California Regional Water Quality Control Board

Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Agency Secretary

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Arnold Schwarzenegger
Governor

April 9, 2008

Dr. Donal Manahan, Director
University of Southern California
Wrigley Marine Science Center
P.O. Box 5069
Avalon, CA 90704

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED
No. 7000 0520 0024 7127 9327

Dear Dr. Manahan:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT (NPDES) (ORDER NO. R4-2008-0017) FOR THE UNIVERSITY OF SOUTHERN CALIFORNIA, WRIGLEY MARINE SCIENCE CENTER, AVALON. NPDES NO. CA0056551, CI NO. 6068.

Our letter dated March 19, 2008, transmitted the response to comments and the revised tentative Order for the above referenced facility.

Pursuant to Division 7 of the California Water Code, this Regional Board at a public hearing held on April 3, 2008, reviewed the revised-tentative requirements, considered all factors in the case, and adopted the proposed NPDES permit. The adopted Order (Order R4-2008-0017) serves as an NPDES permit, and expires on March 3, 2013. Section 13376 of the California Water Code requires that an application/Report of Waste Discharge for a new permit must be filed at least 180 days before the expiration date.

The "Monitoring and Reporting Program" requires you to implement the monitoring program on the effective date of this Order (May 3, 2008). Your first monitoring report for the period of March 2008 is due by August 1, 2008. Monitoring reports should be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to Compliance File CI-6068 and NPDES No. CA0056551, which will assure that the reports, are directed to the appropriate file and staff. Please do not combine your discharge monitoring reports with other reports, such as progress reports. Submit each type of report as a separate document.

We are sending the final copy of the permit only to the Discharger. For those on the mailing list who would like access to a copy of the order, please go to the Regional Board's website at: www.swrcb.ca.gov/rwqcb4/html/permits/generalpermits.html.

If you have any questions please contact Stephanie Turcios at (213) 576-6793.

Sincerely,

Cassandra Owens, Chief
Industrial Permitting Unit

Enclosures: Waste Discharge Requirements
Fact Sheet
Monitoring and Reporting Program

cc: see Mailing List

MAILING LIST

Environmental Protection Agency, Region 9, Permits Branch (WTR-5)
U.S. Army Corps of Engineers
NOAA, National Marine Fisheries Service
Department of Interior, U.S. Fish and Wildlife Service
Mr. Phil Isorena, State Water Resources Control Board, Division of Water Quality
Mr. Dominic Gregorio, State Water Resources Control Board, Division of Water Quality
Ms. Constance Anderson, State Water Resources Control Board, Division of Water Quality
Mr. Michael Levy, State Water Resources Control Board, Office of Chief Counsel
Mr. William Paznokas, Department of Fish and Game, Region 5
Department of Health Services, Sanitary Engineering Section
California State Parks and Recreation
California Coastal Commission, South Coast Region
Water Replenishment District of Southern California
Los Angeles County, Department of Public Works, Waste Management Division
Los Angeles County, Department of Health Services
Dr. Mark Gold, Heal the Bay
Mr. Daniel Cooper, Lawyers for Clean Water
Mr. David Beckman, Natural Resources Defense Council
Mr. Brian League, USC Wrigley Marine Science Center
Mr. Jay Fischer, USC Capital Construction Development
Ms. Laurie Stone, USC Wrigley Marine Science Center
Mr. Jae Kim, Tetra Tech

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

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ORDER NO. R4-2008-0017
NPDES NO. CA0056651

WASTE DISCHARGE REQUIREMENTS
FOR THE UNIVERSITY OF SOUTHERN CALIFORNIA, WRIGLEY MARINE SCIENCE CENTER

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	**University of Southern California**
Name of Facility	**Wrigley Marine Science Center, Avalon**
Facility Address	**No. 1 Big Fisherman Cove, Catalina Island**
	Avalon, CA 90704
	Los Angeles County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a minor discharge.	

The discharge by the University of Southern California from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Waste Seawater and Storm Water Runoff	33 °, 26', 42" N	118 °, 29', 0" W	Pacific Ocean

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**April 3, 2008**
This Order shall become effective on:	**May 3, 2008**
This Order shall expire on:	**March 3, 2013**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

I, **Tracy J. Egoscue**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on **April 3, 2008**

Tracy J. Egoscue, Executive Officer

February 15, 2008
Revised March 10, 2008
Revised March 18, 2008

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	**University of Southern California**
Name of Facility	**Wrigley Marine Science Center, Avalon**
Facility Address	**No. 1 Big Fisherman Cove, Catalina Island**
	Avalon, CA 90704
	Los Angeles County
Facility Contact, Title, and Phone	**Dr. Donal Manahan, Director, (213) 740-5793**
Mailing Address	**P.O. Box 5069, Avalon, California 90704**
Type of Facility	**Marine Research and Educational Facility**
Facility Design Flow	**0.216 million gallons per day (MGD)**

II. FINDINGS

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

A. Background. University of Southern California (hereinafter Discharger) is currently discharging pursuant to Order No. 00-140 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0056651. The Discharger submitted a Report of Waste Discharge, dated June 4, 2003, and applied for an NPDES permit renewal to discharge up to 0.216 MGD of untreated wastewater from Wrigley Marine Science Center, hereinafter Facility.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description. The Discharger owns and operates the marine research and educational facility. The wastewater is not treated prior to discharge. Wastewater is discharged from Discharge Point 001 (see table on cover page) to the Pacific Ocean nearshore zone of Big Fisherman Cove, a water of the United States. On March 21, 1974, the State Water Resources Control Board (State Water Board) designated the adjacent nearshore zone of the Pacific Ocean, Northwest Santa Catalina Island, an Area of Special Biological Significance (ASBS). Attachment B provides a map of the area around the facility. Attachment C provides a flow schematic of the facility.

C. Legal Authorities. This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G through I are also incorporated into this Order.

E. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. **Technology-based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations[1], require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. **Water Quality-Based Effluent Limitations.** Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

H. **Water Quality Control Plans.** The Regional Water Board adopted a Water Quality Control Plan for the Los Angeles Region (hereinafter Basin Plan) on June 13, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Pacific Ocean are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Industrial Water Supply; Water Contact and Non-Contact Recreation, Including Aesthetic Enjoyment; Navigation; Commercial and Sport Fishing; Mariculture; Preservation and Enhancement of Designated Areas of Special Biological Significance (ASBS); Rare and Endangered Species; Marine Habitat; Fish Migration; Fish Spawning and Shellfish Harvesting

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

Requirements of this Order implement the Basin Plan.

I. **Thermal Plan.** The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for coastal waters.

J. **California Ocean Plan.** The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) on July 6, 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005, and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the State to be protected as summarized below:

Table 6. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting

In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

The Ocean Plan prohibits the discharge of wastes to areas designated as ASBS unless an exception to the prohibition is granted by the State Water Board. On February 15, 2006, the State Water Board adopted Resolution No. 2006-0013. Resolution No. 2006-0013 adopts a Mitigated Negative Declaration for a conditional exception to the Ocean Plan prohibition against waste discharges to the Northwest Santa Catalina Island ASBS. The exception establishes requirements and conditions applicable to the discharges into the ASBS comprised of waste seawater and storm water.

K. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes (40 C.F.R. § 131.21; 65 Fed. Reg. 24641 (April 27, 2000)). Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

L. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality-based effluent limitations for individual pollutants.

The technology-based effluent limitations consist of restrictions on biochemical oxygen demand, oil and grease, total suspended solids, and turbidity. Restrictions on biochemical oxygen demand, oil and grease, total suspended solids, and turbidity are discussed in section IV.B of the Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. These limitations are not more stringent than required by the CWA.

Water quality-based effluent limitations (WQBELs) have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. The scientific procedures for calculating the individual WQBELs are based on the Ocean Plan, which was approved by USEPA on February 14, 2006. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

M. Antidegradation Policy. Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16.

N. Anti-Backsliding Requirements. Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

O. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

P. Monitoring and Reporting. Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. Further, the Monitoring and Reporting Program establishes monitoring and reporting requirements in accordance with the conditions of Resolution No. 2006-0013. This Monitoring and Reporting Program is provided in Attachment E.

Q. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. Specifically, this Order contains special provisions in accordance with the conditions of Resolution No. 2006-0013. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

R. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections IV.B, IV.C, V.B, and VI.C. of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the Federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

S. Notification of Interested Parties. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

T. Consideration of Public Comment. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet of this Order.

THEREFORE, IT IS HEREBY ORDERED, that this Order supercedes Order No. 00-140 except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the Federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. Wastes discharged shall be limited to a maximum of 0.216 MGD of aquarium wastewater and storm water runoff as described in the findings. The discharge of wastes from accidental spills or other sources is prohibited. Discharges of non-storm water runoff, except those associated with emergency fire fighting are prohibited.

B. Discharges of chemical additives, including antibiotics, in the seawater system effluent are prohibited.

C. Discharges of water, materials, thermal wastes, elevated temperature wastes, toxic wastes, deleterious substances, or wastes other than those authorized by this Order, to a storm drain system, Pacific Ocean, or other waters of the State, are prohibited.

D. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or a nuisance as defined by Section 13050 of the CWC.

E. Wastes discharged shall not contain any substances in concentrations toxic to human, animal, plant, or aquatic life.

F. The discharge shall not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Water Board or the State Water Board as required by the Federal CWA and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal CWA, and amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

G. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

H. Any discharge of wastes at any point(s) other than specifically described in this Order is prohibited, and constitutes a violation of the Order.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP:

Table 7. Effluent Limitations

Parameter	Units	Effluent Limitations[1]					
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	20	--	60	--	--	--
	lbs/day[2]	36	--	108	--	--	--
Oil and Grease	mg/L	10	--	15	--	--	--
	lbs/day[2]	18	--	27	--	--	--
pH	standard units	--	--	--	6.0	9.0	--
Total Suspended Solids (TSS)	mg/L	50	--	150	--	--	--
	lbs/day[2]	90	--	270	--	--	--
Lead, Total Recoverable	µg/L	--	--	8	--	20	2
	lbs/day[2]	--	--	0.014	--	0.036	0.0036
Zinc, Total Recoverable	µg/L	--	--	80	--	200	20
	lbs/day[2]	--	--	0.144	--	0.36	0.036
Selenium, Total Recoverable	µg/L	--	--	60	--	150	15
	lbs/day[2]	--	--	0.108	--	0.27	0.027
Settleable Solids	ml/L	1.0	1.5	--	--	3.0	--
Temperature	°F	--	--	--	--	86	--
Turbidity	NTU	50	--	150	--	--	--

1 When only one sample is taken during any month or lesser frequency, monthly average limitations apply.

2 Based on a maximum discharge flow rate of 0.216 MGD.

2. Interim Effluent Limitations

[Not Applicable]

B. Land Discharge Specifications

[Not Applicable]

C. Reclamation Specifications

[Not Applicable]

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitation

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the Pacific Ocean:

1. Bacterial Characteristics:

   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 Water Board, but including all kelp beds, the following bacterial objectives shall be maintained throughout the water column:

      i. Samples of water from each sampling station shall have a density of total coliform organisms, based on a minimum of not less than five samples for any 30-day period, less than 1,000 per 100 ml (10 per ml); and a single sample less than 10,000 per 100 ml (100 per ml);

      ii. Samples of water from each sampling station shall have a density of fecal coliform organisms, based on a minimum of not less than five samples for any 30-day period, less than a geometric mean of 200 per 100 ml; and a single sample less than 400 per 100 ml;

      iii. Samples of water from each sampling station shall have a density of enterococcus organisms, based on a minimum of not less than five samples for any 30-day period, less than a geometric mean of 35 per 100 ml; and a single sample less than 104 per 100 ml;

      iv. The Initial Dilution Zone for any wastewater outfall 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.

      v. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Water Board, the median total coliform density shall not exceed 70 per 100 ml throughout the water column, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

2. Physical and Chemical Characteristics:

   a. An increase in the turbidity of the receiving water more than 20% when the natural turbidity of the receiving water is between 0 and 50 NTU nor more than 10% when the natural turbidity of the receiving water is greater than 50 NTU.

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

   c. Alteration of the color of the receiving waters; create a visual contrast with the natural appearance of the water; nor cause aesthetically undesirable discoloration of the ocean surface.

   d. A significant reduction in the transmittance of natural light at any point outside the initial dilution zone, as a result of wastes discharged.

   e. A change in the rate of deposition and the characteristics of inert solids in ocean sediments, such that benthic communities are degraded, as a result of wastes discharged.

   f. The depression of dissolved oxygen concentration outside the zone of initial dilution at any time more than 10 percent from that which occurs naturally, excluding effects of naturally induced upwelling.

   g. A change in the pH of the receiving waters at any time more than 0.2 units from that which occurs naturally outside the zone of initial dilution.

   h. A significant increase in the dissolved sulfide concentration of waters in and near sediments above that present under natural conditions, as a result of wastes discharged.

   i. An increase in the concentration in marine sediments of substances listed in Effluent Limitations, Table B of the Ocean Plan, to levels which would degrade indigenous biota, as a result of wastes discharged.

   j. An increase in the concentration of organic materials in marine sediments above that which would degrade marine life, as a result of wastes discharged.

   k. Objectionable aquatic growths or degrade indigenous biota.

   l. Degradation of marine communities, including vertebrate, invertebrate, and plant species, as a result of wastes discharged.

   m. The bioaccumulation of concentrations of organic materials in fish, shellfish, or other marine resources used for human consumption, to levels that are harmful to human health, as a result of wastes discharged.

   n. Alteration of the natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption, as a result of wastes discharged.

o. Objectionable odors to emanate from the receiving waters.

p. Receiving waters to contain any substance in concentrations toxic to human, animal, plant, or fish life.

q. Any physical evidence of wastes discharged at any time in the water or on beaches, shores, rocks, or structures.

r. A change in the salinity of receiving waters by the wastes discharged to an extent such as to be harmful to marine biota.

s. Concentrations of individual pesticides or a combination of pesticides that adversely affect beneficial uses.

B. Groundwater Limitations

[Not Applicable]

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

a. This Order includes the attached Monitoring and Reporting Program (MRP) No. 6068. If there is any conflict between provisions stated in the MRP and the Standard Provisions, those provisions stated in the former shall prevail.

b. This Order may be modified, revoked, reissued, or terminated in accordance with the provisions of sections 122.44, 122.62, 122.63, 122.64, 125.62 and 125.64. Causes for taking such actions include, but are not limited to: failure to comply with any condition of this Order; endangerment to human health or the environment resulting from the permitted activity; or acquisition of newly-obtained information which would have justified the application of different conditions if known at the time of Order adoption. The filing of a request by the Discharger for an Order modification, revocation, and issuance or termination, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

c. The Discharger must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to storm drain systems or other water courses under their jurisdiction; including applicable requirements in municipal storm water management program developed to comply with NPDES permits issued by the Regional Water Board to local agencies.

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

e. The Discharger shall comply with all applicable effluent limitations, national standards of performance, toxic effluent standards, and all federal regulations established pursuant to sections 301, 302, 303(d), 304, 306, 307, 316, 318, 405, and 423 of the Federal CWA and amendments thereto.

f. These requirements do not exempt the operator of the waste disposal facility from compliance with any other laws, regulations, or ordinances which may be applicable; they do not legalize this waste disposal facility, and they leave unaffected any further restraints on the disposal of wastes at this site which may be contained in other statutes or required by other agencies.

g. Oil or oily material, chemicals, refuse, or other pollutionable materials shall not be stored or deposited in areas where they may be picked up by rainfall and carried off of the property and/or discharged to surface waters. Any such spill of such materials shall be contained and removed immediately.

h. A copy of these waste discharge specifications shall be maintained at the discharge facility so as to be available at all times to operating personnel.

i. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

i. Violation of any term or condition contained in this Order;

ii. Obtaining this Order by misrepresentation, or failure to disclose all relevant facts;

iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

j. If there is any storage of hazardous or toxic materials or hydrocarbons at this facility and if the facility is not manned at all times, a 24-hour emergency response telephone number shall be prominently posted where it can easily be read from the outside.

k. The Discharger shall notify the Regional Water Board not later than 120 days in advance of implementation of any plans to alter production capacity of the product line of the manufacturing, producing or processing facility by more than ten percent. Such notification shall include estimates of proposed production rate, the type of process, and projected effects on effluent quality. Notification shall include submittal of a new report of waste discharge appropriate filing fee.

l. The Discharger shall file with the Regional Water Board a report of waste discharge at least 120 days before making any material change or proposed change in the character, location or volume of the discharge.

m. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Regional Water Board as soon as they know or have reason to believe that they have begun or expect to begin to use or manufacture intermediate or final product or byproduct of any toxic pollutant that was not reported on their application.

n. In the event of any change in name, ownership, or control of these waste disposal facilities, the discharger shall notify this Regional Water Board of such change and shall notify the succeeding owner or operator of the existence of this Order by letter, copy of which shall be forwarded to the Regional Water Board.

o. The Water Code provides that any person who violates a waste discharge requirement or a provision of the Water Code is subject to civil penalties of up to $5,000 per day, $10,000 per day, or $25,000 per day of violation, or when the violation involves the discharge of pollutants, is subject to civil penalties of up to $10 per gallon per day or $25 per gallon per day of violation; or some combination thereof, depending on the violation, or upon the combination of violations.

Violation of any of the provisions of the NPDES program or of any of the provisions of this Order may subject the violator to any of the penalties described herein, or any combination thereof, at the discretion of the prosecuting authority; except that only one kind of penalty may be applied for each kind of violation.

p. The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to waters of the United States, is prohibited unless specifically authorized elsewhere in this permit or another NPDES permit. This requirement is not applicable to products used for lawn and agricultural purposes.

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

r. The Discharger shall notify the Executive Officer in writing no later than 6 months prior to the planned discharge of any chemical, other than the products previously reported to the Executive Officer, which may be toxic to aquatic life. Such notification shall include:

i. Name and general composition of the chemical,

ii. Frequency of use,

iii. Quantities to be used,

iv. Proposed discharge concentrations, and

v. USEPA registration number, if applicable.

s. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

t. Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Wat. Code § 1211.)

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

a. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal CWA, and amendments thereto, the Regional Water Board will revise and modify this Order in accordance with such more stringent standards.

b. This Order may be reopened to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as part of this Order and based on the results of the RPA.

c. This Order may be reopened and modified, to incorporate in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include requirements for the implementation of the watershed management approach or to include new minimum levels (MLs).

d. This Order may be reopened and modified to revise effluent limitations as a result of future Ocean Plan Amendments.

e. This Order may be reopened upon submission by the Discharger of adequate information, as determined by the Regional Water Board, to provide for dilution credits or a mixing zone, as may be appropriate.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Natural Water Quality.** Regional Water Board staff in consultation with the State Water Board's Division of Water Quality shall define *Natural Water Quality* in the receiving water, seaward of the surf zone. For constituents other than

indicator bacteria, natural water quality shall be determined using the reference station in the ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island. For indicator bacteria, the Ocean Plan bacteria objectives will be used. Regional Water Board staff shall review monitoring data and determine whether or not natural water quality is being altered in the ASBS because of the discharges from the Facility. (State Water Board Resolution No. 2006-0013, 2.a)

b. **Benthic Marine Life Survey.** Within 4 ½ years of the adoption of this Order, the Discharger must submit a quantitative survey of benthic marine life. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, shall approve the survey design. The survey design is due to the Regional Water board within 1 year of the effective date of this Order. (State Water Board Resolution No. 2006-0013, 2.j)

c. **Metals Bioaccumulation Study.** Within 4 ½ years of the adoption of this Order, the Discharger must conduct a bioaccumulation study using mussels (*Mytilus californianus*) to determine the concentration of metals near field (within Big Fisherman Cove) and far field (at the reference station). The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, shall approve the study design. The study design is due to the Regional Water Board within 1 year of the effective date of this Order. Based on the study results, the Regional Water Board, in consultation with the State Water Board's Division of Water Quality, may adjust the study design or add additional test organisms required in subsequent permits. (State Water Board Resolution No. 2006-0013, 2.k)

d. **Regional ASBS Monitoring.** Participation in a collaborative regional or statewide ASBS monitoring effort is encouraged. After the first year of monitoring results are reviewed, the Regional Water Board, in consultation with the State Water Board's Division of Water Quality, may adjust the sediment, receiving water, and bioaccumulation monitoring required under this exception, based on the Facility's participation in an appropriate regional or statewide monitoring program.

e. **Receiving Water Monitoring Report.** Within 30 days of becoming aware that receiving water monitoring results indicate that storm water discharges are causing or contributing to an alteration of natural water quality in the ASBS, the Discharger must submit a report to the Regional Water Board. The Regional Water Board may require modifications to the report. The report shall include the following:

   i. Identify those constituents in storm water that alter natural water quality;

   ii. Describe the Best Management Practices (BMPs) that are currently being implemented;

iii. Describe the BMPs that are planned for in the Storm Water Management Plan/Program (SWMP), and additional BMPs that may be added to the SWMP;

iv. Include a new or modified implementation schedule;

v. Within 30 days following approval of the report by the Regional Water Board, the Discharger shall revise its SWMP to incorporate any new or modified BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required.

vi. If the Discharger has complied with the procedures described above and is implementing the revised SWMP, then the Discharger does not have to repeat the same procedure for continuing or recurring exceedances of the same constituent. (State Water Board Resolution No. 2006-0013, 2.p)

f. **Ocean Plan Constituents Monitoring.** The Discharger is required to conduct monitoring for Ocean Plan constituents as follows:

i. **Waste Seawater Discharge and Reference Station.** Within 1 year of adoption of this Order, the Discharger is required to collect two effluent samples from the waste seawater discharge (once during dry weather and once during wet weather, i.e., a storm event). In addition, samples will also be collected from the reference station (in the Pacific Ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island) at the same time the effluent samples are collected. Samples collected at the reference station will represent natural water quality for all Ocean Plan constituents except indicator bacteria and total chlorine residual. Samples at the reference station may be collected immediately following a storm event, but in no case more than 24 hours after, if sampling conditions are unsafe during the storm. All of these samples shall be analyzed for all Ocean Plan Table B constituents, pH, salinity, and temperature, except that samples collected at the reference station do not require toxicity testing; instead, samples collected at the reference station shall be analyzed for Ocean Plan indicator bacteria. Based on the results from the first year, the Regional Water Board will determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except that ammonia nitrogen, pH, salinity, and temperature shall be tested at least annually. Chronic toxicity (for at least one consistent invertebrate species) must be tested at least annually for the waste seawater effluent. In addition, samples collected at the reference station must be analyzed for indicator bacteria according to the requirements of condition p of Resolution No. 2006-0013. (State Water Board Resolution No. 2006-0013, 2.l)

ii. **Storm Water Runoff.** Once annually, during wet weather (i.e., a storm event), the Discharger is required to collect samples of the storm water runoff effluent and the receiving water adjacent to the seawater and storm water

discharge system and analyze the samples for Ocean Plan Table B constituents. The receiving water in Big Fisherman Cove must also be monitored for Ocean Plan indicator bacteria water quality objectives. The sample location for the receiving water shall be immediately seaward of the surf zone in Big Fisherman Cove adjacent to the outfall location. Storm water runoff and receiving water shall be sampled at the same time as the seawater effluent and reference station sampling described in section VI.C.2.e.i, above. Based on the first year sample results, the Regional Water Board will determine specific constituents in the storm water runoff and receiving water to be tested during the remainder of the permit cycle, except that indicator bacteria and chronic toxicity (three species) for receiving water shall be tested annually during a storm event. (State Water Board Resolution No. 2006-0013, 2.m)

iii. **Sediment.** Once annually, the Discharger is required to collect samples of the subtidal sediment near the seawater discharge system and storm water outfall in Big Fisherman Cove and analyze the sample for Ocean Plan Table B constituents. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* shall be performed. Based on the first year sample results, the Regional Water Board will determine specific constituents to be tested during the remainder of the permit cycle, except that acute toxicity for sediment shall be tested annually. (State Water Board Resolution No. 2006-0013, 2.n)

The samples collected for testing should be consistent with the sampling procedure outlined in Section VIII. Benthic Sampling of the *Southern California Bight 2003 Regional Marine Monitoring Survey (Bight '03) Field Operations Manual.*

iv. **Seawater Intake Structure.** In addition to the bacterial monitoring requirements described in section VI.C.2.e,i. and ii., above, the Discharger is required to collect samples at the seawater intake structure during a maximum of three storm events per year that result in runoff from the spray field hillside and analyzed for Ocean Plan indicator bacteria. The station at the seawater intake structure is selected for this requirement because it is near the bluff below the USC/WMSC sewage treatment plant spray field. This requirement, along with the bacterial monitoring in section VI.C.2.e,i. and ii., above is meant to satisfy in total the Ocean Plan bacteria monitoring requirements. This additional bacteria monitoring may be eliminated by the Regional Water Board if changes are made to USC/WMSC's sewage plant or treated sewage effluent system that would absolutely eliminate the possibility of contaminants entering the ASBS. (State Water Board Resolution No. 2006-0013, 2.o)

g. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in MRP section V. Furthermore, this Provision requires the Discharger to investigate the causes of,

and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger during accelerated monitoring established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Work Plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. Toxicity Reduction Evaluation (TRE) Work Plan. Within 90 days of the effective date of this Order, the Discharger shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with USEPA guidance (USEPA manual EPA/600/02-88/070 for industrial) and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.

ii. Accelerated Monitoring and TRE Initiation. When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

iii. Numeric Toxicity Monitoring Trigger. The numeric toxicity monitoring trigger to initiate a TRE is > 1 TUC (where TUC = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iv. Accelerated Monitoring Specifications. If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

(a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate

evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

(b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

3. Best Management Practices and Pollution Prevention

a. Storm Water Management Plan/Program (SWMP)

Within 6 months of the adoption of this Order, the Discharger must submit to the Regional Water Board for approval a SWMP that describes the necessary measures to be taken by the Discharger to prohibit non-storm water runoff and the reduction of pollutants in storm water discharges to the ASBS. (State Water Board Resolution No. 2006-0013, 2.f) The SWMP shall include the following:

i. A map of surface drainage of storm water runoff, including areas of sheet runoff, and any structural Best Management Practices (BMPs) employed;

ii. A map identifying the storm water conveyances in relation to other facility features, such as the laboratory seawater system and discharges, service areas, sewage treatment, and waste and hazardous materials storage areas;

iii. A procedure for updating the map and plan when other changes are made to the facilities;

iv. A description of the measures by which non-storm water discharges have been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented;

v. A description of storm water discharges (physical and chemical characteristics) and how the storm water pollutants will be reduced by implementing BMPs;

vi. A description of BMPs currently employed and BMPs planned (including those for construction activities) and an implementation schedule for the BMPs. The BMPs and implementation schedule shall be designed to ensure natural water quality conditions in the receiving water due to either a reduction in flows from impervious surfaces or reduction in pollutants or some combination thereof;

vii. The implementation schedule shall be developed to ensure that BMPs are implemented within 1 year of the approval date by the Regional Water Board of the SWMP (State Water Board Resolution No. 2006-0013, 2.g, h, i)

b. Biological Pollutant Prevention Program

The Discharger shall pursue and implement a program for prevention of Biological Pollutants (non-native invasive species) in consultation with the California Department of Fish and Game Marine Resources Division. (State Water Board Resolution No. 2006-0013, 2.q)

c. Nonpoint Source Management Plan

The Discharger shall prepare a waterfront and marine operations nonpoint source management plan containing appropriate management practices to address nonpoint source pollutant discharges. Appropriate management measures shall include those described in the State's Nonpoint Source Program Implementation Plan for marinas and recreational boating, as applicable. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, shall review the plan. The Regional Water Board shall appropriately regulate nonpoint source discharges in accordance with the State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program. The plan shall be implemented within 6 months of its approval. (State Water Board Resolution No. 2006-0013, 2.r)

4. Construction, Operation and Maintenance Specifications

a. Construction Activities. The Discharger shall notify the Regional Water Board within 180 days prior to any construction activity that could result in the discharge or habitat modification in the ASBS. Further, the Discharger shall receive approval and appropriate conditions from the Regional Water Board prior to performing any significant modification, rebuilding, or renovation of the waterfront facilities, including the pier and dock, that could result in any discharge or habitat modification in the ASBS, according to the requirements of section III.E.2 of the Ocean Plan. (State Water Board Resolution No. 2006-0013, 2.s)

b. The Discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

5. Other Special Provisions

[Not Applicable]

6. Compliance Schedules

[Not Applicable]

VII. COMPLIANCE DETERMINATION

A. General.

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment G of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Multiple Sample Data.

When determining compliance with an AMEL, AWEL, MDEL, or SMMEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

C. Average Monthly Effluent Limitation.

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar month exceeds the AMEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). If only a single sample is

taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

D. Average Weekly Effluent Limitation.

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar week exceeds the AWEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

E. Maximum Daily Effluent Limitation.

If a daily discharge (or when applicable, the median determined by subsection B above for multiple sample data of a daily discharge) exceeds the MDEL for a given parameter, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

F. Instantaneous Minimum Effluent Limitation.

If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

G. Instantaneous Maximum Effluent Limitation.

If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged and the discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

H. Six-Month Median Effluent Limitation.

If the median of daily discharges over any 180-day period exceeds the six-month median effluent limitation for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for each day of that 180-day period for that parameter. The next assessment of compliance will occur after the next sample is taken. If only a single sample is taken during a given 180-day period and the analytical result for that sample exceeds the six-month median, the discharger will be considered out of compliance for the 180-day period. For any 180-period during which no sample is taken, no compliance determination can be made for the six-month median limitation.

ATTACHMENT A – DEFINITIONS

Acute Toxicity

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{\text{96-hr LC 50\%}}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species as specified in Ocean Plan Appendix III. 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 LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log (100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

Areas of Special Biological Significance (ASBS)
Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
he highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Chlordane
Shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

Chronic Toxicity
This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$TUc = \frac{100}{NOEL}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Ocean Plan Appendix II.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

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.

Degrade
Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ)
Sample results that are less than the reported Minimum Level, but greater than or equal to the laboratory's MDL.

Dichlorobenzenes
Shall mean the sum of 1,2- and 1,3-dichlorobenzene.

Downstream Ocean Waters
Waters downstream with respect to ocean currents.

Dredged Material
Any material excavated or dredged from the navigable waters of the United States, including material otherwise referred to as "spoil".

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

Endosulfan
The sum of endosulfan-alpha and -beta and endosulfan sulfate.

Estuaries and Coastal Lagoons are waters at the mouths of streams that serve as mixing zones for fresh and ocean waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

Initial Dilution
The process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed

when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and non-buoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Kelp Beds
For purposes of the bacteriological standards of the Ocean Plan, 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.

Mariculture
The culture of plants and animals in marine waters independent of any pollution source.

Material
(a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of the Ocean Plan relating to waste disposal, dredging and the disposal of dredged material and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant.

Method Detection Limit (MDL)
The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B.

Minimum Level (ML)
The concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Natural Light
Reduction of natural light may be determined by the Regional Water Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Regional Water Board.

Not Detected (ND)
Those sample results less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. If a discharge outside the territorial waters of the state could affect the quality of the waters of the state, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

PAHs (polynuclear aromatic hydrocarbons)
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.

PCBs (polychlorinated biphenyls)
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.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of Ocean Plan Table B pollutants through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based 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 Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Reported Minimum Level
The ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix II of the Ocean Plan in accordance with section III.C.5.a. of the Ocean Plan or established in accordance with section III.C.5.b. of the Ocean Plan. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where 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 to the ML in the computation of the reported ML.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Shellfish
Organisms identified by the California Department of Health Services as shellfish for public health purposes (i.e., mussels, clams and oysters).

Significant Difference
Defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

Six-Month Median Effluent Limitation
The highest allowable moving median of all daily discharges for any 180-day period.

State Water Quality Protection Areas (SWQPAs)
Non-terrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) that were previously designated by the State Water Board in Resolution No.s 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by the Ocean Plan.

TCDD Equivalents
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.

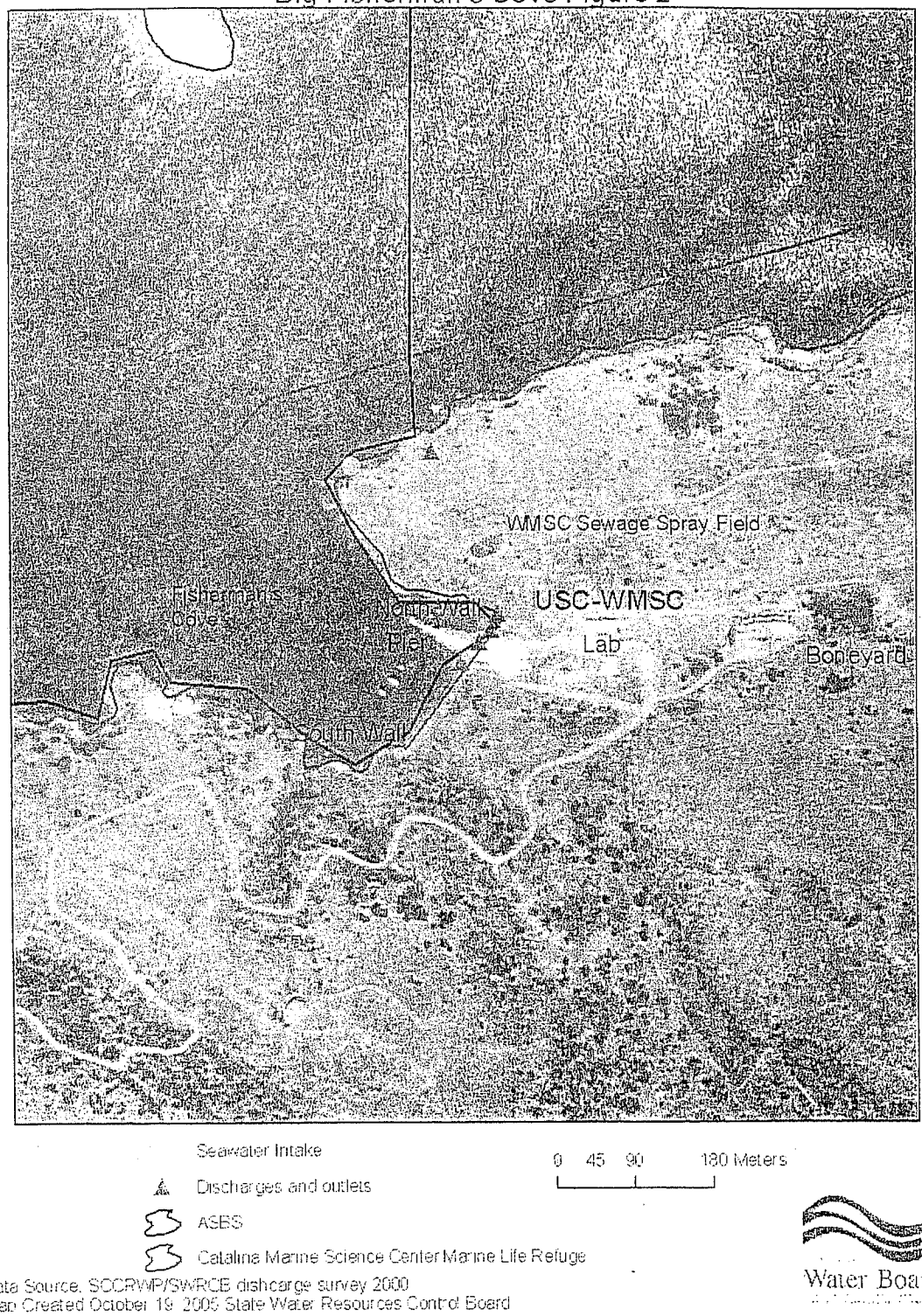
Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

Toxicity Reduction Evaluation (TRE)
A study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

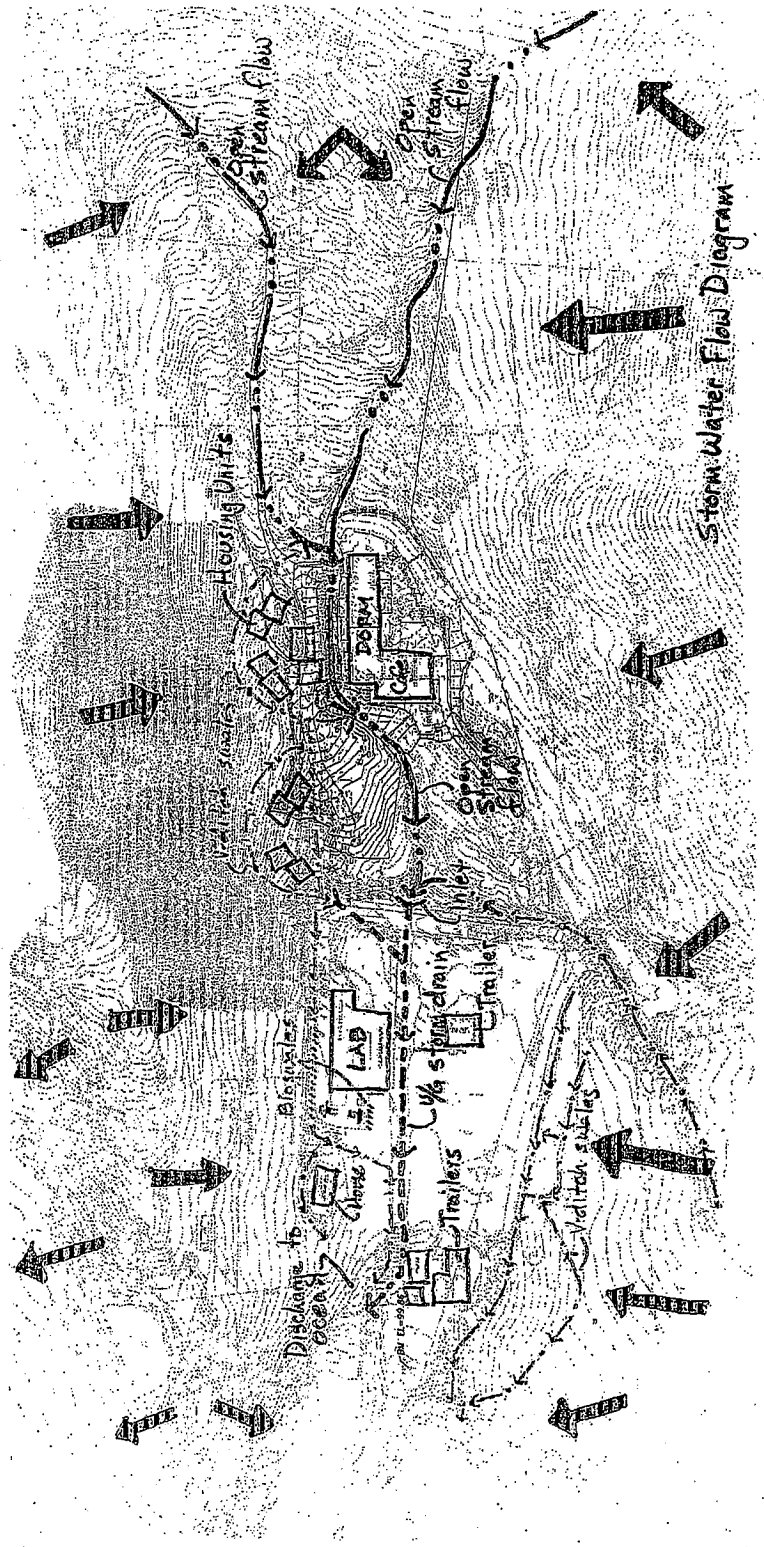
Waste
As used in the Ocean Plan, waste includes a Discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

Water Reclamation
The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

ATTACHMENT B – MAP



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

   c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. **Notice**

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was

caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), 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 Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 C.F.R. § 122.22(a)(3).).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and

   c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard

Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.22(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall

also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)

   b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R.§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):

   a. 100 micrograms per liter (μg/L) (40 C.F.R. § 122.42(a)(1)(i));

   b. 200 μg/L for acrolein and acrylonitrile; 500 μg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));

   c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or

   d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(2)):

a. 500 micrograms per liter (μg/L) (40 C.F.R. § 122.42(a)(2)(i));

b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or

d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM NO. 6068

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. An effluent sampling station shall be established for the point of discharge (Discharge Point 001 [Latitude 33°, 26', 42", Longitude 118°, 29', 0"]) and shall be located where representative samples of that effluent can be obtained.

B. Effluent samples shall be taken downstream of any treatment works and prior to mixing with the receiving waters.

C. This Regional Water Board shall be notified in writing of any change in the sampling stations once established or in the methods for determining the quantities of pollutants in the individual waste streams.

D. Pollutants shall be analyzed using the analytical methods described in 40 CFR §§ 136.3, 136.4, and 136.5 (revised March 12, 2007); or, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board. Laboratories analyzing effluent samples and receiving water samples shall be certified by the California Department of Public Health Environmental Laboratory Accreditation Program (ELAP) or approved by the Executive Officer and must include quality assurance/quality control (QA/QC) data in their reports. A copy of the laboratory certification shall be provided each time a new certification and/or renewal of the certification is obtained from ELAP.

E. For any analyses performed for which no procedure is specified in the USEPA guidelines or in the MRP, the constituent or parameter analyzed and the method or procedure used must be specified in the monitoring report.

F. Each monitoring report must affirm in writing that "all analyses were conducted at a laboratory certified for such analyses by the Department of Public Health or approved by the Executive Officer and in accordance with current USEPA guideline procedures or as specified in this MRP".

G. The monitoring reports shall specify the analytical method used, the Method Detection Limit (MDL), and the Minimum Level (ML) for each pollutant. For the purpose of reporting compliance with numerical limitations, performance goals, and receiving water limitations, analytical data shall be reported by one of the following methods, as appropriate:

1. actual numerical value for sample results greater than or equal to the ML; or

2. "Detected, but Not Quantified (DNQ)" if results are greater than or equal to the laboratory's MDL but less than the ML; or,

3. "Not-Detected (ND)" for sample results less than the laboratory's MDL with the MDL indicated for the analytical method used.

Analytical data reported as "less than" for the purpose of reporting compliance with permit limitations shall be the same or lower than the permit limit(s) established for the given parameter.

Current MLs (Attachment G) are those published in Appendix II of the Ocean Plan. In addition, for metals analyses, aquarium discharge (waste seawater), storm water effluent samples, reference station samples, and receiving water samples must be analyzed by the approved analytical method with the lowest MDL (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

H. Where possible, the MLs employed for effluent analyses shall be lower than the permit limitations established for a given parameter. If the ML value is not below the effluent limitation, then the lowest ML value and its associated analytical method shall be selected for compliance purposes. At least once a year, the Discharger shall submit a list of the analytical methods employed for each test and associated laboratory QA/QC procedures.

The Regional Water Board, in consultation with the State Water Board Quality Assurance Program, shall establish a ML that is not contained in Attachment G to be included in the Discharger's permit in any of the following situations:

1. When the pollutant under consideration is not included in Attachment G;

2. The Discharger and Regional Water Board agree to include in the permit a test method that is more sensitive than that specified in 40 CFR Part 136 (revised March 12, 2007);

3. When the Discharger agrees to use an ML that is lower than that listed in Attachment G;

4. When the Discharger demonstrates that the calibration standard matrix is sufficiently different from that used to establish the ML in Attachment G, and proposes an appropriate ML for their matrix; or,

5. When the Discharger uses a method whose quantification practices are not consistent with the definition of an ML. Examples of such methods are the USEPA-approved method 1613 for dioxins and furans, method 1624 for volatile organic substances, and method 1625 for semi-volatile organic substances. In such cases, the Discharger, the Regional Water Board, and the State Water Board shall agree on a lowest quantifiable limit and that limit will substitute for the ML for reporting and compliance determination purposes.

I. Water/wastewater samples must be analyzed within allowable holding time limits as specified in 40 CFR §136.3. All QA/QC items must be run on the same dates the samples were actually analyzed, and the results shall be reported in the Regional Water Board format, when it becomes available, and submitted with the laboratory reports. Proper chain of custody procedures must be followed, and a copy of the chain of custody shall be submitted with the report.

J. All analyses shall be accompanied by the chain of custody, including but not limited to data and time of sampling, sample identification, and name of person who performed sampling, date of analysis, name of person who performed analysis, QA/QC data, method detection limits, analytical methods, copy of laboratory certification, and a perjury statement executed by the person responsible for the laboratory.

K. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and to insure accuracy of measurements, or shall insure that both equipment activities will be conducted.

L. The Discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. The annual monitoring report required in Section X.D.1.e shall also summarize the QA activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent (10%) of the samples, or at least one sample per sampling period, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples.

M. When requested by the Regional Water Board or USEPA, the Discharger will participate in the NPDES discharge monitoring report QA performance study. The Discharger must have a success rate equal to or greater than 80%.

N. For parameters that both average monthly and daily maximum limits are specified and the monitoring frequency is less than four times a month, the following shall apply. If an analytical result is greater than the average monthly limit, the Discharger shall collect four additional samples at approximately equal intervals during the month, until compliance with the average monthly limit has been demonstrated. All five analytical results shall be reported in the monitoring report for that month, or 45 days after results for the additional samples were received, whichever is later. In the event of noncompliance with an average monthly effluent limitation, the sampling frequency for that constituent shall be increased to weekly and shall continue at this level until compliance with the average monthly effluent limitation has been demonstrated. The Discharger shall provide for the approval of the Executive Officer a program to ensure future compliance with the average monthly limit.

O. In the event wastes are transported to a different disposal site during the report period, the following shall be reported in the monitoring report:

1. Types of wastes and quantity of each type;

2. Name and address for each hauler of wastes (or method of transport if other than by hauling); and

3. Location of the final point(s) of disposal for each type of waste.

   If no wastes are transported off-site during the reporting period, a statement to that effect shall be submitted.

P. Each monitoring report shall state whether or not there was any change in the discharge as described in the Order during the reporting period.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
--	REF-001	Reference Station at Seawater Intake Structure: At the seawater intake structure, in the ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island.
001	EFF-001	Waste Seawater Discharge: Aquarium effluent discharge prior to discharge to the receiving water at Discharge Point 001 [Latitude 33°, 26', 42", Longitude 118°, 29', 0"]
001	EFF-002	Storm Water Runoff: Storm water runoff prior to mixing with the aquarium discharge or the receiving water
--	RSW-001	Receiving Water: Immediately seaward of the surf zone in Big Fisherman Cove adjacent to Discharge Point No. 001.
--	SED-001	Subtidal Sediment: Near the seawater discharge system and storm water outfall in Big Fisherman Cove

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location REF-001

1. The Discharger shall monitor seawater flows into the Facility (intake) at REF-001 as follows:

Table E-2. Influent Monitoring REF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Ammonia (as N)	mg/L	Grab	2x/Year[1, 2]	[3]
pH	Standard units	Grab	2x/Year[1, 2]	[3]
Salinity	ppm	Grab	2x/Year[1, 2]	[3]
Temperature	°F	Grab	2x/Year[1, 2]	[3]
Turbidity	NTU	Grab	2x/Year[1, 2]	[3]
Oil and Grease	mg/L	Grab	2x/Year[1, 2]	[3]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Settleable Solids	ml/L	Grab	2x/Year[1, 2]	[3]
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	Grab	2x/Year[1, 2]	[3]
Total Suspended Solids	mg/L	Grab	2x/Year[1, 2]	[3]
Dissolved Oxygen (DO)	mg/L	Grab	2x/Year[1, 2]	[3]
Ocean Plan Table B Constituents[4]	µg/L	Grab	2x/Year[1, 2]	[3]
Fecal Coliform	MPN/100 ml	Grab	2x/Year[5]	[3]
Total Coliform	MPN/100 ml	Grab	2x/Year[5]	[3]
Enterococci	MPN/100 ml	Grab	2x/Year[5]	[3]

[1] During the first year of each permit cycle, two samples from the reference station shall be collected (at the same time as the effluent samples of waste seawater discharge), once during dry weather and once during wet weather, i.e., a storm event.

[2] Based on the results from the first year, the Regional Water Board shall determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except for ammonia nitrogen, pH, salinity, and temperature shall be tested at least annually.

[3] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix I of the Ocean Plan (Attachment G of this permit package), where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

[4] Ocean Plan Table B Constituents as defined by the Ocean Plan defined in Finding II.J of the Limitations and Discharge Requirements of this Order.

[5] In accordance with Resolution No. 2006-0013, section 2.I, the Discharger is required to collect a reference sample and analyzed for Ocean Plan indicator bacteria twice during the first year of the permit cycle (once during dry weather and once during wet weather). In addition, in accordance with section 2.o of the Resolution, the Discharger is required to collect a reference sample and analyzed for Ocean Plan indicator bacteria during a maximum of three storm events per year that result in runoff from the spray field hillside.

2. As required by Special Provision VI.C.2.e.i of this Order, within 1 year of adoption of this Order, the Discharger is required to collect two samples from the reference station (at the seawater intake structure in the Pacific Ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island) at the same time the effluent (waste seawater discharge) samples are collected. Samples collected at the reference station will represent natural water quality for all Ocean Plan constituents except indicator bacteria and total chlorine residual. Samples at the reference station may be collected immediately following a storm event, but in no case more than 24 hours after, if sampling conditions are unsafe during the storm. All of these samples (reference station and waste seawater discharge effluent) shall be analyzed for all Ocean Plan Table B constituents, pH, salinity, and temperature, except that samples collected at the reference station do not require toxicity testing; instead, samples collected at the reference station shall be analyzed for Ocean Plan indicator bacteria. Based on the

results from the first year, the Regional Water Board will determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except that ammonia nitrogen, pH, salinity, and temperature shall be tested at least annually. Chronic toxicity (for at least one consistent invertebrate species) must be tested at least annually for the waste seawater effluent. (State Water Board Resolution No. 2006-0013, 2.l)

3. In addition to the bacterial monitoring requirements described in Special Provisions VI.C.2.e.i and ii of this Order, samples must be collected at the seawater intake structure during a maximum of three storm events per year that result in runoff from the spray field hillside and measured for Ocean Plan indicator bacteria. The station at the seawater intake structure is selected for this requirement because it is near the bluff below the USC/WMSC sewage treatment plant spray field. This requirement along with the bacterial monitoring in Special Provision VI.C.2.e.i and ii of this Order is meant to satisfy in total the Ocean Plan bacteria monitoring requirements. This additional bacteria monitoring may be eliminated by the Regional Water Board if changes are made to USC/WMSC's sewage plant or treated sewage effluent system that would absolutely eliminate the possibility of contaminants entering the ASBS. (State Water Board Resolution No. 2006-0013, 2.o)

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor waste seawater discharge effluent at EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring EFF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Ammonia (as N)	mg/L	Grab	2x/Year[1, 2]	[3]
pH	Standard units	Grab	1x/Month	[3]
Salinity	ppm	Grab	2x/Year[1, 2]	[3]
Temperature	°F	Grab	1/Month	[3]
Ocean Plan Table B Constituents[4]	µg/L	Grab	2x/Year[1, 2]	[3]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Chronic Toxicity[5]	TU_c	Grab	2x/Year[1, 2]	[3]
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	Grab	1x/Quarter	[3]
Oil and Grease	mg/L	Grab	1x/Quarter	[3]
Total Suspended Solids	mg/L	Grab	1x/Quarter	[3]
Turbidity	NTU	Grab	1x/Quarter	[3]
Settleable Solids	ml/L	Grab	1x/Quarter	[3]
Lead, Total Recoverable	µg/L	Grab	1x/Month	[3]
Zinc, Total Recoverable	µg/L	Grab	1x/Month	[3]
Selenium, Total Recoverable	µg/L	Grab	1x/Month	[3]
Total Waste Flow	MGD	Measured	1x/Month	[3]

[1] During the first year of each permit cycle, two samples from the reference station shall be collected (at the same time as the effluent samples of waste seawater discharge), once during dry weather and once during wet weather, i.e., a storm event.

[2] Based on the results from the first year, the Regional Water Board shall determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except for ammonia nitrogen, pH, salinity, temperature, and chronic toxicity (for at least one consistent invertebrate species) shall be tested at least annually.

[3] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix I of the Ocean Plan (Attachment G of this permit package), where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

[4] Ocean Plan Table B Constituents as defined by the Ocean Plan defined in Finding II.J of the Limitations and Discharge Requirements of this Order.

[5] Refer to Section V, Whole Effluent Toxicity Testing Requirements.

2. As described in Section III.A.2, above, and as required by Special Provision VI.C.2.e.i of this Order, within 1 year of adoption of this Order, the Discharger is required to collect two samples of the effluent (waste seawater discharge) at the same time the reference station (at the seawater intake structure in the Pacific Ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island) samples are collected. Effluent (waste seawater discharge effluent and reference station) samples shall be analyzed for all Ocean Plan Table B constituents, pH, salinity, and temperature. Based on the results from the first year, the Regional Water Board will determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except that ammonia nitrogen, pH, salinity, and temperature shall be tested at least annually. Chronic toxicity (for at least one consistent invertebrate species) must be tested at least annually for the waste seawater effluent. (State Water Board Resolution No. 2006-0013, 2.I)

B. Monitoring Location EFF-002

1. The Discharger shall monitor storm water runoff at EFF-002 as follows:

Table E-4. Effluent Monitoring EFF-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Ocean Plan Table B Constituents[1]	µg/L	Grab	1x/Year[2, 3]	[4]
Turbidity	NTU	Grab	1x/Year[2, 3]	[4]
Dissolved Oxygen (DO)	mg/L	Grab	1x/Year[2, 3]	[4]
Fecal Coliform	MPN/100ml	Grab	1x/Year[5]	[4]
Total Coliform	MPN/100ml	Grab	1x/Year[5]	[4]
Enterococci	MPN/100ml	Grab	1x/Year[5]	[4]
Chronic Toxicity[5]	TU_c	Grab	1x/Year[2, 3]	[4]
Acute Toxicity[5]	TU_a	Grab	1x/Year[2, 3]	[4]

1 Ocean Plan Table B Constituents as defined by the Ocean Plan defined in Finding II.J of the Limitations and Discharge Requirements of this Order.

2 Once annually, during wet weather (i.e., a storm event), the Discharger is required to collect samples of the storm water runoff effluent and the receiving water adjacent to the seawater and storm water discharge system and analyze the samples for Ocean Plan Table B constituents. As required by Special Provision VI.C.2.e.ii of this Order, storm water runoff shall be sampled at the same time as the waste seawater discharge effluent and reference station sampling described in section III.A.2, above.

3 Based on the results from the first year, the Regional Water Board shall determine the frequency of sampling and the constituents to be tested during the remainder of the permit cycle.

4 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix I of the Ocean Plan (Attachment G of this permit package), where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

5 Refer to Section V, Whole Effluent Toxicity Testing Requirements.

2. Once annually, during wet weather (i.e., a storm event), the Discharger is required to collect samples of the storm water runoff effluent and the receiving water adjacent to the seawater and storm water discharge system and analyze the samples for Ocean Plan Table B constituents. As required by Special Provision VI.C.2.e.ii of this Order, storm water runoff shall be sampled at the same time as the waste seawater discharge effluent and reference station sampling described in section III.A.2, above. Based on the first year sample results, the Regional Water Board will determine specific constituents in the storm water runoff to be tested during the remainder of the permit cycle. (State Water Board Resolution No. 2006-0013, 2.m)

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Definition of Toxicity

1. Acute Toxicity.

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{96\text{-hr LC } 50\%}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species as specified in Ocean Plan Appendix III. 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 LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log (100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

2. Chronic Toxicity.

This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$TUc = \frac{100}{NOEL}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Ocean Plan Appendix II.

B. Acute Toxicity Effluent Monitoring Program

1. Effluent samples shall be collected before discharge to the receiving water.

2. The Discharger shall conduct acute toxicity tests on effluent grab samples by methods specified in Part 136 which cites USEPA's *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, October 2002, USEPA, Office of Water, Washington D.C. (EPA/821-R-02-012) or a more recent edition to ensure compliance in 100% effluent.

3. The fathead minnow, *Pimephales promelas*, shall be used as the test species for fresh water discharges and the topsmelt, *Atherinops affinis*, shall be used as the test species for brackish effluent. The method for topsmelt is found in USEPA's *Short-term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, First Edition, August 1995 (EPA/600/R-95/136), or a more recent edition.

4. In lieu of conducting the standard acute toxicity testing with the fathead minnow, the Discharger may elect to report the results or endpoint from the first 48 hours of the chronic toxicity test as the results of the acute toxicity test.

5. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* shall be performed.

C. Chronic Toxicity Effluent Monitoring Program

1. Effluent samples shall be collected before discharge to the receiving water.

2. Test Species and Methods:

   a. The Discharger shall conduct critical life stage chronic toxicity tests on 24-hour composite 100 percent effluent samples in accordance with USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, October 2002 (EPA/21-R-02-013) or USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, Third Edition, October 2002, (EPA/821/R-02-014), or a more recent edition.

   b. The Discharger shall conduct tests as follows:

      i. Chronic toxicity testing of aquarium discharge (Monitoring Location No. EFF-001) shall be conducted using one consistent invertebrate species;

ii. Chronic toxicity testing of receiving water (Monitoring Location No. RSW-002) shall be conducted using three species: one with a vertebrate, an invertebrate, and a plant;

iii. For annual testing conducted on the subtidal sediment, acute toxicity testing using only the amphipod species, *Eohaustorius estuarius,* must be performed.

D. Quality Assurance

1. Concurrent testing with a reference toxicant shall be conducted. Reference toxicant tests shall be conducted using the same test conditions as the effluent toxicity tests (e.g., same test duration, etc).

2. If either the reference toxicant test or effluent test does not meet all test acceptability criteria (TAC) as specified in the test methods manuals (EPA/600/4-91/002 and EPA/821-R-02-014), then the Discharger must re-sample and re-test at the earliest time possible.

3. Control and dilution water should be receiving water or laboratory water, as appropriate, as described in the manual. If the dilution water used is different from the culture water, a second control using culture water shall be used.

E. Accelerated Monitoring and Initial Investigation TRE Trigger

1. Special Provision VI.C.2.f of the Order requires the Discharger to develop and submit for approval an Initial Investigation TRE Workplan.

2. If the results of a toxicity test exceed the acute or chronic toxicity trigger (as defined below):

a. Acute Toxicity:

i. This Order includes an acute testing toxicity trigger defined as an exceedance of 0.3 TU_a in a 96-hour test for 100% effluent.

b. Chronic Toxicity:

i. This Order includes a chronic testing toxicity trigger defined as an exceedance of 1.0 TU_c in a critical life stage test for 100% effluent. (The monthly median for chronic toxicity of 100% effluent shall not exceed, 1 TU_c in a critical life stage test.)

then, the Discharger shall begin the investigation and evaluation as specified in the Dischargers's Initial Investigation TRE Workplan and begin accelerated monitoring by conducting six additional tests, approximately every 2 weeks, over a 12-week period. The samples shall be collected and the tests initiated no less than 7 days apart. The Discharger shall ensure that they receive results of a failing acute toxicity test within 24 hours of the close of the test and the additional tests shall begin within 3 business days of the receipt of the result.

3. If implementation of the Initial Investigation TRE Workplan indicates the source of toxicity (e.g., a temporary plant upset, etc.), then the Discharger may discontinue the Initial Investigation Toxicity Reduction Evaluation and resume routine testing frequency.

4. The first step in the Initial Investigation TRE Workplan for downstream receiving water toxicity can be a toxicity test protocol designed to determine if the effluent from Discharge Point 001 causes or contributes to the measured downstream chronic toxicity. If this first step TRE testing shows that the Discharge Point 001 effluent does not cause or contribute to downstream chronic, using USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, Third Edition, October 2002, (EPA/821/R-02-014) then a report on this testing shall be submitted to the Regional Water Board and the Initial Investigation TRE will be considered to be completed. Routine testing in accordance with the MRP shall be continued thereafter.

F. TRE/TIE Trigger

1. If the accelerated testing shows consistent toxicity as defined below:

   a. Acute Toxicity:

      i. If the results of two of the six accelerated tests exceed 0.3 TU_a

   b. Chronic Toxicity

      i. If the results of two of the six accelerated tests exceed 1.0 TU_c

   then, the Discharger shall immediately implement the Toxicity Reduction Evaluation (TRE) as described below.

G. Steps in TRE and TIE Procedures

1. Following a TRE trigger, the Discharger shall initiate a TRE in accordance with the facility's Initial Investigation TRE workplan. At a minimum, the Discharger shall use USEPA manuals EPA/600/2-88/070 (industrial) or EPA/833B-99/002 (municipal) as guidance. The Discharger shall expeditiously develop a more detailed TRE workplan for submittal to the Executive Officer within 30 days of the trigger, which will include, but not be limited to:

   a. Further actions to investigate and identify the cause of toxicity;

   b. Actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity;

   c. Standards the Discharger will apply to consider the TRE complete and to return to normal sampling frequency; and,

d. A schedule for these actions.

2. The following is a stepwise approach in conducting the TRE:

a. Step 1 - Basic data collection. Data collected for the accelerated monitoring requirements may be used to conduct the TRE;

b. Step 2 - Evaluates optimization of the treatment system operation, facility housekeeping, and the selection and use of in-plant process chemicals;

c. Step 3 - If Steps 1 and 2 are unsuccessful, Step 3 implements a Toxicity Identification Evaluation (TIE) by employing all reasonable efforts and using currently available TIE methodologies. The Discharger shall use the USEPA acute and chronic manuals, EPA/600/6-91/005F (Phase I)/EPA/600/R-96-054 (for marine), EPA/600/R-92/080 (Phase II), and EPA-600/R-92/081 (Phase III) as guidance. The objective of the TIE is to identify the substance or combination of substances causing the observed toxicity;

d. Step 4 - Assuming successful identification or characterization of the toxicant(s), Step 4 evaluates final effluent treatment options;

e. Step 5 - Evaluates in-plant treatment options; and,

f. Step 6 - Consists of confirmation once a toxicity control method has been implemented.

Many recommended TRE elements parallel source control, pollution prevention, and storm water control program best management practices (BMPs). To prevent duplication of efforts, evidence of implementation of these control measures may be sufficient to comply with TRE requirements. By requiring the first steps of a TRE to be accelerated testing and review of the facility's TRE workplan, a TRE may be ended in its early stages. All reasonable steps shall be taken to reduce toxicity to the required level. The TRE may be ended at any stage if monitoring indicates there is no longer toxicity (or six consecutive chronic toxicity test results are less than or equal to 1.0 TU_c).

3. If a TRE/TIE is initiated prior to completion of the accelerated testing schedule required by this permit, then the accelerated testing schedule may be terminated, or used as necessary in performing the TRE/TIE, as determined by the Executive Officer.

4. Toxicity tests conducted as part of a TRE/TIE may also be used for compliance determination, if appropriate.

5. The Regional Water Board recognizes that toxicity may be episodic and identification of causes of and reduction of sources of toxicity may not be successful in all cases. Consideration of enforcement action by the Regional Water Board will

be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

H. Reporting

1. The Discharger shall submit a full report of the toxicity test results, including any accelerated testing conducted during the month as required by this permit. Test results shall be reported as TU_c for chronic toxicity test results with the self monitoring reports (SMR) for the month in which the test is conducted.

2. If an initial investigation indicates the source of toxicity and accelerated testing is unnecessary, then those results also shall be submitted with the SMR for the period in which the investigation occurred.

   a. The full report shall be submitted on or before the end of the month in which the SMR is submitted.

   b. The full report shall consist of (1) the results; (2) the dates of sample collection and initiation of each toxicity test; (3) the chronic toxicity limit or trigger.

3. Test results for toxicity tests also shall be reported according to the appropriate manual chapter on Report Preparation and shall be attached to the SMR. Routine reporting shall include, at a minimum, as applicable, for each test:

   a. Sample date(s);

   b. Test initiation date;

   c. Test species;

   d. End point values for each dilution (e.g., number of young, growth rate, percent survival);

   e. NOEC value(s) in percent effluent;

   f. IC_{15}, IC_{25}, IC_{40} and IC_{50} values in percent effluent;

   g. TU_c values $\left(TU_c = \frac{100}{NOEC}\right)$;

   h. Mean percent mortality (+standard deviation) after 96 hours in 100% effluent (if applicable);

   i. NOEC and LOEC values for reference toxicant test(s);

   j. IC25 value for reference toxicant test(s);

   k. Any applicable charts; and

I. Available water quality measurements for each test (e.g., pH, D.O., temperature, conductivity, hardness, salinity, ammonia).

4. The Discharger shall provide a compliance summary, which includes a summary table of toxicity data from all samples collected during that year.

   The Discharger shall notify by telephone or electronically, this Regional Water Board of any toxicity exceedance of the limit or trigger within 24 hours of receipt of the results followed by a written report within 14 calendar days of receipt of the results. The verbal or electronic notification shall include the exceedance and the plan the Discharger has taken or will take to investigate and correct the cause(s) of toxicity. It may also include a status report on any actions required by the permit, with a schedule for actions not yet completed. If no actions have been taken, the reasons shall be given.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

[Not Applicable]

VII. RECLAMATION MONITORING REQUIREMENTS

[Not Applicable]

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001

1. The Discharger shall monitor the receiving water in Big Fisherman Cove at RSW-001 as follows:

Table E-5. Receiving Water Monitoring Requirements RSW-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Ocean Plan Table B Constituents[1]	µg/L	Grab	1x/Year[2, 3]	4
Turbidity	NTU	Grab	1x/Year[2, 3]	4
Dissolved Oxygen (DO)	mg/L	Grab	1x/Year[2, 3]	4
Fecal Coliform	MPN/ 100ml	Grab	1x/Year[5]	4
Total Coliform	MPN/ 100ml	Grab	1x/Year[5]	4
Enterococci	MPN/ 100ml	Grab	1x/Year[5]	4
Chronic Toxicity[5]	TU_c	Grab	1x/Year[2, 3]	4
Acute Toxicity[5]	TU_a	Grab	1x/Year[2,3]	4

[1] Ocean Plan Table B Constituents as defined by the Ocean Plan defined in Finding II.J of the Limitations and Discharge Requirements of this Order.

[2] Once annually, during wet weather (i.e., a storm event), the Discharger is required to collect samples of the storm water runoff effluent and the receiving water adjacent to the seawater and storm water discharge system and analyze the samples for Ocean Plan Table B constituents. As required by Special Provision VI.C.2.e.ii of this Order, storm water runoff shall be sampled at the same time as the waste seawater discharge effluent and reference station sampling described in section III.A.2, above.

[3] Based on the results from the first year, the Regional Water Board shall determine the frequency of sampling and the constituents to be tested during the remainder of the permit cycle.

[4] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix I of the Ocean Plan (Attachment G of this permit package), where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

[5] Refer to Section V, Whole Effluent Toxicity Testing Requirements.

2. Once annually, during wet weather (i.e., a storm event), the Discharger is required to collect samples of the receiving water in Big Fisherman Cove adjacent to the seawater and storm water discharge system and analyze the samples for Ocean Plan Table B constituents, including the Ocean Plan indicator bacteria water quality objectives. The sample location for the receiving water shall be immediately seaward of the surf zone in Big Fisherman Cove adjacent to the outfall location. The receiving water shall be sampled at the same time as the seawater effluent and reference station sampling described in section III.A.2, above. Based on the first year sample results, the Regional Water Board will determine specific constituents in the receiving water to be tested during the remainder of the permit cycle, except that indicator bacteria and chronic toxicity (three species) for receiving water shall be tested annually during a storm event. (State Water Board Resolution No. 2006-0013, 2.m)

IX. OTHER MONITORING REQUIREMENTS

A. Subtidal Sediment Monitoring Location SED-001

1. The Discharger shall monitor the subtidal sediment at SED-001 as follows:

Table E-6. Subtidal Sediment Monitoring Requirements SED-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Ocean Plan Table B Constituents[1]	µg/L	Grab	1x/Year[2, 3]	[4]
Chronic Toxicity[5]	TU_c	Grab	1x/Year[2, 3]	[4]
Acute Toxicity[5]	TU_a	Grab	1x/Year[2, 3]	[4]

[1] Ocean Plan Table B Constituents as defined by the Ocean Plan defined in Finding II.J of the Limitations and Discharge Requirements of this Order.

[2] As required by Special Provision VI.C.2.e.iii of this Order, once annually, the Discharger is required to collect samples of the subtidal sediment and analyze the samples for Ocean Plan Table B constituents.

[3] Based on the results from the first year, the Regional Water Board shall determine the frequency of sampling and the constituents to be tested during the remainder of the permit cycle, except that acute toxicity for sediment shall be tested annually.

[4] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix I of the Ocean Plan (Attachment G of this permit package), where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

[5] Refer to Section V, Whole Effluent Toxicity Testing Requirements.

2. Once annually, the Discharger is required to collect samples of the subtidal sediment near the seawater discharge system and storm water outfall in Big Fisherman Cove and analyze the sample for Ocean Plan Table B constituents. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* shall be performed. Based on the first year sample results, the Regional Water Board will determine specific constituents to be tested during the remainder of the permit cycle, except that acute toxicity for sediment shall be tested annually. (State Water Board Resolution No. 2006-0013, 2.n)

   The samples collected for testing should be consistent with the sampling procedure outlined in Section VIII. Benthic Sampling of the *Southern California Bight 2003 Regional Marine Monitoring Survey (Bight '03) Field Operations Manual.*

B. Benthic Marine Life Survey

Within 4 ½ years of the adoption of this Order, the Discharger must submit a quantitative survey of benthic marine life. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, shall approve the survey design. The survey design is due to the Regional Water Board within 1 year of the effective date of this Order. (State Water Board Resolution No. 2006-0013, 2.j)

C. Metals Bioaccumulation Study

Within 4 ½ years of the adoption of this Order, the Discharger must conduct a bioaccumulation study using mussels (*Mytilus californianus*) to determine the concentration of metals near field (within Big Fisherman Cove) and far field (at the reference station). The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, shall approve the study design within 1 year of the effective date of this Order. Based on the study results, the Regional Water Board, in consultation with the State Water Board's Division of Water Quality, may adjust the study design or add additional test organisms required in subsequent permits. (State Water Board Resolution No. 2006-0013, 3.k)

D. Regional ASBS Monitoring

Participation in a collaborative or statewide ASBS monitoring effort is encouraged. After the first year of monitoring results are reviewed, the Regional Water Board, in consultation with the State Water Board's Division of Water Quality, may adjust the sediment, receiving water, and bioaccumulation monitoring required under this exception, based on the Facility's participation in an appropriate regional or statewide monitoring program.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. If there is no discharge during any reporting period, the report shall so state.

3. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and corrective actions taken or planned that may be needed to bring the discharge into full compliance with waste discharge requirements. This section shall clearly list all non-compliance with waste discharge requirements, as well as all excursions of effluent limitations.

4. The Discharger shall inform the Regional Water Board well in advance of any proposed construction activity that could potentially affect compliance with applicable requirements.

5. The Discharger shall report the results of acute and chronic toxicity testing, TRE and TIE as required in the Attachment E, Monitoring and Reporting, Section V.F

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit quarterly SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-7. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	May 3, 2008	January 1 - March 31 April 1 - June 30 July 1 – September 30 October 1 – December 31	May 1 August 1 November 1 February 1
1x/Month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1st day of calendar month through last day of calendar month	May 1 August 1 November 1 February 1
1x/Quarter	May 3, 2008	January 1 - March 31 April 1 - June 30 July 1 – September 30 October 1 – December 31	May 1 August 1 November 1 February 1
1x/Semiannual	May 3, 2008	January 1 - June 30 July 1 - December 31	May 1 August 1 November 1 February 1
1x/Year	May 3, 2008	January 1 - December 31	February 1

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

      For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (plus a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (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.

5. Compliance Determination. Compliance with effluent limitations for reportable pollutants shall be determined using sample reporting protocols defined above and in Attachment G of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the reportable pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level (ML).

6. Multiple Sample Data. When determining compliance with a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses and the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND), the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

7. The Discharger shall submit SMRs in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. The Discharger shall report the results of any special studies, special monitoring reports, and pollutant source management plans required by Special Provisions VI.C.2.d, VI.C.2.f.i, VI.C.3a, and VI.C.3.c of this Order. The Discharger shall report the progress in satisfaction of compliance schedule dates specified in Special Provisions VI.C.2.d, VI.C.2.f.i, VI.C.3a, and VI.C.3.c of this Order. The Discharger shall submit reports with the first quarterly SMR scheduled to be submitted on or immediately following the report due date.

   a. **Receiving Water Monitoring Report.** Within 30 days of becoming aware that receiving water monitoring results indicate that storm water discharges are causing or contributing to an alteration of natural water quality in the ASBS, the Discharger must submit a report to the Regional Water Board. The Regional

Water Board may require modifications to the report. The report shall include the following:

i. Identify those constituents in storm water that alter natural water quality;

ii. Describe the BMPs that are currently being implemented;

iii. Describe the BMPs that are planned for in the SWMP, and additional BMPs that may be added to the SWMP;

iv. Include a new or modified implementation schedule;

v. Within 30 days following approval of the report by the Regional Water Board, the Discharger shall revise its SWMP to incorporate any new or modified BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required.

vi. If the Discharger has complied with the procedures described above and is implementing the revised SWMP, then the Discharger does not have to repeat the same procedure for continuing or recurring exceedances of the same constituent. (State Water Board Resolution No. 2006-0013, 2.p)

b. **Storm Water Management Plan/Program.** Within 6 months of the adoption of this Order, the Discharger must submit to the Regional Water Board for approval a SWMP that describes the necessary measures to be taken by the Discharger to prohibit non-storm water runoff and the reduction of pollutants in storm water discharges to the ASBS. (State Water Board Resolution No. 2006-0013, 2.f) The SWMP shall include the following:

i. A map of surface drainage of storm water runoff, including areas of sheet runoff, and any structural Best Management Practices (BMPs) employed;

ii. A map identifying the storm water conveyances in relation to other facility features, such as the laboratory seawater system and discharges, service areas, sewage treatment, and waste and hazardous materials storage areas;

iii. A procedure for updating the map and plan when other changes are made to the facilities;

iv. A description of the measures by which non-storm water discharges have been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented;

v. A description of storm water discharges (physical and chemical characteristics) and how the storm water pollutants will be reduced by implementing BMPs;

vi. A description of BMPs currently employed and BMPs planned (including those for construction activities) and an implementation schedule for the

BMPs. The BMPs and implementation schedule shall be designed to ensure natural water quality conditions in the receiving water due to either a reduction in flows from impervious surfaces or reduction in pollutants or some combination thereof;

vii. The implementation schedule shall be developed to ensure that BMPs are implemented within 1 year of the approval date by the Regional Water Board of the SWMP (State Water Board Resolution No. 2006-0013, 2.g, h, i)

c. Nonpoint Source Management Plan. The Discharger shall prepare a waterfront and marine operations nonpoint source management plan containing appropriate management practices to address nonpoint source pollutant discharges. Appropriate management measures shall include those described in the State's Nonpoint Source Program Implementation Plan for marinas and recreational boating, as applicable. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, shall review the plan. The Regional Water Board shall appropriately regulate nonpoint source discharges in accordance with the State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program. The plan shall be implemented within 6 months of its approval. (State Water Board Resolution No. 2006-0013, 2.r)

d. Initial Investigation TRE Workplan. Within 90 days of the effective date of this permit, the Discharger is required to submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity.

e. Annual Report. By March 1 of each year, the Discharger shall submit an annual report to the Regional Water Board. The report shall contain the following:

i. Both tabular and graphical summaries of the monitoring data obtained during the previous year;

ii. A discussion on the compliance record and the corrective actions taken or planned to bring the discharge into full compliance with the waste discharge requirements;

iii. A report discussing the following: 1) operation/maintenance problems; 2) changes to the facility operations and activities; 3) potential discharge of the pollutants associated with the changes and how these changes are addressed in the BMPP; 3) calibration of flow meters or other equipment/device used to demonstrate compliance with effluent limitations of this Order;

iv. A report summarizing the quantities of all chemicals, listed by both trade and chemical names, which are used at the facility and are discharged or have the potential to be discharged.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	4B191035002
Discharger	University of Southern California
Name of Facility	Wrigley Marine Science Center, Avalon
Facility Address	No. 1 Big Fisherman Cove, Catalina Island
	Avalon, CA 90704
	Los Angeles County
Facility Contact, Title and Phone	Dr. Donal Manahan, Director, (213) 740-5793
Authorized Person to Sign and Submit Reports	SAME
Mailing Address	P.O. Box 5069, Avalon, California 90704
Billing Address	SAME
Type of Facility	Marine Research and Education Center
Major or Minor Facility	Minor
Threat to Water Quality	3
Complexity	C
Pretreatment Program	N
Reclamation Requirements	N/A
Facility Permitted Flow	0.216 (in million gallons per day)
Facility Design Flow	0.216 (in million gallons per day)
Watershed	Pacific Ocean
Receiving Water	Pacific Ocean
Receiving Water Type	Ocean Waters

A. University of Southern California (hereinafter Discharger) is the owner and operator of Wrigley Marine Science Center (hereinafter Facility), previously called the Catalina Marine Science Center, a marine aquarium and education facility.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Pacific Ocean, a water of the United States, and is currently regulated by Order No. 00-140 which was adopted on October 12, 2000, and expired on November 10, 2005. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements and an NPDES permit are adopted pursuant to this Order.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on June 4, 2003.

II. FACILITY DESCRIPTION

The University of Southern California operates the Wrigley Marine Science Center (previously named the Catalina Marine Science Center) for basic marine research and educational activities at Big Fisherman Cove, near the Isthmus, on the leeward side of Santa Catalina Island, Los Angeles County, California. The Facility was created in 1965, but most of the buildings were constructed between 1966 and 1972. The buildings include: laboratories, dorms, a cafeteria, office trailers, and a set of waterfront buildings. Scientists and educators primarily from the University of Southern California, the University of California, and the California State University system use the Facility for research. In addition, the Facility operates public outreach programs for students.

A system exists to deliver seawater to the laboratories and waterfront area. Seawater flows into laboratory aquaria after being pumped from the sub-marine intake. The Facility's seawater intake structure is located at Blue Cavern Point. It consists of two 6-inch polyvinyl chloride (PVC) pipes submerged 15 feet below the water surface and about 50 feet offshore. It is a continuous-flow system, designed with a pump rate of 180,000 gallons per day (gpd) (0.216 MGD) that is available to the laboratory and to large holding tanks and experimental aquaria on the waterfront. The water is untreated except for a macro-screen located on the intake pipes designed to prevent the intake of kelp. This is a once-through system (no recirculation). Seawater is pumped to a 15,000-gallon storage tank on the hill above the laboratory and is then gravity fed to the laboratory and waterfront facilities.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility operates a flow-through seawater system designed to supply the laboratory and waterfront with seawater for purposes of keeping marine animals and plants alive. The seawater is not heated, cooled, or filtered, being used strictly for maintenance of living organisms. All of the once-through seawater used in various parts of the Facility are brought together and co-mingled at the waterfront and discharged to the north side of Big Fisherman Cove. The total flow during normal operations is 0.216 MGD.

The Facility also discharges storm water runoff into receiving waters. Based on a Mitigated Negative Declaration adopted by the State Water Board on February 15, 2006, the Facility has implemented measures to segregate the storm water runoff from the waste seawater discharge, replaced road materials (to reduce potential storm water pollutants), and routed runoff into vegetated swales. The majority of dry weather flows and wet weather flows during small precipitation events will likely be infiltrated in vegetated swales. Areas of the Facility contributing to storm water runoff include the waterfront area, a small portion of the laboratory building area, the main storm water culvert that drains a watershed area with abandoned silver mines, and a non-paved storage area, where old laboratory and marine equipment and construction wastes have been stored.

All other wastes from the Facility are discharged to the community sewer system.

B. Discharge Points and Receiving Waters

The wastewater and storm water discharges onto the beach and the wastes flow across the beach to the Pacific Ocean nearshore zone at Big Fisherman Cove, a water of the United States, at Discharge Point 001 (Latitude 33°, 26', 42" and Longitude 118°, 29', 0"). On March 21, 1974, the State Water Resources Control Board (State Water Board) designated the adjacent nearshore zone of the Pacific Ocean, Northwest Santa Catalina Island, an Area of Special Biological Significance (ASBS).

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in the existing Order for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of the previous Order are presented in Table F-2, below. Monitoring data includes SMR reporting data and data (samples taken 2/5/04 and 10/25/04) submitted with the ASBS exemption request (letter dated November 5, 2004).

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter (units)	Effluent Limitation				Monitoring Data (From Nov 00 – Sep 07)
	Instantaneous Maximum	Instantaneous Minimum	30-day Average	Maximum Daily	Range of Reported Concentrations
Arsenic (µg/L)	--	--	--	--	<50
Cadmium (µg/L)	--	--	--	--	<50
Lead (µg/L)	--	--	--	--	13
Mercury (µg/L)	--	--	--	--	<0.4
Nickel (µg/L)	--	--	--	--	<150
Selenium (µg/L)	--	--	--	--	22 – 703
Zinc (µg/L)	--	--	--	--	13-128
Biochemical Oxygen Demand ($BOD_5$20°C) (mg/L)	--	--	20	60	3 – 4
$BOD_5$20°C (lbs/day)	--	--	30	90	4.5 – 6.0
Oil and Grease (mg/L)	--	--	10	15	<5
Oil and Grease (lbs/day)	--	--	15	22.5	ND
pH (s.u.)	9.0	6.0	--	--	6.52 – 8.33
Suspended Solids (mg/L)	--	--	50	150	6 – 50
Suspended Solids (lbs/day)	--	--	75	225	9.01 – 75.06
Ammonia (µg/L)	--	--	--	--	<0.1
Dissolved Oxygen (mg/L)	--	--	--	--	8.98 – 10.34
Fecal Coliform (MPN/100 mL)	--	--	--	--	280
Total Flow (mgd)	--	--	--	0.18	[1]
Nitrate Nitrogen (µg/L)	--	--	--	--	<0.1
Nitrite Nitrogen (µg/L)	--	--	--	--	<5
Residual Chlorine (mg/L)	--	--	--	--	<0.1
Settleable Solids (ml/L)	--	--	--	--	<0.1
Temperature (°C)	--	100	--	--	52.6 – 72.8
Turbidity (NTU)	--	--	50	150	0.16 – 5.08

[1] The Facility reported a flow of 0.180 MGD in every monitoring report submitted.

D. Compliance Summary

The Facility did not exceed permit limitations during the permit term. On September 28, 2001, the Regional Water Board issued a notice of violation for the reporting violations which occurred in 4th quarter 2000 through 2nd quarter of 2001.

On June 29, 2007, the Regional Water Board issued another notice of violation for the reporting violations which occurred 3rd quarter 2001 through 1st quarter 2007. There has not been any new violations reported during 2nd and 3rd quarter 2007. A summary of the reporting violations are presented in the table, below:

Table F-3. Summary of Compliance History

Monitoring Period	Violation Type	Pollutant	Units
4th Qtr 2000 (October)	Reporting	pH	s.u.
4th Qtr 2000 (November)	Reporting	pH	s.u.
4th Qtr 2000	Reporting	Turbidity	NTU
1st Qtr 2001 (January)	Reporting	pH	s.u.
1st Qtr 2001 (February)	Reporting	pH	s.u.
1st Qtr 2001	Reporting	Turbidity	NTU
2nd Qtr 2001 (April)	Reporting	pH	s.u.
2nd Qtr 2001	Reporting	Oil and grease	mg/L
2nd Qtr 2001	Reporting	$BOD_5$20°C	mg/L
2nd Qtr 2001 (May)	Reporting	pH	s.u.
2nd Qtr 2001 (June)	Reporting	pH	s.u.
2nd Qtr 2001	Reporting	Suspended solids	mg/L
2nd Qtr 2001	Reporting	Turbidity	NTU
3Q Qtr 2001 (August)	Reporting	pH	s.u.
3Q Qtr 2001 (September)	Reporting	pH	s.u.
3Q Qtr 2001	Reporting	Turbidity	NTU
4th Qtr 2004	Reporting	$BOD_5$20°C	mg/L
1st Qtr 2005	Reporting	2004 Annual Report	--
1st Qtr 2006 (February)	Reporting	pH	s.u.
1st Qtr 2007 (January)	Reporting	pH	s.u.

E. Planned Changes

[Not Applicable]

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100 through 21177.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Regional Water Board adopted a Water Quality Control Plan for the Los Angeles Region (hereinafter Basin Plan) on June 13, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Pacific Ocean are as follows:

Table F-4. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Industrial Water Supply; Water Contact and Non-Contact Recreation, Including Aesthetic Enjoyment; Navigation; Commercial and Sport Fishing; Mariculture; Preservation and Enhancement of Designated Areas of Special Biological Significance (ASBS); Rare and Endangered Species; Marine Habitat; Fish Migration; Fish Spawning and Shellfish Harvesting

Requirements of this Order implement the Basin Plan.

2. **Thermal Plan.** The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (white paper) on May 18, 1972, and amended this plan on September 18, 1975. Since the drafting of the previous Order, the Regional Water Board staff developed this white paper, which evaluated the optimum temperatures for steelhead, topsmelt, ghost shrimp, brown rock crab, jackknife clam, and the blue mussel. The white paper is used by the Regional Water Board to implement the requirements of the Thermal Plan. This plan contains temperature objectives for coastal waters.

3. **California Ocean Plan.** The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005, and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the State to be protected as summarized below:

Table F-5. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
Outfall 001	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting

In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

The Ocean Plan prohibits the discharge of wastes to areas designated as ASBS unless an exception to the prohibition is granted by the State Water Board. On February 15, 2006, the State Water Board adopted Resolution No. 2006-0013, approving a conditional exception to the Ocean Plan prohibition against waste discharges to the Northwest Santa Catalina Island ASBS. The exception establishes requirements and conditions applicable to the discharges comprised of waste seawater and storm water runoff into the ASBS. Resolution No. 2006-0013 also references a Migated Negative Declaration for the conditional exception.

4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes (40 C.F.R. § 131.21, 65 Fed. Reg. 24641 (April 27, 2000)). Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

5. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16.

The Ocean Plan, Item III.E., Implementation Provisions For Areas of Special Biological Significance (ASBS), includes a prohibition of the discharge of waste to areas designated as being of special biological significance. The section stipulates that "Discharges shall be located a sufficient distance from such areas to assure maintenance of natural water quality conditions in these areas." Activities

in these areas must not permanently degrade water quality or result in water quality lower than that necessary to protect existing uses.

The Wrigley Marine Science center discharges waste seawater from the aquaria operations and storm water runoff to the ASBS located adjacent the nearshore zone of the Pacific Ocean, Northwest Santa Catalina Island. The Wrigley Marine Science Center was created in 1965 and discharges have emanated from the facility since that time. Resolution No. 2006-0013 approving a conditional exception to the Ocean Plan prohibition was adopted by the State Water Board, after reviewing data submitted by the facility, an anaylsis of the discharges and flows from the facility, and a proposed Mitigated Negative Declaration for discharges from the facility. The adopted resolution includes stipulations designated to ensure that the quality of the receiving water is not adversely impacted by the discharges generated at the Wrigley Marine Science Center. Exceptions also require USEPA concurrence. On July 19, 2006, USEPA provided concurrence in the exception to the Ocean Plan to discharge into the waters of the Northwest Santa Catalina Island ASBS. The criteria included in that resolution have been implemented in this Order.

The NPDES permit includes effluent limits to ensure that the listed beneficial uses of the Pacific Ocean in the vicinity of the discharge are not adversely impacted. The inclusion of the effluent limits, monitoring requirements, prohibitions, and the requirements stipulated in Resolution 2006-0013 in the NPDES permit will ensure that the discharge will not result in a lowering of the water quality in the ASBS. The issuance of this permit, therefore, is consistent with the state's antidegradation policy.

6. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations[1] section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

D. Impaired Water Bodies on CWA 303(d) List

[Not Applicable]

E. Other Plans, Polices and Regulations

1. **Resolution No. 2006-0013.** Public Resources Code 36700(f) defines a State Water Quality Protection Area (SWQPA) as a nonterrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance (ASBS) that have been designated by the State Water Board through its water quality control planning process. ASBS are a subset of SWQPAs, and require special protection as determined by the State

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

Water Board pursuant to the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Thermal Plan adopted by the State Water Board.

The 2005 Ocean Plan (Section III.E.1.) prohibits all point source discharges into areas designated Area of Special Biological Significance. The Ocean Plan (Section III.I.1) allows the State Water Board to grant exceptions provided that the exception "will not compromise protection of ocean waters for beneficial uses, and the public interest will be served." Prior to granting an exception, the State Water Board must hold a public hearing and comply with the CEQA. Exceptions also require USEPA concurrence. On July 19, 2006, USEPA provided concurrence in the exception to the Ocean Plan to discharge into the waters of the Northwest Santa Catalina Island ASBS.

On February 15, 2006, the State Water Board adopted Resolution No. 2006-0013. Resolution No. 2006-0013 adopts a Mitigated Negative Declaration for a conditional exception to the Ocean Plan prohibition against waste discharges to the Northwest Santa Catalina Island ASBS. The exception establishes requirements and conditions applicable to the discharges into the ASBS comprised of waste seawater and storm water. This Order includes discharge prohibitions, specifications, special provisions, and monitoring requirements, as required by Resolution No. 2006-0013, sections 2.a through 2.s. The conditions outlined in Resolution No. 2006-0013 are listed as follows:

a. The discharge must comply with all other applicable provisions, including water quality standards, of the Ocean Plan. Natural water quality conditions in the receiving water, seaward of the surf zone, must not be altered as a result of the discharge. The surf zone is defined as the area between the breaking waves and the shoreline at any one time. Natural water quality will be defined, based on a review of the monitoring data, by Regional Water Board staff in consultation with the Division of Water Quality of the State Water Board. For constituents other than indicator bacteria, natural water quality will be determined using the reference station in the ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island. For indicator bacteria, the Ocean Plan bacteria objectives will be used.

b. The Discharger will not discharge chemical additives, including antibiotics, in the seawater system effluent. In addition and at a minimum, the Discharger, for its waste seawater effluent, must comply with effluent limits implementing Table B water quality objectives as required in Section III.C. of the Ocean Plan.

c. For metals analysis, waste seawater effluent, storm water effluent, reference samples, and receiving water samples must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

d. Flows for the seawater discharge system and storm water runoff (by storm event) must be reported quarterly to the Regional Water Board.

e. The Discharger must continue to prevent all discharges of non-storm water facility runoff (i.e., any discharge of facility runoff that reaches the ocean that is not composed entirely of storm water), except those associated with emergency fire fighting.

f. The Discharger must specifically address the prohibition of non-storm water runoff and the reduction of pollutants in storm water discharges draining to the ASBS in a Storm Water Management Plan/Program (SWMP). The Discharger is required to submit its final SWMP to the Regional Water Board.

g. The SWMP must include a map of surface drainage of storm water runoff, including areas of sheet runoff, and any structural Best Management Practices (BMPs) employed. The map must also show the storm water conveyances in relation to other facility features such as the laboratory seawater system and discharges, service areas, sewage treatment, and waste and hazardous materials storage areas. The SWMP must also include a procedure for updating the map and plan when other changes are made to the facilities.

h. The SWMP must describe the measures by which non-storm water discharges have been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

i. The SWMP must also address storm water discharges and how pollutants have been and will be reduced in storm water runoff into the ASBS through the implementation of BMPs. The SWMP must describe the BMPs currently employed and BMPs planned (including those for construction activities) and an implementation schedule. The BMPs and implementation schedule must be designed to ensure natural water quality conditions in the receiving water due to either a reduction in flows from impervious surfaces or reduction in pollutants or some combination thereof. The implementation schedule must be developed to ensure that the BMPs are implemented within one year of the approval date of the SWMP by the Regional Water Board.

j. At least once every permit cycle (every five years), a quantitative survey of benthic marine life must be performed near the discharge and at a reference site. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, must approve the survey design. The results of the survey must be completed and submitted to the Regional Water Board within six months before the end of the permit cycle (permit expiration).

k. Once during the upcoming permit cycle, a bioaccumulation study using mussels (*Mytilus californianus*) must be conducted to determine the concentrations of metals near field (within Big Fisherman Cove) and far field (at the reference station). The Regional Water Board, in consultation with the Division of Water Quality, must approve the study design. The results of the survey must be completed and submitted to the Regional Water Board at least six months prior to the end of the permit cycle (permit expiration). Based on the

study results, the Regional Water Board, in consultation with the Division of Water Quality, may adjust the study design in subsequent permits, or add additional test organisms.

l. During the first year of each permit cycle, two effluent samples must be collected from the waste seawater discharge (once during dry weather and once during wet weather, i.e., a storm event). In addition, samples must also be collected at the reference station, described in condition a, along with the effluent samples. Samples collected at the reference station will represent natural water quality for all Ocean Plan constituents except indicator bacteria and total chlorine residual. Samples at the reference station may be collected immediately following a storm event, but in no case more than 24 hours after, if sampling conditions are unsafe during the storm. All of these samples must be analyzed for all Ocean Plan Table B constituents, pH, salinity, and temperature, except samples collected at the reference station do not require toxicity testing; instead, samples collected at the reference station must be analyzed for Ocean Plan indicator bacteria. Based on the results from the first year, the Regional Water Board will determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except ammonia nitrogen, pH, salinity, and temperature must be tested at least annually. Chronic toxicity (for at least one consistent invertebrate species) must be tested at least annually for the waste seawater effluent. In addition, samples collected at the reference station must be analyzed for indicator bacteria according to the requirements of condition p.

m. Once annually, during wet weather (storm event), the storm water runoff effluent and the receiving water adjacent to the seawater and storm water discharge system must be sampled and analyzed for Ocean Plan Table B constituents. The receiving water in Big Fisherman Cove must also be monitored for Ocean Plan indicator bacteria water quality objectives. The sample location for the receiving water will be immediately seaward of the surf zone in Big Fisherman Cove adjacent to the outfall location. Storm water runoff and receiving water must be sampled at the same time as the seawater effluent and reference sampling described in condition 1 above. Based on the first year sample results, the Regional Water Board will determine specific constituents in the storm water runoff and receiving water to be tested during the remainder of the permit cycle, except indicator bacteria and chronic toxicity (three species) for receiving water must be tested annually during a storm event.

n. Once annually, the subtidal sediment near the seawater discharge system and storm water outfall in Big Fisherman Cove must be sampled and analyzed for Ocean Plan Table B constituents. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. Based on the first year sample results, the Regional Water Board will determine specific constituents to be tested during the remainder of each permit cycle, except acute toxicity for sediment must be tested annually.

The samples collected for testing should be consistent with the sampling procedure outlined in Section VIII. Benthic Sampling of the *Southern California*

Bight 2003 Regional Marine Monitoring Survey (Bight '03) Field Operations Manual

o. In addition to the bacterial monitoring requirements described in conditions 1. and m. above, samples must be collected at the seawater intake structure during a maximum of three storm events per year that result in runoff from the spray field hillside and measured for Ocean Plan indicator bacteria. The station at the seawater intake structure is selected for this requirement because it is near the bluff below the Discharger sewage treatment plant spray field. This requirement along with the bacterial monitoring in conditions 1. and m. is meant to satisfy in total the Ocean Plan bacteria monitoring requirements. This additional bacteria monitoring may be eliminated by the Regional Water Board if changes are made to the Discharger's sewage plant or treated sewage effluent system that would absolutely eliminate the possibility of contaminants entering the ASBS.

p. If the results of receiving water monitoring indicate that the storm water runoff is causing or contributing to an alteration of natural water quality in the ASBS, as measured at the reference station, the Discharger is required to submit a report to the Regional Water Board within 30 days of receiving the results. Those constituents in storm water that alter natural water quality or receiving water objectives must be identified in that report. The report must describe BMPs that are currently being implemented, BMPs that are planned for in the SWMP, and additional BMPs that may be added to the SWMP. The report shall include a new or modified implementation schedule. The Regional Water Board may require modifications to the report. Within 30 days following approval of the report by the Regional Water Board, the Discharger must revise its SWMP to incorporate any new or modified BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required. As long as the Discharger has complied with the procedures described above and is implementing the revised SWMP, then the Discharger does not have to repeat the same procedure for continuing or recurring exceedances of the same constituent.

q. The Discharger must pursue and implement a program for prevention of Biological Pollutants (non-native invasive species) in consultation with the California Department of Fish and Game Marine Resources Division.

r. The Discharger must prepare a waterfront and marine operations nonpoint source management plan containing appropriate management practices to address nonpoint source pollutant discharges. Appropriate management measures will include those described in the State's Nonpoint Source Program Implementation Plan for marinas and recreational boating, as applicable. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, will review the plan. The Regional Water Board shall appropriately regulate nonpoint source discharges in accordance with the State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program. The plan must be implemented within six months of its approval.

s. The Discharger will notify the Regional Water Board within 180 days prior to any construction activity that could result in any discharge or habitat modification in the ASBS. Furthermore, the Discharger must receive approval and appropriate conditions from the Regional Water Board prior to performing any significant modification, re-building, or renovation of the water front facilities, including the pier and dock, that could result in any discharge or habitat modification in the ASBS, according to the requirements of Section III.E.2 of the Ocean Plan.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

Effluent limitations for Discharge Point 001 in the existing Order were established for pH, temperature, biochemical oxygen demand (BOD), oil and grease, suspended solids, and turbidity. The existing Order established effluent limitations for a number of pollutants believed to be present in the discharge of wastewater from an aquarium facility.

It is presumed that the existing regulated pollutants are still considered pollutants of concern in this Order due to the nature of activities. Seawater is filtered prior to use in the aquariums. As the water passes through the tanks, organic waste, debris, and uneaten feed are contributed to the wastewater flow. Oil and grease may be present due to the use of sumps and other mechanical pumping equipment. Water within the tanks may be heated or cooled to optimize growing conditions for different organisms; therefore, temperature of the discharge is of concern in the permit.

The Facility discharges storm water from the loading dock area of the main laboratory, in addition to some other areas. Typical pollutants of concern for storm water are total suspended solids and oil and grease.

The previous Order established effluent limitations for BOD, oil and grease, TSS, turbidity, pH, and temperature. Table A of the Ocean Plan establishes technology-based effluent limitations for the parameters of oil and grease, TSS, settleable solids, turbidity, and pH. The Thermal Plan contains temperature objectives for Coastal Waters that are applicable to this discharge. In addition, data collected over the term of the permit indicate the discharge has reasonable potential to exceed Ocean Plan water quality objectives for lead, selenium, and mercury. The parameters of BOD, oil and grease, settleable solids, TSS, turbidity, pH, temperature, lead, zinc, and selenium are pollutants of concern for this discharge.

Generally, mass-based effluent limitations ensure that proper treatment, and not dilution, is employed to comply with the final effluent concentration limitations. 40 CFR §

122.45(f)(1) requires that all permit limitations, standards or prohibitions be expressed in terms of mass units except under the following conditions: (1) for pH, temperature, radiation or other pollutants that cannot appropriately be expressed by mass limitations; (2) when applicable standards or limitations are expressed in terms of other units of measure; or (3) if in establishing technology-based permit limitation on a case-by-case basis limitation based on mass are infeasible because the mass or pollutant cannot be related to a measure of production. The limitations, however, must ensure that dilution will not be used as a substitute for treatment.

The conditions required by State Board Resolution 2006-0013 listed in section III.E.1, above provide the basis for certain conditions in this Order.

A. Discharge Prohibitions

The discharge prohibitions are based on the requirements of the Ocean Plan, State Water Board's plans and policies, CWC, and previous Order provisions, and the State Water Board Resolution No. 2006-0013; and are consistent with the requirements set for other discharges regulated by NPDES permit to the Pacific Ocean.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations, require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3.

The CWA requires that technology-based effluent limitations be established based on several levels of controls:

a. Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

b. Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

c. Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease. The BCT standard is established after considering the "cost reasonableness" of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

d. New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires USEPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. Section 402(a)(1) of the CWA and section 125.3 of the Code of Federal Regulations authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the permit writer must consider specific factors outlined in section 125.3.

2. Applicable Technology-Based Effluent Limitations

The ELG for the Concentrated Aquatic Animal Production (CAAP) Point Source Category, published by USEPA, became effective on September 22, 2004. These regulations, available in 40 CFR Part 451, are applicable to CAAP facilities defined in section 122.24. Based on the type of operation and production, the Facility is not categorized as a CAAP facility. Therefore, the CAAP ELGs available in 40 CFR Part 451 are not applicable to the Facility.

The tentative Order includes technology-based effluent limitations based on BPJ in accordance with section 125.3. The previous Order includes effluent limitations for, BOD, oil and grease, total suspended solids, turbidity, pH, and temperature. Table A of the Ocean Plan (Table A) contains technology-based effluent limitations for oil and grease, total suspended solids, settleable solids, turbidity, and pH. Section 402(o) of the CWA and section 122.44(l) require that effluent limitations or conditions in reissued Orders be at least as stringent as those in the existing Orders. The effluent limitations contained in Table A were compared to the effluent limitations contained in the previous Order. In order to prevent backsliding and apply the applicable Table A effluent limitations, the most stringent effluent limitations for each parameter were established in this Order. Table F-6 summarizes the effluent limitations contained in the previous Order and the effluent limitations contained in Table A.

Table F-6. Comparison of Applicable Technology-based Effluent Limitations

Parameter	Units	Order No. 00-140 Limitations		Ocean Plan Table A Limitations		
		30-Day Average	Daily Maximum	30-Day Average	7-Day Average	Instantaneous Maximum
$BOD_5$20°C	mg/L	20	60	--	--	--
Oil and Grease	mg/L	10	15	25	40	75
Settleable Solids	ml/l	--	--	1.0	1.5	3.0
TSS	mg/L	50	150	60[1]	--	--
Turbidity	NTU	50	150	75	100	225
pH	s.u.	--	[2]	--	--	[3]

[1] 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 then 60 mg/l.

[2] The pH of wastes discharged shall at all times be within the range of 6.0 to 9.0 pH units.

[3] Within the limit of 6.0 to 9.0 at all times.

The technology-based effluent limitations contained in the proposed Order are summarized in Table F-7, below.

Table F-7. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Daily Maximum	Instantaneous Minimum	Instantaneous Maximum
$BOD_5$20°C	mg/L	20	--	60	--	--
	lbs/day[1]	36		108		
Oil and Grease	mg/L	10	--	15	--	--
	lbs/day[1]	18		27		
pH	s.u.	--	--	--	6.0	9.0
Suspended Solids	mg/L	50	--	150	--	--
	lbs/day[1]	90		270		
Settleable Solids	ml/L	1.0	1.5	3.0	--	--
Turbidity	NTU	50	100	150	--	--

[1] Mass-based effluent limitations are based on a maximum discharge flow of 0.216 MGD.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and

criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the Ocean Plan.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

As noted in Section III.C of this fact sheet, the State Water Board adopted an Ocean Plan that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the Ocean Plan. The beneficial uses applicable to the Pacific Ocean are summarized in Section III.C.3 of this Fact Sheet. The Ocean Plan includes both narrative and numeric water quality objectives applicable to the receiving water.

Table B of the Ocean Plan includes the following water quality objectives for toxic pollutants and whole effluent toxicity:

a. 6-month median, daily maximum and instantaneous maximum objectives for 21 chemicals and chemical characteristics, including total residual chlorine and chronic toxicity, for the protection of marine aquatic life;

b. 30-day average objectives for 20 non-carcinogenic chemicals for the protection of human health;

c. 30-day average objectives for 42 carcinogenic chemicals for the protection of human health;

d. Daily maximum objectives for acute and chronic toxicity.

3. Determining the Need for WQBELs

The need for effluent limitations based on water quality objectives in Table B of the Ocean plan was evaluated in accordance with 40 CFR 122.44(d) and guidance for statistically determining the "reasonable potential" for a discharged pollutant to exceed an objective, as outlined in the California Ocean Plan Reasonable Potential Analysis (RPA) Amendment that was adopted by the State Water Board on April 21, 2005. The statistical approach combines knowledge of effluent variability (as estimated by a coefficient of variation) with the uncertainty due to a limited amount of effluent data to estimate a maximum effluent value at a high level of confidence. This estimated maximum effluent value is based on a lognormal distribution of daily effluent values. Projected receiving water values (based on the estimated maximum effluent value or the reported maximum effluent value and minimum probable initial dilution), can then be compared to the appropriate objective to determine the potential for an exceedance of that objective and the need for an effluent limitation. According to the Ocean Plan amendment, the reasonable potential analysis (RPA) can yield three endpoints: 1) Endpoint 1, an effluent limitation is required and monitoring is required; 2) Endpoint 2, an effluent limitation is not required and the Regional Water Board may require monitoring; and 3) Endpoint 3, the RPA is inconclusive, monitoring is required, and an existing effluent limitation may be retained or a permit reopener clause may be included to allow inclusion of an effluent limitation if future monitoring warrants the inclusion.

Effluent data submitted to the Regional Water Board in February 2004, October 2004, and November of 2004, and the dilution credit applicable to the ocean outfall, 0 (zero), were used with the RPcalc 2.0 software tool developed by the State Water Board was used for conducting RPAs. Reasonable Potential to exceed water quality objectives contained within the Ocean Plan was determined for lead, selenium, and zinc.

Water quality-based effluent limitations for lead, selenium, and zinc, have been established in this Order. For many of the Table B parameters, insufficient data were available to determine if the parameters had reasonable potential to exceed water quality objectives, thus WQBELs were not established for these parameters; however, monitoring requirements for these parameters have been established in the Monitoring and Reporting Program (Attachment E).

4. WQBEL Calculations

From the Table B water quality objectives of the Ocean Plan, effluent limitations are calculated according to the following equation for all pollutants, except for acute toxicity (if applicable) and radioactivity:

Ce = Co + Dm (Co – Cs)

where:

Ce = the effluent limitation (μg/L)
Co = the water quality objective to be met at the completion of initial dilution (μg/L)
Cs = background seawater concentration
Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

The D_m is based on observed waste flow characteristics, receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure.

The State Water Board had determined the minimum initial dilution factor, Dm, for the Ocean outfall to be 0. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge. As stated above, the water quality objective to be met at the completion of initial dilution is contained in Table B of the Ocean Plan. As site-specific water quality data are not available for the ambient water, in accordance with Table B implementing procedures, C_s equals zero for all pollutants, except the following as per Table C of the Ocean Plan:

Table F-8. Background Concentrations (Ocean Plan Table C)

Pollutant	Unit	Background Seawater Concentration
Arsenic	µg/L	3 µg/L
Copper	µg/L	2 µg/L
Mercury	µg/L	0.0005 µg/L

Pollutant	Unit	Background Seawater Concentration
Silver	µg/L	0.16 µg/L
Zinc	µg/L	8 µg/L

WQBELS based on no dilution provided at the outfall for lead, selenium, and zinc, are determined as follows:

Water quality objectives from the Ocean Plan are listed in Table F-9, below:

Table F-9. Water Quality Objectives (Ocean Plan Table B)

Pollutant	Unit	6-Month Median	Daily Maximum	Instantaneous Maximum
Lead	µg/L	2	8	20
Selenium	µg/L	15	60	150
Zinc	µg/L	20	80	200

Per the implementation provisions for Table B, no background concentration for lead, or selenium is credited for the receiving water, however, a background concentration of 8 µg/L was used for zinc.

Using the equation, **Ce = Co + Dm (Co – Cs)**, WQBELs are calculated as follows:

Lead

Ce = 2 µg/L + 0 (2 µg/L – 0) = 2 µg/L (6-Month Median)

Ce = 8 µg/L + 0 (8 µg/L – 0) = 8 µg/L (Daily Maximum)

Ce = 20 µg/L + 0 (20 µg/L – 0) = 20 µg/L (Instantaneous Maximum)

Selenium

Ce = 15 µg/L + 0 (15 µg/L – 0) = 15 µg/L (6-Month Median)

Ce = 60 µg/L + 0 (60 µg/L – 0) = 60 µg/L (Daily Maximum)

Ce = 150 µg/L + 0 (150 µg/L – 0) = 150 µg/L (Instantaneous Maximum)

Zinc

Ce = 20 µg/L + 0 (20 µg/L – 8) = 20 µg/L (6-Month Median)

Ce = 80 µg/L + 0 (80 µg/L – 8) = 80 µg/L (Daily Maximum)

Ce = 200 µg/L + 0 (200 µg/L – 0) = 200 µg/L (Instantaneous Maximum)

5. WQBELs Based on the Thermal Plan

The previous Order established a narrative effluent limitation for temperature. The previous temperature limitation prohibited the discharge of wastes to exceed 100°F. Since the drafting of the previous Order, the Regional Water Board staff

has developed a white paper entitled *Temperature and Dissolved Oxygen Impacts on Biota in Tidal Estuaries and Enclosed Bays in the Los Angeles Region.* The white paper evaluated the optimum temperatures for steelhead, topsmelt, ghost shrimp, brown rock crab, jackknife clam, and blue mussel. This white paper is used by the Regional Water Board to implement the requirements of the Thermal Plan. As a result of the white paper, a maximum effluent temperature limitation of 86 °F is included in the tentative permit. The new temperature effluent limit is reflective of new information available that indicates that the 100 °F temperature is not protective of aquatic organisms. A survey was completed for several kinds of fish and the 86 °F temperature was found to be protective. Dilution credits are not applicable to temperature effluent limitations developed in accordance with the Thermal Plan.

6. Final WQBELs

A summary of the final WQBELs proposed in this Order are summarized in Table F-10, below.

Table F-10. Summary of WQBELs Discharge Point 001

Pollutant	Unit	Effluent Limitations		
		6-Month Median	Maximum Daily	Instantaneous Maximum
Temperature	°F	--	--	86
Lead, Total Recoverable	µg/L[1]	2	8	20
	lbs/day[2]	0.0036	0.014	0.036
Selenium, Total Recoverable	µg/L[1]	15	60	150
	lbs/day[2]	0.027	0.108	0.27
Zinc, Total Recoverable	µg/L[1]	20	80	200
	lbs/day[2]	0.036	0.144	0.36

[1] Concentration-based effluent limitations based on an initial dilution factor of zero (0).

[2] Mass-based effluent limitations based on a maximum discharge flow of 0.216 MGD.

7. Whole Effluent Toxicity (WET)

Whole effluent toxicity (WET) protects the receiving water quality from the aggregate toxic effect of a mixture of pollutants in the effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent. The WET approach allows for protection of the narrative "no toxics in toxic amounts" criterion while implementing numeric criteria for toxicity. There are two types of WET tests: acute and chronic. An acute toxicity test is conducted over a short time period and measures mortality. A chronic toxicity test is conducted over a longer period of time and may measure mortality, reproduction, and growth.

Implementing provisions at Section III. C of the Ocean Plan (2005) require chronic toxicity monitoring for ocean waste discharges with minimum initial dilution factors below 100. The Discharger will be required to conduct chronic toxicity testing in order to determine reasonable potential and establish WQBELs as necessary. In addition, the Order establishes thresholds that when exceeded requires the

Discharger to conduct accelerated toxicity testing and/or conduct toxicity reduction evaluation (TRE) and toxicity identification evaluation (TIE) studies.

The existing Order does not contain acute or chronic toxicity limitations or monitoring; however, the Discharger performed chronic toxicity monitoring and submitted the results in the application for exemption to the Ocean Plan ASBS protections. Chronic toxicity testing done with samples collected during February and October 2004 indicate an No-Observed-Effect-Concentration (NOEC) of 100%.

Per the conditions of Resolution No. 2006-0013, this Order establishes annual chronic toxicity monitoring requirements for the aquarium effluent (waste seawater discharge) and storm water runoff in order to determine reasonable potential and establish WQBELs as necessary. In addition, the Order establishes thresholds that when exceeded requires the Discharger to conduct accelerated toxicity testing and/or conduct TRE and TIE studies.

D. Final Effluent Limitations

Section 402(o) of the CWA and section 122.44(l) require that effluent limitations or conditions in reissued Orders be at least as stringent as those in the existing Orders based on the submitted sampling data. Effluent limitations for $BOD_5$20°C, oil and grease, suspended solids, turbidity, and pH, are being carried over from the previous Order (Order No. 00-140). Removal of these numeric limitations would constitute backsliding under CWA Section 402(o). The Regional Water Board has determined that these numeric effluent limitations continue to be applicable to the Facility and that backsliding is not appropriate. In addition, the technology-based effluent limitation for settleable solids, and 7-day average for turbidity, contained in the Ocean Plan, have been found to be applicable to the discharge and have been added to the tentative Order.

The effluent limitation for temperature has been revised to reflect new information that is consistent with the goals of the Thermal Plan. In addition, effluent limitations for lead, selenium, and zinc, have been added to this Order because the Facility's discharge was found to have reasonable potential to exceed water quality criteria for these parameters.

1. Satisfaction of Anti-Backsliding Requirements

All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

2. Satisfaction of Antidegradation Policy

The discharge from this facility is not a new discharge. Further, it is comprised of aquaria effluent; the facility operates to maintain aquatic life. This NPDES permit includes effluent limits to ensure that the discharge does not adversely impact the beneficial uses of the receiving waters or degrade water quality. The inclusion of the effluent limits and prohibitions in the NPDES permit, which ensure that any discharge would not result in the lowering of water quality, coupled with the fact

that the discharge occurs infrequently and is temporally limited, support the conclusion that no degradation will arise as a result of reissuing this permit. The issuance of this permit, therefore, is consistent with the state's antidegradation policy.

3. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on biochemical oxygen demand, oil and grease, total suspended solids, settleable solids, turbidity, and pH. Restrictions on biochemical oxygen demand, oil and grease, total suspended solids, settleable solids, turbidity, and pH, are discussed in section IV.B of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the Ocean Plan, which was approved by USEPA on February 14, 2006. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

4. Mass-based Effluent Limitations

Mass-based effluent limitations are established using the following formula:

Mass (lbs/day) = flow rate (MGD) x 8.34 x effluent limitation (mg/L)

where: Mass = mass limitation for a pollutant (lbs/day)
Effluent limitation = concentration limit for a pollutant (mg/L)
Flow rate = discharge flow rate (MGD)

5. Final Effluent Limitations

The final effluent limitations established in this Order are summarized in Table F-11, below:

Table F-11. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations						Basis
		6-Month Median	Average Monthly	Average Weekly	Daily Maximum	Instantaneous Minimum	Instantaneous Maximum	
$BOD_5$20°C	mg/L	--	20	--	60	--	--	Previous Order
	lbs/day[1]	--	36		108			
Oil and Grease	mg/L	--	10	--	15	--	--	Previous Order
	lbs/day[1]	--	18	--	27	--	--	
pH	s.u.	--	--	--	--	6.0	9.0	Ocean Plan/ Previous Order
Suspended Solids	mg/L	--	50	--	150	--	--	Ocean Plan/ Previous Order
	lbs/day[1]	--	90	--	270	--	--	
Lead, Total Recoverable	µg/L	2	--	--	8	--	20	Ocean Plan
	lbs/day[1]	0.0036	--	--	0.014	--	0.036	
Selenium, Total Recoverable	µg/L	15	--	--	60	--	150	Ocean Plan
	lbs/day[1]	0.027	--	--	0.108	--	0.27	
Zinc, Total Recoverable	µg/L	20	--	--	80	--	200	Ocean Plan
	lbs/day[1]	0.036	--	--	0.144	--	0.36	
Settleable Solids	ml/L	--	1.0	1.5	3.0	--	--	Ocean Plan
Temperature	°F	--	--	--	--	--	86	Thermal Plan/BPJ/ Ocean Plan
Turbidity	NTU	--	50	100	150	--	--	Previous Order & Ocean Plan

[1] Mass-based effluent limitations based on a maximum discharge rate of 0.216 MGD.

E. Interim Effluent Limitations

[Not Applicable]

F. Land Discharge Specifications

[Not Applicable]

G. Reclamation Specifications

[Not Applicable]

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

The Ocean Plan contains numeric and narrative water quality objectives applicable to the costal waters of California. Water quality objectives include an objective to maintain the high quality waters pursuant to federal regulations (section 131.12) and State Water Board Resolution No. 68-16. Receiving water limitations in this Order are included to ensure protection of beneficial uses of the receiving water and are based on the water quality objectives contained in the Ocean Plan.

B. Groundwater

[Not Applicable]

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

The discharge shall comply with all applicable provisions, including water quality standards, of the Ocean Plan. Natural water conditions in the receiving water, seaward of the surf zone, shall not be altered as a result of the discharge. Natural water quality will be determined using the reference station in the ocean near the seawater intake structure (prior to entering the intake) at Monitoring Location REF-001, for all Ocean Plan constituents except indicator bacteria and total chlorine residual. Monitoring requirements per the conditions of Resolution No. 2006-0013 are established at Monitoring Location REF-001.

B. Effluent Monitoring

Monitoring for those pollutants expected to be present in the Monitoring Locations EFF-001 and EFF-002 at Discharge Point No. 001 will be required as shown on the proposed MRP (Attachment E). To determine compliance with effluent limitations, the proposed monitoring plan carries forward monitoring requirements for flow, temperature, oil and grease, pH, suspended solids, $BOD_5 20^{\circ}C$, and turbidity from previous Order No. 00-140. In addition, monitoring requirements for settleable solids, lead, selenium, and zinc have been established to determine compliance with new effluent limitations.

Effluent monitoring requirements per the conditions of Resolution No. 2006-0013 have been established at locations EFF-001 and EFF-002.

Grab samples has been established for all parameters (with the exception of flow), because of the consistent nature of the discharge.

C. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity (WET) protects the receiving water quality from the aggregate toxic effect of a mixture of pollutants in the effluent. A chronic toxicity test is conducted over a longer period of time and may measure mortality, reproduction, and growth. Section III.C.3.c.4 of the Ocean Plan requires dischargers to conduct chronic toxicity testing if the minimum initial dilution of the effluent is below 100:1. This Order includes monitoring requirements for chronic toxicity in the MRP (Attachment E) as specified in the Ocean Plan, and to determine reasonable potential of the discharge to exceed Table B water quality objectives.

D. Receiving Water Monitoring

1. Surface Water

This Order includes receiving water limitations and therefore, monitoring requirements are included in the MRP (Attachment E) to determine compliance with the receiving water limitations established in this Order, and to implement conditions of Resolution No. 2006-0013.

2. Groundwater

[Not Applicable]

E. Other Monitoring Requirements

This Order includes additional monitoring requirements per the conditions of Resolution No. 2006-0013 including subtidal sediment monitoring, benthic marine life monitoring, and a metals bioaccumulation study.

Participation in a collaborative regional or statewide ASBS monitoring effort is encouraged. After the first year of monitoring results are reviewed, the Regional Water Board, in consultation with the State Water Board's Division of Water Quality, may adjust the sediment, receiving water, and bioaccumulation monitoring required under this exception, based on the Facility's participation in an appropriate regional or statewide monitoring program.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

1. Federal Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D to the Order.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

2. Regional Board Standard Provisions.

Regional Water Board Standard Provisions are based on the CWA, USEPA regulations, and the Water Code.

B. Special Provisions

1. Reopener Provisions

These provisions are based on section 123 and the previous Order. The Regional Water Board may reopen the permit to modify permit conditions and requirements. Causes for modifications include the promulgation of new federal regulations, modification in toxicity requirements, addition of new and/or more stringent effluent limitations due to monitoring data, or adoption of new regulations by the State Water Board or Regional Water Board, including revisions to the Basin Plan.

2. Special Studies and Additional Monitoring Requirements

a. Natural Water Quality. This provision is based on condition 2.a of Resolution No. 2006-0013.

b. Benthic Marine Life Survey. This provision is based on condition 2.j of Resolution No. 2006-0013.

c. Metals Bioaccumulation Study. This provision is based on condition 2.k of Resolution No. 2006-0013.

d. Receiving Water Monitoring Report. This provision is based on condition 2.p of Resolution No. 2006-0013.

e. Ocean Plan Constituents Monitoring. This provision is based on conditions 2.l through 2.o of Resolution No. 2006-0013.

f. Chronic Whole Effluent Toxicity. This provision is based on Table B of the Ocean Plan and Toxicity Control Provisions.

g. Regional ASBS Monitoring. Allowance for the Facility to participate in regional ASBS monitoring.

3. Best Management Practices and Pollution Prevention

a. Storm Water Management Plan. This provision is based on condition 2.f of Resolution No. 2006-0013.

b. Biological Pollutant Prevention Plan. This provision is based on condition 2.q of Resolution No. 2006-0013.

c. Nonpoint Source Management Plan. This provision is based on condition 2.r of Resolution No. 2006-0013.

4. Construction, Operation, and Maintenance Specifications

This provision is based on condition 2.s of Resolution No. 2006-0013.

5. Other Special Provisions

[Not Applicable]

6. Compliance Schedules

[Not Applicable]

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Los Angeles Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for Univeristy of Southern California, Wrigley Marine Science Center. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

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

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments must be received at the Regional Water Board offices by 5:00 p.m. on February 25, 2008.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: April 3, 2008
Time: 9 A.M.
Location: The Metropolitan Water District, Board Room
700 North Alameda Street
Los Angeles, CA 90012

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is **http://www.waterboards.ca.gov/losangeles** where you can access the current agenda for changes in dates and locations.

D. Nature of Hearing

This will be a formal adjudicative hearing pursuant to section 648 et seq. of title 23 of the California Code of Regulations. Chapter 5 of the California Administrative Procedure Act (commencing with section 11500 of the Government Code) will not apply to this proceeding.

Ex Parte Communications Prohibited: As a quasi-adjudicative proceeding, no board member may discuss the subject of this hearing with any person, except during the public hearing itself. Any communications to the Regional Board must be directed to staff.

E. Parties to the Hearing

The following are the parties to this proceeding:

1. The applicant/permittee

2. Regional Water Board staff

Any other persons requesting party status must submit a written or electronic request to staff not later than [20] business days before the hearing. All parties will be notified if other persons are so designated.

F. Public Comments and Submittal of Evidence

Persons wishing to comment upon or object to the tentative waste discharge requirements, or submit evidence for the Board to consider, are invited to submit them in writing to the above address. To be evaluated and responded to by staff, included in the Board's agenda folder, and fully considered by the Board, written comments

must be received no later than close of business February 25, 2008. Comments or evidence received after that date will be submitted, ex agenda, to the Board for consideration, but only included in administrative record with express approval of the Chair during the hearing. Additionally, if the Board receives only supportive comments, the permit may be placed on the Board's consent calendar, and approved without an oral testimony.

G. Hearing Procedure

The meeting, in which the hearing will be a part of, will start at 9:00 a.m. Interested persons are invited to attend. Staff will present the matter under consideration, after which oral statements from parties or interested persons will be heard. For accuracy of the record, all important testimony should be in writing. The Board will include in the administrative record written transcriptions of oral testimony that is actually presented at the hearing. Oral testimony may be limited to 30 minutes maximum or less for each speaker, depending on the number of persons wishing to be heard. Parties or persons with similar concerns or opinions are encouraged to choose one representative to speak. At the conclusion of testimony, the Board will deliberate in open or close session, and render a decision.

Parties or persons with special procedural requests should contact staff. Any procedure not specified in this hearing notice will be waived pursuant to section 648(d) of title 23 of the California Code of Regulations. Objections to any procedure to be ~~used during this hearing must be submitted in writing not later than close of~~ [15] business days prior to the date of the hearing. Procedural objections will not be entertained at the hearing.

H. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

I. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling (213) 576-6600.

J. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

K. Additional Information

Requests for additional information or questions regarding this order should be directed to Stephanie Turcios at (213) 576-6793.

ATTACHMENT G – STATE WATER BOARD MINIMUM LEVELS (ML)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the State Water Board and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethylene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Methyl Bromide	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethylene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Benzo (a) Anthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3' Dichlorobenzidine		5		
Benzo (b) Fluoranthene		10	10	
3-Methyl-Chlorophenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the

above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2d – PESTICIDES – PCBs*	GC
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
alpha-BHC	0.01
Aldrin	0.005
b-Endosulfan	0.01
Beta-BHC	0.005
Chlordane	0.1
Delta-BHC	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Gamma-BHC (Lindane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration

in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR – Colorimetric

ATTACHMENT H – PRIORITY POLLUTANTS

CTR Number	Parameter	CAS Number	Suggested Analytical Methods
1	Antimony	7440360	1
2	Arsenic	7440382	1
3	Beryllium	7440417	1
4	Cadmium	7440439	1
5a	Chromium (III)	16065831	1
5a	Chromium (VI)	18540299	1
6	Copper	7440508	1
7	Lead	7439921	1
8	Mercury	7439976	1
9	Nickel	7440020	1
10	Selenium	7782492	1
11	Silver	7440224	1
12	Thallium	7440280	1
13	Zinc	7440666	1
14	Cyanide	57125	1
15	Asbestos	1332214	1
16	2,3,7,8-TCDD	1746016	1
17	Acrolein	107028	1
18	Acrylonitrile	107131	1
19	Benzene	71432	1
20	Bromoform	75252	1
21	Carbon Tetrachloride	56235	1
22	Chlorobenzene	108907	1
23	Chlorodibromomethane	124481	1
24	Chloroethane	75003	1
25	2-Chloroethylvinyl Ether	110758	1
26	Chloroform	67663	1
27	Dichlorobromomethane	75274	1
28	1,1-Dichloroethane	75343	1
29	1,2-Dichloroethane	107062	1
30	1,1-Dichloroethylene	75354	1
31	1,2-Dichloropropane	78875	1
32	1,3-Dichloropropylene	542756	1
33	Ethylbenzene	100414	1
34	Methyl Bromide	74839	1
35	Methyl Chloride	74873	1
36	Methylene Chloride	75092	1
37	1,1,2,2-Tetrachloroethane	79345	1
38	Tetrachloroethylene	127184	1
39	Toluene	108883	1
40	1,2-Trans-Dichloroethylene	156605	1
41	1,1,1-Trichloroethane	71556	1
42	1,12-Trichloroethane	79005	1
43	Trichloroethylene	79016	1
44	Vinyl Chloride	75014	1
45	2-Chlorophenol	95578	1
46	2,4-Dichlorophenol	120832	1
47	2,4-Dimethylphenol	105679	1

CTR Number	Parameter	CAS Number	Suggested Analytical Methods
48	2-Methyl-4,6-Dinitrophenol	534521	1
49	2,4-Dinitrophenol	51285	1
50	2-Nitrophenol	88755	1
51	4-Nitrophenol	100027	1
52	3-Methyl-4-Chlorophenol	59507	1
53	Pentachlorophenol	87865	1
54	Phenol	108952	1
55	2,4,6-Trichlorophenol	88062	1
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	1
58	Anthracene	120127	1
59	Benzidine	92875	1
60	Benzo(a)Anthracene	56553	1
61	Benzo(a)Pyrene	50328	1
62	Benzo(b)Fluoranthene	205992	1
63	Benzo(ghi)Perylene	191242	1
64	Benzo(k)Fluoranthene	207089	1
65	Bis(2-Chloroethoxy)Methane	111911	1
66	Bis(2-Chloroethyl)Ether	111444	1
67	Bis(2-Chloroisopropyl)Ether	108601	1
68	Bis(2-Ethylhexyl)Phthalate	117817	1
69	4-Bromophenyl Phenyl Ether	101553	1
70	Butylbenzyl Phthalate	85687	1
71	2-Chloronaphthalene	91587	1
72	4-Chlorophenyl Phenyl Ether	7005723	1
73	Chrysene	218019	1
74	Dibenzo(a,h)Anthracene	53703	1
75	1,2-Dichlorobenzene	95501	1
76	1,3-Dichlorobenzene	541731	1
77	1,4-Dichlorobenzene	106467	1
78	3,3'-Dichlorobenzidine	91941	1
79	Diethyl Phthalate	84662	1
80	Dimethyl Phthalate	131113	1
81	Di-n-Butyl Phthalate	84742	1
82	2,4-Dinitrotoluene	121142	1
83	2,6-Dinitrotoluene	606202	1
84	Di-n-Octyl Phthalate	117840	1
85	1,2-Diphenylhydrazine	122667	1
86	Fluoranthene	206440	1
87	Fluorene	86737	1
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87863	1
90	Hexachlorocyclopentadiene	77474	1
91	Hexachloroethane	67721	1
92	Indeno(1,2,3-cd)Pyrene	193395	1
93	Isophorone	78591	1
94	Naphthalene	91203	1
95	Nitrobenzene	98953	1
96	N-Nitrosodimethylamine	62759	1
97	N-Nitrosodi-n-Propylamine	621647	1
98	N-Nitrosodiphenylamine	86306	1
99	Phenanthrene	85018	1

CTR Number	Parameter	CAS Number	Suggested Analytical Methods
100	Pyrene	129000	[1]
101	1,2,4-Trichlorobenzene	120821	[1]
102	Aldrin	309002	[1]
103	alpha-BHC	319846	[1]
104	beta-BHC	319857	[1]
105	gamma-BHC	58899	[1]
106	delta-BHC	319868	[1]
107	Chlordane	57749	[1]
108	4,4'-DDT	50293	[1]
109	4,4'-DDE	72559	[1]
110	4,4'-DDD	72548	[1]
111	Dieldrin	60571	[1]
112	alpha-Endosulfan	959988	[1]
113	beta-Endosulfan	33213659	[1]
114	Endosulfan Sulfate	1031078	[1]
115	Endrin	72208	[1]
116	Endrin Aldehyde	7421934	[1]
117	Heptachlor	76448	[1]
118	Heptachlor Epoxide	1024573	[1]
119	PCB-1016	12674112	[1]
120	PCB-1221	11104282	[1]
121	PCB-1232	11141165	[1]
122	PCB-1242	53469219	[1]
123	PCB-1248	12672296	[1]
124	PCB-1254	11097691	[1]
125	PCB-1260	11096825	[1]
126	Toxaphene	8001352	[1]

[1] Pollutants shall be analyzed using the methods described in 40 CFR Part 136.

ATTACHMENT I

INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

Alan C. Lloyd, Ph.D.
Agency Secretary

State Water Resources Control Board

Division of Water Quality

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Arnold Schwarzenegger
Governor

MITIGATED
NEGATIVE DECLARATION
Pursuant to Section 21080(c)
Public Resources Code

To:	Office of Planning & Research State Clearinghouse 1400 Tenth Street Sacramento, CA 95814	From:	State Water Resources Control Board Division of Water Quality 1001 I Street Sacramento, CA 95814

Project Title: Exception to the California Ocean Plan for the University of Southern California Wrigley Marine Science Center Discharge into the Northwest Santa Catalina Island Area of Special Biological Significance (No. 25)

Applicant: University of Southern California
Wrigley Institute for Environmental Studies
AHF 232
Los Angeles, CA 90089-0371

Project Description: University of Southern California (USC) Wrigley Marine Science Center (WMSC) seeks an exception from the California Ocean Plan prohibition on discharges into Areas of Special Biological Significance (ASBS). The exception with conditions, if approved, would allow continued waste seawater and storm water discharges into the Northwest Santa Catalina Island ASBS.

Determination: The State Water Board has determined that the above-proposed project will have a less-than-significant effect on the environment for the reasons specified in the attached Initial Study.

Terms and Conditions:

1. The discharge must comply with all other applicable provisions, including water quality standards, of the Ocean Plan. Natural water quality conditions in the receiving water, seaward of the surf zone, must not be altered as a result of the discharge. The surf zone is defined as the area between the breaking waves and the shoreline at any one time. Natural water quality will be defined, based on a review of the monitoring data, by Regional Water Board staff in consultation with the Division of Water Quality of the State Water Board. For constituents other than indicator bacteria, natural water quality will be determined using the reference station in the ocean in the vicinity of Goat Harbor or Italian Gardens near Twin Rocks Point on the northern coast of Santa Catalina Island. For indicator bacteria, the Ocean Plan bacteria objectives will be used.

2. WMSC will not discharge chemical additives, including antibiotics, in the seawater system effluent. In addition and at a minimum, WMSC, for its waste seawater effluent, must comply with effluent limits implementing Table B water quality objectives as required in Section III.C. of the Ocean Plan.

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3. For metals analysis, waste seawater effluent, storm water effluent, reference samples, and receiving water samples must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

4. Flows for the seawater discharge system and storm water runoff (by storm event) must be reported quarterly to the Regional Water Board.

5. WMSC must continue to prevent all discharges of non-storm water facility runoff (i.e., any discharge of facility runoff that reaches the ocean that is not composed entirely of storm water), except those associated with emergency fire fighting.

6. WMSC must specifically address the prohibition of non-storm water runoff and the reduction of pollutants in storm water discharges draining to the ASBS in a Storm Water Management Plan/Program (SWMP). WMSC is required to submit its final SWMP to the Regional Water Board.

7. The SWMP must include a map of surface drainage of storm water runoff, including areas of sheet runoff, and any structural Best Management Practices (BMPs) employed. The map must also show the storm water conveyances in relation to other facility features such as the laboratory seawater system and discharges, service areas, sewage treatment, and waste and hazardous materials storage areas. The SWMP must also include a procedure for updating the map and plan when other changes are made to the facilities.

8. The SWMP must describe the measures by which non-storm water discharges have been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

9. The SWMP must also address storm water discharges, and how pollutants have been and will be reduced in storm water runoff into the ASBS through the implementation of BMPs. The SWMP must describe the BMPs currently employed and BMPs planned (including those for construction activities), and an implementation schedule. The BMPs and implementation schedule must be designed to ensure natural water quality conditions in the receiving water due to either a reduction in flows from impervious surfaces or reduction in pollutants, or some combination thereof. The implementation schedule must be developed to ensure that the BMPs are implemented within one year of the approval date of the SWMP by the Regional Water Board.

10. At least once every permit cycle (every five years), a quantitative survey of benthic marine life must be performed near the discharge and at a reference site. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, must approve the survey design. The results of the survey must be completed and submitted to the Regional Water Board within six months before the end of the permit cycle.

11. Once during the upcoming permit cycle, a bioaccumulation study using mussels (*Mytilus californianus*) must be conducted to determine the concentrations of metals near field (within Big Fisherman Cove) and far field (at the reference station). The Regional Water Board, in consultation with the Division of Water Quality, must approve the study design. The results of the survey must be completed and submitted to the Regional Water Board at least six months prior to the end of the permit cycle (permit expiration). Based on the study results, the Regional Water Board, in consultation with the Division of Water Quality, may adjust the study design in subsequent permits, or add additional test organisms.

12. During the first year of each permit cycle, two effluent samples must be collected from the waste seawater discharge (once during dry weather and once during wet weather, i.e. a storm event). In addition, samples must also be collected at the reference station, described in condition 1, along with the effluent samples. Samples

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collected at the reference station will represent natural water quality for all Ocean Plan constituents except indicator bacteria and total chlorine residual. Samples at the reference station may be collected immediately following a storm event, but in no case more than 24 hours after, if sampling conditions are unsafe during the storm. All of these samples must be analyzed for all Ocean Plan Table B constituents, pH, salinity, and temperature, except that samples collected at the reference station do not require toxicity testing; instead, samples collected at the reference station must be analyzed for Ocean Plan indicator bacteria. Based on the results from the first year, the Regional Water Board will determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except that ammonia nitrogen, pH, salinity, and temperature must be tested at least annually. Chronic toxicity (for at least one consistent invertebrate species) must be tested at least annually for the waste seawater effluent. In addition, samples collected at the reference station must be analyzed for indicator bacteria according to the requirements of condition 16.

13. Once annually, during wet weather (storm event), the storm water runoff effluent and the receiving water adjacent to the seawater and storm water discharge system must be sampled and analyzed for Ocean Plan Table B constituents. The receiving water in Big Fisherman Cove must also be monitored for Ocean Plan indicator bacteria water quality objectives. The sample location for the receiving water will be immediately seaward of the surf zone in Big Fisherman Cove adjacent to the outfall location. Storm water runoff and receiving water must be sampled at the same time as the seawater effluent and reference sampling described in condition 12 above. Based on the first year sample results, the Regional Water Board will determine specific constituents in the storm water runoff and receiving water to be tested during the remainder of the permit cycle, except that indicator bacteria and chronic toxicity (three species) for receiving water must be tested annually during a storm event.

14. Once annually, the subtidal sediment near the seawater discharge system and storm water outfall in Big Fisherman Cove must be sampled and analyzed for Ocean Plan Table B constituents. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. Based on the first year sample results, the Regional Water Board will determine specific constituents to be tested during the remainder of each permit cycle, except that acute toxicity for sediment must be tested annually.

15. In addition to the bacterial monitoring requirements described in conditions 12 and 13 above, samples must be collected at the seawater intake structure during a maximum of three storm events per year that result in runoff from the spray field hillside, and measured for Ocean Plan indicator bacteria. The station at the seawater intake structure is selected for this requirement because it is near the bluff below the WMSC sewage treatment plant spray field. This requirement along with the bacterial monitoring in conditions 12 and 13 is meant to satisfy in total the Ocean Plan bacteria monitoring requirements. This additional bacteria monitoring may be eliminated by the Regional Water Board if changes are made to WMSC's sewage plant or treated sewage effluent system that would absolutely eliminate the possibility of contaminants entering the ASBS.

16. If the results of receiving water monitoring indicate that the storm water runoff is causing or contributing to an alteration of natural water quality in the ASBS, as measured at the reference station, WMSC is required to submit a report to the Regional Water Board within 30 days of receiving the results. Those constituents in storm water that alter natural water quality or receiving water objectives must be identified in that report. The report must describe BMPs that are currently being implemented, BMPs that are planned for in the SWMP, and additional BMPs that may be added to the SWMP. The report shall include a new or modified implementation schedule. The Regional Water Board may require modifications to the report. Within 30 days following approval of the report by the Regional Water Board, WMSC must revise its SWMP to incorporate any new or modified BMPs that have been and will be implemented, the implementation schedule, and any additional

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monitoring required. As long as WMSC has complied with the procedures described above and is implementing the revised SWMP, then WMSC does not have to repeat the same procedure for continuing or recurring exceedances of the same constituent.

17. WMSC must pursue and implement a program for prevention of Biological Pollutants (non-native invasive species) in consultation with the California Department of Fish and Game Marine Resources Division.

18. WMSC must prepare a waterfront and marine operations non-point source management plan containing appropriate management practices to address non-point source pollutant discharges. Appropriate management measures will include those described in the State's Non-point Source Program Implementation Plan for marinas and recreational boating, as applicable. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, will review the plan. The Regional Water Board shall appropriately regulate non-point source discharges in accordance with the State Water Board's Policy for Implementation and Enforcement of the Non-point Source Pollution Control Program. The plan must be implemented within six months of its approval.

19. WMSC will notify the Regional Water Board within 180 days prior to any construction activity that could result in any discharge or habitat modification in the ASBS. Furthermore, WMSC must receive approval and appropriate conditions from the Regional Water Board prior to performing any significant modification, re-building, or renovation of the water front facilities, including the pier and dock, that could result in any discharge or habitat modification in the ASBS, according to the requirements of Section III.E.2 of the Ocean Plan.

20. The Regional Water Board will include these mitigating conditions in the National Pollutant Discharge Elimination System (NPDES) permit for the seawater effluent. Alternatively, the Regional Water Board may regulate the storm water discharge in a storm water NPDES permit and, in that case, would include those conditions relative to storm water in that storm water NPDES permit. In the latter case, all conditions would be included, in some combination, in the waste seawater effluent permit and the storm water permit.

Contact Person: Constance S. Anderson	Telephone: (916) 341-5280 email: csanderson@waterboards.ca.gov

Adopted by the State Water Resources Control Board on February 15, 2006.

Selica Potter
Acting Clerk to the Board

February 15, 2006
Date

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER QUALITY
P.O. BOX 100
SACRAMENTO, CA 95812-0100

INITIAL STUDY

I. Background

Project Title: Exception to the California Ocean Plan for the University of Southern California Wrigley Marine Science Center Discharge into the Northwest Santa Catalina Island Area of Special Biological Significance (No. 25)

Applicant: University of Southern California
Wrigley Institute for Environmental Studies
AHF 232
Los Angeles, CA 90089-0371

Applicant's Contact Person: Dr. Anthony Michaels, (213) 740-6780

Introduction

The State Water Resources Control Board (State Water Board), under its Resolution No. 74-28, designated certain Areas of Special Biological Significance (ASBS) in the adoption of water quality control plans for the control of wastes discharged to ocean waters. To date, thirty-four coastal and offshore island sites have been designated ASBS. Among the ASBS designated was the Santa Catalina Island Subarea One ASBS. The name of this ASBS was changed by the State Water Board in April 2005 to the Northwest Santa Catalina Island ASBS (Resolution 2005-0035).

Since 1983, the California Ocean Plan (Ocean Plan) has prohibited waste discharges to ASBS (SWRCB 1983). Similar to previous versions of the Ocean Plan, the 2001 Ocean Plan (SWRCB 2001) states: "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."

The Northwest Santa Catalina Island ASBS, (from Isthmus Cove to Catalina Head), was included in this designation for the following reasons: 1. it has a diversity of habitat and biological assemblages; 2. it is possibly a transitional zone between subtidal areas containing predominantly northern and southern species; and 3. due to the proximity of the University of Southern California's Wrigley Marine Science Center, many scientific studies have yielded valuable information about the area.

Assembly Bill 2800 (Chapter 385, Statutes of 2000), the Marine Managed Areas Improvement Act, was approved by the Governor on September 8, 2000. This law added sections to the Public Resources Code (PRC) that are relevant to ASBS. Section 36700 (f) of the PRC defines a State Water Quality Protection Area (SWQPA) as "a nonterrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance that have been designated by the State Water Board through its water quality control planning process." Section 36710 (f) of the PRC stated: "In a state water quality protection area, point source waste and thermal discharges shall be prohibited or limited by special conditions. Nonpoint source pollution shall be controlled to the extent practicable. No other use is restricted." The classification of ASBS as SWQPAs went into effect on January 1, 2003 (without Board action) pursuant to Section 36750 of the PRC.

Senate Bill 512 (Chapter 854, Statutes of 2004) amended the marine managed areas portion of the PRC, effective January 1, 2005, to clarify that ASBS are a subset of SWQPAs and require special protection as determined by the State Water Board pursuant to the California Ocean Plan and the California Thermal Plan. Specifically, SB 512 amended the PRC section 36700 (f) definition of state water quality protection area to add the following: "'Areas of special biological significance' are a subset of state water quality protection areas, and require special protection as determined by the State Water Board pursuant to the California Ocean Plan adopted and reviewed pursuant to

Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the State Board."

Section 36710(f) of the PRC was also amended as follows: "In a State Water Quality Protection Area, waste discharges shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board. No other use is restricted." This language replaced the prior wording stating that point sources into ASBS must be prohibited or limited by special conditions, and that nonpoint sources must be controlled to the extent practicable. In other words, the absolute discharge prohibition in the Ocean Plan stands, unless of course an exception is granted. The classification of ASBS as a subset of SWQPAs does not change the ASBS designated use for these areas. Practically speaking, this means that waste discharges to ASBS are prohibited under the Ocean Plan and Thermal Plan unless an exception is granted. The terms and conditions in the mitigated negative declaration and in this initial study are special protections recommended by staff for the Northwest Santa Catalina Island ASBS, and constitute the special conditions referred to in Section 36710(f) of the PRC.

The University of Southern California (USC) Wrigley Marine Science Center (WMSC) is located on the coast adjacent to the Northwest Santa Catalina Island ASBS at Big Fisherman Cove. Wrigley Marine Science Center currently discharges waste seawater without the benefit of an exception from the California Ocean Plan. The Wrigley Marine Science Center was founded in 1965 through a deed of property from the Santa Catalina Island Company. WMSC discharges waste seawater into the ASBS/SWQPA under National Pollutant Discharge Elimination System (NPDES) Permit CA 0056661. The Regional Water Board issued USC its first Waste Discharge Requirements and NPDES permit in Order No. 79-59, on April 23, 1979 (RWQCB 1979). The Ocean Plan in effect at that time prohibited discharges into an ASBS that could alter natural water quality. The permit was re-issued in May 21, 1984, and again on October 12, 2000, expiring November 10, 2005. This discharge has never been issued an exception by the State Water Board and thus does not comply with the California Ocean Plan.

Section III (I)(1) of the 2001 Ocean Plan states: "The State Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the U.S. Environmental Protection Agency, grant exceptions where the Board determines: a. The exception will not compromise protection of ocean waters for beneficial uses, and, b. The public interest will be served."

Project Description

USC seeks an exception from the Ocean Plan's prohibition on discharges into ASBS. The exception with conditions, if approved, would allow their continued waste seawater and co-mingled storm water discharge into the Northwest Santa Catalina Island ASBS. This would provide additional protections for beneficial uses that are not currently provided.

Environmental Setting

Physical Description

Location and Size

Santa Catalina Island is located at 33° 22′ N Latitude, 118° 25′ W longitude and lies 20 miles offshore of the Palos Verdes Peninsula. The Island is 22 miles (35.4 km) long, 8 miles (12.9 km) across at its widest point and is oriented in a general NW-SE direction. The Northwest Santa Catalina Island ASBS is located at the western end of the Island. The shoreline bordering the ASBS is 20.9 miles (33.6 km) in length. The seaward boundary of the ASBS is one mile offshore, and the enclosed water surface is about 13,235 acres (20.68 square miles.) (State Water Board GIS data, at a scale of 1:24,000).

Santa Catalina Island is part of Los Angeles County. Avalon, the only city on the island, is approximately 13 miles (20.9 km) straight-line distance from the University of Southern California Wrigley Marine Science Center (26 miles by road). There is a community located between Catalina Harbor and Isthmus Cove, known as Two Harbors,

operated by the Santa Catalina Island Company. Approximately 100 permanent residents of Two Harbors maintain the local recreational facility utilized by vacationers, the area's primary industry.

The State Water Board has legally defined ASBS No. 25, Northwest Santa Catalina Island Area of Special Biological Significance: "From Point 1 determined by the intersection of the mean high tide line and a line extending due west from USGS Triangulation Station "Channel" on Blue Cavern Point: thence due north to the 300-foot isobath or to one nautical mile offshore, whichever distance is greater; thence northerly and westerly, following the 300-foot isobath maintaining a distance of one nautical mile offshore, whichever is the greater distance, around the northwestern tip of the island and then southerly and easterly, maintaining the distance offshore described above, to a point due south of USGS Triangulation Station "Cone" on Catalina Head; thence due north to the intersection of the mean high tide line and a line extending due south from USGS Triangulation Station "Cone," thence returning around the northwestern tip of the island following the mean high tide line to Point 1."

Climate

Santa Catalina Island has a Mediterranean climate characterized by warm, sunny, and dry summer months and relatively little rainfall during the cooler months. Skies are generally clear; however, fog does occur during the cooler months. The mountainous land mass often limits the fog to the windward side of the island. The Isthmus is a break in this terrain and permits fog and wind to reach the leeward side (SWRCB 1979).

The average daily temperature ranges from the high 70's (°F) in late summer and the low 50's (°F) in the winter. Rainfall occurs primarily between October and April; the average annual precipitation is 11.4 inches, based on data from 1945 through 1967 (SWRCB 1979). More recent precipitation data from the Catalina Island Conservancy for Two Harbors, immediately southwest of WMSC is summarized in Appendix A. On average it rains 27 days per year in Two Harbors and the average rainfall per rain day is 0.40 inches (Mertes, et al. 2005). The northeast side of Catalina experiences greater rainfall than the southwest side. The northeast facing slopes (toward the mainland) are protected from the drying effects of the prevailing westerly winds and hot afternoon sun. Prevailing winds are from the west-northwest. However, during the summer and early fall, warm drying Santa Ana winds occasionally blow from the mainland (SWRCB 1979). These Santa Ana winds may extend into the early winter (Michaels 2005).

Geological Setting

Submarine Topography

Santa Catalina Island borders the San Pedro Basin on the north and Catalina Basin on the south. The Island is rimmed by a shelf extending to a water depth of 450 feet (140 m) approximately one mile offshore on the southern side and two miles on the northern side. The shelf is narrowest off Arrow Point. It has no prominent features and gradually rises to a near shore physiography of steep boulder slopes and cliffs that usually begin at a subtidal depth of approximately 100 feet (30m) (SWRCB 1979).

Above Shoreline Land Mass

The major exposed rock on Santa Catalina Island is generally Catalina schist, a low-grade layered metamorphic rock. Landslides commonly occur where it forms steep slopes (SWRCB 1979). The Isthmus is geologically very active, as indicated by frequent landslides.

The land adjacent to the ASBS is extremely rugged, consisting primarily of mountains with steep drop-offs to the ocean. The area is frequently intersected by narrow ravines (Catalina Head to West End) and by relatively wide stream valleys (West End to Blue Cavern Point). The highest peak adjacent to the ASBS is Silver Peak, reaching an elevation of 1,805 feet. The Isthmus is the land area with the lowest elevation (less than 20 feet) and also has the narrowest width of any portion of the Island (0.25 miles).

Above shoreline landmass adjacent to the ASBS in Big Fisherman is comprised of a gray, friable to unconsolidated, silty matrix of lithic and calcareous sediments. The basement outcropping is composed of andesite, as are numerous boulders (SWRCB 1979).

Oceanographic Conditions and Marine Water Quality

Currents

Northwest Santa Catalina Island ASBS is located in the Southern California Bight (SCB). The Bight is the 300 km of recessed coastline between Point Conception in Santa Barbara County and Cabo Colnett, south of Ensenada, Mexico. The dramatic change in the angle of the coastline creates a large backwater eddy in which equatorial waters flow north near shore and subartic waters flow south offshore. This unique oceanographic circulation pattern creates a biological transition zone between warm and cold waters that contains approximately 500 marine fish species and more than 5,000 invertebrate species (SWRCB 1979).

The principal geostrophic current in this area of Northwest Santa Catalina Island ASBS is the California Current, which flows southward along the coast, and a north-flowing gyre is created east of the California Current and is known as the Southern California Countercurrent. Santa Catalina Island is surrounded by the Southern California Countercurrent. On average, ocean water moves northwest along the WMSC portion of the ASBS (Michaels 2005).

The prevailing direction of swell in the California Bight is from the west. Consequently, intertidal areas on the southwest (windward) side of this ASBS are exposed to the most wave action. The swell bends around the west end and strikes north-facing beaches on the leeward side at an angle, reducing wave energy. Northeast-facing habitats on the leeward shore are the most protected. Only during northeast wind conditions (Santa Ana's) are these areas exposed to wave action. (SWRCB 1979).

Water Quality and Temperature, vicinity of WMSC

Water clarity data measurements were taken approximately daily from 1970-1978 at Bird Rock (surface and twenty meter depths). Though this station is located close to shore, the clarity is not indicative of those areas on the Island coastline subjected to extensive landslide runoff. For example, during the winter of 1977-78 heavy rains and subsequent runoff resulted in poor clarity in the nearshore waters. Clarity is usually greatest (about 25 m) between October and January and poorest (8 m) between April and July when plankton blooms occur (SWRCB 1979).

Surface water temperature measurements were taken approximately daily from 1970-1978 at Bird Rock. Ocean water temperatures for this period at Bird Rock ranged from 11°C in the winter to 20°C in September and October (SWRCB 1979).

Water quality in the ASBS was previously assessed in studies involving analyses of biological material for the presence of pollutants. Drs. Rudolf K. Zahn and Gertud Zahn-Daimler for the Physiologisch-Chemisches Institut der Johannes Gutenberg, Universtat Mainz, found no significant levels of pollutants in the sponge (*Tethya aurantia)* collected on the leeward side of the ASBS (SWRCB 1979).

In a study by Alexander and Young for the Southern California Coastal Water Research Project (1976), in which mussel tissue (*Mytilus californianus*) from the mainland and from Bird Rock was analyzed in 1971 for trace metals, the Bird Rock samples were lower in lead, copper, silver, and nickel, but higher in chromium and zinc, at 27 and 100 mg/kg dry weight respectively. Chen and Lu for the Bureau of Land Management (1974) tested the sediments at Blue Cavern Point and at the mainland shelf of Palos Verdes for synthetic chlorinated hydrocarbons (e.g., DDT), oil and grease, nutrients, total volatile substances, trace metals, and other constituents. They found that the sample from Blue Cavern Point was lower in all constituents except for oil and grease (2,480 ppm), total volatile substances (4.34%), organic and Kjeldahl nitrogen (both 448 ppm), and nickel (41.6 mg/kg dry weight). (SWRCB 1979).

State Mussel Watch results for metals organics from 1977 - 1994 for the west end of Santa Catalina Island are presented in Appendix E.

Subtidal Substrate

Sand and mud comprise the majority of the subtidal substrate from the outer boundary of the ASBS to within approximately 500 yards (457 m) offshore. Nearshore, the main subtidal substrates in the ASBS are boulder slopes

and sandy slopes with a few rocky reefs. There are submerged reefs located off Emerald Bay, Starlight Beach, Howland's Landing and Isthmus Cove. Offshore rock formations, which break the surface, include Whale Rock, Eagle Rock, Indian Rock, Ship Rock and Bird Rock.

In general, the nearshore subtidal area of the ASBS is rimmed with boulder slopes to a depth of 50 to 100 feet (30 m). Boulder size varies with depth. Shallow sloped areas often have a narrow band of medium-sized boulders (1 m diameter) interspersed with course sand closer to shore. Sandy substrate is rare in water shallower than 40 feet (12 m). Isthmus Cove however has sandy subtidal substrate, enclosed by rock outcropping and boulders extending to a depth of approximately 40 feet (12 m). Sediments found in some of the coves from Emerald Bay to Big Fisherman Cove contain a large percentage of calcareous debris (SWRCB 1979).

Intertidal Substrate

The intertidal area of the ASBS is not extensive. The shoreline is extremely rugged, with the main landmass rising steeply out of the ocean. Consequently, intertidal habitats are quite restricted in vertical range. The windward side of the island is exposed to wave action and, in certain places, slightly well developed intertidal areas exist (for example, at Catalina Head). However, the leeward side does not benefit from significant wave activity, and the combination of steep slopes and low wave action result in generally poor intertidal habitats.

Approximately 40 percent of the ASBS intertidal area consists of solid rock walls, and about 45 percent consists of various sized boulders. The majority of the habitats are extremely steep in profile. The remaining 15 percent of the intertidal area consists of sandy or cobbly beaches. Virtually no beaches exist from Catalina Head to the West End, with the exception of Sandy Beach. Between Catalina Head and Arrow Point, most of the intertidal habitat is occupied by boulders. Many small coves and sandy beaches occur along the northeast (leeward) coast from Arrow Point to Blue Cavern Point adjacent to WMSC, although cliffs and boulder areas predominate in this region. The only relatively good intertidal habitat near WMSC, characterized by gently sloping solid substrate, may be found only at Ship Rock, Bird Rock, and Big Fisherman Cove Point.

Marine Biological Resources of the ASBS

Generalized Marine Ecosystem Considerations

Each marine biological community is a group of plant and animal populations that live together, interact with and influence each other. Communities tend to be associated with certain habitat depth ranges which can be described as: 1) Intertidal 2) Intertidal to 30m, 3) 30 to 100 m, 4) 100 to 200 m and 5) 200 m and deeper (NCCOS 2003). Marine habitats include ocean circulation features, because habitat is not simply defined by the substrate. Seawater characteristics are analogous to the climate of terrestrial habitats and include temperature, salinity, nutrients, current speed and direction. Organisms will also be affected by the circulation induced by tidal currents. For those living in shallow water habitats very close to shore, a dominant influence is also the circulation generated by breaking waves.

Rocky reefs, rocky intertidal zones and kelp forests are habitats that support distinct biological communities. In rocky reefs and intertidal zones, the type of rock that forms the reef greatly influences the species using the habitat. For example, granitic versus sedimentary rock reefs each may support different species assemblages.

Phytoplankton, which consists of single-celled algae suspended in the water column, comprises the base of most food chains in the Southern California Bight (Dailey, et al. 1993). The next pelagic trophic levels are composed of zooplankton, consisting of small holoplankton consumers, such as copepods, and meroplankton such as the larval stages of benthic macroinvertebrates and fish. Larger invertebrates and fish consume zooplankton and each other.

Benthic macro algae and vascular plants, including kelp and surf grass respectively, are also important primary producers along the coast of the Southern California Bight, including the ASBS. Benthic invertebrates and demersal fish, which live on the seafloor, graze on benthic algae, filter plankton from the water, and prey on other invertebrates and fishes. Many benthic organisms feed entirely on dead material that accumulates on the seafloor or is suspended in the water.

Marine mammals, birds, and turtles feed on algae, invertebrates, and fishes. Over 5,000 species of benthic invertebrates, 481 fish species, 200 bird species, and 40 species of marine mammals inhabit the SCB (Dailey, et al.

1993). The high diversity is due to a mixture of northern and southern fauna and flora that occurs in the SCB, and the wide range of habitats.

ASBS Intertidal Biota

Well-developed intertidal habitats are sparse at Catalina Island. Big Fisherman Cove Point, Bird Rock and Ship Rock have the only relatively extensive rocky intertidal communities found in the general vicinity of the WMSC within the ASBS. Bird Rock and Ship Rock are offshore rocks that have broad bases and rise from below sea level up to 50 or more feet (15m) above sea level with approaching angles of approximately 45° from the vertical.

A reconnaissance survey to identify marine life forms in the ASBS was performed in 1977 and 1978 (SWRCB 1979). According to this survey the highest rocky intertidal zone is inhabited by the periwinkle (*Littorina planaxis).* In the ASBS, these individuals are usually of small size, never attaining the 10-15mm size of northern California specimens. The congeneric (*Littorina scutulata)* is much rarer than periwinkle. The rock louse (*Ligia occidentalis)* is also found here.

The limpets (*Collisella scabra* and *C. digitalis)* share high intertidal areas with the giant owl limpet (*Lottia gigantean).* The giant owl limpet is not equally distributed over all rock types on Bird Rock but is usually restricted to basalt or other smooth surfaces. The barnacles *Balanus glandula, Chthamalus fissus,* and *Tetraclita squamosa* occur within a broad vertical band in the upper intertidal zone. Below this, California mussel *(Mytilus californianus)* can be found in scattered clumps, attaining the densest populations on the exposed western end of Bird Rock. Interspersed with California mussels is the gooseneck barnacle (*Pollicipes polymerus),* again being most abundant in exposed areas of the substrate. A host of invertebrates is associated with the mussel beds, one of the more important being the predatory sea star (*Pisaster ochraceus).*

Small numbers of the aggregate anemone (*Anthopleura elegantissima)* can be found on Bird Rock. The black turban (*Tegula funebralis)* can occasionally be found, although populations are not large. The lined shore crab (*Pachygrapsus crassipes)* is also encountered. The black abalone (*Haliotis cracherodii)* was locally abundant in crevices washed by wave surge; however withering foot syndrome has had a decimating impact on the black abalone since the Reconnaissance Survey was completed.

The California mussel zone grades into a zone dominated by the southern sea palm (*Eisenia arborea)* and the surf grass (*Phyllospadix torreyi)* on the south side of Bird Rock. Elsewhere, California mussels continue into subtidal areas to approximately –5 feet (e.g. Bird Rock, north wall). *Chama pellucida,* occasionally seen in intertidal areas, is most abundant just below the California mussel zone.

A band of the feather boa kelp (*Egregia laevigata)* is commonly found fringing the intertidal zone. Other algae common to this zone include the erect coralline (*Corallina officinalis)* the red alga (*Geldium purpurascens),* and the brown algae (*Pelvetia fastigiata* and *Hesperophycus harveyanus)* (SWRCB 1979).

ASBS Subtidal Biota

Within the ASBS, substrate type and topographical features are largely responsible for the creation of distinct subtidal habitats. Habitat types include sand, sand interspersed with small boulders, vertical walls, and large and medium boulder slopes. Algae form an additional habitat type that can be utilized by fauna and epiphytic algae. For example, the giant kelp (*Macrocystis pyrifera*) growing on boulders at 20- to 60-foot (18 m) depths, creates an aquatic forest habitat for many fishes and invertebrates.

Sand Substrate Biota

Sand is the major substrate within the boundaries of the ASBS. However, most sand bottom areas occur at depths beyond the reach of scuba divers. In a submarine survey completed in 1977 at Big Fisherman's Cove, the large anomuran crab (*Paralithoides tanneri)* was found to be relatively abundant along with some scattered holothurians and rockfish.

Four categories of organisms live in the nearshore sandy substrate habitats: 1) anchored; 2) mobile; 3) infaunal; and 4) epiphytic. The large bulb or elk kelp (*Pelagphycus* sp.) is an example of the first type of inhabitant (anchored)

and is found attached to the substrate at 50- to 100-foot (30m) depths. Within the ASBS, it is known to occur at the mouth of Big Fisherman Cove, in Isthmus Cove, and at Black Point.

Mobile organisms found within the ASBS and at WMSC in sandy subtidal habitat include the extremely common detritus feeding sea cucumber (*Parastichopus parvimensis)*, the predatory sea star (*Astropecten brasiliensis)*, and the bat ray (*Myliobatis californica)*.

Some highly visible infaunal macroinvertebrates include the large tube dwelling polychaetes parchment worm (*Chaetopterus variopedatus)* and the ornate tube worm (*Diopatra ornate)*. The ornate tube worm was found near the outer edges of kelp beds and in other areas of organic debris accumulation, at depths of 60 to 90 feet (20 to 30 m). In some areas of the ASBS, the density of these worms can be as high as 500 individuals per square meter.

The tubes of these large polychaetes, which sometimes extend up to 5 cm above the sea floor, often provide substrate for small red algae and for the larger brown algae such as *Zonaria farlowii, Distopteris undulata* and *Pachydictyon coriaceum.*

The phoronoid worm (*Phoronopsis californica)*, the sea pens (*Stylatula elongate)* and *Acanthoptilum* spp., and several species of cerianthid anemones are other sessile invertebrates visible in sandy subtidal portions of the ASBS. Brachiopods, in the genus *Glottidia*, were found in sand substrate at depths of 80 feet.

There is considerable species diversity in the sandy subtidal macrofaunal community. One hundred species of polychaete worms were identified from cores taken during survey dives (SWRCB 1979). *Spiochaetopterus costarum, Lumbrineris latreilli, Owenia collaris* and *Allia* sp. were the species found in greatest abundance. Numerous polychaetes *Schistomeringos longicornis* and *Lumbrineris zonata* were found in the sands of north facing coves. The remainder of the macrofaunal organisms is primarily small bivalve mollusks and crustaceans. The clam *Phacoides approximatus* and the gammarid amphipods *Ampelisca cristata* and *Photis sp.* were most abundant (SWRCB 1979).

Vertical Rock Walls Biota

The algal community found on vertical rock walls is subjected to heavy surge and surf action at the shallower depths. Red algae such as *Laurencia spetabilis, Gelidium robustum,* and *Sciadophycus stellatus* are usually found in this habitat along with the brown sea palm, *Eisenia arborea.* The giant kelp, *Macrocystis pyrifera*, may occur on horizontal reefs but is sparse in heavy surge regions. Large, broad bladed brown algae such as *Agarum fimbriatum* and *Laminaria farlowii* predominate at deeper depths (50 to 80 feet).

Subtidal faunal assemblages can be grouped into two general associations according to depth. The *Chama pellucida – Pisaster giganteus* assemblage occurs between 15 and 50 feet (15m) depths, the lower boundary being indistinct as *Chama* abundance gradually becomes less with increasing depth. The sea star *Pisaster giganteus* is the bivalve *Chama's* primary predator and reaches its maximum density within this zone (approximately $0.1/m^2$). A host of invertebrates is found associated with *Chama* beds, including the strawberry anemone *Corynactis californica*, the corals *Coenocyathus bowersi* and *Paracyathus stearnsi*, the tubed polychaete *Spirobranchus spinosus*, the rock scallop *Hinnites multirugosus*, the gastropods *Megathura crenulata* and *Serpulorbis squamigerus*, the sea urchins *Centrostephanus coronatus* and *Strongylocentrotus franciscanus*, the sea cucumbers *Parastichopus parvimensis* and *Cucumaria salma*, and the tunicate *Tridídemnum opacum.*

The second major grouping found between 50 and 80 feet (24m) depths includes the two common gorgonians *Muricea fruiticosa* and *M. californica.* The gorgonian *Lophogorgia chilensis* is common at Bird Rock. Many sessile tunicate and sponge species grow on or near the base of these gorgonians, perhaps gaining some protection thereby. These include the sponges *Haliclona permollis* and *Vergongia aurea*, and the tunicate *Tridídemnum opacum.* The corals *Coenocyathus bowersi, Paracyathus stearnsi*, and *Astrangia lajollaensis* can be found in the region also. Much rock surface is covered by encrusting bryozoans such as *Rhynchozoon rostratum* and *Parasmittina californica* (SWRCB 1979).

Subtidal Boulder Habitat Biota

Boulder habitats are much more three-dimensional than either soft substrates or solid rock walls. In addition to surface substrate, there is much under-rock area utilized by a whole community of organisms. Boulders in the ASBS range between 3 and 33feet (1-10 m) in diameter, with sand often interspersed between the smaller ones. In fact, the majority of subtidal reefs are of this type (SWRCB 1979).

Shallow boulder reefs (10 to 15 foot depths) support several species of common, large algae including *Eisenia arborea, Plocamium sp., Pterocladia capillacea*, and *Cystoseira neglecta.* The marine flowering plant surfgrass, *Phyllospadix torreyi*, is found on reefs exposed to heavy wave action. In slightly deeper water (20- to 40-foot depths), *M. pyrifera* becomes abundant. Extensive kelp forests have a reduced understory algal community. Otherwise, *Cystoseira neglecta*, *Dictyota flabellate*, and *Pachydictyon coriaceum* are locally common. The red algae *Gelidium nudifrons, G. purpurascens,* and *G. robustum* are also locally abundant. *Plocamium coccineum* and *Sargassum muticum* occur extensively in some boulder areas seasonally. Deeper boulder reefs (greater than 50-foot depths) support primarily *Laminaria farlowii, Agarum fimbriatum,* and occasionally *Cystoseira neglecta* and *Eisenia arborea* (SWRCB 1979).

The fauna of the boulder reefs can be conveniently grouped into three categories: 1) those sessile on rock surfaces; 2) those mobile over the rock surface; and 3) those dwelling under rocks. One major difference between boulder reefs and solid rock wall habitats is the reduced abundance of the attached bivalve *Chama pellucida* on the boulder reefs. Concomitant with this reduction is a lower density of the predator *Pisaster giganteus,* although it is still common here. Other large mobile predators are a common component of the subtidal boulder community and include the octopus *Octopus bimaculatus*; the lobster *Panulirus interruptus*; and the whelk *Kelletia kelletii.* The large keyhole limpet, *Megathura crenulata*, is a grazer commonly found on boulder reefs. Boulder areas often have large populations of the sea urchin *Strongylocentrotus franciscanus* and *Centrostephanus coronatus* (the latter being restricted to holes during daylight hours). In addition to urchin and limpet grazers, pink and green abalone *Haliotis corrugata* and *H. fulgens* are other common herbivores (although their populations may also have suffered from withering foot syndrome since the reconnaissance survey was conducted).

Attached fauna include the gorgonians *Muricea californica* and *M. fruiticosa* in deeper water. The sponges *Tethya aurantia* and *Vergonia aurea* are locally common. Abundant bryozoans include *Bugula neritina, Diaperoecia californica, Hippodiplosia inscuplta* and *Phidolopora pacifica.* The tunicates *Eutherdmania claviformis, Pyura haustor,* and *Tridídemnum opacum* are locally abundant.

The encrusting coralline algae, *Lithothamnium giganteum* is common throughout the ASBS from 0 to 100-feet (30m) depths. Shallow-water rock substrate is often covered primarily by low-growing algae, especially in gently sloping boulder reef areas.

Under-rock habitats support a diverse fauna. Attached to the undersurfaces of rocks are several sponges, including *Hymanamphiastra cyanocrypta.* The polychaete *Chaetopterus variopedatus* is often found there, as is the terebellid polychaete *Neoamphitrite robusta.* Several brittle stars, including *Ophioderma panamensis* and *Ophiothrix spiculata,* utilize this habitat. *Strongylocentrotus purpuratus* is also found there, as the juveniles of both other urchin species. The predatory sea star, *Astrometis sertulifera*, is most often found under boulders (SWRCB 1979).

Fish Communities

Many diverse habitats are utilized by fishes in the shallow waters off Santa Catalina Island. Surfgrass beds, sandy/shelly debris bottoms, low algae/rocky rubble, and giant kelp beds are the major inshore habitats present, each with a distinct fish species composition.

The surfgrass beds off Bird Rock, 0.2 NM northerly of Big Fisherman Cove, are a haven for small benthic fishes. Within these beds, spotted kelpfish (*Gibbonsia elegans)*, pipefish (*Syngnathus* spp.), and juvenile California scorpionfish (*Scorpaena guttata),* are the dominant species. Reef finspot (*Paraclinus integripinnis)*, mussel blenny (*Hypsoblennius jenkinsi)*, cabezon (*Scorpaenichthys marmoratus),* and coralline sculpin (*Artedius corallinus)* are also present but in fewer numbers. Just outside the deeper margins of these beds, opaleye (*Girella nigricans),* rock wrasse *(Halichoeres semicinctus)*, kelp bass (*Paralabrax clathratus)*, sheephead (*Pimelometopon pulchrum),* and señorita (*Oxyjulis californica)* are common, while kelp perch (*Barchyistius frenatus),* shiner (*Cymatogaster aggregate),* halfmoon (*Medialuna californiensis),* and black surfperch (*Embiotoca jacksoni)* occasionally frequent

the area. Topsmelt (*Atherinops affinis)* and occasionally blacksmith (*Chromis punctipinnis)* are abundant in the upper water column.

In shallow sandy/shelly debris bottom habitats with seasonal fluctuations of small benthic algae, rock wrasse and sheephead are the most abundant fish, followed by small to medium-sized kelp bass. Present in fewer numbers are the C-O turbot (*Pleuronichthys coenosus)*, the lavender sculpin (*Leicottus hirundo)*, and the bat ray (*Myliobatis californica).* Blackeye gobies (*Coryphopterus nicholsii)* occur in areas with small rocks or other structures for shelter. The upper water column is often dominated by large schools of blacksmith and topsmelt.

The low algae/rocky rubble habitat lying inshore of the giant kelp beds is dominated by large schools of opaleye. Schools of juvenile opaleye are more common in the intertidal or shallow subtidal zones, whereas adults are found in deeper waters and often range into other habitats. Rock wrasse, kelp bass, sheephead and spotted kelpfish are present in fewer numbers, while black surfperch, señorita, kelp perch, California scorpionfish, the giant kelpfish (*Heterostichus rostratus),* and juvenile garibaldi (*Hypsypops rubicundus)* are observed here frequently. The wooly sculpin (*Clinocottus analis)* is only observed in the intertidal and very shallow subtidal regions. During certain times of the day, large schools of blacksmith and topsmelt are in the upper water column. Schools of reproductively active shiner perch are common during the fall.

The kelp beds are the most structurally complex of the ASBS subtidal habitats, and the diversity of fishes there is proportionately greater. These beds are divided vertically into a benthic zone and a middle-to-canopy zone. The most abundant benthic fishes are sheephead, rock wrasse, kelp bass, señorita, garibaldi, black perch, California scorpionfish, opaleye, kelp perch and pile perch (*Damalichtys vaca).* Among the smaller benthic fishes, blue-banded goby (*Lythrypnus dalli)*, Blackeye goby, island kelpfish (*Alloclinus holderi),* and spotted kelpfish are the most abundant, with zebra goby (*Lythrypnus zebra)* common in some areas. Benthic fish seen infrequently here include giant kelpfish, kelp rockfish (*Sebastes atrovirens),* treefish (*Sebastes serriceps),* California moray (*Gymnothorax mordax),* horn shark (*Heterodontus francisci),* and swell shark (*Cephaloscyllium ventriosum).*

In the middle-to-canopy zone, señorita, kelp perch and blacksmith are dominant. Kelp bass and halfmoons occur in fewer numbers, followed by giant kelp fish, kelp rockfish, and in some areas, juvenile olive rockfish (*Sebastes serranoides).* First-year juvenile kelp bass, señorita, giant kelp fish, kelp rockfish, and treefish are most prevalent in the middle-to-canopy zone.

At Bird Rock and Ship Rock, convict fish (*Oxylebius pictus)* are found along with other kelp bed fishes. Angel sharks (*Squatina californica)* are found in the deep sandy bottom areas near these rocks. Pelagic fish, such as yellowtail (*Seriola dorsalis),* jack mackerel (*Trachurus symmetricus),* California barracuda (*Sphyraena argentea),* and common mola (*Mola mola)*, are occasionally abundant in the upper water column surrounding Bird Rock.

The scythe-marked butterfly fish (*Chaetodon falcifer)*, a southern species, is known to inhabit the ASBS.

There are diurnal differences in fish distribution in the ASBS. For example, at night sheephead, garibaldi, blacksmith, opaleye and kelp bass take shelter. At night kelp rockfish are active in the kelp forest, California morays forage in rocky areas, and sargo (*Anisotremus Davidsoni)* are active over shell debris or sand bottoms. (SWRCB 1979).

A complete listing of marine species known to occur in the ASBS may be found in the appendices of the SWRCB April 1979 Reconnaissance Survey Report.

Market Squid

Market squid (*Loligo opalescens)* are an important seasonal member of the community in the ASBS from December through March. Market squid aggregate in nearshore waters to spawn during the winter season.

White Abalone

White abalone (*Haliotus sorenseni*, Federally Endangered) was once common in the ASBS at depths of 60-100 feet (SWRCB 1979). White abalone may still occur within the Marine Reserve and ASBS.

Biota of Big Fisherman Cove

The above description of marine life in the ASBS is not specific to Big Fisherman Cove but is instead a description of the biota generally found in the ASBS by habitat type. Specific species recorded during surveys in Big Fisherman Cove are presented in Appendices B, C and D. These species records are limited to only certain survey dates and times, and do not represent exhaustive lists of all species inhabiting Big Fisherman Cove. Appendix B includes only algal species, and does not include marine vascular plants. It must be noted that the vascular plant surf grass (*Phyllospadix sp.*), an important community member, was identified in the summer of 1999 at Big Fisherman Cove by the author. An important fish species found in Big Fisherman Cove, and specifically the receiving water near the outfall, are leopard sharks (*Triakis semifasciata).* Leopard sharks are not listed in the survey data presented in Appendix D but are abundant in Big Fisherman Cove during the summer. As another example flyingfish (*Cypselurus californicus)* have been observed by the author at night in Big Fisherman Cove, but this species is not found in the survey data in Appendix D.

Threatened, Endangered and Other Wildlife

Many of the following marine reptile, bird and mammal species are federally and/or state-listed as endangered (FE, SE), threatened (FT, ST), or species of special concern (SSC).

Marine Reptiles

Marine sea turtles occur in California waters, and have been observed in Santa Catalina Island waters. Four species of federally protected sea turtles may be found in Santa Catalina Island waters: green (*Chelonia mydas,* FE), leatherback (*Dermochelys coriacea* FE), loggerhead (*Caretta caretta* FE), and olive ridley sea turtles (*Lepidochelys olivacea* FE). These marine turtles are circum-global in distribution but breeding colonies have not been observed in California (Coastal Conservancy 2005).

Marine Birds

Seabirds found at Santa Catalina Island include Xantu's murrelet (*Synthliboramphus hypoleucus,* ST), California gull (*Larus californicus,* SSC), Heermann's gull *(Larus heermanni)*, western gull *(Larus occidentalis*), Royal tern (*Sterna maxima*), California brown pelican (*Pelecanus occidentalis*, FE, SE), ashy storm-petrel (*Oceanodroma homochroa,* SSC), Brandt's cormorant (*Phalacrocorax penicillatus*), and double-crested cormorant (*Phalacrocorax auritus,* SSC). (SWRCB 1979, PRBO 2005.) The California least tern (*Sterna antillarum*, FE, SE) and elegant tern (*Thalasseus elegans*, SSC) forage and nest along the California coast and may possibly frequent the project area.

Only western gulls were documented as nesting on the island in 1979. However, Brandt's cormorant historically bred on Ship and Bird Rocks (SWRCB 1979). In their 2005 California Current Marine Bird Conservation Plan, the Point Reyes Bird Observatory stated that breeding individuals of ashy storm-petrels, western gulls, and possibly Xantu's murrelets were observed on Santa Catalina Island (PRBO 2005).

The bald eagle *(Haliaeetus leucocephalus*, FT, SE*)* is also present on Santa Catalina Island. They were listed as an endangered species in 1967 when their population drastically diminished from exposure to the chemical pesticide DDT. Recovery efforts were made to repopulate this species and, after successful attempts, they were downgraded to threatened in 1995. As of July 6, 1999, they were recommended for delisting by the United States Fish and Wildlife Services due to the increase in numbers found to exist. (DFG 2001)

Marine Mammals

All marine mammals are protected under federal law (Marine Mammal Protection Act). Six species of threatened or endangered marine mammals occur within the Southern California Bight. Three are cetaceans: blue whales (*Balaenoptera musculus,* FE), sperm whales (*Physeter catodon,* FE), and humpback whales (*Megaptera novaeangliae,* FE). The blue whale feeds and migrates off the coast and may transiently venture into shallow (<100 ft) water. Sperm whales occur year-round offshore and may transiently venture into shallower waters. Humpback whales occur year-round and migrate off of the coast, and may venture into shallower water. (DFG 2001).

Two of the threatened listed species are pinnipeds: Steller sea lions (*Eumatopias jubatus,* FT) and Guadalupe fur seals (*Arctocephalus townsendi*, FT, ST), which migrate along the coast and offshore. The most common pinnipeds

found in the ASBS are the California sea lion (*Zalophus californianus*) and the harbor seal (*Phoca vitulina*). (SWRCB 1979).

The southern sea otter (*Enhydra lutris neresis*, FT) was historically abundant in southern California waters but is no longer common there. While most of the sea otters are now found along the central California coast, a population was trans-located to San Nicolas Island, west of Santa Catalina Island.

The gray whale (*Eschrichtius robustus)* also appears in southern California. This species was formerly on the endangered species list, but was deemed recovered and delisted in 1994. They migrate yearly to the entire west coast of the United States, including the Santa Catalina Island area. Also present in this region are the bottlenose dolphin *(Tursiops truncates)*, common dolphin *(Delphinus delphis)*, and Pacific white-sided dolphin *(Lagenorhynchus obliquidens)*. These dolphin species are not on the Endangered Species List, yet they are protected through the Marine Mammal Protection Act. These dolphin species occur year-round in shallow waters among the Channel Islands and surrounding areas at shallow depths (less than approximately 180 m). (DFG 2001).

Fisheries, Marine Protected Areas and Prohibitions on the Take of Marine Life

The Northwest Santa Catalina Island ASBS encompasses, the western portion of the Catalina Marine Science Center State Marine Reserve, including Big Fisherman Cove. Fishing is not allowed in the Catalina Marine Science Center State Marine Reserve. All commercial and recreational take of marine life is prohibited in the Reserve (California Department of Fish and Game, Marine Region 2005).

Commercial and sport fishing occur in the waters off Catalina Island, including the ASBS outside of the Marine Reserve. Both activities are regulated and managed by either the California Department of Fish and Game, or the National Marine Fisheries. Important commercial fisheries include market squid, Pacific mackerel (*Scomber japonicus)*, jack mackerel *(Trachurus symmetricus)*, Pacific bonito *(Sarda chiliensis)*, northern anchovy *(Engraulis mordax)* and Pacific sardine *(Sardinops Sagax)*. The commercial catch of spiny lobster *(Panulirus interruptus)* is prohibited in the vicinity of Big Fisherman and Isthmus Coves (SWRCB 1979). Sport catch is via hook and line as well as scuba diving. Important sport fisheries include finfish such as halfmoon, California halibut *(Paralichthys californicus)*, scorpionfish, rockfish, California barracuda *(Sphyraena argentea)*, bonito, kelp bass, sheephead, and spiny lobster (SWRCB 1979). Abalone, once an important fishery, is now closed entirely in southern California.

Land Use

Between 1965 and 1970, the Santa Catalina Island Company deeded a total of 13.5 acres (5.5 ha) of land in Big Fisherman Cove to the University of Southern California, to support the building and later expansion of the Catalina Marine Science Center (now WMSC). Another 40 acres in the Big Fisherman Cove area is under long-term lease to USC by the Santa Catalina Island Company.

Except for the WMSC, which maintains a more-or-less seasonal enrollment of 50-100 people (Michaels 2005), the population of Catalina varies drastically with the tourist seasons. The "summer" runs roughly from Memorial Day in May through Labor Day in September. During that time, the City of Avalon, as well as other recreation areas and summer camps on the island are generally filled to capacity. During the remaining "winter" months, the population drops to a fairly constant level of permanent residents while other areas retain a minimum number of more-or-less permanent, maintenance-type personnel (Los Angeles County, Department of Regional Planning. 1983. Local Coastal Plan, Santa Catalina Island).

Scientific Study Uses

Infrastructure

In October 1995, the University of Southern California expanded the scope of WMSC at Big Fisherman Cove to include environmental sciences. The lab was renovated in 1996 and the dorms in 1997.

WMSC consists of a 30,000 square-foot laboratory building, a dormitory housing and cafeteria complex, a cluster of cottages, a hyperbaric chamber, an administration building, and a large waterfront staging area complete with dock, pier, helipad, and diving lockers. The facilities are used by USC students and scientists and for full-semester course programs in the Biology Department and Environmental Studies Program of the USC College of Letters, Arts and

Sciences. USC faculty, staff and students also conduct a wide range of research, education and outreach programs for broader audiences, form k-12 to adult learners. These facilities are also used by non-USC scientists, students and other education and outreach visitors from many other institutions. Programs range from day trips to full semester classes run by the California State University and other universities. Currently about half of the use of the facility is by non-USC participants. This facility also provides critical emergency care facilities for a remote region (Michaels 2005).

Dormitory housing and cafeteria facilities are located near the main laboratory building. Adjoining the dormitory-apartment complex is the cafeteria, which provides food service for up to 150 people. There are also outdoor barbecue and picnic facilities. New housing was added in 2002 and the facility has Los Angeles County Planning Commission approval for additional housing, a new educational building, and rebuilding of the waterfront facilities (Michaels 2005).

Laboratory Facilities

In October, 1995 USC expanded the scope of their Marine Science Center to include environmental sciences. Now Named the Philip K. Wrigley Marine Science Center (WMSC), it is the centerpiece of the USC Wrigley Institute for Environmental Studies. WMSC is a facility for marine, terrestrial and environmental science and education. The University of Southern California maintains a 30,000 square-foot marine laboratory that was renovated in the summer of 1996 and is used by faculty and students from USC and other regional universities. The laboratory is available for a broad range of research and educational activities (Michaels, 2005). The lab includes two teaching laboratories and six research laboratories, each with freshwater sinks and seawater aquaria. The facility also contains a library, a stockroom equipped with basic glassware, chemicals, small lab equipment, and a freezer storage space. An onsite machine shop stocked with tools and large equipment provides for repairs or fabrication.

Seawater System

Seawater flows into laboratory aquaria after being pumped from the sub-marine intake. The intake structure is located at Blue Cavern Point, immediately outside the ASBS. It consists of two 6-inch poly-vinyl chloride pipes submerged 15 feet below the water surface. This is a continuous-flow system, designed with a current pump rate of 180,000 GPD (Michaels 2004) available to the laboratory and to large holding tanks and experimental aquaria on the waterfront. The water is untreated except for a macro-screen located on the intake pipes designed to prevent the intake of kelp. This is a once-through system (no recirculation). Seawater is pumped into a 15,000-gallon holding tank on the hill above the facility and is then gravity fed to the laboratory and waterfront facilities. The waterfront holding tank(s) may be used to store fish, shellfish, or algae prior to removal to the laboratory for experimentation. Any sediment picked up at the intakes settles out in the 15,000-gallon storage tank on the hill (Michaels 2005). The sediment may eventually be discharged to Big Fisherman Cove during cleanout operations.

Waterfront Facilities

The waterfront facilities consist of a dock and pier, helipad, dive locker and diver staging area, and the USC Catalina Hyperbaric Chamber. Water depth beneath the two 20-by-60-foot floating dock is 24-40 feet at MLLW. The dock is attached to a 70- by 20-foot standing pier supplied with 110V electrical outlets, a freshwater spigot, and a 5-ton capacity jib crane.

The Center's fleet of small boats is available to students and researchers. The Center maintains 25 moorings for its fleet and private transient boats up to 70 feet in length. Subtidal scientific experiments are frequently staged in the same area as the moorings, often taking advantage of the mooring weights or simply using sand anchors (Michaels 2005).

As mentioned above WMSC has Los Angeles County Planning Commission approval for rebuilding of the waterfront facilities. Per the requirements of Section III.E.2 of the Ocean Plan WMSC must notify the Regional Water Board within 180 days prior to any construction activity that could result in any discharge or habitat modification in the ASBS. Furthermore, WMSC must receive approval and appropriate conditions from the Regional Water Board prior to performing any significant modification, re-building or renovation of the water front facilities, including the pier and dock.

In the vicinity of the waterfront is a helipad licensed by the State of California for day or night helicopter landings. It serves the Catalina Hyperbaric Chamber and is used during evacuation for other medical emergencies. It may also

be used for routine transportation to the mainland by special arrangement with independent helicopter services. Medical and work trailers supporting the lab, chamber, and habitat programs surround the hangar. Two dive lockers provide locked storage for gear, showers and dressing rooms for up to 80 divers, and an air compressor fills standard steel tanks to 2300 psi. A diver staging area is located outside the diving lockers, and includes freshwater tubs for rinsing gear and equipment (Michaels 2005).

Existing Discharges

The Southern California Coastal Water Research Project (SCCWRP), under contract to the State Water Board, conducted a survey of all discharges into State Water Quality Protection Areas. SCCWRP's (2003) final report identified 58 drainages into the Northwest Santa Catalina Island ASBS, consisting of 38 discharges, 17 outlets (natural ephemeral streams), 1 intake line, and 2 potential sources that were not completely identified.

SCCWRP identified two discharges at Wrigley Marine Science Center and one seawater intake pipe for the laboratory aquaria. (It should be noted that the SCCWRP survey of the area of WMSC was conducted from a vessel and not from shore, and therefore had limitations.) Waste seawater drained from the laboratory and the holding tanks at the waterfront. The landscape's main natural drainage feature passes through a 60-inch metal outfall pipe (circa 1965) passing under the road and outfalls, and draining storm water runoff directly into the ASBS waters. Storm water runoff also drained from the laboratory and dormitory areas, co-mingling with return seawater effluent. At the time of the survey a portion of the seawater return from the holding tanks at the waterfront area, and the freshwater rinsing of dive equipment, flowed from a small bluff into Big Fisherman Cove adjacent to the facility's dock. Occasionally flows from tank cleaning operations and dive equipment rinsing eroded the bluff.

SCCWRP also identified discharges in the Two Harbors area, west of the WMSC. These drainages consisted mainly of small earthen channels and pipes that appeared to be used for storm water runoff (SCCWRP 2003). Storm water discharges from Two Harbors are not regulated under a Storm Water NPDES Permit. In addition, Two Harbors has marina facilities (mooring field and pier facilities) that were included in the survey as a nonpoint source. Two Harbors is served by a sewage treatment plant, the effluent from which is disposed of via spraying on a hillside (SWRCB 1979). See Figure 1 for the locations of discharges and other features in the general vicinity of Isthmus Cove (Two Harbors) and Big Fisherman Cove. See Figure 2 for the locations of discharges and other features at Big Fisherman Cove.

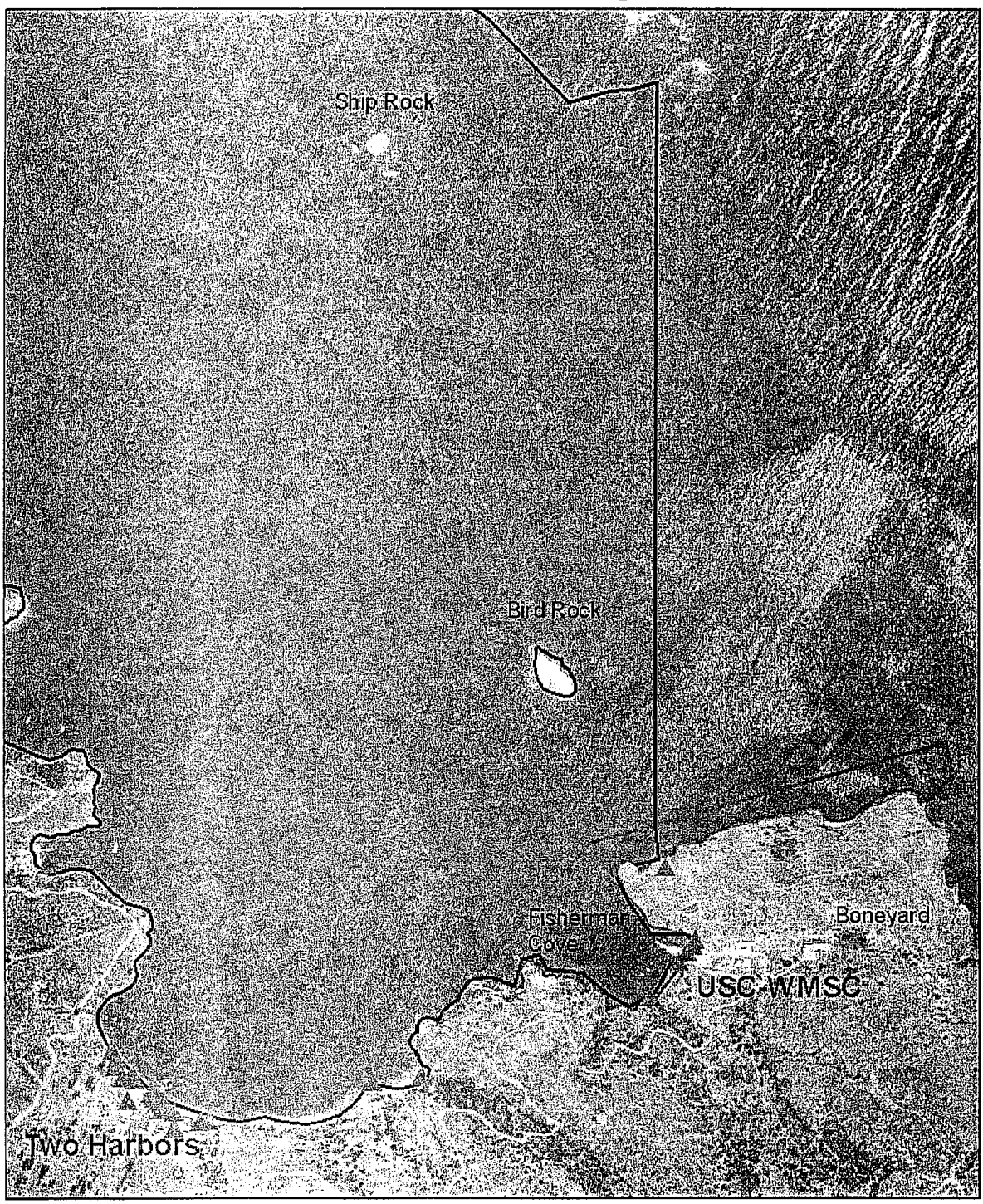
WMSC Waste Seawater Discharge

As mentioned above in the discussion regarding laboratory infrastructure WMSC operates a flow-through seawater system designed to supply the laboratory and waterfront with seawater for purposes of keeping marine animals and plants alive. The seawater is not heated, cooled, or filtered, being used strictly for maintenance of living organisms. All of the once-through seawater used in various parts of the facility are brought together and co-mingled at the waterfront and discharged to the north side of Big Fisherman Cove. The total flow during normal operations is about 180,000 GPD. In addition, as mentioned above, the discharge is covered under NPDES Permit (CA 0056661) issued by the Los Angeles Regional Water Board, re-issued most recently on October 12, 2000, and expiring on November 10, 2005. This discharge has never been issued an exception by the State Water Board and thus does not currently comply with the California Ocean Plan. However, the WMSC has committed to not discharging any chemicals, including chlorine bleach. Furthermore, since the system has no filtration, there will be no need to discharge filter backwash. Monitoring results for the seawater discharge are detailed in the Water Quality Section.

WMSC Sewage Treatment Plant

The wastewater treatment plant for Wrigley Marine Science Center (WMSC) went into operation in late 1967. Sewage treatment consists of an activated sludge digestion process, with extended aeration and provisions for chlorination. The holding pond has a ten-day capacity (per 1979 flows) and the effluent is ultimately sprayed onto a hillside in a fenced area. Capacity of the system is 15,000 GPD. The plant is owned by USC, operated and monitored by WMSC staff.

Isthmus Cove Area Figure 1



Seawater Intake

Discharges and outlets

ASBS

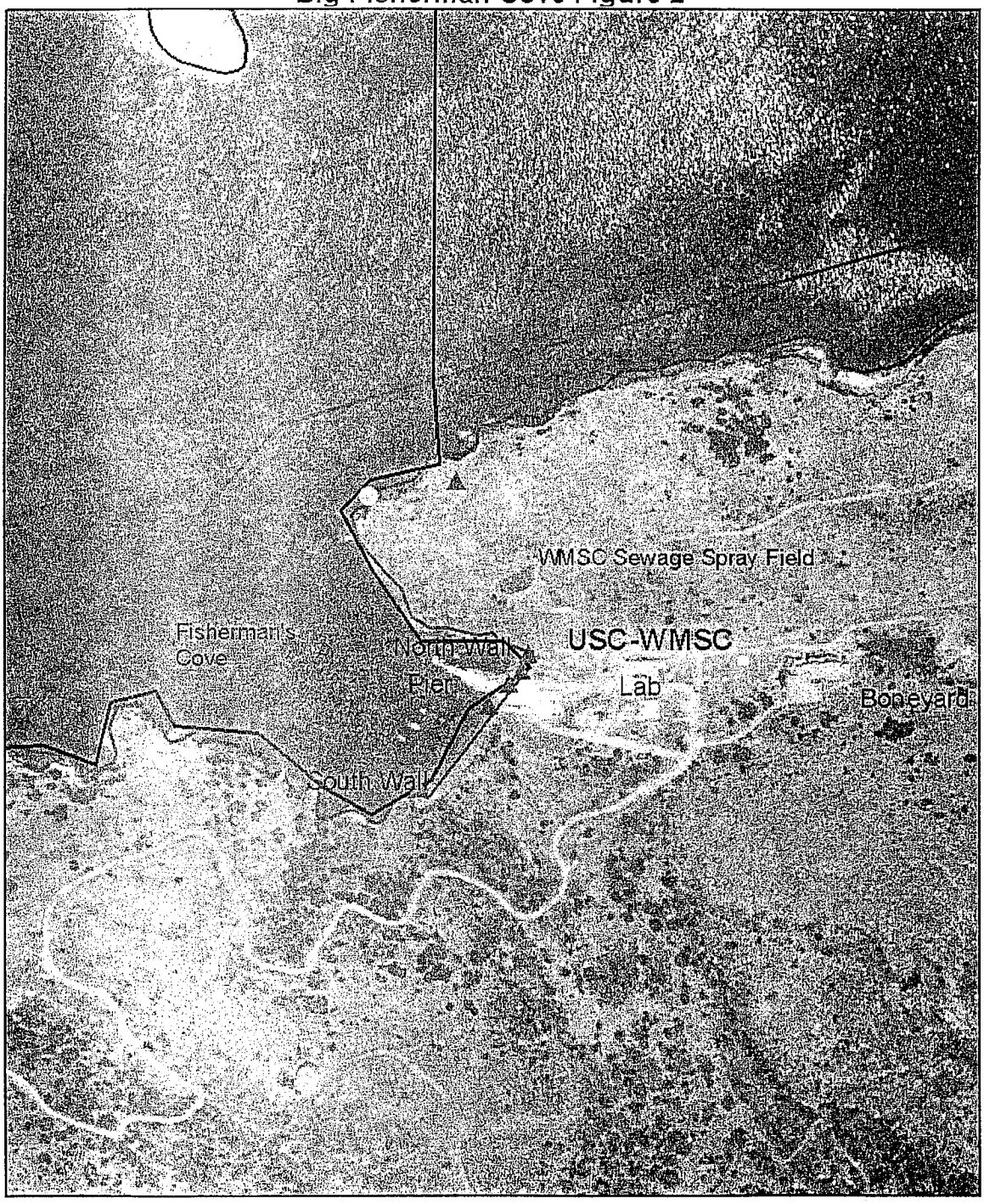
Catalina Marine Science Center Marine Life Refuge

0 0.125 0.25 0.5 Miles

Data Source: SCCRWP/SWRCB dishcarge survey 2000
Map Created October 19, 2005 State Water Resources Control Board

Water Boards

Big Fisherman Cove Figure 2



Seawater Intake

Discharges and outlets

ASBS

Catalina Marine Science Center Marine Life Refuge

0 45 90 180 Meters

Water Boards

Data Source: SCCRWP/SWRCB dishcarge survey 2000
Map Created October 19, 2005 State Water Resources Control Board

Storm runoff from this land disposal spray field may possibly enter the ASBS via ocean currents during large precipitation events.

In June 1966, the County of Los Angeles Health Department set criteria for the WMSC wastewater treatment plant, including requirements that only well-stabilized and disinfected effluent will be used for spray irrigation, that the effluent shall at all times be confined to property under the control of the discharger, that the plant, pond and spray area be fenced to exclude unauthorized persons, and that suitable warning signs will be provided on the fence.

Waste Discharge Requirements (WDR) were originally issued by the Los Angeles Regional Water Quality Control Board in 1966. The plant and discharge currently operate under WDR File No. 66-069, Order No. 94-114, CI No. 5215, most recently reissued in October 1994. The plant is allowed to discharge treated and disinfected (chlorinated) wastewater to land via a spray field. According to the WDR, the wastewater treatment plant effluent is limited to treated domestic and commercial wastewater, prohibiting all other discharge such as water softener regeneration brines, raw sewage, partially dried waste sludge or radioactivity. Wastewater effluent must also meet specific water quality criteria such as pH, total dissolved solids, sulfate, chloride, boron, oil & grease, suspended solids, biochemical oxygen demand and coliform bacteria prior to discharge by irrigation upon the spray field. Total dissolved solids and chloride levels are set above the Basin Plan water quality objectives, reflecting the high concentrations of the constituents in the supply water and the very limited groundwater resources underlying the area. Irrigated effluent must be controlled for both the rate and volume at which it is applied to prevent excess soil moisture conditions and the potential for runoff, and at a distance of 150 feet from any water well or mineral spring.

The Regional Board WDR Monitoring and Reporting Program requires sampling and analyzing the treated wastewater for a variety of constituents. All analyses shall be conducted at a State Department of Health Services approved facility. The quarterly monitoring reports shall contain an average and maximum daily waste flow for each month of the quarter; the estimated average population served during each month of the reporting period and the approximate acreage irrigated by the treated wastewater; a statement relative to compliance with discharge specifications during the reporting period; and results of at least weekly observations in the disposal area for any overflow or surfacing of waste.

II. Environmental Impacts

The environmental factors checked below could be potentially affected by this project. See the checklist on the following pages for more details.

☐	Land Use and Planning	☐	Transportation/Circulation	☐	Public Services
☐	Population and Housing	☑	Biological Resources	☐	Utilities and Service Systems
☐	Geological Problems /Soils	☐	Energy and Mineral Resources	☐	Aesthetics
☑	Hydrology/Water Quality	☐	Hazards	☐	Cultural Resources
☐	Air Quality	☐	Noise	☐	Recreation
☐	Agriculture Resources	☐	Mandatory Findings of Significance		

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. GEOLOGY and SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
i) Rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines & Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☑
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☑
d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑
2. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☑
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☑
d) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☑
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3. HYDROLOGY and WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☑	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (*e.g.*, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site, including through alteration of the course of a stream or river, or substantially increase the rate or volume of surface runoff in a manner that would:				
i) result in flooding on- or off-site	☐	☐	☐	☑
ii) create or contribute runoff water that would exceed the capacity of existing or planned stormwater discharge	☐	☐	☐	☑
iii) provide substantial additional sources of polluted runoff	☐	☐	☐	☑
iv) result in substantial erosion or siltation on-or off-site?	☐	☐	☐	☑
d) Otherwise substantially degrade water quality?	☐	☑	☐	☐
e) Place housing or other structures which would impede or re-direct flood flows within a 100-yr. flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
f) Expose people or structures to a significant risk of loss, injury, or death involving flooding:				
i) as a result of the failure of a dam or levee?	☐	☐	☐	☑
ii) from inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑
g) Would the change in the water volume and/or the pattern of seasonal flows in the affected watercourse result in:				
i) a significant cumulative reduction in the water supply downstream of the diversion?	☐	☐	☐	☑
ii) a significant reduction in water supply, either on an annual or seasonal basis, to senior water right holders downstream of the diversion?	☐	☐	☐	☑
iii) a significant reduction in the available aquatic habitat or riparian habitat for native species of plants and animals?	☐	☐	☐	☑

iv) a significant change in seasonal water temperatures due to changes in the patterns of water flow in the stream?	☐	☐	☐	☑
v) a substantial increase or threat from invasive, non-native plants and wildlife	☐	☑	☐	☐
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☑

HYDROLOGY and WATER QUALITY

Storm Water and Non-Storm Water Runoff

At the time of the SCCWRP survey and initial review by State and Regional Water Board staff concerning the ASBS, storm water runoff (and in some cases non-storm water runoff) was co-mingled with the waste seawater prior to discharge. Major improvements have been made in terms of segregating waste streams, replacement of road materials (to reduce storm water pollutants) and in routing runoff into vegetated swales. The WMSC staff is commended for the work performed in advance of an exception.

The public touch tank area on the east side of the main lab building had originally been designed with seawater drains, which discharged into a concrete swale on the north side of the building. This swale continued down the hill parallel to the road and the surface flow discharged into the ocean near the seawater tanks and other effluent discharges on the waterfront. When it rained, this swale also collected storm water runoff and the two fluids co-mingled. The touch tank drains have since been re-routed and now connect through a four-inch PVC pipe to the existing seawater drainage system. Storm water runoff through the concrete swale is no longer co-mingled with the waste seawater.

In the loading dock area of the main lab building, (on the west side), there is a vent for the seawater drainage system from the lab building. The laboratory's outdoor aquaculture tanks are also located in this area and drain to that same portion of the waste seawater system. Originally this vent also collected runoff from parts of the loading dock, where among other things vehicle maintenance is performed, and the two waste streams co-mingled during storm events. USC WMSC has now segregated (as of February 2005) the storm water runoff from the loading dock and the waste seawater effluent into separate waste streams (Michaels 2005).

The majority of dry weather flows and wet weather flows during small precipitation events will likely be infiltrated in vegetated swales. Storm water runoff will still occur from the water front (dive locker area included), from a small portion of the laboratory building area, and from the main storm water culvert that drains a watershed area with abandoned silver mines, and a non-paved storage area, where old lab and marine equipment and construction wastes have been stored. Although a great deal of progress has already been made, storm water runoff may still contain constituents that are toxic to marine life as shown in Table 1.

The possibility exists that contamination of the ASBS may result due to storm water runoff from the sewage treatment spray field. Additional testing will be required to ensure that runoff from the spray field does not result in any contamination in the ASBS.

WMSC has not prepared and submitted a Storm Water Management Plan (SWMP) to the Regional Water Board that covers those drainage facilities that drain to the ASBS. A SWMP should be developed to identify pollutant sources, develop Best Management Practices (BMPs), and provide measurable goals to reduce the discharge of identified pollutants into the ASBS. The SWMP should include an implementation schedule for specific BMPs (e.g., maintenance area cleanup, spill prevention and control, elimination of non-storm flows, storm drain inspection/maintenance and for addressing storm water pollutant sources).

Metals

Table 1 includes the analytical results for Table B metals (marine aquatic life) for storm water and reference (intake) samples collected in 2004.

Table 1. Analysis of Intake, Seawater and Storm Water Effluents, and Receiving Water, November 2004.

Analyte µg/L	Ocean Plan 6 month median	Intake seawater	Big Fisher-man Cove	Runoff from Lab	Main Storm Drain	Dive Locker Runoff	Detection limit
Arsenic	8	0.998	0.949	4.53	1.31	15.1	**0.015**
Cadmium	1	0.039	0.038	0.23	0.216	0.382	**0.01**
Copper	3	0.267	1.13	34.6	11.3	64.9	**0.01**
Lead	2	0.05	0.044	3.34	4.24	14.9	**0.01**
Nickel	5	0.019	0.275	11.4	11.8	41.8	**0.01**
Selenium	15	ND	ND	0.073	ND	ND	**0.015**
Silver	0.7	ND	ND	ND	0.287	0.18	**0.01**
Zinc	20	1.32	2.5	46.8	166.0	387.0	**0.01**

Non-detected constituents are listed as ND. (CRG Laboratories 2004).

Results for the dive locker storm runoff exceed California Ocean Plan six month median water quality objectives for arsenic, copper, lead, nickel and zinc.

The main storm drain exceeds the California Ocean Plan six month median water quality objectives for copper, lead, nickel, and zinc. The drainage area for this discharge includes a combination of natural watershed, abandoned silver mines from the nineteenth century, a storage area where old lab and marine equipment and construction wastes have been stored, and a long stretch of 60" pipe (possibly in poor repair) that carries runoff below the laboratory and other facilities.

Lab storm water drainage exceeds California Ocean Plan six month median water quality objectives for copper, lead, nickel, and zinc. In the loading dock area of the main lab building, (on the west side), there is a vent for the seawater drainage system from the lab building. At the time of the sampling in November 2004 this vent also collected runoff from parts of the loading dock, and the two waste streams co-mingled during storm events. USC WMSC has now segregated the two streams (Michaels, 2005).

The results of the intake seawater (reference) and the receiving water in Big Fisherman Cove were below Ocean Plan Table C background concentrations for arsenic, copper, silver, and zinc. The receiving water was noticeably elevated above the reference sample for copper, nickel, and zinc.

It must be noted that earlier samples were analyzed for metals but State and Regional Water Board staff determined that the procedures and quality assurance for that analysis were inadequate, providing faulty results. Those results are not presented here.

In December 2004, additional testing to screen for PAH's (by HPLC) was performed at the same three runoff sampling locations. Water samples were collected from the main storm water drainage, the lab storm water drainage and the dive locker storm water drainage sites. PAH's were not detected in any of these this samples at that time.

The following mitigating conditions will be required for the exception in relation to non-storm runoff and storm water management plans:

- *For metals analysis, waste seawater effluent, storm water effluent, reference samples, and receiving water samples must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/ Mass Spectrometry) described in the Ocean Plan.*

- *Flows for the seawater discharge system and storm water runoff (by storm event) must be reported quarterly to the Regional Water Board.*

- *WMSC must continue to prevent all discharges of non-storm water facility runoff (i.e., any discharge of facility runoff that reaches the ocean that is not composed entirely of storm water), except those associated with emergency fire fighting.*

- *WMSC must specifically address the prohibition of non-storm water runoff and the reduction of pollutants in storm water discharges draining to the ASBS in a Storm Water Management Plan/Program (SWMP). WMSC is required to submit its final SWMP to the Regional Water Board.*

- *The SWMP must include a map of surface drainage of storm water runoff, including areas of sheet runoff, and any structural Best Management Practices (BMPs) employed. The map must also show the storm water conveyances in relation to other facility features such as the laboratory seawater system and discharges, service areas, sewage treatment, and waste and hazardous materials storage areas. The SWMP must also include a procedure for updating the map and plan when other changes are made to the facilities.*

- *The SWMP must describe the measures by which non-storm water discharges have been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.*

- *The SWMP must also address storm water discharges, and how pollutants have been and will be reduced in storm water runoff into the ASBS through the implementation of BMPs. The SWMP must describe the BMPs currently employed and BMPs planned (including those for construction activities), and an implementation schedule. The BMPs and implementation schedule must be designed to ensure natural water quality conditions in the receiving water due to either a reduction in flows from impervious surfaces or reduction in pollutants, or some combination thereof. The implementation schedule must be developed to ensure that the BMPs are implemented within one year of the approval date of the SWMP by the Regional Water Board.*

- *Once annually, during wet weather (storm event), the storm water runoff effluent and the receiving water adjacent to the seawater and storm water discharge system must be sampled and analyzed for Ocean Plan Table B constituents. The receiving water in Big Fisherman Cove must also be monitored for Ocean Plan indicator bacteria water quality objectives. The sample location for the receiving water will be immediately seaward of the surf zone in Big Fisherman Cove adjacent to the outfall location. Storm water runoff and receiving water must be sampled at the same time as the seawater effluent and reference sampling described in condition 12 above. Based on the first year sample results, the Regional Water Board will determine specific constituents in the storm water runoff and receiving water to be tested during the remainder of the permit cycle, except that indicator bacteria and chronic toxicity (three species) for receiving water must be tested annually during a storm event.*

- *Once annually, the subtidal sediment near the seawater discharge system and storm water outfall in Big Fisherman Cove must be sampled and analyzed for Ocean Plan Table B constituents. For sediment toxicity testing, only an acute toxicity test using the amphipod Eohaustorius estuarius must be performed. Based on the first year sample results, the Regional Water Board will determine specific constituents to be tested during the remainder of each permit cycle, except that acute toxicity for sediment must be tested annually.*

- *In addition to the bacterial monitoring requirements described in conditions 12 and 13 above, samples must be collected at the seawater intake structure during a maximum of three storm events per year that result in runoff from the spray field hillside, and measured for Ocean Plan indicator bacteria. The station at the seawater intake structure is not considered a reference station for indicator bacteria but instead is selected for this requirement because it is near the bluff below the WMSC sewage treatment plant spray field. This requirement along with the bacterial monitoring in conditions 12 and 13 is meant to satisfy in total the Ocean Plan bacteria monitoring requirements. This additional bacteria monitoring may be eliminated by the Regional Water Board if changes are made to WMSC's sewage plant or treated sewage effluent system that would absolutely eliminate the possibility of contaminants entering the ASBS.*

- *If the results of receiving water monitoring indicate that the storm water runoff is causing or contributing to an alteration of natural water quality in the ASBS, as measured at the reference station at the seawater intake, WMSC is required to submit a report to the Regional Water Board within 30 days of receiving the results. Those constituents in storm water that alter natural water quality or receiving water objectives must be identified in that report. The report must describe BMPs that are currently being implemented, BMPs that are*

planned for in the SWMP, and additional BMPs that may be added to the SWMP. The report shall include a new or modified implementation schedule. The Regional Water Board may require modifications to the report. Within 30 days following approval of the report by the Regional Water Board, WMSC must revise its SWMP to incorporate any new or modified BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required. As long as WMSC has complied with the procedures described above and is implementing the revised SWMP, then WMSC does not have to repeat the same procedure for continuing or recurring exceedances of the same constituent.

Waterfront and Marine Nonpoint Source Pollution

The waterfront facilities include a dock and pier. The dock is attached to a 70 by 20 foot standing pier supplied with 110V electrical outlets, a freshwater spigot, and a 5-ton capacity jib crane. The pier and dock are planned for renovation and the construction activity has the potential to cause pollution in the ASBS.

WMSC maintains several small vessels and 25 moorings for this fleet and transient boats up to 70 feet in length. Some of the vessels are operated by WMSC staff and the transient vessels are operated either by research institutions or private parties. The potential exists for pollutants to enter the ASBS from these vessels and associated operations and facilities.

The following mitigating conditions will be required for the exception in relation to nonpoint source pollution from the waterfront and marine operations:

- *WMSC must prepare a waterfront and marine operations non-point source management plan containing appropriate management practices to address non-point source pollutant discharges. Appropriate management measures will include those described in the State's Non-point Source Program Implementation Plan for marinas and recreational boating, as applicable. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, will review the plan. The Regional Water Board shall appropriately regulate non-point source discharges in accordance with the State Water Board's Policy for Implementation and Enforcement of the Non-point Source Pollution Control Program. The plan must be implemented within six months of its approval.*

- *WMSC will notify the Regional Water Board within 180 days prior to any construction activity that could result in any discharge or habitat modification in the ASBS. Furthermore, WMSC must receive approval and appropriate conditions from the Regional Water Board prior to performing any significant modification, re-building or renovation of the water front facilities, including the pier and dock, according to the requirements of Section III.E.2 of the Ocean Plan.*

Waste Seawater Discharge

As mentioned above, there have been significant improvements in segregating storm water from waste seawater. All waste seawater is now routed through a dedicated drainage system to the outfall at the waterfront. Another improvement involves rinse water disposal at the dive locker/waterfront area. WMSC had originally located a pair of 40-gallon sinks near the seawater tables at the waterfront for the rinsing of dive gear. These sinks were filled with freshwater, but drained onto an earthen bluff and then into the drainage area that catches the discharge from the seawater tanks and tables. Thus, when divers rinsed their gear, they would discharge some amount between 20-60 gallons of waste freshwater onto the bluff and thence into the waste seawater that was running into the ocean. The divers shared these tanks, so they rarely were drained more that 6-10- times per day and most days, probably less than 1-2 times per day. This situation has since been corrected, The rinse tanks were recently relocated to a new location where the freshwater now drains into the sewer and is treated in their secondary treatment plant. Therefore the dive sink wastewater no longer co-mingles with the seawater discharge (Michaels 2004).

Chronic Toxicity Testing

The following are results of the chronic toxicity tests performed on the WMSC waste seawater effluent, and reference and receiving waters, for three samples in February 2004 and one sample in October 2004. Test procedures for the chronic toxicity testing followed the *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. *Atherinops affinis* (topsmelt) are a member of the fish community at Big Fisherman Cove and were utilized as the standard marine test organism for the chronic toxicity testing as shown in Table 2.

Table 2. Chronic Toxicity Testing Survival/Growth Results for *Atherinops affinis*

Sample date	Sampling Station		
	Intake Pipes	Big Fisherman Cove	Seawater System Effluent
February 2004	NOEC = 100%	NOEC = 100%	NOEC = 100%
October 2004	---	---	NOEC = 100%

Chronic toxicity tests evaluate the biological response of an organism to the effluent and measure the acceptability of waters for supporting a healthy marine biota. The No-Observed-Effect-Concentration (NOEC) is the highest concentration of toxicant to which organisms are exposed in a full life cycle or partial life-cycle (short-term) test that causes no observable adverse effects on the test organism. Test results from February and October 2004 seawater effluent and receiving water samples show a NOEC of 100%, in other words zero toxicity.

Chemical and Physical Characteristics

Monitoring data for conventional constituents, as required under the NPDES permit for the waste seawater effluent is presented in Table 3. Reported results from February 2004 to January 2005 were in compliance with the permitted effluent limits.

Table 3. Analysis of Waste Seawater Effluent Sampling Station 2004/2005

	Analyte					
Sample date	pH	Total Suspended Solids (mg/L)	Settleable Solids (mg/L)	Oil & Grease (mg/L)	Turbidity (NTU)	Biochemical Oxygen Demand (mg/L)
June 2005	7.94	---	---	---	---	---
May 2005	7.94	20	ND	ND	0.25	3
April 2005	7.96	---	---	---	---	---
March 2005	7.79	ND	ND	ND	0.31	ND
February 2005	7.72	---	---	---	---	---
January 2005	7.80	---	---	---	---	---
October 2004	8.05	ND	ND	ND	0.17	ND
February 2004	7.87	ND	ND	ND	0.25	ND

Results were reported in either mg/L or ug/L. Constituents that were not tested are indicated by dashed symbol in the column (---). Non-detected constituents are listed as ND.

Waste Seawater Effluent Thermal Impacts

WMSC regularly monitors the temperature of the ambient seawater and water entering the aquaria. Temperatures are taken with standard laboratory thermometers calibrated in degrees Celsius and are reported in those units to maintain accuracy. At the location of the seawater system intake pipe, continuously recording thermisters for recording ocean temperature are installed at the 15, 30, 60 and 100-foot depths. The intake pipe is at the 15-foot depth. Shallower temperatures are warmer than deeper waters with a difference of 2-6 degrees C between 15 ft (5m) and 100 ft (33m). (Michaels 2004).

The discharge temperatures during the period 1991 – 2004 varied from 12-23 degrees C with the same seasonality found in natural waters in this region. The average temperature of the discharge water tends to be only slightly warmer, about 0.2-0.3 degrees C, than the background seawater at the intake (15 ft.). Maximum differences of as much as 2 degrees C were observed.

WMSC also measured ambient surface water temperatures at the end of the pier feet in Big Fisherman Cove and the temperature of the seawater discharge, and reported this to the Regional Board in their quarterly monitoring reports. The mean monthly temperatures for the year 2004 differed by only 0.1° F between the discharge (64.3° F) and the Cove (64.4° F), with the Cove being only slightly warmer. This temperature data from January 2004 to June 2005 is given in Table 4.

On October 25, 2004 WMSC performed field temperature measurements within Big Fisherman Cove. The results of those measurements indicate that the receiving water near the discharge is slightly warmer than in the larger portion of the Cove further away from the discharge. However, the receiving water immediately near the discharge is much more shallow in depth than the majority of the Cove, which might account for some of this difference.

Table 4. Monthly Monitoring of Seawater Temperatures for WMSC 2004/2005.

Month	Big Fisherman Cove Ambient Seawater	Seawater System Discharge
January 2004	59.3° F (15.1° C)	59.3° F (16.1° C)
February 2004	58.4° F (14.6° C)	58.4° F (14.6° C)
March 2004	61.3° F (16.2° C)	61.3° F (16.2° C)
April 2004	62.4° F (16.8 °C)	62.4° F (16.8° C)
May 2004	68.4° F (20.2° C)	68.4° F (20.2° C)
June 2004	64.3° F (17.9° C)	64.3° F (17.9° C)
July 2004	71.2° F (21.7° C)	71.5° F (21.9° C)
August 2004	69.1° F (20.6° C)	69.8° F (21.0° C)
September 2004	69.1° F (20.6° C)	68.2° F (20.1° C)
October 2004	66.1° F (18.9° C)	66.4° F (19.1° C)
November 2004	61.3° F (16.27° C)	60.7° F (15.9° C)
December 2004	61.4° F (16.3° C)	61.4° F (16.3° C)
January 2005	61.3 °F (16.2° C)	62.7° F (15.9° C)
February 2005	60.3° F (15.7° C)	59.2° F (15.1° C)
March 2005	60.7° F (15.9° C)	60.8° F (16.0° C)
April 2005	58.2° F (15.1° C)	58.5° F (14.72° C)
May 2005	66.3° F (16.2° C)	66.5° F (19.1° C)
June 2005	68.4° F (20.2° C)	69.3° F (20.7° C)
Mean	63.8° F (17.6° C)	63.8° F (17.6° C)

Metals

The current permit is not consistent with the 2001 Ocean Plan requirements with regard to Table B constituents, including metals. However, in preparation for this environmental review, samples were collected during dry weather (October 2004) and wet weather (November 2004). Table 5 includes the analytical results of reference samples collected at the seawater intake, waste seawater effluent, and the ASBS receiving waters in Big Fisherman Cove, for Table B metals (marine aquatic life). The waste seawater and ASBS receiving waters were below California Ocean Plan's lowest water quality objectives (six month medians) for metals.

Table 5. Analysis of Waste Seawater, Reference and Receiving Water. October and November 2004.

		October (dry weather)			November (wet weather)			
Analyte µg/L	Ocean Plan 6 month median	Intake Seawater	Waste Seawater	Big Fisherman Cove	Intake Seawater	Waste Seawater	Big Fisherman Cove	Detection limit
Arsenic	8	ND	1.02	1.04	0.998	0.859	0.949	0.015
Cadmium	1	0.035	0.033	0.042	0.039	0.044	0.038	0.01
Copper	3	0.161	0.174	0.515	0.267	0.106	1.13	0.01
Lead	2	0.024	0.02	---	0.05	0.015	0.044	0.01
Nickel	5	0.21	0.249	0.304	0.019	0.278	0.275	0.01
Selenium	15	ND	ND	ND	ND	ND	ND	0.015
Silver	0.7	0.024	ND	ND	ND	ND	ND	0.01
Zinc	20	8.36	1.74	2.18	1.32	1.65	2.5	0.01

Constituents that were not tested are indicated by dashed symbol in the column (---). Non-detected constituents below the DLR are listed as ND. (CRG Laboratories 2004).

During dry weather the results of the intake seawater (reference) sample and the receiving water in Big Fisherman Cove were below Ocean Plan Table C background concentrations for arsenic (3 µg/L), copper (2 µg/L), and silver (0.16 µg/L). The receiving water was below Table C zinc levels as well. Zinc levels in the reference sample were virtually the same (within typical lab error) as the Table C level of 8.0 µg/L. The receiving water was slightly elevated above the reference sample for copper, but was much lower than the reference sample for zinc.

During wet weather the results of the intake seawater (reference) and the receiving water in Big Fisherman Cove were also below Ocean Plan Table C background concentrations for arsenic, copper, silver, and zinc. The receiving water was noticeably elevated above the reference sample for copper, nickel, and zinc, but this is likely related to storm water runoff (see storm water metals analyses in Table1).

It must be noted that earlier samples were analyzed for metals but State and Regional Water Board staff determined that the procedures and quality assurance for that analysis were inadequate, providing faulty results. Those results are not presented here.

The following mitigating conditions will be required for the exception in relation to the waste seawater effluent:

- *The discharge must comply with all other applicable provisions, including water quality standards, of the Ocean Plan. Natural water quality conditions in the receiving water, seaward of the surf zone, must not be altered as a result of the discharge. The surf zone is defined as the area between the breaking waves and the shoreline at any one time. Natural water quality will be defined, based on a review of the monitoring data, by Regional Water Board staff in consultation with the Division of Water Quality of the State Water Board. For constituents other than indicator bacteria, natural water quality will be determined using the reference station in the ocean near the seawater intake structure. For indicator bacteria, the Ocean Plan bacteria objectives will be used.*

- *WMSC will not discharge chemical additives, including antibiotics, in the seawater system effluent. In addition and at a minimum, WMSC, for its waste seawater effluent, must comply with effluent limits implementing Table B water quality objectives as required in Section III.C. of the Ocean Plan (2001).*

- *For metals analysis, waste seawater effluent, storm water effluent, reference samples, and receiving water samples must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.*

- *Flows for the seawater discharge system and storm water runoff (by storm event) must be reported quarterly to the Regional Water Board.*

- *Once during the upcoming permit cycle, a bioaccumulation study using mussels (Mytilus californianus) must be conducted to determine the concentrations of metals near field (within Big Fisherman Cove) and far field (near the seawater intake structure). The Regional Water Board, in consultation with the Division of Water Quality, must approve the study design. The results of the survey must be completed and submitted to the Regional Water Board at least six months prior to the end of the permit cycle (permit expiration). Based on the study results, the Regional Water Board, in consultation with the Division of Water Quality, may adjust the study design in subsequent permits, or add additional test organisms.*

- *During the first year of each permit cycle two effluent samples must be collected from the waste seawater discharge (once during dry weather and once during wet weather, i.e. a storm event). In addition, reference samples must also be collected along with the effluent samples. Reference samples will be collected in the ocean at a station at the seawater intake structure (prior to entering the intake). Samples collected at the seawater intake structure will represent natural water quality for all Ocean Plan constituents except indicator bacteria and total chlorine residual. Samples at the reference station may be collected immediately following a storm event, but in no case more than 24 hours after, if sampling conditions are unsafe during the storm. All of these samples must be analyzed for all Ocean Plan Table B constituents, pH, salinity, and temperature, except that samples collected at the seawater intake do not require toxicity testing; instead, samples collected at the seawater intake structure must be analyzed for Ocean Plan indicator bacteria. Based on the results from the first year, the Regional Water Board will determine the frequency of sampling (at a minimum, annually during wet weather) and the constituents to be tested during the remainder of the permit cycle, except that ammonia nitrogen, pH, salinity, and temperature must be tested at least annually. Chronic toxicity (for at least one consistent invertebrate species) must be tested at least annually for the waste seawater effluent. In addition, samples collected at the seawater intake must be analyzed for indicator bacteria according to the requirements of condition 16.*

- *Once annually, the subtidal sediment near the seawater discharge system and storm water outfall in Big Fisherman Cove must be sampled and analyzed for Ocean Plan Table B constituents. For sediment toxicity testing, only an acute toxicity test using the amphipod Eohaustorius estuarius must be performed. Based on the first year sample results the Regional Water Board will determine specific constituents to be tested during the remainder of each permit cycle, except that acute toxicity for sediment must be tested annually.*

- *The Regional Water Board will include these mitigating conditions in the National Pollutant Discharge Elimination System (NPDES) permit for the seawater effluent. Alternatively, the Regional Water Board may regulate the storm water discharge in a storm water NPDES permit, and, in that case, would include those conditions relative to storm water in that storm water NPDES permit. In the latter case, all conditions would be included, in some combination, in the waste seawater effluent permit and the storm water permit.*

Biological Pollutants (Invasive Species)

Any marine organism not indigenous to the Southern California Bight that may possibly be introduced through the laboratory or aquarium discharges is considered a biological pollutant. Currently available information (California Department of Fish and Game (DFG) 2005) indicates that there are no invasive species that would be associated with a possible introduction from the WMSC discharges. Still, the potential for such introductions of potentially invasive species or pathogenic organisms does exist, and such accidental introductions could alter the marine community in an undesirable way.

Examples of marine invasive species potentially found in the Southern California Bight include, but may not be limited to: *Caulerpa taxifolia*, a Mediterranean Sea green algae; *Terebrasabella heterouncinata,* a South African parasitic polychaete worm which parasitizes marine mollusks such as abalone; *Potamocorbula amurenis*, an Asian clam that is a highly efficient filter feeder; and *Carcinus maenas*, the European Green crab, a voracious predator on native invertebrates (CDFG 2005). There is no evidence that these invasive species are in Big Fisherman Cove at the time of preparing this document. *Sargassum muticans*, an invasive brown algae, is found in Big Fisherman Cove, but

it is ubiquitous throughout the Southern California Bight. Another exotic brown algae (*Undaria pinnatifida*) have been found on Santa Catalina Island (Silva, et al. 2002).

Invasive species in the marine environment generally 'arrive' to a location by one of these methods: 1) they are discharged as part of the ballast water from a docked or passing ship; 2) they are inadvertently released; 3) they come in as a 'stowaway' on another species; or 4) they are deliberately released (CDFG 2001). The pathways that are most applicable to WMSC are inadvertent releases or "stowaways" on another species.

Before being introduced into the research laboratory tanks at WMSC, specimens are currently inspected for incidental invasive species. If a specimen is suspected of carrying or containing an invasive species, then it is quarantined. If this occurs, the waste seawater from the quarantine tank is discharged to the sewer, thereby attempting to protect against biological contamination of the ASBS from the research laboratories.

If during the biological surveys required as required by the exception, any of the above species or any other invasives that are not listed above are detected, WMSC must notify the State Water Board and the California Department of Fish and Game (Marine Division) immediately.

The following mitigating condition will be required for the exception as they relate to biological pollutants:

- *WMSC must pursue and implement a program for prevention of Biological Pollutants (non-native invasive species) in consultation with the California Department of Fish and Game Marine Resources Division.*

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the DFG or USFWS?	☐	☑	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the DFG or USFWS?	☐	☑	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Impacts to Marine Biota

Four qualitative surveys were considered in this Initial Study. These surveys were performed by 1) Bob Givens, et al. 1965 prior to the construction of the lab and seawater system, 2) Bob Givens in 1977 prior to construction of the mole and new pier, 3) Bob Given and Jan Dykzeul for the SWRCB Reconnaissance Survey (1979), and 4) WMSC in 2004. It should be noted that the fieldwork for the SWRCB 1979 document was probably conducted during the period 1977-1978, but no record of exact field survey events is available; therefore we will refer to this data by the 1979 date of publication. In addition, the WMSC 2004 data included some quantitative data (population densities) for only certain species. Finally, a fifth source of information is quantitative measures (population densities) of selected species performed by the Catalina Conservancy Divers and provided by WMSC in its November 2004 letter to the Regional Board.

Benthic Macrophytes

The results of four surveys performed at Big Fisherman Cove are presented in Appendix B. Assemblage analysis in each survey was reported as binary data (presence/absence) that weighs all species the same, and is the only form of data collected. The number of algae species reported increased from four in 1965, to 11 in 1977, 15 in 1979, and 25 in 2004. In the authors' opinion, it is highly unlikely that this is a result of an actual increase in algal species present. Instead this may be a result of survey design, specifically more focus toward algae species in later surveys, algal identification expertise, etc. for the 1965, 1977, and 1979 surveys.

No data is available regarding density of the surf grass *Phyllospadix* in Big Fisherman Cove. This is an important habitat forming species and should be included in future quantitative surveys.

Benthic Invertebrates

The results of four surveys performed at Big Fisherman Cove are presented in Appendix C. Assemblage analysis in each survey was reported as binary data (presence/absence) that weighs all species the same, and is the only form of data collected. In 1965, seven species were reported and eight species were reported for 1977. In 1979, 30 species were observed. In 2004, WMSC identified 29 invertebrate species on the north wall of Big Fisherman Cove and 35 on the south wall; a total of 42 invertebrate species were identified in Big Fisherman Cove.

It is interesting that of the eight species reported in 1977, only one species overlapped with the 1965 listing. In 1979 the bulk of the species (24) inhabited the soft bottom substrate and only seven species were reported solely on rock substrate. In 2004, the opposite is true. Of the 42 species reported, 41 species were rock dwellers and only one species, a tube-dwelling anemone, dwells solely on the soft bottom substrate.

Just as in the algal survey data there is an apparent increase in invertebrate species over time. Again, in the authors' opinion this is highly unlikely. Furthermore, it is unlikely that there were huge shifts in habitat during the intervening years. Instead it is likely that the differences between the survey results are due to survey design/emphasis. For example, it appears that in 1979 the surveyors concentrated on the soft bottom substrate and in 2004 the surveyors concentrated on the rock substrate.

Comparison of Species Densities

Species densities have been consistently monitored by Catalina Conservancy Divers (CCD) in conjunction with the WMSC at established sampling sites since 1992. CCD collected data since 1992 at the seawater system intake pipe(s) for sea urchins and giant kelp. CCD also collected data since 1997 at their Pumpernickel Cove site, located 3000 feet from the seawater system discharge, for sea urchins, warty sea cucumber, southern sea palm and giant kelp. For the Initial Study we will consider the both Pumpernickel and the Intake sites as reference locations. For these reference sites the most recent data provided by WMSC was apparently for spring (May and June) 2003. This quantitative information was supplied by WMSC in their letter to the Regional Board of November 4, 2004 in the

form of hard copy graphs. Raw data was not supplied by WMSC. Therefore it should be noted that the numbers presented in this report are interpretations/approximations from those graphs.

Giant kelp density data was collected at three stations at the Intake, at five, ten and twenty meters depth. The five and ten meter depths show similar patterns of kelp density during different years (i.e., oceanographic conditions). Kelp densities were lowest in the periods winter 1993 through spring 1994, winter 1997 through spring 1998, and the summer of 2000. At the Intake sites the highest density of juvenile giant kelp was recorded at five meters, at about 2.7/m^2 in the fall of 1995. The five-meter site also had the highest density recorded for adult giant kelp plants at the Intake, about 1.2/m^2 in the winter of 2000. The twenty-meter depth station did not exactly track kelp bed fluctuations at the other two Intake stations, but a similar dieback was apparent during the fall 97 – spring 98 period.

At Pumpernickel Cove the highest density of juvenile giant kelp was about 5.25/m^2 in the fall of 1999 and for adult giant kelp plants was about 4.75/m^2 in the winter of 2000. Giant kelp density for both Pumpernickel and the Intake, at five and ten meters, fluctuated similarly during different years (i.e., oceanographic conditions) during the period 1997-2003.

Sea urchin density data was collected for three species (purple, red and blacks) at three stations at the Intake, at five, ten and twenty meters depth. The density data was for the period 1992-2003. Purple urchins were most abundant at the five meter Intake station, which is expected since purple urchins are common in the intertidal zone and shallow waters. Purple urchins were nearly non-existent at ten and twenty meters, and black urchins clearly outnumbered red urchins at those depths. Total urchins (all three species combined) displayed the greatest density for the period 1992-2003 in 2001, with approximately 5/m^2 at five meters, 3/m^2 at ten meters, ands almost 6/m^2 at twenty meters. Total urchins were least dense in 2002, with no urchins reported, but their numbers rebounded to levels of 2-5/m^2 in 2003. Urchin densities were consistently lower at Pumpernickel Cove than at the Intake sites. The highest total urchin density there was just over 2.5/m^2, but there was no apparent population crash in 2002 as shown for the Intake sites.

Density data for southern sea palms and warty sea cucumbers were collected during the period 1997-2003 at Pumpernickel Cove. The highest density of sea palms, about 0.35/m^2 was recorded in the summer of 1997. No sea palms were found in 1999 and in the fall of 2001. The highest density of sea cucumbers, slightly over 0.8/m^2 was recorded in the summer of 1997. No sea cucumbers were found in the fall of 1998.

WMSC conducted another quantitative survey of marine life in 2004 at the north wall of Big Fisherman Cove relatively closer to the discharge, at 510 feet away. Of the target invertebrates bat stars, purple urchins, and keyhole limpets were absent. Giant spined sea stars, spiny lobster, and yellow gorgonians were present but in very low densities. (Note, with regard to yellow gorgonians, the authors are unsure as to whether this is the same as the California golden gorgonian listed in Appendix C, since no scientific names were included in the quantitative data provided by WMSC). Southern sea palms were more abundant than adult giant kelp, and warty sea cucumbers were more abundant than black sea urchins (the most abundant sea urchin). Table 6 presents a comparison of the most recent density data for the Intake, Pumpernickel and the north wall of Big Fisherman Cove.

Table 6. Data from 2003 and 2004 surveys, density/m2

Sampling Site	Black sea urchin	Red sea urchin	Warty sea cucumber	Southern sea palm	Giant kelp juvenile	Giant kelp adult
Seawater Intake – 1350' @ 5m (2003)	0.90	0.90	*	*	0.30	0.65
Seawater Intake – 1350' @ 10m (2003)	2.80	0.20	*	*	<0.01	0.35
Seawater Intake – 1350' @ 20m (2003)	4.75	0.30	*	*	<0.01	0.02
Pumpernickel – 3000' (2003)	0.25	0.01	0.83	0.05	<0.01	3.10
North wall – 510' (2004)	0.10	0.01	0.21	0.83	2.70	5.80

*Note: * indicates no data provided*

Black sea urchins near the discharge were at relatively low densities when compared to Pumpernickel and the Intake Sites. Similarly, warty sea cucumbers were also at comparatively low densities. Conversely, sea palms and giant kelp were at high densities near the discharge than at the reference sites. Ultimately this data is severely limited because we are unable to compare to what the reference site densities were in 2004. Therefore, since the data from the reference sites is from a different year than the data from the site nearer the discharge, no direct comparison is legitimate.

Fish Community

Fish are motile and can swim in and out of an area in pursuit of prey, or even if water quality conditions temporarily degrade. Fishing pressures may also reduce their numbers locally. Therefore, fish community composition data may not reflect environmental perturbations as well as less motile species (such as benthic invertebrates or primary producers). However, since the WMSC waste seawater is relatively constant, and storm water discharges are all draining seasonally to the same location, it is still worth considering possible impacts to fish species assemblages.

The results of four surveys performed at Big Fisherman Cove are presented in Appendix D. Assemblage analysis in the 1965, 1977 and 1979 surveys was reported as binary data (presence/absence) that weighs all species the same, and was the only form of data collected. It is unknown (and unlikely) that the surveyors followed the exact same transects or strictly followed the same survey protocols. Three species were identified in 1965, nine species in 1977, and 13 species in 1979. Interestingly, all of the species recorded in the 1965 and 1977 surveys were also recorded in the 1979 survey, with additional species as well.

In the 2004 survey there were larger numbers of fish species present: 15 on the north wall nearer the discharge, 17 at the south wall away from the discharge, and a total of 21 for Big Fisherman Cove. For the 2004 survey most of the fish data is qualitative (presence/absence), but some fish species, black surfperch, blacksmith, garibaldi, kelp bass, rock wrasse, senorita, and sheephead, were quantitatively reported at the north wall of Big Fisherman Cove. Of these, the most abundant were kelp bass at about $0.85/m^2$, adult blacksmith at about $0.64/m^2$, juvenile blacksmith at about $0.32/m^2$, adult senorita at about $0.57/m^2$, and juvenile senorita $0.29/m^2$.

Just as with the algal and invertebrate data there is an apparent increase in fish species over time. Once again, in the authors' opinion this is highly unlikely. Instead, it is likely that the differences between the survey results are due to survey design/emphasis.

Comparison of the North and South Walls of Big Fisherman Cove

In 2004 WMSC conducted a survey (presence/absence) of marine biota near the discharge (north wall) and a reference location away from the discharge (south wall). Twenty species of algae, 29 species of benthic invertebrates, and 15 fish species were recorded along the north wall. Sixteen species of algae, 35 species of benthic invertebrates, and 17 fish species were recorded along the south wall. More species of algae were found nearer the discharge, including the filamentous green algae *Chaetomorpha* sp. While slightly more fish species were recorded away from the discharge, the difference was consistent with natural temporal patchiness. The largest difference was with benthic invertebrate species, with six fewer species found nearer the discharge. However there does not appear to be a conclusive pattern consistent with a discharge impact. This qualitative data is limited in utility and is possibly not sensitive enough to detect impacts if they occur.

Limitations of existing data and recommendations for further work

While no gross impacts are obvious, it is very difficult to make absolute statements based on the data available. Data sets used here have several limitations. The surveys obviously varied in collection methods, effort, and spatio-temporal coverage, factors that can influence the number of taxa observed. Cryptic or very small species may be under-sampled. The life histories and movement potential of species should also be considered. Within species differences in movement characteristics during their juvenile and adult stages must be taken into account; different life stages may be affected differently by the discharges. Different species can have different patterns of movement, whether random dispersal or directed migration. For example, many fish species that occur in this type of habitat have high emigration and immigration rates, which contributes to the large amount of temporal and spatial patchiness.

Given the apparent inconsistencies in survey designs, and resulting limitations in the utility of the data, it is not possible to ascertain impacts from the discharge. Future study design should take into account the limitations described here, and a more robust quantitative study must be conducted near field (at the discharge in Big Fisherman Cove) and at some adequate reference location. Quantitative, consistent, and sensitive techniques must be utilized in order to better detect impacts if they occur. Future sampling should be conducted at all locations with the same amount of effort for species diversity and other measures to be comparable across the study area. Monitoring should be performed, on a more frequent basis, at least once every permit cycle. Surveys should be completed during the same season(s) and at approximately the same tidal height.

Quadrants should be established for algae, invertebrates and smaller or less motile fish species, at locations near the discharge and at a far-field reference location, and possessing the same habitat conditions. Density measurements, very near-the discharge and far-field over a larger habitat scale, for certain large macrophytes (e.g., *Macrocystis or Phyllospadix*) and large invertebrates. Finally, surveys for large, motile fish species, if performed, should employ established transects within the same season(s), time of day, and tidal height.

The following mitigating condition will be required to monitor the ongoing status and protection of marine aquatic life:

- *At least once every permit cycle (every five years), a quantitative survey of benthic marine life must be performed near the discharge and at a reference site. The Regional Water Board, in consultation with the State Water Board's Division of Water Quality, must approve the survey design. The results of the survey must be completed and submitted to the Regional Water Board within six months before the end of the permit cycle.*

- *Once during the upcoming permit cycle, a bioaccumulation study using mussels (Mytilus californianus) must be conducted to determine the concentrations of metals near field (within Big Fisherman Cove) and far field (near the seawater intake structure). The Regional Water Board, in consultation with the Division of Water Quality, must approve the study design. The results of the survey must be completed and submitted to the Regional Water Board at least six months prior to the end of the permit cycle (permit expiration). Based on the study results, the Regional Water Board, in consultation with the Division of Water Quality, may adjust the study design in subsequent permits, or add additional test organisms.*

5. AGRICULTURAL RESOURCES. In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping & Monitoring Program of the California Resources Agency, to non-agricultural uses?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☑

6. NOISE. Would the project result in:

a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☑

7. LAND USE AND PLANNING. Would the project:

a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑

8. MINERAL RESOURCES. Would the project:

a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☑
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑

9. HAZARDS and HAZARDOUS MATERIALS. Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☑

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or to the environment?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	☐	☐	☐	☑
10. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area either directly (*e.g.*, by proposing new homes and businesses) or indirectly (*e.g.*, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

11. TRANSPORTATION / CIRCULATION. Would the project:

a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (*i.e.*, result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☑
b) Substantially increase hazards due to a design feature (*e.g.*, sharp curves or dangerous intersections) or incompatible uses (*e.g.*, farm equipment)?	☐	☐	☐	☑
c) Result in inadequate emergency access?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Result in inadequate parking capacity?	☐	☐	☐	☑
e) Exceed, either individually or cumulatively, a level-of-service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☑
f) Conflict with adopted policies supporting alternative transportation (*e.g.*, bus turnouts, bicycle racks)?	☐	☐	☐	☑
g) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑

12. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the public services:

a) Fire protection?	☐	☐	☐	☑
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Parks?	☐	☐	☐	☑
e) Other public facilities?	☐	☐	☐	☑

13. UTILITIES AND SERVICE SYSTEMS. Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☑
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☑

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑
14. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☑
15. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☐	☑
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☑
16. RECREATION. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☑

17. MANDATORY FINDINGS OF SIGNIFICANCE.

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☑	☐	☐

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☑	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☑

Under the less stringent and somewhat inadequate controls currently in force, WMSC discharges waste into the ASBS and is in violation of the ASBS prohibition. The project, granting an exception with special mitigating conditions (i.e. special protections), will allow the continued discharge of waste seawater and storm water runoff, and therefore has the potential to degrade water quality. However, under these special protections, the quality of the discharge will improve from current conditions, with an important reduction in the potential to degrade water quality. If all of the special protections designed to limit the discharge are met, as described in this Initial Study, the WMSC discharge will not compromise the protection of ocean waters of the ASBS for beneficial uses, and the public interest will be served.

Granting the conditional exception, likewise, will not violate federal antidegradation requirements because water quality will not be lowered, but rather will be improved. Further, allowance of the exception will not violate the State Water Board's antidegradation policy (SWRCB 1968) since water quality conditions will improve; the discharge will not unreasonably affect present and anticipated beneficial uses; the discharge will not result in water quality lower than that prescribed in the Ocean Plan; and, the people of California benefit from the research and education provided by WMSC while beneficial uses will still be protected.

DETERMINATION

Based on this initial evaluation, we find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures have been incorporated into the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

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Appendix A

Santa Catalina Island Rainfall, Two Harbors Collection Site

Total Rain Days	1201
Total Rainfall	482.97"
Average rain days per year	27
Average rainfall per rain day	0.40"
Minimum rain days	4 (1967)
Maximum rain days	64 (1997)
Maximum rainfall in 24 hours	5.25" (11/21/1967)

From: Catalina Island Conservancy. 2005. Rainfall Data for Two Harbors, Santa Catalina Island: October 1957 – June 2005. http://www.catalinaconservancy.org/ecology/weather/rainfall.cfm

Appendix B. Algal Species found at Big Fisherman Cove. Presence listed by survey.

Algal Group	Species Name	Common Name	Substrate	Givens et. al. 1965	Givens et. al. 1977	SWRCB 1979	WMSC 2004 (South Wall)	WMSC 2004 (North Wall)
Phaeophyta								
	Acinetospora nicholsoniae		Rock			X		
	Colpomenia sp.		Rock				X	X
	Cystoseira osmundacea		Rock				X	X
	Dictyopteris undulata		Rock			X		
	Dictyota sp.		Rock		X	X		
	Dictyota binghamiae		Rock				X	X
	Dictyota undulata		Rock		X			
	Egregia menziesii		Rock	X			X	X
	Eisenia arborea	Southern sea palm	Rock			X	X	X
	Hesperophycus harveyanus		Rock			X		
	Laminaria farlowii	"Kelp"	Rock					X
	Macrocystis pyrifera	Giant Kelp	Rock	X	X	X	X	X
	Pelvetia fastigiata	Brown rock weed	Rock			X		
	Sargassum muticans		Rock			X	X	X
	Zonaria farlowii		Rock			X	X	X
Chlorophyta								
	Chaetomorpha sp.		Rock					X
	Codium fragile	Sea staghorn	Rock		X	X	X	X
	Codium setchellii		Rock				X	X
	Ulva sp.	Sea lettuce	Rock		X	X		X
	Urospora penicilliformis		Rock		X	X		
Rhodophyta								
	Asparagopsis svensonii		Rock					X
	Callithamnion pikeanum		Rock					X
	Corallina sp.		Rock				X	X
	Corallina officinalis		Rock		X	X		
	Fauchea lacinata		Rock					X
	Gastroclonium subarticulatum		Rock				X	X
	Gellidium sp.		Rock				X	X
	Laurencia sp.		Rock		X			
	Lithophyllum spp.	encrusting coralline	Rock	X			X	X
	Lithothamnium sp.	encrusting coralline	Rock			X		
	Lithothamnium giganteum	encrusting coralline	Rock		X			
	Lithothris asperrgillum		Rock		X			
	Mazzaella affinis		Rock					X
	Microcladia coulteri		Rock					X
	Plocamium cartilagineum		Rock				X	X
	Pterocladia sp.		Rock		X			X
	Pterocladia capillacea		Rock			X		
	Rhodymenia californica		Rock	X			X	X

Appendix C. Invertebrate Species found at Big Fisherman Cove. Presence listed by survey.

Invertebrate Group	Species Name	Common Name	Substrate	Givens et. al. 1965	Givens et. al. 1977	SWRCB 1979	WMSC 2004 (South Wall)	WMSC 2004 (North Wall)
Poriferans								
	Lucetta losangelensis	Sponge	Rock					X
	Acarnus erithacus	Red volcano sponge	Rock				X	X
	Cliona sp.	Yellow sponge	Rock					X
	Hymenemphisastra cyanocrypta	Cobalt sponge	Rock				X	
	Ophilitaspongia pennata	Red sponge	Rock				X	X
	Unknown	Sponge	Rock	X				
Cnidarians								
Hydrozoans								
	Hydractinia milleri	Hedgehog Hydroid	Rock				X	
	Plumularia sp.	Hydroid	Rock	X			X	
Anthozoans								
	Alcyonium rudyi	Octocoral	Rock				X	
	Ballanophyilla elegans	Orange cup coral	Rock					X
	Corynactis californica	Club-tipped anemone	Rock	X			X	X
	Lophogorgia chilensis	Red gorgonian	Rock				X	X
	Muricea californica	California golden gorgonian	Rock				X	X
	Muricea fruticosa	Brown gorgonian	Rock				X	X
	Pachycerianthus fimbriatus	Tube-dwelling anemone	Sand	X			X	X
Ectoprocts								
	Bugula californica	Moss animal	Rock				X	X
	Diaperoecia californica	Southern staghorn bryozoan	Rock				X	
	Membranopora sp.	Encrusting bryozoan	Rock					X
Sipunculids								
	Golfingia sp.	Peanut worm	Sand			X		
Phoronids								
	Phoronopsis californica	Phoronid worm	Mud	X		X		
Annelids								
Polychaetes								
	Amaeana occidentalis	Polychaete	Sand			X		
	Ceratonereis paucidentate	Polychaete	Sand			X		
	Euclymeninae	Polychaete	Sand			X		
	Exogone lourei	Polychaete	Sand			X		
	Exogone molesta	Polychaete	Sand			X		
	Lumbrineris zonata	Polychaete	Sand			X		
	Minuspio cirrifera	Polychaete	Sand			X		
	Myxicola infundibulum	Terebellid worm	Rock, Sand					X
	Paraonides	Polychaete	Sand			X		
	Phragmatopoma californica	Colonial sand tube worm	Rock				X	
	Phylo felix	Polychaete	Sand			X		
	Praxillella affinis pacifica	Polychaete	Sand			X		
	Salmacina tribranchiata	Fragile tube worm	Rock				X	
	Scolelepis	Polychaete	Sand			X		

Invertebrate Group	Species Name	Common Name	Substrate	Givens et. al. 1965	Givens et. al. 1977	SWRCB 1979	WMSC 2004 (South Wall)	WMSC 2004 (North Wall)
	Serpula vermicularis	Serpullid worm	Rock				X	X
	Spiochaetopterus costarum	Polychaete	Sand			X		
	Spirobranchus spinosus	Christmas tree worm	Rock	X	X	X	X	
	Tharyx (unidentifiable)	Polychaete	Sand			X		
	Thelepus crispus	Sabellid worm	Rock, Sand				X	X
Molluscs								
Bivalves								
	Chaceia ovoidea	Wart-necked piddock	Rock				X	
	Crassedoma giganteum	Rock scallop	Rock				X	X
	Periploma	Clam	Sand			X		
	Phacoides approximatus	Clam	Sand			X		
	Solen rosaceus	Rosy jackknife clam	Sand			X		
	Tagelus californianus	Clam	Sand			X		
	Tellina	Clam	Sand			X		
Gastropods								
	Conus californicus	California cone	Rock, Sand				X	X
	Cyprea spadicea	Chestnut cowry	Rock				X	
	Kelletia kelletii	Kellet's whelk	Rock					X
	Lithopoma undosum	Wavy turban snail	Rock				X	X
	Norrisa norrisi	Norris's top snail	Rock				X	X
	Olivella biplicata	Olive snail	Sand			X		
	Serpulorbis squamigerus	Scaled worm shell	Rock		X		X	X
	Tegula sp.	Turban snail	Rock				X	X
Arthropods								
Crustaceans								
	Ampelisca cristata	Amphipod	Sand			X		
	Janiridae (unidentifiable)	Isopod	Sand			X		
	Chthamalus fissus	Barnacle	Rock		X	X		
	Tetraclita squamosa elegans	Barnacle	Rock		X	X		
	Tetraclita squamosa rubescens	Barnacle	Rock		X	X		
	Pagurus sp.	Hermit crab	Rock				X	
	Panulirus interruptus	Spiny lobster	Rock				X	X
Echinoderms								
Asteroids								
	Linckia columbiae	Fragile star	Rock	X			X	X
	Ophiopsilla californica	Brittle star	Rock				X	
	Patiria miniata	Sea star	Rock		X	X		
	Pisaster giganteus	Giant spined sea star	Rock		X	X		X
Holothuroids								
	Parastichopus parvimensis	Warty sea cucumber	Rock, Sand		X	X	X	X
Echinoids								
	Lytechinus pictus	Urchin	Sand			X		
	Centrostephanus coronatus	Black sea urchin	Rock				X	X

Invertebrate Group	Species Name	Common Name	Substrate	Givens et. al. 1965	Givens et. al. 1977	SWRCB 1979	WMSC 2004 (South Wall)	WMSC 2004 (North Wall)
	Strongylocentrotus franciscanus	Red sea urchin	Rock				X	X
Chordates								
	Clavelina huntmani	Light bulb tunicate	Rock				X	X
	Didemnum carnulentum	Colonial tunicate	Rock				X	

Appendix D. Fish Species found at Big Fisherman Cove Presence listed by survey.

Fish Group	Species Name	Common Name	Substrate	Givens et. al. 1965	Givens et. al. 1977	SWRCB 1979	WMSC 2004 (South Wall)	WMSC 2004 (North Wall)
Clinidae								
	Gibbonsia elegans	Spotted kelpfish	Rock, Sand			X		
	Gibbonsia montereyensis	Crevice kelpfish	Rock					X
	Heterostichus rostratus	Giant kelpfish	Rock				X	
Embiotocidae								
	Brachyistius frenatus	Kelp perch	Pelagic				X	X
	Embiotoca jacksonii	Black perch	Pelagic					X
	Hyperprosopon argentum	Wall-eye perch	Pelagic				X	
	Hypsurus caryi	Rainbow perch	Pelagic				X	
	Rhacochilus toxotes	Rubberlip surfperch	Pelagic, Rock, Sand		X	X		
Gobidae								
	Lythrypnus dalii	Blue-banded goby	Rock			X	X	X
	Lythrypnus zebra	Zebra goby	Rock				X	X
	Rhinogobiops nicholsi (=Coryphopterus nicholsii)	Black-eyed goby	Rock, Sand	X	X	X	X	X
Haemulidae								
	Anisotremus davidsoni	Sargo	Rock				X	
Girellidae								
	Girella nigricans	Opaleye	Kelp, Rock, Sand		X	X	X	X
Scorpididae								
	Medialuna californiensis	Halfmoon	Pelagic		X	X		X
Labridae								
	Halichoeres semicinctus	Rock wrasse	Rock, Sand	X	X	X	X	X
	Oxyjulis californica	Señorita	Rock, Sand, Pelagic		X	X	X	X
	Semicossyphus (=Pimelometopon) pulchrum	California sheephead	Rock, Sand, Pelagic		X	X	X	X
Malacanthidae								
	Caulolatilus princeps	Ocean whitefish	Pelagic				X	
Muraenidae								
	Gymnothorax mordax	California moray	Rock		X	X		
Pomacentridae								
	Chromis punctipinnis	Blacksmith	Kelp, Rock, Sand			X	X	X
	Hypsypops rubicundus	Garibaldi	Kelp, Rock	X		X	X	X
Scorpaenidae								
	Sebastes serriceps	Treefish	Rock					X
Serranidae								
	Paralabrax clathratus	Kelp bass	Kelp, Rock, Sand		X	X	X	X
Urolophidae								
	Urolophus halleri	Round stingray	Sand				X	

Appendix E
Mussel Watch Data
Catalina Island West

Constituent	Jul-77	Dec-77	Aug-78	Dec-78	Dec-79	May-80	Dec-80	Dec-80	Sep-91	Mar-94	N	Median	Mean	Standard Deviation
Cadmium	1.01	1.4	1.02	1.26	1.04	3.49	1.25	1.36	0.8	1.2	10	1.23	1.38	0.763
Chromium	0.26	0.44	0.35	0.49	0.24	1.06	0.42	0.43	0.23	0.3	10	0.385	0.422	0.242
Copper	0.65	0.86	0.67	0.5	0.47	0.97	0.6	0.82	0.7	0.68	10	0.675	0.692	0.156
Mercury	0.013	0.025	0.042	0.039	0.046	0.040	0.030	0.034	0.02	0.031	10	0.033	0.032	0.010
Nickel	0.18	0.28	na	na	0.18	0.97	na	na	na	0.35	5	0.28	0.392	0.331
Lead	3.38	3.87	3.79	3.19	4.71	5.37	2.77	1.25	2.8	3.5	10	3.44	3.463	1.12
Selenium	na	na	na	na	na	na	na	na	na	0.36	1	0.36	0.36	-
Silver	0.118	0.387	0.237	0.246	0.201	0.115	0.318	0.067	0.17	0.15	10	0.186	0.201	0.099
Zinc	23.8	32.3	25	20.7	31.6	31.3	22.9	18.5	26	37	10	25.5	26.9	5.88
(units measured in ppm, wet weight)														
Total Chlordane	na	na	na	na	ns	ns	ns	ns	ns	nd	1	-	-	-
Total DDT	6.4	1.6	5.3	2.1	ns	ns	ns	ns	ns	2.0	5	2.1	3.48	2.21
Total of PCB arochlors	4.8	4.7	5.0	2.0	ns	ns	ns	ns	ns	5.0	5	4.8	4.30	1.42
Total of Endosulfan	na	na	na	na	ns	ns	ns	ns	ns	nd	1	-	-	-
(units measured in ppb, wet weight)														

nd=not detected (-8)
na=not analyzed (-9)
ns= not sampled