirements enabling the City to apply for a waiver and specifying that discharges must meet the following tests: 80% removal of TSS (monthly ave.); 58% removal of BOD (annual ave.); 45 MGD of water reclamation capacity by the year 2010; and reduction of TSS during the 5-year period of permit modification.

b. <u>California Ocean Plan</u>. The California Ocean Plan was originally adopted by the SWRCB and approved by the EPA in June 1972, and is revised every three years. Among the California Ocean Plan requirements are the following water quality objectives (Chapter II):

A. Bacterial Characteristics, for body-contact recreation and shellfish harvesting;

B. Physical Characteristics, including floatables, visible oil and grease, discoloration of the surface, the reduction of light penetration, and the rate of deposition of solid and inert materials on the bottom;

C. Chemical Characteristics, including dissolved oxygen, pH, dissolved sulfide in and near sediments, concentration of substances in the sediments, organic materials in the sediments, and nutrient levels, and including maintenance of standards such as protecting indigenous biota and marine life;

D. Biological Characteristics, including:

1. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded.

2. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.

3. The concentrations 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.

E. Radioactivity, including maintenance of a standard that marine life shall not be degraded.

General requirements in the Ocean Plan include:

A. Waste management systems that discharge to the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

B. Waste discharged to the ocean must be essentially free of:

1. Material that is floatable or will become floatable upon discharge.

2. Settleable material or substances that may form sediments which will degrade benthic communities or other aquatic life.

3. Substances which will accumulate to toxic levels in marine waters, sediments or biota.

4. Substances that significantly decrease the natural light to benthic communities and other marine life.

5. Materials that result in aesthetically undesirable discoloration of the ocean surface.

C. Waste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.

D. Location of waste discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that: ...

1. Pathogenic organisms and viruses are not present in areas where shellfish are harvested for human consumption or in areas used for swimming or other body-contact sports.

2. Natural water quality conditions are not altered in areas designated as being of special biological significance.

3. Maximum protection is provided to the marine environment.

In addition, the Ocean Plan contains "Table A" effluent limitations for major wastewater constituents and properties, "Table B" limitations that provide maximum concentrations for toxic materials that may not be exceeded upon completion of initial dilution, and other standards. Table A and B limitations are contained in Exhibit 5.

(c) Coastal Act Policies. The Coastal Act contains policies protecting water quality and marine resources. Section 30230 of the Coastal Act provides:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231 provides:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

In addition to these resource protection policies, Section 30412 addresses the Commission's relationship with the SWRCB (State Water Resources Control Board and RWQCB); Section 30412 provides:

> *(a) In addition to the provisions set forth in Section 13142.5 of the Water Code, the provisions of this section shall apply to the commission and the State Water Resources Control Board and the California regional water quality control boards.*
>
> *(b) The State Water Resources Control Board and the California regional water quality control boards are the state agencies with primary responsibility for the coordination and control of water quality. The State Water Resources Control Board has primary responsibility for the administration of water rights pursuant to applicable law. The commission shall assure that proposed development and local coastal programs shall not frustrate the provisions of this section. Neither the commission nor any regional commission shall, except as provided in subdivision (c), modify, adopt conditions, or take any action in conflict with any determination by the State Water Resources Control Board or any California regional water quality control board in matters relating to water quality or the administration of water rights.*
>
> *Except as provided in this section, nothing herein shall be interpreted in any way either as prohibiting or limiting the commission, regional commission, local government, or port governing body from exercising the regulatory controls over development pursuant to this division in a manner necessary to carry out the provisions of this division.*

Finally, Section 13142.5 of the Water Code, which is referenced in Section 30412 above, provides:

> *In addition to any other policies established pursuant to this division, the policies of the state with respect to water quality as it relates to the coastal marine environment are that:*
>
> *(a) Waste water discharges shall be treated to protect present and future beneficial uses, and, where feasible, to restore past beneficial uses of the receiving waters. Highest priority shall be given to improving or eliminating discharges that adversely affect any of the following:*
>
> *(1) Wetlands, estuaries, and other biologically sensitive sites.*
> *(2) Areas important for water contact sports.*
> *(3) Areas that produce shellfish for human consumption.*
> *(4) Ocean areas subject to massive waste discharge.*

Ocean chemistry and mixing processes, marine life conditions, other present or proposed outfalls in the vicinity, and relevant aspects of areawide waste treatment management plans and programs, but not of convenience to the discharger, shall for the purposes of this section, be considered in determining the effects of such discharges...

2. <u>EPA Evaluation of the City of San Diego's Discharges</u>. EPA has conducted a technical evaluation analyzing San Diego's compliance with the 301(h) and other criteria discussed above. This tentative evaluation, dated, February 8, 2002 (Exhibit 4), includes the following EPA findings:

<u>SUMMARY OF FINDINGS</u>

Based upon review of the data, references, and empirical evidence furnished in the application and other relevant sources, EPA Region 9 makes the following findings with regard to compliance with the statutory and regulatory criteria:

1. The applicant's proposed discharge complies with the California Ocean Plan water quality standards for dissolved oxygen (DO), suspended solids, and pH. [Section 301(h)(1), 40 CFR 125.61]

2. The applicant's proposed discharge will not adversely impact public water supplies or interfere with the protection and propagation of a balanced, indigenous population (BIP) of fish, shellfish, and wildlife and will allow for recreational activities. [Section 301(h)(2), 40 CFR 125.62]

3. The applicant has a well-established water quality monitoring program and is committing the resources to continue the program. The City has been monitoring the area around the Point Loma discharge since 1991. EPA Region 9 and the San Diego Regional Water Quality Control Board (Regional Board) will review the existing monitoring program and modify as appropriate. These modifications will be included as provisions for monitoring the impact of the discharge in the 301(h) modified NPDES permit. [Section 301(h)(3), 40 CFR 125.63]

4. The applicant's proposed discharge will not result in any additional treatment requirements on any other point or nonpoint source (See letter from Regional Board dated January 24, 2002). [Section 301(h)(4), 40 CFR 125.64]

5. The applicant's existing pretreatment program was approved by EPA on June 29, 1982. [Section 301(h)(5), 40 CFR 125.66 and 125.68]

6. The applicant has complied with the urban area pretreatment requirements by demonstrating that it has an applicable pretreatment requirement in effect for each toxic pollutant introduced by an industrial discharger. The Urban Area Pretreatment Program was submitted to EPA and the Regional Board in August of 1996. This program was approved by the Regional Board on August 13, 1997 and by EPA Region 9 on December 1, 1998. [Section 301(h)(6), 40 CFR 125.65]

7. The City will continue their existing nonindustrial program which has been in effect since 1985. The City will also continue their existing comprehensive public education program to minimize the amount of toxic pollutants that enter the treatment system from nonindustrial sources. [Section 301(h)(7), 40 CFR 125.66]

8. There will be no new or substantially increased discharges from the point source of the pollutants to which the 301(h) variance will apply above those specified in the permit. [Section 301(h)(8), 40 CFR 125.67]

9. The applicant's removal of 80% of SS as a monthly average and 58% of BOD as an annual average is sufficient to demonstrate the federal requirement of at least 30% removal capability and the California Ocean Plan's 75% SS removal requirement. The discharge allows sufficient dilution to attain of State water quality standards and Federal water quality criteria. [Section 301(h)(9), 40 CFR 125.60]

10. The California Coastal Commission issued Consistency Certification for extending the Point Loma outfall on November 12, 1991. The City has requested a determination from the California Coastal Commission that the proposed discharge is consistent with the policies of the California Coastal Zone Management Program ... No permit may be issued that is not consistent with the policies of the California Coastal Management Program. The California Coastal Commission will be hearing this issue at their meeting on March 5-8, 2002. [40 CFR 125.59(b)(3)]

11. On June 28, 2999, the applicant sent letters to the US Fish and Wildlife Service and the National Marine Fisheries Service requesting concurrence with their conclusion that the discharge will have no impact to threatened or endangered species. The National Marine Fisheries Service concluded that there were no Federally listed species under its jurisdiction that would be affected by the discharge (letter dated August 10, 1999). No response has been received from the U.S. Fish and Wildlife Service. The permit is contingent on a finding from the U.S. Fish and Wildlife Service. There are no

designated marine sanctuaries located within the coastal zones of California that could be impacted by the modified discharge. [40 CFR 125.59(b)(3)]

12. In its operation of the Pt. Loma WWTP, the applicant will remove 80% of suspended solids from the effluent on an annual basis, remove 58% removal of biological oxygen demand from the effluent on an annual basis, and reduce the mass of solids during the period of modification to 13,599 metric tons per year. In addition, the applicant has constructed two reclamation facilities with a treatment capacity of 45 MGD.

13. The applicant sent a letter to the Regional Board requesting a determination that the proposed discharge would comply with the applicable water quality standards on April 4, 2000. The Regional Board confirmed that the City of San Diego's facilities on Point Loma are capable of meeting effluent limitations contained in the California Ocean Plan (see letter dated January 24, 2002). As specified in a Memorandum of Understanding (May 1986) between EPA Region IX and the California State Water Resources Control Board, the joint issuance of an NPDES permit which incorporates both the 301(h) decision and State waste discharge requirements will serve as the State's concurrence. A draft NPDES permit for the discharge has been developed jointly with the Regional Board. [40 CFR 125.59 (i)(2)]

3. Commission Conclusion. The information submitted by the City of San Diego, along with the supporting analysis and information from EPA and the RWQCB, supports its request for a continued secondary treatment waiver. Historically, the Commission has concurred with consistency certifications for these types of waivers and waiver renewals, and found applicable water quality and marine resource policies of the Coastal Act to be met, when: (1) adequate monitoring is in place; and (2) when EPA and the appropriate RWQCB have determined that the discharger's effluent complies with the applicable Clean Water Act and Ocean Plan requirements. In this case, the City has monitored its discharges since its initial waiver was granted in 1995, and these monitoring efforts support the City's conclusions that its discharges meet the applicable water quality and marine resource requirements. Moreover, the stringent monitoring as required under Section 301(h) will be continued.

Based on EPA's analysis including a review of plant performance and modeling efforts performed since 1995, the outfall does not appear to be resulting in any significant reduction in light transmissivity, any biologically significant changes in benthic community structure in the vicinity of the outfall (beyond the zone of initial dilution), or any significant changes in fish populations or fish diseases in the area. EPA and the RWQCB have also addressed a historic Commission's historic concern over toxics by continuing to include requirements for the implementation of a pollution prevention program to minimize discharge of toxic pollutants into the sewer system which might interfere with the treatment processes. As discussed on page 14, EPA states that the City complies with the urban area pretreatment requirements "by

demonstrating that it has an applicable pretreatment requirement in effect for each toxic pollutant," and that the City will continue its existing nonindustrial program (which has been in effect since 1985). Therefore, based on the analysis above, the Commission concludes that the City's discharges would be consistent with the applicable marine resource and water quality provisions (Sections 30230 and 30231) of the Coastal Act.

B. Commercial Fishing/Recreation

Section 30230 of the Coastal Act, quoted in full on page 11, includes a requirement that:

> *Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

The Coastal Act also contains more specific policies protecting commercial and recreational fishing; Section 30234 provides:

> *Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.*

Section 30234.5 provides:

> *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

The Coastal Act also protects public recreation (such as surfing and other water-contact recreation). Section 30213 provides, in part:

> *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided..*

Section 30220 provides:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

As discussed in the water quality/marine resource section above, the City's monitoring efforts over the past five years are sufficient to enable a determination that commercial/recreational

fishing and other recreational concerns are met. Most recreational activities are centered around the Point Loma kelp beds and in nearshore waters. SCUBA diving is very popular in the offshore kelp beds. Only limited diving occurs outside the area of the kelp beds. EPA's analysis of the City's plume modeling and monitoring data show that while there have been shoreline and kelp bed water quality standard exceedances, they are unlikely to be related to the City's outfall discharges. EPA states:

> *There are numerous exceedances of the single sample thresholds for Total Coliform, Fecal coliform and enterococcus (Fig. 53 [Exhibit 3]). However, these do not appear to be related to the Point Loma outfall. A high percentage of these are related to storm events. There also seems to be a spatial pattern which suggests a southern source. For perspective, these data can be compared to comparable data collected as part of the IWTP shoreline monitoring program (See Fig. 54 [Exhibit 3]). There is some overlap between the two program (i.e., San Diego's Stations D1 and D2 overlap with IWTP's Stations S8 and S9). There is a clear south-north gradient in the frequency of exceedances with a peak at the Tijuana River for all three bacterial indicators.*
>
> *Exceedances are generally attributed to surface runoff (e.g. from the Tijuana River) rather than the outfall plume. This is supported by the lack of high concentrations in nearshore stations. This conclusion is also supported by modelling and monitoring efforts, which indicate that the outfall plume remains submerged in the offshore area.*
>
> *Summary of bacteria data. EPA's review of the bacterial monitoring data suggests that the outfall plume is trapped at depth offshore and that the plume surfaces infrequently. Elevated concentrations of bacteria in the kelp beds were observed on rare occasion (less than 0.5% of the time). Although bacterial concentrations along the shoreline frequently exceed the standards, there is no evidence to suggest that this is related to the outfall. Based on these data, along with the results of physical oceanographic modeling performed by the applicant in 1994, EPA concludes that the Point Loma modified discharge will meet the COP bacterial compliance standards at the shoreline, recreational areas and at kelp beds.*

Therefore, as discussed above with respect to marine resources, and with continued monitoring, the Commission concludes that the discharges would be consistent with the applicable commercial and recreational fishing and general recreation policies (Sections 30230, 30234, 30234.5, 30213, and 30220) of the Coastal Act.

SUBSTANTIVE FILE DOCUMENTS:

1. Consistency Certification No. CC-62-91/Coastal Development Permit No. 6-91-217 (City of San Diego, Point Loma outfall extension).

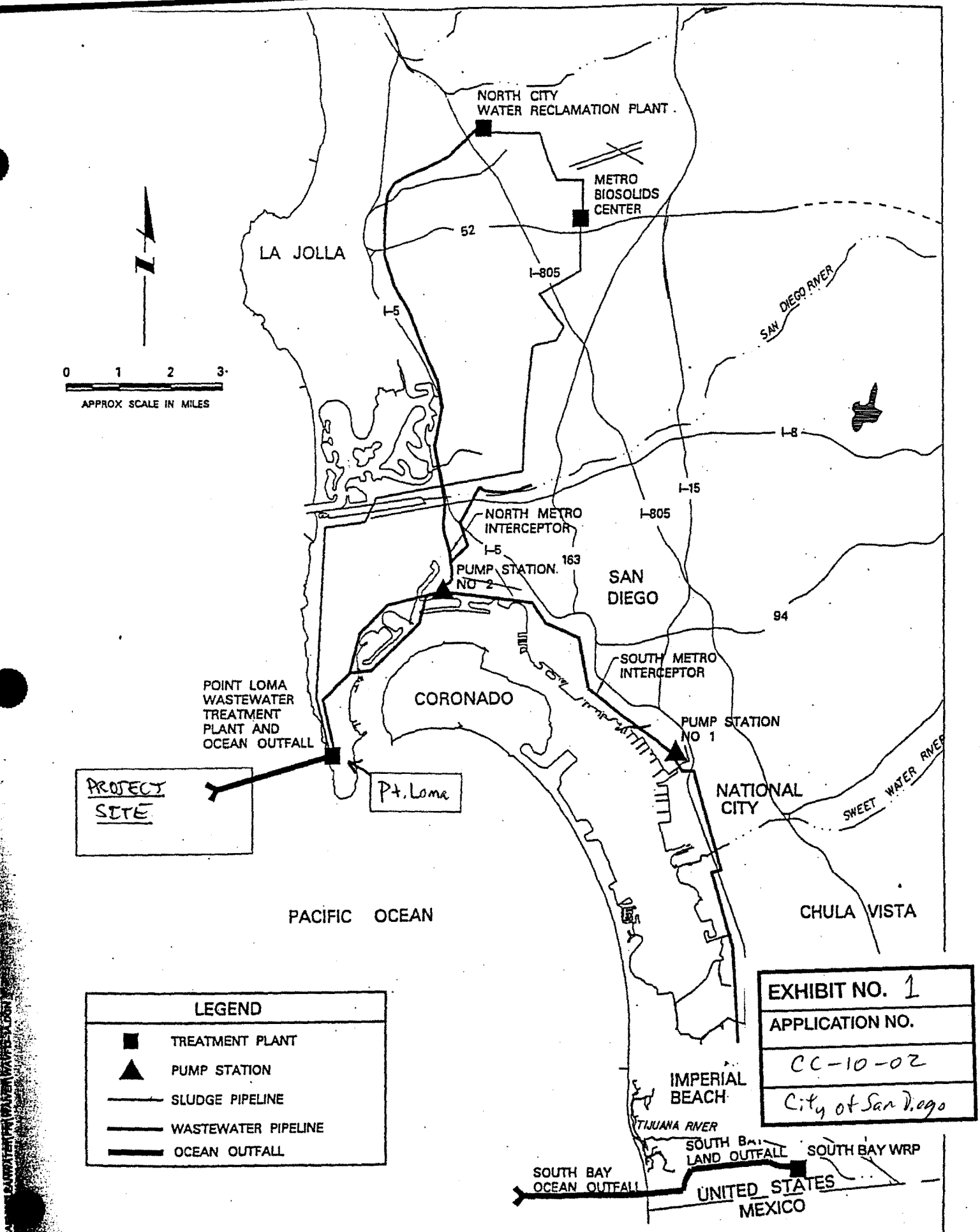
2. No Effects Determination NE-94-95 (City of San Diego, secondary treatment waiver).

3. RWQCB Tentative Order No. R9-2002-0025 and draft NPDES Permit No. CA0107409, City of San Diego.

4. RWQCB Order No. 95-106 and NPDES Permit No. CA0107409, City of San Diego.

5. Consistency Certifications for secondary treatment waiver renewals, CC-88-92 and CC-123-98 (City of Morro Bay), CC-126-96 (Goleta Sanitary District), and CC-3-98 (County Sanitation Districts of Orange County (CSDOC)).

6. Consistency Determination No. CD-137-96 (IBWC) International Boundary and Water Commission International Wastewater Treatment Plant Interim Operation.



METRO FACILITIES LOCATION MAP

Figure 1

THE CITY OF SAN DIEGO

February 8, 2002

RECEIVED
FEB 13 2002
CALIFORNIA
COASTAL COMMISSION

Mr. Mark Delaplaine
California Coastal Commission
45 Fremont Street, 20th Floor
San Francisco, CA. 94105-2221

Dear Mr. Delaplaine:

The purpose of this letter is to document actions by the City of San Diego to comply with the requirement to construct 45 MGD of water reclamation capacity by the year 2010. This was a condition of the Ocean Pollution Reduction Act that allowed the City to re-enter the 301(h) (Waiver) process.

The North City Water Reclamation Plant (NCWRP) was completed and put on-line in 1997. This is a 30 MGD facility. The South Bay Water Reclamation Plant (SBWRP) is in the final stages of completion. It is currently scheduled to go on-line in the spring of 2002. This is a 15 MGD facility.

With the completion of the SBWRP the City will have fulfilled its obligation to have 45 MGD of reclamation capacity nearly eight years ahead of the 2010 requirement.

If you need additional information please contact me at (619) 758-2300.

Sincerely,

Alan C. Langworthy
Deputy Metropolitan Wastewater Director

cc: Scott Tulloch
Ted Bromfield

EXHIBIT NO. 2
APPLICATION NO.
CC-10-02

DIVERSITY

Environmental Monitoring and Technical Services Division • Metropolitan Wastewater
4918 North Harbor Drive, Suite 201 • San Diego, CA 92106-2359
Tel (619) 758-2300 Fax (619) 758-2309

Figure 53. Summary of single sample exceedances for San Diego Shoreline Stations (1995-2000)

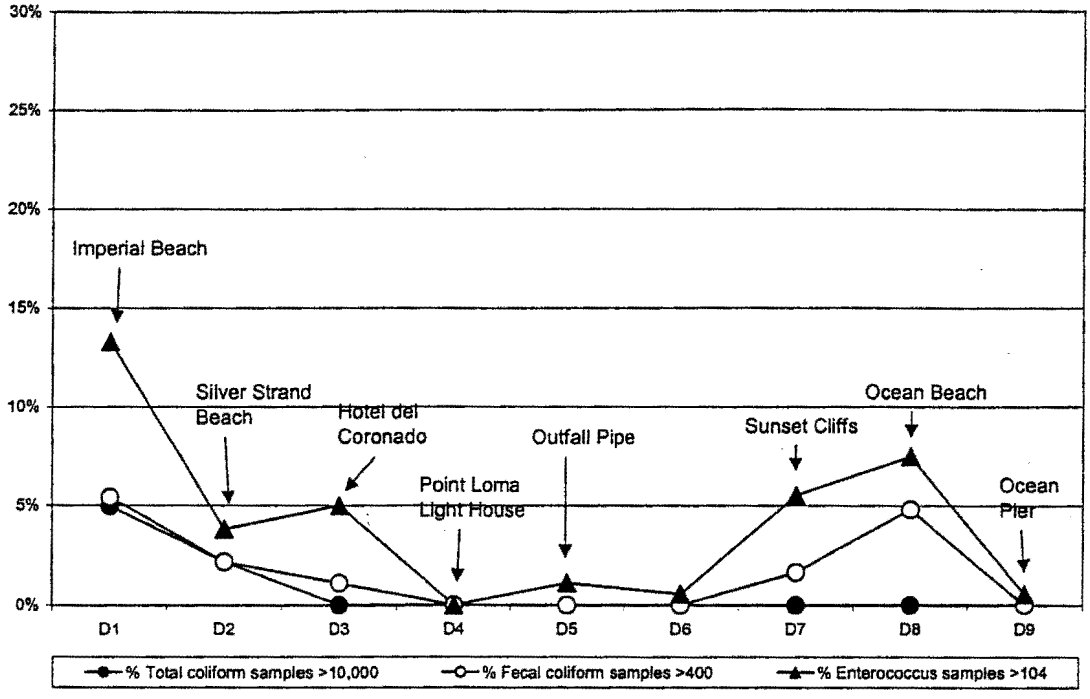


Figure 54. Summary of single sample exceedances for ITP Shoreline Stations (1995-2000)

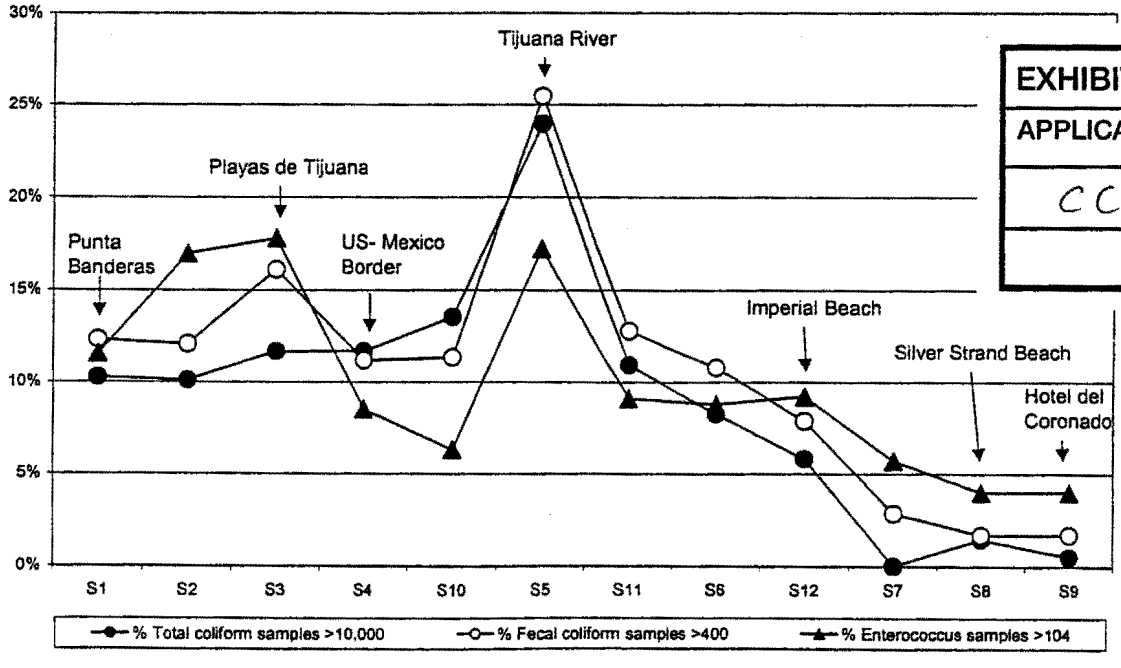


EXHIBIT NO. 3
APPLICATION NO.
CC-10-02

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OFFICE OF THE
REGIONAL ADMINISTRATOR

In Re:

CITY OF SAN DIEGO'S POINT LOMA WASTEWATER TREATMENT PLANT, APPLICATION FOR A MODIFIED NPDES PERMIT UNDER SECTION 301(h) OF THE CLEAN WATER ACT

TENTATIVE DECISION OF THE REGIONAL ADMINISTRATOR PURSUANT TO 40 CFR PART 125, SUBPART G

I have reviewed the attached evaluation analyzing the merits of the application of the City of San Diego for the Point Loma Wastewater Treatment Plant and Ocean Outfall requesting a modification from secondary treatment requirements of the Clean Water Act (the Act). It is my tentative decision that the Point Loma Wastewater Treatment Plant and Ocean Outfall be granted a modification in accordance with the terms, conditions and limitations of the attached evaluation, subject to concurrence by the State of California with the granting of a modification as required by section 301(h) of the Act. USEPA Region 9 will prepare a draft modified National Pollutant Discharge Elimination System (NPDES) permit in accordance with this decision.

Because my decision is based on available evidence specific to this particular discharge, it is not intended to assess the need for secondary treatment in general, nor does it reflect on the necessity for secondary treatment by other publicly owned treatment works discharging to the marine environment. This decision and the NPDES permit implementing this decision are subject to revision on the basis of subsequently acquired information relating to the impacts of the less-than-secondary discharge on the marine environment.

Under the procedures of the Permit Regulations, 40 CFR Part 124 (45 Fed. Reg. 33848 *et seq.*) public notice, comment and administrative appeals regarding this decision and accompanying draft NPDES permit will be made available to interested persons.

Dated: 08 FEBRUARY 2002

Wayne Nastri
Regional Administrator

RECEIVED
FEB 14 2002
CALIFORNIA
COASTAL COMMISSION

EXHIBIT NO. 4
APPLICATION NO.
CC-10-02
EPA Analysis (Text)

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

The City of San Diego, California, (the applicant) is requesting the renewal of a modification under section 301(h) of the Clean Water Act (the Act), 33 U.S.C. section 1311(h), from the secondary treatment requirements contained in section 301(b)(l)(B) of the Act, 33 U.S.C. section 1311(b)(l)(B). The applicant was given the opportunity to apply for a 301(h) waiver under the Ocean Pollution Reduction Act of 1994, 33 U.S.C. § 301(j)(5) (OPRA). The applicant submitted the application on April 26, 1995. The USEPA issued a tentative decision to grant the waiver on August 14, 1995. The final decision and permit were issued on November 9, 1995. This became effective December 12, 1995. The applicant submitted its application for renewal on April 10, 2001.

The modification is being sought for the Point Loma Wastewater Treatment Plant (WWTP), a publicly owned treatment works (POTW). The applicant is seeking a 301(h) modification to discharge wastewater receiving less-than-secondary treatment to the Pacific Ocean. Secondary treatment is defined in regulations (40 CFR Part 133) in terms of effluent quality for suspended solids (SS), biochemical oxygen demand (BOD) and pH. The secondary treatment requirements for SS, BOD and pH are listed below:

SS: (1) The 30-day average shall not exceed 30 mg/l. (2) The 7-day average shall not exceed 45 mg/l. (3) The 30-day average percent removal shall not be less than 85%

BOD: (1) The 30-day average shall not exceed 30 mg/l. (2) The 7-day average shall not exceed 45 mg/l. (3) The 30-day average percent removal shall not be less than 85%.

pH: The effluent limits for pH shall be maintained within the limits of 6.0 to 9.0 pH units

The application is based on an improved discharge, as defined by 40 CFR 125.58(g) and qualifies as a large discharge as defined in 40 CFR 125.58(c). The applicant is requesting a modification for BOD and SS. The proposed effluent limits would require the removal of 80% of SS as a monthly average and the removal of 58% of BOD as an annual average. In addition suspended solids loadings to the ocean would be less than 13,600 metric tons/year. These limits satisfy sections 301(h) and (j)(5) of the CWA.[1]

This document presents findings, conclusions and recommendations of the Environmental Protection Agency (USEPA) Region 9 regarding the compliance of the applicant's proposed discharge with the criteria set forth in section 301(h) of the Act as implemented by regulations contained in 40 CFR Part 125, Subpart G (47 Fed. Reg. 53666, November 26, 1982) and other appropriate guidance.

---

[1]This decision is issued without prejudice to the rights of any party to address the legal issue of the applicability of 33 U.S.C. § 1311(j)(5) to the City's future NPDES permits.

DECISION CRITERIA

Under section 301(b)(1)(B) of the Act, 33 U.S.C. section 1311(b)(1)(B), POTWs in existence on July 1, 1977, were required to meet effluent limitations based upon secondary treatment as defined by the Administrator of EPA (the Administrator). Secondary treatment has been defined by the Administrator in terms of three parameters: biochemical oxygen demand (BOD), suspended solids (SS), and pH. Uniform national effluent limitations for these pollutants were promulgated and included in National Pollutant Discharge Elimination System (NPDES) permits for POTWs issued under section 402 of the Act. POTWs were required to comply with these limitations by July 1, 1977.

Congress subsequently amended the Act, adding section 301(h) which authorizes the Administrator, with State concurrence, to issue NPDES permits which modify the secondary treatment requirements of the Act. P.L. 95-217, 91 Stat. 1566, as amended by, P.L. 97-117, 95 Stat. 1623; and section 303 of the Water Quality Act (WQA) of 1987. Section 301(h) provides that:

> *The Administrator, with the concurrence of the State, may issue a permit under section 402 [of the Act] which modifies the requirements of subsection (b)(1)(B) of this section [the secondary treatment requirements] with respect to the discharge of any pollutant from a publicly owned treatment works into marine waters, if the applicant demonstrates to the satisfaction of the Administrator that:*
>
> *(1) there is an applicable water quality standard specific to the pollutant for which the modification is requested, which has been identified under section 304(a)(6) of this Act;*
>
> *(2) such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced, indigenous population (BIP) of shellfish, fish and wildlife, and allows recreational activities, in and on the water;*
>
> *(3) the applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of the monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;*
>
> *(4) such modified requirements will not result in any additional requirements on any other point or nonpoint source;*
>
> *(5) all applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;*
>
> *(6) in the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for*

which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;

(7) to the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

(8) there will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;

(9) the applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) of the Clean Water Act after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged.

For the purposes of this subsection the phrase "the discharge of any pollutant into marine waters" refers to a discharge into deep waters of the territorial sea or the waters of the contiguous zone, or into saline estuarine waters where there is strong tidal movement and other hydrological and geological characteristics which the Administrator determines necessary to allow compliance with paragraph (2) of this subsection, and section 101(a)(2) of this Act. For the purposes of paragraph (9), "primary or equivalent treatment" means treatment by screening, sedimentation and skimming adequate to remove at least 30 percent of the biochemical oxygen demanding material and of the suspended solids in the treatment works influent, and disinfection, where appropriate. A municipality which applies secondary treatment shall be eligible to receive a permit pursuant to this subsection which modifies the requirements of subsection (b)(1)(B) of this section with respect to the discharge of any pollutant from any treatment works owned by such municipality into marine waters. No permit issued under this subsection shall authorize the discharge of sewage sludge into marine waters. In order for a permit to be issued under this subsection for the discharge of a pollutant into marine waters, such marine waters must exhibit characteristics assuring that water providing dilution does not contain significant amounts of previously discharged effluent from such treatment works. No permit issued under this subsection shall authorize the discharge of any pollutant into marine estuarine waters which at the time of application do not support a balanced, indigenous population of shellfish, fish and wildlife, or allow recreation in and on the waters or which exhibit ambient water quality below applicable water quality standards adopted for the protection of public water supplies, shellfish and wildlife, or recreational activities or such other standards necessary to assure support and protection of such uses. The prohibition contained in the preceding sentence shall

apply without regard to the presence or absence of a causal relationship between such characteristics and the applicant's current or proposed discharge. Notwithstanding any of the other provisions of this subsection, no permit may be issued under this subsection for discharge of a pollutant into the New York Bight Apex consisting of the ocean waters of the Atlantic Ocean westward of 73 degrees 30 minutes west longitude and westward of 40 degrees 10 minutes north latitude.

EPA regulations implementing section 301(h) provide that a 301(h) modified NPDES permit may not be issued in violation of 40 CFR 125.59 (b), which requires among other things, compliance with the provisions of the Coastal Zone Management Act (16 U.S.C. 1451 *et seq.*), the Endangered Species Act (16 U.S.C. 1531 *et seq.*), the Marine Protection Research and Sanctuaries Act (16 U.S.C. 1431 *et seq.*), and any other applicable provision of State or Federal law or Executive Order. In the discussion which follows, the data submitted by the applicant is analyzed in the context of the statutory and regulatory criteria.

SUMMARY OF FINDINGS

Based upon review of the data, references, and empirical evidence furnished in the application and other relevant sources, EPA Region 9 makes the following findings with regard to compliance with the statutory and regulatory criteria:

1. The applicant's proposed discharge complies with the California Ocean Plan water quality standards for dissolved oxygen (DO), suspended solids, and pH. [Section 301(h)(1), 40 CFR 125.61]

2. The applicant's proposed discharge will not adversely impact public water supplies or interfere with the protection and propagation of a balanced, indigenous population (BIP) of fish, shellfish, and wildlife and will allow for recreational activities. [Section 301(h)(2), 40 CFR 125.62]

3. The applicant has a well-established water quality monitoring program and is committing the resources to continue the program. The City has been monitoring the area around the Point Loma discharge since 1991. USEPA Region 9 and the San Diego Regional Water Quality Control Board (Regional Board) will review the existing monitoring program and modify as appropriate. These modifications will be included as provisions for monitoring the impact of the discharge in the 301(h) modified NPDES permit. [Section 301(h)(3), 40 CFR 125.63]

4. The applicant's proposed discharge will not result in any additional treatment requirements on any other point or nonpoint source (See letter from Regional Board dated January 24, 2002). [Section 301(h)(4), 40 CFR 125.64]

5. The applicant's existing pretreatment program was approved by EPA on June 29, 1982. [Section 301(h)(5), 40 CFR 125.66 and 125.68]

6. The applicant has complied with the urban area pretreatment requirements by

demonstrating that it has an applicable pretreatment requirement in effect for each toxic pollutant introduced by an industrial discharger. The Urban Area Pretreatment Program was submitted to EPA and the Regional Board in August of 1996. This program was approved by the Regional Board on August 13, 1997 and by EPA Region 9 on December 1, 1998. [Section 301(h)(6), 40 CFR 125.65]

7. The City will continue their existing nonindustrial program which has been in effect since 1985. The City will also continue their existing comprehensive public education program to minimize the amount of toxic pollutants that enter the treatment system from nonindustrial sources. [Section 301(h)(7), 40 CFR 125.66]

8. There will be no new or substantially increased discharges from the point source of the pollutants to which the 301(h) modification will apply above those specified in the permit. [Section 301(h)(8), 40 CFR 125.67]

9. The applicant's removal of 80% of SS as a monthly average and 58% of BOD as an annual average is sufficient to demonstrate the federal requirement of at least 30% removal capability and the California Ocean Plan's 75% SS removal requirement. The discharge allows sufficient dilution to attain of State water quality standards and Federal water quality criteria. [Section 301(h)(9), 40 CFR 125.60]

10. The California Coastal Commission issued Consistency Certification for extending the Point Loma outfall on November 12, 1991. The applicant has requested a determination from the California Coastal Commission that the proposed discharge is consistent with the policies of the California Coastal Zone Management Program (letter dated July 13, 2000). No permit may be issued that is not consistent with the policies of the California Coastal Management Program. The California Coastal Commission will be hearing this issue at their meeting on March 5-8, 2002. [40 CFR 125.59(b)(3)]

11. On June 28, 1999, the applicant sent letters to the US Fish and Wildlife Service and the National Marine Fisheries Service requesting concurrence with their conclusion that the discharge will have no impact to threatened or endangered species. The National Marine Fisheries Service concluded that there were no Federally listed species under its jurisdiction that would be affected by the dishcharge (letter dated August 10, 1999). No response has been received from the U.S. Fish and Wildlife Service. The permit is contingent on a finding from the U.S. Fish and Wildlife. There are no designated marine sanctuaries located within the coastal zones of California that could be impacted by the modified discharge. [40 CFR 125.59(b)(3)]

12. In its operation of the Pt. Loma WWTP, the applicant will remove 80% of suspended solids from the effluent on an annual basis, remove 58% of biological oxygen demand from the effluent on an annual basis, and reduce the mass of solids during the period of modification to 13,599 metric tons per year. In addition, the applicant has constructed two reclamation facilities with a treatment capacity of 45 MGD.

13. The applicant sent a letter to the Regional Board requesting a determination that the

proposed discharge would comply with the applicable water quality standards on April 4, 2000. The Regional Board confirmed that the City of San Diego's facilities on Point Loma is capable of meeting effluent limitations contained in the California Ocean Plan (see letter dated January 24, 2002). As specified in a Memorandum of Understanding (May 1986) between EPA Region 9 and the California State Water Resources Control Board, the joint issuance of an NPDES permit which incorporates both the 301(h) decision and State waste discharge requirements will serve as the State's concurrence. A draft NPDES permit for the discharge has been developed jointly with the Regional Board. [40 CFR 125.59 (i)(2)]

CONCLUSION

It is concluded that the applicant's proposed discharge will satisfy CWA sections 301(h) and (j)(5) and 40 CFR 125, Subpart G.

RECOMMENDATION

It is recommended that the applicant be granted a section 301(h) modification in accordance with the above findings, contingent upon the satisfaction of the following conditions, and that a draft NPDES permit be prepared in accordance with the applicable provisions of 40 CFR Parts 122-125.

The applicant's receipt of a section 301(h) modification is contingent upon concurrence from the Regional Board.

The draft NPDES permit includes, in addition to all applicable terms and conditions required by 40 CFR Part 122, the following terms and conditions specific to section 301(h):

1. Effluent limitations in accordance with the terms and conditions of this document in accordance with 40 CFR 125.68(a).

2. Monitoring program requirements in accordance with 40 CFR 125.68(c).

3. Reporting requirements that include the results of monitoring programs in accordance with 40 CFR 125.68(d).

DESCRIPTION OF TREATMENT FACILITY

There have been a number of upgrades to the treatment system since 1995. These include: 1) the addition of two new sedimentation basins at the Point Loma plant, 2) construction of the Metro Biosolids Center (MBC) a regional solids handling facility, 3) construction of the North City Water Reclamation Plant (NCWRP) and 4) construction of the South Bay Water Reclamation Plant (SBWRP) and associated outfall. These facilities make up the wastewater treatment system (Fig. 1).

Preliminary treatment consists of screening at pump station No. 2 (coarse screens) and at the

treatment plant (fine screens). The wastewater is then distributed to six aerated grit removal chambers. Ferric chloride is added prior to grit chamber removal to enhance solids removal. Wastewater exiting the grit chamber is then treated with anionic polymers to aid coagulation of solids and distributed to what is now twelve sedimentation tanks. Sludge generated by the advanced primary treatment is digested anaerobically. The Fiesta Island processing facility was closed down and digested sludge from Point Loma is now pumped to the MBC for dewatering. The centrate from this dewatering is returned to sewer system upstream of pump station No.2. The treated advanced primary effluent is discharged through the Point Loma ocean outfall. The ocean outfall extends approximately 7.1 Km (about 4.5 miles) offshore to an approximate depth of 100 meters (about 310 ft). Two diffuser legs branch from the end of the outfall in a "Y"-configuration. Each leg of the diffuser is 760 m (2,946 ft) in length and contains 208 diffuser ports.

The 30-MGD NCWRP began operation shortly after the 1995 permit was issued. The water reclamation plant consists of preliminary screening, grit removal, primary treatment, secondary treatment with provisions for nitrification and partial denitrification, tertiary filtration, and chlorination. Based on demand, a portion of the waste water stream will receive tertiary treatment and be reclaimed. Excess secondary treated water is released back into the sewer system and routed through pump station No. 2 to the Point Loma plant. The waste solids (sludge) are pumped to the MBC where it is thickened, digested in anaerobic digesters, and dewatered. The centrate from the NCWRP is released back into the sewer system upstream of pump station No. 2.

The MBC receives waste solids from the NCWRP and digested solids from the Point Loma plant. NCWRP solids are thickened, digested and dewatered at the MBC plant. The Point Loma solids are dewatered at the MBC. The centrate from these processes is released back into the sewer system upstream of pump station No. 2.

The SBWRP is a 15-MGD plant which is expected to go on line in 2002. Solids removed from the treatment process are released back into the sewer system upstream of pump station No. 2 for treatment at Point Loma. Water for reclamation receives full tertiary treatment. Excess secondary treated effluent will be discharged 3.5 miles offshore through the South Bay Ocean Outfall (SBOO), which is shared with the International Wastewater Treatment Plant (IWTP).

The IWTP is currently operating as a 25-MGD advanced primary plant that was constructed to handle waste from Mexico. While not considered part of the Wastewater System, the plant removes a significant portion of flow from Mexico that was previously discharged to the Metro Wastewater System.

The original application was based on an end of permit flow of 205 MGD. Since then the rating capacity of the plant has been increased to 240 MGD (See addendum 2 to Board Order No. 95-106). The actual flows have been lower than projected. In the years 1999 and 2000 annual flows were around 175 MGD. The projected annual flow for the year 2006 (end of next permit period) is projected to be 195 MGD.

APPLICATION OF STATUTORY AND REGULATORY CRITERIA

1. Compliance with the California State Water Quality Standards [Section 301(h)(1), 40 CFR 125.61].

Under 40 CFR 125.61 which implements section 301(h)(1), there must be a water quality standard applicable to the pollutants for which the modification is requested and the applicant must demonstrate that the proposed modified discharge will comply with these standards. The applicant must obtain a favorable State determination that the proposed modified discharge will comply with applicable provisions of State law including water quality standards.

The applicant is requesting a waiver from the secondary treatment requirement for suspended solids and BOD requirements. The applicant must demonstrate that it meets (and will continue to meet through the end-of-permit period) all effluent limits for suspended solids and turbidity and meets ambient standards for turbidity, light transmittance and dissolved oxygen.

A. Suspended Solids.

1. Solids Removal. The California Ocean Plan (COP) calls for at least 75% removal of suspended solids (30-day average). In this permit, 80% removal of suspended solids as a system-wide monthly average is set as a limit as requested by the City in its application. The percent removal computation is based on a system-wide calculation which accounts for solids removal from the NCWRP and the return of solids associated with the centrate from the MBC.

Table 1. Comparison of treatment removal requirements.

Requirement	Suspended Solids Removal	Biochemical Oxygen Demand Removal	pH Limitation
Primary	30% as 30-day average	30% as 30-day average	6-9
California Ocean Plan	75% as 30-day average	No Requirement	6-9
CWA § 301(h) and (j)(5)	80% as 30-day average	58% as annual average	
Secondary	85% as 30-day average	85% as 30-day average	6-9

The applicant has demonstrated through past performance the ability to meet on a monthly basis both the 75% and 80% removal requirements. In 1999, the average monthly percent removal ranged from 82% to 88%. In 2000, the average monthly removals ranged from 85% to 89%. These percentages are adjusted for system-wide removal. The difference between straight removal (Point Loma only) and system-wide removal (Point Loma plus NCWRP) is only a small percentage (Table 2). The NPDES permit issued to the City will require compliance with the COP objective of 75% removal on a monthly basis and the CWA's 80% removal on a monthly average.

Table 2. Plant performance at Point Loma expressed as percent removal (2000)

	TSS	$TSS_{System-wide}$	BOD	$BOD_{System-wide}$
January	88	89	63	66
February	87	88	56	61
March	87	88	60	64
April	87	88	62	66
May	86	87	59	63
June	87	88	63	67
July	86	87	58	62
August	87	88	59	63
September	85	86	59	63
October	85	87	59	64
November	84	85	59	63
December	88	88	64	66

Suspended solids concentrations. The suspended solids concentration in the effluent has remained relatively consistent over the course of the existing permit (1995-2000). The average monthly suspended solids concentrations are generally around 40 mg/l (Table 3).

Table 3. Average monthly effluent concentration of suspended solids (mg/l) from Point Loma (1995-2000).

Month	1995	1996	1997	1998	1999	2000	Average 1995-2000
January	36	44	41	38	38	35	38
February	41	42	42	62	38	34	43
March	39	44	42	63	36	34	43
April	45	48	38	43	39	35	41
May	40	42	39	33	40	39	39
June	42	44	42	32	41	36	40
July	39	40	44	31	43	38	39
August	46	40	40	33	37	36	39
September	43	46	34	28	37	39	38
October	44	42	33	27	40	38	37
November	48	42	42	32	33	47	40
December	45	44	35	39	30	38	38
Annual Average	42	43	39	38	38	37	40

In 1994, USEPA predicted a maximum increase in suspended solids concentrations of 0.5 mg/l in the immediate area of the outfall based on a worst-case minimum initial dilution of 99:1 and an effluent concentration of 53 mg/l. Applying this worst-case minimum initial dilution to the range

of values in Table 3, the maximum increases in suspended solids concentrations should be on the order of 0.3 to 0.6 mg/l.

To further evaluate the effect of the outfall on ambient suspended solids concentrations, USEPA looked at data from the City's water quality monitoring program. The City has been measuring water quality parameters (e.g., suspended solids, turbidity, dissolved oxygen, bacteria) in the waters around the current outfall locations since 1991 (Fig. 2). The data for the time period between 1995 and 2000 are summarized in the appendix (Table A1). These data indicate that background concentrations in these waters are typically on the order of 2 to 6 mg/l and that there were no substantial differences between suspended solids concentrations measured at stations near the outfall (Stations E10, E16, E14, E8, E12, E18) and those measured at far field reference stations (Stations B9, B12, B1, B5). The minor increases in suspended solids concentrations within the zone of initial dilution predicted by the simple dilution model (0.3 to 0.6 mg/l) are not considered substantial given the range of natural variability in suspended solids concentrations of the receiving water.

Suspended solids loadings. The original permit called for reductions in permitted loadings from 15,000 MT/yr to 13,600 MT/yr by January 1, 2001. The actual loadings during this time period were much smaller due to lower than projected flows and lower suspended solids concentrations than assumed (Table 4). In 1999 and 2000 solids loadings were less than 10,000 MT/yr. The applicant is requesting the same permit limits for the new permit cycle (2001 to 2006), with a limit of 13,599 MT/yr for the last year of the permit term, satisfying section 301(j)(5)(B)(ii).

Table 4. Total Suspended Solids (TSS) Mass Emission Rate (MER) in metric tons per year

Year	Loadings (Actual/*Projected*)	Permit limits (Existing/*Proposed*)
1994	12,021	
1995	11,174	
1996	10,622	15,000
1997	10,183	15,000
1998	10,469	15,000
1999	9,188	15,000
2000	8,888	13,600
2001	*14,100*	*15,000*
2002	*14,200*	*15,000*
2003	*14,300*	*15,000*
2004	*14,500*	*15,000*
2005	*14,600*	*15,000*
2006	*13,599*	*13,599*

2. Turbidity. Turbidity is a surrogate measure for the effects of suspended solids on light transmittance. The COP has an effluent limitation for turbidity and an ambient limitation for light transmittance. These effluent limits are listed below:

	30-day Ave	Weekly Ave	Maximum
Turbidity	75 NTU	100 NTU	225 NTU

To evaluate compliance with the turbidity standard, USEPA evaluated the daily effluent data from 1995 to 2000 (summarized in Table 5).

Table 5. Average monthly concentration for effluent turbidity (NTU) from Point Loma (1995-2000).

Month	1995	1996	1997	1998	1999	2000
January	31	36	38	26	33	37
February	35	37	40	32	30	34
March	34	38	40	37	31	33
April	38	41	37	32	31	37
May	37	46	37	31	38	40
June	37	46	42	34	40	36
July	36	43	40	33	41	41
August	40	41	40	31	37	39
September	39	44	38	30	39	39
October	38	41	34	31	41	38
November	42	38	32	32	37	46
December	37	42	29	37	35	40
Annual Average	37	41	37	32	36	38

The average NTU concentration was 37 NTU. The highest 30-day running average, the highest 7-day running average, and the highest daily maximum concentrations over this five-year period are as listed below:

	30-day Ave	Weekly Ave	Maximum
Turbidity	46 NTU	52 NTU	60 NTU

The effluent turbidity concentrations are well within ocean plan limits. To ensure continued compliance with the COP, effluent limits for turbidity will be included in the NPDES permit.

3. Light Transmittance. The COP states that "*natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge.*" In 1994, USEPA found that the effect of outfall-related solids on light transmittance was minimal and well within the range of variability measured at the other stations.

To re-evaluate this conclusion USEPA evaluated the results of the City's ambient water quality monitoring program. The results support the conclusion that the outfall is not having a major effect on light transmittance (Table A.2). The percent transmissivity measured at stations near the outfall (Stations E10, E16, E14, E8, E12, E18) were similar to those at far field reference stations (Stations B1, B5, B9, B12). Percent transmissivity was generally greater than 85%. Values tended to be slightly lower and slightly more variable at nearshore stations (as a result of shoreline influences) and at samples taken near the bottom depth (as a result of resuspension).

The outfall does not appear to be resulting in any significant reduction in transmissivity.

B. Biochemical Oxygen Demand and Dissolved Oxygen.

The secondary treatment removal requirement for BOD is 85% removal and 30 mg/l as a 30-day average. The permit calls for 58% removal of BOD computed as an annual average. The COP does not have an effluent limitation for BOD. However, the COP water quality standard for dissolved oxygen is applicable. The COP states that "*dissolved oxygen shall not at any time be depressed more than 10% from that which occurs naturally as a result of the discharge of oxygen-demanding waste materials.*"

1. BOD. USEPA reviewed five-years of effluent BOD data from the Point Loma Plant (summarized in Table 6). The existing permit allows BOD removal to be calculated as a system-wide basis to eliminate double counting of BOD returned to the Point Loma WWTP from the Metro Biosolids Center and the North City Water Reclamation Plant (NCWRP). The plant is currently being operated in a manner which meets the 58% removal requirement. Based on daily averages from 1994, the plant operated at better than 58% removal sixty percent of the time. Since that time the applicant has made improvements including new sedimentation basins and solids handling facilities to ensure that they continue to meet the 58% removal on a system-wide basis.

Table 6. Summary of effluent BOD from Point Loma outfall (1995-2000).

Month	1995	1996	1997	1998	1999	2000
January	88	112	104	95	106	91
February	106	119	112	98	108	91
March	96	116	118	126	105	90
April	108	121	107	103	109	90
May	115	125	108	97	115	93
June	113	124	114	110	110	82
July	105	121	105	106	101	96
August	105	116	102	106	96	97
September	107	119	99	100	102	95
October	114	112	97	105	96	94
November	117	116	95	109	89	106
December	114	124	100	114	88	98
Annual Average Effluent BOD	107	119	105	106	102	94
Annual system-wide percent removal	60%	58%	59%	56%	61%	64%

According to the applicant, the percent removal in 1998 was 56% as a result of complications associated with bringing the new solids handling facility (MBC) on line. In 1999 the monthly average system wide percent removals ranged from 53% to 63%, the annual average was 61%. In 2000 the average ranged from 61% to 67%, the average for the year was 64%. The NPDES permit issued to the City will require compliance with the 58% removal requirement.

2. Dissolved Oxygen Concentrations. In 1995, the applicant used a modeling approach to

predict the effect of the discharge on ambient dissolved oxygen concentrations. In its review USEPA (1995) evaluated these efforts and conducted a similar modeling effort to verify the model predictions. These results were slightly higher but comparable to the applicant's. USEPA believes that the results of these models are still valid for use in this review as the initial assumptions about flow (240 MGD), TSS (48 mg/l) and BOD (121 mg/l) concentrations used in the model are conservative with respect to existing conditions (compare to Tables 5 and 6). The results of the applicant's modeling effort and USEPA's review are summarized below.

As recommended in USEPA's 1994 Amended Section 301(h) Technical Support Document (ATSD), modeling efforts were directed toward evaluating the potential for (1) DO depressions following initial dilution during the period of maximum stratification (or other critical period), (2) farfield DO depressions associated with BOD exertion in the wastefield, (3) DO depressions associated with steady-state sediment oxygen demand and (4) DO depressions associated with the resuspension of sediments (Table 7).

Table 7. Predicted worst-case dissolved oxygen depressions (mg/l) from San Diego (1994) and USEPA (1995)

Sources of potential oxygen demand	San Diego	USEPA
Dissolved oxygen depression upon initial dilution	0.05	0.05
Dissolved oxygen depression due to BOD exertion in the farfield	0.14	0.23
Dissolved oxygen depression due to steady-state sediment oxygen demand	0.07	0.16
Dissolved oxygen depression due to abrupt sediment resuspension	0.07	0.12

These model predictions have been compared to the most recent ambient water quality data (Table 8) to assess the potential for reductions in DO concentrations greater than 10% as a result of the outfall. The dissolved oxygen depressions after initial dilution (0.5 mg/l) and due to BOD exertion in the farfield (0.14 to 0.23 mg/l) were compared to ambient dissolved oxygen concentrations at mid-depths which correspond to the trapping depth of the plume. Concentrations at these depths are generally greater than 5 and never less than 3 mg/l. The DO depressions associated with sediment demand (0.7 to 0.16 mg/l) should be compared to bottom waters at the outfall depth. Most of the time these waters are well above 3 (lowest value was 2.5 mg/l). Based on the predictions of the models and the ambient dissolved oxygen concentrations in the water column, it is unlikely that the outfall could reduce dissolved oxygen concentrations in the water column by 10%.

USEPA also looked at the ambient data to determine if there were any depressions in DO that might be attributable to the outfall (Table A-3). Dissolved oxygen concentrations in surface waters were generally around 8 mg/l. DO decreased with depth, largely as a result of low DO associated with bottom water. There are no real differences between nearfield stations (Stations E8, E10, E12, E16, E18) and farfield stations (Stations B9, B12, B1, B5).

Table 8. Depth distribution of dissolved oxygen concentration in waters offshore of Point Loma (1995-2000).

Depth (feet)	# of samples	% of samples DO > 5 mg/l	% of samples DO < 5 mg/l	% of samples DO < 4 mg/l	% of samples DO < 3 mg/l
5	1621	99%	1%		
10	180	100%			
20	180	100%			
40	359	99%	1%		
60	355	94%	6%		
140	1080	85%	15%	2%	
200	898	69%	31%	7%	
260	610	50%	50%	16%	
290	120	33%	67%	29%	3%
320	468	25%	75%	31%	3%
380	94	17%	83%	44%	6%

USEPA concludes that the applicant will be able to meet the 58% removal requirement, and that the discharge is not likely to cause dissolved oxygen depressions greater than 10%. USEPA's conclusion on ambient effects is based on a review of plant performance, modeling efforts performed in 1995 and more recent ambient monitoring data. Permit limits for suspended solids and BOD will be established to ensure that the plant continues to operate at a comparable level of performance through the permit period.

C. pH Compliance.

The COP states that receiving water pH shall "*not be changed at any time more than 0.2 pH units from that which occurs naturally.*" In addition, the COP requires that effluent pH be within 6.0 to 9.0 pH units at all times. This is the same as the secondary treatment requirement for pH. The applicant is not seeking a waiver from the pH requirement.

D. Conclusions on Compliance with Applicable Water Quality Standards.

Based on the information provided by the applicant, the outfall will be operated in a manner which ensures compliance with the State water quality standards relevant to suspended solids, BOD and pH. A review of past performance indicates that the discharge can be operated in a manner that will meet the effluent limits specified in the COP for suspended solids (75% removal), turbidity (75 NTU) and pH (6.0 to 9.0). Based on the review of effluent data, ambient water quality data (1995 to 2000), and model projections USEPA finds that the discharge will have minimal effects on ambient suspended solids concentrations, light transmittance, dissolved oxygen or pH.

Effluent limits for suspended solids and BOD will be established in the NPDES permit to ensure continued compliance with State standards for effluent (suspended solids, turbidity and pH) and receiving water (suspended solids, light transmittance, dissolved oxygen and pH).

2. Protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife, recreational activities or public water supplies. [Section 301(h)(2), 40 CFR 125.62].

A. Physical Characteristics of the Discharge.

1. Outfall/Diffuser and Initial Dilution. 40 CFR 125.62(a) provides that the proposed outfall and diffuser must be located and designed to provide adequate initial dilution, dispersion, and transport of wastewater to meet all applicable water quality standards at and beyond the boundary of the zone of initial dilution (ZID). This evaluation is based on conditions occurring during periods of maximum stratification, and during other periods when discharge characteristics, water quality, biological seasons, or oceanographic conditions indicate more critical situations may exist.

The COP specifies that "*waste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.*" In the COP, minimum initial dilution is defined as the "*lowest average initial dilution within any single month of the year.*" Dilution estimates are "*based on observed waste flow characteristics, observed receiving water density structure and the assumption that no current, of sufficient strength to influence the initial dilution process, flow across the discharge structure.*"

In the 1995 application, the City offered an estimate of initial dilution of 204:1 based on a modified version of the RSB model (USEPA, 1994; Roberts *et al.*, 1989 a,b,c,) and a projected flow of 205 MGD. Additional physical oceanographic modeling performed by the applicant indicated that the lowest 5th percentile initial dilution was 215:1 and that the median dilution was 365:1. Using a slightly different set of assumptions, USEPA (1995) predicted minimum monthly-average initial dilutions ranging from 169:1 to 205:1 and predicted a long-term effective dilution of 328:1 in the area around the outfall. USEPA's estimates for the worst-case initial dilutions ranged from 99:1 to 143:1.

Based on the information provided, the diffuser is well designed and achieves a high degree of dilution. The USEPA's and the City's numbers are comparable given the uncertainties associated with physical oceanographic models. USEPA finds that the value of 204:1 provides a conservative estimate of initial dilution and uses this value for evaluating compliance with water quality standards. USEPA uses a value of 99:1 in this review to assess worst-case conditions.

2. USEPA Water Quality Criteria and State Water Quality Standards. Under section 303(d)(1) of the WQA, a discharger must be in compliance with the criteria established under section 304(a)(1) of the Clean Water Act at the time their 301(h) permit becomes effective.

State standards for a variety of toxic materials are established in the COP. The receiving water standards for the protection of marine aquatic life and human health are listed in Table B of the COP. USEPA uses an initial dilution of 204 for establishing compliance with the State standards and USEPA water quality criteria related to the protection of aquatic life. USEPA uses the long-term average initial dilution of 328:1 for evaluating compliance with federal water quality criteria for the protection of human health. This is appropriate since these criteria are based on

consumption of fish experiencing long-term exposure to chemical concentrations above the criteria.

USEPA reviewed five-years (January 1995 through December 1999) of effluent data provided by the applicant in electronic format. The data were screened to identify those chemicals that have the potential to exceed either state standards or federal criteria after allowing for dilution. To accomplish this, the statistical distribution of each chemical parameter was evaluated to define a chemical-specific coefficient of variability. This was then used along with the maximum detected value (or maximum detection limit) to estimate the projected upper bound of the distribution based on a 99th percentile confidence limits. In effect, we calculated the effluent concentration that we can say with 99% certainty will not be exceeded during the course of the permit. This procedure known as reasonable potential analysis is documented in the Technical Support Document for Water Quality-Based Toxics Control (USEPA/505/2-90-001, March 1991). The results from this analysis are summarized in Table 9. For perspective, the results from previous reasonable potential analysis performed in 1995 are also provided.

Table 9. Comparison of Reasonable Potential Analyses. Bolded figures are based on detected values, all others are based on detection limits.

1990-1994	1995-1999
	Arsenic
Beryllium	
Copper	**Copper**
Aldrin	*Aldrin*
Dieldrin	*Dieldrin*
Chlordane	*Chlordane*
Toxaphene	*Toxaphene*
Guthion	*Guthion*
DDT	
PCBs	*PCBs*
Acrylonitrile	
Benzidene	*Benzidene*
3,3-dichlorobenzene	*3,3-dichlorobenzene*
Hexachlorobenzene	*Hexachlorobenzene*
Heptachlor	
Heptachlor epoxide	
	Dioxin
Total PAHs	*Total PAHs*

In the 1995 Tentative Decision Document (USEPA, 1995), sixteen chemical parameters were identified with the potential to exceed water quality standards. Of these sixteen, four were based on actual detected values (beryllium, copper, chlordane, DDT). The remaining twelve compounds on the list were based on detection limits only. The results of the new reasonable potential analysis identified thirteen parameters. Three are based on actual detected concentrations (arsenic, copper and dioxin) and ten are based on detection limits only. The difference between the two lists in part reflects improvements in either the effluent quality (i.e., beryllium, DDT, chlordane are no longer detected in the effluent) or detection limits achieved by the laboratory (i.e., for acrylonitrile, heptachlor and heptachlor epoxide). The effluent data for arsenic, copper and dioxin are discussed in more detail below.

Arsenic. The average weekly effluent arsenic concentration was 1.2 ug/l with a standard deviation of 0.4 ug/l (Fig. 3). The maximum arsenic concentration measured in the effluent was 2.7 ug/l. This is lower than the assumed background concentration for seawater of 3.0 (COP, 2001). The predicted maximum arsenic concentration after mixing with ambient seawater is 3.7 ug/l. This is below the USEPA criteria for protection of aquatic life of 36 ug/l and below the COP criteria of 8 ug/l, but above the USEPA human health water quality criteria of 0.14 ug/l. The toxicity of arsenic in marine systems was reviewed by Neff (1997). This review (and references therein) documents that concentrations of total arsenic in clean coastal waters range from 1 to 3 ug/l with an average of 1.7 ug/l. The review also suggested that USEPA's human health water quality criterion is inappropriate for marine waters and that arsenic concentrations typically found in clean coastal waters represent a low risk to human consumers of fish. The effluent is consistently below the COP standard of 8 ug/l. Effluent concentrations have not exceeded the permit limits for arsenic.

Copper. The mean effluent concentration was 55 ug/l with a standard deviation of 37 ug/l (Fig. 4). The maximum measured concentration of copper was 292 ug/l. The COP assumes that background copper concentrations in the ocean are 2 ug/l. After dilution the predicted maximum concentration is 3.4 ug/l. This is higher than the COP standard of 3.0 ug/l and the USEPA criteria of 2.9 ug/l. The assumption in the COP about background concentrations may be overly conservative. Flegal *et al.*, (1991) reported that background copper concentrations California coastal waters were around 0.1 ug/l. Using this number, the expected concentration after dilution would be 1.5 ug/l, which is below the COP standard. Effluent concentrations have not exceeded the permit limits for copper.

Dioxin. Dioxin was measured above the detection limit in 6 of 72 samples collected between 1995 and 2000 (Fig. 5). This is related to improved detection limits from the laboratory. The City uses a high resolution method (USEPA Method 1613) that can detect dioxins in the range of 1 to 10 pg/l. This is low but still several orders of magnitude higher than the COP standard for total dioxins of 0.0039 pg/l. The detection limits achieved by the applicant are close to the permit limit of 0.8 pg/l. For most chemicals the COP defines minimum levels that "*represent the lowest concentration that can be quantitatively measured in a sample given the current state of performance in analytical chemistry methods in California*". The COP also states that "*Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant is greater than the permit limit and greater than or equal to the reported minimum level.*" The COP does not, however, identify a minimum level for dioxins. The applicant points

out that their detection limits for dioxin are three to six orders of magnitude lower than measured at other comparable treatment plants (SCCWRP, In Prep) and that detection of dioxins at these levels can be complicated by false positives associated with working at or near the level of detection, matrix interferences and low-level laboratory contamination. Given the uncertainties associated with the low-level analysis of dioxins, we do not consider the values reported by the applicant to represent water quality exceedances. We believe this is consistent with the intent of COP. The applicant is working to improve the methodology for dioxin analyses and will be submitting this to USEPA for approval under the alternative test procedures.

Based on this review of the effluent data, EPA concludes that the effluent quality of the plant is sufficient to meet water quality standards. In a letter dated January 24, 2002 the Regional Board stated that the wastewater discharge "will comply with the applicable water quality standards for waters of the Pacific Ocean included in the 2001 California Ocean Plan and the Water Quality Control Plan for the San Diego Basin (Basin Plan)."

In the 1995 permit, USEPA and the Regional Board established mass-based performance goals based on the effluent data (1990 - April 1995). For most parameters these performance-based goals are set below the effluent limits established in the permit. They were designed to provide an early measure of changes in effluent quality which might substantially increase the mass of pollutants to the ocean. Consistent with the State Board's anti degradation policy, these performance goals were intended to serve as a trigger for anti degradation analyses during permit renewal. Three parameters (phenols, zinc, cyanide) were observed to exceed the annual mass-based performance goals in at least one year. San Diego prepared an anti degradation analyses in their renewal application to evaluate the reasons for these increases and the effects of these increases on the marine environment (See Volume 1, Part 3). USEPA reviewed the weekly effluent data for these three parameters (Figs. 6, 7, and 8). As discussed by the applicant, the concentrations of these three parameters are well below the permitted limits. The exceedances of the annual mass-based performance goal for zinc (in 1996) and cyanide (in 1997) appear to be related to episodic events and do not appear to represent any long-term trend of increased loadings. Phenols exceeded the performance goal all five years. The applicant noted that effluent concentrations in phenols were higher in the 1995 to 2000 time frame than in the previous time period (1990 to 1995) on which the benchmarks were established and suggested that this reflected increases in influent concentrations. We do not see any trends in the effluent data which would suggest that phenol concentrations increased since 1995 (Fig. 6). The existing performance goals will remain in the permit as a baseline for measuring future changes in effluent quality and mass loadings.

In summary, the applicant's discharge will be operated in a manner that ensures compliance with state standards and federal marine water quality criteria. Effluent limits have been established for all COP chemicals and for those USEPA criteria where an analysis of past effluent data indicates a reasonable potential to exceed the standards or criteria. Effluent concentrations will continue to be monitored for all COP constituents and remaining priority pollutants on a regular basis. The results of the effluent monitoring program will be evaluated against performance goals established in the permit.

3. Dilution Water Recirculation. Under section 303(e) of the WQA, before a 301(h) permit may be issued for discharge of a pollutant into marine water, such marine waters must exhibit characteristics assuring that the water providing dilution does not contain significant amounts of previously discharged effluent from the treatment works.

This issue was addressed by City in the 1994 application. To estimate the potential for re-entrainment effects on the 30-day average concentration, the applicant made the assumption that receiving water around the outfall contains all the wastewater effluent discharged during a 30-day period. This is an extremely conservative assumption, as physical oceanographic models indicate that the residence time for wastewater within a 30 Km by 12 Km area around the outfall is about 4.5 days and that 95% of the wastewater is advected out of the area within two weeks. A background effluent concentration was estimated by dividing the volume of wastewater discharged over thirty days by an estimate of the volume of ambient water providing dilution over the 30-day period. Overall, the effect of re-entrainment was to reduce initial dilutions by 8.4 to 8.7%. The minimum monthly-average initial dilution was reduced by around 10%.

USEPA believes that the 10% reduction predicted by the applicant provides a conservative estimate of the effect of re-entrainment on initial dilution. Based on our review of effluent data (above), a 10% difference in initial dilution would not affect the ability of the discharge to comply with State standards or USEPA water quality criteria.

4. Transport and Dispersion of Diluted Wastewater and Particulates, Physical and Chemical Effects. Accumulation of suspended (settleable) solids in and beyond the vicinity of the discharge can have adverse effects on water usage and biological communities. 40 CFR 125.62(a) requires that following initial dilution, the diluted wastewater and particulates must be transported and dispersed so that water use areas and areas of biological sensitivity are not adversely affected.

Solids and Organic matter. The COP states that "*the rate of deposition of inert solids shall not be changed such that benthic communities are degraded" and that "the concentration of organic material in marine sediments shall not be increased to levels which would degrade marine life.*"

In 1994, the City used a sediment deposition model (SEDPXY) to predict the rates of solids deposition around the outfall. The model was run under two flow scenarios assuming flow rates of 205 MGD and 240 MGD assuming solids mass emission rates of 14,073 MT/yr and 16,476 MT/yr, respectively. USEPA (1995) estimated sediment deposition using a modified version of the ASTD sediment deposition model. This model was run assuming a flow of 205 MGD flow rate assuming a solids loading of 13,600 MT/yr. The results from these efforts are summarized in Table 10. The results from this USEPA's ASTD model have been adjusted in this review to evaluate deposition associated with loadings for the 15,000 MT/yr scenario.

The predictions generated using USEPA's model are likely to be different from the applicant's for a number of reasons, including differences in the use of current meter data, bathymetry, trapping depth distributions, the size and resolution of the model grid, and different assumptions regarding the rate with which effluent particles settle (*e.g.*, the settling velocities used by USEPA were about two times higher than those used by the applicant). As a result of these differences

USEPA's model predicts a greater number of particles settling over a smaller area and thus are more conservative in nature.

Table 10. Results of sediment deposition modeling performed by the City (1994) and USEPA (1995).

	San Diego	USEPA
Mass of particles (Mt/yr)	14,073 - 16,476	13,600 - 15,000
Area modeled (km2)	360	200
Percent of particles settling in area modeled	8%	12%
Area around the diffuser modeled (Km^2)	0.01	0.25
Solids deposition rates ($g/m^2/yr$)	152 - 174	254 - 280
Organic deposition rates ($g/m^2/yr$)	122 - 139	203 - 224
Peak a 90-day solids deposition rates ($g/m^2/90$-days)	45 - 51	72 - 79
Peak 90-day organic deposition rates ($g/m^2/90$-days)	37 - 57	58 - 64
Steady-state organic accumulation (g/m^2)	18 - 38	56 - 62

Estimates of solid deposition rates range from 152 to 280 $g/m^2/yr$. This can be compared to an estimate of 625 $g/m^2/yr$ from sediment trap data for the San Diego area (Hendricks and Eganhouse, 1992). Assuming that effluent solids are 80% organic matter, the estimates of organic deposition rates in the area around the outfall range from 122 to 224 $g/m^2/yr$. Although not strictly comparable, our best estimates of the organic carbon flux from the water column associated with primary and secondary production in Southern California are 26 to 62 g $C/m^2/yr$ (Nelson et al., 1987).

The models predict a range of organic accumulation in the sediments from 18 to 62 g/m^2. The steady-state accumulation of organic matter in the sediment is a function of the rate with which organic matter is deposited in the sediments and the rate with which it decays. Both USEPA and the City used a default decay rate of 0.01/day and the conservative assumptions of the sediment deposition models used by USEPA and the City is that there is no resuspension and transport of solids outside the area. This tends to overestimate actual accumulation of outfall deposits in the sediments. For instance, Hendricks and Eganhouse estimated a background accumulation rate for solids of 103 $g/m^2/yr$, one sixth of their estimate for solids deposition. Applying this ratio to the model results in Table 10 yields organic accumulation rates of 20 to 37 g/m^2 and steady-state accumulation rates of 5 to 10 g/m^2. Empirical evidence suggests that steady-state organic accumulations less than 50 g/m^2 have minimal effects on benthic communities (USEPA, 1982).

To evaluate whether significant accumulation is actually occurring in the field, USEPA looked at trends in sediment monitoring data that occurred in the years from 1991 to 2000 (see Fig. 2 for station locations). We compared the results of pre-discharge monitoring surveys (1991 to 1993) and discharge monitoring surveys (1994 to 2000). High rates of organic accumulation in sediments should be associated with elevated sediment concentrations of total volatile solids(TVS), total organic carbon (TOC), biochemical oxygen demand (BOD), and sulfides. To

put these values in perspective we also compared the data from around the outfall to the results from regional surveys conducted in the offshore areas of San Diego (SCBPP, 1994, San Diego, 1995, 1996, 1997; SCCWRP, 1998, San Diego, 1999).

Total Volatile Solids (TVS). TVS is one measure of organic matter in the sediments. The average pre-discharge concentrations from these stations ranged from 2.1 to 2.3% and the average concentrations since 1994 have ranged from 2.4 to 2.7%. Although there appears to be a slight increase during the discharge period (Fig. 10), there does not appear to be any spatial pattern which would suggest that this is an outfall-related effect. The average concentration from the regional surveys was 2.4% with a standard deviation of 1.1%.

Total Organic Carbon (TOC). TOC is a direct measure of organic carbon in the sediments. There does not appear to be any spatial or temporal trends in TOC which might suggest an outfall-related effect (Fig. 11). The concentrations at the outfall depth averaged around 0.5% in both the pre-discharge and discharge time periods. The one exception is at Station B12 (12.7 Km north of the outfall) where TOC values ranged from 0.5% to 3.0%. Background TOC concentrations in the San Diego region ranged from 0 to 3.8%. The average concentration from the regional surveys was 0.5%.

Biochemical Oxygen Demand (BOD). Sediment BOD is an indirect measure of organic enrichment. Although there is some variability in the data (Fig. 12), sediment concentrations were generally in the 200 to 400 ug/g range. There as no apparent increase during the period of the discharge. These values are typical of background concentrations from regional reference surveys in the San Diego Region.

Sediment sulfides. Sulfides are a by-product of anaerobic digestion of organic matter by sulfur bacteria. Sulfide concentrations increased during the discharge period at most stations (Fig. 13). The highest concentrations were seen at station E14 (as high as 30 ug/g). Elevated concentrations were also seen on occasion upcoast of the outfall but the pattern does not appear to be consistent over time. Sulfide concentrations from regional surveys in the San Diego region ranged from 0.1 to 272 ug/g, but were generally less than 5 ug/g. The average concentration from the regional surveys was 8.1 ug/g with a standard deviation of 26.9 ug/g.

Both model predictions and monitoring results indicated that deposition and accumulation rates associated with the outfall are not likely to have negative effects on benthic communities outside the ZID. Sediment parameters associated with organic accumulation (such as total volatile solids, biochemical oxygen demand, total organic carbon and dissolved sulfides) do not appear to show any outfall-related effects. The one exception is dissolved sulfide which does indicate an outfall-related pattern. All these parameters are within the range of natural variability in other surveys and not likely to have significant effects on benthic communities.

Sediment Contamination. The COP states that *"the concentrations of toxic substances in marine sediments shall not be increased to levels which would degrade indigenous biota or degrade marine life."*

The concentrations of nine metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel,

silver, and zinc), total PCBs and total DDTs were evaluated in this review. Trends in sediment contaminant concentrations at stations along the 98-m depth contour (diffuser depth) were evaluated. The data from stations around the outfall were compared to data from the regional reference surveys. To assess the potential impacts to biological communities, the data were compared to sediment guidelines in the literature (as summarized Table 11). Although these guidelines are not regulatory in nature, they do provide some information on the concentrations where the potential for biological effects are likely to occur. The TELs and ERLs are thought to reflect concentrations which pose little risk of toxicity. When sediment concentrations are higher than PEL and ERM values there may be potential for sediment toxicity and further investigation is warranted (Long *et al.*, 1998).

Table 11. Overview of numeric sediment quality guidelines (from Buchman, 1999).

Pollutant	TEL	ERL	PEL	ERM	AET
Arsenic (ug/g)	7.24	8.2	41.6	70	35
Cadmium (ug/g)	0.67	1.2	4.2	9.6	3.0
Chromium-total (ug/g)	52.3	81	160.4	370	260
Copper (ug/g)	18.7	34	108	270	390
Lead (ug/g)	30.2	46.7	112	218	400
Mercury (ug/g)	0.13	0.15	0.696	0.71	0.41
Nickel (ug/g)	15.9	20.9	42.8	51.6	110
Silver (ug/g)	0.73	1	1.77	3.7	3.1
Zinc (ug/g)	124	150	271	410	410
DDT-total (ug/kg)	3.89	1.58	51.7	46.1	11

TEL = threshold effects level; PEL = probable effects level; ERL = effects range low; ERM = effects range median; AET = apparent effects threshold

Arsenic. The average arsenic concentration ranged from 2.2 to 2.5 ug/g during the pre-discharge period and from 3.1 to 3.8 ug/g during the discharge period. This suggests that arsenic concentrations in the sediments have increased by about 1 ug/g during discharge period (Fig. 14). The highest increases were at E14 (near the outfall) and B12 (located 12.7 Km north of the outfall). The average arsenic concentration from the regional surveys was 3.4 ug/g, with a standard deviation of 1.4 ug/g. Arsenic concentrations around the outfall are low relative to ER-L (8.2) and TEL (7.2) thresholds.

Cadmium. Cadmium concentrations greater than the detection limit (0.5 ug/g) were not observed in any of the discharge period samples collected along the 98-m contour (Fig. 15). Cadmium concentrations from the regional surveys were also generally low, being measured in only 25 out of 184 of the measurements collected for the regional surveys between 1995 and 1999. The average measured cadmium concentration was 0.6 ug/g with a standard deviation of 0.3 ug/g. These values are similar to background concentrations for the Bight reported by NOAA (Mearns *et al*, 1991). Cadmium concentrations near the outfall are similar to background and low relative to threshold values (TEL = 0.67 ug/g, ERL = 1.2 ug/g).

Chromium. The average chromium concentration during the discharge period (17.7 ug/g) was slightly higher than in the pre-discharge period (15.8 ug/g). This suggests that chromium concentrations have increased by about 2 ug/g since the plant started discharging (Fig. 16). The average value from the regional surveys was 16.0 ug/g with a standard deviation of 6.7 ug/g. The

numbers around the outfall are similar to background numbers and well below the lowest effects thresholds (TEL = 52 ug/g, ERL = 81 ug/g).

Copper. Copper values ranged from 3.1 to 20 ug/g, with a single outlier of 80.4 ug/g in June 1994 at station B9 located 10.5 Km north of the outfall (Fig. 17). If we remove the outlier, we find that the average concentrations appear to have increased from an average of 7.3 ug/g in the pre-discharge period to 8.8 ug/g for the discharge period. The average value from the regional reference surveys was 8.6 ug/g with a standard deviation of 5.4 ug/g. The copper values are generally low relative to sediment quality thresholds (TEL = 18.7 ug/g, ERL = 34 ug/g).

Lead. Lead concentrations in the sediments were generally below the detection limit of 5 ug/g, being detected in less than 25% of the samples (27 out of 120 measurements). Concentrations in the discharge period for the summer 98-m stations ranged from detection limits to 15.5 ug/g (Fig. 18). Lead was also rarely detected above 5 ug/g in the regional surveys (33 out of 184 samples). The average measured concentration from the regional surveys was 6.9 ug/g with an standard deviation of 1.6 ug/g. This is consistent with data from previous reference surveys (Thompson *et al.*, 1987, 1992) where background concentrations for the Bight were around 2 to 12 ug/g. Concentrations around the outfall are similar to those reported in the regional surveys and well below any of the sediment quality thresholds (ERL = 46.7 ug/g, TEL = 30.2 ug/g).

Mercury (Hg). Comparison of concentrations from the pre-discharge and discharge periods (Fig. 19) is complicated by differences in detection limits (which ranged from 0.025 to 0.047 ug/g) between years and the limited number of detected values in any given year. Mercury was only detected in about 25% of the samples. The maximum detected value was 0.11 ug/g. In the regional surveys, mercury was detected in about 65% of the samples (119/184 or 65% of the samples). The average measured concentration from the regional surveys was 0.05 ug/g with a standard deviation of 0.02 ug/g. Eganhouse *et al.*, (1976) suggested that background concentrations in the Bight were around 0.05 ug/g. The mercury concentrations in sediments near the outfall appear to be similar to background values and below the lower sediment quality threshold values for mercury (TEL = 0.13 ug/g, ERL = 0.15 ug/g).

Nickel (Ni). There does appear to be an outfall-related pattern in the data (Fig. 20). This pattern is driven largely by a single sample at E14 in 1994. This value of 29 ug/g is questionable as duplicate analysis of this sample yielded a value of 11 ug/g. For perspective, the average differences in nickel concentrations between duplicate samples is around 1 ug/g. Averaging the two duplicates from E14, yields a value of 20 ug/g. While this value is still high, it is more in line with other values. On average, nickel concentrations have increased from 6.6 to 7.8 ug/g. The average nickel concentration from the regional reference surveys was 8.3 ug/g with a standard deviation of 3.3 ug/g. The maximum value was 21 ug/g. With the exception of the one outlier at E14, the concentrations near the outfall are below the lower sediment quality thresholds (ERL = 20.9 ug/l, TEL = 15.9 ug/l).

Silver (Ag). Almost all samples were below detection limits of 3 ug/g (Fig. 21). Silver was also detected very infrequently in regional surveys (172/188 or less than 10% of the samples). The maximum concentration in the regional surveys was 6.2 ug/g. NOAA's suggested background concentration for silver is 0.01 to 0.1 ug/g. Although silver has been suggested as a useful

indicator of sewage effluent (Mearns *et al.*, 1991; Sanudo-Wilhelmy and Flegal, 1992), it is impossible to make conclusions about silver concentrations at the Point Loma outfall because the detection limits of 3 ug/g are high relative to background concentrations. These detection limits are also high relative to threshold values for silver (TEL = 0.73 ug/l, ERL = 3.7 ug/l).

Zinc (Zn). There is no apparent outfall-related pattern in zinc concentrations. Zinc concentrations are generally around 20 to 40 ug/g. The one notable exception was in 1997 at station B9 (10.5 Km north of the outfall) where the concentration was 140 ug/g (Fig. 22). The average pre-discharge concentration was 29 ug/g. The average concentration from the discharge period data (excluding the outlier) was 31 ug/g. The average concentration from the regional surveys was 27.4 ug/g with a standard deviation of 13.9 ug/g. The maximum value from the regional survey was 94 ug/g. These values are lower than the average concentrations at the 60- and 150-m stations from 1985 and 1990 SCCWRP reference surveys which ranged from 45 to 55 ug/g. Most values are low relative to threshold values (TEL = 124 ug/l, ERL = 150 ug/g) and within the range of background concentrations.

DDT. *p,p*-DDT was detected in 3 out of 120 samples. Its degradation product *p,p*-DDE was detected in 53 out of 116 samples. The other four DDT isomers (*p,p*-DDD, *o,p*-DDT, *o,p*-DDD and *o,p*-DDE) were not detected at the 100-m stations. Analysis of trends in the DDT data is complicated by differences in detection limits among years (Table 12). Detection limits were 1 ng/g in the pre-discharge time period (1991 to 1993). The detection limits have improved since then. During the 1994-1999 time period, the detection limits ranged from 0.37 to 0.55 ng/g. The three detected values for *p,p*-DDT were 1.2 ng/g, 2.9 ng/g and an anomalously high 40 ng/g (at Station E2 , located 4.6 Km south of the outfall). Trends in *p,p*-DDE can be assessed by comparing the number of detected values greater than 1.0 ng/g in the pre-discharge and discharge periods. In the pre-discharge period, *p,p*-DDE values greater than 1.0 ng/g were detected in 18 out of 36 measurements. In the discharge period data, only 11 out of 84 measurements were greater than 1.0 ng/g. The highest values were for 1993 where all 12 stations were higher than1.0 ppb (max concentration was 4.4 ppb). It is unclear why the *p,p*-DDE concentrations would be greater in sediments from the pre-discharge period. With the exception of 1993, the values from the pre-discharge and discharge periods are similar.

Table 12. DDT detection limits in sediments from San Diego (concentrations in ng/g)

DDT Isomer	91	92	93	94	95	96	97	98	99	00
p,p-DDT	1.00	1.00	1.00	0.44	0.44	0.94	0.94	0.94	0.94	0.41
p,p-DDD	1.00	1.00	1.00	0.32	0.32	0.91	0.91	0.91	0.91	0.59
p,p-DDE	1.00	1.00	1.00	0.37	0.47	0.44	0.44	0.44	0.44	0.55
o,p-DDT	1.00	1.00	1.00	0.51	0.51	0.39	0.39	0.39	0.39	0.57
o,p-DDD				0.36	0.36	0.26	0.26	0.26	0.26	0.32
o,p-DDE				0.54	0.54	0.39	0.39	0.39	0.39	0.48

Similar findings were observed in the regional surveys. The parent compound *p,p*-DDT was detected rarely (2 out of 184 samples), the degradation product *p,p*-DDE was detected more

frequently (59 out of 184 samples), and the isomers *p,p*-DDD, *o,p*-DDT, *o,p*-DDD, and *o,p*-DDE were not detected at all. The maximum concentrations of *p,p*-DDT and *p,p*-DDE in the regional surveys were 3.3 and 3.4 ng/g respectively. The DDT concentrations near the outfall are similar to background concentrations. These values are generally low relative to sediment quality thresholds for total DDT (ERL = 1.58 ng/g, TEL = 3.89 ng/g).

PCBs. The applicant reported that PCBs were not detected in the sediments at the outfall depth. Detection limits for PCB Arochlors 1248, 1254, 1260 and 1262 ranged between 10 and 13 ng/g. The applicant has also been measuring PCB congeners since 1998. PCB congeners were only detected on two occasions at the 100-meter stations (E25, January 2000; E2, April 2000). The detection limits for the various congeners ranged from 1 to 8 ng/g.

Summary of sediment contaminant data. The sediment chemistry data presented by the applicant does not indicate any substantial increase in sediment contaminant concentrations. There appear to be minor increases in the concentrations of certain metals (arsenic, chromium, copper and nickel). Concentrations of metals and organics are within the range of natural variability. The concentrations measured near the outfall were generally below the lowest sediment quality thresholds (such as TELs or ERLs) suggesting that the probability of sediment toxicity is low.

Therefore, USEPA concludes that the discharge will not increase the concentrations of toxic substances in marine sediments to levels that degrade indigenous biota or marine life. The monitoring program being developed as part of the NPDES permit will be designed to continue tracking sediment conditions over time.

B. Impact of Discharge on Public Water Supplies. The applicant's proposed modified discharge will have no effect on the protection of public water supplies and will not interfere with the use of planned or existing public water supplies.

C. Biological Impact of Discharge. The proposed modified discharge must allow for attainment or maintenance of water quality to protect and propagate a balanced, indigenous population (BIP) of shellfish, fish, and wildlife. The applicant must demonstrate that a BIP of shellfish, fish, and wildlife will exist in all areas beyond the ZID that may be affected by the proposed modified discharge.

A BIP is generally defined in the section 301(h) regulations [40 CFR 125.58(f)] as an *ecological community* which exhibits characteristics similar to those of nearby, healthy communities existing under comparable but unpolluted environmental conditions. Consequently, for the purpose of 301(h) the term *population* should be interpreted to mean biological communities and the terms *shellfish, fish and wildlife* should be interpreted to include any or all biological communities that might be adversely affected by the discharge.

The ZID describes an area adjacent to the outfall system in which inhabitants, including the benthos, may be chronically exposed to concentrations of pollutants in violation of water quality standards and criteria. In general, the ZID boundary is operationally defined by the depth of the outfall. For the Point Loma outfall, the ZID boundary is 93.5 m (320 feet) from the outfall and diffuser.

In this evaluation, the effect of the outfall on the BIP is evaluated with respect to potential effects on phytoplankton, effects on benthic and fish community structure, and the potential for bioaccumulation of toxic substances in fish tissue.

1. Phytoplankton. The two following COP standards are applicable to plankton:

> Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded.
>
> Nutrient material shall not cause objectionable aquatic growths or degrade indigenous biota.

Planktonic populations were not measured as part of the applicant's monitoring program. Therefore, this review focuses on variables measured as part of the monitoring program which may relate to phytoplankton, such as ammonia, transmissivity and total suspended solids.

Effluent suspended solids may affect phytoplankton by attenuating light penetration and thus reducing primary productivity. As discussed previously (See Section 1.A), an outfall-related increase in suspended solids of 0.3 to 0.6 mg/l in the area of the ZID is well within the range of natural variability (typically 2 to 5 mg/l). The monitoring data indicates that the effect of the discharge on light transmittance is minimal. These analyses indicate that the outfall-related effects on light penetration are not likely to have a significant effect on phytoplankton productivity.

Effluent ammonia concentrations may also affect phytoplankton productivity because ammonia tends to be a limiting nutrient in coastal waters. Natural background ammonia concentrations within the euphotic zone of the Southern California Bight generally range from below detection limits to 0.02 mg/l (Eppley *et al.*, 1979a). Concentrations in the offshore area are typically lower than 0.01 mg/l. The average ammonia concentrations in the effluent from 1995 to 2000 was 26 mg/l (Table 13).

Table 13. Average monthly effluent concentration for ammonia (mg/l) from Point Loma (1995-2000).

Month	1995	1996	1997	1998	1999	2000	Average 1995-2000
January	19	27	25	24	27	27	25
February	23	26	28	20	25	28	25
March	23	26	30	26	26	28	26
April	24	28	30	26	27	28	27
May	23	27	29	27	26	28	27
June	22	27	28	27	27	28	26
July	23	27	27	26	28	28	27
August	24	26	25	25	26	27	25
September	26	25	22	23	28	28	25
October	26	26	23	23	27	27	25
November	26	28	24	26	29	27	27
December	29	29	25	26	28	29	28
Annual Average	24	27	26	25	27	28	26

The highest monthly average concentration during this time period was 34 mg/l. This equates to a worst-case concentration of 0.34 mg/l (based on 99:1) and a long-term average of 0.09 mg/l (based on a long-term average dilution of 365:1). If these concentrations were to occur in the euphotic zone they could potentially stimulate phytoplankton productivity around the outfall. However, since the wastefield is generally trapped below the euphotic zone, the influence of the wastefield ammonia concentrations on phytoplankton should be minimal.

The applicant measured chlorophyl *a* concentrations (a measure of phytoplankton abundance) in offshore waters since January 1996 as part of their monthly water quality monitoring effort. Although the data is limited, there is no sign of any increase in chlorophyl a concentrations near the outfall.

Summary of effects on phytoplankton. The potential effects of the outfall on phytoplankton productivity were evaluated using the results of the existing monitoring program and model projections provided by the applicant for end-of-permit conditions. Decreases in light transmittance associated with the plume are minimal compared to the range of natural variability. Ammonia concentrations within the plume are likely to be elevated relative to background and could enhance phytoplankton productivity in the vicinity of the outfall. Any substantial increase in phytoplankton productivity would be unlikely however, because the plume trapping depth is generally below the euphotic zone. No increases in chlorophyl a concentrations near the outfall were observed in the monitoring data. Therefore it is concluded that the outfall will not result in phytoplankton blooms or other degraded conditions.

2. Benthic Infauna. The COP standards appropriate to evaluating benthic infauna are:

> Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded.
>
> The rate of deposition of inert solids shall not be changed such that benthic communities are degraded.
>
> The concentrations of toxic substances in marine sediments shall not be increased to levels which would degrade indigenous biota or degrade marine life.

The potential effects of solids deposition and concentrations of toxic substances in marine sediments on benthic communities were addressed previously (See Section 2.A.4). To evaluate whether benthic communities are degraded we evaluated benthic data from the grid of stations near the outfall since 1991 (Fig. 2) and data collected as part of regional reference surveys conducted every summer since 1994 (Fig. 9). In this review we look for differences in the abundances, number of species, as well as differences in the distribution of pollution sensitive and pollution tolerant species. We also looked at the response of two benthic indices designed to evaluate pollutant effects on benthic communities. These were the infaunal trophic index (Word, 1978, 1980) and the Benthic Response Index (Smith *et al.*, 2001). As recommended in the ATSD (USEPA, 1994), outfall-related effects on benthic communities should be evaluated in the context of (1) an evaluation of the range of natural variability in the reference conditions (2) an estimate of the magnitude and areal extent of the effect and (3) the potential for adverse effects.

To evaluate the magnitude and effect of the outfall, we focus on data from the outfall depth (100-meters) and compare values from ZID and nearfield stations to values from farfield and control stations. Station E-14 is located approximately 119 meters from the "Y" of the diffuser and should be considered the ZID boundary station. Stations E11 and E17 are the closest nearfield stations located approximately 204 meters from the south end of the diffuser and 278 meters from the north end of the diffuser, respectively. The remaining E stations are considered farfield stations. The B stations are considered control stations.

The data from the regional reference surveys are used to evaluate the range of natural variability. Since depth is important we focus the review on the benthic data from the 75 to 125 meter depth interval. These data provide a regional perspective on background conditions on the distribution of benthic organisms offshore of San Diego at depths comparable to the outfall.

Within the context of the COP, adverse effects to benthic communities are described in terms of degradation and degradation is defined in terms of statistical significance. We used two distinct but complementary statistical approaches to evaluate benthic degradation (Smith, 2001b). The first statistical approach uses an analysis of variance approach where conditions at control and impact sites are evaluated before and after the outfall went on line. This is known as a BACI (Before-After-Control-Impact) design. In the BACI design, effects at Station E14 were compared to all other100-m stations (Table 14). In addition, the two nearfield stations (E11 and E17) were compared to Stations B9 and E26 representing the reference and most upcoast farfield station. The second statistical approach uses the regional reference data to develop a reference envelope for key benthic parameters. Tolerance intervals were then defined to establish bounds around the reference envelope. Data from the outfall were then evaluated against the upper and/or lower bounds of the reference envelope. In the BACI design outfall impacts are evaluated against fixed control site(s). In the reference envelope approach impacts are evaluated against multiple sites which are intended to reflect background or reference conditions. The results of the BACI analyses are summarized in Table 14. The tolerance intervals are presented in Table 15 along with summary statistics from the regional surveys.

Table 14. Summary results of BACI analysis. (Values in table refer to alpha value, NS means not statistically significant).

	E14 vs. all stations	E17 vs. E26&B9	E14 vs. E26&B9	E11 vs. E26&B9
Number of species	0.05	0.05	0.05	0.05
Total abundance	0.05	NS	0.1	0.05
Amphiodia	0.05	NS	0.05	NS
Parvilucina tenuisculpta	0.05	0.05	0.05	0.05
Euphilomedes carcharodonta	0.05	NS	0.05	0.1
Capitella spp.	0.1	NS	0.1	NS
Infaunal Trophic Index	0.05	0.05	0.05	0.05
Benthic Response Index	0.05	0.05	0.05	0.05

Number of species. One potential indicator of environmental degradation would be a reduction in the number of species around the outfall. The data from the 98-m stations suggests that number of species generally increased after 1993 when the discharge at the current deepwater site began (Fig. 22). The number of species ranged from 93 to 128 per grab in the discharge period. Although there is a lot of variability between years, the BACI analysis indicates that the number of species at Station E14 is statistically higher than at the other stations. The two closest nearfield stations (Stations E11, E17) were also statistically elevated when compared to upcoast reference (Station B9) and farfield (Station E26) stations. This suggests that there may be an outfall-related enhancement in the number of species near the outfall. The fact that increases in species number were also seen at most other stations suggests that some other region-wide factors may also be influencing species number. In the regional surveys the number of species ranged from 50 to 149 per grab (Fig. 23). The number of species at stations near the outfall were within the bounds of the reference envelope (51 to 134) and not likely to be environmentally significant.

Abundance. Benthic abundances are generally predicted to increase in response to organic enrichment. Increased abundances associated with moderate levels of organic enrichment are generally not considered to be adverse unless accompanied by a reduction in the number of species. However as the level of organic enrichment increases the number of species may begin to decline and extremely high abundances associated with reduced number of species would be considered an indication of an adverse outfall-related effect. Benthic abundances would be expected to decline when levels of organic enrichment result in anoxic sediment conditions. In this case, decreased abundances would be indicative of a degraded condition.

Benthic invertebrate abundances at the 100-m stations ranged from 223 to 662 per grab in the discharge period (Fig. 24). Although the inter-annual variability is high, benthic abundances appear to have increased during the discharge period at all stations. BACI analysis indicates that the higher abundances at Stations E14 and E11 are statistically significant. In the regional surveys, average benthic abundances ranges from 173 to 1,072 per grab (Fig. 25). Abundance values at the outfall depth were generally within the tolerance limits for the reference envelope (140 to 616).

Indicator species. We looked at the presence of four key benthic species known to respond to outfall related effects: a brittle star (*Amphiodia urtica*), a bivalve (*Parvilucina tenuisculpta*), a crustacean (*Euphilomedes carcarodonta*) and a polychaete (*Capitella spp.*)

Amphiodia urtica has been suggested as a key indicator species, because it is one of the most abundant species on the shelf and because its abundances are very much reduced near sewage treatment outfalls (Thompson, *et al.*, In Prep). *Amphiodia* abundances from the regional survey ranged from 0 to 175 per grab. They tend to be more abundant at midshelf depths (Fig. 26). The 100-meter outfall depth is at one edge of the depth distribution for *Amphiodia*. The values at the 100-m stations ranged from 5 to 97 per grab. However, there is a clear outfall related pattern in their distribution (Fig. 27). *Amphiodia* abundances appear to have increased at all stations except in the "Y" of the outfall (Station E14) where numbers remain lower than pre-discharge. BACI analysis indicates that this decrease at Station E14 is statistically significant. The effect on *Amphiodia* abundances does not appear to extend beyond the ZID boundary.

The bivalve, *Parvilucina tenuisculpta*, has been suggested as an indicator species because it is found in high abundances in areas of moderate organic enrichment. Abundances from the 100-m stations ranged from 0 to 14 per grab. There is a distinct pattern of increased abundance nearby (Stations E17, E14, E11) which suggests that the outfall is having an enhancement effect near the outfall (Fig. 28). The BACI analysis indicates that abundances at Station E14 are statistically significant as were the abundances at Stations E11 and E17. The range in abundances at these stations near the outfall is also similar to that observed in the regional reference surveys (Fig. 29), where the number ranged from 0 to 13 per grab and the upper bound for the tolerance interval is 14 per grab.

The crustacean, *E. carcharodata* is of interest as indicator species because the abundances of this ostracod species are generally higher near outfalls. At the 100-m stations, *E. caracarodata* abundances ranged from 0 to 28 per grab in the pre-discharge period and from 0 to 31 per grab in the discharge period (Fig. 30). The pattern of increased abundances near the outfall (Stations E14 and E11) and decreased abundances upcoast of the outfall (Stations E17, E20, E23) is similar to that observed with *Parvilucina*. BACI analysis indicates that the increase at Station E14 is statistically significant at the 0.05 alpha level; the increase at Station E11 was statistically significant at the 0.10 alpha level (Table 14). *E. carcharodata* abundances from the regional surveys ranged from 0 to 18 per grab (Fig. 31). Abundances at the outfall depth were generally below the upper limit of the tolerance interval (17 per grab).

Capitella capitata abundances are generally indicative of organic enrichment. Abundances in the regional surveys are fairly low, ranging from 0 to 4 individuals per grab (Fig. 32). A comparison *Capitella* abundances during the pre-discharge and discharge periods clearly indicates enhanced numbers near the outfall (Stations E14 and E17). However, these differences were not statistically significant at the 0.05 level using the BACI model (Table 14). *Capitella* abundances around the ZID boundary (Stations E14 and E17) are higher than the upper reference envelope limit of 3 (Fig. 33). This indicates localized enhancement in the immediate vicinity of the outfall.

Benthic Indices. The ITI is a numerical index which incorporates the relative abundance of over 500 invertebrate species into a single number. The ITI is largely driven by the abundance of many of the species listed above (e.g. *Amphiodia spp.*, *Euphilomedes spp.*, *Parvalucina tenuisculpta*; *Capitella spp.*) and so will reflect and amplify many of the patterns previously discussed.

ITI values from the regional surveys ranged from 73 to 95 ITI units (Fig. 34). At the 100-m stations they ranged from 74-92 over this same time period. There appears to be a long-term temporal pattern in the ITI values (Fig. 35). Values increased from 1991 to 1993, decreased in 1994, remained relatively low until 1997, and then increased again in 1998 and 1999. The range of variability in the ITI values is roughly the same for the pre-discharge and discharge periods. There does appear to be an outfall-related spatial pattern, with values near the outfall (Stations E14, E17, E11) being generally lower than nearfield and farfield stations by 3 to 5 units. The decrease at Station E14 is statistically significant. Although the ITI values at E17 and E11 are higher during the discharge period than they were during the pre-discharge period, the depression relative to other stations (i.e., Stations B9, E26) was statistically significant (Table 14). The ITI

values at stations near the outfall were generally higher than 74, the lower limit of the reference envelope.

The BRI is a benthic response index developed by SCCWRP as part of the Southern California Bight Pilot Project (Smith *et al.*, 2001a) which incorporates information on over 700 benthic species. Values lower than 25 are generally considered to be un-impacted. BRI values from the regional surveys ranged from -4 to 15 (Fig. 36). BRI values from the 100-m stations ranged from -2 to 16. BRI values were generally higher at Stations E14, E11, and E17 (Fig. 37). These were statistically significant based on the BACI analysis. The upper bound for the reference envelope was 11. BRI values higher than this were only observed at Station E14 indicating that the effect is localized.

Table 15. Summary of benthic data from regional reference surveys (1994-1999)

	1994	1995	1996	1997	1998	1999	Tolerance Intervals	
Number of species							**Lower**	**Upper**
Min	57	67	71	59	37	50	51	134
Ave	77	101	92	84	98	87		
Max	104	149	121	123	172	130		
Total Abundance								
Min	173	261	226	233	187	240	140	616
Ave	353	439	324	340	520	390		
Max	602	587	457	500	1072	574		
Amphiodia spp.								
Min	5	1	23	20	0	17	0	NA
Ave	50	66	66	76	45	90		
Max	106	175	138	151	149	203		
Parvalucina tenuisculpta								
Min	0	0	0	0	0	0	NA	14
Ave	1	1	1	1	3	0		
Max	5	7	4	2	13	1		
Euphilomedes cacharodata								
Min	0	0	0	0	0	0	NA	17
Ave	1	3	2	4	3	1		
Max	8	18	5	17	13	3		
Capitella spp.								
Min	0	0	0	0	0	0	NA	3
Ave	0	0	0	0	1	0		
Max	0	1	3	0	4	1		
ITI								
Min	75	76	80	78	73	85	74	NA
Ave	81	83	85	85	83	90		
Max	85	88	89	90	91	95		
BRI								
Min	0	0	2	-1	-1	-4	NA	11
Ave	1	4	5	3	9	0		
Max	5	6	9	8	15	3		

Summary of effects on benthic community structure. The monitoring program is able to pickup shifts in biological communities responding to the presence of the outfall. There are statistically significant changes at the ZID boundary (Station E14) for almost all parameters evaluated in this review. For certain parameters such as number of species, the BRI, and possibly the ITI, these extend to the nearfield stations (Stations E17 and E11). Conditions beyond the zone of initial dilution were generally similar to background conditions as defined by the reference envelope. The outfall does not appear to be causing any biologically significant changes in benthic community structure in the vicinity of the outfall which might be construed as degradation. USEPA concludes that the discharge is not having significant effects on benthic populations beyond the zone of initial dilution

3. Fish and Epibenthic Macroinvertebrates. The COP states that 'marine communities, including vertebrate, invertebrate, and plant species shall not be degraded'.

This review of fish populations focuses on community parameters such as number of species, total abundances and changes in the abundances of common species. For the purpose of analyses, trawl stations SD9, SD10, SD11 and SD12 are considered nearfield stations (see Fig. 38 for station locations). Stations SD07 and SD08 are the southern farfield stations and Stations SD13 and SD14 are the northern farfield stations. Spatial and temporal trends were evaluated by comparing three years of pre-discharge monitoring to the seven years of monitoring that has occurred since the discharge began at the deep ocean outfall.

Table 16. Summary of fish trawl data

	Nearfield stations 1990-1993	Farfield stations 1990-1993	Nearfield stations 1994-2000	Farfield stations 1994-2000
Number of species	12	13	13	15
Total abundance	174	200	327	302
Biomass (kg)	3.5	4.0	6.2	4.7

The average number of species collected per trawl over the ten-year monitoring period ranged from 6 to 23 (Fig. 39). The average number of species at the nearfield increased from 12 to 13 and the average number of species in the farfield stations increased from 13 to 15. These apparent increases are well within the range of natural variability and there were no spatial patterns or temporal trends in the number of species which might suggest an outfall-related trend.

Fish abundances were more variable with values ranging from 22 to 807 fish per trawl (Fig. 40). Abundances appear to have increased during the period since the discharge began. At the nearfield stations, abundances increased from 174 to 327; at the farfield stations the numbers increased from 200 to 302. Abundances tended to be lower at all stations in 1992 and 1998 and higher at all stations in 1999 and 2000. The southern stations (SD7 and SD8) tended to have lower abundances than the more northern stations.

The fish biomass data also tended to be highly variable, with values ranging from 0.6 to 24.2 kilograms of fish per trawl (Fig. 41). At the nearfield stations, biomass appears to have increased from 3.5 to 6.2 Kg. At the farfield stations average biomass increased from 4.0 to 4.7 Kg. Most of the increase in biomass at the nearfield stations is due to two trawls at SD11 in 1994 (high abundance and high species richness) and SD12 in 1997 (moderate abundances and high species

richness). When these two data points are removed, the differences in fish biomass between pre- and post-discharge are minor. As with abundance data, the biomass data tended to be lower at the southern-most stations.

The same species were abundant in both pre-discharge and discharge period. These numerically dominant species and their relative abundance (expressed as percent) are listed in Table 17.

Table 17. Dominant fish species across all stations for the pre-discharge and discharge periods.

Common Name	Percentage (1990-1993)	Percentage (1994-2000)
Pacific sanddab	64.2%	58.0%
Plainfin midshipman	10.0%	8.3%
Dover sole	5.9%	6.9%
Yellowchin sculpin	2.3%	5.0%
Stripetail rockfish	5.4%	5.0%
Longfin sanddab	2.1%	4.8%
Longspine combfish	0.4%	2.6%
Pink seaperch	0.9%	1.5%
Halfbanded rockfish	0.7%	1.1%
Bay goby	1.2%	1.1%
	93.2%	94.1%

These ten fish species represented more than 90% of the total abundance. Pacific sanddab was the most abundant fish in both the pre-discharge and discharge periods, representing around 60% of the total catch (all surveys combined). There were about 19 more fish species in the trawl data from the discharge period. This is probably related to the fact that we have an additional 4 years of trawl data from the discharge period. There were four species that were present in relatively low abundances in the pre-discharge period trawls were not seen in the discharge period trawls. These were speckled sanddab, blackeye goby, big skate, and jack mackerel. These four species were represented by a total of 12 individual fish. The outfall does not appear to be having any major effects on fish species in the area.

Summary of effects on fish community structure. Analyses of temporal and spatial patterns in the fish trawl data did not reveal any outfall-related patterns. There are no meaningful differences in species composition, abundance or biomass between trawls from the pre-discharge and discharge periods that can be attributed to the outfall.

4. Bioaccumulation and Toxic Pollutants. The COP states that "*The concentration of organic materials in fish, shellfish or other marine resource used for human consumption shall not bioaccumulate to levels that are harmful to human health*". The COP does not define tissue concentration levels that would be harmful to human health or the health of the organism.

The applicant's bioaccumulation monitoring program consists of chemical analysis of both muscle and liver tissue from selected fish species from eight trawl stations. Chemical analyses for priority pollutants in fish tissue are performed on a semi-annual basis (from spring and fall trawls). The applicant also performs chemical analyses on rig-caught fish from two sites (RF1 is near the outfall and RF2 is an area 7 miles upcoast of the outfall). USEPA reviewed the data for the time period from July 1991 through October 2000.

Chemical concentrations in muscle tissue. The muscle tissue data is summarized in Table 18. Tissue concentrations were compared with results from other studies of fish bioaccumulation in the Southern California Bight (as summarized in Mearns *et al.* 1991). Where applicable, the data were also compared to Food and Drug Administration (FDA) action levels and risk-based numbers for tissue concentrations (USEPA, 2000). These are summarized in Table 19.

Arsenic. Arsenic levels in the muscle tissue of fish caught off Point Loma ranged from 0.6 to 28.8 ug/g, with a mean of 6.8 ug/g. Longfin sanddab arsenic concentrations ranged from 0.05 to 28.8 ug/g. The mean concentration prior to the discharge was 9.6 and the mean concentration after the discharge went on line was 11.8 ug/g. Pacific sanddabs off Point Loma had arsenic concentrations ranging from 1.0 to 10.7 ug/g, with a mean of 3.5 ug/g (n = 57). Literature values for Pacific sanddab in the Bight range from 3.1 to 11.6 ug/g. California scorpionfish caught off Point Loma had concentrations ranging from 0.5 to 16.0 ug/g, with a mean of 4.6 ug/g (n = 126). Literature values for California scorpionfish from the Bight range from 0.7 to 1.7 ug/g.

The mean arsenic concentration in fish from the Point Loma area are greater than the USEPA risk-based thresholds of 1.2 ug/g (for non-carcinogenic risk) and 0.026 ug/g (for carcinogenic risks). However, it is unlikely that the Point Loma discharge is a significant source of arsenic. The maximum arsenic concentration measured in the effluent (2.7 ug/l) is less than the background concentration (3 ug/l). The applicant also points out the presence of a significant natural source in submarine hot springs near Punta Banda where concentrations can be as high as 420,500 ug/l. There is no spatial or temporal pattern in the tissue concentrations of longfin sanddab or California Scorpionfish which would suggest that the outfall is having an affect on the fish tissue (Figs. 42 and 43).

Cadmium. Cadmium was rarely detected in fish muscle tissue (in about 8% of the samples). Cadmium concentrations ranged from below detection limits (0.1 to 0.34 ug/g) to a maximum detected value of 1.9 ug/g (n = 359). Concentrations in longfin sanddab values ranged from 0.1 to 0.6 ug/g with an average of 0.32 ug/g (n=114). Cadmium was detected only once in longfin sanddab during in the discharge period. Concentrations in Pacific sanddabs ranged from 0.2 to 0.34 with an average of 0.33 ug/g (n =29). It was not detected Pacific sanddab samples from the discharge period. Concentrations in California scorpionfish values were at the detection limit of 0.34 ug/g (n=116). It was detected only once in the California scorpionfish during the discharge period. Literature values for the Bight (from Mearns *et al.*, 1991) range from <0.001 to 0.200 ug/g. The applicant's data on cadmium in fish tissue can not be compared to these data because of differences in detection limits.

Chromium. Chromium was detected in about 19% of the fish samples. Concentrations ranged from below detection limits (0.2 ug/g to 0.33 ug/g) to a maximum detected value of 54 ug/g. The concentrations in longfin sanddabs ranged from 0.2 to 7.8 ug/g with an average of 0.5 ug/g (n = 119). The concentration in Pacific sanddabs ranged from 0.20 to 0.96 ug/g with and average of 0.39 ug/g (n=30). The concentrations in California Scorpionfish ranged from 0.3 to 1.2 with an average of 0.34 ug/g (n = 116). The two highest measurements (7.8 ug/g in longfin sanddab and 54 ug/g in English sole), were measured in April of 1993 before the discharge went on line. The detection limits associated with the Point Loma data are generally higher than background measurements for the Bight from the literature which ranged from 0.004 to 0.123 ug/g (from

Mearns *et al.*, 1991). There does not appear to be any spatial or temporal trend to suggest that chromium concentrations are increasing as a result of the outfall.

Copper. Copper was measured in concentrations above the detection limit in about half (45%) of the samples. Concentrations in muscle tissue ranged from below detection limits (0.2 to 0.76 ug/g) to a maximum concentration of 9 ug/g. Concentrations in the muscle tissue of longfin sanddab ranged from 0.2 to 7.7 ug/g, with an average of 1.0 ug/g (n = 147). Concentrations in the tissue of Pacific sanddab ranged from 0.2 to 4.1 ug/g, with an average of 1.0 ug/g (n=35). This can be compared to literature values for Pacific sanddab for the Bight which ranged from 0.1 to 0.6 ug/g. Copper concentrations in the muscle tissue of California scorpionfish ranged from 0.5 to 9 ug/g, with a mean of 1.2 ug/g (n = 120). These values are higher than reported literature values for California scorpionfish from other areas in the Bight which ranged from 0.1 to 0.2 ug/g.

Lead. Lead was detected in about 13% of the fish tissue samples. Concentrations in the muscle tissue of fish off Point Loma ranged from 0.2 to 14 ug/g (n = 376). Our review of the lead data is complicated by relatively high detection limits (2.5 ug/g) for most of the samples (i.e., 328 of samples). For the forty-eight samples where detection limits were lower (0.2 to 0.5 ug/g) the range of values was 0.2 to 14 ug/g. There were 19 samples with concentrations greater than 1 ug/g. These were all collected before 1994. We have no independent estimate of lead concentrations in fish tissue for the Bight, but there does not appear to be any trend toward increased concentrations or increased number of detects.

Mercury. Mercury was detected in almost all (94%) of the fish sampled. Concentrations ranged from 0.01 to 0.99 ug/g, with an average of 0.088 ug/g. Concentrations in longfin sanddab ranged from 0.01 to 0.36, with an average of 0.07 ug/l (n=209). Concentrations in Pacific sanddab ranged from 0.01 to 0.11 ug/g with an average of 0.04 ug/l (n=50). Literature values for Pacific sanddab from the Bight ranged from 0.053 to 0.16 ug/g, with a mean of 0.04 ug/g (n = 23). Concentrations in the California scorpionfish ranged from 0.01 to 0.59 ug/g with an average of 0.13 ug/g (n=123). Literature values for this species in the Bight ranged from 0.03 to 5.49 ug/g. There were no spatial or temporal patterns were observed in longfin sanddab or California scorpionfish to suggest that the outfall is having an affect on mercury concentrations (Figs. 44 and 45). The average mercury concentration was lower in the discharge period data than in the data from pre-discharge period.

The FDA limit for total mercury in 0.5 ug/g. USEPA has established a health risk value of 0.4 ug/g based on methyl mercury. Concentrations of total mercury greater than 0.4 ug/g was measured in muscle tissue in 4 out of 524 measurements (Greenblotched rockfish, 0.99 ug/g; California scorpionfish, 0.59 ug/g; Greenspotted rockfish, 0.49 ug/g, and Speckled rockfish, 0.46 ug/g). Based on these results less than 1% of the fish in the San Diego area have tissue concentrations greater than the USEPA risk screening threshold value.

Selenium. Selenium concentrations were measured in detectable concentrations in most (96%) of the samples (detection limits ranged form 0.1 to 1.0 ug/l). Selenium concentrations ranged from 0.13 to 4.3 ug/g. Concentrations in longfin sanddab ranged from 0.18 to 4.3 ug/g, with an average of 0.98 ug/l (n=129). Concentrations in Pacific sanddab ranged from 0.13 to 3.3 ug/g,

with an average of 0.49 ug/g (n=32). Literature values for Pacific sanddab from the Bight ranged from 0.47 to 0.94 ug/g. Selenium concentrations in California scorpion fish ranged from 0.13 to 0.80 ug/g, with a mean of 0.26 ug/g (n = 116). Literature values for the Bight ranged from 0.44 to 1.26 ug/g for California scorpionfish.

Silver. The applicant detected silver in muscle tissue in only five instances. Silver was detected three times in longfin sanddab samples at concentrations ranging from 0.01 to 0.05 ug/g, once in Pacific sanddab at a concentration of 0.28 ug/g and once in California scorpionfish at a concentration of 2.68 ug/g. Literature values for Pacific sanddab from the Bight range from 0.001 to 0.014 ug/g.

Zinc. Zinc was detected in all fish samples (n=503). Concentrations in longfin Sanddab ranged from 1.52 to 65 ug/g, with an average of 3.54 (n=197). Concentrations in Pacific sanddab ranged from 1.8 to 10.0 ug/g, with an average of 3.54 ug/g (n = 47). Zinc concentrations in California scorpionfish ranged from 2.12 to 16.8 ug/g, with a mean of 4.53 ug/g (n = 125). Literature values for California scorpion fish from the Bight ranged from 0.6 to 6.5 ug/g. Thus, zinc concentrations in muscle tissue measured by the applicant are similar to background concentrations for the Bight.

PCBs. PCBs were only detected in reportable concentrations in about 7% of the fish sampled (19 out of 274 measurements). There was only one detected value prior to 1995 (0.34 ug/g in longfin sanddab). There have been more detected values since 1995, largely as a result of better detection limits associated with measuring specific congeners (as opposed to arochlor mixtures). The next highest concentration was 0.089 ug/g (unidentified rockfish, April 1999). All other values were below the 0.08 ug/g threshold for non-carcinogenic risk. Eight samples were above the 0.02 ug/g threshold for carcinogenic risk. This represents about 3% of the fish. The minimum value reported in the literature for the Bight for total PCBs in fish muscle tissue is 0.001 ug/g.

DDT. Most of the DDT compounds were below detection limits. Out of 331 fish tissue samples p,p DDT was detected only twice; o,p-DDT only once; p,p,-DDD was detected three times, o,p-DDD was not detected in measurable quantities; and o,p-DDE was detected only once. The compound p,p-DDE was measured in low but detectable concentrations in almost all fish samples (510 out of 551 samples). The concentration of p,p-DDE ranged from 0.001 ug/g to 0.53 ug/g (n = 510). No values were greater than the 2.0 ug/g non-carcinogenic threshold. Five samples were greater than the carcinogenic risk threshold. This represents less than 1% of the fish sampled. The minimum value for total DDT in fish tissue from the Bight reported in the literature is 0.02 ug/g.

Table 18. Summary of metals data in fish muscle tissue from the Point Loma area (1990-2000)

All Fish				Longfin Sanddab		
Metals	# of Detects / # of Samples	Range	Avg.	# of Detects / # of Samples	Range	Avg.
Arsenic	454/545	0.06-28.8	5.9	208/225	0.0-28.8	8.8
Cadmium	30/359	0.1-1.9	0.3	17/114	0.1-0.6	0.32
Chromium	67/357	0.2-54	.056	33/119	0.2-7.8	0.5
Copper	185/415	0.2-9	1.1	71/147	0.2-7.7	1.0
Lead	48/376	0.2-14	2.4	37/135	0.2-7.7	2.1
Nickel	48/366	0.4-50	1.2	33/123	0.4-38	1.2
Mercury	491/521	0.01-0.99	0.088	199/209	0.01-0.36	0.070
Selenium	363/378	0.13-4.3	0.057	129/129	0.18-4.3	0.98
Silver	5/332	0.1-2.68	0.62	3/101	0.5-0.62	
Zinc	503/503	1.52-65	3.84	197/197	1.52-65	3.54

California Scorpionfish				Pacific Sanddab		
Metals	# of Detects / # of Samples	Range	Avg.	# of Detects / # of Samples	Range	Avg.
Arsenic	108/126	0.05-16	4.6	50/57	0.05-10.7	3.5
Cadmium	1/116	0.34-0.34	0.34	2/29	0.2-0.34	0.04
Chromium	10/116	.03-1.2	0.34	6/30	0.2-0.96	0.39
Copper	55/120	0.5-9	1.2	12/35	0.2-4.1	0.96
Lead	0/113	2.5-2.5	2.5	9/36	0.3-14	2.5
Nickel	2/118	0.5-0.95	0.78	5/30	0.79-27	1.04
Mercury	117/123	0.01-0.59	0.13	49/50	0.01-0.11	0.04
Selenium	113/116	0.13-0.8	0.26	24/32	0.13-3.3	0.49
Silver	1/113	0.63-2.68	0.13	1/28	0.2-.62	0.61
Zinc	125/125	2.12-16.8	4.53	47/47	1.84-10	3.47

Table 19. Comparison of maximum contaminant concentrations in muscle tissue from fish collected in the vicinity of the San Diego Point Loma outfall with recommended screening values for recreational fishers.

Analyte	Maximum observed concentration level	Health risk screening level	
		Non Carcinogenic	Carcinogenic
Arsenic (inorganic)	28.8 (total)	1.2	0.026
Cadmium	1.9	4.0	
Methyl mercury	0.99 (total)	0.4	
Selenium	4.3	20	
Total Chlordane	0.0012	2.0	0.114
Total DDT	1.08	2.0	0.117
Dieldrin	ND	0.2	0.0025
Endosulfan	0.0033	24	
Endrin	ND	1.2	
Heptachlor epoxide	0.0035	0.052	0.00439
Hexachorobenzene	0.0047	3.2	0.025
Lindane	ND	1.2	.0307
Mirex	ND	0.8	
Toxaphene	ND	1.0	0.0363
PAHs	ND		0.00547
PCBs	0.34	0.08	0.02
Dioxins/Furans	NA		0.000000256

Liver tissue. Spatial and temporal trends in contaminant concentrations were evaluated using liver tissue data from the longfin sanddab, Pacific sanddab, and the California scorpionfish because these species provide the most complete data set for assessing temporal trends. We looked at total PCB and DDTs because these have the potential to accumulate in fish tissue. These values were also compared to fish tissue data from the 1994 Southern California Bight Pilot Project (SCBPP).

According to the applicant DDT in longfin sanddab ranged from 0.48 ug/g to 3.80 ug/g, with an average of 1.66 ug/g (Fig. 46). The average DDT concentrations in liver from the SCBPP were 0.22 ug/g for longfin sanddab. Pacific sanddab ranged from 0.29 to 1.76 ug/g with an average of 0.67 ug/g (Fig. 47). DDT concentrations in liver from the SCBPP were 0.15 ug/g for Pacific sanddab. Concentrations in California scorpionfish ranged from 0.31 to 2.31 ug/g with an average of 2.26 ug/g. For all three species the high values (>1 ug/g) were only observed on samples collected in October of 1993, before the outfall went online. With the exception of one

other fish sample (Pacific Sanddab, April 1997, 12.7 ug/g) all other samples were below 0.1 ug/g. DDT concentrations in fish around the outfall from the discharge period are low relative to background values for the Bight.

The applicant reported that Total PCB concentrations in longfin sanddab ranged from 0.11 ug/g to 5.64 ug/g with an average of 0.90 ug/g (Fig. 48). According to the applicant, PCB concentrations in longfin sanddab have decreased from 2.13 ug/g during the pre-discharge period to 0.90 ug/g during the discharge period. Concentrations in Pacific sanddab ranged from 0.12 ug/g to 1.45 ug/g with an average of 0.44 ug/g (Fig. 49). Data from the SCBPP indicates average concentration in longfin sanddab is around 0.07 ug/g and the average for Pacific sanddab is around 0.02 ug/g. These numbers are higher than reported for background in the Bight. However, there does not appear to be any spatial or temporal patterns to suggest that the outfall is having an affect on bioaccumulation in fish tissue. PCBs were detected at very low concentrations in the effluent and not detected in sediments.

Summary of fish bioaccumulation. USEPA's review of the fish bioaccumulation data provided by the applicant does not indicate that the outfall is having a significant effect on the contaminant concentrations in fish tissue (muscle or liver).

5. Incidences of lesions and parasites. All trawled fish caught during the monitoring program were visually examined by the City for gross morphological evidence of diseases and ectoparasites. No fin erosion or tumors were found on trawl-caught fish in the discharge area. The overall abundance of external parasites was minimal. The overall incidence of parasitism in the first year of the post-discharge monitoring was determined to be 0.006%.

Mearns and Sherwood (1977) examined approximately 290,000 fishes from more than 900 trawl samples throughout the Bight (including the Palos Verdes Shelf) from 1969 to 1976. These specimens included 151 species and 48 families of sharks, rays and bony fishes. Over the entire Bight, approximately 5% of the specimens were found to be affected with external disease symptoms, including fin and tail erosion, tumors, abnormal coloration, and attached macroparasites. A more recent assessment of fish assemblages in close to 300 trawls (SCBPP, 1994) indicates that the prevalence of anomalies was down to about 1%. It appears, from the limited data available, that the incidence of fish disease around the Point Loma outfall is negligible compared to the historical data and current background conditions.

D. Impact of Discharge on Recreational Activities. Under section 125.62(d), the applicant's proposed modified discharge must allow for the attainment or maintenance of water quality which allows for recreational activities at and beyond the zone of initial dilution, including, without limitation, swimming, diving, boating, fishing, picnicking and sports activities along shorelines and beaches.

The ocean shoreline along the southern portion of Point Loma is predominantly on a military reservation (Fort Rosencrans) and the extreme southern portion of the peninsula is within the Cabrillo National Monument. As a result, access is limited to several designated tide pooling areas within the boundaries of the national monument. Consequently, most recreational activities are centered around the Point Loma kelp beds and in nearshore waters. SCUBA diving is very

popular in the offshore kelp beds. Only limited diving occurs outside the area of the kelp beds.

The COP applies the following bacterial standards for shoreline and body contact sports area (including kelp beds):

> Total Coliform bacteria: Greater than 80% of samples in an 30-day period shall be less than 1,000 per 100 ml at each sampling station. No single sample, when verified by a repeat sample within 48 hours, shall be greater than 10,000 per 100 ml
>
> Fecal Coliform bacteria: The geometric mean shall not exceed 200 per 100 ml based on at least 5 samples in any 30-day period and not more than 10% of the total samples during any 60-day period shall exceed 400 per 100 ml.

The applicant monitors total coliform, fecal coliform, and enterococcus concentrations at a number of stations in the area subject to water contact standards. These monitoring stations include nine shoreline stations (D-1 - D9), eight kelp bed stations (A1, A6, A7, C4 - C8) and at seventeen offshore stations located upcoast and downcoast from the ZID (Fig. 2). We evaluated the bacterial monitoring data collected by the applicant from 1996 to 2000.

Offshore. The seventeen offshore water quality stations were sampled on a monthly basis at a minimum of three depths (near-surface, mid-depth, near-bottom). These data are summarized in Tables A-4, A-5, and A-6. These samples were not collected for compliance purposes but rather to provide information about the location of the plume to help interpret the results of kelp station and shoreline monitoring results. The higher concentrations of total coliforms were generally seen offshore at depths ranging from 140 to 380 feet, indicating that the outfall is generally trapped at depth. At these depths concentrations of total coliforms can be in the tens of thousands and the concentrations of fecal coliforms in the thousands. In the surface waters, the average concentrations of total coliforms ranged from 2 to 50 CFU/100 ml (Table A-4). High total concentrations were seen in the offshore surface waters in two isolated instances. One was in July of 1998 at station A5 (2800 CFU/100 ml), and the other was in January 2000 at station E8 (2400 CFU/100 ml). This indicates that the plume does surface on occasion, albeit infrequently. The fecal coliform concentrations at the offshore surface waters ranged from 2 to 11 CFU/100 ml (Table A-5). The maximum concentration measured at the surface was 300 CFU/100 ml (at station B1 in June 1997 and at station E16 in December 1997). The average enterococcus concentrations in surface water from the offshore stations ranged from 2 to 10 CFU/100 ml (Table A-6). The maximum observed enterococcus value of 200 CFU/100 ml was observed in ten instances (at Stations A2, A10, A14, B2, B9, E18).

Kelp beds. There were no violations of the total coliform standards in the kelp beds (Table 20). Total coliform values greater than 1000 were seen in 9 occasions out of 7172 samples (around 0.1%). Fecal coliform concentrations were below the geometric mean standard of 200 per 100 ml. Fecal coliform concentrations greater than 400 per 100 ml were observed on rare occasion (6 out of 6585 measurements). The enterococcus data can be compared to USEPA water quality criteria for bacteria (USEPA, 1986). There were two occasions (February and March of 1998) where the 30-day geometric mean was for enterococcus was greater than 35 per 100 ml. Enterococcus concentrations greater than 104 per 100 ml were observed about 0.5% of the time

(35 out of 6581 measurements). These were generally seen at depth suggesting an association with the outfall plume. The rarity of these events is consistent with the applicant's modeling results which suggested that the plume is not likely to reach the kelp beds for the following reasons:

1. Density stratification traps the plume below the depth of the kelp beds.
2. The shelf slope as a barrier between the submerged plume and the shallow kelp beds.
3. The predominant surface flows are longshore and mainly downcoast away from the kelp beds.

Table 20. Summary of bacterial concentrations (CFU/100 ml) at kelp stations (1995-2000)

Long-term average concentrations of total coliforms (and standard deviation) from Kelp Stations					
60-foot kelp stations	**A1**	**A7**	**A6**	**C7**	**C8**
5	57 (625)	8 (22)	6 (20)	7 (33)	17 (106)
40	21 (73)	22 (81)	20 (44)	11 (29)	10 (26)
60	79 (472)	44 (159)	46 (120)	19 (45)	21 (41)
30-foot kelp stations	**C4**	**C5**	**C6**		
5	11 (55)	12 (111)	5 (11)		
10	11 (50)	8 (23)	8 (41)		
20	10 (26)	9 (49)	11 (61)		
Long-term average concentrations of fecal coliforms (and standard deviation) from Kelp Stations					
60-foot kelp stations	**A1**	**A7**	**A6**	**C7**	**C8**
5	3 (6)	3 (12)	3 (12)	3 (12)	4 (8)
40	9 (39)	7 (34)	6 (12)	4 (7)	4 (13)
60	36 (355)	13 (57)	11 (3)	6 (10)	7 (16)
30-foot kelp stations	**C4**	**C5**	**C6**		
5	3 (4)	3 (10)	3 (5)		
10	4 (13)	3 (4)	3 (10)		
20	3 (12)	3 (7)	4 (19)		
Long-term average concentrations of enterococcus (and standard deviation) from Kelp Stations					
60-foot kelp stations	**A1**	**A7**	**A6**	**C7**	**C8**
5	3 (8)	4 (27)	3 (13)	3 (5)	4 (14)
40	4 (14)	4 (14)	5 (26)	3 (13)	3 (8)
60	7 (26)	7 (32)	4 (13)	5 (14)	13 (145)
30-meter kelp stations	**C4**	**C5**	**C6**		
5	6 (38)	4 (18)	3 (12)		
10	4 (18)	4 (18)	3 (4)		
20	3 (13)	4 (18)	3 (4)		

Shoreline. The data from the applicant's shoreline monitoring program is presented in Figs. 50-52. There are numerous exceedances of the single sample thresholds for total coliform, fecal coliform and enterococcus (Fig. 53). However, these do not appear to be related to the Point Loma outfall. A high percentage of these are related to storm events. There also seems to be a spatial pattern which suggests a southern source. For perspective, these data can be compared to comparable data collected as part of the IWTP shoreline monitoring program (See Fig. 54). There is some overlap between the two programs (i.e., San Diego's Stations D1, D2 and D3 overlap with IWTP's Stations S12, S8 and S9). There is a clear south-north gradient in the frequency of exceedances with a peak at the Tijuana River for all three bacterial indicators.

Exceedances are generally attributed to surface runoff (e.g. from the Tijuana River) rather than

the outfall plume. This is supported by the lack of high concentrations in nearshore stations. This conclusion is also supported by modeling and monitoring efforts, which indicate that the outfall plume remains submerged in the offshore area.

Summary of bacteria data. USEPA's review of the bacterial monitoring data suggests that the outfall plume is trapped at depth offshore and that the plume surfaces infrequently. Elevated concentrations of bacteria in the kelp beds were observed on only rare occasion (less than 0.5% of the time). Although bacterial concentrations along the shoreline frequently exceed the standards, there is no evidence to suggest that this is related to the outfall. Based on these data, along with the results of physical oceanographic modeling performed by the applicant in 1994, USEPA concludes that the Point Loma modified discharge will meet the COP bacterial compliance standards at the shoreline, recreational areas and at kelp beds.

E. Summary of Conclusions. In this review of the data provide by the applicant, it appears that a balanced indigenous population is being maintained in the vicinity of the outfall. This conclusion is based on the following considerations:

1. The ability of the discharger to meet state standards and federal criteria for water quality

2. The lack of any substantial increase in suspended solids deposition or accumulation of organic matter in the sediments as predicted by sediment models

3. Observations from the monitoring program do not indicate any major changes in chemical contaminant concentrations in sediments from around the outfall

4. Observations from the monitoring program indicate only minor changes in benthic community assemblages around the outfall and the lack of any observable changes in fish community structure

5. Observations from the monitoring program do not indicate any increases in the tissue contaminant burdens of selected fish species

6. Observations from the monitoring program indicate that recreational standards are being attained

7. Physical oceanographic measurements and plume modeling efforts performed by the applicant suggest that these standards will continue to be maintained throughout the permit period.

3. Establishment of a Monitoring Program. [Section 301(h)(3), 40 CFR 125.62]

Under 40 CFR 125.62, which implements section 301(h)(3), the applicant must have a monitoring program designed to evaluate the impact of the modified discharge on the marine biota, demonstrate compliance with applicable water quality standards, measure toxic substances in the discharge, and have the capability to implement these programs upon issuance of a

301(h)-modified NPDES permit. The frequency and extent of the monitoring program are to be determined by taking into consideration the applicant's rate of discharge, quantities of toxic pollutants discharged, and potentially significant impacts on receiving water, marine biota, and designated water uses.

The City's current monitoring program was developed jointly with the City, USEPA and the Regional Board. This is described in Volume IV, Appendix D. The monitoring program may be modified during the development of the permit.

4. Impact of Modified Discharge on Other Point and Nonpoint Sources. [Section 301(h)(4), 40 CFR 125.63]

Under 40 CFR 125.63, which implements section 301(h)(4), the applicant's proposed modified discharge must not result in the imposition of additional treatment requirements on any other point or nonpoint source.

The Regional Board has determined that the Point Loma discharge will not have any effect on any existing or planned point or non-point source discharges (letter dated March 21, 1995).

5. Toxics Control Program. [Section 301(h)(5), 40 CFR 125.66(a)-(c)]

A. Chemical Analysis.

A 301(h) large applicant is required to provide a chemical analysis of its effluent under both wet and dry conditions for toxic pollutants and pesticides. The City of San Diego routinely conducts influent and effluent sampling. Effluent samples are collected and analyzed weekly for metals, cyanide, ammonia, chlorinated pesticides, phenolic compounds and PCBs. Other pesticides, volatile organics, and other pollutants are analyzed on a monthly basis. The results of influent and effluent data are provided in monthly, quarterly and annual reports submitted to the Regional Board and USEPA Region 9. The City also submitted effluent data from 1995 to 2000 to USEPA in electronic format as part of the renewal process (see section 2A for review of effluent data). Based on data from1999, the applicant indicates that there is no significant differences in effluent quality between wet and dry conditions (Volume II, Table III.H.1c-3).

B. Toxic Pollutant Source Identification.

Under 40 CFR 125.66(b) the large applicant must submit an analysis of the sources of toxic pollutants identified in section 125.66(a) and, to the extent practicable, categorize the sources according to industrial and nonindustrial types. As part of the City's Industrial Waste Source Control Program, the City surveys industries which may contribute toxics to the sewer system, establishes discharge permits where necessary, and monitors the permitted industrial discharges. In addition the City monitors also performs an annual system-wide non-industrial toxics survey program to identify other potential sources of toxics. The known and suspected sources of metals, cyanide and organic constituents detected in the effluent are summarized in Volume II of the application (Table III.H.1d-1 and Table III.H.1.d-2).

C. Industrial Pretreatment Requirements.

Under 40 CFR 125.66(c) an applicant that has known or suspected industrial sources of toxic pollutants must have an approved pretreatment program under 40 CFR Part 403. USEPA approved the City of San Diego's industrial pretreatment program on June 29, 1982.

6. Urban Area Pretreatment Program. [Section 301(h)(6), Section 303(c) of the Water Quality Act of 1987]

Large applicants for a modified NPDES permit under section 301(h) of the Act that receive one or more toxic pollutants from an industrial source are required to comply with the urban area pretreatment requirements. A POTW subject to these requirements must demonstrate, for each toxic pollutant known or suspected to be introduced by an industrial source, that it either has an applicable pretreatment requirement in effect, or that it has a program that achieves secondary removal equivalency. In addition, an applicant must demonstrate that industrial sources are in compliance with applicable pretreatment requirements. The City of San Diego is subject to these requirements.

In the the 1994 application, the City indicated that it will comply with the urban area pretreatment requirements by demonstrating that it has applicable pretreatment requirements in effect. The City submitted their Urban Area Pretreatment Program to USEPA in 1996. This UAPP was approved by the Regional Board on August 13, 1997 and by USEPA Region 9 on December 1, 1998.

Under 40 CFR 125.65(b)(2), the City must demonstrate that industrial sources introducing waste into the applicant's treatment works are in compliance with all applicable pretreatment requirements, including numerical standards set by local limits, and that it will enforce those requirements.

As explained in the preamble to the revised 301(h) regulations (FR 40656, August 9, 1994), *"EPA intends to determine a POTW's continuing eligibility for a 301(h) waiver under section 301(h)(6) by measuring industrial user compliance and POTW enforcement activities against existing criteria in the Agency's National Pretreatment Program. ... In 1989, EPA established criteria for determining POTW compliance with pretreatment implementation obligations. One element of these criteria is the level of significant noncompliance of the POTW's industrial users. The General Pretreatment Regulations (part 403) identify the circumstances when industrial user noncompliance is significant. The industrial user significant noncompliance (SNC) criteria are set out in 40 CFR 403.8(f)(2)(vii) and address both effluent and reporting violations. ... For pretreatment purposes, a POTW's enforcement program is considered adequate if no more than 15 percent of its industrial users meet the SNC criteria in a single year. ... In addition, a POTW is also considered in SNC if it fails to take formal appropriate and timely enforcement action against any industrial user, the wastewater from which passes through the POTW or interferes with the POTW operations."*

"In enforcing the pretreatment programs, POTWs are expected to respond to industrial user noncompliance using local enforcement authorities in accordance with an approved enforcement

response plan (ERP) which is required of all approved pretreatment programs (see 40 CFR 403.5). POTWs including 301(h) POTWs, with greater than 15 percent of their users in SNC, or which fail to enforce appropriately against any single industrial user causing pass through or interference, are deemed to be failing to enforce their pretreatment program. ...EPA believes that the combination of industrial user compliance and POTW enforcement provides an appropriate measurement of the POTW's eligibility for the 301(h) waiver under section 301(h)(6)."

The 1989 criteria discussed in the preamble is a September 27, 1989, memorandum from James R. Elder to USEPA Regional Water Management Division Directors titled: FY 1990 Guidance for Reporting and Evaluating POTW Noncompliance with Pretreatment Implementation Requirements.

Although the preamble for the urban area pretreatment requirements refers to "*industrial users*" when discussing the 15% noncompliance criteria, the 1989 criteria apply to "*significant industrial users.*" This term is defined at 40 CFR 403.3(t) and includes all industrial users subject to categorical standards and other industrial users designated by the POTW. In addition, the Agency has issued clarifying guidance explaining that the significant noncompliance criteria at 40 CFR 403.8(f)(2)(vii) apply only to significant industrial users rather than to all industrial users. Consequently, the Agency views the 15% noncompliance criteria in the urban area pretreatment requirements as applying only to significant industrial users rather than to all industrial users.

Under the 1989 measures, violating industries are not included in the 15% noncompliance criteria when the POTW has issued a formal enforcement action or penalties. Consequently, the Agency views the 15% noncompliance in the urban area pretreatment requirements as including only significant industrial users that are in significant noncompliance and which have not received at least a formal enforcement action from the POTW.

USEPA believes that the combination of industrial user compliance and POTW enforcement provides an appropriate measurement of the POTW's eligibility for the 301(h) waiver under section 301(h)(6). The City's enforcement plan is described in Appendix K (attachment K2) of the application

The City's Enforcement Response Plan is included in Technical Appendix K-3 of its section 301(h) application. The second level of formal enforcement is an Administrative Notice and Order which may be issued when:

- An industrial user fails to take any significant action to establish compliance withing 30 days of receiving a Notice of Violation
- An industrial user fails to establish full compliance, beginning on the 91st day after the industrial user received a Notice of Violation;
- An industrial user is in significant noncompliance status; or
- An industrial user violates a Compliance Findings of Violation and Order.

The Agency recognizes that specific enforcement response to a violation must be decided on a case-by-case basis. We believe, however, that in most cases an Administrative Notice and Order

as described in the City's Enforcement Response Plan are appropriate when a significant industrial user is in significant noncompliance.

The local limits approved by USEPA as part of the UAPP were included in all industrial discharge permits by December 1997. As a consequence of the new local limits, some significant industrial users may need time to come into compliance with those local limits. In any such cases, the Agency expects the City to issue a Compliance Findings of Violation and Order which is the first level of formal enforcement in the City's Enforcement Response Plan. The Order shall contain a schedule for achieving compliance with the new local limits. Significant industrial users receiving such Orders will not be included in the 15% noncompliance criteria.

Table 21. Summary of compliance status for significant industrial users (modified from Table 4.2.1, appendix K of the application. The numbers for SNC have been adjusted based on discussions with Pretreatment Program Manager.

Year	1993	1994	1995	1996	1997	1998	1999
Number of Significant Industrial users	118	139	130	130	133	131	139
Number in Significant Noncompliance (SNC)	25	27	12	16	25	16	14
Number SNC adjusted for enforcement			9	15	20	13	13
Percent SNC	21%	19%	9%	12%	19%	12%	10%
Percent SNC adjusted			7%	12%	15%	10%	9%

USEPA finds that the information in the City's application regarding the urban area pretreatment requirements is acceptable for the purpose of issuing this tentative decision. The permit will require the City to maintain an annual rate of significant noncompliance for significant industrial users of no more than 15 percent of the total number of significant industrial users.

7. Nonindustrial Source Control Program. [Section 301(h)(7), 40 CFR 125.64(d)]

Under 40 CFR 125.64(d), which implements section 301 (h)(7), the applicant must have a proposed public education program designed to minimize the entrance of nonindustrial toxic pollutants and pesticides into their treatment facility, and develop and implement additional nonindustrial source control programs in the earliest possible schedule.

The City proposes to continue their existing nonindustrial program and public education program that have been in effect since 1985. The nonindustrial program will be supplemented with an updated survey of industrial and nonindustrial contaminant sources. These programs are described in Appendix K of the application.

8. Increase in Effluent Volume or Amount of Pollutants Discharged. [Section 301(h)(8), 40 CFR 125.65]

Under 40 CFR 125.65, which implements section 301(h)(7), the applicant's proposed modified discharge may not increase above the amount specified in the 301(h) modified NPDES permit. CWA § 301(j)(5)(C) specifies 80% removal of suspended solids on a monthly average and 58% removal of BOD on an annual average. In addition to these conditions. The NPDES permit establishes the following limits based on an annual average flow of 205 MGD. The flows for the projected end of permit (2006) are 195 MGD.

Table 22. Proposed effluent limitations for Point Loma Permit

Effluent Parameter	Annual Removal	Monthly Removal	Annual Mass Emission	Monthly Average
TSS	80%	80%	13,599 mt/yr	75 mg/l
BOD	58%	--	--	--

Table 23. Proposed and projected mass emission rates (MT/yr) for TSS and BOD

Year	Proposed MER	Projected MER
2001	15000	14100
2002	15000	14200
2003	15000	14300
2004	15000	14500
2005	15000	14600
2006	13599	13599

9. Compliance with Primary Treatment and Federal Water Quality Criteria. [Section 301(h)(9), Section 303(d)(1) and (2) of the Water Quality Act of 1987]

Under section 303(d)(1) of the WQA the applicant's wastewater effluent must be receiving at least primary treatment at the time their section 301(h) permit becomes effective. Section 303(d)(2) of the WQA states that, "Primary or equivalent treatment means treatment by screening, sedimentation, and skimming adequate to remove at least 30 percent of the biological oxygen demanding material and other suspended solids in the treatment works influent, and disinfection, where appropriate."

The Point Loma discharge is subject to State and Federal requirements which are much stricter than the primary treatment standard. The COP requires that "Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewater to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/l."

The average monthly removals for suspended solids in 1999 and 2000 ranged from 82% to 87%.

The average monthly removals for BOD in 1999 and 2000 ranged from 53% to 67%. The applicant meets the primary treatment standard of at least 30% removal for suspended solids and biological oxygen demand. The draft NPDES permit will include effluent limits of 80% removal for suspended solids on an monthly average basis and 58% removal of BOD on an annual average basis.

COMPLIANCE WITH OTHER APPLICABLE LAWS

40 CFR 125.59(b)(3) provides that a 301(h) modified NPDES permit may not be issued if such issuance would conflict with applicable provisions of local, State, or other Federal laws or existing Executive Orders.

1. State Coastal Zone Management Program. [40 CFR 125.59(b)(3)]

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with the Coastal Zone Management Act, 16 USC 1451 *et seq*. In accordance with 16 USC 1456(c)(3)(A), a 301(h) modified NPDES permit may not be issued unless the proposed discharge is certified by the State to comply with applicable State coastal zone management program(s) approved under the Coastal Zone Management Act, or the State waives such certification.

In 1991, the California Coastal Commission issued Consistency Certification No. CC-62-91 for extending the Point Loma outfall to 4.5 miles. In 1995, the California Coastal Commission issued Consistency Certification the City's Waiver Application. As part of this permit renewal cycle, the City of San Diego requested the Commission to provide a determination that the existing and proposed discharge is consistent with applicable coastal zone management requirements (See Letter dated July 13, 2000). No permit may be issued that is inconsistent with the policies of the California Coastal Management Program. The California Coastal Commission will be hearing this issue at their meeting on March 5-8, 2002.

2. Marine Sanctuaries. [40 CFR 125.59(b)(3)]

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with Title III of the Marine Protection, Research and Sanctuaries Act, 16 USC 1431 *et seq*. In accordance with 16 USC 1432(f)(2) a 301(h) modified NPDES permit may not be issued for a discharge located in a marine sanctuary designated pursuant to Title III if the regulations applicable to the sanctuary prohibit issuance of such a permit.

The Point Loma ocean outfall discharge is not located in a marine sanctuary. Two zones (San Diego-La Jolla Ecological Reserve and San Diego Marine Life Reserve) approximately 21-22 km (13-14 mi) north of the discharge point have been designated by the California Water Resources Control Board as "*Areas of Special Biological Significance.*" Discharges of wastewater to these zones are prohibited by the Water Quality Control Plan for Ocean Waters of California. The Point Loma outfall discharges wastewater at a location and distance that would not have a significant impact on these zones.

The applicant also listed several protected areas in the San Diego region. We believe that significant dilution of any pollutant discharged through the Point Loma outfall would occur and concentrations would be at background level by the time the wastefield approaches any of these protected areas.

3. Endangered or Threatened Species. [40 CFR 125.59(b)(3)]

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with the Endangered Species Act, 16 USC 1531 *et seq*. In accordance with 16 USC 1536(a)(2) a 301(h) modified NPDES permit may not be issued if the proposed discharge will adversely impact threatened or endangered species or critical habitat listed pursuant to the Endangered Species Act.

As part of the California Environmental Quality Act requirements, the City prepared an Environmental Impact Report (EIR) to address impacts from the outfall extension project. The National Marine Fisheries Service (NMFS) requested an informal consultation to assess impacts to the gray whale, and established mitigation to minimize construction-related impacts to the whale. The U.S. Fish and Wildlife Service (USFWS) did not comment on the EIR.

More recently, the City of San Diego initiated an informal consultation on endangered species with both the USFWS and NMFS through correspondence to both agencies, inviting comments specifically on the existing discharge and proposed 301(h) modification request. Responses were provided by both agencies. In a letter dated May 8, 1995, the USFWS stated that they have determined that the San Diego project "will have no effect on any listed species or any designated critical habitat." NMFS in their March 27, 1995 letter confirmed the list prepared by the City of San Diego of potentially impacted species under the jurisdiction of NMFS, with one exception, the gray whale, which is no longer a listed species. NMFS also stated that "available information indicates that no Federally listed species under the jurisdiction of the NMFS are likely to be affected by the modified discharges at the Point Loma outfall."

The City sent letters to USFWS and NMFS on June 28, 1999. NMFS concluded that there were no Federally listed species under its jurisdiction that are likely to be affected by the modified discharges at the Point Loma outfall. No response from has been received from USFWS. The permit is contingent on a finding from the U.S. Fish and Wildlife.

In regards to State law, the Point Loma outfall discharges beyond the three-mile limit for waters controlled by the State of California. Therefore, the discharge is into waters governed by Federal laws. Within the three-mile limit, the State of California Endangered Species Act applies. The State Endangered Species Act has provisions similar to the Federal Endangered Species Act. See the discussion above for compliance with the Federal Endangered Species Act.

STATE CONCURRENCE IN MODIFICATION

Section 301(h) and 40 CFR 125.59(i)(2) provide that a 301(h) modification may not be granted until the appropriate State certification/concurrence is granted or waived pursuant to 40 CFR 124.54. In accordance with the procedures of 40 CFR 124.53(a), before USEPA may issue the

applicant a 301(h) modified NPDES permit, the State must either grant certification pursuant to section 401 of the Act or waive certification. Such action by the State will serve as State concurrence in the modification.

USEPA Region 9 and the California State Water Resources Control Board have developed a Memorandum of Understanding (MOU; May 1984) outlining the procedures that each agency will follow to coordinate the implementation of section 301(h) and State waste discharge requirements. The MOU specifies that the joint issuance of an NPDES permit which incorporates both 301(h) decision and State waste discharge requirements will serve as the State's concurrence. USEPA and the Regional Board will jointly issue the NPDES permit for the City of San Diego.

II. WATER QUALITY OBJECTIVES

A. General Provisions

1. This chapter sets forth limits or levels of water quality characteristics for ocean* waters to ensure the reasonable protection of beneficial uses and the prevention of nuisance. The discharge of waste* shall not cause violation of these objectives.

2. The Water Quality Objectives and Effluent Limitations are defined by a statistical distribution when appropriate. This method recognizes the normally occurring variations in treatment efficiency and sampling and analytical techniques and does not condone poor operating practices.

3. Compliance with the water quality objectives of this chapter shall be determined from samples collected at stations representative of the area within the waste field where initial* dilution is completed.

B. Bacterial Characteristics

1. Water-Contact Standards

a. 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 following bacterial objectives shall be maintained throughout the water column:

(1) 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 30-day 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).

(2) The fecal coliform density based on a minimum of not less than five samples for any 30-day 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.

b. The "Initial* Dilution Zone" of wastewater outfalls shall be excluded from designation as "kelp* beds" for purposes of bacterial standards, and Regional Boards should recommend extension of such exclusion zone where warranted to the SWRCB (for consideration under Chapter III.H.). Adventitious assemblages of kelp plants on waste discharge structures (e.g., outfall pipes and diffusers) do not constitute kelp* beds for purposes of bacterial standards.

* See Appendix I for definition of terms.

EXHIBIT NO. 5
APPLICATION NO.
CC-10-02
California Ocean Plan

2. Shellfish* Harvesting Standards

   a. At all areas where shellfish* may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives shall be maintained throughout the water column:

      (1) The median total coliform density shall not exceed 70 per 100 ml, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

C. Physical Characteristics

1. Floating particulates and grease and oil shall not be visible.

2. The discharge of waste* shall not cause aesthetically undesirable discoloration of the ocean* surface.

3. Natural* light shall not be significantly* reduced at any point outside the initial* dilution zone as the result of the discharge of waste*.

4. The rate of deposition of inert solids and the characteristics of inert solids in ocean* sediments shall not be changed such that benthic communities are degraded*.

D. Chemical Characteristics

1. The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste* materials.
2. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.
3. The dissolved sulfide concentration of waters in and near sediments shall not be significantly* increased above that present under natural conditions.
4. The concentration of substances set forth in Chapter II, Table B, in marine sediments shall not be increased to levels which would degrade* indigenous biota.
5. The concentration of organic materials in marine sediments shall not be increased to levels that would degrade* marine life.
6. Nutrient materials shall not cause objectionable aquatic growths or degrade* indigenous biota.
7. Numerical Water Quality Objectives

   a. Table B water quality objectives apply to all discharges within the jurisdiction of this Plan.

   b. Table B Water Quality Objectives

* See Appendix I for definition of terms.

TABLE B
WATER QUALITY OBJECTIVES

	Units of Measurement	Limiting Concentrations 6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	ug/l	8.	32.	80.
Cadmium	ug/l	1.	4.	10.
Chromium (Hexavalent) (see below, a)	ug/l	2.	8.	20.
Copper	ug/l	3.	12.	30.
Lead	ug/l	2.	8.	20.
Mercury	ug/l	0.04	0.16	0.4
Nickel	ug/l	5.	20.	50.
Selenium	ug/l	15.	60.	150.
Silver	ug/l	0.7	2.8	7.
Zinc	ug/l	20.	80.	200.
Cyanide (see below, b)	ug/l	1.	4.	10.
Total Chlorine Residual (For intermittent chlorine sources see below, c)	ug/l	2.	8.	60.
Ammonia (expressed as nitrogen)	ug/l	600.	2400.	6000.
Acute* Toxicity	TUa	N/A	0.3	N/A
Chronic* Toxicity	TUc	N/A	1.	N/A
Phenolic Compounds (non-chlorinated)	ug/l	30.	120.	300.
Chlorinated Phenolics	ug/l	1.	4.	10.
Endosulfan	ug/l	0.009	0.018	0.027
Endrin	ug/l	0.002	0.004	0.006
HCH*	ug/l	0.004	0.008	0.012
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			

* See Appendix I for definition of terms.

Table B Continued

Chemical	30-day Average (ug/l) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS		
acrolein	220.	2.2×10^{2}
antimony	1,200.	1.2×10^{3}
bis(2-chloroethoxy) methane	4.4	4.4×10^{0}
bis(2-chloroisopropyl) ether	1,200.	1.2×10^{3}
chlorobenzene	570.	5.7×10^{2}
chromium (III)	190,000.	1.9×10^{5}
di-n-butyl phthalate	3,500.	3.5×10^{3}
dichlorobenzenes*	5,100.	5.1×10^{3}
diethyl phthalate	33,000.	3.3×10^{4}
dimethyl phthalate	820,000.	8.2×10^{5}
4,6-dinitro-2-methylphenol	220.	2.2×10^{2}
2,4-dinitrophenol	4.0	4.0×10^{0}
ethylbenzene	4,100.	4.1×10^{3}
fluoranthene	15.	1.5×10^{1}
hexachlorocyclopentadiene	58.	5.8×10^{1}
nitrobenzene	4.9	4.9×10^{0}
thallium	2.	$2. \times 10^{0}$
toluene	85,000.	8.5×10^{4}
tributyltin	0.0014	1.4×10^{-3}
1,1,1-trichloroethane	540,000.	5.4×10^{5}
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS		
acrylonitrile	0.10	1.0×10^{-1}
aldrin	0.000022	2.2×10^{-5}
benzene	5.9	5.9×10^{0}
benzidine	0.000069	6.9×10^{-5}
beryllium	0.033	3.3×10^{-2}
bis(2-chloroethyl) ether	0.045	4.5×10^{-2}
bis(2-ethylhexyl) phthalate	3.5	3.5×10^{0}
carbon tetrachloride	0.90	9.0×10^{-1}
chlordane*	0.000023	2.3×10^{-5}
chlorodibromomethane	8.6	8.6×10^{0}

* See Appendix I for definition of terms.

Table B Continued

Chemical	30-day Average (ug/l) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS		
chloroform	130.	1.3×10^{2}
DDT*	0.00017	1.7×10^{-4}
1,4-dichlorobenzene	18.	1.8×10^{1}
3,3'-dichlorobenzidine	0.0081	8.1×10^{-3}
1,2-dichloroethane	28.	2.8×10^{1}
1,1-dichloroethylene	0.9	9×10^{-1}
dichlorobromomethane	6.2	6.2×10^{0}
dichloromethane	450.	4.5×10^{2}
1,3-dichloropropene	8.9	8.9×10^{0}
dieldrin	0.00004	4.0×10^{-5}
2,4-dinitrotoluene	2.6	2.6×10^{0}
1,2-diphenylhydrazine	0.16	1.6×10^{-1}
halomethanes*	130.	1.3×10^{2}
heptachlor	0.00005	5×10^{-5}
heptachlor epoxide	0.00002	2×10^{-5}
hexachlorobenzene	0.00021	2.1×10^{-4}
hexachlorobutadiene	14.	1.4×10^{1}
hexachloroethane	2.5	2.5×10^{0}
isophorone	730.	7.3×10^{2}
N-nitrosodimethylamine	7.3	7.3×10^{0}
N-nitrosodi-N-propylamine	0.38	3.8×10^{-1}
N-nitrosodiphenylamine	2.5	2.5×10^{0}
PAHs*	0.0088	8.8×10^{-3}
PCBs*	0.000019	1.9×10^{-5}
TCDD equivalents*	0.0000000039	3.9×10^{-9}
1,1,2,2-tetrachloroethane	2.3	2.3×10^{0}
tetrachloroethylene	2.0	2.0×10^{0}
toxaphene	0.00021	2.1×10^{-4}
trichloroethylene	27.	2.7×10^{1}
1,1,2-trichloroethane	9.4	9.4×10^{0}
2,4,6-trichlorophenol	0.29	2.9×10^{-1}
vinyl chloride	36.	3.6×10^{1}

* See Appendix I for definition of terms.

Table B Notes:

a) Dischargers may at their option meet this objective as a total chromium objective.

b) If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR PART 136, as revised May 14, 1999.

c) Water quality objectives for total chlorine residual applying to intermittent discharges not exceeding two hours, shall be determined through the use of the following equation:

$$\log y = -0.43 (\log x) + 1.8$$

where: y = the water quality objective (in ug/l) to apply when chlorine is being discharged;
x = the duration of uninterrupted chlorine discharge in minutes.

E. Biological Characteristics

1. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded*.

2. The natural taste, odor, and color of fish, shellfish*, or other marine resources used for human consumption shall not be altered.

3. 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.

F. Radioactivity

1. Discharge of radioactive waste* shall not degrade* marine life.

* See Appendix I for definition of terms.

III. PROGRAM OF IMPLEMENTATION

A. General Provisions

1. Effective Date

   a. The *Water Quality Control Plan, Ocean Waters of California, California Ocean Plan* was adopted and has been effective since 1972. There have been multiple amendments of the Ocean Plan since its adoption.

      This document includes the most recent amendments of the Ocean Plan as approved by the SWRCB on November 16, 2000. However, amendments in this version of the Ocean Plan do not become effective until approved by the US EPA. Persons using the Ocean Plan prior to US EPA approval of this version should reference the 1997 Ocean Plan. Once approved by the US EPA, this document (the 2001 Ocean Plan) will supercede the 1997 Ocean Plan.

2. General Requirements For Management Of Waste Discharge To The Ocean*

   a. Waste* management systems that discharge to the ocean* must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

   b. Waste discharged* to the ocean* must be essentially free of:

      (1) Material that is floatable or will become floatable upon discharge.

      (2) Settleable material or substances that may form sediments which will degrade* benthic communities or other aquatic life.

      (3) Substances which will accumulate to toxic levels in marine waters, sediments or biota.

      (4) Substances that significantly* decrease the natural* light to benthic communities and other marine life.

      (5) Materials that result in aesthetically undesirable discoloration of the ocean* surface.

   c. Waste* effluents shall be discharged in a manner which provides sufficient initial* dilution to minimize the concentrations of substances not removed in the treatment.

   d. Location of waste* discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that:

      (1) Pathogenic organisms and viruses are not present in areas where shellfish* are harvested for human consumption or in areas used for swimming or other body-contact sports.

      (2) Natural water quality conditions are not altered in areas designated as being of special biological significance or areas that existing marine laboratories use as a source of seawater.

      (3) Maximum protection is provided to the marine environment.

---

* See Appendix I for definition of terms.

e. Waste* that contains pathogenic organisms or viruses should be discharged a sufficient distance from shellfishing* and water-contact sports areas to maintain applicable bacterial standards without disinfection. Where conditions are such that an adequate distance cannot be attained, reliable disinfection in conjunction with a reasonable separation of the discharge point from the area of use must be provided. Disinfection procedures that do not increase effluent toxicity and that constitute the least environmental and human hazard should be used.

3. Areas of Special Biological Significance

   a. ASBS* shall be designated by the SWRCB following the procedures provided in Appendix IV. A list of ASBS* is available in Appendix V.

4. Combined Sewer Overflow: Not withstanding any other provisions in this plan, discharges from the City of San Francisco's combined sewer system are subject to the US EPA's Combined Sewer Overflow Policy.

B. Table A Effluent Limitations

TABLE A
EFFLUENT LIMITATIONS

		Limiting Concentrations		
	Unit of Measurement	Monthly (30-day Average)	Weekly (7-day Average)	Maximum at any time
Grease and Oil	mg/l	25.	40.	75.
Suspended Solids			See below +	
Settleable Solids	Ml/l	1.0	1.5	3.0
Turbidity	NTU	75.	100.	225.
PH	Units		Within limit of 6.0 to 9.0 at all times	

Table A Notes:

+ Suspended Solids: Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean*, except that the effluent limitation to be met shall not be lower than 60 mg/l. Regional Boards may recommend that the SWRCB (Chapter IIIJ), with the concurrence of the Environmental Protection Agency, adjust the lower effluent concentration limit (the 60 mg/l above) to suit the environmental and effluent characteristics of the discharge. As a further consideration in making such recommendation for adjustment, Regional Boards should evaluate effects on existing and potential water* reclamation projects.

  If the lower effluent concentration limit is adjusted, the discharger shall remove 75% of suspended solids from the influent stream at any time the influent concentration exceeds four times such adjusted effluent limit.

1. Table A effluent limitations apply only to publicly owned treatment works and industrial discharges for which Effluent Limitations Guidelines have not been established pursuant to Sections 301, 302, 304, or 306 of the Federal Clean Water Act.

* See Appendix I for definition of terms.

2. Table A effluent limitations shall apply to a discharger's total effluent, of whatever origin (i.e., gross, not net, discharge), except where otherwise specified in this Plan.

3. The SWRCB is authorized to administer and enforce effluent limitations established pursuant to the Federal Clean Water Act. Effluent limitations established under Sections 301, 302, 306, 307, 316, 403, and 405 of the aforementioned Federal Act and administrative procedures pertaining thereto are included in this plan by reference. Compliance with Table A effluent limitations, or Environmental Protection Agency Effluent Limitations Guidelines for industrial discharges, based on Best Practicable Control Technology, shall be the minimum level of treatment acceptable under this plan, and shall define reasonable treatment and waste control technology.

C. Implementation Provisions for Table B

1. Effluent concentrations calculated from Table B water quality objectives shall apply to a discharger's total effluent, of whatever origin (i.e., gross, not net, discharge), except where otherwise specified in this Plan.

2. Effluent limitations shall be imposed in a manner prescribed by the SWRCB such that the concentrations set forth below as water quality objectives shall not be exceeded in the receiving water upon completion of initial* dilution, except that objectives indicated for radioactivity shall apply directly to the undiluted waste* effluent.

3. Calculation of Effluent Limitations

   a. Effluent limitations for water quality objectives listed in Table B, with the exception of acute* toxicity and radioactivity, shall be determined through the use of the following equation:

   Equation 1: $Ce = Co + Dm (Co - Cs)$

   where:

   Ce = the effluent concentration limit, ug/l

   Co = the concentration (water quality objective) to be met at the completion of initial* dilution, ug/l

   Cs = background seawater concentration (see Table C below), ug/l

   Dm = minimum probable initial* dilution expressed as parts seawater per part wastewater.

TABLE C
BACKGROUND SEAWATER CONCENTRATIONS (Cs)

Waste Constituent	Cs (ug/l)
Arsenic	3.
Copper	2.
Mercury	0.0005
Silver	0.16
Zinc	8.
For all other Table B parameters, Cs = 0.	

* See Appendix I for definition of terms.

b. Determining a Mixing Zone for the Acute* Toxicity Objective

The mixing zone for the acute* toxicity objective shall be ten percent (10%) of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (zone of initial dilution). There is no vertical limitation on this zone. The effluent limitation for the acute* toxicity objective listed in Table B shall be determined through the use of the following equation:

Equation 2: $Ce = Ca + (0.1)\ Dm\ (Ca)$

where:

Ca = the concentration (water quality objective) to be met at the edge of the acute mixing zone.

Dm = minimum probable initial* dilution expressed as parts seawater per part wastewater (This equation applies only when Dm > 24).

c. Toxicity Testing Requirements based on the Minimum Initial* Dilution Factor for Ocean Waste Discharges

(1) Dischargers shall conduct acute* toxicity testing if the minimum initial* dilution of the effluent is greater than 1,000:1 at the edge of the mixing zone.

(2) Dischargers shall conduct either acute* or chronic* toxicity testing if the minimum initial* dilution ranges from 350:1 to 1,000:1 depending on the specific discharge conditions. The RWQCB shall make this determination.

(3) Dischargers shall conduct chronic* toxicity testing for ocean waste discharges with minimum initial* dilution factors ranging from 100:1 to 350:1. The RWQCBs may require that acute toxicity testing be conducted in addition to chronic as necessary for the protection of beneficial uses of ocean waters.

(4) Dischargers shall conduct chronic toxicity testing if the minimum initial* dilution of the effluent falls below 100:1 at the edge of the mixing zone.

d. For the purpose of this Plan, minimum initial* dilution is the lowest average initial* dilution within any single month of the year. Dilution estimates shall be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents, of sufficient strength to influence the initial* dilution process, flow across the discharge structure.

e. The Executive Director of the SWRCB shall identify standard dilution models for use in determining Dm, and shall assist the Regional Board in evaluating Dm for specific waste discharges. Dischargers may propose alternative methods of calculating Dm, and the Regional Board may accept such methods upon verification of its accuracy and applicability.

* See Appendix I for definition of terms.

f. The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered to equal zero for days on which no discharge occurred.

g. The daily maximum shall apply to flow weighted 24 hour composite samples.

h. The instantaneous maximum shall apply to grab sample determinations.

i. If only one sample is collected during the time period associated with the water quality objective (e.g., 30-day average or 6-month median), the single measurement shall be used to determine compliance with the effluent limitation for the entire time period.

j. Discharge requirements shall also specify effluent limitations in terms of mass emission rate limits utilizing the general formula:

Equation 3: lbs/day = 0.00834 x Ce x Q

where:

Ce = the effluent concentration limit, ug/l

Q = flow rate, million gallons per day (MGD)

k. The six-month median limit on daily mass emissions shall be determined using the six-month median effluent concentration as Ce and the observed flow rate Q in millions of gallons per day. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as Ce and the observed flow rate Q in millions of gallons per day.

l. Any significant change in waste* flow shall be cause for reevaluating effluent limitations.

4. Minimum* Levels

For each numeric effluent limitation, the Regional Board must select one or more Minimum* Levels (and their associated analytical methods) for inclusion in the permit. The "reported" Minimum* Level is the Minimum* Level (and its associated analytical method) chosen by the discharger for reporting and compliance determination from the Minimum* Levels included in their permit.

a. Selection of Minimum* Levels from Appendix II

The Regional Board must select all Minimum* Levels from Appendix II that are below the effluent limitation. If the effluent limitation is lower than all the Minimum* Levels in Appendix II, the Regional Board must select the lowest Minimum* Level from Appendix II.

* See Appendix I for definition of terms.

b. Deviations from Minimum* Levels in Appendix II

The Regional Board, in consultation with the State Water Board's Quality Assurance Program, must establish a Minimum* Level to be included in the permit in any of the following situations:

1. A pollutant is not listed in Appendix II.
2. The discharger agrees to use a test method that is more sensitive than those described in 40 CFR 136 (revised May 14, 1999).
3. The discharger agrees to use a Minimum* Level lower than those listed in Appendix II.
4. The discharger demonstrates that their calibration standard matrix is sufficiently different from that used to establish the Minimum* Level in Appendix II and proposes an appropriate Minimum* Level for their matrix.
5. A discharger uses an analytical method having a quantification practice that is not consistent with the definition of Minimum* Level (e.g., US EPA methods 1613, 1624, 1625).

5. Use of Minimum* Levels

a. Minimum* Levels in Appendix II represent the lowest quantifiable concentration in a sample based on the proper application of method-specific analytical procedures and the absence of matrix interferences. Minimum* Levels also represent the lowest standard concentration in the calibration curve for a specific analytical technique after the application of appropriate method-specific factors.

Common analytical practices may require different treatment of the sample relative to the calibration standard. Some examples are given below:

Substance or Grouping	Method-Specific Treatment	Most Common Factor
Volatile Organics	No differential treatment	1
Semi-Volatile Organics	Samples concentrated by extraction	1000
Metals	Samples diluted or concentrated	½ , 2 , and 4
Pesticides	Samples concentrated by extraction	100

b. Other factors may be applied to the Minimum* Level depending on the specific sample preparation steps employed. For example, the treatment typically applied when there are matrix effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied during the computation of the reporting limit. Application of such factors will alter the reported Minimum* Level.

c. Dischargers are to instruct their laboratories to establish calibration standards so that the Minimum* Level (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve. In accordance with Section 4b, above, the discharger's laboratory may employ a calibration standard lower than the Minimum* Level in Appendix II.

* See Appendix I for definition of terms.

6. Sample Reporting Protocols

   a. Dischargers must report with each sample result the reported Minimum* Level (selected in accordance with Section 4, above) and the laboratory's current MDL*.

   b. Dischargers must also report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

      (1) Sample results greater than or equal to the reported Minimum* Level must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).

      (2) Sample results less than the reported Minimum* Level, but greater than or equal to the laboratory's MDL*, must be reported as "Detected, but Not Quantified", or DNQ. The laboratory must write the estimated chemical concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc.").

      (3) Sample results less than the laboratory's MDL* must be reported as "Not Detected", or ND.

7. Compliance Determination

   Sufficient sampling and analysis shall be required to determine compliance with the effluent limitation.

   a. Compliance with Single-Constituent Effluent Limitations

      Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant (see Section 7c, below) in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum* Level.

   b. Compliance with Effluent Limitations expressed as a Sum of Several Constituents

      Dischargers are out of compliance with an effluent limitation which applies to the sum of a group of chemicals (e.g., PCB's) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or DNQ.

   c. Multiple Sample Data Reduction

      The concentration of the pollutant in the effluent may be estimated from the result of a single sample analysis or by a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses when all sample results are quantifiable (i.e., greater than or equal to the reported Minimum* Level). When one or more sample results are reported as ND or DNQ, the central tendency concentration of the pollutant shall be the median (middle) value of the multiple samples. If, in an even number of samples, one or both of the middle values is ND or DNQ, the median will be the lower of the two middle values.

---

* See Appendix I for definition of terms.

d. Powerplants and Heat Exchange Dischargers

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table B objectives on a routine basis. Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimal probable initial* dilution of the combined effluent (in-plant waste streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 3. The mass emission limits will then serve as requirements applied to all inplant waste* streams taken together which discharge into the cooling water flow, except that limits for total chlorine residual, acute* (if applicable per Section (3)(c)) and chronic* toxicity and instantaneous maximum concentrations in Table B shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table B objective for radioactivity shall apply to the undiluted combined final effluent.

8. Pollutant Minimization Program

a. Pollutant Minimization Program Goal

The goal of the Pollutant Minimization Program is to reduce all potential sources of a pollutant through pollutant minimization (control) strategies, including pollution prevention measures, in order to maintain the effluent concentration at or below the effluent limitation.

Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The completion and implementation of a Pollution Prevention Plan, required in accordance with CA Water Code Section 13263.3 (d) will fulfill the Pollution Minimization Program requirements in this section.

b. Determining the need for a Pollutant Minimization Program

1. The discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true:

(a) The calculated effluent limitation is less than the reported Minimum* Level

(b) The concentration of the pollutant is reported as DNQ

(c) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.

2. Alternatively, the discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true:

(a) The calculated effluent limitation is less than the Method Detection Limit*.

(b) The concentration of the pollutant is reported as ND.

(c) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.

* See Appendix I for definition of terms.

c. Regional Boards may include special provisions in the discharge requirements to require the gathering of evidence to determine whether the pollutant is present in the effluent at levels above the calculated effluent limitation. Examples of evidence may include:

1. health advisories for fish consumption,
2. presence of whole effluent toxicity,
3. results of benthic or aquatic organism tissue sampling,
4. sample results from analytical methods more sensitive than methods included in the permit (in accordance with Section 4b, above).
5. the concentration of the pollutant is reported as DNQ and the effluent limitation is less than the MDL

d. Elements of a Pollutant Minimization Program

The Regional Board may consider cost-effectiveness when establishing the requirements of a Pollutant Minimization Program. The program shall include actions and submittals acceptable to the Regional Board including, but not limited to, the following:

1. An annual review and semi-annual monitoring of potential sources of the reportable pollutant, which may include fish tissue monitoring and other bio-uptake sampling;
2. Quarterly monitoring for the reportable pollutant in the influent to the wastewater treatment system;
3. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable pollutant in the effluent at or below the calculated effluent limitation;
4. Implementation of appropriate cost-effective control measures for the pollutant, consistent with the control strategy; and,
5. An annual status report that shall be sent to the Regional Board including:
   (a) All Pollutant Minimization Program monitoring results for the previous year;
   (b) A list of potential sources of the reportable pollutant;
   (c) A summary of all action taken in accordance with the control strategy; and,
   (d) A description of actions to be taken in the following year.

9. Toxicity Reduction Requirements

a. If a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table B, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source of toxicity. Once the source(s) of toxicity is identified, the discharger shall take all reasonable steps necessary to reduce toxicity to the required level.

---

* See Appendix I for definition of terms.

b. The following shall be incorporated into waste discharge requirements: (1) a requirement to conduct a TRE if the discharge consistently exceeds its toxicity effluent limitation, and (2) a provision requiring a discharger to take all reasonable steps to reduce toxicity once the source of toxicity is identified.

D. Implementation Provisions for Bacterial Assessment and Remedial Action Requirements

1. The requirements listed below shall be used to determine the occurrence and extent of any impairment of a beneficial use due to bacterial contamination, generate information which can be used in the development of an enterococcus standard, and provide the basis for remedial actions necessary to minimize or eliminate any impairment of a beneficial use.

   a. Measurement of enterococcus density shall be conducted at all stations where measurement of total and fecal coliforms are required. In addition to the requirements of Chapter II.B.I, if a shore station consistently exceeds a coliform objective or exceeds a geometric mean enterococcus density of 24 organisms per 100 ml for a 30-day period or 12 organisms per 100 ml for a six-month period, the Regional Board shall require the appropriate agency to conduct a survey to determine if that agency's discharge is the source of the contamination. The geometric mean shall be a moving average based on no less than five samples per month, spaced evenly over the time interval. When a sanitary survey identifies a controllable source of indicator organisms associated with a discharge of sewage, the Regional Board shall take action to control the source.

   b. Waste discharge requirements shall require the discharger to conduct sanitary surveys when so directed by the Regional Board. Waste discharge requirements shall contain provisions requiring the discharger to control any controllable discharges identified in a sanitary survey.

E. Implementation Provisions For Areas* of Special Biological Significance (ASBS)

1. Waste* shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas.

2. Regional Boards may approve waste discharge requirements or recommend certification for limited-term (i.e. weeks or months) activities in ASBS*. Limited-term activities include, but are not limited to, activities such as maintenance/repair of existing boat facilities, restoration of sea walls, repair of existing storm water pipes, and replacement/repair of existing bridges. Limited-term activities may result in temporary and short-term changes in existing water quality. Water quality degradation shall be limited to the shortest possible time. The activities must not permanently degrade water quality or result in water quality lower than that necessary to protect existing uses, and all practical means of minimizing such degradation shall be implemented.

* See Appendix I for definition of terms.

F. Revision of Waste* Discharge Requirements

1. The Regional Board shall revise the waste* discharge requirements for existing* discharges as necessary to achieve compliance with this Plan and shall also establish a time schedule for such compliance.

2. The Regional Boards may establish more restrictive water quality objectives and effluent limitations than those set forth in this Plan as necessary for the protection of beneficial uses of ocean* waters.

3. Regional Boards may impose alternative less restrictive provisions than those contained within Table B of the Plan, provided an applicant can demonstrate that:

   a. Reasonable control technologies (including source control, material substitution, treatment and dispersion) will not provide for complete compliance; or

   b. Any less stringent provisions would encourage water* reclamation;

4. Provided further that:

   a. Any alternative water quality objectives shall be below the conservative estimate of chronic* toxicity, as given in Table D, and such alternative will provide for adequate protection of the marine environment;

   b. A receiving water quality toxicity objective of 1 TUc is not exceeded; and

   c. The State Board grants an exception (Chapter III. I.) to the Table B limits as established in the Regional Board findings and alternative limits.

TABLE D
CONSERVATIVE ESTIMATES OF CHRONIC TOXICITY

Constituent	Estimate of Chronic Toxicity (ug/l)
Arsenic	19.
Cadmium	8.
Hexavalent Chromium	18.
Copper	5.
Lead	22.
Mercury	0.4
Nickel	48.
Silver	3.
Zinc	51.
Cyanide	10.
Total Chlorine Residual	10.0
Ammonia	4000.0
Phenolic Compounds (non-chlorinated)	a) (see below)
Chlorinated Phenolics	a)
Chlorinated Pesticides and PCB's	b)

* See Appendix I for definition of terms.

Table D Notes:

a) There are insufficient data for phenolics to estimate chronic toxicity levels. Requests for modification of water quality objectives for these waste* constituents must be supported by chronic toxicity data for representative sensitive species. In such cases, applicants seeking modification of water quality objectives should consult the Regional Water Quality Control Board to determine the species and test conditions necessary to evaluate chronic effects.

b) Limitations on chlorinated pesticides and PCB's shall not be modified so that the total of these compounds is increased above the objectives in Table B.

G. Monitoring Program

1. The Regional Boards shall require dischargers to conduct self-monitoring programs and submit reports necessary to determine compliance with the waste* discharge requirements, and may require dischargers to contract with agencies or persons acceptable to the Regional Board to provide monitoring reports. Monitoring provisions contained in waste discharge requirements shall be in accordance with the Monitoring Procedures provided in Appendix III.

2. Where the Regional Board is satisfied that any substance(s) of Table B will not significantly occur in a discharger's effluent, the Regional Board may elect not to require monitoring for such substance(s), provided the discharger submits periodic certification that such substance(s) is not added to the waste* stream, and that no change has occurred in activities that could cause such substance(s) to be present in the waste* stream. Such election does not relieve the discharger from the requirement to meet the objectives of Table B.

3. The Regional Board may require monitoring of bioaccumulation of toxicants in the discharge zone. Organisms and techniques for such monitoring shall be chosen by the Regional Board on the basis of demonstrated value in waste* discharge monitoring.

H. Discharge Prohibitions

1. Hazardous Substances

a. The discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste* into the ocean* is prohibited.

2. Areas Designated for Special Water Quality Protection

a. Waste* shall not be discharged to designated Areas* of Special Biological Significance except as provided in Chapter III E. Implementation Provisions For Areas of Special Biological Significance.

3. Sludge

a. Pipeline discharge of sludge to the ocean* is prohibited by federal law; the discharge of municipal and industrial waste* sludge directly to the ocean*, or into

---

* See Appendix I for definition of terms.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

RECORD PACKET COPY

Tu 13 d

Addendum

Date: **February 15, 2002**

To: **Commissioners and Interested Persons**

From: **Peter Douglas, Executive Director**
Mark Delaplaine, Federal Consistency Staff

Subject: **Consistency Certification CC-10-02, City of San Diego Secondary Treatment Waiver Renewal**

Attached are several background documents concerning the above-referenced Consistency Certification. The Regional Water Quality Control Board (RWQCB) documents are draft, as the matter is still pending before the Regional Board and is scheduled for a public hearing on March 13, 2002 (as noted in the staff's recommendation on the Consistency Certification). The EPA document, the text of which is an exhibit in the staff recommendation, contains the graphs, charts and monitoring station maps accompanying EPA's analysis.

Attachments

1. California Regional Water Quality Control Board, San Diego Region:
   - Tentative Order No. R9-2002-0025 and draft NPDES Permit No. CA0107409
   - Fact Sheet and Public Notice
   - Draft Monitoring and Reporting Program
2. EPA, Tentative Decision Document (including graphics).

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
AND
U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX

TENTATIVE ORDER NO. R9-2002-0025
DRAFT NPDES PERMIT NO. CA0107409
WASTE DISCHARGE REQUIREMENTS
AND
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
FOR THE
CITY OF SAN DIEGO
E. W. BLOM POINT LOMA
METROPOLITAN WASTEWATER TREATMENT PLANT

DISCHARGE TO THE PACIFIC OCEAN
THROUGH THE POINT LOMA OCEAN OUTFALL
SAN DIEGO COUNTY

Table of Contents

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
AND
U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX

TENTATIVE ORDER NO. R9-2002-0025
DRAFT NPDES PERMIT NO. CA0107409
WASTE DISCHARGE REQUIREMENTS
AND
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
FOR THE
CITY OF SAN DIEGO
E. W. BLOM POINT LOMA
METROPOLITAN WASTEWATER TREATMENT PLANT

DISCHARGE TO THE PACIFIC OCEAN
THROUGH THE POINT LOMA OCEAN OUTFALL
SAN DIEGO COUNTY

The California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board) and the U. S. Environmental Protection Agency, Region IX (hereinafter EPA), find that:

1. On April 26, 1995, the City of San Diego (hereinafter City or discharger) submitted an application for a 301(h)-modified National Pollutant Discharge Elimination System (NPDES) permit for discharge from the E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant (PLMWTP), pursuant to sections 301(h) and (j)(5) of the Clean Water Act (CWA), 33 U.S.C. §§ 1311(h) and (j)(5). The PLMWTP is owned and operated by the City. On November 9, 1995, the Regional Board and EPA adopted Order No. 95-106, NPDES Permit No. CA0107409, for the PLMWTP discharge. Order No. 95-106, as amended, established waste discharge requirements and monitoring and reporting requirements for the discharge of up to 240 million gallons per day (MGD) (average dry weather flow) of treated wastewater to the Pacific Ocean via the Point Loma Ocean Outfall Extension (PLOO).

2. On April 10, 2001, the City submitted an application for renewal of its 1995 301(h)-modified NPDES permit. The 2001 application is based on an improved discharge, as defined under 40 CFR 125.58(g), and requests the following effluent limitations for total suspended solids (TSS) and biochemical oxygen demand (5-day) (BOD_5):

Effluent Parameter	Mean Annual Percent Removal	Mean Monthly Percent Removal	Annual Mass Emission	Daily Range
Total Suspended Solids (TSS)	n/a*	≥ 80 %	15,000 mt/yr** 13,599 mt/yr***	n/a
Biochemical Oxygen Demand (5-day) (BOD_5)	≥ 58 %	n/a	n/a	n/a
pH	n/a	n/a	n/a	6 - 9 units

* Not applicable
** Effective years 1 through 4 of NPDES permit
*** Effective year 5 of NPDES permit
Units: ≥ = greater than or equal to mt/yr = metric tons per year
% = percent

3. The EPA drafted a Tentative Decision Document (TDD) evaluating the discharge from the PLMWTP based on 1995-2000 effluent concentrations for TSS and BOD_5 and the City's projected average annual end-of-permit flow of 195 MGD, as provided in the 2001 application. The EPA Regional Administrator's (hereinafter Regional Administrator) tentative decision was issued on February 11, 2002, granting the City's 301(h) modification request for the following parameters: TSS and BOD_5.

4. The Metropolitan Sewerage System (Metro System) is owned and operated by the City. The Metro System presently serves all or portions of the City and 15 other cities and water/sanitation districts (participating agencies). In addition, there is a cross-border emergency connection between the Metro System and the City of Tijuana, Mexico, which is currently not utilized. The service area encompasses approximately 450 square miles. The institutional arrangements between the City and the participating agencies are defined by a number of Regional Wastewater Disposal Agreements, Sewage Disposal Agreements, Sewage Transportation Agreements, and various amendments to these agreements. The 15 participating agencies are:

Cities	Water/Sanitation Districts
City of Chula Vista	Lakeside-Alpine Sanitation District
City of Coronado	Lemon Grove Sanitation District
City of Del Mar	East Otay Mesa Sewer Maintenance District
City of El Cajon	Otay Water District
City of Imperial Beach	Spring Valley Sanitation District

Cities	Water/Sanitation Districts
City of La Mesa	Padre Dam Municipal Water District
City of National City	Wintergardens Sewer Maintenance District
City of Poway	

5. There have been a number of upgrades to the Metro System since 1995. These include: (1) the addition of two new sedimentation basins at the PLMWTP; (2) construction and start-up of the Metro Biosolids Center (MBC); (3) construction of the North City Wastewater Reclamation Plant (NCWRP); and (4) construction and start-up of the South Bay Water Reclamation Plant (SBWRP). Together, these facilities comprise the Metro System.

6. The PLMWTP is located at 1902 Gatchell Road, on the western side and near the southern tip of Point Loma in the City of San Diego. The facility site is located on the Fort Rosecrans military reservation and adjoins the Cabrillo National Monument. PLMWTP began operation in 1963. Currently, preliminary treatment consists of screening at Pump Station No. 2 (course screens) and at the treatment plant (fine screens). The wastewater is then distributed to six aerated grit removal chambers. Ferric chloride is added prior to entering the grit chamber to enhance solids removal. Wastewater exiting the grit chamber is then treated with anionic polymers to aid coagulation of solids and distribution to 12 sedimentation tanks. Sludge generated by the advanced primary treatment process is digested anaerobically. The Fiesta Island sludge processing facility has been closed and digested sludge from PLMWTP is now pumped to the MBC for dewatering. The centrate from the dewatering process is returned to the sewer system upstream of Pump Station No. 2 and treated advanced primary effluent is discharged through the PLOO.

7. The City began operation of the 30 MGD North City Water Reclamation Plant (NCWRP) during the 1995 permit term. Wastewater treatment consists of preliminary screening, grit removal, primary treatment, secondary treatment with provision for nitrification and partial denitrification, tertiary filtration, and chlorination. Based on demand, a portion of treated water is released back into the sewer system and routed through Pump Station No. 2 to the PLMWTP. Waste solids are pumped to the MBC where they are thickened, digested in anaerobic digesters, and dewatered. Centrate from the NCWRP is released back into the sewer system upstream of Pump Station No. 2.

8. The South Bay Water Reclamation Plant (SBWRP) is a 15 MGD treatment facility which began operation in December 2001. Solids removed from the treatment process are released back into the sewer system upstream of Pump Station No. 2 for treatment at the PLMWTP. Water for reclamation receives full tertiary treatment. Excess secondary treated effluent is discharged one mile offshore through the South Bay Ocean Outfall (SBOO), which is shared with the International Wastewater Treatment Plant (IWTP), a

facility owned and operated by the International Boundary and Water Commission.

9. The IWTP is a 25 MGD treatment facility that was constructed to handle wastewater from Mexico. While not considered part of the Metro System, the plant treats Mexican sewage that could otherwise cross the border untreated.

10. The PLOO was extended in 1993, when 12,500 feet of 144 inch diameter concrete pipe were added to the existing pipe. The new diffuser legs are each 2,500 feet long. The extended PLOO now discharges PLMWTP effluent to the Pacific Ocean approximately 4.5 miles offshore at a depth of 310 feet (coordinates 32°39'55" North Latitude, 117°19'25" West Longitude). Outfall hydraulic capacity is 432 MGD (peak wet weather flow).

    In the 1995 application, the City used a modified version of the RSB model, in *Dilution Models for Effluent Discharges* (EPA/600/R-94/086, 1994), to estimate critical initial dilutions for determining effluent quality requirements. These modeling results were verified by the EPA, as outlined in the TDD. The critical initial dilution for determining compliance with *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan), Chapter II, Table B toxic materials limitations is 204:1 (i.e., minimum month average initial dilution). This is roughly twice the critical initial dilution calculated for the original PLOO which terminated in State waters (i.e., 113). As explained in the TDD, critical initial dilutions for determining compliance with federal marine water quality criteria for the protection of aquatic life and human health are 204:1 and 328:1, respectively.

11. The State Water Resources Control Board (hereinafter State Board) adopted a revised California Ocean Plan on November 16, 2000, which was approved by EPA on December 3, 2001. The Ocean Plan identifies the following beneficial uses of State ocean waters to be protected:

    a. Industrial water supply
    b. Navigation
    c. Water contact recreation
    d. Non-contact water recreation
    e. Ocean commercial and sport fishing
    f. Preservation and enhancement of Areas of Special Biological Significance (ASBS)
    g. Preservation of rare and endangered species
    h. Marine habitat
    i. Mariculture
    j. Fish migration
    k. Fish spawning
    l. Shellfish harvesting
    m. Aesthetic enjoyment

In order to protect these beneficial uses, the Ocean Plan establishes water quality objectives (for bacterial, physical, chemical, and biological characteristics, and for radioactivity), general requirements for management of waste discharged to the ocean, quality requirements for waste discharges (effluent quality requirements), discharge prohibitions, and general provisions.

12. The *Water Quality Control Plan, San Diego Basin (9)* (Basin Plan) was adopted by the Regional Board on September 8, 1994 and approved by the State Board. Subsequent revisions to the Basin Plan have also been adopted by the Regional Board and approved by the State Board.

13. The Basin Plan identifies the following beneficial uses of State ocean waters to be protected:

    a. Industrial service supply
    b. Navigation
    c. Water contact recreation
    d. Noncontact water recreation
    e. Commercial and sport fishing
    f. Preservation of biological habitats of special significance
    g. Rare, threatened, or endangered species
    h. Marine habitat
    i. Aquaculture
    j. Migration of aquatic organisms
    k. Spawning, reproduction, and/or early development
    l. Shellfish harvesting
    m. Wildlife habitat

    The Basin Plan relies primarily on the requirements of the Ocean Plan for protection of these beneficial uses; however, the Basin Plan establishes additional water quality objectives for dissolved oxygen and pH.

14. Numeric effluent limitations for non-301(h) pollutant parameters discharged through the PLOO are established based on Ocean Plan quality requirements for waste discharges.

15. Order No. 95-106 contained mass emission benchmarks for effluent discharged through the PLOO. These benchmarks were established to address the uncertainty due to projected increases in toxic pollutant loadings from the PLMWTP to the marine environment during the five-year 301(h) modification, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with antidegradation requirements at the time of permit reissuance. Based on a review of effluent data collected during the previous permit term, the benchmarks contained in Order No. 95-106 are retained in Order No. R9-2002-0025, with minor revisions.

    Mass emission benchmarks are not water quality-based effluent limitations and are not

enforceable, as such. Annual mass emission benchmarks were determined using 1990 through April 1995 n-day average monthly performance (95th percentile) of the PLMWTP and the City's projected end-of-permit flow of 205 MGD (see 1995 application). Due to increases in source water concentrations in the City's imported potable water supply, mass emission benchmarks for copper and selenium were determined using 1994 n-day average monthly performance (95th percentile) of the PLMWTP and the City's projected end-of-permit flow of 205 MGD. The mass emission benchmark for cyanide has been corrected from the previous permit term. Average monthly performance was calculated as outlined in *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, 1991; TSD), Appendix E.

16. With the addition of the South Bay Reclamation plant, the City has implemented a wastewater reclamation program that has achieved a system capacity of 45 MGD of reclaimed wastewater by January 1, 2010. In addition, on a system-wide basis, the City will remove not less than 80 percent of TSS (on a monthly average) and not less than 58 percent of the BOD_5 (on an annual average) in the discharge to which this application applies. The City also proposes to decrease the suspended solids mass emissions. The City's permit application satisfies § 301(j)(5) of the CWA.[1]

17. The City's renewal of a modification from secondary treatment requirements pursuant to Section 301(h) of the CWA is contingent upon:

    a. Determination by the California Coastal Commission that the proposed discharge is consistent with the Coastal Zone Management Act [16 U.S.C. 1451 *et seq.*] (The California Coastal Commission will be hearing this issue at their meeting on March 5-8, 2002.); and

    b. Determination by the U. S. Fish and Wildlife Service that the proposed discharge is consistent with the Endangered Species Act [16 U.S.C. 1531 *et seq.*] (The City sent a letter to the Service on June 8, 1999.).

18. Pursuant to 40 CFR 125.59(i)(2), the City has requested that the Regional Board provide a determination that the proposed discharge would comply with applicable State water quality standards. As specified in a Memorandum of Understanding (May 1984), the joint issuance of a NPDES permit which incorporates both the 301(h) modification and State waste discharge requirements will serve as the State's concurrence.

19. Pursuant to 40 CFR 125.60, the City's proposed percent removal requirements for TSS and BOD_5 are sufficient to demonstrate compliance with the federal requirement of at least 30 percent removal, and the State requirement of 75 percent removal for suspended solids. The discharge allows sufficient dilution to attain State water quality standards and

[1]This permit is issued without prejudice to the rights of any party to address the legal issue of the applicability of 33 U.S.C. § 1311(j)(5) to the City's future NPDES permits.

federal water quality criteria.

20. Pursuant to 40 CFR 125.61, the City's proposed discharge will comply with Ocean Plan water quality standards for dissolved oxygen, suspended solids, and pH.

21. Pursuant to 40 CFR 125.62, the City's proposed discharge will not adversely impact public water supplies or interfere with the protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife and will allow for recreational activities.

22. Pursuant to 40 CFR 125.63, the City has proposed a monitoring program for the PLMWTP discharge. The Regional Board and EPA are including additional requirements for monitoring and reporting the impact of the 301(h)-modified discharge.

23. Pursuant to 40 CFR 125.64, the City's proposed discharge will not result in any additional treatment requirements on any other point or nonpoint source.

24. Pursuant to 40 CFR 125.65, the City has complied with urban area pretreatment requirements by demonstrating that it has an applicable pretreatment requirement in effect for each toxic pollutant introduced by an industrial user.

25. Pursuant to 40 CFR 125.66 and 125.68, the City's existing pretreatment program was approved by EPA on June 29, 1982.

26. Pursuant to 40 CFR 125.66, the City will continue implementing its existing nonindustrial source control program (which has been in effect since 1985). The City will also continue its existing comprehensive public education program to minimize the entrance of toxic pollutants from nonindustrial sources into the treatment works.

27. Pursuant to 40 CFR 125.67, there will be no new or substantially increased discharges from the point source of the pollutants to which the 301(h) modification will apply, above those specified in this order and permit.

28. On November 16, 1990, the EPA promulgated NPDES permit application requirements for storm water discharges (40 CFR 122, 123, and 124) which are applicable to the PLMWTP. On April 17, 1997, the State Board adopted Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities*. Storm water discharges from wastewater treatment facilities tributary to the PLOO are subject to the terms and conditions of Water Quality Order No. 97-03-DWQ, as amended.

29. Federal regulations (40 CFR 403) establish pretreatment program requirements for publicly owned treatment works (POTWs) which receive pollutants from industries subject to pretreatment standards. This order and permit contains industrial pretreatment program requirements pursuant to 40 CFR 403 (see Pretreatment Requirements).

30. On February 19, 1993, the EPA issued the final rule for the use and disposal of sewage sludge (40 CFR 503). This regulation requires that producers of sewage sludge meet certain reporting, handling, and disposal requirements. The EPA, not the Regional Board, will oversee compliance with 40 CFR 503.

31. Effluent limitations, industrial pretreatment standards, sludge use and disposal regulations, and ocean discharge criteria established under Sections 208(b), 301, 302, 303(d), 304, 306, 307, 403, 405, and 503 of the CWA, as amended [33 U.S.C. 1251 *et seq.*], are applicable to the discharge.

32. On May 9, 1996, the Regional Board adopted Order No. 96-04, *General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies*, and addenda thereto, to regulate sewage discharges from publicly owned sewage collection systems in the San Diego Region. Order No. 96-04, serving as State Waste Discharge Requirements, prohibits the discharge of sewage from sanitary sewer systems at any point upstream of a sewage treatment plant. Order No. 96-04 requires the development of a Sanitary Sewer Overflow Prevention Plan and a Sanitary Sewer Overflow Response Plan for each collection system in the Region. In the event that a sewage discharge occurs within a collection system, Order No. 96-04 specifies procedures for reporting the discharge to the Regional Board. (See Reporting Requirement H.5 for requirements that apply to sewage spills at wastewater treatment facilities.)

33. The Constitution of California states ". . . the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." Based on this constitutional declaration and other considerations, the State Water Resources Control Board (SWRCB) has concluded that "in all cases where an applicant in a water-short area proposes a discharge of once-used wastewater to the ocean, the report of waste discharge should include an explanation as to why the effluent is not being reclaimed for further beneficial use." (SWRCB Order No. WQ 84-7) It has been and continues to be the policy of the Regional Board to encourage reclamation and reuse of water resources, however, it is not the intent of the Regional Board to require specific volumes of water to be reclaimed or to require specific water reclamation projects to be implemented.

34. Waste discharge requirements for this discharge must be in conformance with 40 CFR 131.12 and State Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (known collectively as "antidegradation" policies). The PLMWTP discharge is in conformance with 40 CFR 131.12 because pollutant loadings to the environment are reduced during the period of the permit modification.

35. For the purposes of this order and permit, "waste" includes the City's total discharge, of whatever origin (i.e., gross, not net, discharge).

36. For the purposes of this discharge, the term "permittee" used in parts of 40 CFR incorporated into this order and permit by reference and/or applicable to this order and permit shall have the same meaning as the term "discharger" used elsewhere in this order and permit.

37. State Board Resolution No. 74-28, *Areas of Special Biological Significance*, requires the Regional Boards to select areas in coastal waters which contain "biological communities of such extraordinary, even though unquantifiable, value that no acceptable risk of change in their environments as a result of man's activities can be entertained." La Jolla Ecological Reserve, approximately 12 miles north of the PLOO, is the closest designated Area of Special Biological Significance. As stated in the Basin Plan, discharges of wastewater and/or heat must be sufficiently removed spatially from an area of special biological significance to assure the maintenance of natural water quality in the area. Existing wastewater and/or heat discharges, which influence the natural water quality in the designated area, must be phased out as promptly as possible. Regional Board review of the monitoring data submitted in the City's application for a 301(h)-modified NPDES permit have not revealed any impacts on the La Jolla Ecological Reserve resulting from discharge through the PLOO. No impacts to the reserve area are expected to occur in the future.

38. The Regional Board, in establishing the requirements contained herein, considered factors including, but not limited to, the following:

    a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose;

    b. Other waste discharges;

    c. The need to prevent nuisance;

    d. Past, present, and probable future beneficial uses of water;

    e. Environmental characteristics of the receiving waters under consideration, including the quality of those receiving waters;

    f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;

    g. Economic considerations;

    h. The need for developing housing within the region; and

i. The need to develop and use recycled water. (California Water Code 13263 and 13241)

39. The issuance of waste discharge requirements for this discharge is exempt from the requirement for preparation of environmental documents under the California Environmental Quality Act [Public Resources Code, Division 13, Chapter 3, Section 21000 *et seq.*] in accordance with Section 13389 of the California Water Code (CWC).

40. On February 11, 2002, the Regional Board and EPA notified the City and all known interested parties of their intent to issue the 301(h)-modified NPDES permit for the discharge of treated effluent from the PLMWTP through the PLOO to the Pacific Ocean. (CWC 13378 and 13384)

41. The Regional Board and EPA at a public meeting on March 13, 2002 have heard and considered all comments pertaining to the discharge of treated effluent from the PLMWTP through the PLOO to the Pacific Ocean. (CWC 13378 and 13384)

42. This Order shall serve as a NPDES permit for the discharge of treated effluent from the PLMWTP through the PLOO to the Pacific Ocean pursuant to Section 402 of the CWA, and amendments thereto.

IT IS HEREBY ORDERED that the City of San Diego (hereinafter discharger), in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and the regulations adopted thereunder, shall comply with the following for the handling, treatment, and disposal of wastes from the E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant through the Point Loma Ocean Outfall:

A. PROHIBITIONS

1. The discharge of waste in a manner or to locations that have not been specifically authorized by this order and permit, or for which valid waste discharge requirements/NPDES permits are not in force, is prohibited.

2. Discharge through the PLOO from the PLMWTP in excess of an average daily flow rate of 240 MGD is prohibited, unless the Regional Board and the EPA Water Division Director (hereinafter Director) approve a revised flow rate in accordance with this order and permit.

3. The discharge of any pollutant that is not subject to an effluent limitation in this order and permit is prohibited, except in the following circumstances:

   a. The pollutant has been identified in the administrative record for this order and permit.

   b. The pollutant has not been identified in the administrative record for the order and permit, so long as the discharger: (1) has complied with all applicable requirements for disclosure of information about its pollutant discharges, operations, and sources of wastes; and (2) complies with all applicable requirements for notification of changes in its operations and discharges.

4. Compliance with Discharge Prohibitions, as stated in Chapter III.H of the 2001 Ocean Plan (Attachment 1) is required as a condition of this order and permit.

5. Compliance with Discharge Prohibitions contained in Chapter 4 of the 1994 Basin Plan (Attachment No. 2) is required as a condition of this order and permit.

B. DISCHARGE SPECIFICATIONS

1. The following effluent limitations apply to the undiluted effluent from PLMWTP discharged through the PLOO to the Pacific Ocean.

a. Effluent Limitations for Major Constituents and Properties of Wastewater

(1) 301(h) Pollutant Parameters

Effluent Constituent*	Mean Annual Percent Removal	Mean Monthly Percent Removal	Monthly Average
Biochemical Oxygen Demand (5-day) (BOD_5)	≥ 58 %**	n/a***	n/a
Total Suspended Solids (TSS)	n/a	≥ 80 %**	75 mg/l
	The discharger shall achieve a mass emission of TSS of no greater than 15,000 mt/yr; this requirement shall be effective through December 31, 2005. Effective January 1, 2006, the discharger shall achieve a mass emission of TSS of no greater than 13,599 mt/yr. These mass emission requirements shall only apply to TSS discharged from POTWs which are owned and operated by the discharger, and the discharger's wastewater generated in the Metro System service area. These mass emission requirements do not apply to wastewater (and the resulting TSS) generated in Mexico and treated at and discharged from the PTWWTP.		

* The effluent concentration limitation for TSS was determined based on PLMWTP monthly average performance data for 1990 through 1994 provided by the discharger. Effluent mass emission limitations for TSS were determined using the discharger's 1995 and 2001 application; and the discharger's 1997 Metro System projected annual average effluent flow rate of 195 MGD and 80 percent removal of TSS.
** Percent removal to be calculated on a system-wide basis.
*** Not applicable.
Units: ≥ = greater than or equal to; % = percent; mg/l = milligrams per liter; mt/yr = metric tons per year

(2) Non-301(h) Pollutant Parameters

Effluent Constituent	Units	Monthly Average (30-day)*	Weekly Average (7-day)*	Maximum at any time*
Oil and Grease	mg/l lbs/day	25. 34,000	40. 68,000	75. 130,000

Effluent Constituent	Units	Monthly Average (30-day)*	Weekly Average (7-day)*	Maximum at any time*
Settleable Solids	ml/l	1.0	1.5	3.0
Turbidity	NTU	75.	100.	225.
pH	pH units	Within limits of 6.0 - 9.0 at all times.		

* Effluent concentration limitations are the limiting concentrations specified in Table A of the 2001 Ocean Plan. Mass emission rates, where applicable, were determined using procedures outlined in the Ocean Plan and a flow rate of 205 MGD.

Units: mg/l = milligrams per liter; ml/l = milliliters per liter; lb/day = pounds per day; NTU = nephelometric turbidity units

b. Effluent Limitations for Toxic Materials for Protection of Marine Aquatic Life

Effluent Constituent	Units	6-Month Median*	Daily Maximum*	Instantaneous Maximum*
Arsenic	ug/l	1,000.	5,900.	16,000.
Cadmium	ug/l	200.	800.	2,100.
Chromium (Hexavalent)**	ug/l	400.	2,000.	4,100.
Copper	ug/l	200.	2,100.	5,700.
Lead	ug/l	400.	2,000.	4,100.
Mercury	ug/l	8.1	33.	80.
Nickel	ug/l	1,000.	4,100.	10,000.
Selenium	ug/l	3,100.	12,000.	30,800.
Silver	ug/l	100.	540.	1,000.
Zinc	ug/l	2,500.	15,000.	39,400
Cyanide***	ug/l	200.	800.	2,100.
Total Chlorine Residual	ug/l	400.	2,000.	12,000.
Ammonia (as N)	ug/l	123,000.	492,000.	1,230,000.
Acute Toxicity	TUa	n/a****	6.5	n/a

Effluent Constituent	Units	6-Month Median*	Daily Maximum*	Instantaneous Maximum*
Chronic Toxicity	TUc	n/a	205	n/a
Phenolic Compounds (non-chlorinated)	ug/l	6,200.	24,600.	61,500.
Chlorinated Phenolics	ug/l	200.	800.	2,100.
Endosulfan[1]	ug/l	2.	3.7	5.5
Endrin	ug/l	.4	.8	1.
HCH[2]	ug/l	.8	2.	2.5
Radioactivity	pci/l	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.		

* Effluent concentration limitations are based on the limiting concentrations specified in Table B of the 2001 Ocean Plan and were determined using procedures outlined in the Ocean Plan and a critical initial dilution of 204:1.

** Dischargers may at their option meet these limitations as total chromium limitations.

*** If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.

**** Not applicable

Units: ug/l = micrograms per liter pci/l = picocuries per liter
TUc = toxic units chronic

c. Effluent Limitations for Toxic, Noncarcinogenic Materials for Protection of Human Health

Effluent Constituent	Units	Monthly Average (30-day)*
acrolein	ug/l	45,000.
antimony	ug/l	250,000.
bis(2-chloroethoxy) methane	ug/l	900.
bis(2-chloroisopropyl) ether	ug/l	250,000.
chlorobenzene	ug/l	120,000.
chromium (III)	ug/l	39,000,000.
di-n-butyl phthalate	ug/l	720,000.
dichlorobenzenes[3]	ug/l	1,000,000.
diethyl phthalate	ug/l	6,800,000.
dimethyl phthalate	ug/l	170,000,000.
4,6-dinitro-2-methylphenol	ug/l	45,000.
2,4-dinitrophenol	ug/l	820.
ethylbenzene	ug/l	840,000.
fluoranthene	ug/l	3,100.
hexachlorocyclopentadiene	ug/l	12,000.
nitrobenzene	ug/l	1,000.
thallium	ug/l	400.
toluene	ug/l	17,000,000.
tributyltin	ug/l	.29
1,1,1-trichloroethane	ug/l	110,000,000.

* Effluent concentration limitations are based on the limiting concentrations specified in Table B of 21the 2001 Ocean Plan and were determined using procedures outlined in the Ocean Plan and a critical initial dilution of 204:1.

Units: ug/l = micrograms per liter

d. Effluent Limitations for Toxic, Carcinogenic Materials for Protection of Human Health

Effluent Constituent	Units	Monthly Average (30-day)*
acrylonitrile	ug/l	21.
aldrin	ug/l	.0045
benzene	ug/l	1,200.
benzidine	ug/l	.014
beryllium	ug/l	6.8
bis(2-chloroethyl) ether	ug/l	9.2
bis(2-ethylhexyl) phthalate	ug/l	720.
carbon tetrachloride	ug/l	180.
chlordane[4]	ug/l	.0047
chlorodibromomethane	ug/l	1,800.
chloroform	ug/l	27,000.
DDT[5]	ug/l	.035
1,4-dichlorobenzene	ug/l	3,700.
3,3'-dichlorobenzidine	ug/l	1.7
1,2-dichloroethane	ug/l	5,700.
1,1-dichloroethylene	ug/l	200.
dichlorobromomethane	ug/l	1,300.
dichloromethane	ug/l	92,000.
1,3-dichloropropene	ug/l	1,800.
dieldrin	ug/l	.0082
2,4-dinitrotoluene	ug/l	530.
1,2-diphenylhydrazine	ug/l	33.
halomethanes[6]	ug/l	27,000.
heptachlor	ug/l	.01

Effluent Constituent	Units	Monthly Average (30-day)*
heptachlor epoxide	ug/l	.004
hexachlorobenzene	ug/l	.043
hexachlorobutadiene	ug/l	2,900.
hexachloroethane	ug/l	510.
isophorone	ug/l	150,000.
N-nitrosodimethylamine	ug/l	1,500.
N-nitrosodi-N-propylamine	ug/l	78.
N-nitrosodiphenylamine	ug/l	510.
PAHs[7]	ug/l	1.8
PCBs[8]	ug/l	.0039
TCDD equivalents[9]	ug/l	.00000080
1,1,2,2-tetrachloroethane	ug/l	470.
tetrachloroethylene	ug/l	410.
toxaphene	ug/l	.43
trichloroethylene	ug/l	5,500.
1,1,2-trichloroethane	ug/l	1,900.
2,4,6-trichlorophenol	ug/l	59.
vinyl chloride	ug/l	7,400.

* Effluent concentration limitations are based on the limiting concentrations specified in Table B of the 2001 Ocean Plan and were determined using procedures outlined in the Ocean Plan and a critical initial dilution of 204:1.
Units: ug/l = micrograms per liter

2. Any significant change in waste flow shall be cause for reevaluating effluent limitations.

3. Waste management systems that discharge to the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

4. Waste discharged from PLMWTP to the Pacific Ocean must be essentially free of:

a. Material that is floatable or will become floatable upon discharge.

b. Settleable material or substances that may form sediments which will degrade benthic communities or other aquatic life.

c. Substances which will accumulate to toxic levels in marine waters, sediments, or biota.

d. Substances that significantly decrease the natural light to benthic communities and other marine life.

e. Materials that result in aesthetically undesirable discoloration of the ocean surface.

5. Waste discharged from the PLMWTP to the Pacific Ocean shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.

6. Location of waste discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that:

a. Pathogenic organisms and viruses are not present in areas where shellfish are harvested for human consumption or in areas used for swimming or other body-contact sports.

b. Natural water quality conditions are not altered in areas designated as being of special biological significance or areas that existing marine laboratories use as a source of seawater.

c. Maximum protection is provided to the marine environment.

7. Waste that contains pathogenic organisms or viruses should be discharged a sufficient distance from shellfishing and water-contact sports areas to maintain applicable bacterial standards without disinfection. Where conditions are such that an adequate distance cannot be attained, reliable disinfection in conjunction with a reasonable separation of the discharge point from the area of use must be provided. Disinfection procedures that do not increase effluent toxicity and that constitute the least environmental and human hazard should be used.

8. All waste treatment, containment, and disposal facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.

9. All waste treatment, containment, and disposal facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year frequency 24-hour storm.

10. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer and Director.

11. The discharge of substances for which effluent limitations are not established by this order and permit shall be prevented or, if the discharge cannot be prevented, minimized.

12. To address the uncertainty due to projected increases in toxic pollutant loadings from the PLMWTP to the marine environment during the five-year 301(h) modification, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with antidegradation requirements at the time of permit reissuance, the following mass emission benchmarks have been established for effluent discharged through the PLOO. The exceedance of a mass emission benchmark will trigger an antidegradation analysis for that pollutant to be conducted by the discharger, the results of which will accompany the discharger's re-application for a NPDES permit. These mass emission benchmarks are not water quality-based effluent limitations and are not enforceable, as such. These mass emission threshold values may be re-evaluated and modified during the permit term (see Special Provision I.4). To address the possibility that alternate effluent limitations may be proposed as a result of an antidegradation analysis performed in response to increases of solids loadings from the PLMWTP to the marine environment, in the event that such alternate effluent limitations are proposed, the discharger shall have the right to make any objection to the authority to propose, and to the basis for, such limitations at the time such limitations are proposed.

The following effluent mass emission benchmarks for toxic and carcinogenic materials apply to the undiluted effluent from PLMWTP discharged through the PLOO:

Effluent Constituent	Units	Annual Mass Emission
arsenic	mt/yr	0.88
cadmium	mt/yr	1.4
chromium (hexavalent)*	mt/yr	14.2
copper	mt/yr	26.0
lead	mt/yr	14.2
mercury	mt/yr	0.19
nickel	mt/yr	11.3
selenium	mt/yr	0.44
silver	mt/yr	2.8
zinc	mt/yr	18.3

Effluent Constituent	Units	Annual Mass Emission
cyanide**	mt/yr	1.57
total chlorine residual***	mt/yr	—
ammonia (as N)	mt/yr	8018
phenolic compounds (non-chlorinated)	mt/yr	2.57
chlorinated phenolics	mt/yr	1.73
endosulfan[1]	mt/yr	0.006
endrin	mt/yr	0.008
HCH[2]	mt/yr	0.025
acrolein	mt/yr	17.6
antimony	mt/yr	56.6
bis(2-chloroethoxy) methane	mt/yr	1.50
bis(2-chloroisopropyl) ether	mt/yr	1.61
chlorobenzene	mt/yr	1.70
chromium (III)***	mt/yr	—
di-n-butyl phthalate	mt/yr	1.33
dichlorobenzenes[3]	mt/yr	2.8
diethyl phthalate	mt/yr	6.23
dimethyl phthalate	mt/yr	1.59
4,6-dinitro-2-methylphenol	mt/yr	6.80
2,4-dinitrophenol	mt/yr	11.9
ethylbenzene	mt/yr	2.04
fluoranthene	mt/yr	0.62
hexachlorocyclopentadiene***	mt/yr	—
nitrobenzene	mt/yr	2.07
thallium	mt/yr	36.8
toluene	mt/yr	3.31

Effluent Constituent	Units	Annual Mass Emission
tributyltin	mt/yr	0.001
1,1,1-trichloroethane	mt/yr	2.51
acrylonitrile	mt/yr	5.95
aldrin	mt/yr	0.006
benzene	mt/yr	1.25
benzidine	mt/yr	12.5
beryllium	mt/yr	1.42
bis(2-chloroethyl) ether	mt/yr	1.61
bis(2-ethylhexyl) phthalate	mt/yr	2.89
carbon tetrachloride	mt/yr	0.79
chlordane[4]	mt/yr	0.014
chlorodibromomethane***	mt/yr	—
chloroform	mt/yr	2.19
DDT[5]	mt/yr	0.043
1,4-dichlorobenzene	mt/yr	1.25
3,3'-dichlorobenzidine	mt/yr	4.67
1,2-dichloroethane	mt/yr	0.79
1,1-dichloroethylene	mt/yr	0.79
dichlorobromomethane***	mt/yr	—
dichloromethane	mt/yr	13.7
1,3-dichloropropene	mt/yr	1.42
dieldrin	mt/yr	0.011
2,4-dinitrotoluene	mt/yr	1.61
1,2-diphenylhydrazine	mt/yr	1.52
halomethanes[6]	mt/yr	5.86
heptachlor	mt/yr	0.001

Effluent Constituent	Units	Annual Mass Emission
heptachlor epoxide	mt/yr	0.024
hexachlorobenzene	mt/yr	0.54
hexachlorobutadiene	mt/yr	0.54
hexachloroethane	mt/yr	1.13
isophorone	mt/yr	0.71
N-nitrosodimethylamine	mt/yr	0.76
N-nitrosodi-N-propylamine***	mt/yr	—
N-nitrosodiphenylamine	mt/yr	1.47
PAHs[7]	mt/yr	15.45
PCBs[8]	mt/yr	0.275
TCDD equivalents[9,***]	mt/yr	—
1,1,2,2-tetrachloroethane	mt/yr	1.95
tetrachloroethylene	mt/yr	4.00
toxaphene	mt/yr	0.068
trichloroethylene	mt/yr	1.56
1,1,2-trichloroethane	mt/yr	1.42
2,4,6-trichlorophenol	mt/yr	0.96
vinyl chloride	mt/yr	0.40

* Dischargers may at their option meet these limitations as total chromium limitations.

** If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.

*** An effluent mass emission benchmark for this constituent/property could not be statistically determined by the Regional Board and EPA.

Units: mt/yr = metric tons per year

C. RECEIVING WATER LIMITATIONS

1. The discharge of waste from the PLMWTP through the PLOO shall not, by itself or jointly with any other discharge, cause violation of the following Ocean Plan water quality objectives. Compliance with the water quality objectives shall be determined from samples collected at stations representative of the area within the waste field where initial dilution is completed.

   a. Bacterial Characteristics

      (1) Water-Contact Standards

      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 following bacterial objectives shall be maintained throughout the water column:

      (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 30-day 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 30-day 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.

      The "Initial Dilution Zone" of wastewater outfalls shall be excluded from designation as "kelp beds" for purposes of bacterial standards. Adventitious assemblages of kelp plants on waste discharge structures (e.g., outfall pipes and diffusers) do not constitute kelp beds for purposes of bacterial standards. Kelp beds, for purposes of the bacteriological standards of this order and permit, are significant aggregations of marine algae of the genera *Macrocystis* and *Nereocystis*. Kelp beds include the total foliage canopy of *Macrocystis* and *Nereocystis* plants throughout the water column.

(2) Shellfish Harvesting Standards

At all areas where shellfish may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives shall be maintained throughout the water column:

(a) The median total coliform density shall not exceed 70 per 100 ml, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

b. Bacterial Assessment and Remedial Action Requirements

The requirements listed below shall be used to:

(1) Determine the occurrence and extent of any impairment of a beneficial use due to bacterial contamination;

(2) Generate information which can be used in the development of an enterococcus standard; and

(3) Provide the basis for remedial actions necessary to minimize or eliminate any impairment of a beneficial use.

Measurement of enterococcus density shall be conducted at all stations where measurement of total and fecal coliforms are required. In addition to the requirements of Receiving Water Limitation C.1.a of this order and permit, if a shore station consistently exceeds a coliform objective or exceeds a geometric mean enterococcus density of 24 organisms per 100 ml for a 30-day period or 12 organisms per 100 ml for a six-month period, the Regional Board may require the discharger to conduct or participate in a survey to determine the source of the contamination. The geometric mean shall be a moving average based on no less than five samples per month, spaced evenly over the time interval. When a sanitary survey identifies a controllable source of indicator organisms associated with a discharge of sewage, the Regional Board may require the discharger and any other responsible parties identified by the Regional Board to take action to control the source.

The discharger shall conduct sanitary surveys when so directed by the Regional Board. The discharger shall control any controllable discharges identified in a sanitary survey.

c. Physical Characteristics

(1) Floating particulates and grease and oil shall not be visible.

(2) The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.

(3) Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste.

(4) The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

d. Chemical Characteristics

(1) The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste materials.

(2) The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.

(3) The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.

(4) The concentration of substances, set forth in Receiving Water Limitation C.3 of this order and permit, in marine sediments shall not be increased to levels which would degrade indigenous biota.

(5) The concentration of organic materials in marine sediments shall not be increased to levels which would degrade marine life.

(6) Nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota.

e. Biological Characteristics

(1) Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded.

(2) The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.

(3) 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.

f. Radioactivity

Discharge of radioactive waste shall not degrade marine life.

2. The discharge of waste from the PLMWTP shall not, by itself or jointly with any other discharge, cause violation of the following Basin Plan ocean water quality objectives:

   a. The dissolved oxygen concentration in ocean waters shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste materials.

   b. The pH value shall not be changed at any time more than 0.2 pH units from that which occurs naturally.

3. Toxic Materials

   The discharge from the PLMWTP through the PLOO shall not by itself or jointly with any other discharge, cause the following Ocean Plan water quality objectives to be exceeded in the receiving water upon completion of initial dilution, except that limitations indicated for radioactivity shall apply directly to the undiluted waste effluent.

   a. Water Quality Objectives for Toxic Materials for Protection Of Marine Aquatic Life

Constituent	Units	6-Month Median*	Daily Maximum*	Instantaneous Maximum*
Arsenic	ug/l	8.	32.	80.
Cadmium	ug/l	1.	4.	10.
Chromium (Hexavalent)**	ug/l	2.	8.	20.
Copper	ug/l	3.	12.	30.
Lead	ug/l	2.	8.	20.
Mercury	ug/l	0.04	0.16	0.4
Nickel	ug/l	5.	20.	50.
Selenium	ug/l	15.	60.	150.
Silver	ug/l	0.7	2.8	7.
Zinc	ug/l	20.	80.	200.
Cyanide***	ug/l	1.	4.	10.

Constituent	Units	6-Month Median*	Daily Maximum*	Instantaneous Maximum*
Total Chlorine Residual	ug/l	2.	8.	60.
Ammonia (as N)	ug/l	600.	2,400.	6,000.
Acute Toxicity	TUa	n/a****	0.3	n/a
Chronic Toxicity	TUc	n/a	1.	n/a
Phenolic Compounds (non-chlorinated)	ug/l	30.	120.	300.
Chlorinated Phenolics	ug/l	1.	4.	10.
Endosulfan[1]	ug/l	0.009	0.018	0.027
Endrin	ug/l	0.002	0.004	0.006
HCH[2]	ug/l	0.004	0.008	0.012
Radioactivity	pci/l	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.		

* Water quality objectives are based on the limiting concentrations specified in Table B of the 2001 Ocean Plan.

** Dischargers may at their option meet these limitations as total chromium limitations.

*** If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.

**** Not applicable.

Units: ug/l =micrograms per liter pci/l = picocuries per liter
TUc = toxic units chronic

b. Water Quality Objectives for Toxic, Noncarcinogenic Materials for Protection of Human Health

Constituent	Units	Monthly Average (30-day)*
acrolein	ug/l	220.
antimony	ug/l	1,200.
bis(2-chloroethoxy) methane	ug/l	4.4
bis(2-chloroisopropyl) ether	ug/l	1,200.
chlorobenzene	ug/l	570.
chromium (III)	ug/l	190,000.
di-n-butyl phthalate	ug/l	3,500.
dichlorobenzenes[3]	ug/l	5,100.
diethyl phthalate	ug/l	33,000.
dimethyl phthalate	ug/l	820,000.
4,6-dinitro-2-methylphenol	ug/l	220.
2,4-dinitrophenol	ug/l	4.0
ethylbenzene	ug/l	4,100.
fluoranthene	ug/l	15.
hexachlorocyclopentadiene	ug/l	58.
nitrobenzene	ug/l	4.9
thallium	ug/l	2.
toluene	ug/l	85,000.
tributyltin	ug/l	0.0014
1,1,1-trichloroethane	ug/l	540,000.

* Water quality objectives are based on the limiting concentrations specified in Table B of the 2001 Ocean Plan.
Units: ug/l = micrograms per liter

c. Water Quality Objectives for Toxic, Carcinogenic Materials for Protection of Human Health

Constituent	Units	Monthly Average (30-day)*
acrylonitrile	ug/l	0.10
aldrin	ug/l	0.000022
benzene	ug/l	5.9
benzidine	ug/l	0.000069
beryllium	ug/l	0.033
bis(2-chloroethyl) ether	ug/l	0.045
bis(2-ethylhexyl) phthalate	ug/l	3.5
carbon tetrachloride	ug/l	0.90
chlordane[4]	ug/l	0.000023
chlorodibromomethane	ug/l	8.6
chloroform	ug/l	130.
DDT[5]	ug/l	0.00017
1,4-dichlorobenzene	ug/l	18.
3,3'-dichlorobenzidine	ug/l	0.0081
1,2-dichloroethane	ug/l	28.
1,1-dichloroethylene	ug/l	0.9
dichlorobromomethane	ug/l	6.2
dichloromethane	ug/l	450.
1,3-dichloropropene	ug/l	8.9
dieldrin	ug/l	0.00004
2,4-dinitrotoluene	ug/l	2.6
1,2-diphenylhydrazine	ug/l	0.16
halomethanes[6]	ug/l	130.
heptachlor	ug/l	0.00005
heptachlor epoxide	ug/l	0.00002
hexachlorobenzene	ug/l	0.00021

Constituent	Units	Monthly Average (30-day)*
hexachlorobutadiene	ug/l	14.
hexachloroethane	ug/l	2.5
isophorone	ug/l	730.
N-nitrosodimethylamine	ug/l	7.3
N-nitrosodi-N-propylamine	ug/l	0.38
N-nitrosodiphenylamine	ug/l	2.5
PAHs[7]	ug/l	0.0088
PCBs[8]	ug/l	0.000019
TCDD equivalents[9]	ug/l	0.0000000039
1,1,2,2-tetrachloroethane	ug/l	2.3
tetrachloroethylene	ug/l	2.0
toxaphene	ug/l	0.00021
trichloroethylene	ug/l	27.
1,1,2-trichloroethane	ug/l	9.4
2,4,6-trichlorophenol	ug/l	0.29
vinyl chloride	ug/l	36.

* Water quality objectives are based on the limiting concentrations specified in Table B of the 2001 Ocean Plan.
Units: ug/l = micrograms per liter

D. PRETREATMENT REQUIREMENTS

1. The discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR 403, including any subsequent regulatory revisions. Where 40 CFR 403 or subsequent revision places mandatory actions upon the discharger as Control Authority but does not specify a timetable for completion of the actions, the discharger shall complete the required actions within six months from the issuance date of this order and permit or the effective date of the 40 CFR 403 revisions, whichever comes later. For violations of pretreatment requirements, the discharger shall be subject to enforcement actions, penalties, fines, and other remedies by the EPA or other appropriate parties, as provided in the CWA, and by the State under the Porter-Cologne Water Quality Control Act. The EPA and the State may initiate

enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the CWA and the Porter-Cologne Water Quality Control Act.

2. The discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate, and effective enforcement actions. The discharger shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

3. The discharger shall perform the pretreatment functions as required in 40 CFR 403 and Section 13263.3 of the CWC, including, but not limited to:

   a. Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

   b. Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

   c. Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and

   d. Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

4. The discharger shall comply with the urban area pretreatment requirements under Section 301(h) of the CWA and the implementing requirements at 40 CFR 125. The discharger's actions to comply shall include the following:

   a. During each calendar year, maintaining a rate of significant noncompliance (SNC), as defined at 40 CFR 403.8(f)(2)(vii), for significant industrial users (SIUs) of no more than 15 percent of the total number of SIUs.

      The 15 percent noncompliance criteria includes only SIUs that are in SNC and which have not received at least a second level formal enforcement action from the discharger, in accordance with the Enforcement Response Plan included in Appendix K-2 of the discharger's April 1995 301(h) modification application. The second level of enforcement is an Administrative Notice and Order.

   b. Providing the annual analysis regarding local limits required under 40 CFR 125.65(c)(1)(iii). As a consequence of any new local limits, some SIUs may need time to come into compliance with those limits. In any such cases, the discharger shall issue a Compliance Findings of Violation and Order which is the first level of formal enforcement in its Enforcement Response Plan. The Order shall contain a schedule for achieving compliance with the new local limits. SIUs receiving such Orders will not be included in the 15 percent noncompliance criteria.

5. The discharger shall submit annually to the EPA, State Board, Regional Board, and San

Diego County Department of Environmental Health, Hazardous Materials Management Division, a report describing its pretreatment activities over the previous calendar year. If the discharger is not in compliance with conditions or requirements of this order and permit, or any pretreatment compliance inspection or audit requirements, then the discharger shall also include the reasons for noncompliance and state how and when the discharger shall comply with such conditions and requirements. This annual report shall cover operations from January 1st through December 31st and is due on April 30th of each year. The report shall contain, but not be limited to, the following information:

a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants identified under Section 307(a) of the CWA which are known or suspected to be discharged by nondomestic users. This will consist of wastewater sampling and analysis in accordance with the minimum frequency of analysis stated in MRP No. R9-2002-0025. The discharger is not required to sample and analyze for asbestos. Sludge sampling and analysis are covered in Part E of this order and permit. The discharger shall also provide any influent or effluent monitoring data for nonpriority pollutants which the discharger believes may be causing or contributing to interference or pass through. Sampling and analysis shall be performed with the techniques prescribed in 40 CFR 136 and amendments thereto;

b. A discussion of upset, interference, or pass through incidents, if any, at the treatment plant which the discharger knows or suspects were caused by nondomestic users of the POTW system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the nondomestic user(s) responsible. The discussion shall also include a review of the applicable local pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent interference or pass through, or noncompliance with sludge disposal requirements;

c. An updated list of the discharger's SIUs, including their names and addresses, and a list of deletions, additions, and SIU name changes keyed to the previously submitted list. The discharger shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall also indicate which SIUs are subject to local limitations;

d. The discharger shall characterize the compliance status of each SIU by providing a list or table which includes the following information:

   (1) Name of the SIU;

   (2) Category, if subject to federal categorical standards;

(3) The type of wastewater treatment or control processes in place;

(4) The number of samples taken and inspections performed by the POTW during the year;

(5) The number of samples taken by the SIU during the year;

(6) For an SIU subject to discharge requirements for total toxic organics (TTO), whether all required certifications were provided;

(7) A list of violations during the year. Identify whether the violations were for categorical standards, local limits, or the general or specific prohibitions at 40 CFR 403.5;

(8) Whether the facility is in SNC, as defined at 40 CFR 403.8(f)(2)(vii) at any time during the year;

(9) A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action, final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance.

(10) The names of any SIUs required to submit a baseline monitoring report (BMR), including any SIUs currently discharging or scheduled to discharge to the POTW; and

(11) The names of any SIU required to prepare and/or implement a pollution prevention plan pursuant to CA SB 709 and SB 2165.

e. A brief description of any programs the discharger implements to reduce pollutants from nondomestic users that are not classified as SIUs;

f. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;

g. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases;

h. A summary of activities to involve and inform the public of the program, including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(vii).

i. A description of changes in sludge disposal methods; and

j. A discussion of any concerns not described elsewhere in the annual report.

6. The discharger shall submit a semi-annual compliance status report to the EPA and State. The report shall cover the period of January 1st through June 30th. This report shall be submitted by September 1st. SIU compliance status for July 1st through December 31st shall be included in the annual report. The semi-annual reports shall contain:

a. The name and address of all SIUs which violated any discharge or reporting requirements during the reporting period;

b. A description of the violations including whether any discharge violations were for categorical standards, local limits, or other requirements;

c. A description of the enforcement or other actions taken to remedy the noncompliance; and

d. The status of active enforcement and other actions taken in response to SIU noncompliance identified in previous reports.

e. The status of any IU required to prepare and/or implement pollution prevention plans under CA SB 709 and SB 2165 .

E. SLUDGE REQUIREMENTS

1. General Requirements

a. The discharger must ensure that all sludge generated at its wastewater treatment facilities is reused or disposed of in accordance with applicable portions of:

(1) 40 CFR 258: for sludge disposed of in municipal solid waste landfills;

(2) 40 CFR 503: for sludge reused by land application, incinerated, or disposed of in sludge-only surface disposal sites (dedicated land disposal sites or sludge-only landfills); and

(3) 40 CFR 257: for all sludge disposal practices not covered under 40 CFR 258 or 503.

The discharger must ensure that sludge produced at its wastewater treatment facilities is reused/disposed of in accordance with 40 CFR 257, 258, and 503, whether the discharger reuses or disposes of the sludge directly or transfers it to another party for further treatment, reuse, or disposal. The discharger must inform subsequent preparers, appliers, or disposers of the sludge of requirements

which they must meet under 40 CFR 257, 258, and 503.

b. The discharger shall notify the Regional Board and EPA prior to any change in use or disposal practice, including new land application sites, surface disposal sites, landfills, or treatment facilities. This notification shall include the following information:

(1) For land application:

(a) The information required in 40 CFR 501.15(a)(2)(viii) and (ix);

(b) For any sludge which does not meet Table 3 metals limits, copies of the applier's notifications to the EPA pursuant to 40 CFR 503.12(e) and (j); and

(c) For sludge shipped to another state or to Indian Lands, the notification as required in 40 CFR 503.12(i).

(2) For transfer to a preparer (composter, alkaline treater, or other):

(a) Name of preparer, mailing address, location of facility, and amount of sludge to be transferred to the preparer's site; and

(b) Copy of preparer's notification to the EPA pursuant to 40 CFR 122.21.

(3) For transfer to a surface disposal site operator:

(a) Name, mailing address, and location of facility; and

(b) Copy of surface disposal site operator's notification to the EPA pursuant to 40 CFR 122.21.

(4) For transfer to a landfill or facility not regulated under 40 CFR 258 or 503:

(a) Name, mailing address, and location of facility;

(b) Amount of sludge to be transferred to facility; and

(c) Description of treatment/use/disposal practice.

c. All sludge generated by the discharger's wastewater treatment facilities should be used or disposed of within two years. Any site where sludge generated by the discharger is stored for more than two years will be classified by the EPA as a surface disposal site pursuant to 40 CFR 503, Subpart C. The discharger must

ensure that the operator of any such surface disposal site submits the notification required in 40 CFR 122.21 to the EPA 180 days before the site becomes a surface disposal site, and that the site operator complies fully with the requirements in 40 CFR 503, Subpart C for surface disposal sites at the two-year start date. If the discharger wants to store sludge for more than two years, or allow a contractor to store sludge for more than two years, the discharger must submit the information in 40 CFR 503.20(b) to the EPA in writing 180 days prior to the date at which the site becomes a surface disposal site.

d. Inspection and Entry: The discharger shall allow the Regional Administrator or an authorized representative thereof, upon the presentation of credentials, to:

(1) Enter upon all premises where sludge from the discharger is treated, stored, reused, or disposed, by either the discharger or contractor to the discharger;

(2) Have access to and copy any records that must be kept under the conditions of this order and permit or 40 CFR 503, by either the discharger or contractor to the discharger; and

(3) Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations used in the treatment, storage, reuse, or disposal of the discharger's sludge, by either the discharger or by contractor to the discharger.

e. Duty to Mitigate: The discharger shall take all reasonable steps to prevent or minimize any sludge use or disposal which has a likelihood of adversely affecting human health or the environment.

f. The discharger must implement management practices to minimize production of odors, dust, and vector attraction during sludge treatment, transfer, storage, and disposal or use.

g. The discharger must assure that haulers who ship non-Class A sludge off site for additional treatment, reuse, or disposal take all reasonable measures to ensure that no sludge is discharged from vehicles during transit.

h. Sludge containing more than 50 mg/kg PCB's must be disposed of in accordance with 40 CFR 761.

i. Proper Operation and Maintenance: The discharger shall at all times properly operate and maintain all facilities and systems of sludge treatment and control, including adequate laboratory controls and quality assurance procedures. The discharger shall ensure that any person who takes the discharger's sludge for further treatment shall also properly operate and maintain their facilities.

2. Monitoring

   a. Sludge shall be monitored once per month for the constituents required under 40 CFR 503.

   b. Sludge shall be tested twice per year for all pollutants listed under Section 307(a) of the CWA (priority pollutants) and Title 22 CCR.

   c. The discharger shall develop a sampling plan for collection of representative samples for monitoring pollutants, pathogens (for land application or surface disposal), and vector attraction reduction (for land application or surface disposal). The plan should include the number and location of sampling points. If pathogen reduction is determined by time and temperature, the plan must be designed to determine the representative temperature of the process.

   d. Samples of sludge shall be collected according to the procedures for compositing samples outlined in *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (EPA Publication SW-846, Second Edition, as updated). Samples shall be split, and a portion of the sample preserved, in the event that the results show concentrations of waste constituents that exceed 10 times the STLC listed in Title 22 CCR.

   e. Results of analyses shall be reported in mg/kg, wet weight (for Title 22 CCR compliance) and 100 percent dry weight (for 40 CFR 503 compliance). If the results indicate that the total concentration of any waste constituent is greater than 10 times the STLC value for the constituent listed in Title 22 CCR, then the discharger shall also perform a Waste Extraction Test on the sludge sample pursuant to Title 22 CCR requirements.

   f. The discharger shall test for dioxins, dibenzofurans, and coplanar PCBs at the time of their next priority pollutant scan, using Method 1613, Revision B, for dioxins and dibenzofurans, and Method 1668 for coplanar PCBs. Toxicity equivalency should be determined using the EPA's toxic equivalency factors (TEFs) for dioxins and dibenzofurans published in 1989 and the World Health Organization's TEFs for coplanar PCBs published in 1998. Detection limits of $\leq$1 ppt (in TEFs) shall be used.

3. Notification of Noncompliance

   The discharger shall notify the EPA of any noncompliance which may seriously endanger health or the environment as soon as possible, but no later than 24 hours from the time the discharger first became aware of the circumstances. A written report shall be submitted to:

CWA Compliance Office (WTR-7)
U. S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

within five days. For other instances of noncompliance, the discharger shall notify the EPA in writing within five working days of becoming aware of the noncompliance.

4. Reporting Requirements

The discharger shall submit an annual report to the EPA by April 1st of each year for the period covering the previous calendar year. The report shall include:

a. Amount of sludge generated that year at each of its plants, in dry metric tons, and amount leaving each plant;

b. Amount transferred to Miramar, or other treatment sites, amount in treatment and in storage at these sites, and amount leaving these sites;

c. Results of all monitoring required in Part E.2;

d. For sludge disposed of in municipal solid waste landfills:

(1) Name and location of each landfill; and

(2) Amount of sludge shipped to each landfill, amount placed in landfill, and amount used as landfill cover.

e. For sludge that was land-applied:

(1) Amount land applied (in dry metric tons);

(2) The information required in 40 CFR 503.17; and

(3) Copies of records and certification statements required of contract land appliers per 40 CFR 503.17.

f. For sludge that was transferred to another preparer for treatment prior to land application, surface disposal, or placement in a municipal solid waste landfill:

(1) Amount sent to each preparer (in dry metric tons);

(2) Amount treated;

(3) Amount transferred by preparer to final reuse/disposal site; and

(4) Reference to preparers' annual report (if preparer does not submit an annual report to the EPA, then the discharger must include the information in Parts E.4.e, f, g, and h in its report to the EPA).

g. For sludge that was disposed in a surface disposal site:

(1) The information required in 40 CFR 503.27;

(2) Names and locations of surface disposal sites, and amount of sludge shipped to each site; and

(3) Results of groundwater monitoring; or copy of certification by a groundwater scientist that the placement of sludge on the site will not contaminate an aquifer, and name/title/telephone number of the groundwater scientist that made the determination.

h. For sludge that was stored:

(1) Locations (street address and latitude and longitude) and ages of all stored sludge, and description of the level of treatment of the sludge prior to storage; and

(2) Name and mailing address of operators of storage sites.

i. For sludge that was disposed/reused by other methods:

(1) Description of method used;

(2) Location of disposal/reuse site; and

(3) Name and mailing address of site operator.

Reports shall be submitted to:

Regional Sludge Coordinator (WTR-7)
U. S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

F. COMPLIANCE DETERMINATION

1. The annual average effluent limitation shall be the moving arithmetic mean of daily concentrations over the specified 365-day period.

2. The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period.

3. The 30-day average shall be the moving arithmetic mean of daily concentrations over the specified 30-day period.

4. The 7-day average shall be the moving arithmetic mean of daily concentrations over the specified 7-day period.

5. The daily maximum shall apply to flow weighted 24-hour composite samples.

6. The instantaneous maximum shall apply to grab sample determinations.

7. If only one sample is collected during the time period associated with the effluent limitation (e.g., 30-day average or six-month median), the single measurement shall be used to determine compliance with the effluent limitation for the entire time period.

8. The mass emission rate (MER), in pounds per day, shall be obtained from the following calculation for any calendar day:

   mass emission rate (lbs/day) = 8.34 x Q x C

   in which Q and C are the flow rate in MGD and the constituent concentration in mg/l, respectively, and 8.34 is the conversion factor. If a composite sample is taken, then C is the concentration measured in the composite sample and Q is the average flow rate occurring during the period over which the samples are composited.

9. Minimum Levels

   For each numeric effluent limitation, the discharger shall select one or more Minimum Levels (and their associated analytical methods) from Appendix II of the 2001 Ocean Plan. The "reported" Minimum Level is the Minimum Level (and its associated analytical method) chosen by the discharger for reporting and compliance determination from Appendix II.

   a. Selection of Minimum Levels from Appendix II

      The discharger must select from all Minimum Levels from Appendix II that are below the effluent limitation. If the effluent limitation is lower than all the Minimum Levels in Appendix II, then the discharger must select the lowest

Minimum Level.

9. Use of Minimum Levels

a. Minimum Levels in Appendix II represent the lowest quantifiable concentration in a sample based on the proper application of method-specific analytical procedures and the absence of matrix interferences. Minimum Levels also represent the lowest standard concentration in the calibration curve for a specific analytical technique after the application of appropriate method-specific factors.

Common analytical practices may require different treatment of the sample relative to the calibration standard. Some examples of these practices are given in Chapter III.C.5.a of the Ocean Plan.

b. Other factors may be applied to the Minimum Level depending on the specific sample preparation steps employed. For example, the treatment typically applied when there are matrix effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied during the computation of the reporting limit. Application of such factors will alter the reported Minimum Level.

c. The discharger shall instruct its laboratories to establish calibration standards so that the Minimum Level (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve. In accordance with the Ocean Plan, the discharger's laboratory may employ a calibration standard lower than the Minimum Level in Appendix II.

10. Sample Reporting Protocols

a. The discharger shall report with each sample result the reported Minimum Level (selected in accordance with Part F.9 of this order and permit) and the laboratory's current MDL.

b. The discharger shall also report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

(1) Sample results greater than or equal to the reported Minimum Level shall be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample);

(2) Sample results less than the reported Minimum Level, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified", or DNQ. The discharger shall write the estimated chemical

concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."); and

(3) Sample results less than the laboratory's MDL shall be reported a "Not Detected", or ND.

11. Compliance Determination

Sufficient sampling and analysis shall be conducted to determine compliance with the effluent limitation.

a. Compliance with Single-Constituent Effluent Limitations

Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level.

b. Compliance with Effluent Limitations expressed as a Sum of Several Constituents

Dischargers are out of compliance with an effluent limitation which applies to the sum of a group of chemicals (e.g., PCBs) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or NDQ.

c. Multiple Sample Data Reduction

The concentration of the pollutant in the effluent may be estimated from the result of a single sample analysis or by a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses when all sample results are quantifiable (i.e., greater than or equal to the reported Minimum Level). When one or more sample results are reported as ND or DNQ, the central tendency concentration of the pollutant shall be the median (middle) value of the multiple samples. If, in an even number of samples, one or both of the middle values is ND or DNQ, the median will be the lower of the two middle values.

12. Pollutant Minimization Program

a. Pollutant Minimization Program Goal

The goal of the Pollutant Minimization Program is to reduce all potential sources of a pollutant through pollutant minimization (control) strategies, including pollution prevention measures, in order to maintain the effluent concentration at or below the effluent limitation.

Pollution prevention measures may be particularly appropriate for persistent

bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The completion and implementation of a Pollution Prevention Plan, required in accordance with Water Code Section 13263.3(d) will fulfill the Pollutant Minimization Program Requirements in this section.

b. Determining the need for a Pollutant Minimization Program

(1) The discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true: the calculated effluent limitation is less than the reported Minimum Level; the concentration of the pollutant is reported as DNQ; and there is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.

(2) Alternatively, the discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true: the calculated effluent limitation is less than the Method Detection Limit; the concentration of the pollutant is reported as ND; and there is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.

c. The Regional Board may include special provisions in the discharge requirements to require the gathering of evidence to determine whether the pollutant is present in the effluent at levels above the calculated effluent limitation: Examples of evidence may include:

(1) Heath advisories for fish consumption;

(2) Presence of whole effluent toxicity;

(3) Results of benthic or aquatic organisms tissue sampling;

(4) Sample results from analytical methods more sensitive than method referenced in the order and permit; and

(5) The concentration of the pollutant is reported as DNQ and the effluent limitation is less than the MDL.

d. Elements of a Pollutant Minimization Program

The Regional Board may consider cost-effectiveness when establishing the requirements of a Pollutant Minimization Program. The program shall include actions and submittals acceptable to the Regional Board including, but not limited to, the following:

(1) An annual review and semi-annual monitoring of potential sources of the reportable pollutant, which may include fish tissue monitoring and other

bio-uptake sampling;

(2) Quarterly monitoring for the reportable pollutant in the effluent to the wastewater treatment system;

(3) Submittal of a control strategy designated to proceed toward the goal of maintaining concentrations of the reportable pollutant in the effluent at or below the calculated effluent limitation;

(4) Implementation of appropriate cost-effective control measures for the pollutant, consistent with the control strategy; and

(5) An annual status report that shall be sent to the Regional Board, including: all Pollutant Minimization Program monitoring results for the previous year; a list of potential sources of the reportable pollutant; a summary of all action taken in accordance with the control strategy; and a description of actions to be taken in the following year.

13. The discharger shall conduct monthly chronic WET tests on 24-hour composite effluent samples. Samples shall be taken at the NPDES sampling location.

a. Test Species and Methods

The discharger shall conduct tests with the following vertebrate, invertebrate, and alga species for the first three suites of tests. After this screening period, monitoring shall be conducted using the most sensitive species.

(1) Vertebrate: Topsmelt, *Atherinops affinis* (survival and growth).

(2) Invertebrate: Red abalone, *Haliotis rufescens* (larval development test).

(3) Alga: Giant kelp, *Macrocystis pyrifera* (germination and germ-tube length test).

Every year, the discharger shall re-screen, at different times from the prior year(s) and continue to monitor with the most sensitive species.

The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95-136, 1995).

b. Definition of Acute and Chronic Toxicity

Acute toxicity measures the lethal effect (i.e., mortality) to experimental test organisms exposed to an effluent or ambient waters compared to that of the control organisms. Test results shall be reported in TUa, where TUa = 100/96-hr

LC50. The LC50 is the percent waste giving 50% survival of test organisms. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC50 may be determined after the test samples are adjusted to remove the influence of those substances. When a 96-hr LC50 cannot be measured because greater than 50% of test species survive in 100% waste, the toxicity shall be calculated as TUa = log (100 - s)/1.7, where s = percentage survival in 100% waste. If s > 99, TUa shall be reported as zero.

Chronic toxicity measures a sublethal effect (e.g., reduced growth, reproduction) to experimental test organisms exposed to an effluent or ambient waters compared to that of the control organisms. Test results shall be reported in TUc, where TUc = 100/NOEC. The no observed effect concentration (NOEC) is the highest concentration of toxicant to which organisms are exposed in a chronic test, that causes no observable adverse effect on the test organisms (e.g., the highest concentration of toxicant to which the values for the observed responses are <u>not</u> statistically significantly different from the controls).

c. Quality Assurance

A series of five dilutions and a control will be tested. The series shall include the instream waste concentration (IWC), two dilutions above the IWC, and two dilutions below the IWC (e.g., 12.5, 25, 50, 75 and 100 percent effluent, where IWC = 50). The IWC for this discharge is 0.49 percent effluent.

Concurrent testing with reference toxicants shall be conducted.

If either of the reference toxicant tests or the effluent tests do not meet all test acceptability criteria as specified in the test methods manual, then the discharger must re-sample and re-test as soon as possible.

Control and dilution water should be receiving water or lab water, as appropriate. If the dilution water is different from the culture water, then culture water should be used in a second control.

14. Preparation of Toxicity Reduction Evaluation (TRE) Workplan

The discharger shall submit to the Regional Board and EPA a TRE workplan within 180 days of the effective date of this order and permit. The workplan shall describe steps the discharger intends to follow if the effluent limitation for chronic toxicity, as specified in Discharge Specification B.1.b of this order and permit, is exceeded.

15. Toxicity Reduction Evaluation/Toxicity Identification Evaluation

a. If the toxicity effluent limitation is exceeded, then within 15 days of exceedance, the discharger shall begin conducting six additional tests, bi-weekly, over a 12 week period. If the toxicity effluent limitation is exceeded in any of these six

additional tests, then the discharger shall notify the Executive Officer and Director. If the Executive Officer and Director determine that the discharge consistently exceeds a toxicity effluent limitation, then the discharger shall initiate a TRE/TIE in accordance with the TRE workplan, *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA 833-B-99-002, 1999), and EPA TIE guidance documents (Phase I, EPA/600/6-91/005F, 1992; Phase I, EPA/600/R-96/054, 1996; Phase II, EPA/600/R-92/080, 1993; and Phase III, EPA/600/R-92/081, 1993).

b. If no toxicity is detected in any of these additional six tests, then the discharger may return to the testing frequency specified in MRP No. R9-2002-0025.

16. WET Reporting

a. TRE/TIE results: Within 15 days of the exceedance of the toxicity effluent limitation, or the initiation of a TRE/TIE, the discharger shall notify the Regional Board and EPA in writing of:

(1) The finding of the TRE/TIE, or other investigation to identify the causes of toxicity;

(2) Actions the discharger has taken or will take to mitigate the impact of the discharge, to correct the noncompliance, and to prevent the recurrence of toxicity;

(3) Where corrective actions, including a TRE/TIE have not been completed, an expeditious schedule under which corrective actions will be implemented; and

(4) If no action has been taken, then the reason for not taking action.

b. By the end of the month the discharger shall submit, with the discharge monitoring report (DMR) for that month, a full report consisting of:

(1) Toxicity test results (in TUs) for all tests conducted during the monthly reporting period;

(2) Dates of sample collection and initiation of each toxicity test;

(3) The average flow rate occurring during the period over which the samples are composited; and

(4) Results of effluent analyses for chemical/physical parameters required under MRP No. R9-2002-0025.

c. Toxicity test results shall be reported according to the chronic manual chapter on

Report Preparation, and shall be attached to the DMR. It is suggested that the discharger submit the data on an electronic disk in the Toxicity Standardized Electronic Reporting Form (TSERF) (*Standardized Electronic Reporting Format for Monitoring Effluent Toxicity: October 1994 Format*, State Board, 1995).

17. For all bacterial analyses, sample dilutions should be performed so the range of values extends from 2 to 16,000. The detection methods used for each analysis shall be reported with the results of the analysis. Detection methods used for coliforms (total and fecal) shall be those presented in Table 1A of 40 CFR 136, unless alternate methods have been approved in advance by the EPA pursuant to 40 CFR 136. Detection methods used for enterococcus shall be those presented in EPA publication EPA 600/4-85/076, *Test Methods for Escherichia coli and Enterococci in Water By Membrane Filter Procedure*, or any improved method determined by the Regional Board to be appropriate.

19. Reduction of natural light may be determined by the Regional Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Regional Board.

G. STANDARD PROVISIONS

1. The following sections of 40 CFR are incorporated into this permit by reference:

   a. 122.5 *Effect of a permit.*

   b. 122.21 *Application for a permit.*

   c. 122.22 *Signatories to permit applications and reports.*

   d. 122.41 *Conditions applicable to all permits.*

   e. 122.61 *Transfer of permits.*

   f. 122.62 *Modification or revocation of permits.*

   g. 122.63 *Minor modifications of permits.*

   h. 122.64 *Termination of permits.*

2. *Review and revision of permit:* Upon application by any affected person, or on its own motion, the Regional Board may review and revise this Order. [CWC 13263(e)]

3. *Termination or modification of permit:* This permit may be terminated or modified for cause, including, but not limited to, all of the following:

   a. Violation of any condition contained in this permit.

b. Obtaining this permit by misrepresentation, or failure to disclose fully all relevant facts.

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. [CWC 13381]

4. *Material change:* The discharger shall file a new Report of Waste Discharge not less than 180 days prior to any material change in the character, location, or volume of the waste discharge, including, but not limited to, the following:

a. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.

b. Significant change in disposal method (e.g., change from land disposal to a direct discharge to water), or change in the method of treatment which would significantly alter the characteristics of the waste.

c. 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.

d. Increase in flow beyond that specified in the waste discharge requirements.

e. Increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements. [CWC 13372, 13376, and 13264, 23 CCR 2210]

5. *Transfers:* When this permit is transferred to a new owner or operator, such requirements as may be necessary under the CWC may be incorporated into this permit. (Also see 40 CFR 122.41(l)(3) and 122.61.)

6. *Conditions not stayed:* The filing of a request by the discharger for modification, revocation and reissuance, or termination of this permit, or a notification of planned change in or anticipated noncompliance with this permit does not stay any condition of this permit.

7. *Interim limitations:* The discharger shall comply with any interim effluent limitations which are in effect as a result of modification of this permit or as a result of any Regional Board or EPA enforcement action.

8. *Monitoring and Reporting Program:* The discharger shall conduct monitoring and submit

reports in accordance this permit. Monitoring results shall be reported at the intervals specified in this permit. [CWC 13267 and 13383, 23 CCR 2230, 40 CFR 122.43(a), 122.44(i), and 122.48]

9. *Availability:* A copy of this permit shall be posted at a prominent location at or near the treatment and disposal facilities and shall be available to operating personnel at all times.

10. *Duty to minimize or correct adverse impacts:* The discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.

11. *Immediate notification and posting:* Whenever a receiving water sample is found to contain levels of bacteria which exceed water-contact standards for bacterial characteristics specified in this permit, the discharger shall immediately notify the County of San Diego, Department of Environmental Health and post signs, at the direction of the Department of Environmental Health, prohibiting body contact with water in all areas affected by the contamination.

12. *Twenty-four hour reporting:* In accordance with 40 CFR 122.41(l)(6)(ii)(C), the discharger shall report violation of any maximum daily effluent limitation specified in this permit to the Regional Board and EPA within 24 hours. [40 CFR 122.44(g)]

    In addition, the discharger shall report the following to the Regional Board and EPA within 24 hours:

    a. Any violation of any effluent limitation for acute toxicity specified in this permit.

    b. Any violation of any prohibition of this permit.

    c. Any finding of levels of bacteria in a receiving water sample which exceed water-contact standards for bacterial characteristics specified in this permit. [CWC 13267 and 13383]

13. *Reports and notifications:* The discharger shall submit reports and provide notifications to the Regional Board and other agencies as specified in this permit. These other agencies include EPA, State Board, and County of San Diego, Department of Environmental Health. Reports shall be submitted and notifications shall be made to:

    a. POTW Compliance Unit
    California Regional Water Quality Control Board
    San Diego Region
    9174 Sky Park Court, Suite 100
    San Diego, CA 92123-4340
    Phone - (858) 467-2952
    Fax - (858) 571-6972

b. Regional Administrator
U. S. Environmental Protection Agency
Region IX
[DMR/NPDES to WTR-7 and Monitoring Reports to WTR-2]
75 Hawthorne Street
San Francisco, CA 94105-3901

c. Regulatory Unit
Division of Water Quality
State Water Resources Control Board
P. O. Box 944213
Sacramento, CA 94244-2130

d. Department of Environmental Health
County of San Diego
P. O. Box 85261
San Diego, CA 92138-5261
Phone - (858) 338-2222
Fax - (858) 338-2174

14. *Responsibilities, liabilities, legal action, penalties:* The Porter-Cologne Water Quality Control Act provides for civil and criminal penalties comparable to, and in some cases greater than, those provided for under the CWA. [CWC 13385 and 13387]

Nothing in this permit shall be construed to protect the discharger from its liabilities under federal, State, or local laws.

Except as provided for in 40 CFR 122.41(m) and (n), nothing in this permit shall be construed to relieve the discharger from civil or criminal penalties for noncompliance.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

Nothing in this permit shall be construed to preclude institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the CWA.

15. *Noncompliance:* Any noncompliance with this permit constitutes violation of the CWC and is grounds for denial of an application for permit modification. [Also see 40 CFR 122.41(a).]

16. *Discharge is a privilege:* No discharge of waste into waters of the State, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge. All discharges of waste into waters of the State are

privileges, not rights. [CWC 13263(g)]

17. *Supersession:* This Order supersedes Order No. 95-106 when this Order becomes effective.

18. *Effective date:*

    a. These waste discharge requirements (Regional Board Order No. R9-2002-0025) shall become effective upon the date of adoption by the Regional Board.

    b. This NPDES permit shall become effective 33 days from the date of signature by the Director.

19. *Expiration:* This NPDES permit expires five years from its effective date. [40 CFR 122.43, 122.44(h), and 122.46]

20. *Continuation of expired permit:* After this permit expires, the terms and conditions of this permit are automatically continued pending issuance of a new permit if all requirements of the federal NPDES regulations on the continuation of expired permits are complied with. [40 CFR 122.6, 23 CCR 2235.4]

21. *Applications:* Any application submitted by the discharger for reissuance or modification of this permit shall satisfy all applicable requirements specified in federal regulations as well as any additional requirements for submittal of a Report of Waste Discharge specified in the CWC and the CCR.

22. *Confidentiality:* Except as provided for in 40 CFR 122.7, no information or documents submitted in accordance with or in application for this permit will be considered confidential, and all such information and documents shall be available for review by the public at the offices of the Regional Board and EPA.

23. *Severability:* The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

H. PROVISIONS APPLICABLE TO POTWs

1. 40 CFR 122.42(b) is incorporated into this permit by reference.

2. *Plant supervision and operation:* Supervisors and operators of all wastewater treatment facilities shall possess a certificate of appropriate grade in accordance with 23 CCR 3680. [23 CCR 2233(d)(1)]

3. *Operation and maintenance manual:* Each wastewater treatment facility shall be operated and maintained in accordance with the operation and maintenance manual prepared by the owner of the treatment facility through the Clean Water Grant Program. [23 CCR

2233(d)(2)]

4. *New and expanded treatment facilities:* All proposed new treatment facilities and expansions of existing treatment facilities shall be completely constructed and operable prior to initiation of the discharge from the new or expanded facilities. The discharger shall submit a certification report for each new treatment facility, expansion of an existing treatment facility, and re-rating of an existing treatment facility. For new treatment facilities and expansions, the certification report shall be prepared by the design engineer. For re-ratings, the certification report shall be prepared by the engineer who evaluated the treatment facility capacity. The certification report shall:

   a. Identify the design capacity of the treatment facility;

   b. Certify the adequacy of each component of the treatment facility; and

   c. Contain a requirement-by-requirement analysis, based on acceptable engineering practices, of how the process and physical design of the facility will ensure compliance with this permit.

   The signature and engineering license number of the engineer preparing the certification report shall be affixed to the report. The certification report, should, if possible, be submitted prior to beginning construction. The discharger shall not initiate a discharge from a new treatment facility or initiate a discharge from an existing treatment facility at a 30-day average dry weather flowrate in excess of its design capacity until:

   a. The certification report is received by the Executive Officer;

   b. The Executive Officer has received written notification of the completion of construction (new treatment facilities and expansions only);

   c. An inspection of the plant has been made by the Regional Board staff (new treatment facilities and expansions only); and

   d. The Executive Officer has provided the discharger with written authorization and a permit modification to discharge at a 30-day average dry weather flowrate not to exceed the revised design capacity.

5. *Sewer Overflow Reporting:* The discharger shall report sewer overflow events in accordance with the following procedures:

   a. Definition

      For purposes of this Reporting Requirement, a sewer overflow event is a discharge of treated or untreated wastewater at a location not authorized by waste discharge requirements and/or NPDES permit which results from a pump station failure, sewer line break, obstruction, surcharge, or any other operational dysfunction. This Reporting Requirement applies to all sewer overflow events

other than those events subject to regulation under this Regional Board's Order No. 96-04, *General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies*.

b. 24-Hour Reporting to the Regional Board

If a sewer overflow event results in a discharge of 1,000 gallons or more, or results in a discharge to surface waters (any volume), the discharger shall:

Report the sewer overflow event to the Regional Board by any available means, including telephone, voice mail, or FAX, within 24 hours from the time that: (1) discharger has knowledge of the sewer overflow, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures. Notification may be made after normal business hours by leaving a message for the Regional Board on voice mail or FAX.

For the purpose of this Reporting Requirement, surface waters include navigable waters, rivers, streams (including ephemeral streams), lakes, playa lakes, natural ponds, bays, the Pacific Ocean, lagoons, estuaries, man-made canals, ditches, dry arroyos, mudflats, sandflats, wet meadows, wetlands, swamps, marshes, sloughs and water courses, and storm drains tributary to surface waters. The term includes waters of the United States as used in the CWA (see 40 CFR 122.2)

The information reported to the Regional Board in the initial report shall include the name and phone number of the person reporting the sanitary sewer overflow, the responsible sanitary sewer system agency, the estimated total sewer overflow volume, the location, the receiving waters, whether or not the sewer overflow is still occurring at the time of the report, and confirmation that the local health services agency was or will be notified as required under the reporting requirements of the local health services agency.

c. Five-Day Reporting to the Regional Board

If the sewer overflow event results in a discharge of 1,000 gallons or more, or results in a discharge to surface waters (any volume), the discharger shall:

Complete a copy of the Sanitary Sewer Overflow Form attached to Monitoring and Reporting Program No. 96-04, and submit the completed Sanitary Sewer Overflow Report form, along with any additional correspondence, to the Regional Board no later than 5 days following the starting date of the sanitary sewer overflow. Additional correspondence and follow-up reports should be submitted to the Regional Board, as necessary, to supplement the Sanitary Sewer Overflow Report Form to provide detailed information on cause, response, adverse effects, corrective actions, preventative measures, or other information.

d. Quarterly Reporting to the Regional Board

The discharger shall report all sewer overflows, regardless of volume or final destination, in the next quarterly self-monitoring report, in accordance with the format described in Order No. 96-04.

6. *Sewer Overflow Prevention Plan:* The discharger shall maintain a Sewer Overflow Prevention Plan (SOPP) in an up-to-date condition and shall amend the SOPP whenever there is a change (e.g., in the design, construction, operation, or maintenance of the sewerage system or sewerage facilities) which materially affects the potential for sewer overflows. The discharger shall review and amend the SOPP as appropriate after each sewer overflow from the PLMWTP and downstream facilities. The SOPP and any amendments thereto, shall be subject to the approval of the Executive Officer and shall be modified as directed by the Executive Officer. The discharger shall submit the SOPP and any amendments thereto to the Executive Officer upon request of the Executive Officer. The discharger shall ensure that the up-to-date SOPP is readily available to sewerage system personnel at all times and that sewerage system personnel are familiar with it.

7. *Sewer Overflow Response Plan:* The discharger shall maintain a Sewer Overflow Response Plan (SORP) for the PLMWTP and downstream facilities. The SORP shall establish procedures for responding to sewer overflows from the PLMWTP and downstream facilities so as to: (a) minimize the sewer overflow volume which enters surface waters, and (b) minimize the adverse effects of sewer overflows on water quality and beneficial uses. The discharger shall maintain the SORP in an up-to-date condition and shall amend the SORP as necessary to accomplish these objectives. The discharger shall review and amend the SORP as appropriate after each sewer overflow from the PLOO and the area tributary to the PLOO. The SORP, and any amendments thereto, shall be subject to the approval of the Executive Officer and shall be modified as directed by the Executive Officer. The discharger shall submit the SORP and any amendments thereto to the Executive Officer upon request of the Executive Officer. The discharger shall ensure that the up-to-date SORP is readily available to sewerage system personnel at all times and that sewerage system personnel are familiar with it.

8. *Reclamation planning:* In November 2002 and November 2005, the discharger shall submit a report to the Executive Officer which describes the discharger's water reclamation plans and the potential for the discharger to reclaim additional wastewater in the next period of not less than five years. (This is not a requirement for the discharger to actually reclaim water or reuse reclaimed water.)

9. *Ensuring adequate capacity:* The discharger shall submit a written report to the Executive Officer within 90 days after the average dry weather influent flowrate for any 30-day period equals or exceeds 75 percent of the design capacity of any waste treatment and/or disposal facilities. The discharger's senior administrative officer shall sign a letter which transmits that report and certifies that the policy-making body is adequately informed about it. The report shall include:

   a. Average daily flow for the 30-day period, the date on which the instantaneous peak flow occurred, the rate of that peak flow, and the total flow for that day.

b. The discharger's best estimate of when the average daily dry-weather flowrate will equal or exceed the design capacity of the facilities.

c. The discharger's intended schedule for studies, design, and other steps needed to provide additional capacity for the waste treatment and/or disposal facilities and/or control the flowrate before the waste flowrate equals the capacity of present units.

10. *Sewage sludge:* The discharger shall comply with all federal and State laws, regulations, and requirements that apply to its sewage sludge use and disposal practice(s). [40 CFR 122.44(b)(2) and 122.44(o)]

I. SPECIAL PROVISIONS

1. The discharger shall continue to implement its existing nonindustrial source control program and public education program that have been in effect since 1985. These programs are described in Volume VI, Appendix K, of discharger's April 1995 application.

2. This permit may be modified in accordance with the requirements set forth at 40 CFR 122.62 and 124.5, to include appropriate conditions or limitations to address demonstrated effluent toxicity based on newly available information.

3. MRP No. R9-2002-0025 may be modified by the Regional Board and EPA to enable the discharger to participate in comprehensive regional monitoring activities conducted in the Southern California Bight during the term of this permit. The intent of regional monitoring activities is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled scientific resources of the region. During these coordinated sampling efforts, the discharger's sampling and analytical effort may be reallocated to provide a regional assessment of the impact of the discharge of municipal wastewater to the Southern California Bight. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and to determine cumulative impacts of various pollution sources. If predictable relationships among the biological, water quality and effluent monitoring variables can be demonstrated, it may be appropriate to decrease the discharger's sampling effort. Conversely, the monitoring program may be intensified if it appears that the objectives cannot be achieved through the discharger's existing monitoring program. These changes will improve the overall effectiveness of monitoring in the Southern California Bight. Minor changes may be made without further public notice.

4. To address the uncertainty due to projected increases in toxic pollutant loadings from the PLMWTP to the marine environment during the five-year waiver, and to establish a framework for evaluating the need for an antidegradation analysis to show compliance with antidegradation requirements at the time of permit reissuance, mass emission benchmarks have been established for effluent discharged through the PLOO. These mass emissions benchmarks were calculated based on EPA's evaluation of current effluent concentrations from the PLMWTP. This permit may be modified in accordance with the requirements set forth at 40 CFR 122.62 and 124.5 to revise mass emission benchmarks contained in Discharge Specification B.13. To address the possibility that alternate effluent limitations may be proposed as a result of an antidegradation analysis performed in response to increases of solids loadings from the PLMWTP to the marine environment, in the event that such alternate effluent limitations are proposed, the discharger shall have the right to make any objection to the authority to propose, and to the basis for, such limitations at the time such limitations are proposed.

5. At least six months before a new treatment facility initiates discharges to the sewer system, the discharger shall submit to the Executive Officer and Director a methodology for monitoring and calculating percent removal of influent TSS and BOD_5, consistent

with Discharge Specifications B.1.a(1) and B.2. The methodology shall be subject to the approval of the Executive Officer and Director.

J. ORDER NO. R9-2002-0025 ENDNOTES

1. Endosulfan shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.

2. HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

3. Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

4. Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

5. DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

6. Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide), chloromethane (methyl chloride).

7. PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

8. PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

9. TCDD equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

This certifies that the foregoing is a full, true, and correct copy of Order No. R9-2002-0025 adopted by the California Regional Water Quality Control Board, San Diego Region, on _____, 2002 and of NPDES Permit No. CA0107409 issued by the U. S. Environmental Protection Agency, Region IX, on _____, 2002.

(Tentative)

JOHN H. ROBERTUS
Executive Officer
California Regional Water Quality Control Board
San Diego Region

(Tentative)

ALEXIS STRAUSS
Director
Water Division
U. S. Environmental Protection Agency
Region IX

For the Regional Administrator

ATTACHMENT NO. 1

2001 OCEAN PLAN
CHAPTER III H.
DISCHARGE PROHIBITIONS

A. Hazardous Substances

The level of any radiological, chemical, or biological warfare agent or high-level radioactive waste* into the ocean* is prohibited.

B. Areas Designated for Special Water Quality Protection

Waste* shall not be discharged to designated Areas* of Special Biological Significance except as provided in Chapter III.E, Implementation Provisions for Areas of Special Biological Significance, of the Ocean Plan.

C. Sludge

Pipeline discharge of sludge to the ocean* is prohibited by federal law; the discharge of municipal and industrial waste* sludge directly to the ocean*, or into a waste* stream that discharges to the ocean*, is prohibited by the Ocean Plan. The discharge of sludge digester supernatant directly to the ocean*, or to a waste* stream that discharges to the ocean* without further treatment, is prohibited.

It is the policy of the SWRCB that the treatment, use and disposal of sewage sludge shall be carried out in the manner found to have the least adverse impact on the total natural and human environment. Therefore, if federal law is amended to permit such discharge, which could affect California waters, the SWRCB may consider requests for exceptions to this section under Chapter III.H of the Ocean Plan, provided further that an Environmental Impact Report on the proposed project shows clearly that any available alternative disposal method will have a greater adverse environmental impact than the proposed project.

D. By-Passing

The by-passing of untreated wastes* containing concentrations of pollutants in excess of those in Table A or Table B of the Ocean Plan to the ocean* is prohibited.

Please refer to the 2001 California Ocean Plan for further information.

ATTACHMENT NO. 2

1994 WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN WASTE DISCHARGE PROHIBITIONS

California Water Code Section 13243 provides that a Regional Board, in a water quality control plan, may specify certain conditions or areas where the discharge of waste, or certain types of waste is not permitted. The following discharge prohibitions are applicable to any person, as defined by Section 13050(c) of the California Water Code, who is a citizen, domiciliary, or political agency or entity of California whose activities in California could affect the quality of waters of the State within the boundaries of the San Diego Region.

1. The discharge of waste to waters of the State in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in California Water Code Section 13050, is prohibited.

2. The discharge of waste to land, except as authorized by waste discharge requirements or the terms described in California Water Code Section 13264 is prohibited.

3. The discharge of pollutants or dredged or fill material to waters of the United States except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in California Water Code Section 13376) is prohibited.

4. Discharges of recycled water to lakes or reservoirs used for municipal water supply or to inland surface water tributaries thereto are prohibited, unless this Regional Board issues a NPDES permit authorizing such a discharge; the proposed discharge has been approved by the State Department of Health Services and the operating agency of the impacted reservoir; and the discharger has an approved fail-safe long-term disposal alternative.

5. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the Regional Board. Consideration would include streamflow data, the degree of treatment provided and safety measures to ensure reliability of facility performance. As an example, discharge of secondary effluent would probably be permitted if streamflow provided 100:1 dilution capability.

6. The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited, unless the discharge is authorized by the Regional Board.

7. The dumping, deposition, or discharge of waste directly into waters of the State, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the Regional Board.

8. Any discharge to a storm water conveyance system that is not composed entirely of "*storm water*"is prohibited unless authorized by the Regional Board. [The federal regulations, 40 CFR 122.26(b)(13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities.] [Part 122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

9. The unauthorized discharge of treated or untreated sewage to waters of the State or to a storm water conveyance system is prohibited.

10. The discharge of industrial wastes to conventional septic tank/subsurface disposal systems, except as authorized by the terms described in California Water Code Section 13264, is prohibited.

11. The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the State is prohibited.

12. The discharge of any radiological, chemical, or biological warfare agent into waters of the State is prohibited.

13. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the Regional Board.

14. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the State or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

15. The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.

16. The discharge of untreated sewage from vessels to San Diego Bay is prohibited.

17. The discharge of treated sewage from vessels to portions of San Diego Bay that are less than 30 feet deep at mean lower low water (MLLW) is prohibited.

18. The discharge of treated sewage from vessels, which do not have a properly functioning U. S. Coast Guard certified Type I or Type II marine sanitation device, to portions of San Diego Bay that are greater than 30 feet deep at MLLW is prohibited.

California Regional Water Quality Control Board
San Diego Region

Winston H. Hickox
Secretary for Environmental Protection

Internet Address: http://www.swrcb.ca.gov/rwqcb9/
9174 Sky Park Court, Suite 100, San Diego, California 92123
Phone (858) 467-2952 ♦ FAX (858) 571-6972

Gray Davis
Governor

CERTIFIED MAIL RETURN RECEIPT REQUESTED
7099 3400 0017 1547 7255

February 11, 2002

RECEIVED
FEB 13 2002
CALIFORNIA
COASTAL COMMISSION

Mr. Scott Tulloch
Director
City of San Diego Metropolitan Wastewater Department
4918 North Harbor Drive, Suite 201
San Diego, CA 92106-2359

Dear Mr. Tulloch:

TENTATIVE ORDER NO. R9-2002-0025, NPDES PERMIT NO. CA0107409 FOR THE CITY OF SAN DIEGO, E. W. BLOM POINT LOMA METROPOLITAN WASTEWATER TREATMENT PLANT DISCHARGE TO THE PACIFIC OCEAN THROUGH THE POINT LOMA OCEAN OUTFALL

The U. S. Environmental Protection Agency (USEPA) and the California Regional Water Quality Control Board, San Diego Region (Regional Board) have issued a Draft National Pollutant Discharge Elimination System (NPDES) permit and Tentative State waste discharge requirements for the City of San Diego E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant discharge to the Pacific Ocean through the Point Loma Ocean Outfall.

Enclosed are copies of the subject Tentative Order and Draft NPDES Permit, public notice, 301(h) Tentative Decision, fact sheet, and monitoring and reporting program. An initial public hearing will be held by the Regional Board and USEPA to receive and consider public testimony regarding the Tentative Order and Draft NPDES permit on Wednesday, March 13, 2002. After all oral and written testimony has been received and considered, a Regional Board hearing for final action on issuance of the permit will be held on April 10, 2002. Details regarding the hearing locations and times are included in the attached public notice.

If you have any questions, please call Robyn Stuber with the USEPA at (415) 972-3524 or David Hanson with the Regional Board at (858) 467-2724.

Respectfully,

JOHN H. ROBERTUS
Executive Officer

Enclosures
cc: See interested party list

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at http://www.swrcb.ca.gov.

Recycled Paper

NOTICE OF PUBLIC HEARING BY
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
AND
U.S. ENVIRONMENTAL PROTECTION AGENCY

February 11, 2002

U. S. Environmental Protection Agency
WTR-5 Region 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Telephone: (415) 972-3658

California Regional Water Quality
Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Telephone: (619) 467-2952

Pursuant to the requirement of the National Pollutant Discharge Elimination System (NPDES) permitting program, under the California Porter-Cologne Act and the federal Clean Water Act, the California Regional Water Quality Control Board (Regional Board) and the United States Environmental Protection Agency (USEPA) hereby give Notice of the following **Proposed Action:**

Joint adoption of Tentative Order No. R9-2002-0025 (NPDES Permit No. CA0107409) for the discharge of treated wastewater from the E.W. Blom Point Loma Metropolitan Wastewater Treatment Plant discharge to the Pacific Ocean through the Point Loma Ocean Outfall by the City of San Diego. The NPDES Permit conditions and waste discharge requirements contained in Tentative Order No. R9-2002-0025 are based on a variance from secondary treatment requirements as provided for improved discharges under 40 CFR 125 Subpart G and Section 301(h) of the Clean Water Act (33USC131(h)).

A copy of the fact sheet, draft permit, monitoring and reporting program, and 301(h) tentative decision are available at http://www.swrcb.ca.gov/rwqcb9. Alternatively, a hard copy can be obtained by contacting Mr. David Hanson at (858) 467-2724 or hansd@rb9.swrcb.ca.gov.

The City's wastewater treatment plant is located at 1902 Gatchell Road, on the western side and near the southern tip of Point Loma in San Diego. This plant serves the Metropolitan Sewer System service area and discharges advanced primary treated municipal wastewater to the Pacific Ocean through the PLOO approximately 4.5 miles offshore (32°39'55" North Latitude, 117°19'25" West Longitude) at a depth of approximately 310 feet.

The Regional Board and USEPA wish to obtain information to assist them in determining the proper permit conditions and requirements for the discharge. An initial public hearing will be held by the Regional Board and USEPA to receive and consider public testimony regarding the proposed action. This public hearing is scheduled to begin at 9:00 a.m. on Wednesday, March 13, 2002, at the following location:

California Water Quality Control Board, San Diego Region
Regional Board Meeting Room
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

After all oral and written testimony has been received and considered, a Regional Board hearing for final action on issuance of the permit will be held on April 10, 2002, 9:00 a.m., at the same location.

Interested persons are invited to attend to express their views on the above item. Oral statements will be heard, but for accuracy of the record, all important testimony should be in writing. In keeping with USEPA procedures, written comments will be accepted up to the end of the initial hearing on March 13, 2002. It is recommended, however, that written testimony be submitted to the USEPA and Regional Board offices as soon as possible to allow consideration of the testimony prior to the initial meeting. Persons wishing to comment should submit their comments in writing, either in person or by mail, to the attention of Ms. Robyn Stuber with the USEPA and Mr. David Hanson with the Regional Board at the addresses shown above. Presentations should be brief to allow all interested parties time to be heard. For more information, please contact Mr. David Hanson at (858) 467-2724 or by email at hansd@rb9.swrcb.ca.gov. The staff contact at the USEPA is Ms. Robyn Stuber at (415) 972-3524 or stuber.robyn@epa.gov.

All documents, comments received, and other information related to the adoption above mentioned items are on file and may be viewed at the office of the Regional Board. Review of information and files can be conducted on the following days and times: Monday, Tuesday, and Thursday from 1:30 to 4:30 p.m., and Tuesday, Wednesday, and Friday from 8:30 to 11:30 a.m. Please bring the foregoing to the attention of any person known to you who would be interested in these matters.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
AND
U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX

FACT SHEET
for the
E. W. BLOM POINT LOMA METROPOLITAN WASTEWATER TREATMENT PLANT
DISCHARGE TO THE PACIFIC OCEAN THROUGH THE POINT LOMA OCEAN OUTFALL
SAN DIEGO COUNTY

ORDER NO. R9-2002-0025
NPDES PERMIT NO. CA0107409

SUMMARY

On February 11, 2002, the U. S. Environmental Protection Agency, Region IX (hereinafter USEPA) tentatively decided to grant a modification from secondary treatment requirements of the Clean Water Act (CWA) to the City of San Diego (hereinafter discharger) for the E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant (PLMWTP) discharge to waters of the Pacific Ocean through the Point Loma Ocean Outfall (PLOO). In accordance with this decision, and the authorities vested in Section 402 of the CWA, USEPA is issuing a final 301(h)-modified National Pollutant Discharge Elimination System (NPDES) permit that incorporates this tentative decision. The PLOO discharges beyond the 3-mile State waters limit to federal waters. Therefore, USEPA has primary regulatory responsibility for the discharge; however, in 1984 a Memorandum of Understanding was signed between USEPA and the State of California to jointly issue and administer discharges that are granted modifications from secondary treatment requirements. Under California's Porter-Cologne Water Quality Control Act, the California Regional Water Quality Control Board issues waste discharge requirements which serve as the NPDES permit. On February 11, 2002, the USEPA and California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board) jointly proposed issuance of a draft 301(h)-modified NPDES permit incorporating both federal NPDES requirements and State waste discharge requirements.

ADMINISTRATIVE PROCESS

The administrative processing of a Section 301(h) modification application consists of the following actions:

1. Filing of a timely and complete application;

2. Initial screening of the application by the State and USEPA;

3. USEPA preparation of a Tentative Decision Document (TDD) which involves comparison of the application with criteria set forth in the statute and regulations;

4. USEPA staff recommendation that the USEPA Regional Administrator (hereinafter Regional Administrator) sign the TDD;

5. Announcement of the tentative decision by the Regional Administrator;

6. Public notice of a draft 301(h)-modified NPDES permit incorporating the tentative decision;

7. Public hearings to address public interest;

8. State concurrence in the granting of a 301(h) modification through State and USEPA joint issuance of a 301(h)-modified NPDES permit; or denial by the State and/or the Regional Administrator.

9. Processing of appeals, in accordance with 40 CFR 124.12.

TENTATIVE DECISION

On April 10, 2001, the discharger submitted an application for renewal of its 1995 301(h)-modified NPDES permit. This application was based on an improved discharge, as defined at 40 CFR 125.58(g). In this application, the discharger proposed the following effluent limitations:

Effluent Parameter	Mean Annual Percent Removal	Mean Monthly Percent Removal	Annual Mass Emission (effective year 5 of NPDES permit)	Daily Range
Total Suspended Solids (TSS)	N/A	≥ 80%	13,599 mt/yr 82,100 lb/day	N/A
5-Day Biochemical Oxygen Demand (BOD_5)	≥ 58%	N/A	N/A	N/A
PH	N/A	N/A	N/A	6-9

mt/yr = metric tons per year
lb/day = pounds per day
N/A = not applicable

The discharger proposed that percent removal for TSS and BOD_5 be computed on a "system-wide" basis. By computing percent removal on a system-wide basis, the discharger receives credit for TSS and BOD_5 removal achieved as part of upstream water reclamation operations. The USEPA drafted a TDD evaluating the proposed 301(h)-modified discharge based on 1995 through 2000 effluent concentrations for TSS and BOD_5 and the discharger's projected end-of-permit flow of 195 million gallons per day (MGD) (maximum dry season monthly average daily

discharge flow), as provided in the application. The USEPA used the following CWA criteria to evaluate the discharger's modification request. These criteria require that:

1. The discharge maintains a balanced indigenous population of fish, shellfish and wildlife, and allows recreational activities;

2. A practicable program to monitor potential impacts of the ocean discharge be implemented;

3. The discharge not result in additional requirements on any other pollution source;

4. The discharge meets State water quality standards;

5. All applicable pretreatment requirements be enforced;

6. An urban area pretreatment program be implemented or secondary equivalency of toxics removal be demonstrated;

7. A program to reduce toxics from non-industrial sources be implemented;

8. The total pollutants discharged will not exceed permit limitations; and

9. The discharge will at minimum meet primary treatment standards and meet water quality criteria after initial mixing.

In addition, the discharger will also achieve:

1. 80 percent removal of TSS on a system-wide monthly average;

2. 58 percent removal of BOD_5 on a system-wide annual average;

3. 45 MGD of water reclamation capacity by the year 2010; and

4. Reduction of TSS discharged into the ocean during the period of permit modification.

The USEPA found that the discharger's application satisfies these CWA provisions. The Regional Administrator's tentative decision grants the discharger's modification request for the following parameters: TSS and BOD_5. The TDD is incorporated, herein, by reference, as part of this fact sheet. This fact sheet and the TDD set forth the principal facts and significant legal, methodological, and policy questions considered in the development of the 301(h)-modified NPDES permit. The 301(h)-modified NPDES permit is based on the Administrative Record.

SERVICE AREA DESCRIPTION

The Metropolitan Sewerage System (Metro System) is owned and operated by the discharger. The Metro System presently serves all or portions of the City of San Diego and 15 other cities and water/sanitation districts (participating agencies). In addition, there is a cross-border emergency connection between the Metro System and the City of Tijuana, Mexico. The service area encompasses approximately 450 square miles. The institutional arrangements between the discharger and the participating agencies are defined by a number of Sewage Disposal Agreements, Sewage Transportation Agreements, and various amendments to these agreements. The 15 participating agencies are:

Cities	Water/Sanitation Districts
City of Chula Vista	Lakeside-Alpine Sanitation District
City of Coronado	Lemon Grove Sanitation District
City of Del Mar	East Otay Mesa Sewer Maintenance Dist.
City of El Cajon	Otay Water District
City of Imperial Beach	Spring Valley Sanitation District
City of La Mesa	Padre Dam Municipal Water District
City of National City	Wintergardens Sewer Maintenance District
City of Poway	

Total raw wastewater generated within the Metro System service area is collected and transported via a network of trunk sewers, interceptor sewers and pump stations. The backbone of the Metro System consists of the North Metro Interceptor (NMI) (2.4 mile, 96 inch diameter sewer), the South Metro Interceptor (SMI) (1 mile, 78 inch diameter sewer; 2.1 mile, 84 inch diameter crosstown tunnel; 0.3 mile, 102 inch diameter sewer, and 1.7 mile, 108 inch diameter sewer), Pump Station No. 1 (PS1) and its force main (discharging wastewater to the SMI through a 1.6 mile, 72 inch diameter force main), and Pump Station No. 2 (PS2) and its two force mains (discharging wastewater to the Point Loma Tunnel and Interceptor Sewer). The total raw wastewater generated within the Metro System service area is pumped from PS2 via the two PS2 force mains and the Point Loma Tunnel and Interceptor Sewer to the PLMWTP Headworks for treatment at PLMWTP and final effluent disposal through the PLOO.

TREATMENT FACILITIES

There have been a number of upgrades to the Metro System since 1995. These include: (1) the addition of two new sedimentation basins at the PLMWTP; (2) construction of the Metro Biosolids Center (MBC); (3) construction of the North City Wastewater Reclamation Plant (NCWRP); and (4) construction of the South Bay Water Reclamation Plant (SBWRP). Together, these facilities comprise the Metro System.
The PLMWTP is located at 1902 Gatchell Road, on the western side and near the southern tip of Point Loma in the City of San Diego. The facility site is located on the Fort Rosecrans military reservation and adjoins the Cabrillo National Monument. PLMWTP began operation in 1963. From 1963 through 1985, the plant operated as a primary treatment plant using gravity separation to reduce TSS levels by 60 percent prior to ocean discharge. In 1986, chemical coagulation was added to increase TSS removal to 75 percent.

Currently, preliminary treatment consists of course screening at Pump Station No. 2 and fine screening at the PLMWTP. The wastewater is then distributed to six aerated grit removal chambers. Ferric chloride is added prior to entering the grit chamber to enhance solids removal. Wastewater exiting the grit chamber is then treated with anionic polymers to aid coagulation of solids and distribution to 12 sedimentation tanks. The PLMWTP is capable of achieving at least 80 percent removal of suspended solids. Sludge generated by the advanced primary treatment process is digested anaerobically then pumped to the MBC for dewatering. Screening, grit, and scum are trucked to a landfill for disposal. Treated effluent is discharged to the Pacific Ocean through the PLOO. Rated capacity of the PLMWTP is 240 MGD average annual daily flow (AADF) and 432 MGD peak wet weather flow (PWWF).

The MBC, completed in 1998, replaced sludge dewatering operations at the now closed Fiesta Island Sludge Dewatering Facilities (FISDF). Digested sludge is pumped from the PLMWTP to MBC for processing. Recycled streams (centrate) from the dewatering processes at MBC are returned to the PLMWTP through the sewer system. In addition to dewatering of PLWTP sludge, MBC also provides thickening, anerobic digestion and dewatering facilities for sludge received from the NCWRP. The processed sludge from MBC is currently trucked to an approved landfill for disposal. The Executive Officer and USEPA Region IX Water Division Director must approve any change in the manner of disposal. MBC is subject to the terms and conditions of this Order and NPDES Permit.

Up to 30 MGD AADF of raw wastewater, which would otherwise be conveyed to the PLMWTP via the Rose Canyon Trunk Sewer (RCTS), is diverted to the NCWRP downstream of Pump Station No. 64. Treated effluent from the NCWRP is delivered to a reclaimed water distribution system. When reclaimed water production exceeds demand, excess NCWRP effluent is returned to the RCTS, retreated at the PLMWTP, and discharged through the PLOO. Undigested sludge is directed to MBC. Requirements for the discharge of reclaimed water from the NCWRP are established in Regional Board Order No. 97-03.

Up to 15 MGD AADF of raw wastewater, which would otherwise be conveyed to the PLMWTP via the upper reach of the SMI, will be diverted to the SBWRP via the South Bay Reclamation

Sewer Pump Station (SBRSPS) once the facilities are operational in mid-2002. A portion of the treated effluent from the SBWRP will be delivered to a reclaimed water distribution system and the excess will be discharged through the South Bay Ocean Outfall (SBOO). The SBWRP does not currently have onsite sludge handling capability. A pipeline will convey undigested sludge back to the SMI for treatment at the PLMWTP. Requirements for discharge from the SBWRP through the SBOO are established in Regional Board Order No. 2000-129, NDPES Permit No. CA0109045. Requirements for the discharge of reclaimed water from the SBWRP are established in Regional Board Order No. 2000-203.

POINT LOMA OCEAN OUTFALL

The original PLOO was constructed in 1963 and consists of a 108 inch diameter reinforced concrete pipe extending 11,300 feet offshore to a wye diffuser at an approximate depth of 200 feet. From this wye, two diffuser legs extend approximately 1,368 feet north and south and terminate at a depth of approximately 220 feet below sea level. The PLOO was extended in 1993, when 12,500 feet of 144 inch diameter concrete pipe were added to the existing pipe. The new diffuser legs are each 2,500 feet long. The extended PLOO terminates at a point approximately 4.5 miles offshore at a depth of 310 feet (coordinates 32°39'55" North Latitude, 117°19'25" West Longitude). These coordinates indicate the location of the beginning of the extended outfall's diffuser structure. The outfall hydraulic capacity is 432 MGD (peak wet weather flow).

DISCHARGE DESCRIPTION

Treated wastewater discharged through the PLOO consists primarily of treated domestic sewage. Industrial flows contribute approximately three percent of the total Metro System flows. According to the discharger's application, the treated wastewater discharged to the Pacific Ocean through the PLOO has the following characteristics for TSS and BOD_5:

Parameter	Units	Annual Average (1999)
TSS	mg/l	38
BOD_5	mg/l	102

BASIS FOR REQUIREMENTS

Section 402 of the CWA gives USEPA the authority to issue NPDES permits. Under Sections 301(h) and (j)(5) of the CWA, USEPA has the authority to grant a modification from secondary treatment requirements contained in Section 301(b)(1)(B) of the CWA.

The State Water Resources Control Board (hereinafter State Board) adopted a revised 2001 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) on November 16, 2000. The 2001 Ocean Plan was approved by USEPA on December 3, 2001. The Ocean Plan identifies the following beneficial uses of State ocean waters to be protected:

1. Industrial water supply
2. Navigation
3. Water contact recreation
4. Non-contact water recreation
5. Ocean commercial and sport fishing
6. Preservation and enhancement of Areas of Special Biological Significance (ASBS)
7. Preservation of rare and endangered species
8. Marine habitat
9. Mariculture
10. Fish migration
11. Fish spawning
12. Shellfish harvesting
13. Aesthetic enjoyment

In order to protect these beneficial uses, the Ocean Plan establishes water quality objectives (for bacterial, physical, chemical, and biological characteristics, and for radioactivity), general requirements for management of waste discharged to the ocean, quality requirements for waste discharges (effluent quality requirements), discharge prohibitions, and general provisions.

The Water Quality Control Plan, San Diego Basin (9) (Basin Plan) was adopted by the Regional Board on September 8, 1994 and approved by the State Board. Subsequent revisions to the Basin Plan have also been adopted by the Regional Board and approved by the State Board. The Basin Plan identifies the following beneficial uses of State ocean waters to be protected:

1. Industrial service supply
2. Navigation
3. Water contact recreation
4. Noncontact water recreation
5. Commercial and sport fishing
6. Preservation of biological habitats of special significance
7. Rare, threatened, or endangered species
8. Marine habitat
9. Aquaculture
10. Migration of aquatic organisms
11. Spawning, reproduction, and/or early development
12. Shellfish harvesting
13. Wildlife habitat

The Basin Plan relies primarily on the requirements of the Ocean Plan for protection of these beneficial uses; however, the Basin Plan establishes additional water quality objectives for dissolved oxygen and pH.

This discharge must be in conformance with 40 CFR 131.12 and State Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California (known collectively as "antidegradation" policies). As the effluent concentration and mass emission rate limitations in this Order are the same as or more stringent than those in Order 95-106, except for differences due to rounding, significant figures, or revised calculations, adoption of this Order is consistent with antidegradation policies.

EFFLUENT LIMITATIONS

Effluent limitations, industrial pretreatment standards, sludge use and disposal regulations, and ocean discharge criteria established under Sections 208(b), 301, 302, 303(d), 304, 306, 307, 403, 405, and 503 of the CWA, and amendments thereto, are applicable to this discharge.

Effluent limitations for TSS and BOD_5 [see Discharge Specification B.1.a(1)] are shown below:

Effluent Parameter	Mean Annual Percent Removal	Mean Monthly Percent Removal	Monthly Average
TSS	N/A	≥ 80 *	75 mg/l
BOD_5	≥ 58 *	N/A	N/A

* Percent removal to be calculated on a system-wide basis.

The discharger shall achieve a mass emission of TSS of no greater than 15,000 mt/yr through December 31, 2005. Effective January 1, 2006, the discharger shall achieve a mass emission of TSS of no greater than 13,599 mt/yr. PLOO mass emission requirements shall only apply to TSS discharged from POTWs that are owned and operated by the discharger, and the discharger's wastewater generated in the Metro System service area. PLOO mass emission requirements do not apply to wastewater (and the resulting TSS) generated in Mexico that may be treated at and discharged from POTWs in the U.S.

Percent removal limitations for TSS and BOD_5 are computed on a "system-wide" basis. By computing percent removal on a system-wide basis, the discharger receives credit for TSS and BOD_5 removal achieved as part of upstream water reclamation operations. The effluent

concentration limitation for TSS was determined based on PLMWTP monthly average performance data for 1993 through 1999 provided by the discharger. Effluent mass emission limitations for TSS were determined using the discharger's application; and the discharger's 2006 projected annual average effluent flow of 195 MGD and 80 percent removal of TSS. The final 301(h)-modified NPDES permit does not contain a concentration or mass emission effluent limitation for BOD_5 (see Administrative Record).

Effluent concentration limitations in Discharge Specification B.1.a(2) are the limiting concentrations specified in Table A of the Ocean Plan. Mass emission rates, where applicable, were determined using a flowrate of 205 MGD and the following equation specified in the Ocean Plan:

$$MER = 0.00834 \times Ce \times Q$$

where:

MER = mass emission rate in lb/day
Ce = the effluent concentration limitation in µg/l
Q = flowrate in MGD

The discharger used a modified version of the RSB model, in Dilution Models for Effluent Discharges (EPA/600/R-94/086, 1994), and the following characteristics of the ocean outfall diffuser system to estimate critical initial dilutions for determining effluent quality requirements:

Outfall Characteristic	Value
Outfall flowrate (peak wet weather flow)	432 MGD
Diffuser length (each leg)	2496 feet
Number of ports (per leg)	208
Port spacing	24 feet
Port diameters	
1008 foot section	3.75 inches at 7.0 feet
840 foot section	4.25 inches at 5.5 feet
648 foot section	4.75 inches at 4.0 feet
Port angle	5° below horizontal perpendicular to pipe

The discharger's modeling results were verified by USEPA, as outlined in the TDD. The critical initial dilution for determining compliance with the limiting concentrations specified in Table B of the Ocean Plan is 204:1 (i.e., minimum monthly average initial dilution). This is roughly twice the critical initial dilution calculated for the original PLOO (i.e., 113).

Effluent concentration limitations in Discharge Specifications B.1.b, c, and d are based on the limiting concentrations specified in Table B of the Ocean Plan, and were determined using a

minimum probable initial dilution (i.e., critical initial dilution) of 204:1 and the following equation specified in the Ocean Plan:

$$Ce = Co + Dm\ (Co - Cs)$$

where:

Ce = the effluent concentration limitation in µg/l
Co = the concentration (water quality objective) to be met at the completion of initial dilution, µg/l
Dm = the minimum probable initial dilution expressed as parts seawater per part wastewater
Cs = background seawater concentration in µg/l

SYSTEM-WIDE PERCENT REMOVAL CALCULATIONS

On August 14, 1996, the discharger, in accordance with Order No. 95-106, NPDES No. CA0107409, submitted a system-wide percent removal calculation and schematic for TSS and BOD_5. On December 8, 2000, the discharger submitted a follow-up letter requesting modifications to the proposed schematic and calculations based on changes that occurred within the discharger's wastewater system as of that date. Both of these letters are available in the Regional Board public files.

Although the SBWRP will become operational during the term of this permit, it will not be part of the system-wide percent removal calculation because, as currently constructed, the facility does not have sludge disposal capabilities. When operational, the SBWRP will send sludge to the PLMWTP for solids removal and disposal at MBC. Therefore, no significant TSS or BOD_5 removal from the overall system occurs at the SBWRP. Once sludge handling and disposal facilities are available at the SBWRP, the system-wide calculation will be modified.

The system-wide percent removals of TSS and BOD_5 are calculated using the following formula (mass emissions in pounds):

$$\%\ \text{Removal (TSS or } BOD_5) = \frac{(\text{System Influents} - \text{Return Streams}) - \text{Outfall Discharge}}{\text{System Influents} - \text{Return Streams}} \times 100$$

Where,

System Influents = PLMWTP Influent, NCWRP Influent Pump Station, and NCWRP Influent from Penasquitos Pump Station.

Return Streams = NCWRP Filter Backwash, NCWRP Plant Drain, NCWRP Secondary and Un-disinfected Filtered Effluent Bypass, NCWRP Final Effluent, and MBC Centrate

The TSS and BOD_5 concentration, together with flow rate, of each stream will be measured daily and a system-wide removal rate calculated according to the above formula. In the event that a flow rate measurement, TSS concentration, or BOD_5 concentration is not obtained from a stream, the median value for the previous calendar year for that stream will be used as a surrogate number to allow completion of the calculation. The discharger will be required to flag values where surrogate numbers are used in their self-monitoring reports submitted to the Regional Board. The failure to obtain a value may still be considered a violation of the permit that could result in enforcement action depending on the frequency of failures and efforts by the discharger to prevent such failures. Additional information regarding the discharger's wastewater treatment system, system-wide removal calculations, and overall system schematics is available in the Regional Board files.

EFFLUENT MASS EMISSION BENCHMARKS

To address the uncertainty due to projected increases in toxic pollutant loadings from the PLMWTP to the marine environment during the five-year waiver, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with antidegradation requirements at the time of permit reissuance, mass emission benchmarks have been established for effluent discharged through the PLOO. These mass emission benchmarks are not water quality-based effluent limitations and are not enforceable, as such. These mass emission threshold values may be re-evaluated and modified during the permit term.

Annual mass emission benchmarks were determined using 1990 through April 1995 n-day average monthly performance (95th percentile) of the PLMWTP and the discharger's projected end-of-permit flow of 205 MGD. Due to increases in source water concentrations in the discharger's imported potable water supply, mass emission benchmarks for copper and selenium were determined using 1994 n-day average monthly performance (95th percentile) of the PLMWTP and the discharger's projected end-of-permit flow of 205 MGD:

$$MER = Ce \times Q \times 3.785\ l/gal \times 365\ days/yr \times 1\ kg/10^9 \mu g \times 1\ mt/10^3 kg$$

where:

MER = mass emission rate in mt/yr
Ce = the n-day average monthly effluent concentration in µg/l
n = number of days in the month (28-31 days)
Q = flowrate in MGD

Average monthly performance was calculated using the equations specified in the Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001, 1991), Appendix E, Table E.2.

MONITORING AND REPORTING PROGRAM

To evaluate compliance with 301(h) requirements and State water quality standards, the Monitoring and Reporting Program (MRP) contained in this Order and NPDES Permit continues the existing program under Order No. 95-106, NPDES No. CA0107409 with minor changes. The MRP requires influent and effluent monitoring for conventional, non-conventional, and priority pollutants. Sludge monitoring, recordkeeping, and reporting requirements are consistent with 40 CFR 503. Pretreatment requirements are consistent with 40 CFR 403. Receiving environment monitoring requires receiving water sampling and analyses, benthic monitoring (sediment, infauna and fish monitoring), and kelp bed monitoring.

PROCEDURES FOR FINAL DECISION

On February 11, 2002, the USEPA and Regional Board notified the discharger and all known interested parties of their intent to jointly issue a 301(h)-modified NPDES permit and conduct a joint public hearing to take comment on these proposed actions. In accordance with 40 CFR 124.12, a public hearing is scheduled for March 13, 2002, 9:00 a.m., at the Regional Board office.

The Administrative Record, which includes the final 301(h)-modified NPDES permit and fact sheet, the draft 301(h)-modified NPDES permit and fact sheet, comments received and response to comments, permit application, 301(h) tentative decision, and other relevant documents are available for review at the addresses below. [Monday through Friday, between 9 a.m. and 5 p.m. at USEPA; and Monday, Tuesday, and Thursday at 1:30-4:30 p.m. and Tuesday, Wednesday, and Friday at 8:30-11:30 a.m. at the Regional Board, or call ahead to arrange other times.]

U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901
Telephone: (415) 972-3658

California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123
Telephone: (858) 467-2952

When a final 301(h)-modified NPDES permit is issued, it will become effective 33 days following the date of signature by the USEPA Water Division Director, unless a petition is filed with the Environmental Appeals Board to review any condition of the permit decision. Those persons filing a petition must have filed comments on the draft or participated in the public hearing. Otherwise, any such petition for administrative review may be filed only to the extent of the changes from the draft to the final permit decision. Petitions to the Environmental Appeals Board must be filed within 33 days following the receipt of the final permit decision and must meet the requirements of 40 CFR 124.19.

INTERESTED PARTIES LIST

Notice, Fact Sheet, , Tentative Order/NPDES Permit, and 301(h) Tentative Decision to:

John Richards
Office of Chief Counsel (OCC)
State and Regional Board Services
P.O. Box 100
Sacramento, CA 95812-0100

Janet Hashimoto
WTR-2
USEPA REGION 9
75 Hawthorne Street
San Francisco, CA 94105

Terry Fleming
WTR-2
USEPA REGION 9
75 Hawthorne Street
San Francisco, CA 94105

Robyn Stuber
WTR-5
USEPA REGION 9
75 Hawthorne Street
San Francisco, CA 94105

Doreen Stadtlander
U.S. Fish and Wildlife Service
2730 Locker Avenue, West
Carlsbad, CA 92008

Bob Hoffman
National Marine Fisheries Service
501 West Ocean Blvd., Suite 4200
Long Beach, CA 90802

Lauren Fondhal
WTR-7
USEPA REGION 9
75 Hawthorne St.
San Francisco, CA 94105-3901

Laurinda Owens
California Coastal Commission,
San Diego District
7575 Metropolitan Drive, Suite 103
San Diego, CA 92108-4402

Notice and Fact Sheet only to:

John Norton
State Water Resources Control Board
Compliance Assurance and Enforcement Unit
P.O. Box 100
Sacramento, CA 95812-0100

Chris Beegan
State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100

Terry Oda
WTR-5
USEPA REGION 9
75 Hawthorne Street
San Francisco, CA 94105

Keith Silva
WTR-7
USEPA REGION 9
75 Hawthorne Street
San Francisco, CA 94105

Bill Paznokas
California Department of Fish and Game,
South Coast Region
4949 Viewridge Drive
San Diego, CA 92123

Department of Health Services
County of San Diego
P.O. Box 85261
San Diego, California 92138-5261

Mark Delaplaine
California Coastal Commission
45 Fremont, Suite 2000
San Francisco, CA 94105-2219

San Diego BayKeeper
1450 Harbor Island Drive, Suite 205
San Diego, CA 92101

Marco A. Gonzalez
Surfrider Foundation, San Diego Chapter
215 South Hwy. 101, Ste. 206
Solana Beach, CA 92075

Mr. Bill Ullrich
Superintendent of Public Works
City of Chula Vista
707 F Street
Chula Vista, CA 91910

Mr. David L.Scherer
Public Works Director
City of Del Mar
1050 Camino del Mar
Del Mar, CA 92014-2698

Mr. Hank Levien
Public Works Director
City of Imperial Beach
825 Imperial Beach Blvd.
Imperial Beach, CA 91932

Mr. Burton Myers
Public Works Director/City Engineer
City of National City
1243 National City Blvd.
National City, CA 91950

Edward Kimura
Sierra Club, San Diego Chapter
6995 Camino Amero
San Diego, California 92111

Environmental Health Coalition
1717 Kettner Blvd., Suite 100
San Diego, CA 92101

Mr. John Snyder
Director of Public Works
County of San Diego
Department of Public Works
555 Overland Ave. Bldg. 2
San Diego, CA 92123

Mr. Scott W. Huth
Director of Public Services
City of Coronado
101 B Avenue
Coronado, CA 92118-1510

Mr. Al Cablay
Public Works Superintendent
City of El Cajon
1050 Vernon Way
El Cajon, CA 92020

Mr. Cameron Berkuti
City Engineer/Public Works Director
City of La Mesa
P.O. Box 937
8130 Allison Ave.
La Mesa, CA 91942

Mr. James R. Howell
Director of Public Works
City of Poway
P.O. Box 789
Poway, CA 92074-0789

Mr. Edward Wimmer
City Engineer
Lemon Grove Sanitation District
3232 Main Street
Lemon Grove, CA 91945

Mr. Harold E. Bailey
Director of Operations and Water Quality
Padre Dam Municipal Water District
9120 Carlton Oaks
Santee, CA 92072

Mr. Robert Griego
General Manager
Otay Water District
2554 Sweetwater Springs Blvd.
Spring Valley, CA 91978

February 11, 2002

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
AND
U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX

TENTATIVE MONITORING AND REPORTING PROGRAM NO. R9-2002-0025
DRAFT NPDES PERMIT NO. CA0107409

FOR THE CITY OF SAN DIEGO
E. W. BLOM POINT LOMA METROPOLITAN WASTEWATER TREATMENT PLANT

DISCHARGE TO THE PACIFIC OCEAN
THROUGH THE POINT LOMA OCEAN OUTFALL
SAN DIEGO COUNTY

Monitoring and Reporting Program (MRP) No. R9-2002-0025 supersedes and entirely replaces the monitoring and reporting requirements previously established by MRP No. 95-106. MRP No. R9-2002-0025 shall take effect upon the date of adoption by the California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board).

A. GENERAL MONITORING AND REPORTING PROVISIONS

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored waste stream. All samples shall be taken at the monitoring points specified in this MRP and, unless otherwise specified, before the waste stream joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall be subject to the approval of the Regional Board Executive Officer (hereinafter Executive Officer) and the U. S. Environmental Protection Agency, Region IX (hereinafter EPA), Water Division Director (hereinafter Director) and shall not be changed without notification to and the approval of the Executive Officer and the Director. Samples shall be collected at times representative of "worst case" conditions with respect to compliance with the requirements of Order No. R9-2002-0025.

2. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent

with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±5 percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under Title 40 of the Code of Federal Regulations Part 136 (40CFR 136), Guidelines Establishing Test Procedures for the Analysis of Pollutants, as amended, unless otherwise specified for sludge in 40CFR 503, or unless other test procedures have been specified in Order No. R9-2002-0025 and/or in this monitoring and reporting program.

4. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services in accordance with the provision of Section 13176 CWC or a laboratory approved by the Executive Officer.

5. Monitoring results must be reported on discharge monitoring report (DMR) forms approved by the Executive Officer.

6. If the discharger monitors any pollutant more frequently than required by this MRP, using test procedures approved under 40 CFR 136, or as specified in this MRP, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. The increased frequency of monitoring shall also be reported.

7. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this MRP, Order No. R9-2002-0025 and any enforcement order issued by the Regional Board, and records of all data used to complete the application for Order No. R9-2002-0025. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Executive Officer or Director. It is recommended that the discharger maintain the results of all analyses indefinitely.

8. Records of monitoring information shall include:

   a. The date, exact location, and time of sampling or measurements;

   b. The individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed;

   d. The laboratory and individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of all such analyses.

9. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in Order No. R9-2002-0025 or in this MRP. The discharger shall report the analysis results, calculation results, data, and equations used in calculations.

10. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices. Annually, the discharger shall submit to the Executive Officer a written statement signed by a registered professional engineer certifying that all flow measurement devices have been calibrated and will reliably achieve the accuracy required by General Monitoring and Reporting Provision A.2.

11. The discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. An annual report shall be submitted by March 30 of each year which summarizes the QA activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent of the samples or at least one sample per month, whichever is greater. The discharger must have a success rate equal to or greater than 80 percent. A similar frequency shall be maintained for analyzing spiked samples. When requested by EPA, the discharger will participate in the National Pollutant Discharge Elimination System (NPDES) discharger monitoring report quality assurance (QA) performance study.

12. The discharger shall report all instances of noncompliance not reported under 40 CFR 122.44 at the time monitoring reports are submitted. The reports shall contain the information listed in 40 CFR 122.44.

13. The monitoring reports shall be signed by an authorized person as required by 40 CFR 122.44.

14. A composite sample is generally defined as a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

The 100-milliliter minimum volume of an aliquot does not apply to automatic self-purging samplers.

15. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.

16. For all bacterial analyses, sample dilutions shall be performed so the range of values extends from 2 to 16,000. The detection method used for each analysis shall be reported with the results of the analysis.

17. Detection methods used for coliforms (total and fecal) shall be those presented in the most recent edition of Standard Methods for the Examination of Water and Wastewater or any improved method determined by the Regional Board (and approved by EPA) to be appropriate. Detection methods used for enterococcus shall be those presented in Test Methods for Escherichia coli and Enterococci in Water by Membrane Filter Procedure (EPA 600/4-85/076) or any improved method determined by the Executive Officer to be appropriate.

18. MRP No. R9-2002-0025 may be modified by the Regional Board and EPA to enable the discharger to participate in comprehensive regional monitoring activities conducted in the Southern California Bight during the term of this permit. The intent of regional monitoring activities is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled scientific resources of the region. During these coordinated sampling efforts, the discharger's sampling and analytical effort may be reallocated to provide a regional assessment of the impact of the discharge of municipal wastewater to the Southern California Bight. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and to determine cumulative impacts of various pollution sources. If predictable relationships among the biological, water quality and effluent monitoring variables can be demonstrated, it may be appropriate to decrease the discharger's sampling effort. Conversely, the monitoring program may be intensified if it appears that the objectives cannot be achieved through the dischargerÕs existing monitoring program. These changes will improve the overall effectiveness of monitoring in the Southern California Bight. Minor changes may be made without further public notice.

19. By July 1 of each year, the discharger shall submit an annual report to the Regional Board and EPA which contains tabular and graphical summaries of the monitoring data obtained during the previous year. The discharger shall discuss the compliance record and corrective actions taken, or which may be needed, to bring the discharge into full compliance with the requirements of Order No. R9-2002-0025 and this MRP. The report shall address operator certification and provide a list of current operating personnel and

their grade of certification. The report shall include the date of the facilities' Operations and Maintenance Manual, the date the manual was last reviewed, and a statement as to whether the manual is complete and valid for the current facilities. The report shall restate, for the record, the laboratories used by the discharger to monitor compliance with Order No. R9-2002-0025 and this MRP, and provide a summary of performance relative to the requirements in this MRP.

20. The discharger shall submit a monthly report containing the following information:

    a. The number of equivalent unit connections to the sewerage system at the beginning of the month.

    b. The number of new equivalent unit connections added to the sewerage system during the month.

    c. The increase in influent flow volume resulting from the unit connections described in (b) above.

    d. The number of equivalent unit connections which have been authorized but not yet connected.

    e. The anticipated increase in influent flow volume resulting from connecting the units described in (d) above.

21. The sampling frequency of "daily" means that samples shall be collected seven days per week. "Weekly" samples shall be collected such that each day of the week is represented during a seven week period.

22. Monitoring results shall be reported at intervals and in a manner specified in this MRP and Order No. R9-2002-0025. Monitoring reports shall be submitted to the Regional Board and to EPA according to the following schedule:

REPORTS	Report Period	Report Due
MONTHLY REPORTS Influent and Effluent Solids Removal/Disposal Receiving Water Quality Report Tijuana Cross-Border Emergency Connection (when flowing)	Monthly	By the 1st day of 2nd following month (e.g., March 1 for January)

QUARTERLY REPORTS Sludge Analysis	 January-March April-June July-September October-December	 June 1 September 1 December 1 March 1
SEMI-ANNUAL REPORTS Pretreatment Report	 January-June	 September 1
ANNUAL REPORTS Pretreatment Report (Provision A.19) Sludge analysis QA Report Flow measurement Outfall inspection Receiving waters monitoringreport Kelp report.	 January-December	 April 1 April 1 July 1 July 1 July 1 July 1 July 1

23. All influent, effluent, and receiving water data shall be submitted annually to EPA for inclusion in the STORET data base. The data shall be submitted in an electronic format specified by EPA.

B. INFLUENT AND EFFLUENT MONITORING

Influent monitoring is required to determine the effectiveness of pretreatment and nonindustrial source control programs, to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations. As such, influent monitoring results must accurately characterize raw wastewater from the entire service area of the treatment facilities, unaffected by in-plant or return or recycle flows or the addition of treatment chemicals.

Effluent monitoring is required to determine compliance with the permit conditions and to identify operational problems and improve plant performance. Effluent monitoring also provides information on wastewater characteristics and flows for use in interpreting water quality and biological data. The effluent sampling station shall be located where representative samples of the effluent can be obtained. The sampling station shall be located downstream from any in-plant return flows and from the last connection through which wastes can be admitted to the outfall.

Influent and effluent monitoring shall be conducted as shown in the following table. In addition monitoring of the waste flow in the standby emergency connection from the City of Tijuana, Mexico, shall be conducted as shown in the following table, whenever there is flow from Mexico and/or the SBIWTP through the connection.

INFLUENT AND EFFLUENT SAMPLING AND ANALYSIS REQUIREMENTS

CONSTITUENT	Unit	Sample type	Sampling frequency		
			Influent stream	Effluent stream	Emergency connection
flowrate	MGD	recorder/totalizer	Continuous	Continuous	Continuous
BOD_5@20°C	mg/l	24 hr. composite	Daily	Daily	Weekly
volatile suspended solids	mg/l	24 hr. composite	Daily	Daily	Weekly
total dissolved solids	mg/l	24 hr. composite	Daily	Daily	Weekly
temperature	°C	grab	Daily	Daily	Weekly
floating particulates	mg/l	24 hr. composite	Daily	Daily	Weekly
TABLE A parameters					
grease & oil	mg/l	grab	Daily	Daily	Weekly
total suspended solids	mg/l	24 hr. composite	Daily	Daily	Weekly
settleable solids	ml/l	grab	Daily	Daily	Weekly
turbidity	NTU	grab	Daily	Daily	Weekly
pH	units	grab	Daily	Daily	Weekly
Table B parameters for protection of marine aquatic life					
arsenic	ug/l	24 hr. composite	Weekly	Weekly	Weekly
cadmium	µg/l	24 hr. composite	Weekly	Weekly	Weekly
chromium (VI)[1]	µg/l	24 hr. composite	Weekly	Weekly	Weekly
copper	µg/l	24 hr. composite	Weekly	Weekly	Weekly
lead	µg/l	24 hr. composite	Weekly	Weekly	Weekly
mercury	µg/l	24 hr. composite	Weekly	Weekly	Weekly
nickel	µg/l	24 hr. composite	Weekly	Weekly	Weekly
selenium	µg/l	24 hr. composite	Weekly	Weekly	Weekly
silver	µg/l	24 hr. composite	Weekly	Weekly	Weekly
zinc	µg/l	24 hr. composite	Weekly	Weekly	Weekly
cyanide	µg/l	24 hr. composite	Weekly	Weekly	Weekly
ammonia (as N)	mg/l	24 hr. composite	Weekly	Weekly	Weekly

acute toxicity	TUa	24 hr. composite	-	Semi-annually	-
chronic toxicity	TUc	24 hr. composite	-	Monthly	-
phenolic compounds (nonchlorinated)	µg/l	24 hr. composite	Weekly	Weekly	Weekly
phenolic compounds (chlorinated)	µg/l	24 hr. composite	Weekly	Weekly	Weekly
endosulfan	µg/l	24 hr. composite	Weekly	Weekly	Weekly
endrin	µg/l	24 hr. composite	Weekly	Weekly	Weekly
HCH[2]	µg/l	24 hr. composite	Weekly	Weekly	Weekly
radioactivity	pci/l	24 hr. composite	Monthly	Monthly	Monthly
Table B parameters for protection of human health - non carcinogens					
acrolein	µg/l	grab	Monthly	Monthly	Monthly
antimony	µg/l	24 hr. composite	Monthly	Monthly	Monthly
bis(2-chloroethoxy) methane	µg/l	24 hr. composite	Monthly	Monthly	Monthly
bis(2-chloroisopropyl) ether	µg/l	24 hr. composite	Monthly	Monthly	Monthly
chlorobenzene	µg/l	grab	Monthly	Monthly	Monthly
chromium (III)[1]	µg/l	24 hr. composite	Monthly	Monthly	Monthly
di-n-butyl phthalate	µg/l	24 hr. composite	Monthly	Monthly	Monthly
dichlorobenzenes[3]	µg/l	24 hr composite	Monthly	Monthly	Monthly
diethyl phthalate	µg/l	24 hr. composite	Monthly	Monthly	Monthly
dimethyl phthalate	µg/l	24 hr. composite	Monthly	Monthly	Monthly
4,6-dinitro-2-methylphenol	µg/l	24 hr. composite	Monthly	Monthly	Monthly
2,4-dinitrophenol	µg/l	24 hr. composite	Monthly	Monthly	Monthly
ethylbenzene	µg/l	grab	Monthly	Monthly	Monthly
fluoranthene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
hexachlorocyclopentadiene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
nitrobenzene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
thallium	µg/l	24 hr. composite	Monthly	Monthly	Monthly
toluene	µg/l	grab	Monthly	Monthly	Monthly

tributyltin	µg/l	24 hr. composite	Monthly	Monthly	Monthly
1,1,1-trichloroethane	µg/l	grab	Monthly	Monthly	Monthly
Table B parameters for protection of human health - carcinogens					
acrylonitrile	µg/l	grab	Monthly	Monthly	Monthly
aldrin	µg/l	24 hr. composite	Weekly	Weekly	Weekly
benzene	µg/l	grab	Monthly	Monthly	Monthly
benzidine	µg/l	24 hr composite	Monthly	Monthly	Monthly
beryllium	µg/l	24 hr. composite	Monthly	Monthly	Monthly
bis(2-chloroethyl) ether	µg/l	24 hr. composite	Monthly	Monthly	Monthly
bis(2-ethylhexyl) phthalate	µg/l	24 hr. composite	Monthly	Monthly	Monthly
carbon tetrachloride	µg/l	grab	Monthly	Monthly	Monthly
chlordane[5]	µg/l	24 hr. composite	Weekly	Weekly	Weekly
chlorodibromomethane	µg/l	24 hr. composite	Monthly	Monthly	Monthly
chloroform	µg/l	grab	Monthly	Monthly	Monthly
DDT[6]	µg/l	24 hr. composite	Weekly	Weekly	Weekly
1,4-dichlorobenzene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
3,3'-dichlorobenzidine	µg/l	24 hr. composite	Monthly	Monthly	Monthly
1,2-dichloroethane	µg/l	grab	Monthly	Monthly	Monthly
1,1-dichloroethylene	µg/l	grab	Monthly	Monthly	Monthly
dichlorobromomethane	µg/l	24 hr. composite	Monthly	Monthly	Monthly
dichloromethane	µg/l	grab	Monthly	Monthly	Monthly
1,3-dichloropropene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
dieldrin	µg/l	24 hr. composite	Weekly	Weekly	Weekly
2,4-dinitrotoluene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
1,2-diphenylhydrazine	µg/l	24 hr. composite	Monthly	Monthly	Monthly
halomethanes[7]	µg/l	24 hr. composite	Monthly	Monthly	Monthly
heptachlor	µg/l	24 hr. composite	Monthly	Monthly	Monthly
hepthachlor epoxide		24 hr. composite	Monthly	Monthly	Monthly

hexachlorobenzene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
hexachlorobutadiene	µg/l	24 hr. composite	Monthly	Monthly	Monthly
hexachloroethane	µg/l	24 hr. composite	Monthly	Monthly	Monthly
isophorone	µg/l	24 hr. composite	Monthly	Monthly	Monthly
N-nitrosodimethylamine	µg/l	24 hr. composite	Monthly	Monthly	Monthly
N-nitroso-di-N-propylamine		24 hr. composite	Monthly	Monthly	Monthly
N-nitrosdiphenylamine	µg/l	24 hr. composite	Monthly	Monthly	Monthly
PAHs[8]	µg/l	24 hr. composite	Monthly	Monthly	Monthly
PCBs[9]	µg/l	24 hr. composite	Weekly	Weekly	Weekly
1,1,2,2-tetrachloroethane	µg/l	grab	Monthly	Monthly	Monthly
TCDD equivalents[10]	µg/l	24 hr. composite	Monthly	Monthly	Monthly
tetrachloroethylene	µg/l	grab	Monthly	Monthly	Monthly
toxaphene	µg/l	24 hr. composite	Weekly	Weekly	Weekly
trichloroethylene	µg/l	grab	Monthly	Monthly	Monthly
1,1,2-trichloroethane	µg/l	grab	Monthly	Monthly	Monthly
2,4,6-trichlorophenol	µg/l	24 hr. composite	Monthly	Monthly	Monthly
vinyl chloride	µg/l	grab	Monthly	Monthly	Monthly
remaining "priority pollutants"	µg/l	24 hr. composite	Monthly	Monthly	Monthly

SAMPLING OF RETURN STREAMS

Parameter	Units	Sample type	Sampling frequency
flowrate	MGD	recorder/totalizer	continuous
total suspended solids	mg/l	24 hr. composite	daily
BOD_5@20°C	mg/l	24 hr. composite	daily

The discharger shall report the Mass Emission Rate (MER) in lb/day or mt/yr for all constituents that have MER effluent limitations or MER benchmarks established by Discharge Specifications B.1 and/or B.11 of Order No. R9-2002-0025. The discharger shall also report the concentration and flowrate used to calculate the MER for each constituent.

The system-wide percent removals of TSS and BOD_5 shall be calculated using the following formula (mass emissions in metric tons):

$$\% \text{ Removal (TSS or } BOD_5) = \frac{(\text{System Influents} - \text{Return Streams}) - \text{Outfall Discharge}}{\text{System Influents} - \text{Return Streams}} \times 100$$

Where,

System Influents	=	PLMWTP Influent, NCWRP [make sure this term has previously been defined] Influent Pump Station, and NCWRP Influent from Penasquitos Pump Station.
Return Streams	=	NCWRP Filter Backwash, NCWRP Plant Drain, NCWRP Secondary and Un-disinfected Filtered Effluent Bypass, NCWRP Final Effluent, and MBC Centrate

The TSS and BOD_5 concentration, together with flow rate, of each stream shall be measured daily and a system-wide removal rate calculated according to the above formula. In the event that a flow rate measurement, TSS concentration, or BOD_5 concentration is not obtained from a stream, the median value for the previous calendar year for that stream shall be used as a surrogate number to allow completion of the calculation. The discharger shall be required to flag values where surrogate numbers are used in their self-monitoring reports submitted to the Regional Board. The failure to obtain a value may still be considered a violation of the permit that could result in enforcement action depending on the frequency of failures and efforts by the discharger to prevent such failures.

C. SLUDGE MONITORING REQUIREMENTS

1. General sludge monitoring and reporting requirements are contained in Sludge Requirements, Section I, of Order No. R9-2002-0025.

D. RECEIVING ENVIRONMENT MONITORING

Receiving environment monitoring shall be conducted as specified below. Station location, sample type, sample preservation, and analyses, when not specified, shall be by methods approved by the Executive Officer and Director.

Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of this MRP shall include, as a minimum, the following information:

- A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.).

- A description of sampling stations, including differences unique to each station (e.g., station location, sediment grain size, distribution of bottom sediments, rocks, shell litter, calcareous worm tubes, etc.).
- A description of the sample collection and preservation procedures used in the survey.
- A description of the specific method used for laboratory analysis.
- An in-depth discussion of the results of the survey. All tabulations and computations shall be explained.

1. Sampling Stations

a. Offshore Water Quality Stations. Offshore stations shall be located and numbered as follows:

Station	Depth (m)	N. Latitude	W. Longitude	Descriptor
A1	18	32° 39.56'	117° 15.72'	
A2	59	32° 39.37'	117° 16.68'	
A5	62	32° 41.32'	117° 17.27'	
A6	18	32° 41.56'	117° 16.18'	
A7	18	32° 40.53'	117° 16.01'	
A8	63	32° 39.84'	117° 16.84'	
A9	63	32° 40.83'	117° 17.12'	
A10	47	32° 39.50'	117° 16.13'	
A12	47	32° 40.47'	117° 16.42'	
A14	47	32° 41.43'	117° 16.63'	
A15	61	32° 40.10'	117° 16.90'	
A16	61	32° 40.58'	117° 17.05'	
B1	62	32° 35.00'	117° 16.18'	
B2	18	32° 46.00'	117° 16.18'	
B3	59	32° 45.42'	117° 18.38'	
B5	60	32° 49.25'	117° 19.60'	

B8	88	32° 45.50'	117° 20.77'	
B9	98	32° 45.33'	117° 21.70'	10.5 Km north of diffuser "Y"
B10	116	32° 45.22'	117° 22.16'	
B11	88	32° 46.57'	117° 21.35'	
B12	98	32° 46.36'	117° 22.30'	12.7 Km north of diffuser "Y"
B13	116	32° 46.38'	117° 22.64'	
C4	9	32° 39.88'	117° 14.93'	0.75 Km seaward of Station D4
C5	9	32° 40.67'	117° 15.36'	0.75 Km seaward of Station D5
C6	9	32° 41.36'	117° 15.64'	0.75 Km seaward of Station D6
C7	18	32° 42.98'	117° 16.33'	1.5 Km seaward of Station D7
C8	18	32° 43.96'	117° 16.40'	1.5 Km seaward of Station D8
E1	88	32° 37.53'	117° 18.35'	
E2	98	32° 37.45'	117° 19.09'	4.6 Km south of diffuser "Y"
E3	116	32° 37.29'	117° 20.09'	
E4	88	32° 38.50'	117° 18.57'	
E5	98	32° 38.38'	117° 19.28'	3.1 Km south of diffuser "Y"
E6	116	32° 38.28'	117° 20.00'	
E7	88	32° 39.00'	117° 18.65'	
E8	98	32° 38.91'	117° 19.34'	2.1 Km south of diffuser "Y"
E9	116	32° 38.75'	117° 20.06'	
E10	88	32° 39.50'	117° 18.81'	
E11	98	32° 39.40'	117° 19.42'	1.2 Km south of diffuser "Y"
E12	116	32° 39.37'	117° 19.96'	
E13	88	32° 40.01'	117° 18.89'	
E14	98	32° 39.94'	117° 19.49'	0.3 Km west of diffuser "Y"
E15	116	32° 39.88'	117° 19.91'	
E16	88	32° 40.52'	117° 19.07'	
E17	98	32° 40.48'	117° 19.54'	0.9 Km north of diffuser "Y"

E18	116	32° 40.38'	117° 19.88'	
E19	88	32° 41.04'	117° 19.18'	
E20	98	32° 40.96'	117° 19.67'	1.8 Km north of diffuser "Y"
E21	116	32° 40.89'	117° 20.00'	
E22	88	32° 41.58'	117° 19.25'	
E23	98	32° 41.47'	117° 19.77'	2.7 Km north of diffuser "Y"
E24	116	32° 41.40'	117° 20.06'	
E25	98	32° 42.38'	117° 20.07'	4.5 Km north of diffuser "Y"
E26	98	32° 43.82'	117° 20.57'	7.3 Km north of diffuser "Y"

b. Shore Stations. Shore stations shall be located and numbered as follows:

Station	N. Latitude	W. Longitude	Description
D1	32° 35.08'	117° 07.96'	Approx. 480 m (1600 ft) north of the pier at the end of Palm Ave in Imperial Beach
D2	32° 38.22'	117° 08.65'	Silver Strand State Beach, Area 4, just west of the Coronado Cays
D3	32° 40.58'	117° 10.74'	At the foot of Avenida del Sol seaward of the Hotel del Coronado
D4	32° 39.94'	117° 14.62'	Located at the southernmost tip of Point Loma just north of the lighthouse
D5	32° 40.85'	117° 14.94'	Directly in front of the Point Loma Wastewater Treatment plant where the outfall pipe enters the ocean
D6	32° 41.92'	117° 15.36'	Approx. 1260 m (4150 ft) north of the outfall pipe at NOSC seawater pump station
D7	32° 43.16'	117°15.44'	Sunset Cliffs at the foot of the stairs seaward of Ladera Street
D8	32° 44.22'	117°15.32'	Ocean Beach at the foot of the stairs seaward of Bermuda Street
D9	32° 44.80'	117°15.24'	Just south of the Ocean pier at the foot of the stairs seaward of Narragansett Street

c. Fish trawl and rig fish stations. Trawl stations shall be located and numbered as follows:

Station	Depth (m)	N. Latitude	W. Longitude
SD1	61	32° 46.40	117° 18.60

SD3	61	32° 41.76	117° 17.30
SD6	61	32° 39.47	117° 16.85
SD7	100	32° 35.06	117° 18.39
SD8	100	32° 37.54	117° 19.37
SD9	90	32° 39.24	117° 18.84
SD10	100	32° 39.16	117° 19.50
SD11	90	32° 40.32	117° 19.15
SD12	100	32° 40.25	117° 19.56
SD13	100	32° 42.83	117° 20.25
SD14	100	32° 44.30	117° 20.96
Rig fish stations shall be located in an area centered around the following sites			
RF1	107	32° 40.32	117° 19.78
RF2	96	32° 45.67	117° 22.02

2. Receiving Water Sampling and Analyses Requirements .

Receiving water monitoring shall be conducted as shown in the following table:

Parameters	Units	Stations	Sample type	Sampling Frequency	Reporting Frequency
visual observations	---	A1, A2, A5-A7, A10, A12, A14, B1-B3, B5, B8-B13, C4-C8, D1-D9, E2, E4-E25	visual	monthly	monthly
temperature	°C	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B8-B13, C4-C8, E2, E4-E25	profile	monthly	monthly
salinity	ppt	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B8-B13, C4-C8, E2, E4-E25	profile	monthly	monthly
dissolved oxygen	mg/l	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B8-B13, C4-C8, E2, E4-E25	profile	monthly	monthly

light transmittance	%	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B8-B13, C4-C8, E2, E4-E25	profile	monthly	monthly
secchi disk	m	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B8-B13, C4-C8, E2, E4-E25	visual	monthly	monthly
total suspended solids	mg/l	A1, A2, A5-A7, A10, A12, A14, B1, B3, B5, B9, B12, C4-C8, E2, E5, E8, E10, E12, E14, E16, E18	grab	monthly	monthly
oil and grease	mg/l	A1, A2, A5-A7, B1, B3, B5, B9, B12, E2, E5, E8, E10, E12, E14, E16, E18	grab	monthly	monthly
pH	units	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B8-B13, C4-C8, E2, E4-E25	profile	monthly	monthly
total and fecal coliforms	CFU/ 100 ml	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B9, B12, C4-C8, D1-D9, E2, E5, E8, E10, E12, E14, E16, E18	grab	weekly-monthly	monthly
enterococcus	CFU/ 100 ml	A1, A2, A5-A7, A10, A12, A14, B1- B3, B5, B9, B12, C4-C8, D1-D9, E2, E5, E8, E10, E12, E14, E16, E18	grab	weekly-monthly	monthly
kelp	---	---	aerial photos	annually	annually

Visual observations of the surface water conditions at the designated receiving water stations shall be conducted in such a manner to enable the observer to describe and to report the presence, if any, of floatables of sewage origin. Observations of wind (direction and speed), weather (e.g., cloudy, sunny, or rainy), current (e.g., direction), and tidal conditions (e.g., high or low tide) shall be recorded. Observations of water color, discoloration, oil and grease, turbidity, odor, materials of sewage origin in the water or on the beach shall be recorded. These observations shall be taken whenever a sample is collected (generally monthly). Observations at shoreline stations D1 through D9, shall occur on a more frequent basis (weekly or every two weeks) corresponding with the increased frequency of shoreline bacterial monitoring during certain times of the year (see below).

Total suspended solids shall be measured monthly at three depths (1 meter below the surface, mid-depth and bottom). Oil and grease shall be measured monthly in surface waters (top 1 meter). Temperature, salinity, dissolved oxygen, light transmittance and pH shall be measured

monthly throughout the entire water column using probes (e.g., XBTs, CTDs) or meters (e.g., DO, pH). Suspended solids, secchi disc and light transmittance measurements shall be taken on the same day and as close together in time as possible.

Total coliforms, fecal coliforms and enterococcus shall be sampled at nine shore stations (D1-D9) according to the following schedule. Weekly from May 1 through October 31 and every two weeks from November 1 through April 30.

Total coliforms, fecal coliforms and enterococcus shall be sampled at eight kelp bed stations (A1, A6, A7, C4, C5, C6, C7, C8) shall be monitored at least five times per month, such that each day of the week is represented over a two month period. Samples shall be collected from three depths (1 m below the surface, mid-depth and bottom).

Total coliforms, fecal coliforms and enterococcus shall be measured at least monthly at the remaining offshore stations at the following depth increments. Station B2, shall be sampled at three depths (1 m, 12 m and 18 m). Stations along the 45-meter (A10, A12, A14) shall be sampled at two depths (1 m and 40 m). Stations along the 200-foot contour (A2, A5, B1, B3, B5) shall be sampled at three depths (1 m, 40 m and 60 m) Stations along the 88-meter contour (E10 and E16) shall be sampled at five depths (1 m, 40 m, 60 m, 80 m and 88 m). Stations along the 98-meter contour (E2, E5, E8, E14, B9, B12) shall be sampled at five depths (1 m, 40 m, 60 m, 80 m and 98 m). Stations along the 116-m contour (E12, E18) shall be sampled at six depths (1 m, 40 m, 60 m, 80 m, 98 m , and 116 m).

3. Benthic Monitoring Requirements

a. <u>Sediment Sampling and Analyses Requirements</u>. Sediment samples shall be collected on a quarterly basis from twenty-three stations (B8-B13, E1-3, E5, E7-9, E11, E14, E15, E17, E19-21, E23, E25, E26) using a 0.1-m^2 modified Van Veen grab sampler. Sediment samples for chemical analyses shall be taken from the top 2 cm of the grab. These samples shall be analyzed for the set of constituents as listed below. For sediment chemistry ambient monitoring may be conducted using EPA approved or methods developed by NOAA's National Status and Trends Program for Marine Environmental Quality or methods developed in conjunction with the Southern California Bight Regional Monitoring Program. For chemical analysis of sediment, samples shall be reported on a dry weight basis.

Parameter	*Units*	*Sample type*	*Frequency*
Sediment grain size	µm	grab	quarterly
Total Organic Carbon	%	grab	quarterly
Total Nitrogen	%	grab	quarterly
Acid soluble sulfides	mg/kg	grab	quarterly

Metals			
Aluminum	mg/kg	grab	quarterly
Antimony	mg/kg	grab	quarterly
Arsenic	mg/kg	grab	quarterly
Cadmium	mg/kg	grab	quarterly
Chromium	mg/kg	grab	quarterly
Copper	mg/kg	grab	quarterly
Iron	mg/kg	grab	quarterly
Lead	mg/kg	grab	quarterly
Manganese	mg/kg	grab	quarterly
Mercury	mg/kg	grab	quarterly
Nickel	mg/kg	grab	quarterly
Selenium	mg/kg	grab	quarterly
Silver	mg/kg	grab	quarterly
Tin	mg/kg	grab	quarterly
Zinc	mg/kg	grab	quarterly
PCBs and Chlorinated Pesticides			
PCBs[11]	ng/kg	grab	quarterly
2,4'-DDD	ng/kg	grab	quarterly
4,4'-DDD	ng/kg	grab	quarterly
2,4'-DDE	ng/kg	grab	quarterly
4,4'-DDE	ng/kg	grab	quarterly
2,4'-DDT	ng/kg	grab	quarterly
4,4'-DDT	ng/kg	grab	quarterly
Aldrin	ng/kg	grab	quarterly
alpha-Chlordane	ng/kg	grab	quarterly
Dieldrin	ng/kg	grab	quarterly
Endosulfan	ng/kg	grab	quarterly

Endrin	ng/kg	grab	quarterly
gamma-BHC	ng/kg	grab	quarterly
Heptachlor	ng/kg	grab	quarterly
Heptachlor epoxide	ng/kg	grab	quarterly
Hexachlorobenzene	ng/kg	grab	quarterly
Mirex	ng/kg	grab	quarterly
Trans-nonachlor	ng/kg	grab	quarterly
Polycyclic Aromatic Hydrocarbons			
Acenapthene	ug/kg	grab	quarterly
Acenaphthylene	ug/kg	grab	quarterly
Anthracene	ug/kg	grab	quarterly
Benz(a)anthracene	ug/kg	grab	quarterly
Benzo(b)fluoranthene	ug/kg	grab	quarterly
Benzo(k)fluoranthene	ug/kg	grab	quarterly
Benzo(ghi)pyrelene	ug/kg	grab	quarterly
Benzo(a)pyrene	ug/kg	grab	quarterly
Benzo(e)pyrene	ug/kg	grab	quarterly
Biphenyl	ug/kg	grab	quarterly
Chrysene	ug/kg	grab	quarterly
Dibenz(ah)anthracene	ug/kg	grab	quarterly
Fluoranthene	ug/kg	grab	quarterly
Fluorene	ug/kg	grab	quarterly
Indeno(123cd)pyrene	ug/kg	grab	quarterly
Naphthalene	ug/kg	grab	quarterly
1-Methylnaphthalene	ug/kg	grab	quarterly
2-Methylnaphthalene	ug/kg	grab	quarterly
2,6-Dimethylnaphthalene	ug/kg	grab	quarterly
2,3,5-Trimethylnaphthalene	ug/kg	grab	quarterly

Perylene	ug/kg	grab	quarterly
Phenanthrene	ug/kg	grab	quarterly
1-Methylphenanthrene	ug/kg	grab	quarterly
Pyrene	ug/kg	grab	quarterly

b. Infauna Monitoring. For analyses of benthic infauna, two replicate samples of bottom sediments shall be collected and analyzed quarterly from the following 21 stations: B8-B13, E2, E5, E7-E9, E11, E14, E15, E17, E19-E21, E23, E25, and E26.

The benthic infaunal samples shall be collected using a 0.1-m^2 modified Van Veen grab. These sample grabs shall be separate from those collected for sediment analyses. The samples shall be sieved using a 1.0-mm mesh screen. The benthic organisms retained on the sieve shall be fixed in fifteen percent buffered formalin, and transferred to 70 percent ethanol within two to seven days for storage. All organisms, including infauna organisms, obtained during benthic monitoring shall be counted and identified to as low a taxon as possible. This enumeration and identification of organisms continues the historical data base developed by the discharger. This information shall be submitted quarterly. Biomass shall be estimated from wet weight measurements for each of the following taxa: molluscs, echinoderms, polychaetes, crustaceans and other taxa.

Community analyses shall consist of number of species, number of individuals per species and total numerical abundance, and biomass. Quarterly reports shall consist of the raw data (number of individuals per species) along with analysis of community parameters. Community parameters shall be summarized per station as:

Number of species per 0.1 m^2
Total number of species per station
Total numerical abundance
Biomass
Infaunal trophic index
Swartz' 75% dominance index
Shannon-Weiner's diversity index (H')
Pielou evenness (J')

Annual reports will include community parameters along with more detailed statistical comparisons including community, temporal, and spatial analyses. Methods may include, but are not limited to, various multivariate analyses such as cluster analysis, ordination, and regression. The discharger should also conduct additional analyses, as appropriate, to elucidate temporal and spatial trends in the data.

c. **Fish Monitoring**. Fish trawls shall be conducted to assess the community structure of demersal fish and macro-invertebrates and the presence of priority pollutants in fish. Single trawls for demersal fish and macro-invertebrates shall be conducted semiannually at three trawl stations (SD1, SD3, and SD6) and quarterly at each of eight trawl stations (SD7-SD14). Trawls shall be conducted using a Marinovich 7.62 m (25 ft) head rope otter trawl, using the guidance specified in the field manual developed for the Southern California Bight Pilot Project. Captured organisms shall be identified at all stations (SD1-SD14).

Fish collected by trawls should be identified to species. At all station, community structure analysis should be conducted. Community structure analysis consists of the wet weight of each species, number of individuals per species, total numerical abundance, species richness, species diversity (i.e., Shannon-Wiener), multivariate pattern analyses (e.g., ordination and classification analyses). Abnormalities and disease symptoms shall be recorded and itemized (e.g., fin erosion, internal and external lesions, tumors).

Chemical analyses of fish tissue shall be performed semiannually on selected target species from SD7-SD14. The list of constituents shall be the same as for sediments with the exception that total lipids will be measured instead of organic carbon, nitrogen and sulfides. The species targeted for analysis will be selected for their ecological or commercial importance and abundance at each sampling location. Three replicate composite samples shall be prepared from each trawl station for both liver and muscle tissue. Each composite sample shall consist of tissues taken from at least three fish of the same species.

The species targeted for analysis at the trawl stations shall be primarily flatfish. The targeted species include but are not limited to the following: Pacific sanddab (Citharichthys sordidus), longfin sanddab (Citharichthys xanthostigma), speckled sanddab (Citharichthys stigmaeus), bigmouth sole (Hippoglossina stomata), or hornyhead turbot (Pleuronichthys verticalis). The California scorpionfish (Scorpaena guttata) and the halfbanded rockfish (Sebastes semicinctus) shall be targeted at sites that do not contain sufficient number of flatfish.

Rig fishing shall be performed semiannually to monitor the uptake of pollutants in fish which are consumed by man in order to determine the impact on public health, and to assess the impacts on local fish populations. Twice each year, fish shall be collected by hook and line or by setting baited lines from within the zone of initial dilution (ZID) and at some point removed from the ZID. The fish shall be representative of those caught by recreational and commercial fishermen in the area. Fish samples shall be identified as to species, number of individuals per species, standard length and wet weight. Physical abnormalities and disease symptoms shall be recorded and itemized (e.g., fin rot, internal and external lesions, and tumors).

Three replicate composite samples of the target species shall be obtained from each station. Each composite shall consist of a minimum of three individuals. Tissue shall be chemically analyzed for the same set of constituents as trawl-caught fish. The species targeted for analysis at the rig

fishing stations shall be primarily rockfish. The selected species will be representative of a typical sport fisherman's catch. These include but are not limited to: greenbotched rockfish (Sebastes rosenblatti); canary rockfish (Sebastes pinniger), squarespot rockfish (Sebastes hopkinsi), and additional species of the genus Sebastes.

4. Remote Sensing.

The discharger shall participate and coordinate with state and local agencies and other dischargers in the San Diego Region in the development and implementation of a remote sensing monitoring program for the trans border ocean region. This remote sensing monitoring program is intended to identify and track (in near real time) the fate and transport of the effluent from the Point Loma Ocean Outfall, the South Bay Ocean Outfall, wet weather discharge from the Tijuana River, and other sources of coastal sewage and stormwater plumes in the area. This program will focus on obtaining satellite and aircraft imagery in an area extending up to 100 Km North and 100 Km south of the US-Mexico Border and up to 15 Km offshore. The discharger shall provide both technical and financial assistance with the implementation of this program.

5. Kelp Bed Monitoring.

Kelp bed monitoring is intended to assess the extent to which the discharge of wastes may affect the areal extent and health of coastal kelp beds. The discharger shall participate with other ocean dischargers in the San Diego Region in an annual regional kelp bed photographic survey. Kelp beds shall be monitored annually by means of vertical aerial infrared photography to determine the maximum areal extent of the region's coastal kelp beds within the calender year. Surveys shall be conducted as close as possible to the time when kelp bed canopies cover the greatest area. The entire San Diego Region coastline, from the international boundary to the San Diego Region/Santa Ana Region boundary shall be photographed on the same day. The images produced by the surveys shall be presented in the form of a 1:24,000 scale phot-mosaic of the entire San Diego Region coastline. Onshore reference points, locations of all ocean outfalls and diffusers, and the 30-foot (MLLW) and 60-foot (MLLW) depth contours shall be shown. The areal extent of the various kelp beds photographed in each survey shall be compared to that noted in surveys of previous years. Any significant losses which persist for more than one year shall be investigated by divers to determine the probable reason for the loss.

Table Footnotes

1. The discharger may, at its option, meet the effluent limitation and effluent mass emission benchmark for chromium (VI) or chromium (III) as a total chromium limitation and benchmark.

2. Endosulfan shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.

3. HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

4. Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

5. Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

6. DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

7. Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide), chloromethane (methyl chloride).

8. PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

9. PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

10. TCDD equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

11. For sediment and fish tissue PCBs shall mean the sum of the following congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149,

151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, 206. These represent concensus based numbers developed by agencies participating in offshore regional monitoring programs in Southern California. These 41 congeners are thought to represent the most-important PCB congeners in terms of mass and toxicity.

Briefing Papers for OWOW Review of Region IX's Wetlands Program
11-13 February 2002

Table of Contents

Briefing Papers for OWOW Review of Region IX's Wetlands Program
11-13 February 2002

Table of Contents (cont.)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OFFICE OF THE
REGIONAL ADMINISTRATOR

In Re:

CITY OF SAN DIEGO'S POINT LOMA WASTEWATER TREATMENT PLANT, APPLICATION FOR A MODIFIED NPDES PERMIT UNDER SECTION 301(h) OF THE CLEAN WATER ACT	TENTATIVE DECISION OF THE REGIONAL ADMINISTRATOR PURSUANT TO 40 CFR PART 125, SUBPART G

I have reviewed the attached evaluation analyzing the merits of the application of the City of San Diego for the Point Loma Wastewater Treatment Plant and Ocean Outfall requesting a modification from secondary treatment requirements of the Clean Water Act (the Act). It is my tentative decision that the Point Loma Wastewater Treatment Plant and Ocean Outfall be granted a modification in accordance with the terms, conditions and limitations of the attached evaluation, subject to concurrence by the State of California with the granting of a modification as required by section 301(h) of the Act. USEPA Region 9 will prepare a draft modified National Pollutant Discharge Elimination System (NPDES) permit in accordance with this decision.

Because my decision is based on available evidence specific to this particular discharge, it is not intended to assess the need for secondary treatment in general, nor does it reflect on the necessity for secondary treatment by other publicly owned treatment works discharging to the marine environment. This decision and the NPDES permit implementing this decision are subject to revision on the basis of subsequently acquired information relating to the impacts of the less-than-secondary discharge on the marine environment.

Under the procedures of the Permit Regulations, 40 CFR Part 124 (45 Fed. Reg. 33848 *et seq.*) public notice, comment and administrative appeals regarding this decision and accompanying draft NPDES permit will be made available to interested persons.

Dated: 08 FEBRUARY 2002

Wayne Nastri
Regional Administrator

RECEIVED
FEB 14 2002
CALIFORNIA
COASTAL COMMISSION

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

The City of San Diego, California, (the applicant) is requesting the renewal of a modification under section 301(h) of the Clean Water Act (the Act), 33 U.S.C. section 1311(h), from the secondary treatment requirements contained in section 301(b)(l)(B) of the Act, 33 U.S.C. section 1311(b)(l)(B). The applicant was given the opportunity to apply for a 301(h) waiver under the Ocean Pollution Reduction Act of 1994, 33 U.S.C. § 301(j)(5) (OPRA). The applicant submitted the application on April 26, 1995. The USEPA issued a tentative decision to grant the waiver on August 14, 1995. The final decision and permit were issued on November 9, 1995. This became effective December 12, 1995. The applicant submitted its application for renewal on April 10, 2001.

The modification is being sought for the Point Loma Wastewater Treatment Plant (WWTP), a publicly owned treatment works (POTW). The applicant is seeking a 301(h) modification to discharge wastewater receiving less-than-secondary treatment to the Pacific Ocean. Secondary treatment is defined in regulations (40 CFR Part 133) in terms of effluent quality for suspended solids (SS), biochemical oxygen demand (BOD) and pH. The secondary treatment requirements for SS, BOD and pH are listed below:

SS: (1) The 30-day average shall not exceed 30 mg/l. (2) The 7-day average shall not exceed 45 mg/l. (3) The 30-day average percent removal shall not be less than 85%

BOD: (1) The 30-day average shall not exceed 30 mg/l. (2) The 7-day average shall not exceed 45 mg/l. (3) The 30-day average percent removal shall not be less than 85%.

pH: The effluent limits for pH shall be maintained within the limits of 6.0 to 9.0 pH units

The application is based on an improved discharge, as defined by 40 CFR 125.58(g) and qualifies as a large discharge as defined in 40 CFR 125.58(c). The applicant is requesting a modification for BOD and SS. The proposed effluent limits would require the removal of 80% of SS as a monthly average and the removal of 58% of BOD as an annual average. In addition suspended solids loadings to the ocean would be less than 13,600 metric tons/year. These limits satisfy sections 301(h) and (j)(5) of the CWA.[1]

This document presents findings, conclusions and recommendations of the Environmental Protection Agency (USEPA) Region 9 regarding the compliance of the applicant's proposed discharge with the criteria set forth in section 301(h) of the Act as implemented by regulations contained in 40 CFR Part 125, Subpart G (47 Fed. Reg. 53666, November 26, 1982) and other appropriate guidance.

---

[1]This decision is issued without prejudice to the rights of any party to address the legal issue of the applicability of 33 U.S.C. § 1311(j)(5) to the City's future NPDES permits.

DECISION CRITERIA

Under section 301(b)(1)(B) of the Act, 33 U.S.C. section 1311(b)(1)(B), POTWs in existence on July 1, 1977, were required to meet effluent limitations based upon secondary treatment as defined by the Administrator of EPA (the Administrator). Secondary treatment has been defined by the Administrator in terms of three parameters: biochemical oxygen demand (BOD), suspended solids (SS), and pH. Uniform national effluent limitations for these pollutants were promulgated and included in National Pollutant Discharge Elimination System (NPDES) permits for POTWs issued under section 402 of the Act. POTWs were required to comply with these limitations by July 1, 1977.

Congress subsequently amended the Act, adding section 301(h) which authorizes the Administrator, with State concurrence, to issue NPDES permits which modify the secondary treatment requirements of the Act. P.L. 95-217, 91 Stat. 1566, as amended by, P.L. 97-117, 95 Stat. 1623; and section 303 of the Water Quality Act (WQA) of 1987. Section 301(h) provides that:

> *The Administrator, with the concurrence of the State, may issue a permit under section 402 [of the Act] which modifies the requirements of subsection (b)(1)(B) of this section [the secondary treatment requirements] with respect to the discharge of any pollutant from a publicly owned treatment works into marine waters, if the applicant demonstrates to the satisfaction of the Administrator that:*
>
> *(1) there is an applicable water quality standard specific to the pollutant for which the modification is requested, which has been identified under section 304(a)(6) of this Act;*
>
> *(2) such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced, indigenous population (BIP) of shellfish, fish and wildlife, and allows recreational activities, in and on the water;*
>
> *(3) the applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of the monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;*
>
> *(4) such modified requirements will not result in any additional requirements on any other point or nonpoint source;*
>
> *(5) all applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;*
>
> *(6) in the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for*

which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;

(7) to the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

(8) there will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;

(9) the applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) of the Clean Water Act after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged.

For the purposes of this subsection the phrase "the discharge of any pollutant into marine waters" refers to a discharge into deep waters of the territorial sea or the waters of the contiguous zone, or into saline estuarine waters where there is strong tidal movement and other hydrological and geological characteristics which the Administrator determines necessary to allow compliance with paragraph (2) of this subsection, and section 101(a)(2) of this Act. For the purposes of paragraph (9), "primary or equivalent treatment" means treatment by screening, sedimentation and skimming adequate to remove at least 30 percent of the biochemical oxygen demanding material and of the suspended solids in the treatment works influent, and disinfection, where appropriate. A municipality which applies secondary treatment shall be eligible to receive a permit pursuant to this subsection which modifies the requirements of subsection (b)(1)(B) of this section with respect to the discharge of any pollutant from any treatment works owned by such municipality into marine waters. No permit issued under this subsection shall authorize the discharge of sewage sludge into marine waters. In order for a permit to be issued under this subsection for the discharge of a pollutant into marine waters, such marine waters must exhibit characteristics assuring that water providing dilution does not contain significant amounts of previously discharged effluent from such treatment works. No permit issued under this subsection shall authorize the discharge of any pollutant into marine estuarine waters which at the time of application do not support a balanced, indigenous population of shellfish, fish and wildlife, or allow recreation in and on the waters or which exhibit ambient water quality below applicable water quality standards adopted for the protection of public water supplies, shellfish and wildlife, or recreational activities or such other standards necessary to assure support and protection of such uses. The prohibition contained in the preceding sentence shall

apply without regard to the presence or absence of a causal relationship between such characteristics and the applicant's current or proposed discharge. Notwithstanding any of the other provisions of this subsection, no permit may be issued under this subsection for discharge of a pollutant into the New York Bight Apex consisting of the ocean waters of the Atlantic Ocean westward of 73 degrees 30 minutes west longitude and westward of 40 degrees 10 minutes north latitude.

EPA regulations implementing section 301(h) provide that a 301(h) modified NPDES permit may not be issued in violation of 40 CFR 125.59 (b), which requires among other things, compliance with the provisions of the Coastal Zone Management Act (16 U.S.C. 1451 *et seq.*), the Endangered Species Act (16 U.S.C. 1531 *et seq.*), the Marine Protection Research and Sanctuaries Act (16 U.S.C. 1431 *et seq.*), and any other applicable provision of State or Federal law or Executive Order. In the discussion which follows, the data submitted by the applicant is analyzed in the context of the statutory and regulatory criteria.

SUMMARY OF FINDINGS

Based upon review of the data, references, and empirical evidence furnished in the application and other relevant sources, EPA Region 9 makes the following findings with regard to compliance with the statutory and regulatory criteria:

1. The applicant's proposed discharge complies with the California Ocean Plan water quality standards for dissolved oxygen (DO), suspended solids, and pH. [Section 301(h)(1), 40 CFR 125.61]

2. The applicant's proposed discharge will not adversely impact public water supplies or interfere with the protection and propagation of a balanced, indigenous population (BIP) of fish, shellfish, and wildlife and will allow for recreational activities. [Section 301(h)(2), 40 CFR 125.62]

3. The applicant has a well-established water quality monitoring program and is committing the resources to continue the program. The City has been monitoring the area around the Point Loma discharge since 1991. USEPA Region 9 and the San Diego Regional Water Quality Control Board (Regional Board) will review the existing monitoring program and modify as appropriate. These modifications will be included as provisions for monitoring the impact of the discharge in the 301(h) modified NPDES permit. [Section 301(h)(3), 40 CFR 125.63]

4. The applicant's proposed discharge will not result in any additional treatment requirements on any other point or nonpoint source (See letter from Regional Board dated January 24, 2002). [Section 301(h)(4), 40 CFR 125.64]

5. The applicant's existing pretreatment program was approved by EPA on June 29, 1982. [Section 301(h)(5), 40 CFR 125.66 and 125.68]

6. The applicant has complied with the urban area pretreatment requirements by

demonstrating that it has an applicable pretreatment requirement in effect for each toxic pollutant introduced by an industrial discharger. The Urban Area Pretreatment Program was submitted to EPA and the Regional Board in August of 1996. This program was approved by the Regional Board on August 13, 1997 and by EPA Region 9 on December 1, 1998. [Section 301(h)(6), 40 CFR 125.65]

7. The City will continue their existing nonindustrial program which has been in effect since 1985. The City will also continue their existing comprehensive public education program to minimize the amount of toxic pollutants that enter the treatment system from nonindustrial sources. [Section 301(h)(7), 40 CFR 125.66]

8. There will be no new or substantially increased discharges from the point source of the pollutants to which the 301(h) modification will apply above those specified in the permit. [Section 301(h)(8), 40 CFR 125.67]

9. The applicant's removal of 80% of SS as a monthly average and 58% of BOD as an annual average is sufficient to demonstrate the federal requirement of at least 30% removal capability and the California Ocean Plan's 75% SS removal requirement. The discharge allows sufficient dilution to attain of State water quality standards and Federal water quality criteria. [Section 301(h)(9), 40 CFR 125.60]

10. The California Coastal Commission issued Consistency Certification for extending the Point Loma outfall on November 12, 1991. The applicant has requested a determination from the California Coastal Commission that the proposed discharge is consistent with the policies of the California Coastal Zone Management Program (letter dated July 13, 2000). No permit may be issued that is not consistent with the policies of the California Coastal Management Program. The California Coastal Commission will be hearing this issue at their meeting on March 5-8, 2002. [40 CFR 125.59(b)(3)]

11. On June 28, 1999, the applicant sent letters to the US Fish and Wildlife Service and the National Marine Fisheries Service requesting concurrence with their conclusion that the discharge will have no impact to threatened or endangered species. The National Marine Fisheries Service concluded that there were no Federally listed species under its jurisdiction that would be affected by the dishcharge (letter dated August 10, 1999). No response has been received from the U.S. Fish and Wildlife Service. The permit is contingent on a finding from the U.S. Fish and Wildlife. There are no designated marine sanctuaries located within the coastal zones of California that could be impacted by the modified discharge. [40 CFR 125.59(b)(3)]

12. In its operation of the Pt. Loma WWTP, the applicant will remove 80% of suspended solids from the effluent on an annual basis, remove 58% of biological oxygen demand from the effluent on an annual basis, and reduce the mass of solids during the period of modification to 13,599 metric tons per year. In addition, the applicant has constructed two reclamation facilities with a treatment capacity of 45 MGD.

13. The applicant sent a letter to the Regional Board requesting a determination that the

proposed discharge would comply with the applicable water quality standards on April 4, 2000. The Regional Board confirmed that the City of San Diego's facilities on Point Loma is capable of meeting effluent limitations contained in the California Ocean Plan (see letter dated January 24, 2002). As specified in a Memorandum of Understanding (May 1986) between EPA Region 9 and the California State Water Resources Control Board, the joint issuance of an NPDES permit which incorporates both the 301(h) decision and State waste discharge requirements will serve as the State's concurrence. A draft NPDES permit for the discharge has been developed jointly with the Regional Board. [40 CFR 125.59 (i)(2)]

CONCLUSION

It is concluded that the applicant's proposed discharge will satisfy CWA sections 301(h) and (j)(5) and 40 CFR 125, Subpart G.

RECOMMENDATION

It is recommended that the applicant be granted a section 301(h) modification in accordance with the above findings, contingent upon the satisfaction of the following conditions, and that a draft NPDES permit be prepared in accordance with the applicable provisions of 40 CFR Parts 122-125.

The applicant's receipt of a section 301(h) modification is contingent upon concurrence from the Regional Board.

The draft NPDES permit includes, in addition to all applicable terms and conditions required by 40 CFR Part 122, the following terms and conditions specific to section 301(h):

1. Effluent limitations in accordance with the terms and conditions of this document in accordance with 40 CFR 125.68(a).

2. Monitoring program requirements in accordance with 40 CFR 125.68(c).

3. Reporting requirements that include the results of monitoring programs in accordance with 40 CFR 125.68(d).

DESCRIPTION OF TREATMENT FACILITY

There have been a number of upgrades to the treatment system since 1995. These include: 1) the addition of two new sedimentation basins at the Point Loma plant, 2) construction of the Metro Biosolids Center (MBC) a regional solids handling facility, 3) construction of the North City Water Reclamation Plant (NCWRP) and 4) construction of the South Bay Water Reclamation Plant (SBWRP) and associated outfall. These facilities make up the wastewater treatment system (Fig. 1).

Preliminary treatment consists of screening at pump station No. 2 (coarse screens) and at the

treatment plant (fine screens). The wastewater is then distributed to six aerated grit removal chambers. Ferric chloride is added prior to grit chamber removal to enhance solids removal. Wastewater exiting the grit chamber is then treated with anionic polymers to aid coagulation of solids and distributed to what is now twelve sedimentation tanks. Sludge generated by the advanced primary treatment is digested anaerobically. The Fiesta Island processing facility was closed down and digested sludge from Point Loma is now pumped to the MBC for dewatering. The centrate from this dewatering is returned to sewer system upstream of pump station No.2. The treated advanced primary effluent is discharged through the Point Loma ocean outfall. The ocean outfall extends approximately 7.1 Km (about 4.5 miles) offshore to an approximate depth of 100 meters (about 310 ft). Two diffuser legs branch from the end of the outfall in a "Y"-configuration. Each leg of the diffuser is 760 m (2,946 ft) in length and contains 208 diffuser ports.

The 30-MGD NCWRP began operation shortly after the 1995 permit was issued. The water reclamation plant consists of preliminary screening, grit removal, primary treatment, secondary treatment with provisions for nitrification and partial denitrification, tertiary filtration, and chlorination. Based on demand, a portion of the waste water stream will receive tertiary treatment and be reclaimed. Excess secondary treated water is released back into the sewer system and routed through pump station No. 2 to the Point Loma plant. The waste solids (sludge) are pumped to the MBC where it is thickened, digested in anaerobic digesters, and dewatered. The centrate from the NCWRP is released back into the sewer system upstream of pump station No. 2.

The MBC receives waste solids from the NCWRP and digested solids from the Point Loma plant. NCWRP solids are thickened, digested and dewatered at the MBC plant. The Point Loma solids are dewatered at the MBC. The centrate from these processes is released back into the sewer system upstream of pump station No. 2.

The SBWRP is a 15-MGD plant which is expected to go on line in 2002. Solids removed from the treatment process are released back into the sewer system upstream of pump station No. 2 for treatment at Point Loma. Water for reclamation receives full tertiary treatment. Excess secondary treated effluent will be discharged 3.5 miles offshore through the South Bay Ocean Outfall (SBOO), which is shared with the International Wastewater Treatment Plant (IWTP).

The IWTP is currently operating as a 25-MGD advanced primary plant that was constructed to handle waste from Mexico. While not considered part of the Wastewater System, the plant removes a significant portion of flow from Mexico that was previously discharged to the Metro Wastewater System.

The original application was based on an end of permit flow of 205 MGD. Since then the rating capacity of the plant has been increased to 240 MGD (See addendum 2 to Board Order No. 95-106). The actual flows have been lower than projected. In the years 1999 and 2000 annual flows were around 175 MGD. The projected annual flow for the year 2006 (end of next permit period) is projected to be 195 MGD.

APPLICATION OF STATUTORY AND REGULATORY CRITERIA

1. Compliance with the California State Water Quality Standards [Section 301(h)(1), 40 CFR 125.61].

Under 40 CFR 125.61 which implements section 301(h)(1), there must be a water quality standard applicable to the pollutants for which the modification is requested and the applicant must demonstrate that the proposed modified discharge will comply with these standards. The applicant must obtain a favorable State determination that the proposed modified discharge will comply with applicable provisions of State law including water quality standards.

The applicant is requesting a waiver from the secondary treatment requirement for suspended solids and BOD requirements. The applicant must demonstrate that it meets (and will continue to meet through the end-of-permit period) all effluent limits for suspended solids and turbidity and meets ambient standards for turbidity, light transmittance and dissolved oxygen.

A. Suspended Solids.

1. Solids Removal. The California Ocean Plan (COP) calls for at least 75% removal of suspended solids (30-day average). In this permit, 80% removal of suspended solids as a system-wide monthly average is set as a limit as requested by the City in its application. The percent removal computation is based on a system-wide calculation which accounts for solids removal from the NCWRP and the return of solids associated with the centrate from the MBC.

Table 1. Comparison of treatment removal requirements.

Requirement	Suspended Solids Removal	Biochemical Oxygen Demand Removal	pH Limitation
Primary	30% as 30-day average	30% as 30-day average	6-9
California Ocean Plan	75% as 30-day average	No Requirement	6-9
CWA § 301(h) and (j)(5)	80% as 30-day average	58% as annual average	
Secondary	85% as 30-day average	85% as 30-day average	6-9

The applicant has demonstrated through past performance the ability to meet on a monthly basis both the 75% and 80% removal requirements. In 1999, the average monthly percent removal ranged from 82% to 88%. In 2000, the average monthly removals ranged from 85% to 89%. These percentages are adjusted for system-wide removal. The difference between straight removal (Point Loma only) and system-wide removal (Point Loma plus NCWRP) is only a small percentage (Table 2). The NPDES permit issued to the City will require compliance with the COP objective of 75% removal on a monthly basis and the CWA's 80% removal on a monthly average.

Table 2. Plant performance at Point Loma expressed as percent removal (2000)

	TSS	$TSS_{System-wide}$	BOD	$BOD_{System-wide}$
January	88	89	63	66
February	87	88	56	61
March	87	88	60	64
April	87	88	62	66
May	86	87	59	63
June	87	88	63	67
July	86	87	58	62
August	87	88	59	63
September	85	86	59	63
October	85	87	59	64
November	84	85	59	63
December	88	88	64	66

Suspended solids concentrations. The suspended solids concentration in the effluent has remained relatively consistent over the course of the existing permit (1995-2000). The average monthly suspended solids concentrations are generally around 40 mg/l (Table 3).

Table 3. Average monthly effluent concentration of suspended solids (mg/l) from Point Loma (1995-2000).

Month	1995	1996	1997	1998	1999	2000	Average 1995-2000
January	36	44	41	38	38	35	38
February	41	42	42	62	38	34	43
March	39	44	42	63	36	34	43
April	45	48	38	43	39	35	41
May	40	42	39	33	40	39	39
June	42	44	42	32	41	36	40
July	39	40	44	31	43	38	39
August	46	40	40	33	37	36	39
September	43	46	34	28	37	39	38
October	44	42	33	27	40	38	37
November	48	42	42	32	33	47	40
December	45	44	35	39	30	38	38
Annual Average	42	43	39	38	38	37	40

In 1994, USEPA predicted a maximum increase in suspended solids concentrations of 0.5 mg/l in the immediate area of the outfall based on a worst-case minimum initial dilution of 99:1 and an effluent concentration of 53 mg/l. Applying this worst-case minimum initial dilution to the range

of values in Table 3, the maximum increases in suspended solids concentrations should be on the order of 0.3 to 0.6 mg/l.

To further evaluate the effect of the outfall on ambient suspended solids concentrations, USEPA looked at data from the City's water quality monitoring program. The City has been measuring water quality parameters (e.g., suspended solids, turbidity, dissolved oxygen, bacteria) in the waters around the current outfall locations since 1991 (Fig. 2). The data for the time period between 1995 and 2000 are summarized in the appendix (Table A1). These data indicate that background concentrations in these waters are typically on the order of 2 to 6 mg/l and that there were no substantial differences between suspended solids concentrations measured at stations near the outfall (Stations E10, E16, E14, E8, E12, E18) and those measured at far field reference stations (Stations B9, B12, B1, B5). The minor increases in suspended solids concentrations within the zone of initial dilution predicted by the simple dilution model (0.3 to 0.6 mg/l) are not considered substantial given the range of natural variability in suspended solids concentrations of the receiving water.

Suspended solids loadings. The original permit called for reductions in permitted loadings from 15,000 MT/yr to 13,600 MT/yr by January 1, 2001. The actual loadings during this time period were much smaller due to lower than projected flows and lower suspended solids concentrations than assumed (Table 4). In 1999 and 2000 solids loadings were less than 10,000 MT/yr. The applicant is requesting the same permit limits for the new permit cycle (2001 to 2006), with a limit of 13,599 MT/yr for the last year of the permit term, satisfying section 301(j)(5)(B)(ii).

Table 4. Total Suspended Solids (TSS) Mass Emission Rate (MER) in metric tons per year

Year	Loadings (Actual/*Projected*)	Permit limits (Existing/*Proposed*)
1994	12,021	
1995	11,174	
1996	10,622	15,000
1997	10,183	15,000
1998	10,469	15,000
1999	9,188	15,000
2000	8,888	13,600
2001	*14,100*	*15,000*
2002	*14,200*	*15,000*
2003	*14,300*	*15,000*
2004	*14,500*	*15,000*
2005	*14,600*	*15,000*
2006	*13,599*	*13,599*

2. Turbidity. Turbidity is a surrogate measure for the effects of suspended solids on light transmittance. The COP has an effluent limitation for turbidity and an ambient limitation for light transmittance. These effluent limits are listed below:

	30-day Ave	Weekly Ave	Maximum
Turbidity	75 NTU	100 NTU	225 NTU

To evaluate compliance with the turbidity standard, USEPA evaluated the daily effluent data from 1995 to 2000 (summarized in Table 5).

Table 5. Average monthly concentration for effluent turbidity (NTU) from Point Loma (1995-2000).

Month	1995	1996	1997	1998	1999	2000
January	31	36	38	26	33	37
February	35	37	40	32	30	34
March	34	38	40	37	31	33
April	38	41	37	32	31	37
May	37	46	37	31	38	40
June	37	46	42	34	40	36
July	36	43	40	33	41	41
August	40	41	40	31	37	39
September	39	44	38	30	39	39
October	38	41	34	31	41	38
November	42	38	32	32	37	46
December	37	42	29	37	35	40
Annual Average	37	41	37	32	36	38

The average NTU concentration was 37 NTU. The highest 30-day running average, the highest 7-day running average, and the highest daily maximum concentrations over this five-year period are as listed below:

	30-day Ave	Weekly Ave	Maximum
Turbidity	46 NTU	52 NTU	60 NTU

The effluent turbidity concentrations are well within ocean plan limits. To ensure continued compliance with the COP, effluent limits for turbidity will be included in the NPDES permit.

3. Light Transmittance. The COP states that "*natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge.*" In 1994, USEPA found that the effect of outfall-related solids on light transmittance was minimal and well within the range of variability measured at the other stations.

To re-evaluate this conclusion USEPA evaluated the results of the City's ambient water quality monitoring program. The results support the conclusion that the outfall is not having a major effect on light transmittance (Table A.2). The percent transmissivity measured at stations near the outfall (Stations E10, E16, E14, E8, E12, E18) were similar to those at far field reference stations (Stations B1, B5, B9, B12). Percent transmissivity was generally greater than 85%. Values tended to be slightly lower and slightly more variable at nearshore stations (as a result of shoreline influences) and at samples taken near the bottom depth (as a result of resuspension).

The outfall does not appear to be resulting in any significant reduction in transmissivity.

B. Biochemical Oxygen Demand and Dissolved Oxygen.

The secondary treatment removal requirement for BOD is 85% removal and 30 mg/l as a 30-day average. The permit calls for 58% removal of BOD computed as an annual average. The COP does not have an effluent limitation for BOD. However, the COP water quality standard for dissolved oxygen is applicable. The COP states that "*dissolved oxygen shall not at any time be depressed more than 10% from that which occurs naturally as a result of the discharge of oxygen-demanding waste materials.*"

1. BOD. USEPA reviewed five-years of effluent BOD data from the Point Loma Plant (summarized in Table 6). The existing permit allows BOD removal to be calculated as a system-wide basis to eliminate double counting of BOD returned to the Point Loma WWTP from the Metro Biosolids Center and the North City Water Reclamation Plant (NCWRP). The plant is currently being operated in a manner which meets the 58% removal requirement. Based on daily averages from 1994, the plant operated at better than 58% removal sixty percent of the time. Since that time the applicant has made improvements including new sedimentation basins and solids handling facilities to ensure that they continue to meet the 58% removal on a system-wide basis.

Table 6. Summary of effluent BOD from Point Loma outfall (1995-2000).

Month	1995	1996	1997	1998	1999	2000
January	88	112	104	95	106	91
February	106	119	112	98	108	91
March	96	116	118	126	105	90
April	108	121	107	103	109	90
May	115	125	108	97	115	93
June	113	124	114	110	110	82
July	105	121	105	106	101	96
August	105	116	102	106	96	97
September	107	119	99	100	102	95
October	114	112	97	105	96	94
November	117	116	95	109	89	106
December	114	124	100	114	88	98
Annual Average Effluent BOD	107	119	105	106	102	94
Annual system-wide percent removal	60%	58%	59%	56%	61%	64%

According to the applicant, the percent removal in 1998 was 56% as a result of complications associated with bringing the new solids handling facility (MBC) on line. In 1999 the monthly average system wide percent removals ranged from 53% to 63%, the annual average was 61%. In 2000 the average ranged from 61% to 67%, the average for the year was 64%. The NPDES permit issued to the City will require compliance with the 58% removal requirement.

2. Dissolved Oxygen Concentrations. In 1995, the applicant used a modeling approach to

predict the effect of the discharge on ambient dissolved oxygen concentrations. In its review USEPA (1995) evaluated these efforts and conducted a similar modeling effort to verify the model predictions. These results were slightly higher but comparable to the applicant's. USEPA believes that the results of these models are still valid for use in this review as the initial assumptions about flow (240 MGD), TSS (48 mg/l) and BOD (121 mg/l) concentrations used in the model are conservative with respect to existing conditions (compare to Tables 5 and 6). The results of the applicant's modeling effort and USEPA's review are summarized below.

As recommended in USEPA's 1994 Amended Section 301(h) Technical Support Document (ATSD), modeling efforts were directed toward evaluating the potential for (1) DO depressions following initial dilution during the period of maximum stratification (or other critical period), (2) farfield DO depressions associated with BOD exertion in the wastefield, (3) DO depressions associated with steady-state sediment oxygen demand and (4) DO depressions associated with the resuspension of sediments (Table 7).

Table 7. Predicted worst-case dissolved oxygen depressions (mg/l) from San Diego (1994) and USEPA (1995)

Sources of potential oxygen demand	San Diego	USEPA
Dissolved oxygen depression upon initial dilution	0.05	0.05
Dissolved oxygen depression due to BOD exertion in the farfield	0.14	0.23
Dissolved oxygen depression due to steady-state sediment oxygen demand	0.07	0.16
Dissolved oxygen depression due to abrupt sediment resuspension	0.07	0.12

These model predictions have been compared to the most recent ambient water quality data (Table 8) to assess the potential for reductions in DO concentrations greater than 10% as a result of the outfall. The dissolved oxygen depressions after initial dilution (0.5 mg/l) and due to BOD exertion in the farfield (0.14 to 0.23 mg/l) were compared to ambient dissolved oxygen concentrations at mid-depths which correspond to the trapping depth of the plume. Concentrations at these depths are generally greater than 5 and never less than 3 mg/l. The DO depressions associated with sediment demand (0.7 to 0.16 mg/l) should be compared to bottom waters at the outfall depth. Most of the time these waters are well above 3 (lowest value was 2.5 mg/l). Based on the predictions of the models and the ambient dissolved oxygen concentrations in the water column, it is unlikely that the outfall could reduce dissolved oxygen concentrations in the water column by 10%.

USEPA also looked at the ambient data to determine if there were any depressions in DO that might be attributable to the outfall (Table A-3). Dissolved oxygen concentrations in surface waters were generally around 8 mg/l. DO decreased with depth, largely as a result of low DO associated with bottom water. There are no real differences between nearfield stations (Stations E8, E10, E12, E16, E18) and farfield stations (Stations B9, B12, B1, B5).

Table 8. Depth distribution of dissolved oxygen concentration in waters offshore of Point Loma (1995-2000).

Depth (feet)	# of samples	% of samples DO > 5 mg/l	% of samples DO < 5 mg/l	% of samples DO < 4 mg/l	% of samples DO < 3 mg/l
5	1621	99%	1%		
10	180	100%			
20	180	100%			
40	359	99%	1%		
60	355	94%	6%		
140	1080	85%	15%	2%	
200	898	69%	31%	7%	
260	610	50%	50%	16%	
290	120	33%	67%	29%	3%
320	468	25%	75%	31%	3%
380	94	17%	83%	44%	6%

USEPA concludes that the applicant will be able to meet the 58% removal requirement, and that the discharge is not likely to cause dissolved oxygen depressions greater than 10%. USEPA's conclusion on ambient effects is based on a review of plant performance, modeling efforts performed in 1995 and more recent ambient monitoring data. Permit limits for suspended solids and BOD will be established to ensure that the plant continues to operate at a comparable level of performance through the permit period.

C. pH Compliance.

The COP states that receiving water pH shall "*not be changed at any time more than 0.2 pH units from that which occurs naturally.*" In addition, the COP requires that effluent pH be within 6.0 to 9.0 pH units at all times. This is the same as the secondary treatment requirement for pH. The applicant is not seeking a waiver from the pH requirement.

D. Conclusions on Compliance with Applicable Water Quality Standards.

Based on the information provided by the applicant, the outfall will be operated in a manner which ensures compliance with the State water quality standards relevant to suspended solids, BOD and pH. A review of past performance indicates that the discharge can be operated in a manner that will meet the effluent limits specified in the COP for suspended solids (75% removal), turbidity (75 NTU) and pH (6.0 to 9.0). Based on the review of effluent data, ambient water quality data (1995 to 2000), and model projections USEPA finds that the discharge will have minimal effects on ambient suspended solids concentrations, light transmittance, dissolved oxygen or pH.

Effluent limits for suspended solids and BOD will be established in the NPDES permit to ensure continued compliance with State standards for effluent (suspended solids, turbidity and pH) and receiving water (suspended solids, light transmittance, dissolved oxygen and pH).

2. Protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife, recreational activities or public water supplies. [Section 301(h)(2), 40 CFR 125.62].

A. Physical Characteristics of the Discharge.

1. Outfall/Diffuser and Initial Dilution. 40 CFR 125.62(a) provides that the proposed outfall and diffuser must be located and designed to provide adequate initial dilution, dispersion, and transport of wastewater to meet all applicable water quality standards at and beyond the boundary of the zone of initial dilution (ZID). This evaluation is based on conditions occurring during periods of maximum stratification, and during other periods when discharge characteristics, water quality, biological seasons, or oceanographic conditions indicate more critical situations may exist.

The COP specifies that "*waste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.*" In the COP, minimum initial dilution is defined as the "*lowest average initial dilution within any single month of the year.*" Dilution estimates are "*based on observed waste flow characteristics, observed receiving water density structure and the assumption that no current, of sufficient strength to influence the initial dilution process, flow across the discharge structure.*"

In the 1995 application, the City offered an estimate of initial dilution of 204:1 based on a modified version of the RSB model (USEPA, 1994; Roberts *et al.*, 1989 a,b,c,) and a projected flow of 205 MGD. Additional physical oceanographic modeling performed by the applicant indicated that the lowest 5th percentile initial dilution was 215:1 and that the median dilution was 365:1. Using a slightly different set of assumptions, USEPA (1995) predicted minimum monthly-average initial dilutions ranging from 169:1 to 205:1 and predicted a long-term effective dilution of 328:1 in the area around the outfall. USEPA's estimates for the worst-case initial dilutions ranged from 99:1 to 143:1.

Based on the information provided, the diffuser is well designed and achieves a high degree of dilution. The USEPA's and the City's numbers are comparable given the uncertainties associated with physical oceanographic models. USEPA finds that the value of 204:1 provides a conservative estimate of initial dilution and uses this value for evaluating compliance with water quality standards. USEPA uses a value of 99:1 in this review to assess worst-case conditions.

2. USEPA Water Quality Criteria and State Water Quality Standards. Under section 303(d)(1) of the WQA, a discharger must be in compliance with the criteria established under section 304(a)(1) of the Clean Water Act at the time their 301(h) permit becomes effective.

State standards for a variety of toxic materials are established in the COP. The receiving water standards for the protection of marine aquatic life and human health are listed in Table B of the COP. USEPA uses an initial dilution of 204 for establishing compliance with the State standards and USEPA water quality criteria related to the protection of aquatic life. USEPA uses the long-term average initial dilution of 328:1 for evaluating compliance with federal water quality criteria for the protection of human health. This is appropriate since these criteria are based on

consumption of fish experiencing long-term exposure to chemical concentrations above the criteria.

USEPA reviewed five-years (January 1995 through December 1999) of effluent data provided by the applicant in electronic format. The data were screened to identify those chemicals that have the potential to exceed either state standards or federal criteria after allowing for dilution. To accomplish this, the statistical distribution of each chemical parameter was evaluated to define a chemical-specific coefficient of variability. This was then used along with the maximum detected value (or maximum detection limit) to estimate the projected upper bound of the distribution based on a 99th percentile confidence limits. In effect, we calculated the effluent concentration that we can say with 99% certainty will not be exceeded during the course of the permit. This procedure known as reasonable potential analysis is documented in the Technical Support Document for Water Quality-Based Toxics Control (USEPA/505/2-90-001, March 1991). The results from this analysis are summarized in Table 9. For perspective, the results from previous reasonable potential analysis performed in 1995 are also provided.

Table 9. Comparison of Reasonable Potential Analyses. Bolded figures are based on detected values, all others are based on detection limits.

1990-1994	1995-1999
	Arsenic
Beryllium	
Copper	**Copper**
Aldrin	*Aldrin*
Dieldrin	*Dieldrin*
Chlordane	*Chlordane*
Toxaphene	*Toxaphene*
Guthion	*Guthion*
DDT	
PCBs	*PCBs*
Acrylonitrile	
Benzidene	*Benzidene*
3,3-dichlorobenzene	*3,3-dichlorobenzene*
Hexachlorobenzene	*Hexachlorobenzene*
Heptachlor	
Heptachlor epoxide	
	Dioxin
Total PAHs	*Total PAHs*

In the 1995 Tentative Decision Document (USEPA, 1995), sixteen chemical parameters were identified with the potential to exceed water quality standards. Of these sixteen, four were based on actual detected values (beryllium, copper, chlordane, DDT). The remaining twelve compounds on the list were based on detection limits only. The results of the new reasonable potential analysis identified thirteen parameters. Three are based on actual detected concentrations (arsenic, copper and dioxin) and ten are based on detection limits only. The difference between the two lists in part reflects improvements in either the effluent quality (i.e., beryllium, DDT, chlordane are no longer detected in the effluent) or detection limits achieved by the laboratory (i.e., for acrylonitrile, heptachlor and heptachlor epoxide). The effluent data for arsenic, copper and dioxin are discussed in more detail below.

Arsenic. The average weekly effluent arsenic concentration was 1.2 ug/l with a standard deviation of 0.4 ug/l (Fig. 3). The maximum arsenic concentration measured in the effluent was 2.7 ug/l. This is lower than the assumed background concentration for seawater of 3.0 (COP, 2001). The predicted maximum arsenic concentration after mixing with ambient seawater is 3.7 ug/l. This is below the USEPA criteria for protection of aquatic life of 36 ug/l and below the COP criteria of 8 ug/l, but above the USEPA human health water quality criteria of 0.14 ug/l. The toxicity of arsenic in marine systems was reviewed by Neff (1997). This review (and references therein) documents that concentrations of total arsenic in clean coastal waters range from 1 to 3 ug/l with an average of 1.7 ug/l. The review also suggested that USEPA's human health water quality criterion is inappropriate for marine waters and that arsenic concentrations typically found in clean coastal waters represent a low risk to human consumers of fish. The effluent is consistently below the COP standard of 8 ug/l. Effluent concentrations have not exceeded the permit limits for arsenic.

Copper. The mean effluent concentration was 55 ug/l with a standard deviation of 37 ug/l (Fig. 4). The maximum measured concentration of copper was 292 ug/l. The COP assumes that background copper concentrations in the ocean are 2 ug/l. After dilution the predicted maximum concentration is 3.4 ug/l. This is higher than the COP standard of 3.0 ug/l and the USEPA criteria of 2.9 ug/l. The assumption in the COP about background concentrations may be overly conservative. Flegal *et al.*, (1991) reported that background copper concentrations California coastal waters were around 0.1 ug/l. Using this number, the expected concentration after dilution would be 1.5 ug/l, which is below the COP standard. Effluent concentrations have not exceeded the permit limits for copper.

Dioxin. Dioxin was measured above the detection limit in 6 of 72 samples collected between 1995 and 2000 (Fig. 5). This is related to improved detection limits from the laboratory. The City uses a high resolution method (USEPA Method 1613) that can detect dioxins in the range of 1 to 10 pg/l. This is low but still several orders of magnitude higher than the COP standard for total dioxins of 0.0039 pg/l. The detection limits achieved by the applicant are close to the permit limit of 0.8 pg/l. For most chemicals the COP defines minimum levels that "*represent the lowest concentration that can be quantitatively measured in a sample given the current state of performance in analytical chemistry methods in California*". The COP also states that "*Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant is greater than the permit limit and greater than or equal to the reported minimum level.*" The COP does not, however, identify a minimum level for dioxins. The applicant points

out that their detection limits for dioxin are three to six orders of magnitude lower than measured at other comparable treatment plants (SCCWRP, In Prep) and that detection of dioxins at these levels can be complicated by false positives associated with working at or near the level of detection, matrix interferences and low-level laboratory contamination. Given the uncertainties associated with the low-level analysis of dioxins, we do not consider the values reported by the applicant to represent water quality exceedances. We believe this is consistent with the intent of COP. The applicant is working to improve the methodology for dioxin analyses and will be submitting this to USEPA for approval under the alternative test procedures.

Based on this review of the effluent data, EPA concludes that the effluent quality of the plant is sufficient to meet water quality standards. In a letter dated January 24, 2002 the Regional Board stated that the wastewater discharge "will comply with the applicable water quality standards for waters of the Pacific Ocean included in the 2001 California Ocean Plan and the Water Quality Control Plan for the San Diego Basin (Basin Plan)."

In the 1995 permit, USEPA and the Regional Board established mass-based performance goals based on the effluent data (1990 - April 1995). For most parameters these performance-based goals are set below the effluent limits established in the permit. They were designed to provide an early measure of changes in effluent quality which might substantially increase the mass of pollutants to the ocean. Consistent with the State Board's anti degradation policy, these performance goals were intended to serve as a trigger for anti degradation analyses during permit renewal. Three parameters (phenols, zinc, cyanide) were observed to exceed the annual mass-based performance goals in at least one year. San Diego prepared an anti degradation analyses in their renewal application to evaluate the reasons for these increases and the effects of these increases on the marine environment (See Volume 1, Part 3). USEPA reviewed the weekly effluent data for these three parameters (Figs. 6, 7, and 8). As discussed by the applicant, the concentrations of these three parameters are well below the permitted limits. The exceedances of the annual mass-based performance goal for zinc (in 1996) and cyanide (in 1997) appear to be related to episodic events and do not appear to represent any long-term trend of increased loadings. Phenols exceeded the performance goal all five years. The applicant noted that effluent concentrations in phenols were higher in the 1995 to 2000 time frame than in the previous time period (1990 to 1995) on which the benchmarks were established and suggested that this reflected increases in influent concentrations. We do not see any trends in the effluent data which would suggest that phenol concentrations increased since 1995 (Fig. 6). The existing performance goals will remain in the permit as a baseline for measuring future changes in effluent quality and mass loadings.

In summary, the applicant's discharge will be operated in a manner that ensures compliance with state standards and federal marine water quality criteria. Effluent limits have been established for all COP chemicals and for those USEPA criteria where an analysis of past effluent data indicates a reasonable potential to exceed the standards or criteria. Effluent concentrations will continue to be monitored for all COP constituents and remaining priority pollutants on a regular basis. The results of the effluent monitoring program will be evaluated against performance goals established in the permit.

3. Dilution Water Recirculation. Under section 303(e) of the WQA, before a 301(h) permit may be issued for discharge of a pollutant into marine water, such marine waters must exhibit characteristics assuring that the water providing dilution does not contain significant amounts of previously discharged effluent from the treatment works.

This issue was addressed by City in the 1994 application. To estimate the potential for re-entrainment effects on the 30-day average concentration, the applicant made the assumption that receiving water around the outfall contains all the wastewater effluent discharged during a 30-day period. This is an extremely conservative assumption, as physical oceanographic models indicate that the residence time for wastewater within a 30 Km by 12 Km area around the outfall is about 4.5 days and that 95% of the wastewater is advected out of the area within two weeks. A background effluent concentration was estimated by dividing the volume of wastewater discharged over thirty days by an estimate of the volume of ambient water providing dilution over the 30-day period. Overall, the effect of re-entrainment was to reduce initial dilutions by 8.4 to 8.7%. The minimum monthly-average initial dilution was reduced by around 10%.

USEPA believes that the 10% reduction predicted by the applicant provides a conservative estimate of the effect of re-entrainment on initial dilution. Based on our review of effluent data (above), a 10% difference in initial dilution would not affect the ability of the discharge to comply with State standards or USEPA water quality criteria.

4. Transport and Dispersion of Diluted Wastewater and Particulates, Physical and Chemical Effects. Accumulation of suspended (settleable) solids in and beyond the vicinity of the discharge can have adverse effects on water usage and biological communities. 40 CFR 125.62(a) requires that following initial dilution, the diluted wastewater and particulates must be transported and dispersed so that water use areas and areas of biological sensitivity are not adversely affected.

Solids and Organic matter. The COP states that "*the rate of deposition of inert solids shall not be changed such that benthic communities are degraded" and that "the concentration of organic material in marine sediments shall not be increased to levels which would degrade marine life.*"

In 1994, the City used a sediment deposition model (SEDPXY) to predict the rates of solids deposition around the outfall. The model was run under two flow scenarios assuming flow rates of 205 MGD and 240 MGD assuming solids mass emission rates of 14,073 MT/yr and 16,476 MT/yr, respectively. USEPA (1995) estimated sediment deposition using a modified version of the ASTD sediment deposition model. This model was run assuming a flow of 205 MGD flow rate assuming a solids loading of 13,600 MT/yr. The results from these efforts are summarized in Table 10. The results from this USEPA's ASTD model have been adjusted in this review to evaluate deposition associated with loadings for the 15,000 MT/yr scenario.

The predictions generated using USEPA's model are likely to be different from the applicant's for a number of reasons, including differences in the use of current meter data, bathymetry, trapping depth distributions, the size and resolution of the model grid, and different assumptions regarding the rate with which effluent particles settle (*e.g.*, the settling velocities used by USEPA were about two times higher than those used by the applicant). As a result of these differences

USEPA's model predicts a greater number of particles settling over a smaller area and thus are more conservative in nature.

Table 10. Results of sediment deposition modeling performed by the City (1994) and USEPA (1995).

	San Diego	USEPA
Mass of particles (Mt/yr)	14,073 - 16,476	13,600 - 15,000
Area modeled (km2)	360	200
Percent of particles settling in area modeled	8%	12%
Area around the diffuser modeled (Km^2)	0.01	0.25
Solids deposition rates ($g/m^2/yr$)	152 - 174	254 - 280
Organic deposition rates ($g/m^2/yr$)	122 - 139	203 - 224
Peak a 90-day solids deposition rates ($g/m^2/90$-days)	45 - 51	72 - 79
Peak 90-day organic deposition rates ($g/m^2/90$-days)	37 - 57	58 - 64
Steady-state organic accumulation (g/m^2)	18 - 38	56 - 62

Estimates of solid deposition rates range from 152 to 280 $g/m^2/yr$. This can be compared to an estimate of 625 $g/m^2/yr$ from sediment trap data for the San Diego area (Hendricks and Eganhouse, 1992). Assuming that effluent solids are 80% organic matter, the estimates of organic deposition rates in the area around the outfall range from 122 to 224 $g/m^2/yr$. Although not strictly comparable, our best estimates of the organic carbon flux from the water column associated with primary and secondary production in Southern California are 26 to 62 g $C/m^2/yr$ (Nelson et al., 1987).

The models predict a range of organic accumulation in the sediments from 18 to 62 g/m^2. The steady-state accumulation of organic matter in the sediment is a function of the rate with which organic matter is deposited in the sediments and the rate with which it decays. Both USEPA and the City used a default decay rate of 0.01/day and the conservative assumptions of the sediment deposition models used by USEPA and the City is that there is no resuspension and transport of solids outside the area. This tends to overestimate actual accumulation of outfall deposits in the sediments. For instance, Hendricks and Eganhouse estimated a background accumulation rate for solids of 103 $g/m^2/yr$, one sixth of their estimate for solids deposition. Applying this ratio to the model results in Table 10 yields organic accumulation rates of 20 to 37 g/m^2 and steady-state accumulation rates of 5 to 10 g/m^2. Empirical evidence suggests that steady-state organic accumulations less than 50 g/m^2 have minimal effects on benthic communities (USEPA, 1982).

To evaluate whether significant accumulation is actually occurring in the field, USEPA looked at trends in sediment monitoring data that occurred in the years from 1991 to 2000 (see Fig. 2 for station locations). We compared the results of pre-discharge monitoring surveys (1991 to 1993) and discharge monitoring surveys (1994 to 2000). High rates of organic accumulation in sediments should be associated with elevated sediment concentrations of total volatile solids(TVS), total organic carbon (TOC), biochemical oxygen demand (BOD), and sulfides. To

put these values in perspective we also compared the data from around the outfall to the results from regional surveys conducted in the offshore areas of San Diego (SCBPP, 1994, San Diego, 1995, 1996, 1997; SCCWRP, 1998, San Diego, 1999).

Total Volatile Solids (TVS). TVS is one measure of organic matter in the sediments. The average pre-discharge concentrations from these stations ranged from 2.1 to 2.3% and the average concentrations since 1994 have ranged from 2.4 to 2.7%. Although there appears to be a slight increase during the discharge period (Fig. 10), there does not appear to be any spatial pattern which would suggest that this is an outfall-related effect. The average concentration from the regional surveys was 2.4% with a standard deviation of 1.1%.

Total Organic Carbon (TOC). TOC is a direct measure of organic carbon in the sediments. There does not appear to be any spatial or temporal trends in TOC which might suggest an outfall-related effect (Fig. 11). The concentrations at the outfall depth averaged around 0.5% in both the pre-discharge and discharge time periods. The one exception is at Station B12 (12.7 Km north of the outfall) where TOC values ranged from 0.5% to 3.0%. Background TOC concentrations in the San Diego region ranged from 0 to 3.8%. The average concentration from the regional surveys was 0.5%.

Biochemical Oxygen Demand (BOD). Sediment BOD is an indirect measure of organic enrichment. Although there is some variability in the data (Fig. 12), sediment concentrations were generally in the 200 to 400 ug/g range. There as no apparent increase during the period of the discharge. These values are typical of background concentrations from regional reference surveys in the San Diego Region.

Sediment sulfides. Sulfides are a by-product of anaerobic digestion of organic matter by sulfur bacteria. Sulfide concentrations increased during the discharge period at most stations (Fig. 13). The highest concentrations were seen at station E14 (as high as 30 ug/g). Elevated concentrations were also seen on occasion upcoast of the outfall but the pattern does not appear to be consistent over time. Sulfide concentrations from regional surveys in the San Diego region ranged from 0.1 to 272 ug/g, but were generally less than 5 ug/g. The average concentration from the regional surveys was 8.1 ug/g with a standard deviation of 26.9 ug/g.

Both model predictions and monitoring results indicated that deposition and accumulation rates associated with the outfall are not likely to have negative effects on benthic communities outside the ZID. Sediment parameters associated with organic accumulation (such as total volatile solids, biochemical oxygen demand, total organic carbon and dissolved sulfides) do not appear to show any outfall-related effects. The one exception is dissolved sulfide which does indicate an outfall-related pattern. All these parameters are within the range of natural variability in other surveys and not likely to have significant effects on benthic communities.

Sediment Contamination. The COP states that *"the concentrations of toxic substances in marine sediments shall not be increased to levels which would degrade indigenous biota or degrade marine life."*

The concentrations of nine metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel,

silver, and zinc), total PCBs and total DDTs were evaluated in this review. Trends in sediment contaminant concentrations at stations along the 98-m depth contour (diffuser depth) were evaluated. The data from stations around the outfall were compared to data from the regional reference surveys. To assess the potential impacts to biological communities, the data were compared to sediment guidelines in the literature (as summarized Table 11). Although these guidelines are not regulatory in nature, they do provide some information on the concentrations where the potential for biological effects are likely to occur. The TELs and ERLs are thought to reflect concentrations which pose little risk of toxicity. When sediment concentrations are higher than PEL and ERM values there may be potential for sediment toxicity and further investigation is warranted (Long *et al.*, 1998).

Table 11. Overview of numeric sediment quality guidelines (from Buchman, 1999).

Pollutant	TEL	ERL	PEL	ERM	AET
Arsenic (ug/g)	7.24	8.2	41.6	70	35
Cadmium (ug/g)	0.67	1.2	4.2	9.6	3.0
Chromium-total (ug/g)	52.3	81	160.4	370	260
Copper (ug/g)	18.7	34	108	270	390
Lead (ug/g)	30.2	46.7	112	218	400
Mercury (ug/g)	0.13	0.15	0.696	0.71	0.41
Nickel (ug/g)	15.9	20.9	42.8	51.6	110
Silver (ug/g)	0.73	1	1.77	3.7	3.1
Zinc (ug/g)	124	150	271	410	410
DDT-total (ug/kg)	3.89	1.58	51.7	46.1	11

TEL = threshold effects level; PEL = probable effects level; ERL = effects range low; ERM = effects range median; AET = apparent effects threshold

Arsenic. The average arsenic concentration ranged from 2.2 to 2.5 ug/g during the pre-discharge period and from 3.1 to 3.8 ug/g during the discharge period. This suggests that arsenic concentrations in the sediments have increased by about 1 ug/g during discharge period (Fig. 14). The highest increases were at E14 (near the outfall) and B12 (located 12.7 Km north of the outfall). The average arsenic concentration from the regional surveys was 3.4 ug/g, with a standard deviation of 1.4 ug/g. Arsenic concentrations around the outfall are low relative to ER-L (8.2) and TEL (7.2) thresholds.

Cadmium. Cadmium concentrations greater than the detection limit (0.5 ug/g) were not observed in any of the discharge period samples collected along the 98-m contour (Fig. 15). Cadmium concentrations from the regional surveys were also generally low, being measured in only 25 out of 184 of the measurements collected for the regional surveys between 1995 and 1999. The average measured cadmium concentration was 0.6 ug/g with a standard deviation of 0.3 ug/g. These values are similar to background concentrations for the Bight reported by NOAA (Mearns *et al*, 1991). Cadmium concentrations near the outfall are similar to background and low relative to threshold values (TEL = 0.67 ug/g, ERL = 1.2 ug/g).

Chromium. The average chromium concentration during the discharge period (17.7 ug/g) was slightly higher than in the pre-discharge period (15.8 ug/g). This suggests that chromium concentrations have increased by about 2 ug/g since the plant started discharging (Fig. 16). The average value from the regional surveys was 16.0 ug/g with a standard deviation of 6.7 ug/g. The

numbers around the outfall are similar to background numbers and well below the lowest effects thresholds (TEL = 52 ug/g, ERL = 81 ug/g).

Copper. Copper values ranged from 3.1 to 20 ug/g, with a single outlier of 80.4 ug/g in June 1994 at station B9 located 10.5 Km north of the outfall (Fig. 17). If we remove the outlier, we find that the average concentrations appear to have increased from an average of 7.3 ug/g in the pre-discharge period to 8.8 ug/g for the discharge period. The average value from the regional reference surveys was 8.6 ug/g with a standard deviation of 5.4 ug/g. The copper values are generally low relative to sediment quality thresholds (TEL = 18.7 ug/g, ERL = 34 ug/g).

Lead. Lead concentrations in the sediments were generally below the detection limit of 5 ug/g, being detected in less than 25% of the samples (27 out of 120 measurements). Concentrations in the discharge period for the summer 98-m stations ranged from detection limits to 15.5 ug/g (Fig. 18). Lead was also rarely detected above 5 ug/g in the regional surveys (33 out of 184 samples). The average measured concentration from the regional surveys was 6.9 ug/g with an standard deviation of 1.6 ug/g. This is consistent with data from previous reference surveys (Thompson *et al.*, 1987, 1992) where background concentrations for the Bight were around 2 to 12 ug/g. Concentrations around the outfall are similar to those reported in the regional surveys and well below any of the sediment quality thresholds (ERL = 46.7 ug/g, TEL = 30.2 ug/g).

Mercury (Hg). Comparison of concentrations from the pre-discharge and discharge periods (Fig. 19) is complicated by differences in detection limits (which ranged from 0.025 to 0.047 ug/g) between years and the limited number of detected values in any given year. Mercury was only detected in about 25% of the samples. The maximum detected value was 0.11 ug/g. In the regional surveys, mercury was detected in about 65% of the samples (119/184 or 65% of the samples). The average measured concentration from the regional surveys was 0.05 ug/g with a standard deviation of 0.02 ug/g. Eganhouse *et al.*, (1976) suggested that background concentrations in the Bight were around 0.05 ug/g. The mercury concentrations in sediments near the outfall appear to be similar to background values and below the lower sediment quality threshold values for mercury (TEL = 0.13 ug/g, ERL = 0.15 ug/g).

Nickel (Ni). There does appear to be an outfall-related pattern in the data (Fig. 20). This pattern is driven largely by a single sample at E14 in 1994. This value of 29 ug/g is questionable as duplicate analysis of this sample yielded a value of 11 ug/g. For perspective, the average differences in nickel concentrations between duplicate samples is around 1 ug/g. Averaging the two duplicates from E14, yields a value of 20 ug/g. While this value is still high, it is more in line with other values. On average, nickel concentrations have increased from 6.6 to 7.8 ug/g. The average nickel concentration from the regional reference surveys was 8.3 ug/g with a standard deviation of 3.3 ug/g. The maximum value was 21 ug/g. With the exception of the one outlier at E14, the concentrations near the outfall are below the lower sediment quality thresholds (ERL = 20.9 ug/l, TEL = 15.9 ug/l).

Silver (Ag). Almost all samples were below detection limits of 3 ug/g (Fig. 21). Silver was also detected very infrequently in regional surveys (172/188 or less than 10% of the samples). The maximum concentration in the regional surveys was 6.2 ug/g. NOAA's suggested background concentration for silver is 0.01 to 0.1 ug/g. Although silver has been suggested as a useful

indicator of sewage effluent (Mearns *et al.*, 1991; Sanudo-Wilhelmy and Flegal, 1992), it is impossible to make conclusions about silver concentrations at the Point Loma outfall because the detection limits of 3 ug/g are high relative to background concentrations. These detection limits are also high relative to threshold values for silver (TEL = 0.73 ug/l, ERL = 3.7 ug/l).

Zinc (Zn). There is no apparent outfall-related pattern in zinc concentrations. Zinc concentrations are generally around 20 to 40 ug/g. The one notable exception was in 1997 at station B9 (10.5 Km north of the outfall) where the concentration was 140 ug/g (Fig. 22). The average pre-discharge concentration was 29 ug/g. The average concentration from the discharge period data (excluding the outlier) was 31 ug/g. The average concentration from the regional surveys was 27.4 ug/g with a standard deviation of 13.9 ug/g. The maximum value from the regional survey was 94 ug/g. These values are lower than the average concentrations at the 60- and 150-m stations from 1985 and 1990 SCCWRP reference surveys which ranged from 45 to 55 ug/g. Most values are low relative to threshold values (TEL = 124 ug/l, ERL = 150 ug/g) and within the range of background concentrations.

DDT. *p,p*-DDT was detected in 3 out of 120 samples. Its degradation product *p,p*-DDE was detected in 53 out of 116 samples. The other four DDT isomers (*p,p*-DDD, *o,p*-DDT, *o,p*-DDD and *o,p*-DDE) were not detected at the 100-m stations. Analysis of trends in the DDT data is complicated by differences in detection limits among years (Table 12). Detection limits were 1 ng/g in the pre-discharge time period (1991 to 1993). The detection limits have improved since then. During the 1994-1999 time period, the detection limits ranged from 0.37 to 0.55 ng/g. The three detected values for *p,p*-DDT were 1.2 ng/g, 2.9 ng/g and an anomalously high 40 ng/g (at Station E2 , located 4.6 Km south of the outfall). Trends in *p,p*-DDE can be assessed by comparing the number of detected values greater than 1.0 ng/g in the pre-discharge and discharge periods. In the pre-discharge period, *p,p*-DDE values greater than 1.0 ng/g were detected in 18 out of 36 measurements. In the discharge period data, only 11 out of 84 measurements were greater than 1.0 ng/g. The highest values were for 1993 where all 12 stations were higher than1.0 ppb (max concentration was 4.4 ppb). It is unclear why the *p,p*-DDE concentrations would be greater in sediments from the pre-discharge period. With the exception of 1993, the values from the pre-discharge and discharge periods are similar.

Table 12. DDT detection limits in sediments from San Diego (concentrations in ng/g)

DDT Isomer	91	92	93	94	95	96	97	98	99	00
p,p-DDT	1.00	1.00	1.00	0.44	0.44	0.94	0.94	0.94	0.94	0.41
p,p-DDD	1.00	1.00	1.00	0.32	0.32	0.91	0.91	0.91	0.91	0.59
p,p-DDE	1.00	1.00	1.00	0.37	0.47	0.44	0.44	0.44	0.44	0.55
o,p-DDT	1.00	1.00	1.00	0.51	0.51	0.39	0.39	0.39	0.39	0.57
o,p-DDD				0.36	0.36	0.26	0.26	0.26	0.26	0.32
o,p-DDE				0.54	0.54	0.39	0.39	0.39	0.39	0.48

Similar findings were observed in the regional surveys. The parent compound *p,p*-DDT was detected rarely (2 out of 184 samples), the degradation product *p,p*-DDE was detected more

frequently (59 out of 184 samples), and the isomers *p,p*-DDD, *o,p*-DDT, *o,p*-DDD, and *o,p*-DDE were not detected at all. The maximum concentrations of *p,p*-DDT and *p,p*-DDE in the regional surveys were 3.3 and 3.4 ng/g respectively. The DDT concentrations near the outfall are similar to background concentrations. These values are generally low relative to sediment quality thresholds for total DDT (ERL = 1.58 ng/g, TEL = 3.89 ng/g).

PCBs. The applicant reported that PCBs were not detected in the sediments at the outfall depth. Detection limits for PCB Arochlors 1248, 1254, 1260 and 1262 ranged between 10 and 13 ng/g. The applicant has also been measuring PCB congeners since 1998. PCB congeners were only detected on two occasions at the 100-meter stations (E25, January 2000; E2, April 2000). The detection limits for the various congeners ranged from 1 to 8 ng/g.

Summary of sediment contaminant data. The sediment chemistry data presented by the applicant does not indicate any substantial increase in sediment contaminant concentrations. There appear to be minor increases in the concentrations of certain metals (arsenic, chromium, copper and nickel). Concentrations of metals and organics are within the range of natural variability. The concentrations measured near the outfall were generally below the lowest sediment quality thresholds (such as TELs or ERLs) suggesting that the probability of sediment toxicity is low.

Therefore, USEPA concludes that the discharge will not increase the concentrations of toxic substances in marine sediments to levels that degrade indigenous biota or marine life. The monitoring program being developed as part of the NPDES permit will be designed to continue tracking sediment conditions over time.

B. Impact of Discharge on Public Water Supplies. The applicant's proposed modified discharge will have no effect on the protection of public water supplies and will not interfere with the use of planned or existing public water supplies.

C. Biological Impact of Discharge. The proposed modified discharge must allow for attainment or maintenance of water quality to protect and propagate a balanced, indigenous population (BIP) of shellfish, fish, and wildlife. The applicant must demonstrate that a BIP of shellfish, fish, and wildlife will exist in all areas beyond the ZID that may be affected by the proposed modified discharge.

A BIP is generally defined in the section 301(h) regulations [40 CFR 125.58(f)] as an *ecological community* which exhibits characteristics similar to those of nearby, healthy communities existing under comparable but unpolluted environmental conditions. Consequently, for the purpose of 301(h) the term *population* should be interpreted to mean biological communities and the terms *shellfish, fish and wildlife* should be interpreted to include any or all biological communities that might be adversely affected by the discharge.

The ZID describes an area adjacent to the outfall system in which inhabitants, including the benthos, may be chronically exposed to concentrations of pollutants in violation of water quality standards and criteria. In general, the ZID boundary is operationally defined by the depth of the outfall. For the Point Loma outfall, the ZID boundary is 93.5 m (320 feet) from the outfall and diffuser.

In this evaluation, the effect of the outfall on the BIP is evaluated with respect to potential effects on phytoplankton, effects on benthic and fish community structure, and the potential for bioaccumulation of toxic substances in fish tissue.

1. Phytoplankton. The two following COP standards are applicable to plankton:

> Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded.
>
> Nutrient material shall not cause objectionable aquatic growths or degrade indigenous biota.

Planktonic populations were not measured as part of the applicant's monitoring program. Therefore, this review focuses on variables measured as part of the monitoring program which may relate to phytoplankton, such as ammonia, transmissivity and total suspended solids.

Effluent suspended solids may affect phytoplankton by attenuating light penetration and thus reducing primary productivity. As discussed previously (See Section 1.A), an outfall-related increase in suspended solids of 0.3 to 0.6 mg/l in the area of the ZID is well within the range of natural variability (typically 2 to 5 mg/l). The monitoring data indicates that the effect of the discharge on light transmittance is minimal. These analyses indicate that the outfall-related effects on light penetration are not likely to have a significant effect on phytoplankton productivity.

Effluent ammonia concentrations may also affect phytoplankton productivity because ammonia tends to be a limiting nutrient in coastal waters. Natural background ammonia concentrations within the euphotic zone of the Southern California Bight generally range from below detection limits to 0.02 mg/l (Eppley *et al.*, 1979a). Concentrations in the offshore area are typically lower than 0.01 mg/l. The average ammonia concentrations in the effluent from 1995 to 2000 was 26 mg/l (Table 13).

Table 13. Average monthly effluent concentration for ammonia (mg/l) from Point Loma (1995-2000).

Month	1995	1996	1997	1998	1999	2000	Average 1995-2000
January	19	27	25	24	27	27	25
February	23	26	28	20	25	28	25
March	23	26	30	26	26	28	26
April	24	28	30	26	27	28	27
May	23	27	29	27	26	28	27
June	22	27	28	27	27	28	26
July	23	27	27	26	28	28	27
August	24	26	25	25	26	27	25
September	26	25	22	23	28	28	25
October	26	26	23	23	27	27	25
November	26	28	24	26	29	27	27
December	29	29	25	26	28	29	28
Annual Average	24	27	26	25	27	28	26

The highest monthly average concentration during this time period was 34 mg/l. This equates to a worst-case concentration of 0.34 mg/l (based on 99:1) and a long-term average of 0.09 mg/l (based on a long-term average dilution of 365:1). If these concentrations were to occur in the euphotic zone they could potentially stimulate phytoplankton productivity around the outfall. However, since the wastefield is generally trapped below the euphotic zone, the influence of the wastefield ammonia concentrations on phytoplankton should be minimal.

The applicant measured chlorophyl *a* concentrations (a measure of phytoplankton abundance) in offshore waters since January 1996 as part of their monthly water quality monitoring effort. Although the data is limited, there is no sign of any increase in chlorophyl a concentrations near the outfall.

Summary of effects on phytoplankton. The potential effects of the outfall on phytoplankton productivity were evaluated using the results of the existing monitoring program and model projections provided by the applicant for end-of-permit conditions. Decreases in light transmittance associated with the plume are minimal compared to the range of natural variability. Ammonia concentrations within the plume are likely to be elevated relative to background and could enhance phytoplankton productivity in the vicinity of the outfall. Any substantial increase in phytoplankton productivity would be unlikely however, because the plume trapping depth is generally below the euphotic zone. No increases in chlorophyl a concentrations near the outfall were observed in the monitoring data. Therefore it is concluded that the outfall will not result in phytoplankton blooms or other degraded conditions.

2. Benthic Infauna. The COP standards appropriate to evaluating benthic infauna are:

> Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded.
>
> The rate of deposition of inert solids shall not be changed such that benthic communities are degraded.
>
> The concentrations of toxic substances in marine sediments shall not be increased to levels which would degrade indigenous biota or degrade marine life.

The potential effects of solids deposition and concentrations of toxic substances in marine sediments on benthic communities were addressed previously (See Section 2.A.4). To evaluate whether benthic communities are degraded we evaluated benthic data from the grid of stations near the outfall since 1991 (Fig. 2) and data collected as part of regional reference surveys conducted every summer since 1994 (Fig. 9). In this review we look for differences in the abundances, number of species, as well as differences in the distribution of pollution sensitive and pollution tolerant species. We also looked at the response of two benthic indices designed to evaluate pollutant effects on benthic communities. These were the infaunal trophic index (Word, 1978, 1980) and the Benthic Response Index (Smith *et al.*, 2001). As recommended in the ATSD (USEPA, 1994), outfall-related effects on benthic communities should be evaluated in the context of (1) an evaluation of the range of natural variability in the reference conditions (2) an estimate of the magnitude and areal extent of the effect and (3) the potential for adverse effects.

To evaluate the magnitude and effect of the outfall, we focus on data from the outfall depth (100-meters) and compare values from ZID and nearfield stations to values from farfield and control stations. Station E-14 is located approximately 119 meters from the "Y" of the diffuser and should be considered the ZID boundary station. Stations E11 and E17 are the closest nearfield stations located approximately 204 meters from the south end of the diffuser and 278 meters from the north end of the diffuser, respectively. The remaining E stations are considered farfield stations. The B stations are considered control stations.

The data from the regional reference surveys are used to evaluate the range of natural variability. Since depth is important we focus the review on the benthic data from the 75 to 125 meter depth interval. These data provide a regional perspective on background conditions on the distribution of benthic organisms offshore of San Diego at depths comparable to the outfall.

Within the context of the COP, adverse effects to benthic communities are described in terms of degradation and degradation is defined in terms of statistical significance. We used two distinct but complementary statistical approaches to evaluate benthic degradation (Smith, 2001b). The first statistical approach uses an analysis of variance approach where conditions at control and impact sites are evaluated before and after the outfall went on line. This is known as a BACI (Before-After-Control-Impact) design. In the BACI design, effects at Station E14 were compared to all other100-m stations (Table 14). In addition, the two nearfield stations (E11 and E17) were compared to Stations B9 and E26 representing the reference and most upcoast farfield station. The second statistical approach uses the regional reference data to develop a reference envelope for key benthic parameters. Tolerance intervals were then defined to establish bounds around the reference envelope. Data from the outfall were then evaluated against the upper and/or lower bounds of the reference envelope. In the BACI design outfall impacts are evaluated against fixed control site(s). In the reference envelope approach impacts are evaluated against multiple sites which are intended to reflect background or reference conditions. The results of the BACI analyses are summarized in Table 14. The tolerance intervals are presented in Table 15 along with summary statistics from the regional surveys.

Table 14. Summary results of BACI analysis. (Values in table refer to alpha value, NS means not statistically significant).

	E14 vs. all stations	E17 vs. E26&B9	E14 vs. E26&B9	E11 vs. E26&B9
Number of species	0.05	0.05	0.05	0.05
Total abundance	0.05	NS	0.1	0.05
Amphiodia	0.05	NS	0.05	NS
Parvilucina tenuisculpta	0.05	0.05	0.05	0.05
Euphilomedes carcharodonta	0.05	NS	0.05	0.1
Capitella spp.	0.1	NS	0.1	NS
Infaunal Trophic Index	0.05	0.05	0.05	0.05
Benthic Response Index	0.05	0.05	0.05	0.05

Number of species. One potential indicator of environmental degradation would be a reduction in the number of species around the outfall. The data from the 98-m stations suggests that number of species generally increased after 1993 when the discharge at the current deepwater site began (Fig. 22). The number of species ranged from 93 to 128 per grab in the discharge period. Although there is a lot of variability between years, the BACI analysis indicates that the number of species at Station E14 is statistically higher than at the other stations. The two closest nearfield stations (Stations E11, E17) were also statistically elevated when compared to upcoast reference (Station B9) and farfield (Station E26) stations. This suggests that there may be an outfall-related enhancement in the number of species near the outfall. The fact that increases in species number were also seen at most other stations suggests that some other region-wide factors may also be influencing species number. In the regional surveys the number of species ranged from 50 to 149 per grab (Fig. 23). The number of species at stations near the outfall were within the bounds of the reference envelope (51 to 134) and not likely to be environmentally significant.

Abundance. Benthic abundances are generally predicted to increase in response to organic enrichment. Increased abundances associated with moderate levels of organic enrichment are generally not considered to be adverse unless accompanied by a reduction in the number of species. However as the level of organic enrichment increases the number of species may begin to decline and extremely high abundances associated with reduced number of species would be considered an indication of an adverse outfall-related effect. Benthic abundances would be expected to decline when levels of organic enrichment result in anoxic sediment conditions. In this case, decreased abundances would be indicative of a degraded condition.

Benthic invertebrate abundances at the 100-m stations ranged from 223 to 662 per grab in the discharge period (Fig. 24). Although the inter-annual variability is high, benthic abundances appear to have increased during the discharge period at all stations. BACI analysis indicates that the higher abundances at Stations E14 and E11 are statistically significant. In the regional surveys, average benthic abundances ranges from 173 to 1,072 per grab (Fig. 25). Abundance values at the outfall depth were generally within the tolerance limits for the reference envelope (140 to 616).

Indicator species. We looked at the presence of four key benthic species known to respond to outfall related effects: a brittle star (*Amphiodia urtica*), a bivalve (*Parvilucina tenuisculpta*), a crustacean (*Euphilomedes carcarodonta*) and a polychaete (*Capitella spp.*)

Amphiodia urtica has been suggested as a key indicator species, because it is one of the most abundant species on the shelf and because its abundances are very much reduced near sewage treatment outfalls (Thompson, *et al.*, In Prep). *Amphiodia* abundances from the regional survey ranged from 0 to 175 per grab. They tend to be more abundant at midshelf depths (Fig. 26). The 100-meter outfall depth is at one edge of the depth distribution for *Amphiodia*. The values at the 100-m stations ranged from 5 to 97 per grab. However, there is a clear outfall related pattern in their distribution (Fig. 27). *Amphiodia* abundances appear to have increased at all stations except in the "Y" of the outfall (Station E14) where numbers remain lower than pre-discharge. BACI analysis indicates that this decrease at Station E14 is statistically significant. The effect on *Amphiodia* abundances does not appear to extend beyond the ZID boundary.

The bivalve, *Parvilucina tenuisculpta*, has been suggested as an indicator species because it is found in high abundances in areas of moderate organic enrichment. Abundances from the 100-m stations ranged from 0 to 14 per grab. There is a distinct pattern of increased abundance nearby (Stations E17, E14, E11) which suggests that the outfall is having an enhancement effect near the outfall (Fig. 28). The BACI analysis indicates that abundances at Station E14 are statistically significant as were the abundances at Stations E11 and E17. The range in abundances at these stations near the outfall is also similar to that observed in the regional reference surveys (Fig. 29), where the number ranged from 0 to 13 per grab and the upper bound for the tolerance interval is 14 per grab.

The crustacean, *E. carcharodata* is of interest as indicator species because the abundances of this ostracod species are generally higher near outfalls. At the 100-m stations, *E. caracarodata* abundances ranged from 0 to 28 per grab in the pre-discharge period and from 0 to 31 per grab in the discharge period (Fig. 30). The pattern of increased abundances near the outfall (Stations E14 and E11) and decreased abundances upcoast of the outfall (Stations E17, E20, E23) is similar to that observed with *Parvilucina*. BACI analysis indicates that the increase at Station E14 is statistically significant at the 0.05 alpha level; the increase at Station E11 was statistically significant at the 0.10 alpha level (Table 14). *E. carcharodata* abundances from the regional surveys ranged from 0 to 18 per grab (Fig. 31). Abundances at the outfall depth were generally below the upper limit of the tolerance interval (17 per grab).

Capitella capitata abundances are generally indicative of organic enrichment. Abundances in the regional surveys are fairly low, ranging from 0 to 4 individuals per grab (Fig. 32). A comparison *Capitella* abundances during the pre-discharge and discharge periods clearly indicates enhanced numbers near the outfall (Stations E14 and E17). However, these differences were not statistically significant at the 0.05 level using the BACI model (Table 14). *Capitella* abundances around the ZID boundary (Stations E14 and E17) are higher than the upper reference envelope limit of 3 (Fig. 33). This indicates localized enhancement in the immediate vicinity of the outfall.

Benthic Indices. The ITI is a numerical index which incorporates the relative abundance of over 500 invertebrate species into a single number. The ITI is largely driven by the abundance of many of the species listed above (e.g. *Amphiodia spp.*, *Euphilomedes spp.*, *Parvalucina tenuisculpta*; *Capitella spp.*) and so will reflect and amplify many of the patterns previously discussed.

ITI values from the regional surveys ranged from 73 to 95 ITI units (Fig. 34). At the 100-m stations they ranged from 74-92 over this same time period. There appears to be a long-term temporal pattern in the ITI values (Fig. 35). Values increased from 1991 to 1993, decreased in 1994, remained relatively low until 1997, and then increased again in 1998 and 1999. The range of variability in the ITI values is roughly the same for the pre-discharge and discharge periods. There does appear to be an outfall-related spatial pattern, with values near the outfall (Stations E14, E17, E11) being generally lower than nearfield and farfield stations by 3 to 5 units. The decrease at Station E14 is statistically significant. Although the ITI values at E17 and E11 are higher during the discharge period than they were during the pre-discharge period, the depression relative to other stations (i.e., Stations B9, E26) was statistically significant (Table 14). The ITI

values at stations near the outfall were generally higher than 74, the lower limit of the reference envelope.

The BRI is a benthic response index developed by SCCWRP as part of the Southern California Bight Pilot Project (Smith *et al.*, 2001a) which incorporates information on over 700 benthic species. Values lower than 25 are generally considered to be un-impacted. BRI values from the regional surveys ranged from -4 to 15 (Fig. 36). BRI values from the 100-m stations ranged from -2 to 16. BRI values were generally higher at Stations E14, E11, and E17 (Fig. 37). These were statistically significant based on the BACI analysis. The upper bound for the reference envelope was 11. BRI values higher than this were only observed at Station E14 indicating that the effect is localized.

Table 15. Summary of benthic data from regional reference surveys (1994-1999)

	1994	1995	1996	1997	1998	1999	Tolerance Intervals	
Number of species							Lower	Upper
Min	57	67	71	59	37	50	51	134
Ave	77	101	92	84	98	87		
Max	104	149	121	123	172	130		
Total Abundance								
Min	173	261	226	233	187	240	140	616
Ave	353	439	324	340	520	390		
Max	602	587	457	500	1072	574		
Amphiodia spp.								
Min	5	1	23	20	0	17	0	NA
Ave	50	66	66	76	45	90		
Max	106	175	138	151	149	203		
Parvalucina tenuisculpta								
Min	0	0	0	0	0	0	NA	14
Ave	1	1	1	1	3	0		
Max	5	7	4	2	13	1		
Euphilomedes cacharodata								
Min	0	0	0	0	0	0	NA	17
Ave	1	3	2	4	3	1		
Max	8	18	5	17	13	3		
Capitella spp.								
Min	0	0	0	0	0	0	NA	3
Ave	0	0	0	0	1	0		
Max	0	1	3	0	4	1		
ITI								
Min	75	76	80	78	73	85	74	NA
Ave	81	83	85	85	83	90		
Max	85	88	89	90	91	95		
BRI								
Min	0	0	2	-1	-1	-4	NA	11
Ave	1	4	5	3	9	0		
Max	5	6	9	8	15	3		

Summary of effects on benthic community structure. The monitoring program is able to pickup shifts in biological communities responding to the presence of the outfall. There are statistically significant changes at the ZID boundary (Station E14) for almost all parameters evaluated in this review. For certain parameters such as number of species, the BRI, and possibly the ITI, these extend to the nearfield stations (Stations E17 and E11). Conditions beyond the zone of initial dilution were generally similar to background conditions as defined by the reference envelope. The outfall does not appear to be causing any biologically significant changes in benthic community structure in the vicinity of the outfall which might be construed as degradation. USEPA concludes that the discharge is not having significant effects on benthic populations beyond the zone of initial dilution

3. Fish and Epibenthic Macroinvertebrates. The COP states that 'marine communities, including vertebrate, invertebrate, and plant species shall not be degraded'.

This review of fish populations focuses on community parameters such as number of species, total abundances and changes in the abundances of common species. For the purpose of analyses, trawl stations SD9, SD10, SD11 and SD12 are considered nearfield stations (see Fig. 38 for station locations). Stations SD07 and SD08 are the southern farfield stations and Stations SD13 and SD14 are the northern farfield stations. Spatial and temporal trends were evaluated by comparing three years of pre-discharge monitoring to the seven years of monitoring that has occurred since the discharge began at the deep ocean outfall.

Table 16. Summary of fish trawl data

	Nearfield stations 1990-1993	Farfield stations 1990-1993	Nearfield stations 1994-2000	Farfield stations 1994-2000
Number of species	12	13	13	15
Total abundance	174	200	327	302
Biomass (kg)	3.5	4.0	6.2	4.7

The average number of species collected per trawl over the ten-year monitoring period ranged from 6 to 23 (Fig. 39). The average number of species at the nearfield increased from 12 to 13 and the average number of species in the farfield stations increased from 13 to 15. These apparent increases are well within the range of natural variability and there were no spatial patterns or temporal trends in the number of species which might suggest an outfall-related trend.

Fish abundances were more variable with values ranging from 22 to 807 fish per trawl (Fig. 40). Abundances appear to have increased during the period since the discharge began. At the nearfield stations, abundances increased from 174 to 327; at the farfield stations the numbers increased from 200 to 302. Abundances tended to be lower at all stations in 1992 and 1998 and higher at all stations in 1999 and 2000. The southern stations (SD7 and SD8) tended to have lower abundances than the more northern stations.

The fish biomass data also tended to be highly variable, with values ranging from 0.6 to 24.2 kilograms of fish per trawl (Fig. 41). At the nearfield stations, biomass appears to have increased from 3.5 to 6.2 Kg. At the farfield stations average biomass increased from 4.0 to 4.7 Kg. Most of the increase in biomass at the nearfield stations is due to two trawls at SD11 in 1994 (high abundance and high species richness) and SD12 in 1997 (moderate abundances and high species

richness). When these two data points are removed, the differences in fish biomass between pre- and post-discharge are minor. As with abundance data, the biomass data tended to be lower at the southern-most stations.

The same species were abundant in both pre-discharge and discharge period. These numerically dominant species and their relative abundance (expressed as percent) are listed in Table 17.

Table 17. Dominant fish species across all stations for the pre-discharge and discharge periods.

Common Name	Percentage (1990-1993)	Percentage (1994-2000)
Pacific sanddab	64.2%	58.0%
Plainfin midshipman	10.0%	8.3%
Dover sole	5.9%	6.9%
Yellowchin sculpin	2.3%	5.0%
Stripetail rockfish	5.4%	5.0%
Longfin sanddab	2.1%	4.8%
Longspine combfish	0.4%	2.6%
Pink seaperch	0.9%	1.5%
Halfbanded rockfish	0.7%	1.1%
Bay goby	1.2%	1.1%
	93.2%	94.1%

These ten fish species represented more than 90% of the total abundance. Pacific sanddab was the most abundant fish in both the pre-discharge and discharge periods, representing around 60% of the total catch (all surveys combined). There were about 19 more fish species in the trawl data from the discharge period. This is probably related to the fact that we have an additional 4 years of trawl data from the discharge period. There were four species that were present in relatively low abundances in the pre-discharge period trawls were not seen in the discharge period trawls. These were speckled sanddab, blackeye goby, big skate, and jack mackerel. These four species were represented by a total of 12 individual fish. The outfall does not appear to be having any major effects on fish species in the area.

Summary of effects on fish community structure. Analyses of temporal and spatial patterns in the fish trawl data did not reveal any outfall-related patterns. There are no meaningful differences in species composition, abundance or biomass between trawls from the pre-discharge and discharge periods that can be attributed to the outfall.

4. Bioaccumulation and Toxic Pollutants. The COP states that "*The concentration of organic materials in fish, shellfish or other marine resource used for human consumption shall not bioaccumulate to levels that are harmful to human health*". The COP does not define tissue concentration levels that would be harmful to human health or the health of the organism.

The applicant's bioaccumulation monitoring program consists of chemical analysis of both muscle and liver tissue from selected fish species from eight trawl stations. Chemical analyses for priority pollutants in fish tissue are performed on a semi-annual basis (from spring and fall trawls). The applicant also performs chemical analyses on rig-caught fish from two sites (RF1 is near the outfall and RF2 is an area 7 miles upcoast of the outfall). USEPA reviewed the data for the time period from July 1991 through October 2000.

Chemical concentrations in muscle tissue. The muscle tissue data is summarized in Table 18. Tissue concentrations were compared with results from other studies of fish bioaccumulation in the Southern California Bight (as summarized in Mearns *et al.* 1991). Where applicable, the data were also compared to Food and Drug Administration (FDA) action levels and risk-based numbers for tissue concentrations (USEPA, 2000). These are summarized in Table 19.

Arsenic. Arsenic levels in the muscle tissue of fish caught off Point Loma ranged from 0.6 to 28.8 ug/g, with a mean of 6.8 ug/g. Longfin sanddab arsenic concentrations ranged from 0.05 to 28.8 ug/g. The mean concentration prior to the discharge was 9.6 and the mean concentration after the discharge went on line was 11.8 ug/g. Pacific sanddabs off Point Loma had arsenic concentrations ranging from 1.0 to 10.7 ug/g, with a mean of 3.5 ug/g (n = 57). Literature values for Pacific sanddab in the Bight range from 3.1 to 11.6 ug/g. California scorpionfish caught off Point Loma had concentrations ranging from 0.5 to 16.0 ug/g, with a mean of 4.6 ug/g (n = 126). Literature values for California scorpionfish from the Bight range from 0.7 to 1.7 ug/g.

The mean arsenic concentration in fish from the Point Loma area are greater than the USEPA risk-based thresholds of 1.2 ug/g (for non-carcinogenic risk) and 0.026 ug/g (for carcinogenic risks). However, it is unlikely that the Point Loma discharge is a significant source of arsenic. The maximum arsenic concentration measured in the effluent (2.7 ug/l) is less than the background concentration (3 ug/l). The applicant also points out the presence of a significant natural source in submarine hot springs near Punta Banda where concentrations can be as high as 420,500 ug/l. There is no spatial or temporal pattern in the tissue concentrations of longfin sanddab or California Scorpionfish which would suggest that the outfall is having an affect on the fish tissue (Figs. 42 and 43).

Cadmium. Cadmium was rarely detected in fish muscle tissue (in about 8% of the samples). Cadmium concentrations ranged from below detection limits (0.1 to 0.34 ug/g) to a maximum detected value of 1.9 ug/g (n = 359). Concentrations in longfin sanddab values ranged from 0.1 to 0.6 ug/g with an average of 0.32 ug/g (n=114). Cadmium was detected only once in longfin sanddab during in the discharge period. Concentrations in Pacific sanddabs ranged from 0.2 to 0.34 with an average of 0.33 ug/g (n =29). It was not detected Pacific sanddab samples from the discharge period. Concentrations in California scorpionfish values were at the detection limit of 0.34 ug/g (n=116). It was detected only once in the California scorpionfish during the discharge period. Literature values for the Bight (from Mearns *et al.*, 1991) range from <0.001 to 0.200 ug/g. The applicant's data on cadmium in fish tissue can not be compared to these data because of differences in detection limits.

Chromium. Chromium was detected in about 19% of the fish samples. Concentrations ranged from below detection limits (0.2 ug/g to 0.33 ug/g) to a maximum detected value of 54 ug/g. The concentrations in longfin sanddabs ranged from 0.2 to 7.8 ug/g with an average of 0.5 ug/g (n = 119). The concentration in Pacific sanddabs ranged from 0.20 to 0.96 ug/g with and average of 0.39 ug/g (n=30). The concentrations in California Scorpionfish ranged from 0.3 to 1.2 with an average of 0.34 ug/g (n = 116). The two highest measurements (7.8 ug/g in longfin sanddab and 54 ug/g in English sole), were measured in April of 1993 before the discharge went on line. The detection limits associated with the Point Loma data are generally higher than background measurements for the Bight from the literature which ranged from 0.004 to 0.123 ug/g (from

Mearns *et al.*, 1991). There does not appear to be any spatial or temporal trend to suggest that chromium concentrations are increasing as a result of the outfall.

Copper. Copper was measured in concentrations above the detection limit in about half (45%) of the samples. Concentrations in muscle tissue ranged from below detection limits (0.2 to 0.76 ug/g) to a maximum concentration of 9 ug/g. Concentrations in the muscle tissue of longfin sanddab ranged from 0.2 to 7.7 ug/g, with an average of 1.0 ug/g (n = 147). Concentrations in the tissue of Pacific sanddab ranged from 0.2 to 4.1 ug/g, with an average of 1.0 ug/g (n=35). This can be compared to literature values for Pacific sanddab for the Bight which ranged from 0.1 to 0.6 ug/g. Copper concentrations in the muscle tissue of California scorpionfish ranged from 0.5 to 9 ug/g, with a mean of 1.2 ug/g (n = 120). These values are higher than reported literature values for California scorpionfish from other areas in the Bight which ranged from 0.1 to 0.2 ug/g.

Lead. Lead was detected in about 13% of the fish tissue samples. Concentrations in the muscle tissue of fish off Point Loma ranged from 0.2 to 14 ug/g (n = 376). Our review of the lead data is complicated by relatively high detection limits (2.5 ug/g) for most of the samples (i.e., 328 of samples). For the forty-eight samples where detection limits were lower (0.2 to 0.5 ug/g) the range of values was 0.2 to 14 ug/g. There were 19 samples with concentrations greater than 1 ug/g. These were all collected before 1994. We have no independent estimate of lead concentrations in fish tissue for the Bight, but there does not appear to be any trend toward increased concentrations or increased number of detects.

Mercury. Mercury was detected in almost all (94%) of the fish sampled. Concentrations ranged from 0.01 to 0.99 ug/g, with an average of 0.088 ug/g. Concentrations in longfin sanddab ranged from 0.01 to 0.36, with an average of 0.07 ug/l (n=209). Concentrations in Pacific sanddab ranged from 0.01 to 0.11 ug/g with an average of 0.04 ug/l (n=50). Literature values for Pacific sanddab from the Bight ranged from 0.053 to 0.16 ug/g, with a mean of 0.04 ug/g (n = 23). Concentrations in the California scorpionfish ranged from 0.01 to 0.59 ug/g with an average of 0.13 ug/g (n=123). Literature values for this species in the Bight ranged from 0.03 to 5.49 ug/g. There were no spatial or temporal patterns were observed in longfin sanddab or California scorpionfish to suggest that the outfall is having an affect on mercury concentrations (Figs. 44 and 45). The average mercury concentration was lower in the discharge period data than in the data from pre-discharge period.

The FDA limit for total mercury in 0.5 ug/g. USEPA has established a health risk value of 0.4 ug/g based on methyl mercury. Concentrations of total mercury greater than 0.4 ug/g was measured in muscle tissue in 4 out of 524 measurements (Greenblotched rockfish, 0.99 ug/g; California scorpionfish, 0.59 ug/g; Greenspotted rockfish, 0.49 ug/g, and Speckled rockfish, 0.46 ug/g). Based on these results less than 1% of the fish in the San Diego area have tissue concentrations greater than the USEPA risk screening threshold value.

Selenium. Selenium concentrations were measured in detectable concentrations in most (96%) of the samples (detection limits ranged form 0.1 to 1.0 ug/l). Selenium concentrations ranged from 0.13 to 4.3 ug/g. Concentrations in longfin sanddab ranged from 0.18 to 4.3 ug/g, with an average of 0.98 ug/l (n=129). Concentrations in Pacific sanddab ranged from 0.13 to 3.3 ug/g,

with an average of 0.49 ug/g (n=32). Literature values for Pacific sanddab from the Bight ranged from 0.47 to 0.94 ug/g. Selenium concentrations in California scorpion fish ranged from 0.13 to 0.80 ug/g, with a mean of 0.26 ug/g (n = 116). Literature values for the Bight ranged from 0.44 to 1.26 ug/g for California scorpionfish.

Silver. The applicant detected silver in muscle tissue in only five instances. Silver was detected three times in longfin sanddab samples at concentrations ranging from 0.01 to 0.05 ug/g, once in Pacific sanddab at a concentration of 0.28 ug/g and once in California scorpionfish at a concentration of 2.68 ug/g. Literature values for Pacific sanddab from the Bight range from 0.001 to 0.014 ug/g.

Zinc. Zinc was detected in all fish samples (n=503). Concentrations in longfin Sanddab ranged from 1.52 to 65 ug/g, with an average of 3.54 (n=197). Concentrations in Pacific sanddab ranged from 1.8 to 10.0 ug/g, with an average of 3.54 ug/g (n = 47). Zinc concentrations in California scorpionfish ranged from 2.12 to 16.8 ug/g, with a mean of 4.53 ug/g (n = 125). Literature values for California scorpion fish from the Bight ranged from 0.6 to 6.5 ug/g. Thus, zinc concentrations in muscle tissue measured by the applicant are similar to background concentrations for the Bight.

PCBs. PCBs were only detected in reportable concentrations in about 7% of the fish sampled (19 out of 274 measurements). There was only one detected value prior to 1995 (0.34 ug/g in longfin sanddab). There have been more detected values since 1995, largely as a result of better detection limits associated with measuring specific congeners (as opposed to arochlor mixtures). The next highest concentration was 0.089 ug/g (unidentified rockfish, April 1999). All other values were below the 0.08 ug/g threshold for non-carcinogenic risk. Eight samples were above the 0.02 ug/g threshold for carcinogenic risk. This represents about 3% of the fish. The minimum value reported in the literature for the Bight for total PCBs in fish muscle tissue is 0.001 ug/g.

DDT. Most of the DDT compounds were below detection limits. Out of 331 fish tissue samples p,p DDT was detected only twice; o,p-DDT only once; p,p,-DDD was detected three times, o,p-DDD was not detected in measurable quantities; and o,p-DDE was detected only once. The compound p,p-DDE was measured in low but detectable concentrations in almost all fish samples (510 out of 551 samples). The concentration of p,p-DDE ranged from 0.001 ug/g to 0.53 ug/g (n = 510). No values were greater than the 2.0 ug/g non-carcinogenic threshold. Five samples were greater than the carcinogenic risk threshold. This represents less than 1% of the fish sampled. The minimum value for total DDT in fish tissue from the Bight reported in the literature is 0.02 ug/g.

Table 18. Summary of metals data in fish muscle tissue from the Point Loma area (1990-2000)

All Fish				Longfin Sanddab		
Metals	# of Detects / # of Samples	Range	Avg.	# of Detects / # of Samples	Range	Avg.
Arsenic	454/545	0.06-28.8	5.9	208/225	0.0-28.8	8.8
Cadmium	30/359	0.1-1.9	0.3	17/114	0.1-0.6	0.32
Chromium	67/357	0.2-54	.056	33/119	0.2-7.8	0.5
Copper	185/415	0.2-9	1.1	71/147	0.2-7.7	1.0
Lead	48/376	0.2-14	2.4	37/135	0.2-7.7	2.1
Nickel	48/366	0.4-50	1.2	33/123	0.4-38	1.2
Mercury	491/521	0.01-0.99	0.088	199/209	0.01-0.36	0.070
Selenium	363/378	0.13-4.3	0.057	129/129	0.18-4.3	0.98
Silver	5/332	0.1-2.68	0.62	3/101	0.5-0.62	
Zinc	503/503	1.52-65	3.84	197/197	1.52-65	3.54

California Scorpionfish				Pacific Sanddab		
Metals	# of Detects / # of Samples	Range	Avg.	# of Detects / # of Samples	Range	Avg.
Arsenic	108/126	0.05-16	4.6	50/57	0.05-10.7	3.5
Cadmium	1/116	0.34-0.34	0.34	2/29	0.2-0.34	0.04
Chromium	10/116	.03-1.2	0.34	6/30	0.2-0.96	0.39
Copper	55/120	0.5-9	1.2	12/35	0.2-4.1	0.96
Lead	0/113	2.5-2.5	2.5	9/36	0.3-14	2.5
Nickel	2/118	0.5-0.95	0.78	5/30	0.79-27	1.04
Mercury	117/123	0.01-0.59	0.13	49/50	0.01-0.11	0.04
Selenium	113/116	0.13-0.8	0.26	24/32	0.13-3.3	0.49
Silver	1/113	0.63-2.68	0.13	1/28	0.2-.62	0.61
Zinc	125/125	2.12-16.8	4.53	47/47	1.84-10	3.47

Table 19. Comparison of maximum contaminant concentrations in muscle tissue from fish collected in the vicinity of the San Diego Point Loma outfall with recommended screening values for recreational fishers.

Analyte	Maximum observed concentration level	Health risk screening level	
		Non Carcinogenic	Carcinogenic
Arsenic (inorganic)	28.8 (total)	1.2	0.026
Cadmium	1.9	4.0	
Methyl mercury	0.99 (total)	0.4	
Selenium	4.3	20	
Total Chlordane	0.0012	2.0	0.114
Total DDT	1.08	2.0	0.117
Dieldrin	ND	0.2	0.0025
Endosulfan	0.0033	24	
Endrin	ND	1.2	
Heptachlor epoxide	0.0035	0.052	0.00439
Hexachorobenzene	0.0047	3.2	0.025
Lindane	ND	1.2	.0307
Mirex	ND	0.8	
Toxaphene	ND	1.0	0.0363
PAHs	ND		0.00547
PCBs	0.34	0.08	0.02
Dioxins/Furans	NA		0.000000256

Liver tissue. Spatial and temporal trends in contaminant concentrations were evaluated using liver tissue data from the longfin sanddab, Pacific sanddab, and the California scorpionfish because these species provide the most complete data set for assessing temporal trends. We looked at total PCB and DDTs because these have the potential to accumulate in fish tissue. These values were also compared to fish tissue data from the 1994 Southern California Bight Pilot Project (SCBPP).

According to the applicant DDT in longfin sanddab ranged from 0.48 ug/g to 3.80 ug/g, with an average of 1.66 ug/g (Fig. 46). The average DDT concentrations in liver from the SCBPP were 0.22 ug/g for longfin sanddab. Pacific sanddab ranged from 0.29 to 1.76 ug/g with an average of 0.67 ug/g (Fig. 47). DDT concentrations in liver from the SCBPP were 0.15 ug/g for Pacific sanddab. Concentrations in California scorpionfish ranged from 0.31 to 2.31 ug/g with an average of 2.26 ug/g. For all three species the high values (>1 ug/g) were only observed on samples collected in October of 1993, before the outfall went online. With the exception of one

other fish sample (Pacific Sanddab, April 1997, 12.7 ug/g) all other samples were below 0.1 ug/g. DDT concentrations in fish around the outfall from the discharge period are low relative to background values for the Bight.

The applicant reported that Total PCB concentrations in longfin sanddab ranged from 0.11 ug/g to 5.64 ug/g with an average of 0.90 ug/g (Fig. 48). According to the applicant, PCB concentrations in longfin sanddab have decreased from 2.13 ug/g during the pre-discharge period to 0.90 ug/g during the discharge period. Concentrations in Pacific sanddab ranged from 0.12 ug/g to 1.45 ug/g with an average of 0.44 ug/g (Fig. 49). Data from the SCBPP indicates average concentration in longfin sanddab is around 0.07 ug/g and the average for Pacific sanddab is around 0.02 ug/g. These numbers are higher than reported for background in the Bight. However, there does not appear to be any spatial or temporal patterns to suggest that the outfall is having an affect on bioaccumulation in fish tissue. PCBs were detected at very low concentrations in the effluent and not detected in sediments.

Summary of fish bioaccumulation. USEPA's review of the fish bioaccumulation data provided by the applicant does not indicate that the outfall is having a significant effect on the contaminant concentrations in fish tissue (muscle or liver).

5. Incidences of lesions and parasites. All trawled fish caught during the monitoring program were visually examined by the City for gross morphological evidence of diseases and ectoparasites. No fin erosion or tumors were found on trawl-caught fish in the discharge area. The overall abundance of external parasites was minimal. The overall incidence of parasitism in the first year of the post-discharge monitoring was determined to be 0.006%.

Mearns and Sherwood (1977) examined approximately 290,000 fishes from more than 900 trawl samples throughout the Bight (including the Palos Verdes Shelf) from 1969 to 1976. These specimens included 151 species and 48 families of sharks, rays and bony fishes. Over the entire Bight, approximately 5% of the specimens were found to be affected with external disease symptoms, including fin and tail erosion, tumors, abnormal coloration, and attached macroparasites. A more recent assessment of fish assemblages in close to 300 trawls (SCBPP, 1994) indicates that the prevalence of anomalies was down to about 1%. It appears, from the limited data available, that the incidence of fish disease around the Point Loma outfall is negligible compared to the historical data and current background conditions.

D. Impact of Discharge on Recreational Activities. Under section 125.62(d), the applicant's proposed modified discharge must allow for the attainment or maintenance of water quality which allows for recreational activities at and beyond the zone of initial dilution, including, without limitation, swimming, diving, boating, fishing, picnicking and sports activities along shorelines and beaches.

The ocean shoreline along the southern portion of Point Loma is predominantly on a military reservation (Fort Rosencrans) and the extreme southern portion of the peninsula is within the Cabrillo National Monument. As a result, access is limited to several designated tide pooling areas within the boundaries of the national monument. Consequently, most recreational activities are centered around the Point Loma kelp beds and in nearshore waters. SCUBA diving is very

popular in the offshore kelp beds. Only limited diving occurs outside the area of the kelp beds.

The COP applies the following bacterial standards for shoreline and body contact sports area (including kelp beds):

> Total Coliform bacteria: Greater than 80% of samples in an 30-day period shall be less than 1,000 per 100 ml at each sampling station. No single sample, when verified by a repeat sample within 48 hours, shall be greater than 10,000 per 100 ml
>
> Fecal Coliform bacteria: The geometric mean shall not exceed 200 per 100 ml based on at least 5 samples in any 30-day period and not more than 10% of the total samples during any 60-day period shall exceed 400 per 100 ml.

The applicant monitors total coliform, fecal coliform, and enterococcus concentrations at a number of stations in the area subject to water contact standards. These monitoring stations include nine shoreline stations (D-1 - D9), eight kelp bed stations (A1, A6, A7, C4 - C8) and at seventeen offshore stations located upcoast and downcoast from the ZID (Fig. 2). We evaluated the bacterial monitoring data collected by the applicant from 1996 to 2000.

Offshore. The seventeen offshore water quality stations were sampled on a monthly basis at a minimum of three depths (near-surface, mid-depth, near-bottom). These data are summarized in Tables A-4, A-5, and A-6. These samples were not collected for compliance purposes but rather to provide information about the location of the plume to help interpret the results of kelp station and shoreline monitoring results. The higher concentrations of total coliforms were generally seen offshore at depths ranging from 140 to 380 feet, indicating that the outfall is generally trapped at depth. At these depths concentrations of total coliforms can be in the tens of thousands and the concentrations of fecal coliforms in the thousands. In the surface waters, the average concentrations of total coliforms ranged from 2 to 50 CFU/100 ml (Table A-4). High total concentrations were seen in the offshore surface waters in two isolated instances. One was in July of 1998 at station A5 (2800 CFU/100 ml), and the other was in January 2000 at station E8 (2400 CFU/100 ml). This indicates that the plume does surface on occasion, albeit infrequently. The fecal coliform concentrations at the offshore surface waters ranged from 2 to 11 CFU/100 ml (Table A-5). The maximum concentration measured at the surface was 300 CFU/100 ml (at station B1 in June 1997 and at station E16 in December 1997). The average enterococcus concentrations in surface water from the offshore stations ranged from 2 to 10 CFU/100 ml (Table A-6). The maximum observed enterococcus value of 200 CFU/100 ml was observed in ten instances (at Stations A2, A10, A14, B2, B9, E18).

Kelp beds. There were no violations of the total coliform standards in the kelp beds (Table 20). Total coliform values greater than 1000 were seen in 9 occasions out of 7172 samples (around 0.1%). Fecal coliform concentrations were below the geometric mean standard of 200 per 100 ml. Fecal coliform concentrations greater than 400 per 100 ml were observed on rare occasion (6 out of 6585 measurements). The enterococcus data can be compared to USEPA water quality criteria for bacteria (USEPA, 1986). There were two occasions (February and March of 1998) where the 30-day geometric mean was for enterococcus was greater than 35 per 100 ml. Enterococcus concentrations greater than 104 per 100 ml were observed about 0.5% of the time

(35 out of 6581 measurements). These were generally seen at depth suggesting an association with the outfall plume. The rarity of these events is consistent with the applicant's modeling results which suggested that the plume is not likely to reach the kelp beds for the following reasons:

1. Density stratification traps the plume below the depth of the kelp beds.
2. The shelf slope as a barrier between the submerged plume and the shallow kelp beds.
3. The predominant surface flows are longshore and mainly downcoast away from the kelp beds.

Table 20. Summary of bacterial concentrations (CFU/100 ml) at kelp stations (1995-2000)

Long-term average concentrations of total coliforms (and standard deviation) from Kelp Stations					
60-foot kelp stations	**A1**	**A7**	**A6**	**C7**	**C8**
5	57 (625)	8 (22)	6 (20)	7 (33)	17 (106)
40	21 (73)	22 (81)	20 (44)	11 (29)	10 (26)
60	79 (472)	44 (159)	46 (120)	19 (45)	21 (41)
30-foot kelp stations	**C4**	**C5**	**C6**		
5	11 (55)	12 (111)	5 (11)		
10	11 (50)	8 (23)	8 (41)		
20	10 (26)	9 (49)	11 (61)		
Long-term average concentrations of fecal coliforms (and standard deviation) from Kelp Stations					
60-foot kelp stations	**A1**	**A7**	**A6**	**C7**	**C8**
5	3 (6)	3 (12)	3 (12)	3 (12)	4 (8)
40	9 (39)	7 (34)	6 (12)	4 (7)	4 (13)
60	36 (355)	13 (57)	11 (3)	6 (10)	7 (16)
30-foot kelp stations	**C4**	**C5**	**C6**		
5	3 (4)	3 (10)	3 (5)		
10	4 (13)	3 (4)	3 (10)		
20	3 (12)	3 (7)	4 (19)		
Long-term average concentrations of enterococcus (and standard deviation) from Kelp Stations					
60-foot kelp stations	**A1**	**A7**	**A6**	**C7**	**C8**
5	3 (8)	4 (27)	3 (13)	3 (5)	4 (14)
40	4 (14)	4 (14)	5 (26)	3 (13)	3 (8)
60	7 (26)	7 (32)	4 (13)	5 (14)	13 (145)
30-meter kelp stations	**C4**	**C5**	**C6**		
5	6 (38)	4 (18)	3 (12)		
10	4 (18)	4 (18)	3 (4)		
20	3 (13)	4 (18)	3 (4)		

Shoreline. The data from the applicant's shoreline monitoring program is presented in Figs. 50-52. There are numerous exceedances of the single sample thresholds for total coliform, fecal coliform and enterococcus (Fig. 53). However, these do not appear to be related to the Point Loma outfall. A high percentage of these are related to storm events. There also seems to be a spatial pattern which suggests a southern source. For perspective, these data can be compared to comparable data collected as part of the IWTP shoreline monitoring program (See Fig. 54). There is some overlap between the two programs (i.e., San Diego's Stations D1, D2 and D3 overlap with IWTP's Stations S12, S8 and S9). There is a clear south-north gradient in the frequency of exceedances with a peak at the Tijuana River for all three bacterial indicators.

Exceedances are generally attributed to surface runoff (e.g. from the Tijuana River) rather than

the outfall plume. This is supported by the lack of high concentrations in nearshore stations. This conclusion is also supported by modeling and monitoring efforts, which indicate that the outfall plume remains submerged in the offshore area.

Summary of bacteria data. USEPA's review of the bacterial monitoring data suggests that the outfall plume is trapped at depth offshore and that the plume surfaces infrequently. Elevated concentrations of bacteria in the kelp beds were observed on only rare occasion (less than 0.5% of the time). Although bacterial concentrations along the shoreline frequently exceed the standards, there is no evidence to suggest that this is related to the outfall. Based on these data, along with the results of physical oceanographic modeling performed by the applicant in 1994, USEPA concludes that the Point Loma modified discharge will meet the COP bacterial compliance standards at the shoreline, recreational areas and at kelp beds.

E. Summary of Conclusions. In this review of the data provide by the applicant, it appears that a balanced indigenous population is being maintained in the vicinity of the outfall. This conclusion is based on the following considerations:

1. The ability of the discharger to meet state standards and federal criteria for water quality

2. The lack of any substantial increase in suspended solids deposition or accumulation of organic matter in the sediments as predicted by sediment models

3. Observations from the monitoring program do not indicate any major changes in chemical contaminant concentrations in sediments from around the outfall

4. Observations from the monitoring program indicate only minor changes in benthic community assemblages around the outfall and the lack of any observable changes in fish community structure

5. Observations from the monitoring program do not indicate any increases in the tissue contaminant burdens of selected fish species

6. Observations from the monitoring program indicate that recreational standards are being attained

7. Physical oceanographic measurements and plume modeling efforts performed by the applicant suggest that these standards will continue to be maintained throughout the permit period.

3. Establishment of a Monitoring Program. [Section 301(h)(3), 40 CFR 125.62]

Under 40 CFR 125.62, which implements section 301(h)(3), the applicant must have a monitoring program designed to evaluate the impact of the modified discharge on the marine biota, demonstrate compliance with applicable water quality standards, measure toxic substances in the discharge, and have the capability to implement these programs upon issuance of a

301(h)-modified NPDES permit. The frequency and extent of the monitoring program are to be determined by taking into consideration the applicant's rate of discharge, quantities of toxic pollutants discharged, and potentially significant impacts on receiving water, marine biota, and designated water uses.

The City's current monitoring program was developed jointly with the City, USEPA and the Regional Board. This is described in Volume IV, Appendix D. The monitoring program may be modified during the development of the permit.

4. Impact of Modified Discharge on Other Point and Nonpoint Sources. [Section 301(h)(4), 40 CFR 125.63]

Under 40 CFR 125.63, which implements section 301(h)(4), the applicant's proposed modified discharge must not result in the imposition of additional treatment requirements on any other point or nonpoint source.

The Regional Board has determined that the Point Loma discharge will not have any effect on any existing or planned point or non-point source discharges (letter dated March 21, 1995).

5. Toxics Control Program. [Section 301(h)(5), 40 CFR 125.66(a)-(c)]

A. Chemical Analysis.

A 301(h) large applicant is required to provide a chemical analysis of its effluent under both wet and dry conditions for toxic pollutants and pesticides. The City of San Diego routinely conducts influent and effluent sampling. Effluent samples are collected and analyzed weekly for metals, cyanide, ammonia, chlorinated pesticides, phenolic compounds and PCBs. Other pesticides, volatile organics, and other pollutants are analyzed on a monthly basis. The results of influent and effluent data are provided in monthly, quarterly and annual reports submitted to the Regional Board and USEPA Region 9. The City also submitted effluent data from 1995 to 2000 to USEPA in electronic format as part of the renewal process (see section 2A for review of effluent data). Based on data from1999, the applicant indicates that there is no significant differences in effluent quality between wet and dry conditions (Volume II, Table III.H.1c-3).

B. Toxic Pollutant Source Identification.

Under 40 CFR 125.66(b) the large applicant must submit an analysis of the sources of toxic pollutants identified in section 125.66(a) and, to the extent practicable, categorize the sources according to industrial and nonindustrial types. As part of the City's Industrial Waste Source Control Program, the City surveys industries which may contribute toxics to the sewer system, establishes discharge permits where necessary, and monitors the permitted industrial discharges. In addition the City monitors also performs an annual system-wide non-industrial toxics survey program to identify other potential sources of toxics. The known and suspected sources of metals, cyanide and organic constituents detected in the effluent are summarized in Volume II of the application (Table III.H.1d-1 and Table III.H.1.d-2).

C. Industrial Pretreatment Requirements.

Under 40 CFR 125.66(c) an applicant that has known or suspected industrial sources of toxic pollutants must have an approved pretreatment program under 40 CFR Part 403. USEPA approved the City of San Diego's industrial pretreatment program on June 29, 1982.

6. Urban Area Pretreatment Program. [Section 301(h)(6), Section 303(c) of the Water Quality Act of 1987]

Large applicants for a modified NPDES permit under section 301(h) of the Act that receive one or more toxic pollutants from an industrial source are required to comply with the urban area pretreatment requirements. A POTW subject to these requirements must demonstrate, for each toxic pollutant known or suspected to be introduced by an industrial source, that it either has an applicable pretreatment requirement in effect, or that it has a program that achieves secondary removal equivalency. In addition, an applicant must demonstrate that industrial sources are in compliance with applicable pretreatment requirements. The City of San Diego is subject to these requirements.

In the the 1994 application, the City indicated that it will comply with the urban area pretreatment requirements by demonstrating that it has applicable pretreatment requirements in effect. The City submitted their Urban Area Pretreatment Program to USEPA in 1996. This UAPP was approved by the Regional Board on August 13, 1997 and by USEPA Region 9 on December 1, 1998.

Under 40 CFR 125.65(b)(2), the City must demonstrate that industrial sources introducing waste into the applicant's treatment works are in compliance with all applicable pretreatment requirements, including numerical standards set by local limits, and that it will enforce those requirements.

As explained in the preamble to the revised 301(h) regulations (FR 40656, August 9, 1994), "*EPA intends to determine a POTW's continuing eligibility for a 301(h) waiver under section 301(h)(6) by measuring industrial user compliance and POTW enforcement activities against existing criteria in the Agency's National Pretreatment Program. ... In 1989, EPA established criteria for determining POTW compliance with pretreatment implementation obligations. One element of these criteria is the level of significant noncompliance of the POTW's industrial users. The General Pretreatment Regulations (part 403) identify the circumstances when industrial user noncompliance is significant. The industrial user significant noncompliance (SNC) criteria are set out in 40 CFR 403.8(f)(2)(vii) and address both effluent and reporting violations. ... For pretreatment purposes, a POTW's enforcement program is considered adequate if no more than 15 percent of its industrial users meet the SNC criteria in a single year. ... In addition, a POTW is also considered in SNC if it fails to take formal appropriate and timely enforcement action against any industrial user, the wastewater from which passes through the POTW or interferes with the POTW operations.*"

"*In enforcing the pretreatment programs, POTWs are expected to respond to industrial user noncompliance using local enforcement authorities in accordance with an approved enforcement*

response plan (ERP) which is required of all approved pretreatment programs (see 40 CFR 403.5). POTWs including 301(h) POTWs, with greater than 15 percent of their users in SNC, or which fail to enforce appropriately against any single industrial user causing pass through or interference, are deemed to be failing to enforce their pretreatment program. ...EPA believes that the combination of industrial user compliance and POTW enforcement provides an appropriate measurement of the POTW's eligibility for the 301(h) waiver under section 301(h)(6)."

The 1989 criteria discussed in the preamble is a September 27, 1989, memorandum from James R. Elder to USEPA Regional Water Management Division Directors titled: FY 1990 Guidance for Reporting and Evaluating POTW Noncompliance with Pretreatment Implementation Requirements.

Although the preamble for the urban area pretreatment requirements refers to "*industrial users*" when discussing the 15% noncompliance criteria, the 1989 criteria apply to "*significant industrial users.*" This term is defined at 40 CFR 403.3(t) and includes all industrial users subject to categorical standards and other industrial users designated by the POTW. In addition, the Agency has issued clarifying guidance explaining that the significant noncompliance criteria at 40 CFR 403.8(f)(2)(vii) apply only to significant industrial users rather than to all industrial users. Consequently, the Agency views the 15% noncompliance criteria in the urban area pretreatment requirements as applying only to significant industrial users rather than to all industrial users.

Under the 1989 measures, violating industries are not included in the 15% noncompliance criteria when the POTW has issued a formal enforcement action or penalties. Consequently, the Agency views the 15% noncompliance in the urban area pretreatment requirements as including only significant industrial users that are in significant noncompliance and which have not received at least a formal enforcement action from the POTW.

USEPA believes that the combination of industrial user compliance and POTW enforcement provides an appropriate measurement of the POTW's eligibility for the 301(h) waiver under section 301(h)(6). The City's enforcement plan is described in Appendix K (attachment K2) of the application

The City's Enforcement Response Plan is included in Technical Appendix K-3 of its section 301(h) application. The second level of formal enforcement is an Administrative Notice and Order which may be issued when:

- An industrial user fails to take any significant action to establish compliance withing 30 days of receiving a Notice of Violation
- An industrial user fails to establish full compliance, beginning on the 91st day after the industrial user received a Notice of Violation;
- An industrial user is in significant noncompliance status; or
- An industrial user violates a Compliance Findings of Violation and Order.

The Agency recognizes that specific enforcement response to a violation must be decided on a case-by-case basis. We believe, however, that in most cases an Administrative Notice and Order

as described in the City's Enforcement Response Plan are appropriate when a significant industrial user is in significant noncompliance.

The local limits approved by USEPA as part of the UAPP were included in all industrial discharge permits by December 1997. As a consequence of the new local limits, some significant industrial users may need time to come into compliance with those local limits. In any such cases, the Agency expects the City to issue a Compliance Findings of Violation and Order which is the first level of formal enforcement in the City's Enforcement Response Plan. The Order shall contain a schedule for achieving compliance with the new local limits. Significant industrial users receiving such Orders will not be included in the 15% noncompliance criteria.

Table 21. Summary of compliance status for significant industrial users (modified from Table 4.2.1, appendix K of the application. The numbers for SNC have been adjusted based on discussions with Pretreatment Program Manager.

Year	1993	1994	1995	1996	1997	1998	1999
Number of Significant Industrial users	118	139	130	130	133	131	139
Number in Significant Noncompliance (SNC)	25	27	12	16	25	16	14
Number SNC adjusted for enforcement			9	15	20	13	13
Percent SNC	21%	19%	9%	12%	19%	12%	10%
Percent SNC adjusted			7%	12%	15%	10%	9%

USEPA finds that the information in the City's application regarding the urban area pretreatment requirements is acceptable for the purpose of issuing this tentative decision. The permit will require the City to maintain an annual rate of significant noncompliance for significant industrial users of no more than 15 percent of the total number of significant industrial users.

7. Nonindustrial Source Control Program. [Section 301(h)(7), 40 CFR 125.64(d)]

Under 40 CFR 125.64(d), which implements section 301 (h)(7), the applicant must have a proposed public education program designed to minimize the entrance of nonindustrial toxic pollutants and pesticides into their treatment facility, and develop and implement additional nonindustrial source control programs in the earliest possible schedule.

The City proposes to continue their existing nonindustrial program and public education program that have been in effect since 1985. The nonindustrial program will be supplemented with an updated survey of industrial and nonindustrial contaminant sources. These programs are described in Appendix K of the application.

8. Increase in Effluent Volume or Amount of Pollutants Discharged. [Section 301(h)(8), 40 CFR 125.65]

Under 40 CFR 125.65, which implements section 301(h)(7), the applicant's proposed modified discharge may not increase above the amount specified in the 301(h) modified NPDES permit. CWA § 301(j)(5)(C) specifies 80% removal of suspended solids on a monthly average and 58% removal of BOD on an annual average. In addition to these conditions. The NPDES permit establishes the following limits based on an annual average flow of 205 MGD. The flows for the projected end of permit (2006) are 195 MGD.

Table 22. Proposed effluent limitations for Point Loma Permit

Effluent Parameter	Annual Removal	Monthly Removal	Annual Mass Emission	Monthly Average
TSS	80%	80%	13,599 mt/yr	75 mg/l
BOD	58%	--	--	--

Table 23. Proposed and projected mass emission rates (MT/yr) for TSS and BOD

Year	Proposed MER	Projected MER
2001	15000	14100
2002	15000	14200
2003	15000	14300
2004	15000	14500
2005	15000	14600
2006	13599	13599

9. Compliance with Primary Treatment and Federal Water Quality Criteria. [Section 301(h)(9), Section 303(d)(1) and (2) of the Water Quality Act of 1987]

Under section 303(d)(1) of the WQA the applicant's wastewater effluent must be receiving at least primary treatment at the time their section 301(h) permit becomes effective. Section 303(d)(2) of the WQA states that, "Primary or equivalent treatment means treatment by screening, sedimentation, and skimming adequate to remove at least 30 percent of the biological oxygen demanding material and other suspended solids in the treatment works influent, and disinfection, where appropriate."

The Point Loma discharge is subject to State and Federal requirements which are much stricter than the primary treatment standard. The COP requires that "Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewater to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/l."

The average monthly removals for suspended solids in 1999 and 2000 ranged from 82% to 87%.

The average monthly removals for BOD in 1999 and 2000 ranged from 53% to 67%. The applicant meets the primary treatment standard of at least 30% removal for suspended solids and biological oxygen demand. The draft NPDES permit will include effluent limits of 80% removal for suspended solids on an monthly average basis and 58% removal of BOD on an annual average basis.

COMPLIANCE WITH OTHER APPLICABLE LAWS

40 CFR 125.59(b)(3) provides that a 301(h) modified NPDES permit may not be issued if such issuance would conflict with applicable provisions of local, State, or other Federal laws or existing Executive Orders.

1. State Coastal Zone Management Program. [40 CFR 125.59(b)(3)]

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with the Coastal Zone Management Act, 16 USC 1451 *et seq*. In accordance with 16 USC 1456(c)(3)(A), a 301(h) modified NPDES permit may not be issued unless the proposed discharge is certified by the State to comply with applicable State coastal zone management program(s) approved under the Coastal Zone Management Act, or the State waives such certification.

In 1991, the California Coastal Commission issued Consistency Certification No. CC-62-91 for extending the Point Loma outfall to 4.5 miles. In 1995, the California Coastal Commission issued Consistency Certification the City's Waiver Application. As part of this permit renewal cycle, the City of San Diego requested the Commission to provide a determination that the existing and proposed discharge is consistent with applicable coastal zone management requirements (See Letter dated July 13, 2000). No permit may be issued that is inconsistent with the policies of the California Coastal Management Program. The California Coastal Commission will be hearing this issue at their meeting on March 5-8, 2002.

2. Marine Sanctuaries. [40 CFR 125.59(b)(3)]

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with Title III of the Marine Protection, Research and Sanctuaries Act, 16 USC 1431 *et seq*. In accordance with 16 USC 1432(f)(2) a 301(h) modified NPDES permit may not be issued for a discharge located in a marine sanctuary designated pursuant to Title III if the regulations applicable to the sanctuary prohibit issuance of such a permit.

The Point Loma ocean outfall discharge is not located in a marine sanctuary. Two zones (San Diego-La Jolla Ecological Reserve and San Diego Marine Life Reserve) approximately 21-22 km (13-14 mi) north of the discharge point have been designated by the California Water Resources Control Board as "*Areas of Special Biological Significance.*" Discharges of wastewater to these zones are prohibited by the Water Quality Control Plan for Ocean Waters of California. The Point Loma outfall discharges wastewater at a location and distance that would not have a significant impact on these zones.

The applicant also listed several protected areas in the San Diego region. We believe that significant dilution of any pollutant discharged through the Point Loma outfall would occur and concentrations would be at background level by the time the wastefield approaches any of these protected areas.

3. Endangered or Threatened Species. [40 CFR 125.59(b)(3)]

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with the Endangered Species Act, 16 USC 1531 *et seq.* In accordance with 16 USC 1536(a)(2) a 301(h) modified NPDES permit may not be issued if the proposed discharge will adversely impact threatened or endangered species or critical habitat listed pursuant to the Endangered Species Act.

As part of the California Environmental Quality Act requirements, the City prepared an Environmental Impact Report (EIR) to address impacts from the outfall extension project. The National Marine Fisheries Service (NMFS) requested an informal consultation to assess impacts to the gray whale, and established mitigation to minimize construction-related impacts to the whale. The U.S. Fish and Wildlife Service (USFWS) did not comment on the EIR.

More recently, the City of San Diego initiated an informal consultation on endangered species with both the USFWS and NMFS through correspondence to both agencies, inviting comments specifically on the existing discharge and proposed 301(h) modification request. Responses were provided by both agencies. In a letter dated May 8, 1995, the USFWS stated that they have determined that the San Diego project "will have no effect on any listed species or any designated critical habitat." NMFS in their March 27, 1995 letter confirmed the list prepared by the City of San Diego of potentially impacted species under the jurisdiction of NMFS, with one exception, the gray whale, which is no longer a listed species. NMFS also stated that "available information indicates that no Federally listed species under the jurisdiction of the NMFS are likely to be affected by the modified discharges at the Point Loma outfall."

The City sent letters to USFWS and NMFS on June 28, 1999. NMFS concluded that there were no Federally listed species under its jurisdiction that are likely to be affected by the modified discharges at the Point Loma outfall. No response from has been received from USFWS. The permit is contingent on a finding from the U.S. Fish and Wildlife.

In regards to State law, the Point Loma outfall discharges beyond the three-mile limit for waters controlled by the State of California. Therefore, the discharge is into waters governed by Federal laws. Within the three-mile limit, the State of California Endangered Species Act applies. The State Endangered Species Act has provisions similar to the Federal Endangered Species Act. See the discussion above for compliance with the Federal Endangered Species Act.

STATE CONCURRENCE IN MODIFICATION

Section 301(h) and 40 CFR 125.59(i)(2) provide that a 301(h) modification may not be granted until the appropriate State certification/concurrence is granted or waived pursuant to 40 CFR 124.54. In accordance with the procedures of 40 CFR 124.53(a), before USEPA may issue the

applicant a 301(h) modified NPDES permit, the State must either grant certification pursuant to section 401 of the Act or waive certification. Such action by the State will serve as State concurrence in the modification.

USEPA Region 9 and the California State Water Resources Control Board have developed a Memorandum of Understanding (MOU; May 1984) outlining the procedures that each agency will follow to coordinate the implementation of section 301(h) and State waste discharge requirements. The MOU specifies that the joint issuance of an NPDES permit which incorporates both 301(h) decision and State waste discharge requirements will serve as the State's concurrence. USEPA and the Regional Board will jointly issue the NPDES permit for the City of San Diego.

REFERENCES

Baumgartner, D. 1981. Presentation at 301(h) Task Force Meeting, March 13, 1981 at USEPA's Office of Research and Development.

Baumgartner, D.J., W.E. Frick, P.J.W. Roberts and C.A. Bodeen. 1992. Dilution models for effluent discharges. U.S. Environmental Protection Agency, Pacific Ecosystems Branch, Newport, OR. 168 pp.

Baumgartner, D.J., W.E. Frick and P.J. W. Roberts. 1993. Dilution models for effluent discharges (second edition). Report EPA/600/R-93/139. U.S. Environmental Protection Agency, Pacific Ecosystems Branch, Newport, OR. 181 pp.

Baumgartner, D.J., W.E. Frick and P.J. W. Roberts. 1994. Dilution models for effluent discharges (third edition). Report EPA/600/R-94/086. U.S. Environmental Protection Agency, Pacific Ecosystems Branch, Newport, OR. 189 pp.

Buchman, M.F. 1999. NOAA screening quick reference tables. NOAA HAZMAT Report No. 99-1, Coastal Protection and Restoration Division, National Oceanographic and Atmospheric Administration, Seattle WA. 12 pp.

California Ocean Plan. 2001. Water quality control plan, ocean waters of California. State Water Resources Control Board, Sacramento, CA

Eganhouse, R.P., J.N. Johnson, D.R. Young, and D.J. McDermott. 1976. Mercury in Southern California waters: Inputs, distribution and fate. Tech. Memo. 227. Southern California Coastal Water Research Project, El Segundo, CA.

Emery, K.O. 1960. The sea off Southern California. A modern habitat of petroleum. John Wiley and Sons, Inc.

EPA. 1982. Revised Section 301(h) Technical Support Document. EPA 430/9-82-011. US Environmental Protection Agency, Office of Water Operations, Washington D.C.

EPA. 2000. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. Volume 1. Fish Sampling and Analysis. Third Edition. EPA 823-B-00-007. US Environmental Protection Agency. Office of Water, Washington D.C.

EPA, 1990. Guidance for Reporting and Evaluating POTW Noncompliance with Pretreatment Implementation Requirements. US Environmental Protection Agency, Washington D.C.

EPA, 1991. Technical Support Document for Water Quality-Based Toxics Control US Environmental Protection Agency, Washington D.C. (EPA/505/2-90-001, March 1991).

EPA. 1993. Amended Section 301(h) Technical Support Document, Draft Report. Prepared *by*

Tetra Tech, Inc. Bellevue, WA. *for* US Environmental Protection Agency, Washington D.C.

EPA. 1994. Dilution models for effluent discharges. Prepared *by* D.J. Baumgartner, W.E. Frick, and P.J.W. Roberts *for* US Environmental Protection Agency, Washington D.C. (EPA/600/R-94/086, March 1994)

Eppley, R.W., E.H. Renger, W.G. Harrison and J.J. Cullen. 1979. Ammonium distribution in Southern California coastal waters and its role in the growth of phytoplankton. Limnology and Oceanography 24:495-509.

Hendricks, T.J. and R. Eganhouse. 1992. Modification and verification of sediment deposition models. Southern California Coastal Water Research Project, Long Beach, CA.

Katz, A. and I.R. Kaplan. 1981. Heavy metal behavior in coastal sediments of Southern California: A critical review and synthesis. Mar. Chem. 10:261-299.

Long, E.R., L.J. Field, and D.D. MacDonald., 1998. Predicting toxicity in marine sediments with numerical sediment quality guidelines. Env. Toxicol. and Chem. 17:714-727.

Maughan, J.T. and C.A. Oviatt. 1994. Sediment and benthic response to wastewater solids in a marine mesocosm. Water Environ. Res. 46:879-889.

Mearns, A.J., M. Matta, G. Shigenaka, D. MacDonald, M. Buchman, H. Harris, J. Golas, and G. Lauenstein. 1991. Contaminant trends in te southern California Bight: Inventory and assessment. NOAA Tech. Memo. NOS ORCA 62. Seattle WA.

Mearns, A. J. and M. J. Sherwood. 1977. Distribution of neoplasms and other diseases in marine fishes relative to the discharge of waste water. Ann. N.Y. Acad. Sci. 298:210-224.

Muellenhoff, W.P., A.M. Soldate Jr., D.J. Baumgartner, M.D. Schuldt, L.R. Davis and W.E. Frick. 1985. Initial mixing characteristics of municipal ocean outfall discharges: Volume I. Procedures and applications. Report Number EPA/600/3-85/073a. U.S. Environmental Protection Agency, Office of Research and Development, Newport, OR. 90 pp.

Nelson, J.R., J.R. Beers, R.W. Eppley, G.A. Jackson, J.J. McCarthy and A. Soutar. 1987. A particle flux study in the Santa Monica - San Pedro Basin off Los Angeles: particle flux, primary production, and transmissometer survey. Cont. Shelf Res. 7:307-328.

Preisendorfer, R.W. 1986. Secchi disk science: Visual optics of natural waters. Limnol. Oceanogr. 31:909-926.

Roberts, P.J.W., W.H. Snyder, and D.J. Baumgartner, 1989 a. Ocean outfalls I: Submerged wastefield formation. ASCE Journal of Hydraulic Engineering. 115:1-25.

Roberts, P.J.W., W.H. Snyder, and D.J. Baumgartner, 1989 b. Ocean outfalls II: Spatial evolution of submerged wastefield. ASCE Journal of Hydraulic Engineering. 115:26-48.

Roberts, P.J.W., W.H. Snyder, and D.J. Baumgartner, 1989 c. Ocean outfalls III: Effect of diffuser design on submerged wastefield. ASCE Journal of Hydraulic Engineering. 115:49-70.

Sanudo-Wilhelmy, S.A. and A. R. Flegal. 1992. Anthropogenic silver in the Southern California Bight: A new tracer of sewage in coastal waters. Environ. Sci. Technol. 26:2147-2151.

SCCWRP, In Prep. Model Ocean Monitoring Program Report. Prepared by the Southern California Coastal Water Research Project, Westminster CA.

Schwalbach, J.R. and D.S. Gorsline. 1985. Holocene sediment budgets for the basins of the California continental borderland. J. Sed. Petrol. 55:829-842.

Swartz, R.C. 1978. Techniques for sampling and analyzing the marine macrobenthos. EPA-600/3-78-030. U.S. EPA, Corvallis, OR. 27 pp.

Smith, R.W. 2001. Analyses of benthic monitoring data in the vicinity of the Point Loma ocean outfall (PLOO): Tests for possible impact with BACI statistical methodology, and the determination of background indicator levels with tolerance intervals. (May 27, 2001) Prepared *for* US EPA Region 9, San Francisco CA.

Smith, R.W., M. Bergen, S.B. Weisberg, D. Cadien, A. Dalkey, D. Montagne, J.K. Stull, and R.G. Velarde. 2001. Benthic response index for assessing infaunal communities on the Southern California mainland shelf. Ecol. App. 11:1073-1087.

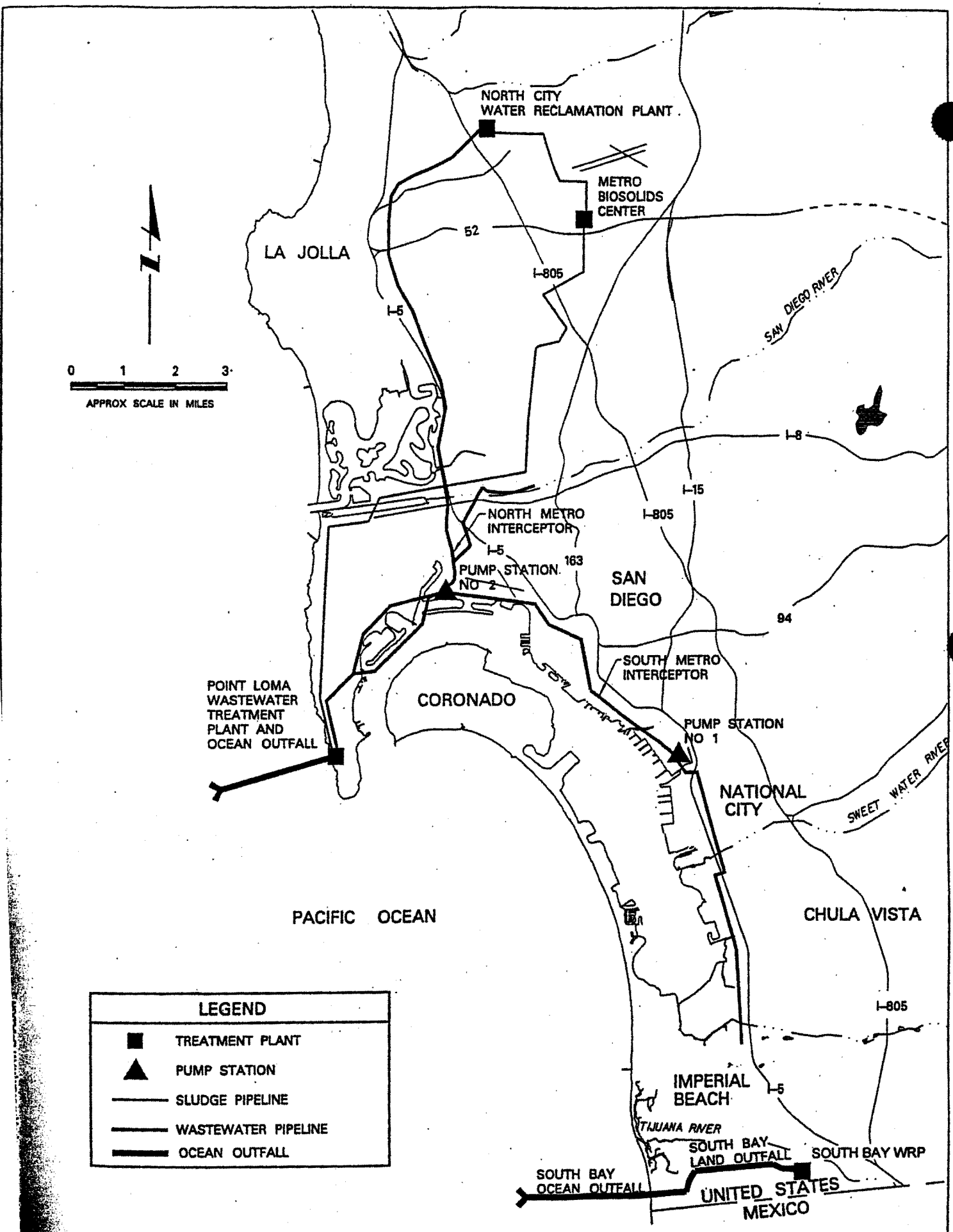
Thompson, B.E., J. Laughlin, and D. Tsukada. 1987. 1985 Reference site survey. Tech. Rept. #221. Southern California Coastal Water Research Project, Long Beach CA.

Thompson, B.E., D. Tsukada and D. O'Donohue. 1992. 1990 Reference site survey. Tech. Rept. #355. Southern California Coastal Water Research Project, Long Beach CA.

Thompson, B.E., D.Tsukada, D. O'Donohue, A. Jirik and G. Jones. In Prep. Biology of the Ophiuroid *Amphiodia urtica* off Southern California, I: Distribution, abundances, feeding, and ecological relationships. Draft Manuscript. Southern California Coastal Water Research Project, Long Beach, CA.

Word, J. 1978. The infaunal trophic index. Annual Report, 1978, Southern California Coastal Water Research Project, pp 19-39, Long Beach CA.

Word, J. and A. Mearns. 1979. 60-m control survey off southern California. Tech. Memo. # 229, Southern California Coastal Water Research Project, Long Beach CA.



METRO FACILITIES LOCATION MAP

Figure 1

FIGURE 2.
LOCATION OF AMBIENT MONITORING STATIONS

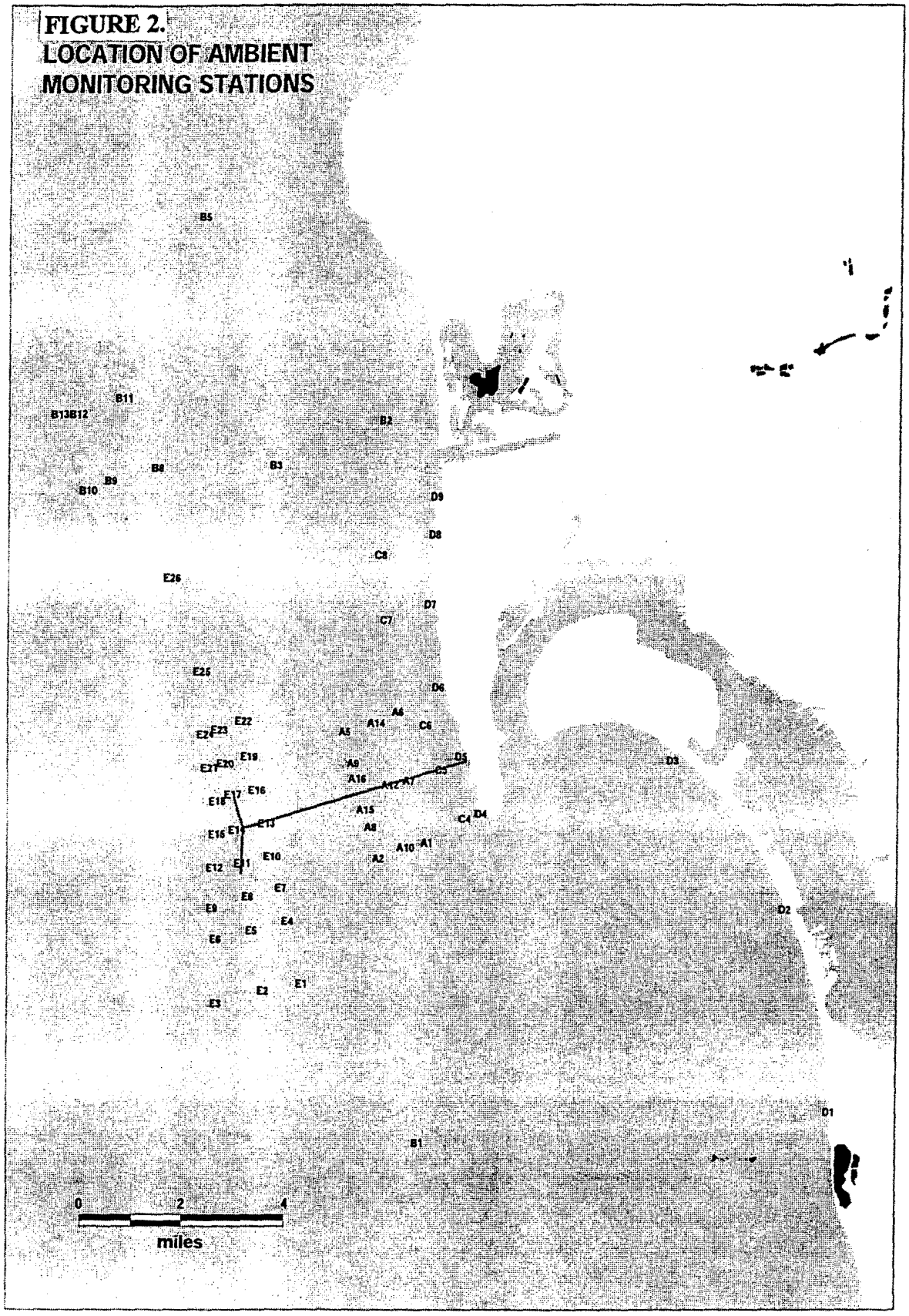


Figure 3. Trends in weekly effluent concentrations for arsenic (1995-1999)

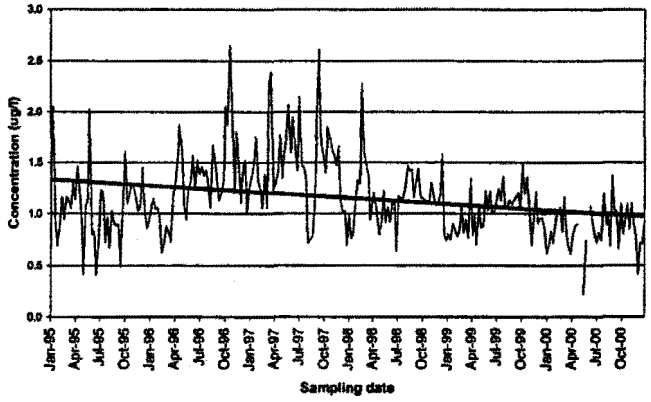


Figure 4. Trends in weekly effluent concentration for copper (1995-1999)

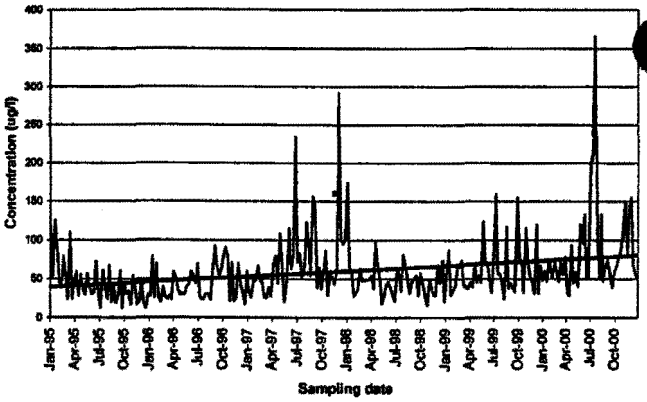


Figure 5. Summary of monthly effluent data for Dioxins expressed TCDD equivalents (1995 to 2000) compared to effluent limitations and method detection limits for 2,3,7,8-TCDD

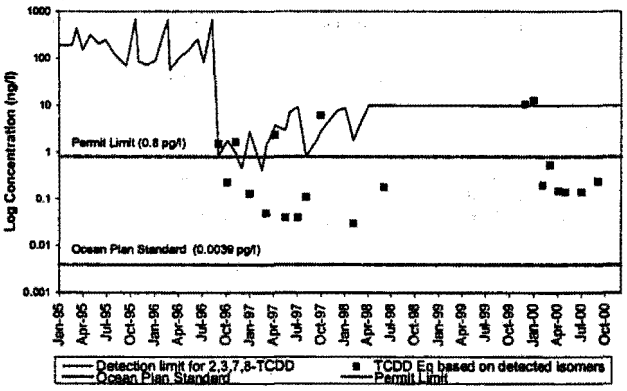


Figure 6. Trends in weekly phenol concentration (1995-1999)

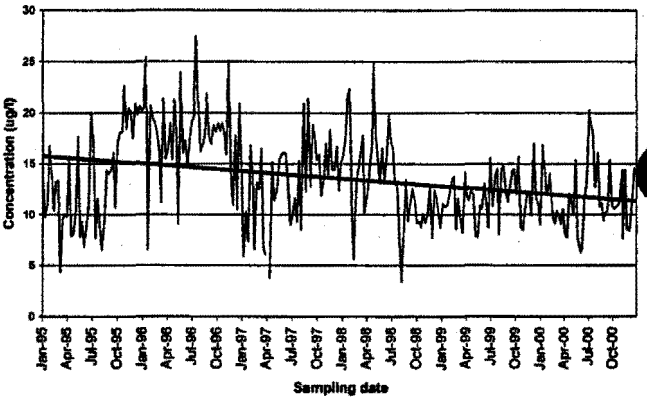


Fig 7. Trends in weekly effluent concentration for cyanide (1995-1999)

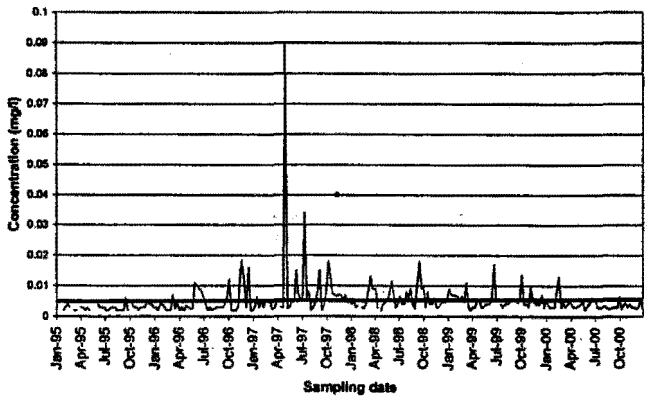


Figure 8. Trends in weekly effluent concentration for zinc (1995-2000)

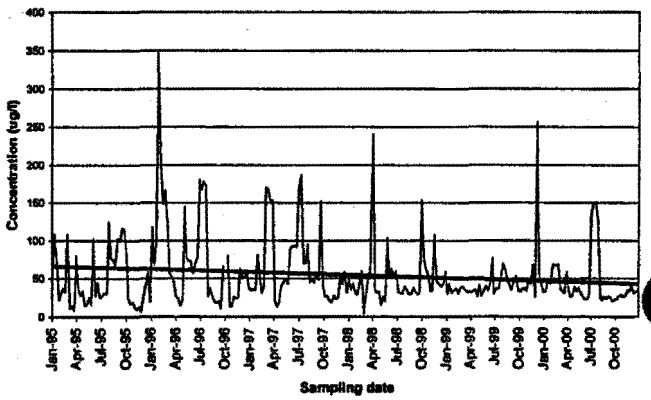


FIGURE 9.

REGIONAL BIGHT STATIONS

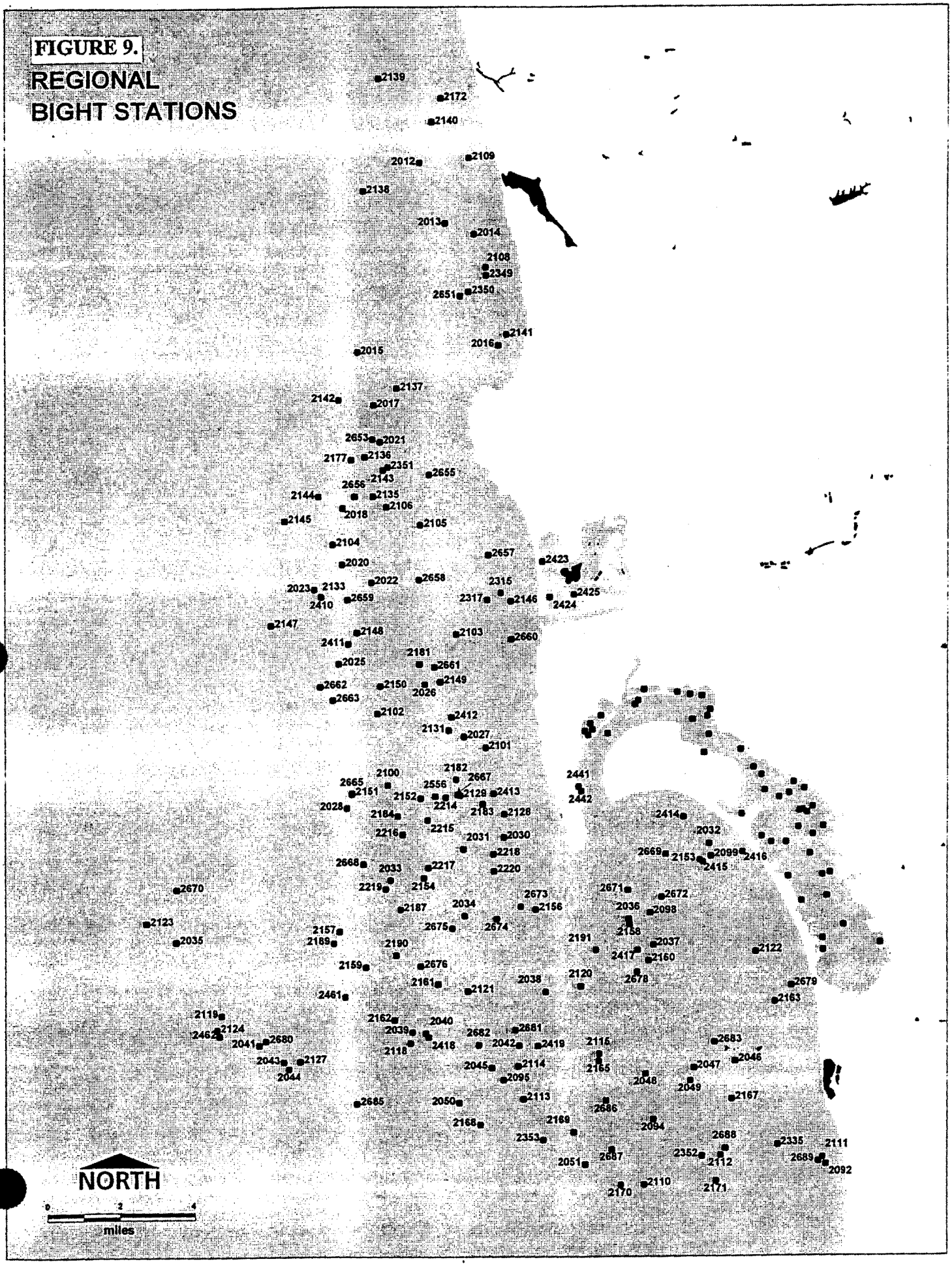


Figure 10. Sediment TVS concentrations at the 100-meter stations (1991-2000)

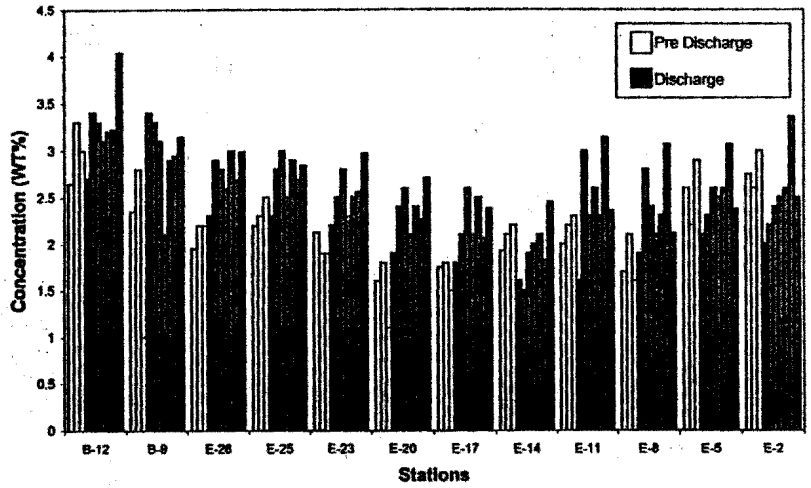


Figure 11. Sediment TOC concentrations along 100-meter contour (1993-2000)

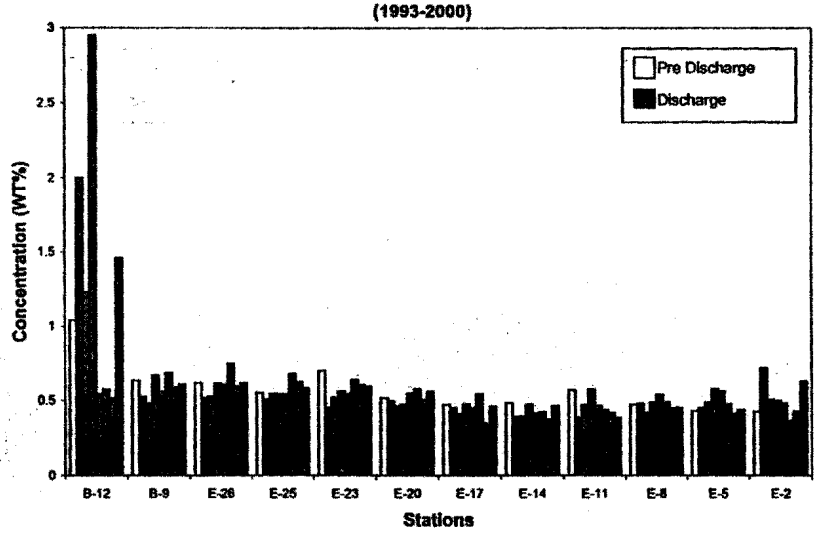


Figure 12. Sediment BOD concentration at the 100-meter stations (1991-2000)

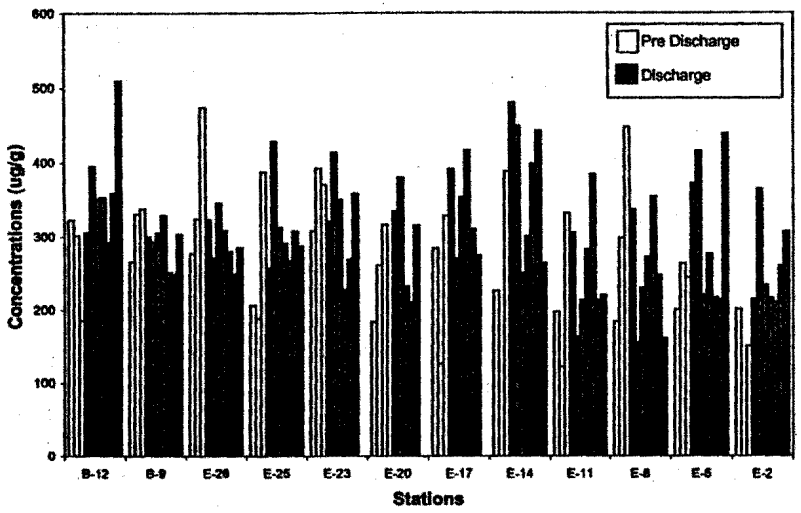


Figure 13. Sediment sulfide concentrations at the 100-meter stations (1991-2000)

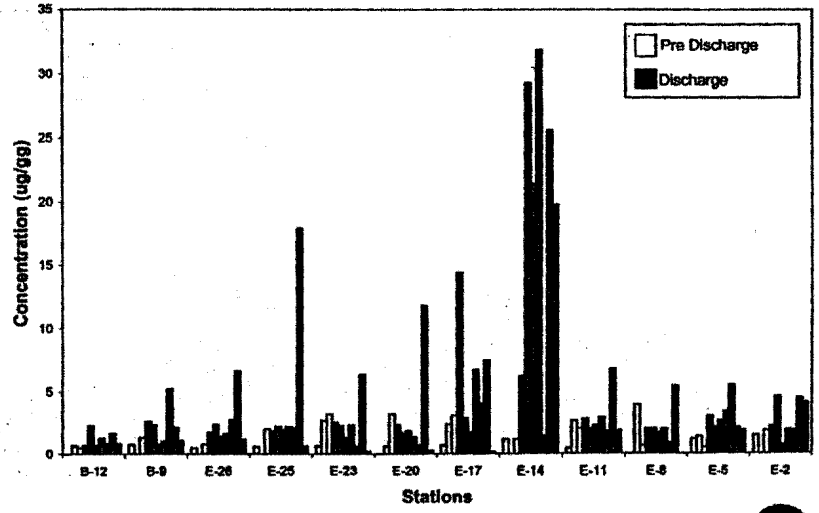


Figure 14. Sediment arsenic concentrations at the 100-meter stations (1991-2000)

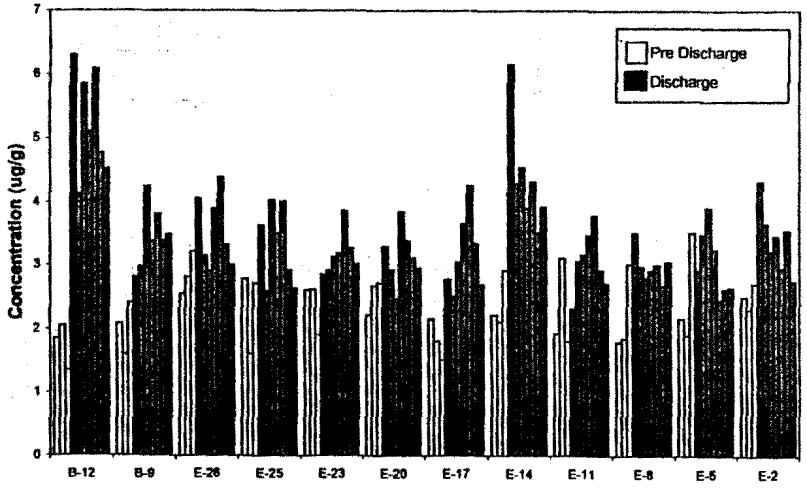


Figure 15. Sediment cadmium concentrations at the 100-meter stations (1991-2000)

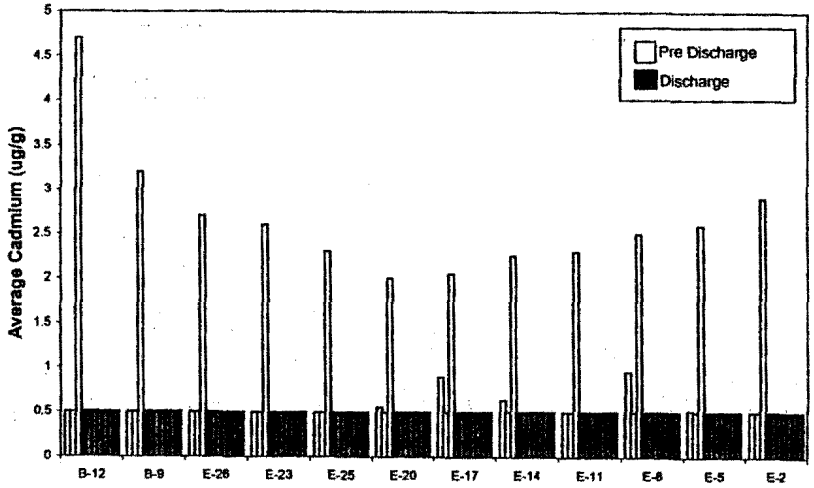


Figure 16. Sediment chromium concentrations at the 100-meter stations (1991-2000)

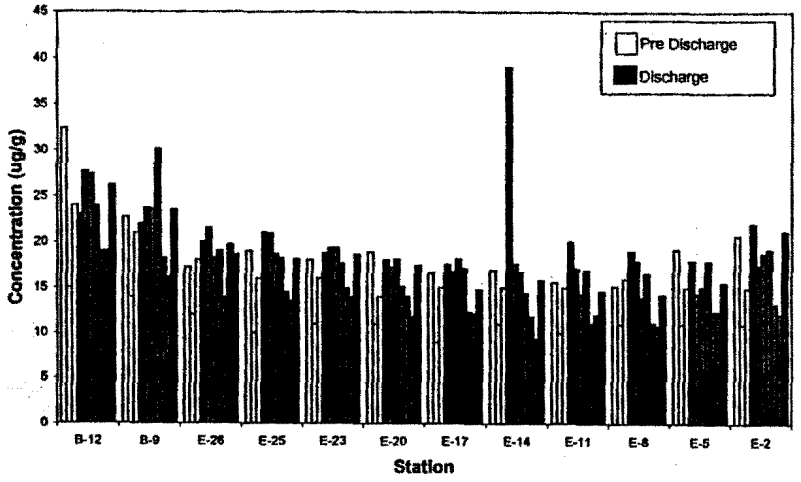


Figure 17. Sediment copper concentrations at the 100-meter stations (1991-2000)

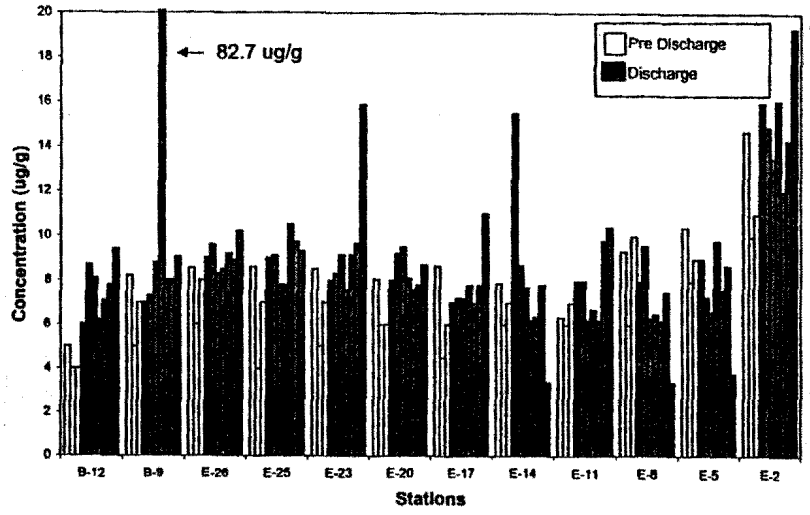


Figure 18. Sediment lead concentrations at the 100-meter stations (1991-2000)

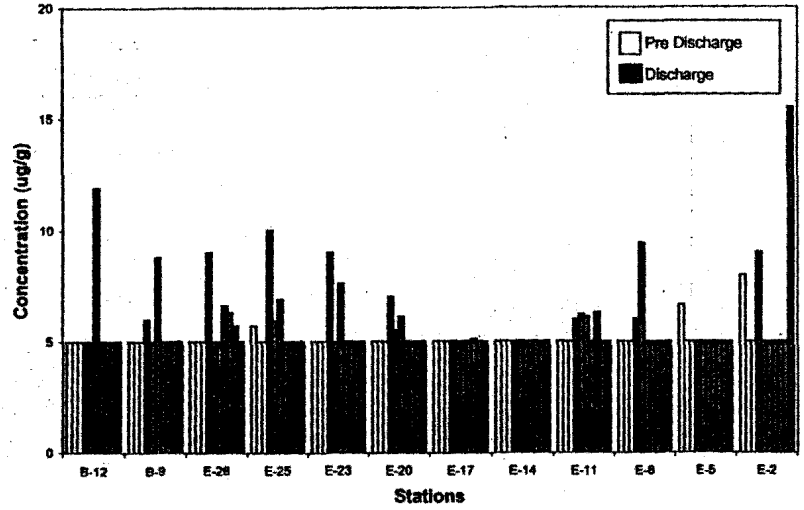


Figure 19. Sediment mercury concentrations at the 100-meter stations (1991-2000)

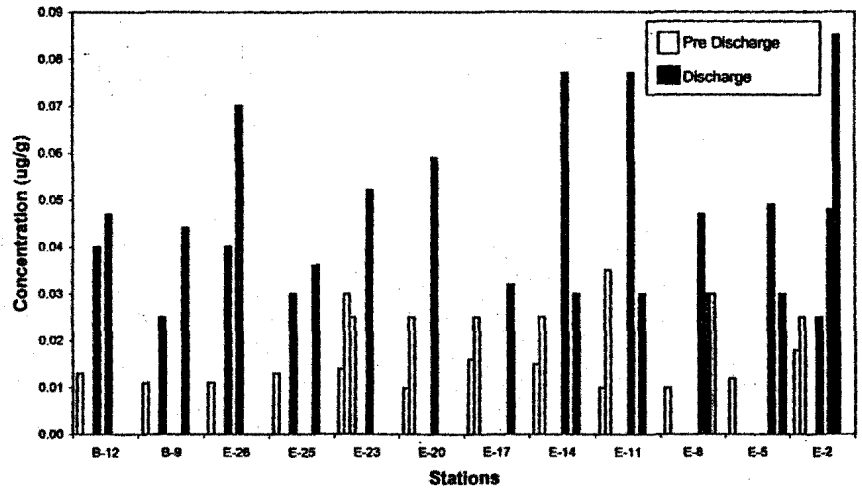


Figure 20. Sediment Nickel concentrations at the 100-meter stations (1990-2000)

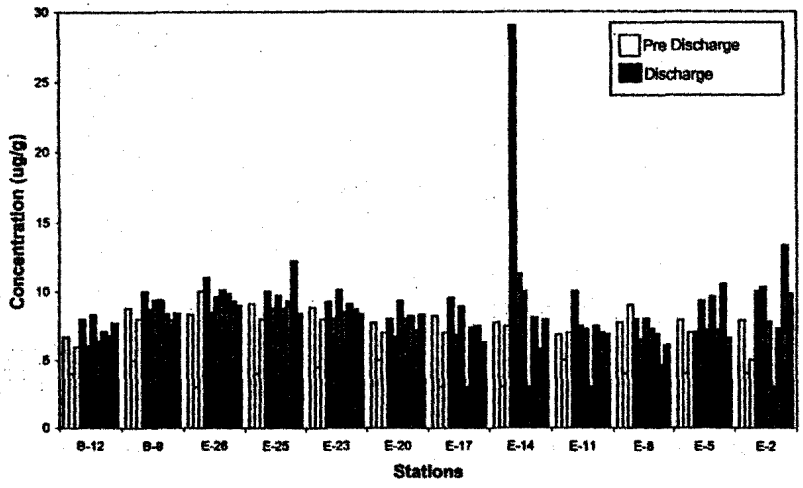


Figure 21. Sediment zinc concentrations at the 100-meter stations (1991-2000)

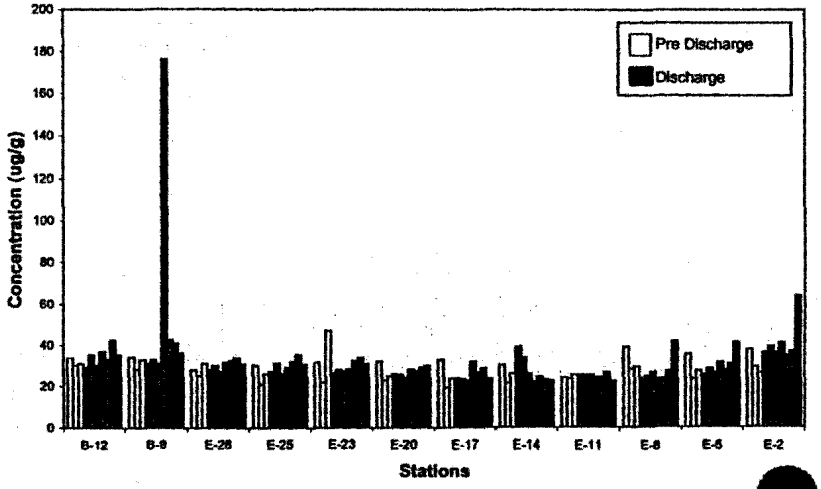


Figure 22. Number of benthic species at the 100-meter stations

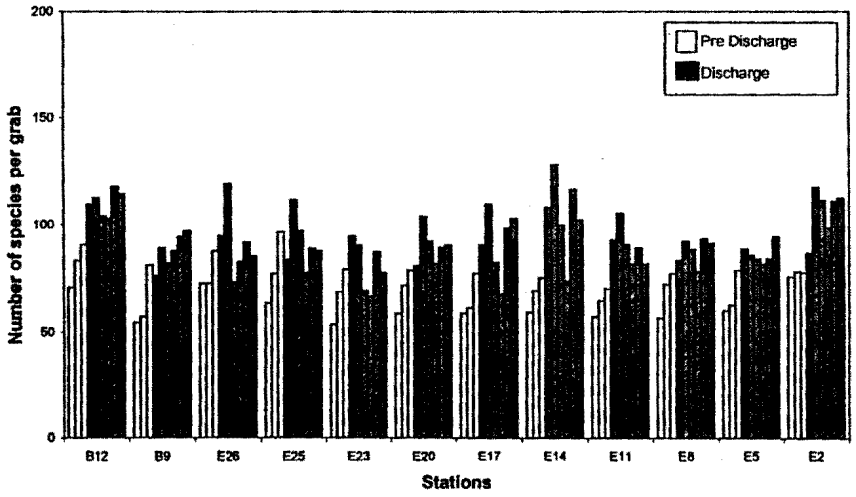


Figure 23. Depth distribution of ln total number of species from San Diego Regional Surveys (1994-1999)

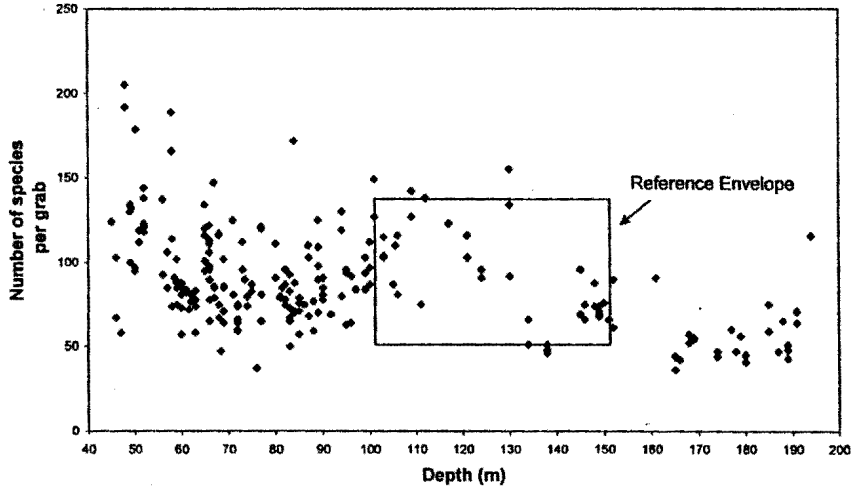


Figure 24. Benthic abundances at the 100-meter stations

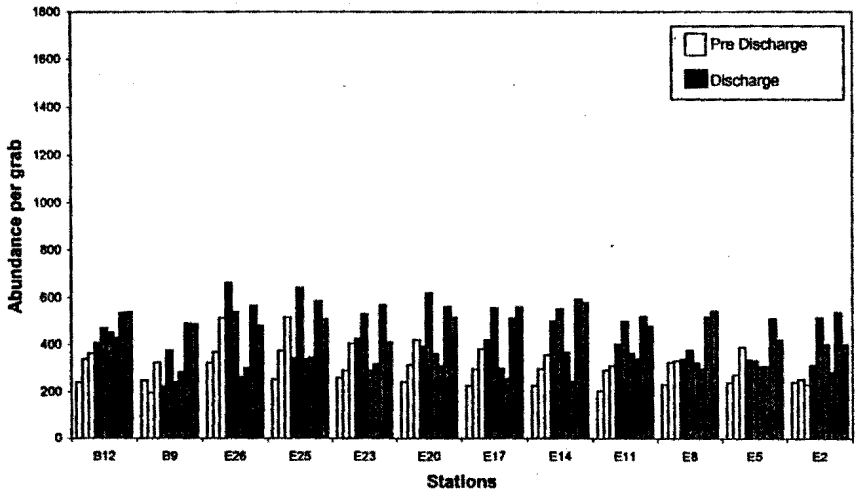


Figure 25. Depth distribution of total abundance from San Diego Regional Surveys (1994-1999)

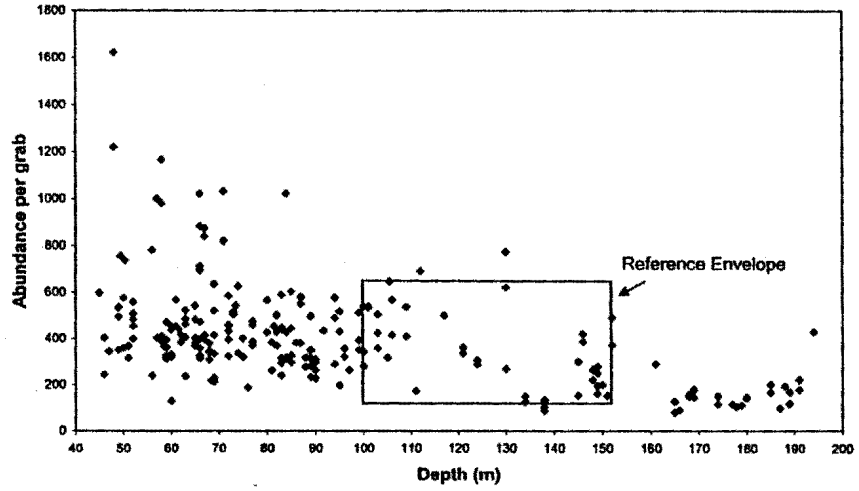


Figure 26. Amphiodia abundances at the 100-meter stations (1991-1999)

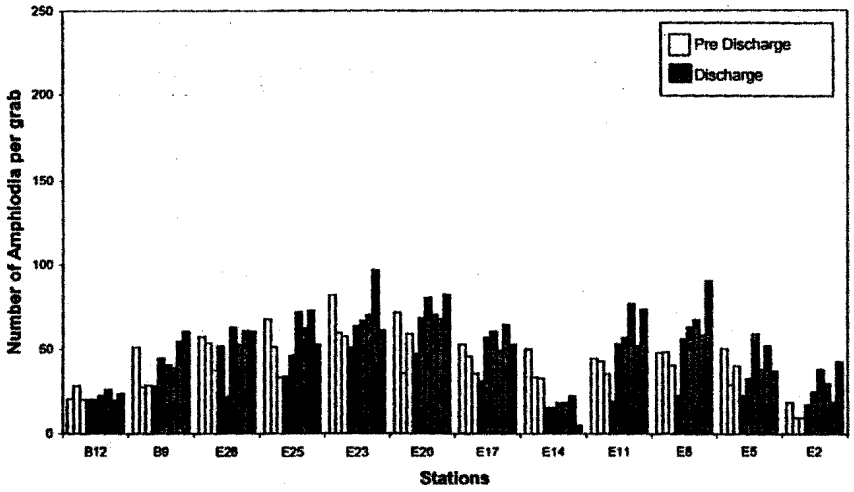


Figure 27. Depth distribution of Amphiodia spp. from San Diego Regional Surveys (1994-1999)

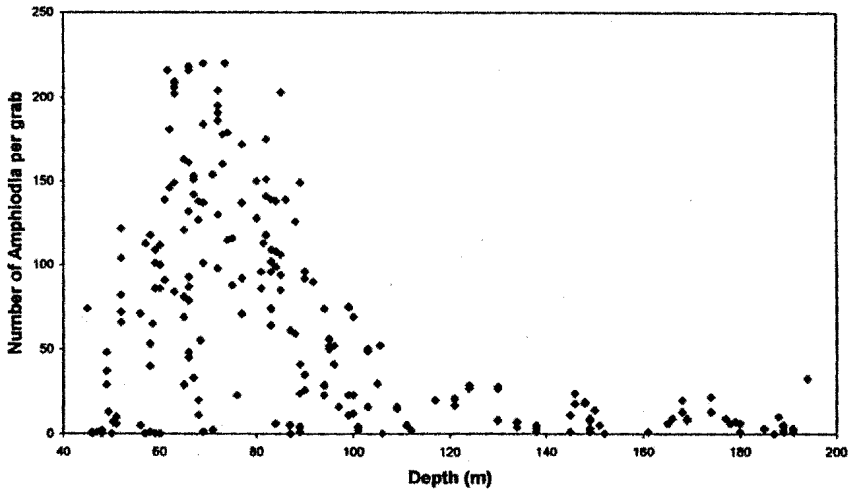


Figure 28. Abundances of Parvalucina at the 100-meter stations (1991-1999)

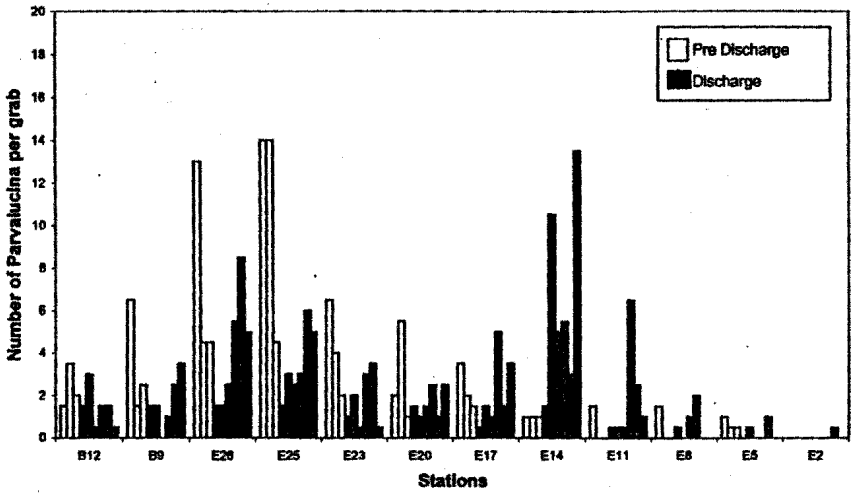


Figure 29. Depth distribution of Parvilucina tenuisculpta from San Diego Regional Surveys (1994-1999)

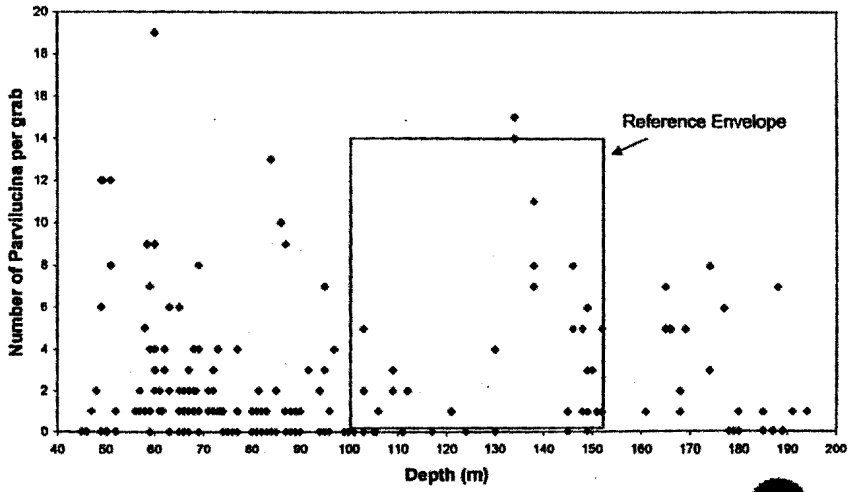


Figure 30. Abundances of Euphilomedes at the 100-meter stations

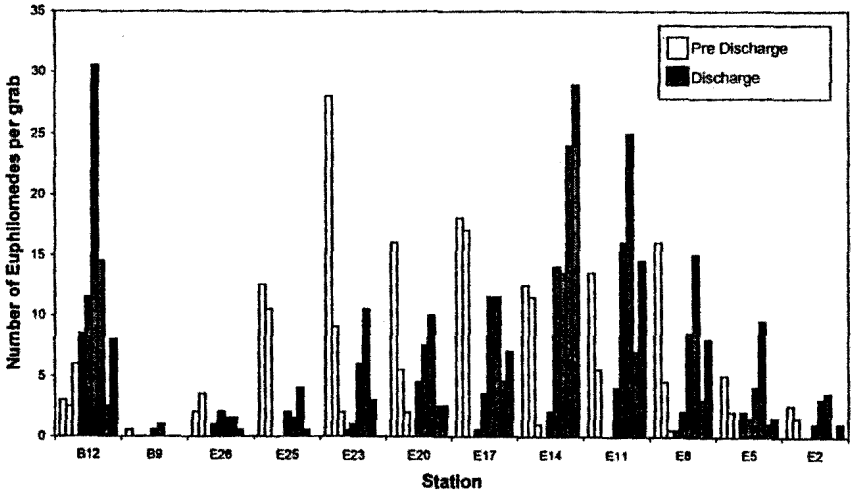


Figure 31. Depth distribution of Euphilomedes carcharodonta from San Diego Regional Surveys (1994-1999)

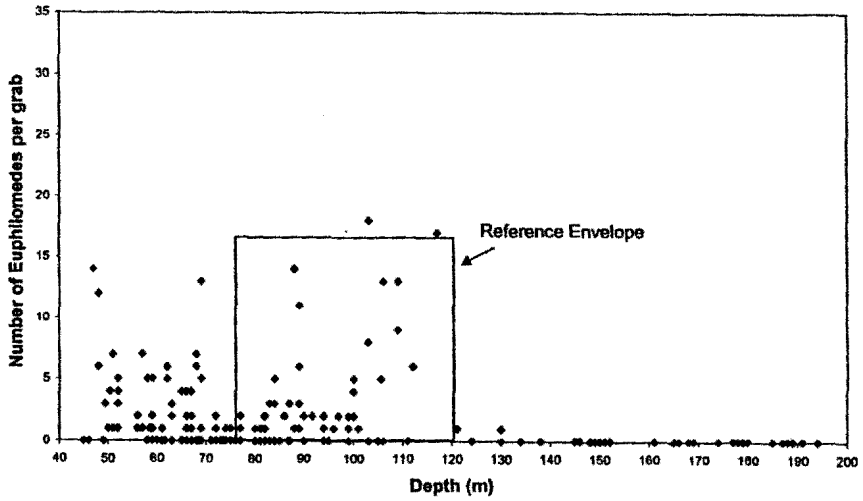


Figure 32. Capitella spp abundances at the 100-meter stations (1991-1999)

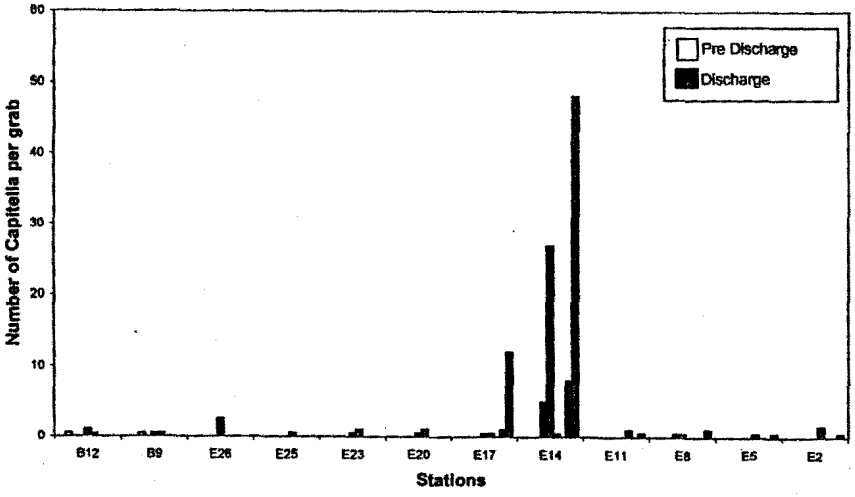


Figure 33. Depth distribution of Capitella capitata complex from San Diego Regional Surveys (1994-1999)

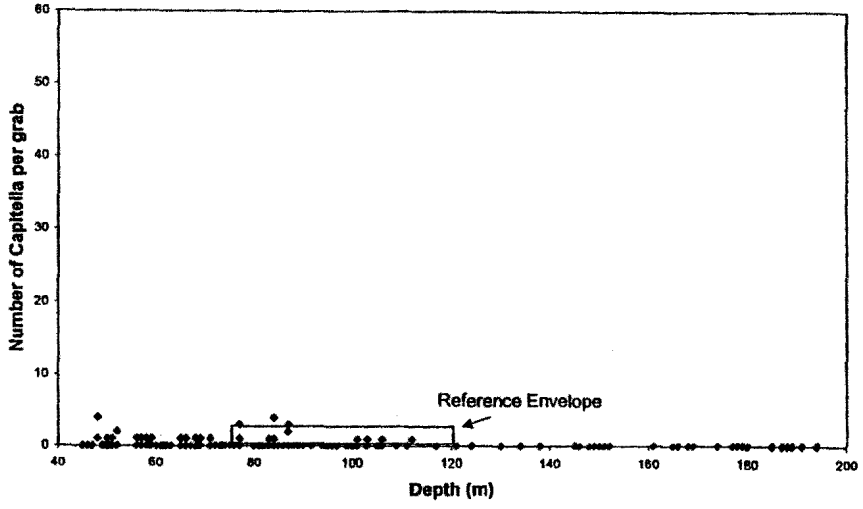


Figure 34. Infaunal Trophic Index values at the 100-meter stations

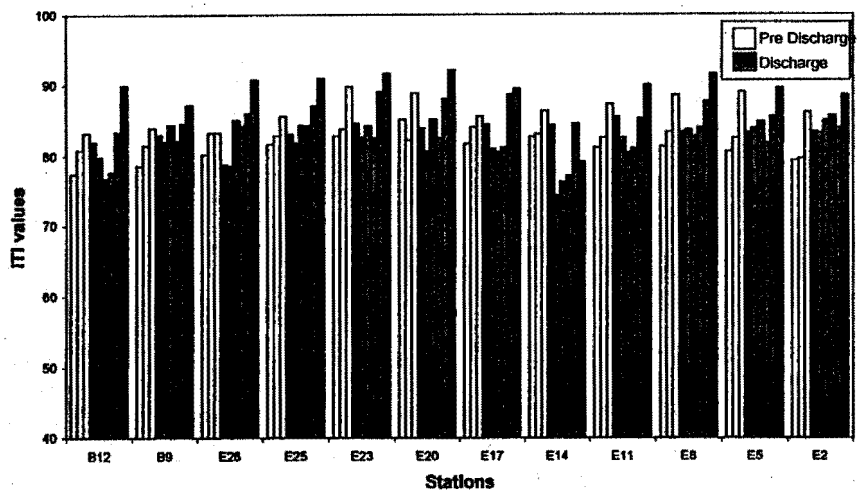


Figure 35. Depth distribution of ITI values from San Diego Regional Surveys (1994-1999)

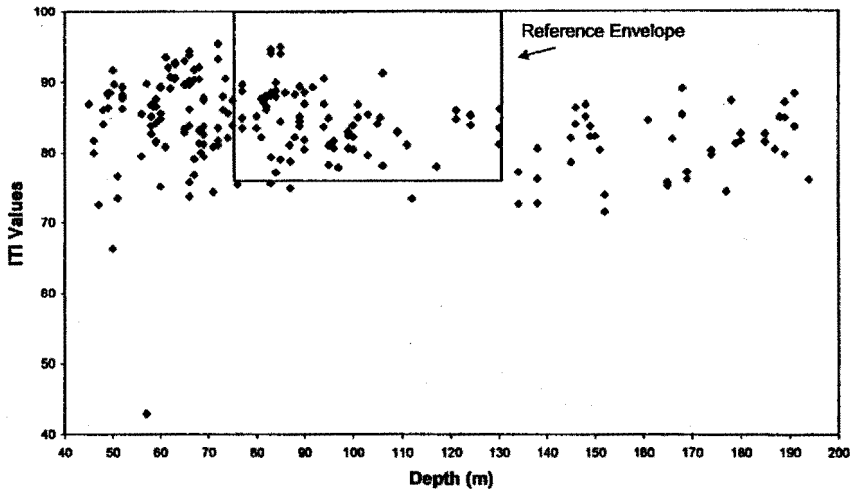


Figure 36. Benthic Response Index values at 100-meter stations (1991-1999)

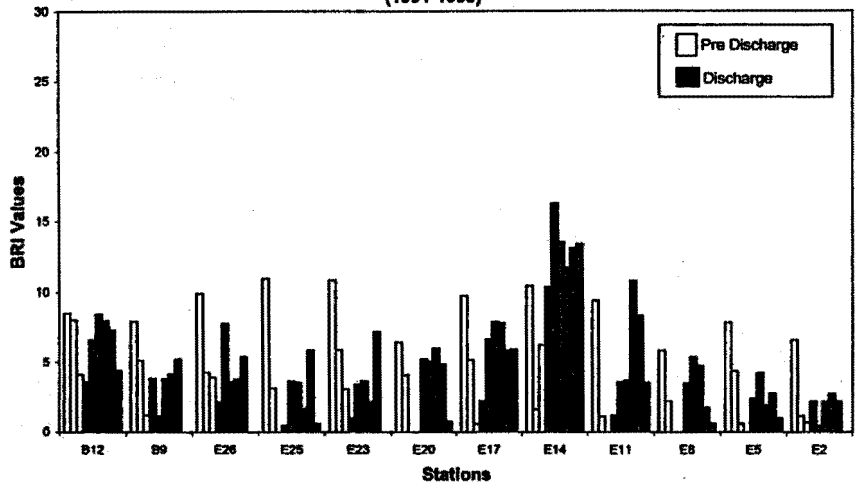


Figure 37. Depth distribution of BRI values from San Diego Regional Surveys (1994-1999)

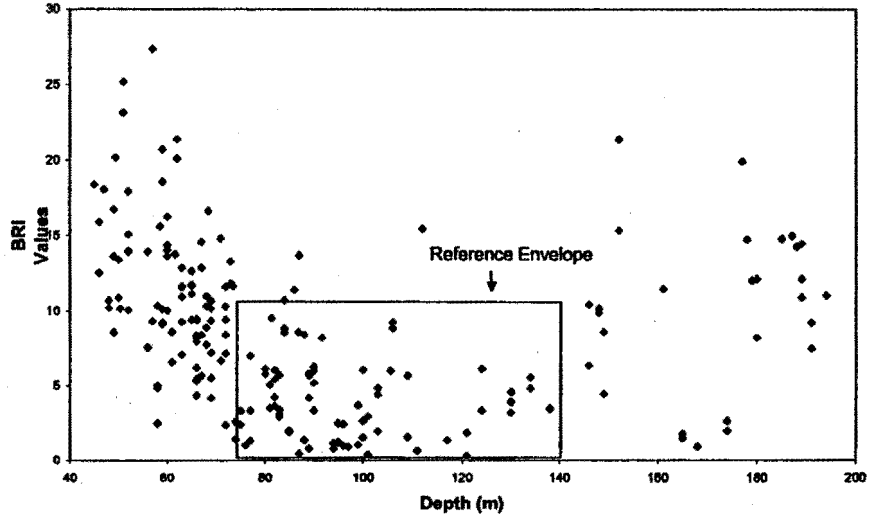


FIGURE 38.
LOCATION OF FISH TRAWL AND RIG FISH STATIONS

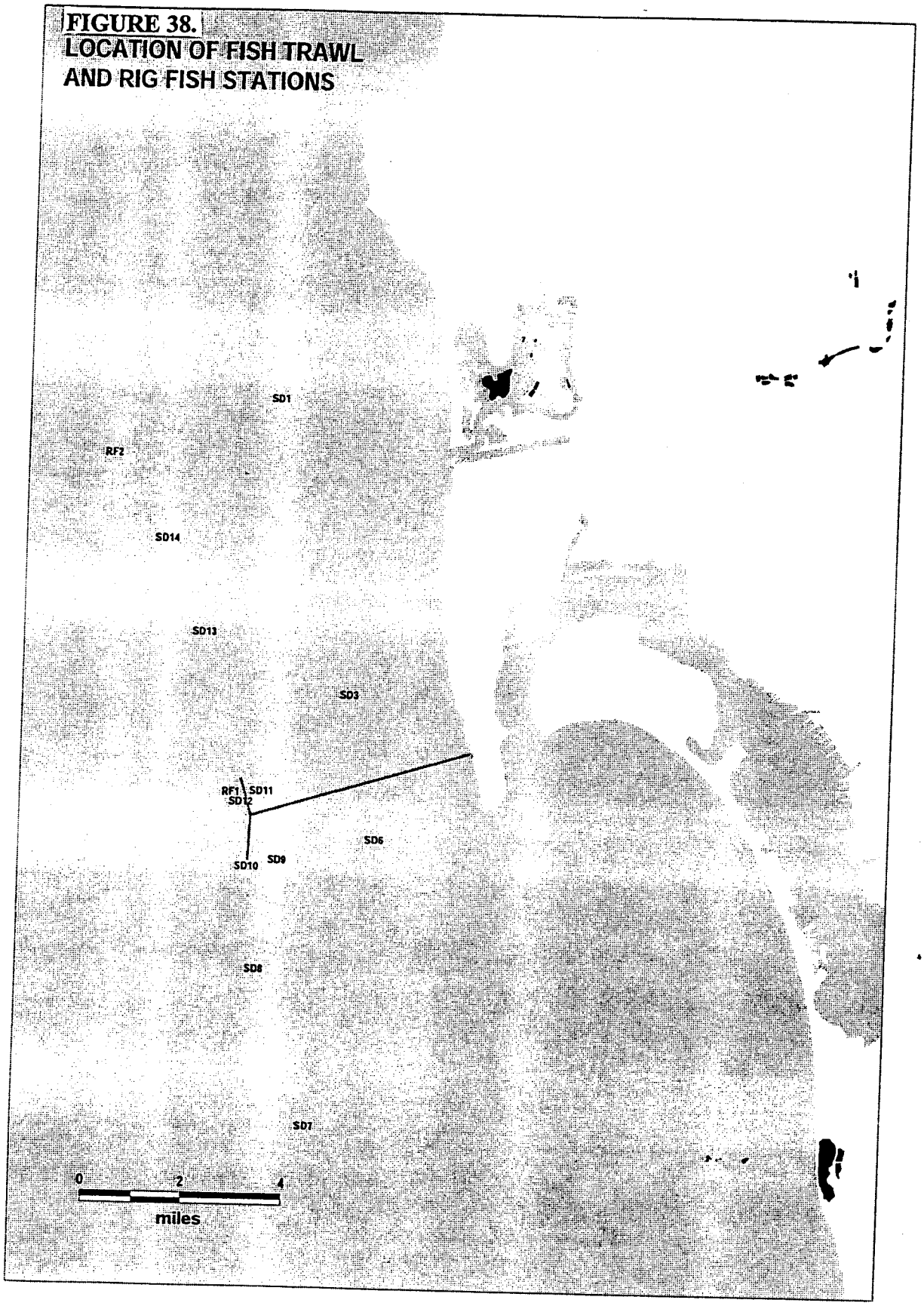


Figure 39. Number of fish species at summer trawl stations (1991-2000)

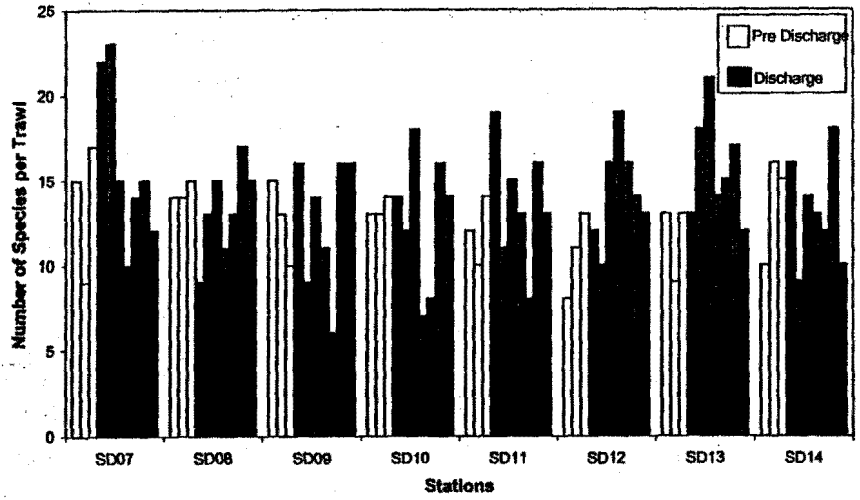


Figure 40. Fish abundances at summer trawl stations (1991-2000)

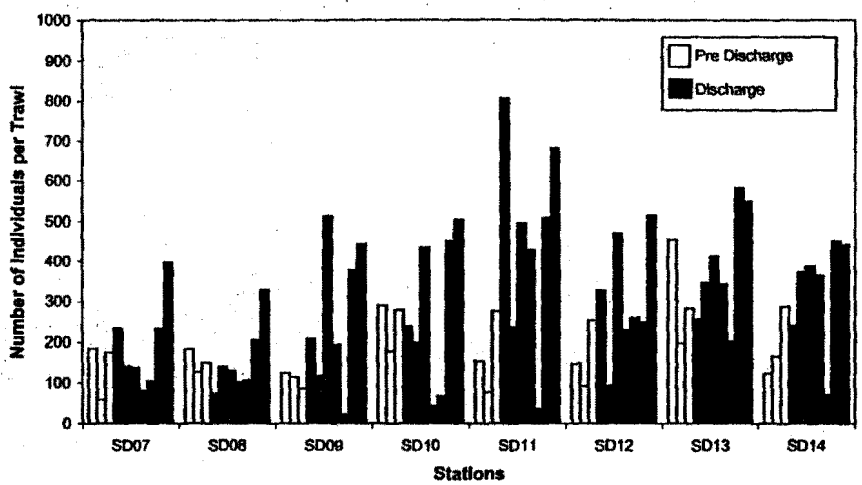


Figure 41. Fish biomass at summer trawl stations (1991-2000)

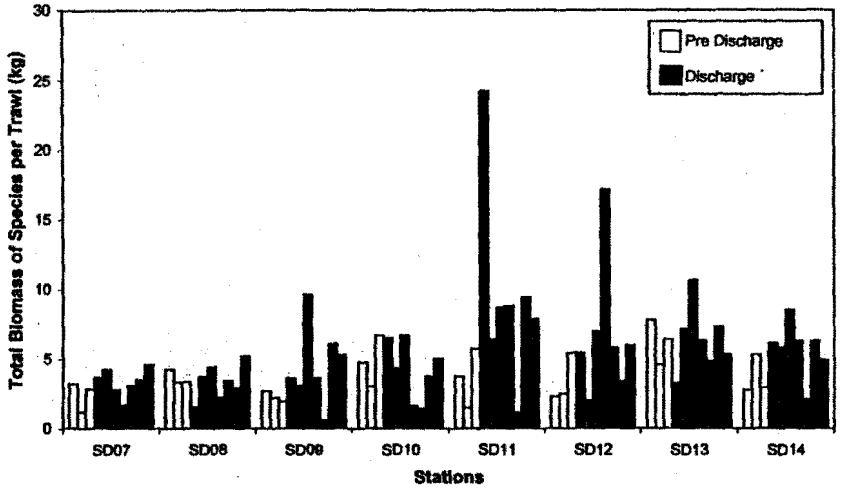


Figure 42. Arsenic in Longfin Sandab muscle tissue (1991-2000)

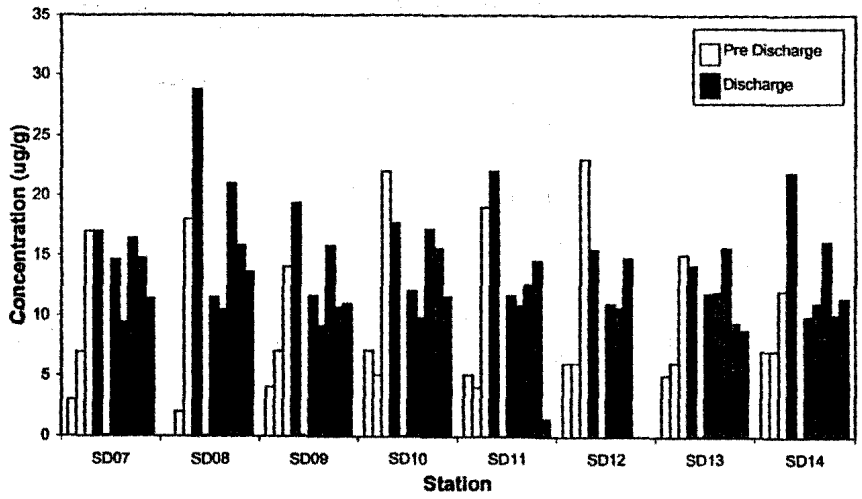


Figure 43. Arsenic in California Scorpionfish Muscle Tissue (1991-2000)

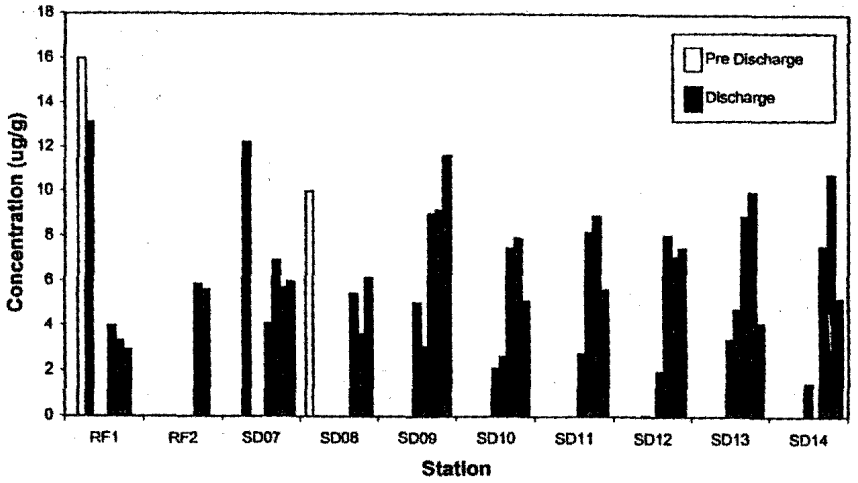


Figure 44. Mercury in Longfin Sanddab Muscle Tissue (1991-2000)

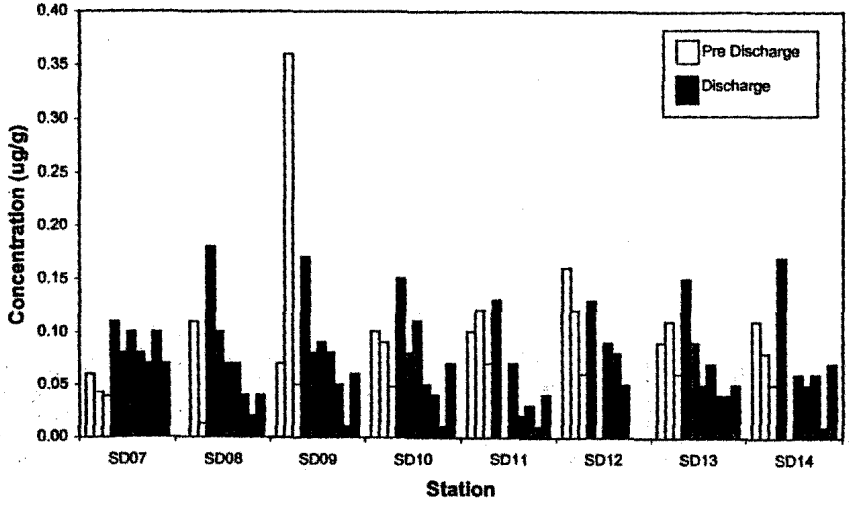


Figure 45. Mercury in California Scorpionfish Muscle Tissue (1991-2000)

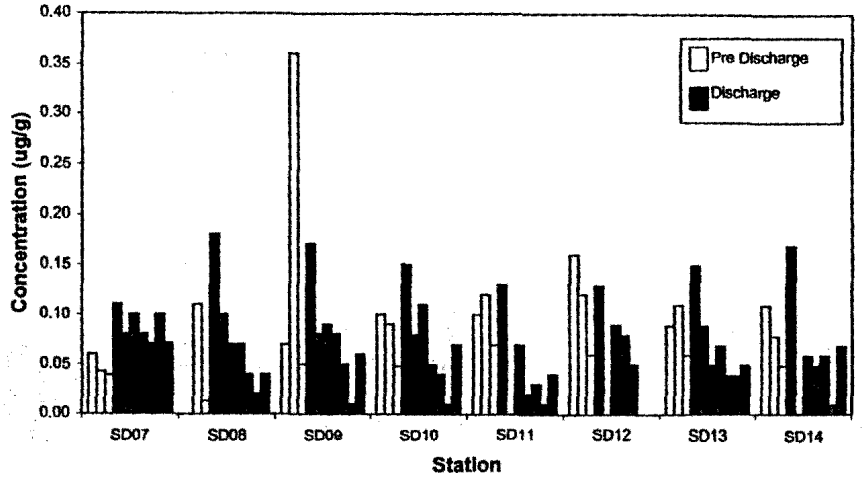


Figure 46. Total DDT in Longfin Sanddab Liver (1991-2000)

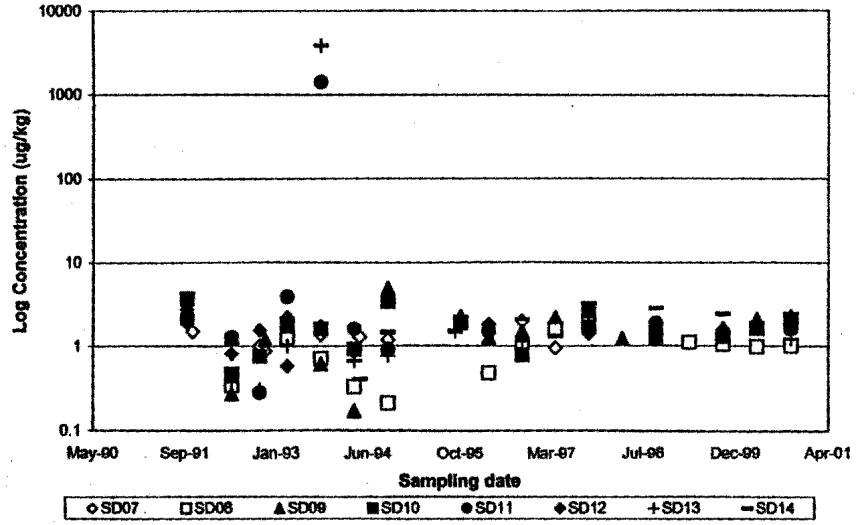


Figure 47. Total DDT in Pacific Sanddab Liver (1991-2000)

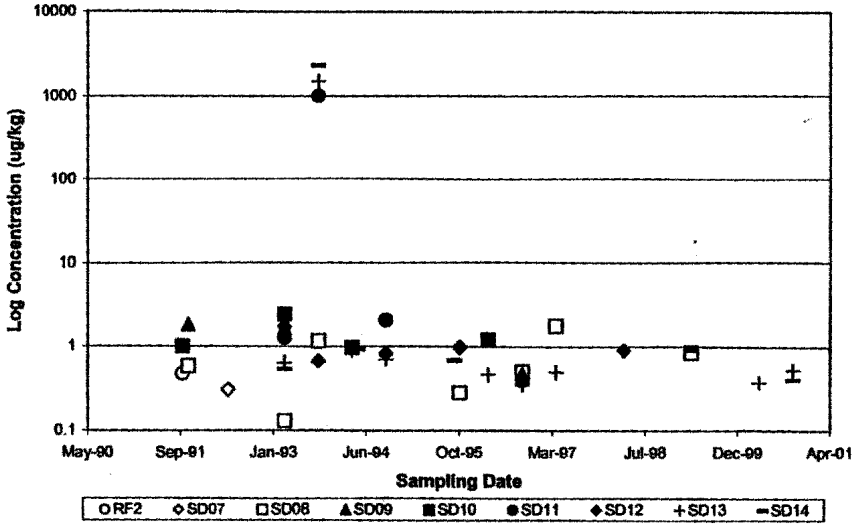


Figure 48. Total PCBs in Longfin Sanddab Liver (1991-2000)

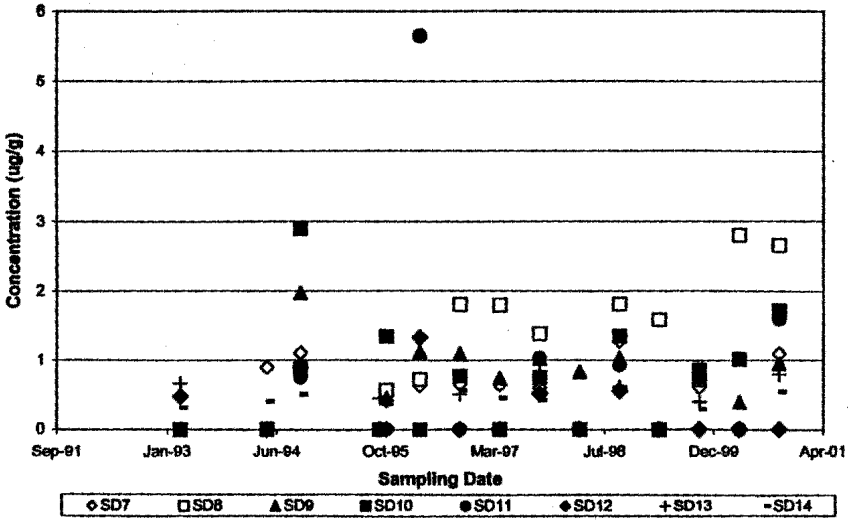


Figure 49. Total PCBs in Pacific Sanddab Liver (1991-2000)

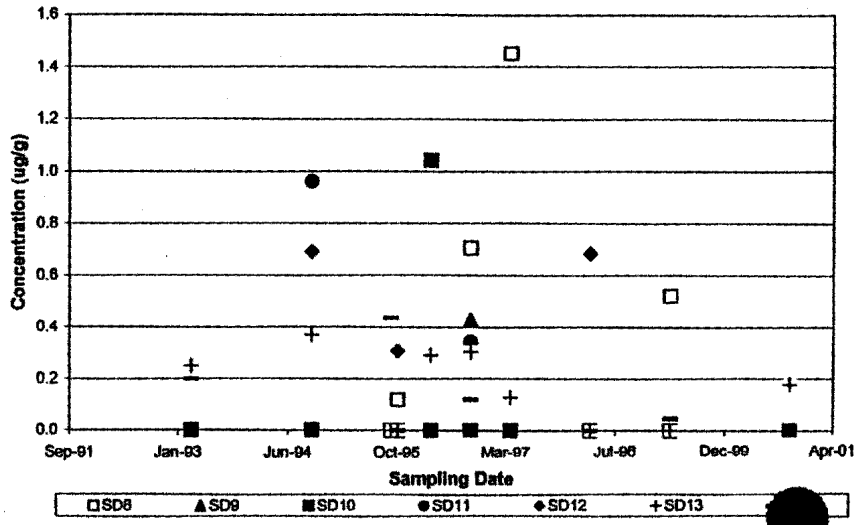


Figure 50. San Diego Shoreline Total Coliform Data (1996-2000)

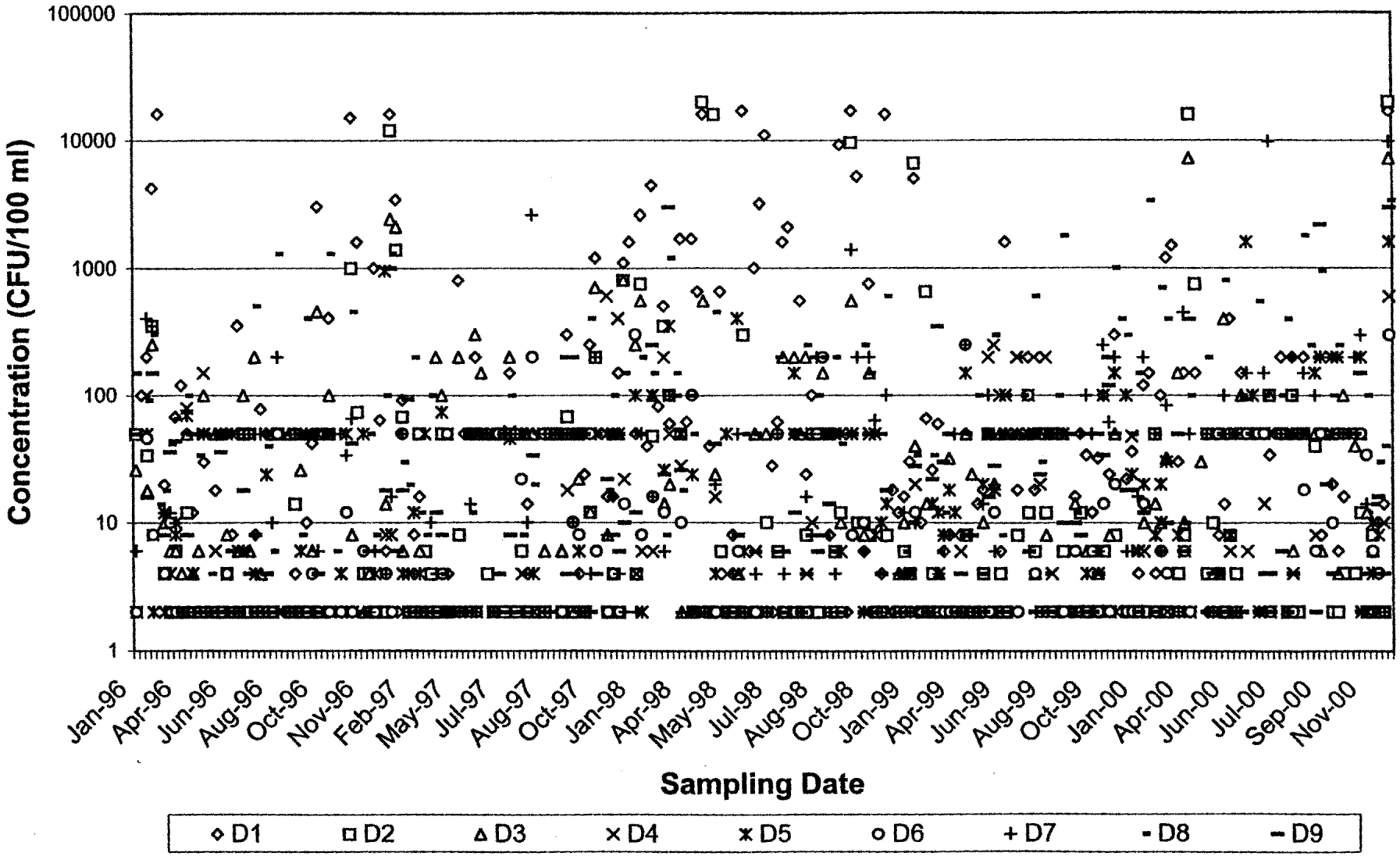


Figure 51. San Diego Shoreline Fecal Coliform Data (1996-2000)

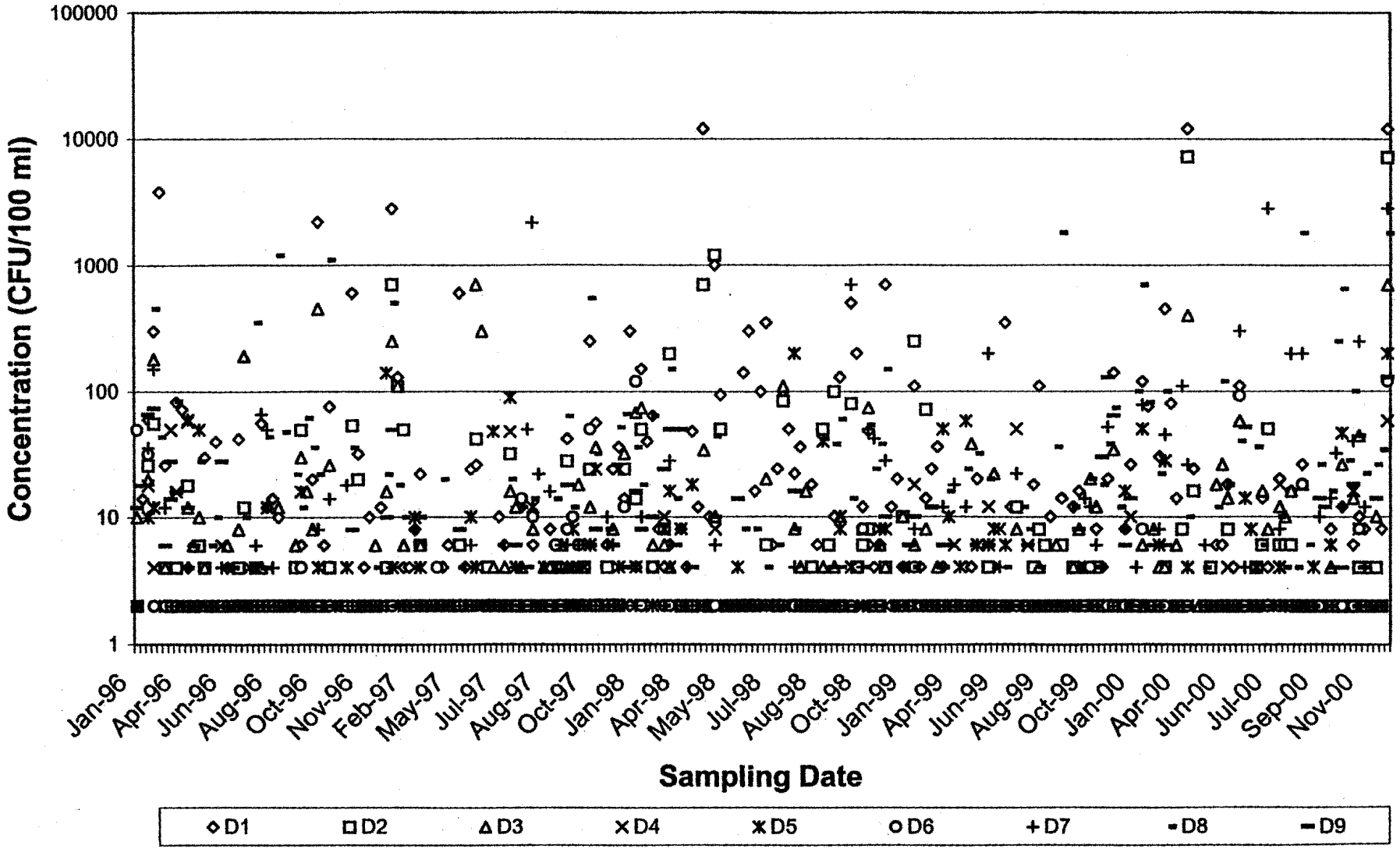


Figure 53. Summary of single sample exceedances for San Diego Shoreline Stations (1995-2000)

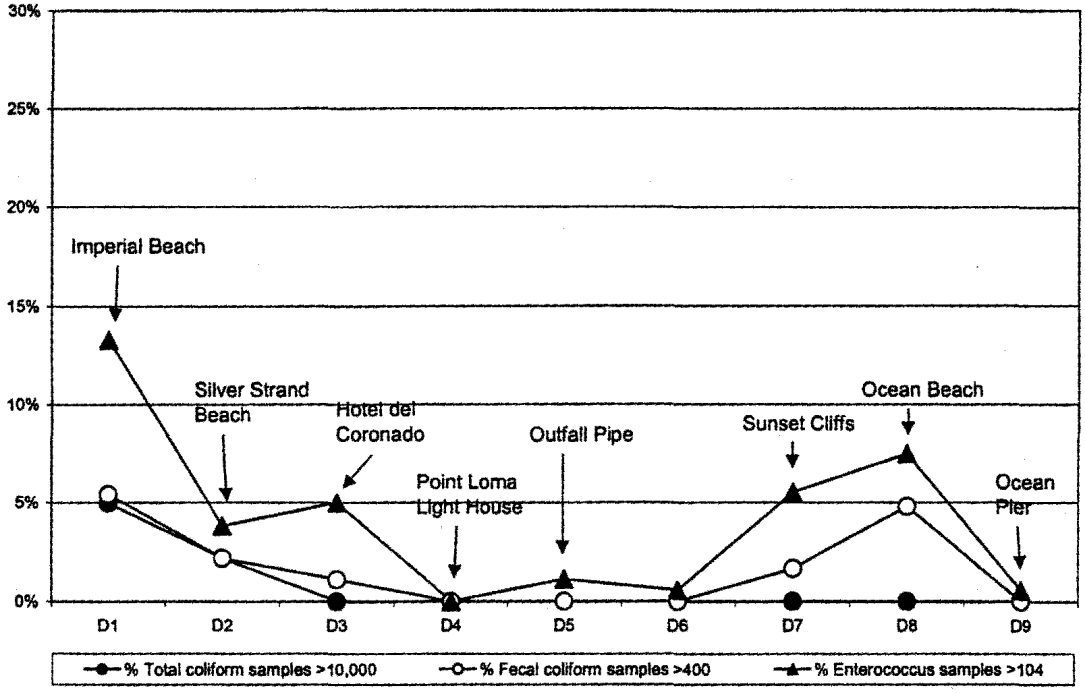


Figure 54. Summary of single sample exceedances for ITP Shoreline Stations (1995-2000)

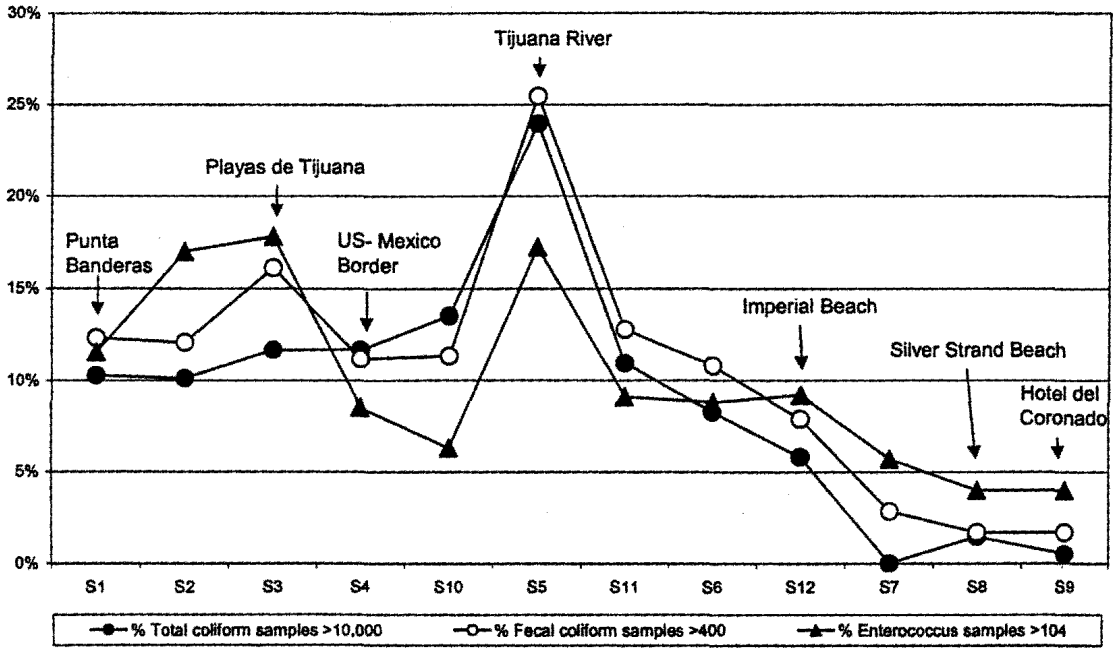
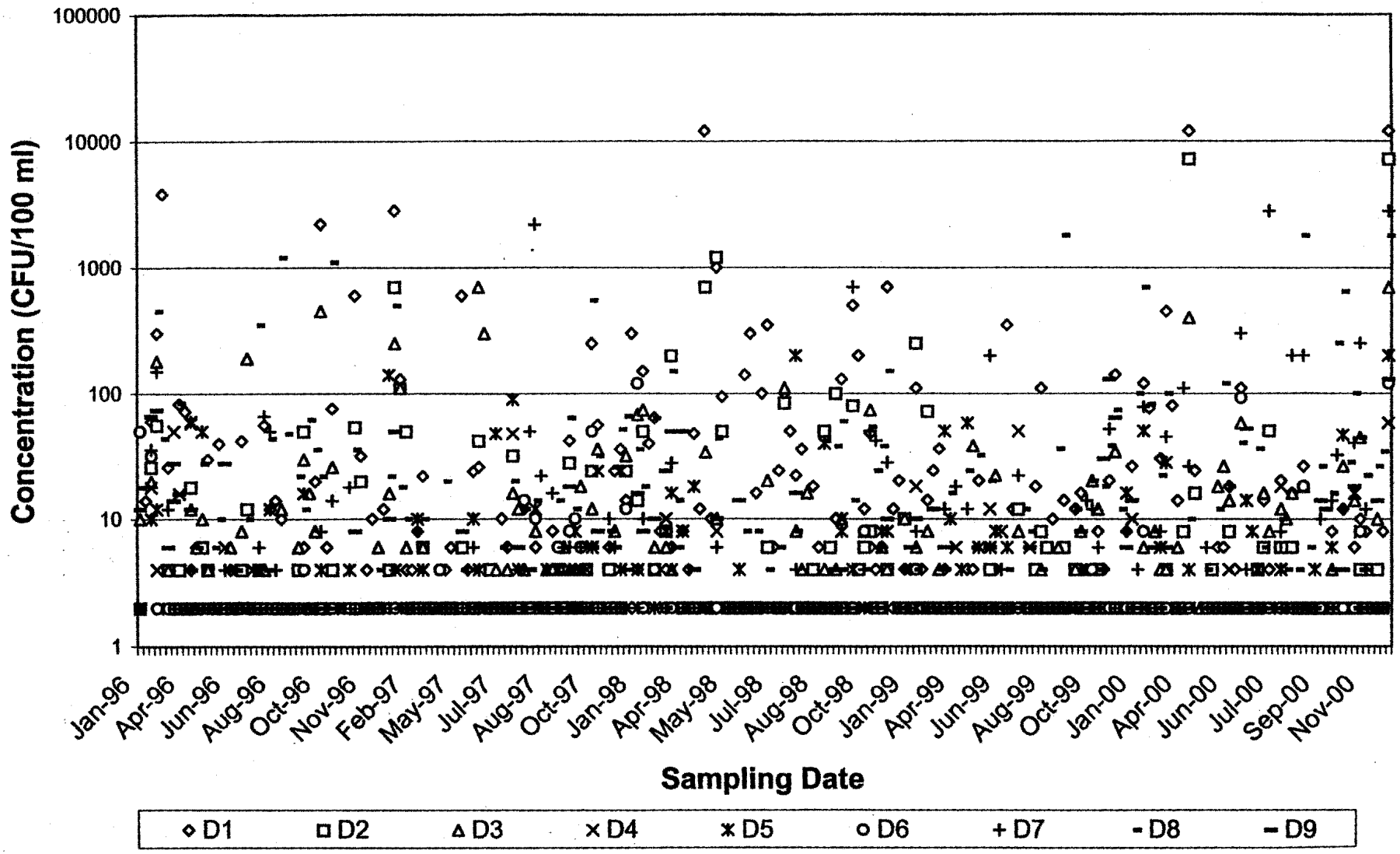


Figure 52. San Diego Shoreline Enterococcus Data (1996-2000)



Appendix
A

Summary of Water Quality Data

Table A-1. Long-term average suspended solids concentrations (and standard deviation) in mg/l for offshore stations

60-foot contour station									
	5	40	60	80	140	200	260	290	320	380
B2										
150-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
A10	4.2 (2.2)				5.6 (7.7)					
A12	4.1 (2.1)				3.8 (1.6)					
A14	4.8 (3.5)				4.1 (2.2)					
200-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
B1	4.1 (1.8)				2.7 (1.2)	3.6 (2.4)				
A2	4.1 (1.6)				3.0 (1.1)	8.8 (13.7)				
A5	4.3 (2.3)				3.1 (1.5)	4.3 (4.2)				
B3	4.6 (2.5)				3.1 (1.8)	4.2 (1.9)				
B5	3.6 (1.9)				2.9 (1.7)	3.5 (2.1)				
290-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E10	3.8 (2.0)				2.9 (1.9)			3.5 (1.9)		
E16	3.8 (2.5)				2.8 (1.4)			4.1 (5.3)		
320-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E2	3.6 (2.9)				2.5 (1.2)				5.2 (8.2)	
E5	4.3 (3.7)				2.7 (1.4)				5.4 (11.1)	
E8	3.4 (1.7)				2.7 (1.8)				4 (4.7)	
E14	4.1 (1.8)				2.7 (1.6)				3.3 (2.5)	
B9	3.5 (1.8)				3.1 (1.7)				3.2 (1.8)	
B12	3.3 (1.7)				3.0 (1.9)				3.6 (1.9)	
380-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E12	3.8 (3.0)				3.1 (2.2)					3.6 (2.7)
E18	3.5 (2.0)				3.0 (2.2)					6.2 (9.4)

Table A-2. Long-term average in percent transmissivity values (and standard deviation) for offshore stations

60-foot contour station										
	5	40	60	80	140	200	260	290	320	380
B2	79 (9)	81 (5)	79 (8)							
150-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
A10	82 (7)			89	81 (8)					
A12	83 (5)			85	81 (8)					
A14	83 (5)			87	82 (6)					
200-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
B1	85 (6)				89 (2)	87 (4)				
A2	84 (5)				87 (4)	77 (11)				
A5	84 (5)				87 (3)	80 (7)				
B3	85 (6)				88 (3)	80 (8)				
B5	85 (5)				88 (4)	82 (8)				
290-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E10	86 (4)				89 (2)	89 (3)	88 (3)	84 (6)		
E16	86 (4)				89 (2)	89 (3)	88 (3)	85 (6)		
320-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E2	86 (5)				90 (2)	90 (2)	89 (3)		85 (7)	
E5	87 (4)				90 (2)	90 (2)	90 (2)		84 (11)	
E8	87 (4)				90 (2)	90 (3)	89 (3)		84 (8)	
E14	87 (4)				90 (2)	89 (3)	88 (3)		86 (5)	
B9	87 (4)				90 (2)	90 (2)	89 (3)		87 (4)	
B12	88 (3)				90 (2)	90 (2)	90 (2)		87 (5)	
380-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E12	87 (4)				90 (2)	90 (2)	90 (2)		89 (3)	87 (4)
E18	87 (4)				90 (2)	90 (2)	89 (3)		89 (4)	87 (5)

Table A-3. Long-term average dissolved oxygen concentrations (and standard deviation) in mg/l for offshore stations

60-foot contour station										
	5	40	60	80	140	200	260	290	320	380
B2	8.4 (1.6)	8.1 (1.6)	7.2 (1.6)							
150-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
A10	8.0 (1.5)			6.8	6.0 (1.6)					
A12	8.0 (1.4)			6.8	6.0 (1.6)					
A14	8.0 (1.5)			7.2	6.0 (1.6)					
200-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
B1	7.9 (1.5)				6.2 (1.5)	5.4 (1.3)				
A2	8.2 (1.4)				6.1 (1.5)	5.4 (1.2)				
A5	8.0 (1.5)				6.0 (1.5)	5.3 (1.4)				
B3	8.1 (1.5)				6.1 (1.5)	5.3 (1.4)				
B5	8.2 (1.5)				6.4 (1.5)	5.5 (1.4)				
290-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E10	8.2 (0.8)				6.5 (1.2)	5.7 (1.3)	5.0 (1.2)	4.7 (1.1)		
E16	8.2 (0.7)				6.6 (1.2)	5.7 (1.3)	5.1 (1.2)	4.8 (1.2)		
320-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E2	8.0 (0.8)				6.6 (1.3)	5.8 (1.2)	5.1 (1.1)		6.0(11.3?)	
E5	8.1 (0.7)				6.7 (1.3)	5.7 (1.3)	5.1 (1.2)		4.5 (1.1)	
E8	8.3 (0.7)				6.6 (1.2)	5.8 (1.3)	5.2 (1.2)		4.5 (1.0)	
E14										
B9	8.0 (0.9)				6.7 (1.2)	5.9 (1.2)	5.2 (1.2)		4.6 (1.1)	
B12	8.0 (0.7)				6.9 (1.3)	6.0 (1.2)	5.3 (1.1)		4.7 (1.1)	
380-foot contour stations										
	5	40	60	80	140	200	260	290	320	380
E12	8.1 (0.8)				6.7 (1.2)	5.9 (1.2)	5.2 (1.1)		4.7 (1.0)	4.3 (1.1)
E18	8.2 (0.7)				6.7 (1.2)	5.8 (1.2)	5.1 (1.1)		4.6 (1.1)	4.4 (1.1)

Table A-4. Long-term average (and std dev.) for total coliforms (CFU/100 ml) for offshore water quality stations (1996-2000)

60-foot contour station	5	40	60	140	200	260	290	320	380
B2	9 (30)	11 (29)	11 (16)						

150-foot contour stations	5	40	60	140	200	260	290	320	380
A10	17 (62)			341 (975)					
A12	7 (27)			256 (462)					
A14	8 (28)			365 (761)					

200-foot contour stations	5	40	60	140	200	260	290	320	380
A2	20 (119)			386 (1152)	1571 (4156)				
A5	51 (367)			1031 (2920)	1209 (2415)				
B1	24 (119)			60 (198)	271 (886)				
B3	20 (94)			56 (132)	510 (956)				
B5	3 (7)			25 (39)	190 (454)				

290-foot contour stations	5	40	60	140	200	260	290	320	380
E10	6 (26)			1065 (3902)	3787 (6663)	3846 (5889)	5249 (6662)		
E16	18 (57)			262 (1110)	3450 (6272)	6073 (6557)	4099 (5609)		

320-foot contour stations	5	40	60	140	200	260	290	320	380
E2	5 (15)			108 (498)	1295 (3814)	1349 (3264)		1927 (4298)	
E5	3 (2)			264 (1074)	2217 4996)	2173 (4626)		2123 (4213)	
E8	47 (315)			266 (993)	2654 (5715)	2927 (5343)		2095 (4025)	
E14	4 (9)			608 (2466)	4580 (6750)	8471 (7713)		7036 (7405)	
B9	3 (6)			22 (86)	290 (1210)	2296 (4358)		1246 (2588)	
B12	2 (1)			125 (859)	775 (3062)	1159 (2961)		717 (2406)	

380-foot contour stations	5	40	60	140	200	260	290	320	380
E12	3 (3)			93 (511)	1040 (2939)	2583 (5286)		2727 (5640)	1926 (4548)
E18	7 (26)			31 (98)	1213 (3546)	4894 (7021)		4454 (6587)	2627 (4957)

Table A-5. Long-term average (and std. Dev.) for fecal coliforms (CFU/100 ml) for offshore water quality stations (1996-2000)

60-foot contour station	5	40	60	140	200	260	290	320	380
B2	3 (2)	3 (3)	4 (6)						

160-foot contour stations	5	40	60	140	200	260	290	320	380
A10	3 (5)			69 (211)					
A12	3 (4)			47 (79)					
A14	2 (0)			172 (152)					

200-foot contour stations	5	40	60	140	200	260	290	320	380
A2	3 (7)			78 (205)	346 (879)				
A5	5 (18)			166 (495)	250 (560)				
B1	8 (39)			15 (38)	51 (175)				
B3	4 (11)			12 (21)	143 (340)				
B5	2 (1)			7 (12)	52 (146)				

290-foot contour stations	5	40	60	140	200	260	290	320	380
E10	2 (3)			404 (1681)	1279 (2771)	1661 (3492)	2104 (3506)		
E16	11 (42)			15 (37)	859 (2328)	2104 (3127)	1204 (2141)		

320-foot contour stations	5	40	60	140	200	260	290	320	380
E2	2 (0)			20 (78)	259 (847)	430 (1481)		594 (1369)	
E5	3 (6)			30 (135)	549 (1537)	920 (2552)		450 (1008)	
E8	3 (6)			48 (201)	795 (2133)	1003 (2443)		761 (2066)	
E14	4 (9)			62 (246)	2834 (5051)	4062 (4721)		3811 (5017)	
B9	4 (12)			4 (4)	126 (686)	794 (1879)		389 (1131)	
B12	2 (0)			52 (360)	326 (1470)	288 (740)		232 (887)	

380-foot contour stations	5	40	60	140	200	260	290	320	380
E12	2 (2)			15 (68)	243 (1620)	770 (1910)		949 (2353)	472 (1306)
E18	2 (1)			7 (19)	502 (1946)	2273 (3899)		1670 (3321)	971 (2875)

Table A-6. Long-term average (and std dev.) of enterococcus (CFU/100 ml) offshore of San Diego (1996-2000)

60-foot contour station	5	40	60	140	200	260	290	320	380
B2	10 (37)	3 (4)	3 (3)						

150-foot contour stations	5	40	60	140	200	260	290	320	380
A10	10 (37)			17 (72)					
A12	4 (8)			9 (16)					
A14	9 (36)			11 (20)					

200-foot contour stations	5	40	60	140	200	260	290	320	380
A2	10 (37)			11 (25)	34 (66)				
A5	5 (11)			25 (106)	40 (103)				
B1	4 (9)			12 (34)	29 (116)				
B3	4 (9)			5 (10)	29 (57)				
B5	2 (1)			4 (4)	13 (22)				

290-foot contour stations	5	40	60	140	200	260	290	320	380
E10	2 (0)			26 (104)	147 (321)	124 (238)	162 (295)		
E16	3 (6)			11 (53)	152 (381)	158 (231)	108 (159)		

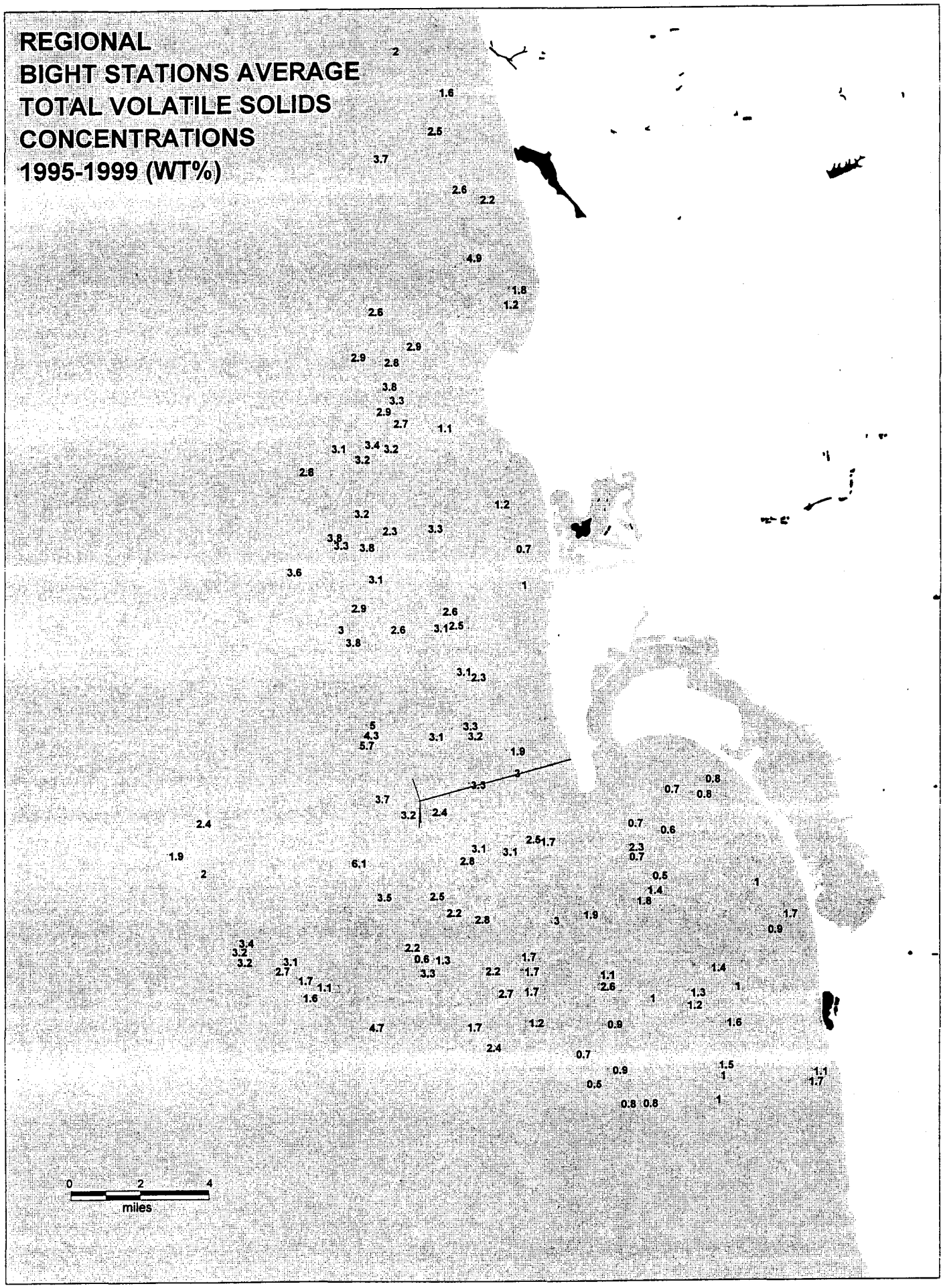
320-foot contour stations	5	40	60	140	200	260	290	320	380
E2	2 (0)			7 (21)	55 (169)	50 (147)		53 (130)	
E5	3 (6)			6 (15)	97 (283)	91 (253)		50 (98)	
E8	2 (3)			12 (41)	132 (427)	111 (341)		70 (157)	
E14	4 (13)			11 (32)	182 (355)	242 (307)		157 (278)	
B9	5 (26)			2 (1)	25 (93)	66 (155)		33 (63)	
B12	2 (0)			16 (68)	41 (140)	31 (78)		21 (58)	

380-foot contour stations	99	5	40	60	140	200	260	290	320	380
E12	3 (7)				4 (8)	74 (421)	92 (245)		93 (224)	55 (186)
E18	5 (26)				4 (7)	50 (195)	228 (477)		117 (250)	70 (172)

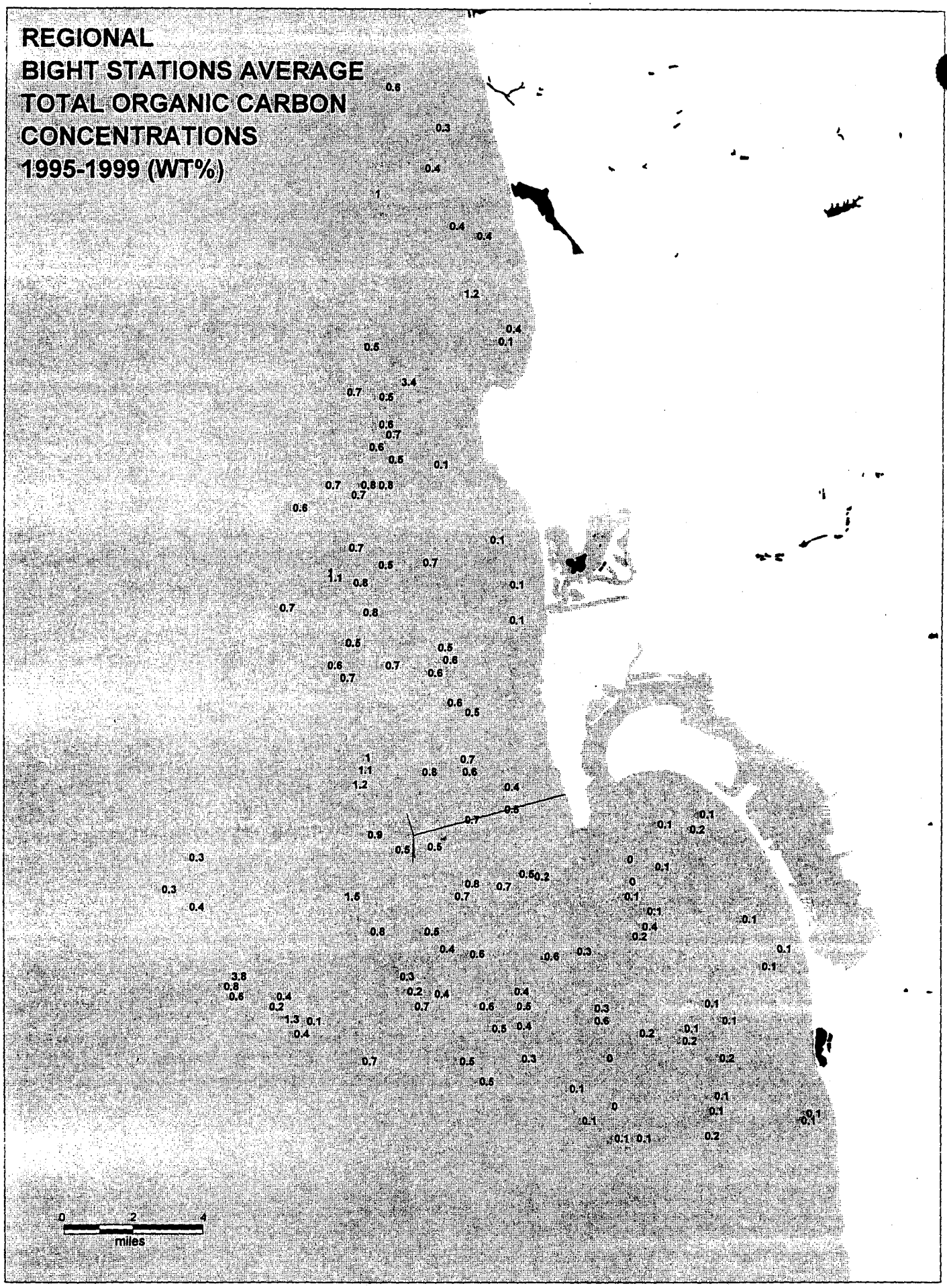
Appendix
B

Sediment Chemistry
From Regional Surveys

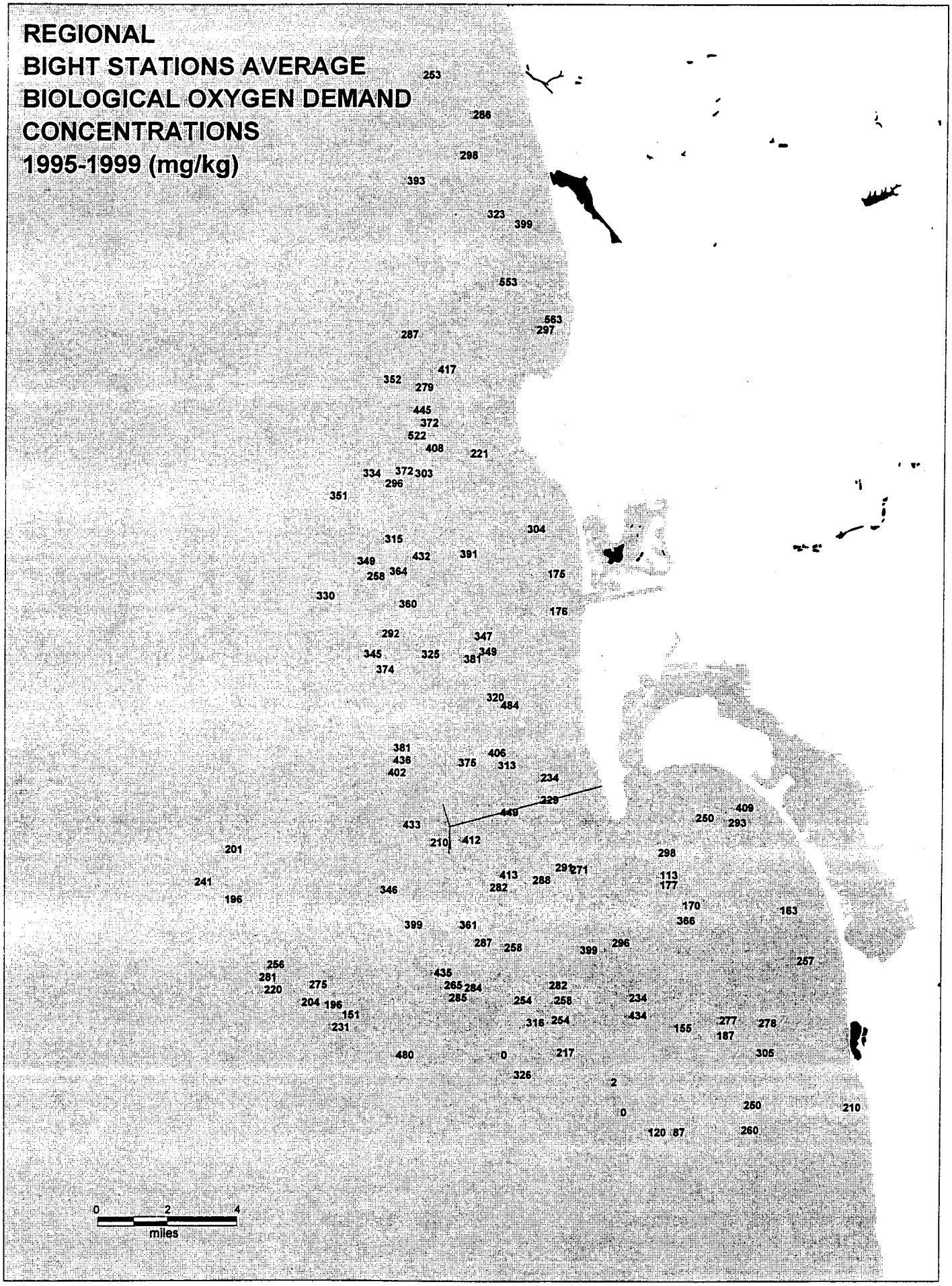
REGIONAL BIGHT STATIONS AVERAGE TOTAL VOLATILE SOLIDS CONCENTRATIONS 1995-1999 (WT%)



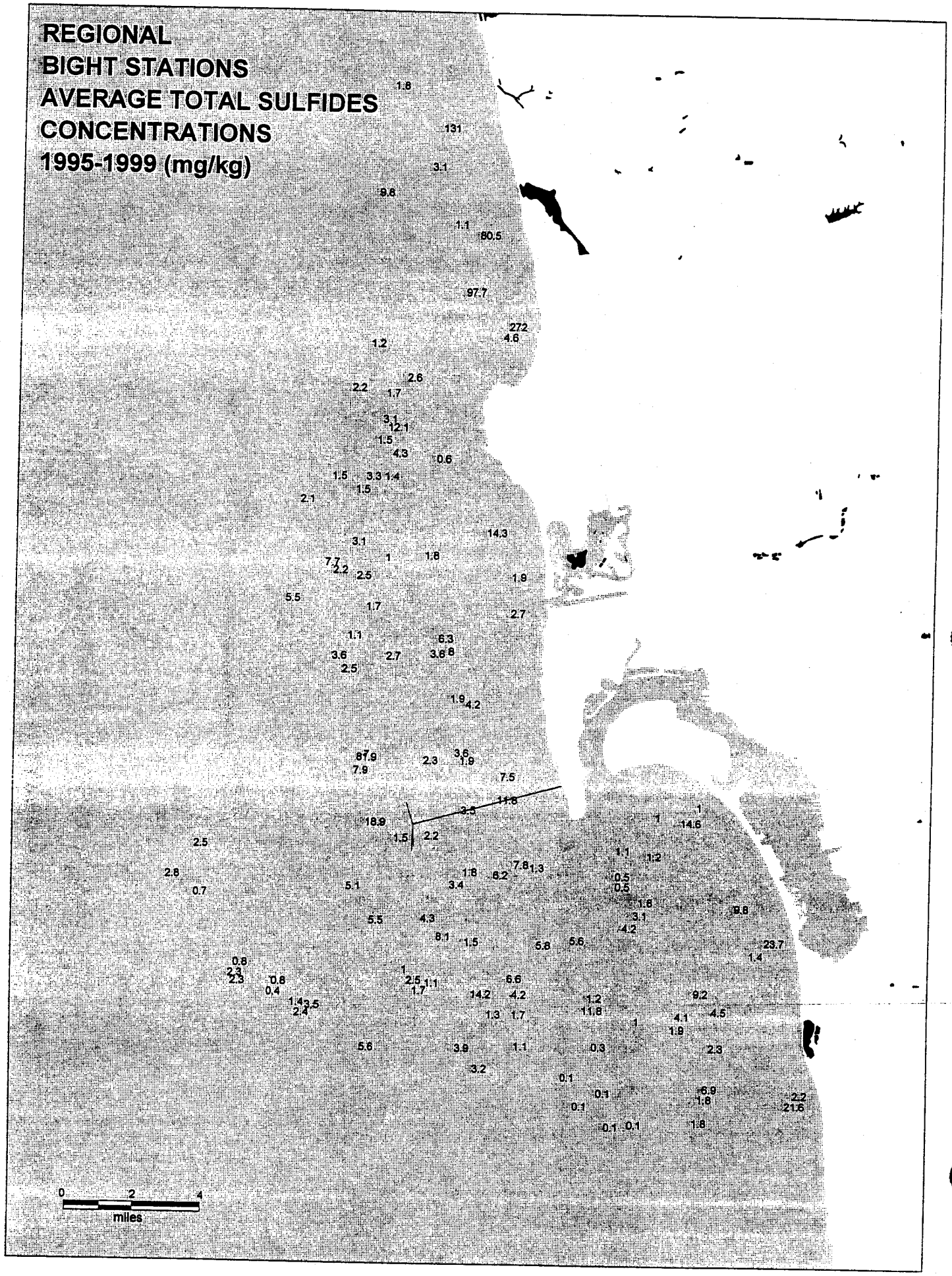
REGIONAL BIGHT STATIONS AVERAGE TOTAL ORGANIC CARBON CONCENTRATIONS 1995-1999 (WT%)



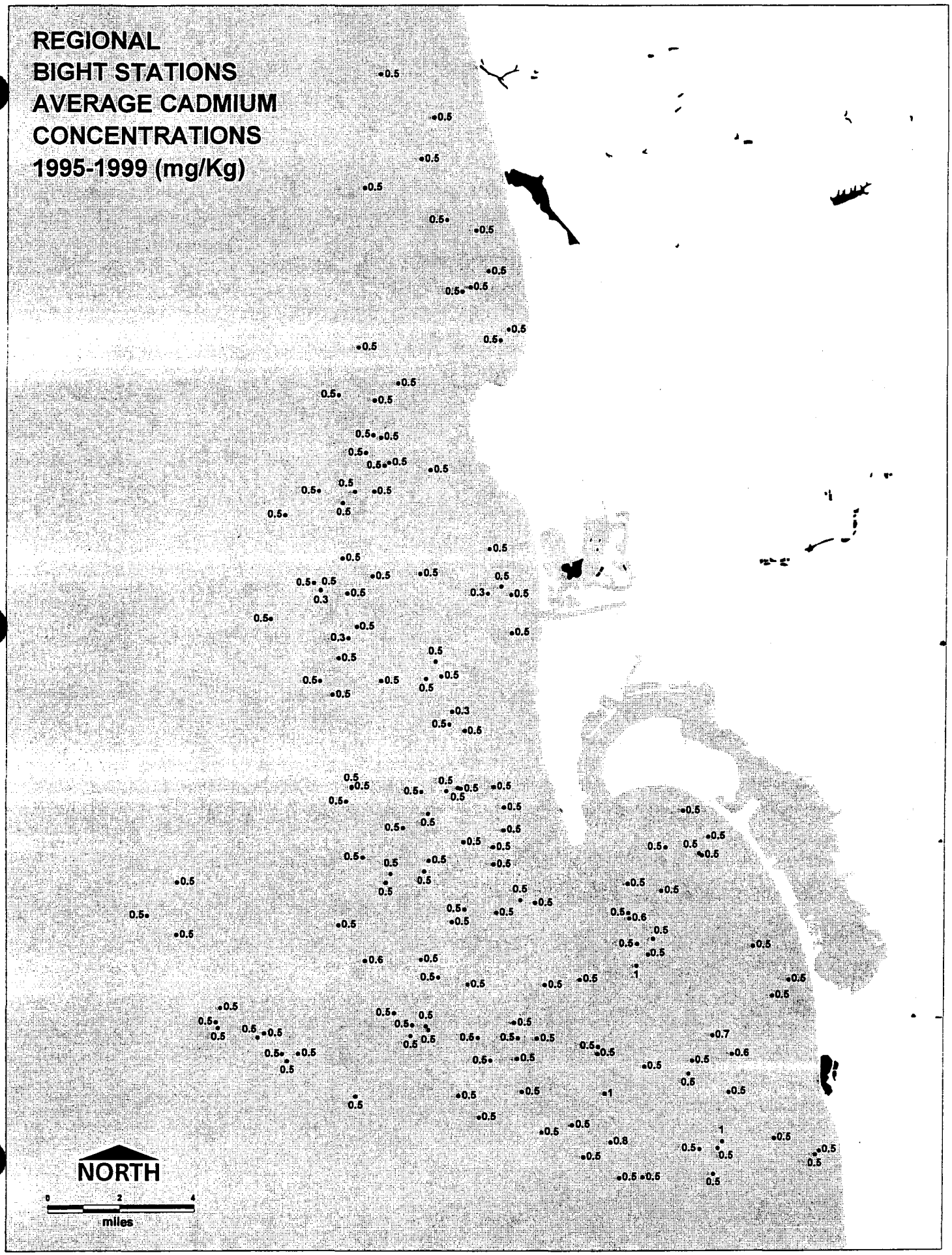
REGIONAL BIGHT STATIONS AVERAGE BIOLOGICAL OXYGEN DEMAND CONCENTRATIONS 1995-1999 (mg/kg)



REGIONAL BIGHT STATIONS AVERAGE TOTAL SULFIDES CONCENTRATIONS 1995-1999 (mg/kg)



REGIONAL BIGHT STATIONS AVERAGE CADMIUM CONCENTRATIONS 1995-1999 (mg/Kg)



REGIONAL BIGHT STATIONS AVERAGE ARSENIC CONCENTRATIONS 1995-1999 (mg/Kg)