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 No.	Monitoring Location Name	Monitoring Location Description
--	INF-001	At a location where all influent wastestream flows to South Bay International Wastewater Treatment Plant (IWTP or Facility) are accounted for in monitoring events; upstream of any in-plant return flows; and where representative samples of influent can be collected before any process or treatment that could alter the properties of the influent. Latitude: 32° 32' 29.94''N; Longitude:117°03' 33.75"W
001	EFF-001	Downstream of any in-plant return flows at the Facility where representative samples of effluent treated at the Facility can be collected, prior to commingling with other discharges contributing to the South Bay Ocean Outfall (SBOO). Latitude: 32° 32' 37.68"N; Longitude:117° 03' 54.83"W
TRANSBOUNDARY STATIONS		
	C1	Goat Canyon Diversion Structure; Approximate Location at Latitude: 32° 32' 13.1994"N; Longitude: 117° 5' 57.516"'W
	C2	Smugglers Gulch Diversion Structure; Approximate Location at Latitude: 32° 32' 23.2794"N; Longitude: 117° 5' 12.8394"W
	C3	Silva Drain Canyon Collector; Approximate Location at Latitude: 32° 32' 22.0554"N; Longitude: 117° 3' 55.4394"W
	C4	Canyon del Sol Collector; Approximate Location at Latitude: 32° 32' 21.0114"N; Longitude: 117° 4' 7.1754"W
	C5	Stewart's Drain Canyon Collector; Approximate Location at Latitude: 32° 32' 25.6914"N; Longitude: 117° 3' 28.1874"W
SHORELINE STATIONS		
--	S-0	Latitude: 32° 25.148'N; Longitude:117°05.837'W Mexico (Southernmost location)
--	S-2	Latitude: 32° 29.922'N; Longitude:117°07.380'W Mexico (Beach south of El Vigia Restaurant)
--	S-3	Latitude: 32° 31.542'N; Longitude:117°07.440'W Mexico (Beach at end of existing road of Playas de Tijuana)
--	S-4	Latitude: 32° 32.118'N; Longitude:117°07.500'W United States (Beach just north of the border fence)
--	S-5	Latitude: 32° 33.468'N; Longitude:117°07.860'W United States (Beach north of mouth of estuary)
--	S-6	Latitude: 32° 33.978'N; Longitude:117°07.980'W United States (Beach at end of Seacoast Drive)
--	S-8	Latitude: 32°38.208'N; Longitude:117°08.640'W United States (Silver Strand State Beach, Area 4 West of Coronado Cays)
--	S-9	Latitude: 32°40.620'N; Longitude:117°10.680'W United States (Beach at end of Avenida Del Sol seaward of Hotel Del Coronado)

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Discharge Point No.	Monitoring Location Name	Monitoring Location Description
--	S-10	Latitude: 32°32.598'N; Longitude:117°07.500'W United States (Beach at the terminus of Monument Road)
--	S-11	Latitude: 32°33.678'N; Longitude:117°07.920'W United States (Beach approximately ¾ miles north of the mouth of the Tijuana River)
	S-12	Latitude: 32°35.142'N; Longitude:117°07.980'W United States (Beach at the end of Carnation Street)
OFFSHORE STATIONS[1,2]		
--	I-1	Latitude: 32°28.400'N; Longitude:117°16.620'W; DEPTH 198 ft (60 m)
--	I-2	Latitude: 32°28.400'N; Longitude:117°11.940'W; DEPTH 106 ft (32 m)
--	I-3	Latitude: 32°28.020'N; Longitude:117°10.080'W; DEPTH 89 ft (27 m)[3]
--	I-4	Latitude: 32°28.300'N; Longitude:117°08.400'W; DEPTH 59 ft (18 m)
--	I-5	Latitude: 32°28.300'N; Longitude:117°07.800'W; DEPTH 46 ft (14 m)[4]
--	I-6	Latitude: 32°29.610'N; Longitude:117°09.780'W; DEPTH 86 ft (26 m)
--	I-7	Latitude: 32°31.000'N; Longitude:117°15.180'W; DEPTH 172 ft (52 m)[5]
--	I-8	Latitude: 32°31.000'N; Longitude:117°12.120'W; DEPTH 118 ft (36 m)[6]
--	I-9	Latitude: 32°30.700'N; Longitude:117°10.740'W; DEPTH 96 ft (29 m)[3]
--	I-10	Latitude: 32°31.000'N; Longitude:117°09.360'W; DEPTH 63 ft (19 m)[7]
--	I-11	Latitude: 32°30.800'N; Longitude:117°08.220'W; DEPTH 43 ft (13 m)[4]
--	I-12	Latitude: 32°31.970'N; Longitude:117°10.980'W; DEPTH 92 ft (28 m)[3]
--	I-13	Latitude: 32°32.250'N; Longitude:117°12.720'W; DEPTH 125 ft (38 m)[6]
--	I-14	Latitude: 32°32.580'N; Longitude:117°11.040'W; DEPTH 92 ft (28 m)[3]
--	I-15	Latitude: 32°32.270'N; Longitude:117°11.340'W; DEPTH 102 ft (31 m)
--	I-16	Latitude: 32°32.270'N; Longitude:117°10.980'W; DEPTH 92 ft (28 m)[3]
--	I-17	Latitude: 32°32.270'N; Longitude:117°10.680'W; DEPTH 83 ft (25 m)
--	I-18	Latitude: 32°32.170'N; Longitude:117°09.660'W; DEPTH 63 ft (19 m)[7]
--	I-20	Latitude: 32°33.420'N; Longitude:117°15.420'W; DEPTH 182 ft (55 m)[8]
--	I-21	Latitude: 32°33.640'N; Longitude:117°13.620'W; DEPTH 135 ft (41 m)[6]
--	I-22	Latitude: 32°33.200'N; Longitude:117°11.100'W; DEPTH 92 ft (28 m)[3]
--	I-23	Latitude: 32°33.050'N; Longitude:117°09.900'W; DEPTH 69 ft (21 m)[7]
--	I-27	Latitude: 32°34.450'N; Longitude:117°11.460'W; DEPTH 92 ft (28 m)
--	I-28	Latitude: 32°35.630'N; Longitude:117°15.840'W; DEPTH 182 ft (55 m)
--	I-29	Latitude: 32°35.670'N; Longitude:117°13.380'W; DEPTH 125 ft (38 m)
--	I-30	Latitude: 32°35.720'N; Longitude:117°11.820'W; DEPTH 92 ft (28 m)[3]
--	I-31	Latitude: 32°35.730'N; Longitude:117°10.320'W; DEPTH 63 ft (19 m)
--	I-33	Latitude: 32°37.430'N; Longitude:117°14.220'W; DEPTH 99 ft (30 m)[3]
--	I-34	Latitude: 32°37.800'N; Longitude:117°12.960'W; DEPTH 63 ft (19 m)
--	I-35	Latitude: 32°38.200'N; Longitude:117°10.920'W; DEPTH 63 ft (19 m)
--	I-36	Latitude: 32°38.350'N; Longitude:117°09.240'W; DEPTH 36 ft (11 m)[4]
--	I-37	Latitude: 32°38.880'N; Longitude:117°12.980'W; DEPTH 40 ft (12 m)[4]
--	I-38	Latitude: 32°40.130'N; Longitude:117°11.200'W; DEPTH 36 ft (11 m)[4]
KELP/NEARSHORE STATIONS		
--	I-19	Latitude: 32°32.180'N; Longitude:117°07.740'W; DEPTH 33 ft (10 m)[4]
--	I-24	Latitude: 32°33.400'N; Longitude:117°08.700'W; DEPTH 36 ft (11 m)[4]
--	I-25	Latitude: 32°33.670'N; Longitude:117°08.880'W; DEPTH 30 ft (9 m)[9]
--	I-26	Latitude: 32°34.470'N; Longitude:117°08.820'W; DEPTH 30 ft (9 m)[9]
--	I-32	Latitude: 32°35.680'N; Longitude:117°08.280'W; DEPTH 33 ft (10 m)[9]
--	I-39	Latitude: 32°34.340'N; Longitude:117°10.050'W; DEPTH 59 ft (18 m)[7]
--	I-40	Latitude: 32°33.230'N; Longitude:117°08.170'W; DEPTH 33 ft (10 m)[9]

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Discharge Point No.	Monitoring Location Name	Monitoring Location Description
TRAWL STATIONS		
--	SD-15 (Zone 9)	Latitude: 32°28.350'N; 117°10.500'W; DEPTH: 89 ft (27 m)
--	SD-16 (Zone 8)	Latitude: 32°31.000'N; 117°10.720'W; DEPTH: 89 ft (27 m)
--	SD-17 (Zone 5)	Latitude: 32°32.200'N; 117°11.430'W; DEPTH: 99 ft (30 m)
--	SD-18 (Zone 5)	Latitude: 32°32.580'N; 117°11.350'W; DEPTH: 99 ft (30 m)
--	SD-19 (Zone 6)	Latitude: 32°33.500'N; 117°11.080'W; DEPTH: 92 ft (28 m)
--	SD-20 (Zone 6)	Latitude: 32°34.680'N; 117°11.450'W; DEPTH: 96 ft (29 m)
--	SD-21 (Zone 7)	Latitude: 32°36.990'N; 117°12.690'W; DEPTH: 96 ft (29 m)
RIG FISHING STATIONS		
--	RF-3	Latitude: 32°32.270'N; 117°11.000'W; DEPTH: 89 ft (27 m)
--	RF-4	Latitude: 32°25.910'N; 117°17.655'W; DEPTH: 89 ft (27 m)

1. All 40 offshore and kelp/nearshore stations designated I-1 to I-40 are monitored for visual observations, temperature, depth, pH, salinity, dissolved oxygen, light transmittance, and chlorophyll-a as indicated in Table E-7.
2. A total of 28 of the above offshore and kelp/nearshore stations are also monitored for total coliforms, fecal coliforms, and Enterococcus as indicated in Table E-7. These stations include I-3, I-5, I-7 to I-14, I-16, I-18 to I-26, I-30, I-32, I-33, and I-36 to I-40.
3. Discrete depths for fecal indicator bacteria samples include: 2m, 18m, and 27m.
4. Discrete depths for fecal indicator bacteria samples include: 2m, 6m, and 11m.
5. Discrete depths for fecal indicator bacteria samples include: 2m, 18m, and 52m.
6. Discrete depths for fecal indicator bacteria samples include: 2m, 18m, and 37m.
7. Discrete depths for fecal indicator bacteria samples include: 2m, 12m, and 18m.
8. Discrete depths for fecal indicator bacteria samples include: 2m, 18m, and 55m.
9. Discrete depths for fecal indicator bacteria samples include: 2m, 6m, and 9m.

The North latitude and West longitude information in Table E-1 are approximate for administrative purposes. A map of the shoreline stations, offshore stations, trawl stations, and rig fishing stations monitoring locations is provided in Attachment B of this Order.

III. CORE MONITORING REQUIREMENTS

A. Influent Monitoring Requirements

Influent monitoring is the collection and analysis of samples or measurements of wastewater prior to the treatment processes. Influent monitoring of a wastewater stream prior to entering the treatment plant is necessary to address the following questions:

(1) Is the pretreatment program effectively controlling pollutant loads from industrial facilities?

(2) What is the frequency of unexpected industrial discharges (or pollutants loads) which can cause or contribute to an upset in the wastewater process?

(3) Is the influent inhibiting or disrupting the IWTP, its treatment processes or operations, or its sludge processes, use, or disposal?

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(4) Is the influent complying with influent limitations prescribed in the Order?

(5) Is the Facility complying with permit conditions, including but not limited to carbonaceous biochemical oxygen demand (CBOD5) and total suspended solids (TSS) percent removal limitations?

The Discharger shall monitor the influent at Monitoring Location Name INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units[1]	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Recorder/Totalizer	Continuous	--
Carbonaceous Biochemical Oxygen Demand (5-Day at 20°C) ($CBOD_5$)	mg/L	24-hr Composite	1/Day[3,4]	[2]
Biochemical Oxygen Demand (5-day @ 20°C) (BOD_5)	mg/L	24-hr Composite	1/Day[3,4]	[2]
Total Suspended Solids (TSS)	mg/L	24-hr Composite	1/Day[3,4]	[2]
Volatile Suspended Solids	mg/L	24-hr Composite	1/Day[3,4]	[2]
Total Dissolved Solids (TDS)	mg/L	24-hr Composite	1/Week[4,5]	[2]
Temperature	°F	Grab	1/Day[3,4]	[2]
Floating Particulates	mg/L	24-hr Composite	1/Week[5]	[2]
Grease and Oil	mg/L	Grab	1/Week[4,5]	[2]
Settleable Solids	ml/L	Grab	1/Week[5]	[2]
Turbidity	NTU	24-hr Composite	1/Week[5]	[2]
pH	pH Units	Grab	1/Week[5]	[2]
Arsenic, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Cadmium, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Chromium (VI) , Total Recoverable[6]	µg/L	24-hr Composite	1/Week[4,5]	[2]
Copper, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Lead, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Mercury, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Nickel, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Selenium, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Silver, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Zinc, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Cyanide, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	[2]
Ammonia (as N)	µg/L	24-hr Composite	1/Month[4,5]	[2]
Phenolic Compounds (nonchlorinated)[1]	µg/L	24-hr Composite	1/Month[4,5]	[2]
Phenolic Compounds (chlorinated)[1]	µg/L	24-hr Composite	1/Month[4,5]	[2]
Endosulfan[1]	µg/L	24-hr Composite	1/Month[4,5]	[2]
Endrin	µg/L	24-hr Composite	1/Month[4,5]	[2]
HCH[1]	µg/L	24-hr Composite	1/Month[4,5]	[2]
Radioactivity	µg/L	24-hr Composite	1/Month[4,5]	[2]
Acrolein	µg/L	Grab	1/Quarter[4,5]	[2]
Antimony, Total Recoverable	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Bis (2-chloroethoxy) Methane	µg/L	24-hr Composite	1/Quarter[4,5]	[2]

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Parameter	Units[1]	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Bis (2-chloroisopropyl) Ether	µg/L	Grab	1/Quarter[4,5]	[2]
Chlorobenzene	µg/L	Grab	1/Quarter[4,5]	[2]
Chromium (III), Total Recoverable[6]	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Di-n-butyl Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Dichlorobenzenes[1]	µg/L	Grab	1/Quarter[4,5]	[2]
Diethyl Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Dimethyl Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
4,6-dinitro-2-methylphenol	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
2,4-dinitrophenol	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Ethylbenzene	µg/L	Grab	1/Quarter[4,5]	[2]
Fluoranthene	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Hexachlorocyclopentadiene	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Nitrobenzene	µg/L	Grab	1/Quarter[4,5]	[2]
Thallium, Total Recoverable	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Toluene	µg/L	Grab	1/Quarter[4,5]	[2]
Tributyltin	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
1,1,1-trichloroethane	µg/L	Grab	1/Quarter[4,5]	[2]
Acrylonitrile	µg/L	Grab	1/Quarter[4,5]	[2]
Aldrin	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Benzene	µg/L	Grab	1/Quarter[4,5]	[2]
Benzidine	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Beryllium, Total Recoverable	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Bis(2-chloroethyl) ether	µg/L	Grab	1/Quarter[4,5]	[2]
Bis(2-ethylhexyl) phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Carbon tetrachloride	µg/L	Grab	1/Quarter[4,5]	[2]
Chlordane[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Chlorodibromomethane (dibromochloromethane)	µg/L	Grab	1/Quarter[4,5]	[2]
Chloroform	µg/L	Grab	1/Quarter[4,5]	[2]
DDT[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
1,4-Dichlorobenzene	µg/L	Grab	1/Quarter[4,5]	[2]
3,3'-Dichlorobenzidine	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
1,2-Dichloroethane	µg/L	Grab	1/Quarter[4,5]	[2]
1,1-Dichloroethylene	µg/L	Grab	1/Quarter[4,5]	[2]
Dichlorobromomethane	µg/L	Grab	1/Quarter[4,5]	[2]
Dichloromethane (Methylene Chloride)	µg/L	Grab	1/Quarter[4,5]	[2]
1,3-Dichloropropene (1,3-Dichloropropylene)	µg/L	Grab	1/Quarter[4,5]	[2]
Dieldrin	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
2,4-Dinitrotoluene	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
1,2-Diphenylhydrazine	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Halomethanes[1]	µg/L	Grab	1/Quarter[4,5]	[2]
Heptachlor	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Heptachlor Epoxide	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Hexachlorobenzene	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Hexachlorobutadiene	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Hexachloroethane	µg/L	24-hr Composite	1/Quarter[4,5]	[2]

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Parameter	Units[1]	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Isophorone	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
N-nitrosodimethylamine	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
N-nitrosodi-N-propylamine	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
N-nitrosodiphenylamine	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
PAHs[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
PCBs[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
TCDD equivalents[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
1,1,2,2-Tetrachoroethane	µg/L	Grab	1/Quarter[4,5]	[2]
Tetrachloroethylene (Tetrachloroethene)	µg/L	Grab	1/Quarter[4,5]	[2]
Toxaphene	µg/L	24-hr Composite	1/Quarter[4,5]	[2]
Trichloroethylene (Trichloroethene)	µg/L	Grab	1/Quarter[4,5]	[2]
1,1,2-Trichloroethane	µg/L	Grab	1/Quarter[4,5]	[2]
2,4,6-Trichlorophenol	µg/L	Grab	1/Quarter[4,5]	[2]
Vinyl Chloride	µg/L	Grab	1/Quarter[4,5]	[2]

1. See Attachment A for definitions of abbreviations and a glossary of common terms used in this Order.
2. As required under 40 CFR part 136.
3. Five days per week except seven days per week for at least one week during July or August of each year.
4. The Discharger shall calculate and report the mass emission rate (MER) of the constituent for each sample taken. The MER shall be calculated in accordance with section VII.I.4 of this Order.
5. The minimum frequency shall be increased from 1/Week to 5/Week, 1/Month to 1/Week, or 1/Quarter to 1/Month, as appropriate, if any result for this parameter exceeds the applicable interim or final influent limitation specified in this Order, as appropriate. The increased minimum frequency of monitoring shall remain in effect until the results of a minimum of four consecutive analyses for this parameter are below all applicable interim or final influent limitation specified in this Order, as appropriate.
6. The Discharger may, at their option, monitor for total recoverable chromium in lieu of total recoverable chromium (III) or total recoverable chromium (VI).

B. Effluent Monitoring Requirements

Effluent monitoring is the collection and analysis of samples or measurements of effluents, after all treatment processes, to determine and quantify contaminants and demonstrate compliance with applicable effluent limitations, standards, and other requirements of this Order.

Effluent monitoring is necessary to address the following questions:

(1) Does the effluent comply with permit effluent limitations, performance goals, and other requirements of this Order, thereby ensuring that water quality standards are achieved in the receiving water?

(2) What is the mass of constituents that are discharged daily, monthly or annually?

(3) Is the effluent concentration or mass changing over time?

(4) Is the Facility being properly operated and maintained to ensure compliance with the conditions of the Order?

The Discharger shall monitor the effluent at Monitoring Location EFF-001 as follows:

Table E-3. Effluent Monitoring

Parameter	Units[1]	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Recorder/Totalizer	Continuous[2]	--
$CBOD_5$	mg/L	24-hr Composite	1/Day[3,4]	6
BOD_5	mg/L	24-hr Composite	1/Day[3,4]	6
TSS	mg/L	24-hr Composite	1/Day[3,4]	6
Volatile Suspended Solids	mg/L	24-hr Composite	1/Day[3]	6
Total Dissolved Solids	mg/L	24-hr Composite	1/Day[3]	6
Temperature	°C	Grab	1/Day[3]	6
Dissolved Oxygen	mg/L	Grab	1/Week[5]	
Floating Particulates	mg/L	24-hr Composite	1/Day[3]	6
Grease and Oil	mg/L	Grab	1/Week[4,5]	6
Settleable Solids	mL/L	Grab	1/Day[3]	6
Turbidity	NTU	24-hr Composite	1/Day[3]	6
pH	pH Units	Grab	1/Day[3]	6
TABLE 1 PARAMETERS FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Cadmium, Total Recoverable	µg/L	24-hr Composite	1/ Week[4,5]	6
Chromium (VI), Total Recoverable[7]	µg/L	24-hr Composite	1/Week[4,5]	6
Copper, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Lead, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Mercury, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Nickel, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Selenium, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Silver, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Zinc, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6
Cyanide, Total Recoverable	µg/L	24-hr Composite	1/Week[4,5]	6,8
Total Chlorine Residual[9]	µg/L	Grab	1/Day[4]	6
Ammonia Nitrogen, Total (as N)	mg/L	24-hr Composite	1/Month[4,5]	6
Phenolic Compounds (nonchlorinated)[1]	µg/L	24-hr Composite	1/ Month[4,5]	6
Phenolic Compounds (chlorinated)[1]	µg/L	24-hr Composite	1/Month[4,5]	6
Endosulfan	µg/L	24-hr Composite	1/ Month[4,5]	6
Endrin	µg/L	24-hr Composite	1/ Month[4,5]	6
HCH[1]	µg/L	24-hr Composite	1/Month[4,5]	6
Radioactivity	pCi/L	24-hr Composite	1/ Month[4,5]	6
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS				
Acrolein	µg/L	Grab	1/Quarter[4,5]	6
Antimony, Total Recoverable	µg/L	24-hr Composite	1/Quarter[4,5]	6
Bis (2-chloroethoxy) Methane	µg/L	24-hr Composite	1/Quarter[4,5]	6
Bis (2-chloroisopropyl) Ether	µg/L	Grab	1/Quarter[4,5]	6
Chlorobenzene	µg/L	Grab	1/Quarter[4,5]	6

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Parameter	Units[1]	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chromium (III), Total Recoverable[7]	µg/L	24-hr Composite	1/Quarter[4,5]	6
Di-n-butyl Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	6
Dichlorobenzenes[1]	µg/L	Grab	1/Quarter[4,5]	6
Diethyl Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	6
Dimethyl Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	6
4,6-dinitro-2-methylphenol	µg/L	24-hr Composite	1/Quarter[4,5]	6
2,4-dinitrophenol	µg/L	24-hr Composite	1/Quarter[4,5]	6
Ethylbenzene	µg/L	Grab	1/Quarter[4,5]	6
Fluoranthene	µg/L	24-hr Composite	1/Quarter[4,5]	6
Hexachlorocyclopentadiene	µg/L	24-hr Composite	1/Quarter[4,5]	6
Nitrobenzene	µg/L	Grab	1/Quarter[4,5]	6
Thallium, Total Recoverable	µg/L	24-hr Composite	1/Quarter[4,5]	6
Toluene	µg/L	Grab	1/Quarter[4,5]	6
Tributyltin	µg/L	24-hr Composite	1/Quarter[4,5]	6
1,1,1-trichloroethane	µg/L	Grab	1/Quarter[4,5]	6
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS				
Acrylonitrile	µg/L	Grab	1/Quarter[4,5]	6
Aldrin	µg/L	24-hr Composite	1/Quarter[4,5]	6
Benzene	µg/L	Grab	1/Quarter[4,5]	6
Benzidine	µg/L	24-hr Composite	1/Quarter[4,5]	6
Beryllium, Total Recoverable	µg/L	24-hr composite	1/Quarter[4,5]	6
Bis (2-chloroethyl) Ether	µg/L	Grab	1/Quarter[4,5]	6
Bis (2-ethlyhexyl) Phthalate	µg/L	24-hr Composite	1/Quarter[4,5]	6
Carbon Tetrachloride	µg/L	Grab	1/Quarter[4,5]	6
Chlordane[1]	µg/L	24-hr Composite	1/Quarter[4,5]	6
Chlorodibromomethane (dibromochloromethane)	µg/L	Grab	1/Quarter[4,5]	6
Chloroform	µg/L	Grab	1/Quarter[4,5]	6
DDT[1]	µg/L	24-hr Composite	1/Quarter[4,5]	6
1,4-dichlorobenzene	µg/L	Grab	1/Quarter[4,5]	6
3,3'-dichlorobenzidine	µg/L	24-hr Composite	1/Quarter[4,5]	6
1,2-dichloroethane	µg/L	Grab	1/Quarter[4,5]	6
1,1-dichloroethylene	µg/L	Grab	1/Quarter[4,5]	6
Dichlorobromomethane	µg/L	Grab	1/Quarter[4,5]	6
Dichloromethane (Methylene Chloride)	µg/L	Grab	1/Quarter[4,5]	6
1,3-dichloropropene (1,3-Dichloropropylene)	µg/L	Grab	1/Quarter[4,5]	6
Dieldrin	µg/L	24-hr Composite	1/Quarter[4,5]	6
2,4-dinitrotoluene	µg/L	24-hr Composite	1/Quarter[4,5]	6
1,2-diphenylhydrazine	µg/L	24-hr Composite	1/Quarter[4,5]	6
Halomethanes[1]	µg/L	Grab	1/Quarter[4,5]	6
Heptachlor	µg/L	24-hr Composite	1/Quarter[4,5]	6
Heptachlor Epoxide	µg/L	24-hr Composite	1/Quarter[4,5]	6
Hexachlorobenzene	µg/L	24-hr Composite	1/Quarter[4,5]	6
Hexachlorobutadiene	µg/L	24-hr Composite	1/Quarter[4,5]	6
Hexachloroethane	µg/L	24-hr Composite	1/Quarter[4,5]	6
Isophorone	µg/L	24-hr Composite	1/Quarter[4,5]	6

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Parameter	Units[1]	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
N-nitrosodimethylamine	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
N-nitrosodi-N-propylamine	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
N-nitrosodiphenylamine	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
PAHs[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
PCBs[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
TCDD equivalents[1]	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
1,1,2,2-tetrachloroethane	µg/L	Grab	1/Quarter[4,5]	[6]
Tetrachloroethylene (Tetrachloroethene)	µg/L	Grab	1/Quarter[4,5]	[6]
Toxaphene	µg/L	24-hr Composite	1/Quarter[4,5]	[6]
Trichloroethylene (Trichloroethene)	µg/L	Grab	1/Quarter[4,5]	[6]
1,1,2-trichloroethane	µg/L	Grab	1/Quarter[4,5]	[6]
2,4,6-trichlorophenol	µg/L	Grab	1/Quarter[4,5]	[6]
Vinyl Chloride	µg/L	Grab	1/Quarter[4,5]	[6]

1 See Attachment A for definitions of abbreviations and a glossary of common terms used in this Order

2 Report the total daily effluent flow and the monthly average effluent flow.

3 The minimum sampling frequency shall be five days per week and shall increase to seven days per week for at least one week during July or August of each year.

4 The Discharger shall calculate and report the mass emission rate (MER) of the constituent for each sample taken. The MER shall be calculated in accordance with section VII.I.4 of this Order.

5 The minimum frequency shall be increased from 1/Week to 5/Week, 1/Month to 1/Week, or 1/Quarter to 1/Month, as appropriate , if any result for this parameter exceeds the applicable effluent limitation or performance goal specified in this Order. The increased minimum frequency of monitoring shall remain in effect until the results of a minimum of four consecutive analyses for this parameter are below all applicable effluent limitations or performance goals specified in this Order.

6 The analytical test methods for compliance determinations shall use minimum levels specified in Appendix II of the Ocean Plan used as required under 40 CFR part 136. The Discharger shall select minimum levels that are below the effluent limitation or performance goal. If no minimum level value is below the effluent limitation or performance goal, the Discharger shall select the lowest minimum level value and its associated analytical method.

7 The Discharger may, at their option, apply this performance goal as a total chromium performance goal and monitor for total recoverable chromium in lieu of total recoverable chromium (III) or total recoverable chromium (VI).

8 If a Discharger can demonstrate to the satisfaction of the USEPA and the State Water Board that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR part 136.

9 Monitoring of total chlorine residual is required at the frequency specified when any of the treatment units that are the subject of this Order use chlorine for disinfection. Monitoring of total chlorine residual is not required on days when none of the treatment units that are subject to this Order use chlorine for disinfection. If only one sample is collected for total chlorine residual analysis on a particular day, that sample must be collected at the time when the concentration of total chlorine residual in the discharge would be expected to be greatest. The times of chlorine discharges on the days that samples are collected, and the time at which samples are collected, shall be reported.

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C. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity (WET) refers to the overall aggregate toxic effect of an effluent measured directly by an aquatic toxicity test(s). The control of WET is one approach this Order uses to control the discharge of toxic pollutants. WET tests evaluate the 1) aggregate toxic effects of all chemicals in the effluent including additive, synergistic, or antagonistic toxicity effects; 2) the toxicity effects of unmeasured chemicals in the effluent; and 3) variability in bioavailability of the chemicals in the effluent.

Monitoring to assess the overall toxicity of the effluent is required to answer the following questions:

(1) Does the effluent comply with permit effluent limitations for toxicity thereby ensuring that water quality standards are achieved in the receiving water?

(2) If the effluent does not comply with permit effluent limitations for toxicity, are unmeasured pollutants causing risk to aquatic life?

(3) If the effluent does not comply with permit effluent limitations for toxicity, are pollutants in combinations causing risk to aquatic life?

The Discharger shall monitor the effluent at Monitoring Location EFF-001 as follows:

Table E-4. Whole Effluent Toxicity Testing

Monitoring Location	Test	Unit	Sample Type	Minimum Test Frequency
EFF-001	Screening period for chronic toxicity	TU_c	24-hr Composite	Every other year for 3 months, beginning with the calendar year 2014
	Chronic Toxicity	TU_c	24-hr Composite	1/Week
	Acute Toxicity	TUa	24-hr Composite	1/Week

Acute toxicity testing shall be performed using either a marine fish or invertebrate species in accordance with procedures established by the USEPA guidance manual, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 5th Edition, October 2002 (EPA-821-R-02-012).

Critical life stage toxicity tests shall be performed to measure chronic toxicity. Testing shall be performed using methods outlined in Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine Estuarine Organisms (Chapman, G.A., D.L. Denton, and J.M. Lazorchak, 1995) or Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project (State Water Board, 1996).

A screening period for chronic toxicity shall be conducted every other year, beginning with the calendar year 2014. Each screening period shall consist of 3 WET tests, conducted once per month for three consecutive months, with each WET test using a minimum of three test species with approved test protocols, from the following list (from the Ocean Plan). Repeat screening periods may be terminated after the first month if the most sensitive species is the same as the species previously found to be most sensitive. Other tests may be used, if they have been approved for such testing by the State Water Board. The test species shall include a fish, an invertebrate, and an aquatic plant. After the screening period, the most sensitive test species shall be used for the weekly testing. The regular minimum test frequency for chronic toxicity of once per week shall continue prior to, during, and after each screening period. Control and dilution water should be receiving water or lab water as appropriate. If the dilution water is different from the culture water, then culture water should be used in a second control. The sensitivity of the test organisms to a reference toxicant shall be determined

concurrently with each bioassay test and reported with test results. The Discharger shall follow the requirements under Special Provisions, section VI.C.2.e of this Order if any effluent limitations for toxicity are exceeded.

Table E-5. Approved Test for Chronic Toxicity

Species	Test	Tier [1]	Reference[2]
giant kelp, *Macrocystis pyrifera*	percent germination; germ tube length	1	a, c
red abalone, *Haliotis rufescens*	abnormal shell development	1	a, c
oyster, *Crassostrea gigas*; mussels, *Mytilus spp.*	abnormal shell development; percent survival	1	a, c
urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	percent normal development	1	a, c
urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	percent fertilization	1	a, c
Mysid shrimp, *Holmesimysis costata*	percent survival; growth	1	a, c
Mysid shrimp, *Mysidopsis bahia*	percent survival; fecundity	2	b, d
topsmelt, *Atherinops affinis*	larval growth rate; percent survival	1	a, c
Silversides, *Menidia beryllina*	larval growth rate; percent survival	2	b, d

1 First tier methods are preferred for compliance monitoring. If first tier organisms are not available, the Discharger can use a second tier test method following approval by the San Diego Water Board.

2 Protocol References:

a. Chapman, G.A., D.L. Denton, and J.M. Lazorchak. 1995. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms. USEPA Report No. EPA/600/R-95/136.

b. Klemm, D.J., G.E. Morrison, T.J. Norberg-King, W.J. Peltier, and M.A. Heber. 1994. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms. USEPA Report No. EPA-600-4-91-003.

c. SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project. 96-1WQ.

d. Weber, C.I., W.B. Horning, I.I., D.J. Klemm, T.W. Nieheisel, P.A. Lewis, E.L. Robinson, J. Menkedick and F. Kessler 9eds). 1998. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-87/028. National Information Service, Springfield, VA.

D. Land Discharge Monitoring Requirements – Not Applicable

E. Recycling Monitoring Requirements – Not Applicable

IV. RECEIVING WATER MONITORING REQUIREMENTS

The receiving water and sediment monitoring requirements set forth below are designed to measure the effects of the SBOO discharge on the receiving ocean waters. The overall receiving water monitoring program is intended to answer the following questions:

(1) Does the receiving water meet water quality standards?

(2) Are the receiving water conditions getting better or worse over time?

(3) What is the relative contribution of the Facility discharge to pollution in the receiving water?

Receiving water and sediment monitoring in the vicinity of the SBOO shall be conducted as specified below. This program is intended to document conditions within the waste field in the vicinity of the zone of initial dilution (ZID) boundary, at reference stations, and at areas beyond

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the ZID where discharge impacts might be reasonably expected. Station location, sampling, sample preservation and analyses, when not specified, shall be by methods approved by the San Diego Water Board. The monitoring program may be modified by the San Diego Water Board at any time. The Discharger may also submit a list of proposed changes with supporting rationale to these monitoring requirements that it considers to be appropriate to the San Diego Water Board for approval.

The receiving water and sediment monitoring program for the SBOO may be conducted jointly with other dischargers to the SBOO.

During monitoring events sample stations shall be located using a land-based microwave positioning system or a satellite positioning system such as global positioning system (GPS). If an alternate navigation system is proposed, its accuracy should be compared to that of microwave and satellite based systems, and any compromises in accuracy shall be justified.

In the event that the Discharger is unable to obtain a sample from a monitoring station(s) located in Mexico, due to safety, legal, or other reasons, collection of samples at such station(s) can be omitted. In the event that a monitoring location is omitted, the Discharger shall submit a statement to the San Diego Water Board containing, at a minimum, the following information:

1. The monitoring station(s) that was omitted;
2. The date the monitoring station was omitted; and
3. A description of the circumstances for omitting the collection of data at the monitoring station.

A. Shoreline Water Quality Monitoring Requirements

As ocean surface waves come closer to shore they break, forming the foamy, bubbly surface called surf. The region of breaking waves defines the shoreline.

Monitoring of the shoreline is intended to answer the following questions:

(1) Does the effluent cause or contribute to an exceedance of the water quality standards in the receiving water?

(2) Does the effluent reach water contact zones or commercial shellfish beds?

(3) Are densities of bacteria in water contact areas below levels protective of public health?

All shoreline stations shall be monitored as follows:

Table E-6. Shoreline Monitoring Requirements[2]

Parameter	Units	Stations	Sample Type	Sampling Frequency
Visual Observations	--	S0, S2-S6, S8-S12	Visual	[1]
Temperature	°C	S0, S2-S6, S8-S12	Grab	1/Week
Total and Fecal Coliforms; Enterococcus[3]	colony forming units (CFU)/100 mL	S0, S2-S6, S8-S12	Grab	1/Week

1 Visual observations of the surface water conditions at the designated receiving water stations shall be conducted in such a manner as to enable the observer to describe and report the presence, if any, of floatables of sewage origin. Observations of wind (direction and speed), weather (cloudy, sunny, or rainy), direction of current, tidal conditions (high or low), water color, discoloration, oil and grease, turbidity, and odor shall be recorded. These observations shall be taken whenever a sample is collected. Visual observations shall also be conducted for repeat sampling.

2. See Attachment A for definitions of abbreviations and a glossary of common terms used in this Order.

3. If a single sample exceeds any of the single sample maximum (SSM) bacterial standards contained in section V.A.1.a.ii of this Order, repeat sampling at that location shall be conducted to determine the extent and persistence of

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the exceedance. Repeat sampling shall be conducted within 24 hours of receiving analytical results and continued until the sample result is less than the SSM standard or until a sanitary survey is conducted to determine the source of the high bacterial densities.

When repeat sampling is required because of an exceedance of any one single sample density, values from all samples collected during that 30-day period will be used to calculate the geometric mean. Repeat sampling is not required for the stations located in Mexico.

Sample Station Omission Due to Storm Condition (including required repeat sampling). In the event of stormy weather which makes sampling hazardous at certain shoreline stations, collection of samples at such stations can be omitted, provided that such omissions do not occur more than 5 days in any calendar year or occur at consecutive sampling times, or provided that a written request from the Discharger is approved by the Executive Officer in writing. The visual observations listed in footnote no. 1 above shall still be recorded and reported to the San Diego Water Board for these stations at the time the sample was attempted to be collected. If practicable, an effort should be made to return to the sampling station that was omitted and collect the sample during calmer conditions within the same reporting period.

B. Offshore Water Quality Monitoring Requirements

Offshore monitoring extends from south of the international border to Point Loma. See Attachment B for a map of the offshore monitoring stations.

Offshore monitoring is necessary to answer the following questions:

(1) Is natural light significantly reduced at any point outside the ZID as a result of the discharge?

(2) Does the discharge cause a discoloration of the ocean surface?

(3) Does the discharge of oxygen demanding waste cause the dissolved oxygen concentration to be depressed at any time more than 10 percent from that which occurs naturally outside the ZID?

(4) Does the discharge of waste cause the pH to change at any time more than 0.2 units from that which occurs naturally outside the ZID?

(5) Is the wastewater plume encroaching upon receiving water areas used for swimming, surfing, diving and shellfish harvesting?

(6) What is the fate of the discharge plume?

1. Offshore receiving water monitoring shall be conducted as follows:

Table E-7. Offshore and Kelp/Nearshore Monitoring Requirements

Parameter	Units	Sample Type	Sampling Frequency[1,2]	
			Offshore	Kelp/Nearshore
Visual Observations	--	Visual	[3]	[3]
Temperature and Depth[4]	°C, feet	Profile	1/Quarter	1/Week
pH[4]	units	Profile	1/Quarter	1/Week
Salinity[4]	parts per thousand	Profile	1/Quarter	1/Week
Dissolved Oxygen[4]	mg/L	Profile	1/Quarter	1/Week
Light Transmittance[4]	Percent	Profile	1/Quarter	1/Week
Chlorophyll a[4]	ug/L	Profile	1/Quarter	1/Week
Total Coliforms	CFU/100 mL	Grab	1/Quarter	1/Week
Fecal Coliforms	CFU/100 mL	Grab	1/Quarter	1/Week
Enterococcus	CFU/100 mL	Grab	1/Quarter	1/Week

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1 Quarterly receiving water monitoring results shall be submitted within the monthly SMR for the month in which the monitoring was conducted.
2 Shall be monitored at all applicable discrete depths specified for bacterial monitoring in Table E-1 of this MRP.
3 Visual observations of the surface water conditions at the designated receiving water stations shall be conducted in such a manner as to enable the observer to describe and report the presence, if any, of floatables of sewage origin. Observations of wind (direction and speed), weather (cloudy, sunny, or rainy), direction of current, tidal conditions (high or low), water color, oil and grease, turbidity, and odor shall be recorded. These observations shall be taken whenever a sample is collected.
4 Temperature, depth, pH, salinity, dissolved oxygen, light transmittance, and chlorophyll a profile data shall be measured throughout the entire water column during the quarterly and weekly sampling events.

Sample Station Omission Due to Storm Condition. In the event of stormy weather which makes sampling hazardous at certain offshore stations, collection of samples at such stations can be omitted, provided that such omissions do not occur more than 5 days in any calendar year or occur at consecutive sampling times, or provided that a written request from the Discharger is approved by the Executive Officer in writing. The visual observations listed in footnote no. 1 above shall still be recorded and reported to the San Diego Water Board for these stations at the time the sample was attempted to be collected. If practicable, an effort should be made to return to the sampling station that was omitted and collect the sample during calmer conditions within the same reporting period.

2. Plume Tracking

a. Plume Tracking Monitoring Plan (PTMP). By March 30, 2018, the Discharger shall, in consultation with the San Diego Water Board, prepare and submit a PTMP to implement an ongoing program designed to map dispersion and fate of the wastewater plume discharged from the SBOO. The PTMP shall include, but is not limited to, the following elements.

i. Installation and operation by the Discharger of a permanent, real-time oceanographic mooring system located near the terminal diffuser wye structure of the SBOO. The mooring system shall be designed to measure, at minimum, direction and velocity of subsurface currents, and ocean stratification.

ii. Development of a work plan or pilot study (special study) for implementation of the SBOO real-time mooring system, including data acquisition and processing.

iii. Networking the SBOO system to be compatible with a similar system being deployed by the Discharger near the Point Loma Ocean Outfall (PLOO) discharge site, as well as a third system operated by the University of California San Diego, Scripps Institution of Oceanography in the coastal waters off the City of Del Mar.

iv. Development of a work plan or pilot study (special study) for utilizing advanced oceanographic sampling technologies such as an autonomous underwater vehicle (AUV) or remotely operated towed vehicle (ROTV) in conjunction with the SBOO real-time mooring system to enhance collection of water quality data in real-time and provide higher resolution maps of plume location and movement.

b. Plume Tracking Implementation. The Discharger shall implement the PTMP within sixty (60) days after submission in accordance with the scheduled contained in the PTMP unless otherwise directed by the San Diego Water Board.

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c. Plume Tracking Reporting. The Discharger shall submit reports to the San Diego Water Board on the SBOO real-time mooring system and associated pilot studies (e.g., AUV/ROTV surveys) biennially in accordance with the due dates specified in Table E-11 for the Biennial Receiving Waters Monitoring and Assessment Report. These reports shall include in-depth discussion, evaluation, interpretation, and tabulation of the real-time mooring and other project data. Report interpretations and conclusions shall include the state of the receiving waters into which the SBOO discharges and the estimated location of the SBOO plume throughout the reporting period, Additional project progress reports may also be required per approved work plan schedules.

C. Benthic Monitoring Requirements

Seafloor sediments integrate constituents that are discharged to the ocean. Most particles that come from the SBOO discharge, and any associated contaminants, will eventually settle to the seafloor where they are incorporated into the existing sediments. Sediments can accumulate these particles over the years until the point where sediment quality is degraded and beneficial uses are impaired.

Benthic organisms are strongly affected by sediment contaminant exposure because these organisms often live in continual direct contact with sediment/pore water, and many species ingest significant quantities of sediment as a source of nutrition. Because the benthos are dependent on their surroundings, they serve as a biological indicator that reflects the overall conditions of the aquatic environment.

The assessment of sediment quality with respect to sediment chemistry, sediment toxicity and benthic community condition is necessary to answer the following questions:

(1) Is the dissolved sulfide concentration of waters in sediments significantly increased above that present under natural conditions?

(2) Is the concentration of substances, set forth in Table 1 of the Ocean Plan for protection of marine aquatic life, in marine sediments at levels which would degrade the benthic community?

(3) Is the concentration of organic pollutants in marine sediments at levels that would degrade the benthic community?

(4) Are benthic communities degraded as a result of the discharge?

(5) Is the sediment quality changing over time?

The assessment of sediment quality to evaluate potential effects of the SBOO discharge and compliance with narrative water quality standards specified in the Ocean Plan consist of the measurement and integration of three lines of evidence: 1) physical and chemical properties of seafloor sediments, 2) seafloor sediment toxicity to assess bioavailability and toxicity of sediment contaminants, and 3) ecological status of the biological communities (benthos) that live in or on the seafloor sediments.

1. Sediment Assessment for Physical and Chemical Properties

a. ***Sediment Sampling Stations and Monitoring Frequency***. The core sediment monitoring program is designed to assess spatial and temporal trends at 27 of the offshore stations listed in Table E-1, including 12 primary stations located along the outfall discharge depth contour (i.e., stations I2, I3, I6, I9, I12, I14, I15, I16, I22, I27, I30, I33) and 15 secondary stations located at other depths (i.e., stations I1, I4, I7, I8, I10, I13, I18, I20, I21, I23, I28, I29, I31, I34, I35). At the discretion of the San Diego

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Water Board, the requirement for sampling the secondary stations may be relaxed to allow Discharger participation in Southern California Bight Regional Monitoring efforts, or to reallocate resources to accommodate approved Strategic Process Studies. Sediment samples shall be collected twice per year during the Winter (e.g., January) and Summer (e.g., July) at each of the 27 offshore stations described above and in Table E-1 in order to assess benthic habitat condition in terms of physical and chemical composition (e.g., grain-size distribution, sediment chemistry).

b. ***Sediment Sample Collection Methods***. Sediment samples shall be taken using a 0.1-square meter modified Van Veen grab sampler. Samples for grain-size and chemical analyses shall be collected from within the upper two centimeters of the surface sediment. Bulk sediment chemical analysis shall include at a minimum the set of constituents listed in Table E-8 below.

c. **Sediment Chemistry.** Sediment chemistry is the measurement of the concentration of chemicals of concern in sediments. The chemistry line of evidence is used to assess the potential overall exposure risk to benthic organisms from pollutants in surficial sediments. Chemical analysis of sediment shall be conducted using USEPA approved methods, methods developed by the National Oceanic and Atmospheric Administration's (NOAA's) *National Status and Trends for Marine Environmental Quality*, or methods developed in conjunction with the Southern California Bight Regional Monitoring Program. For chemical analysis of sediment, samples shall be reported on a dry weight basis.

Sediment monitoring for physical and chemical properties shall be conducted at the 27 offshore benthic stations listed above in Section IV.C.1.a of this MRP as follows:

Table E-8. Sediment Monitoring Requirements

Determination	Units	Type of Sample	Minimum Frequency
Sediment grain size	µm	Grab	2/Year
Total Organic Carbon	Percent	Grab	2/Year
Total Nitrogen	Percent	Grab	2/Year
Acid Volatile Sulfides	mg/kg	Grab	2/Year
Aluminum	mg/kg	Grab	2/Year
Antimony	mg/kg	Grab	2/Year
Arsenic	mg/kg	Grab	2/Year
Cadmium	mg/kg	Grab	2/Year
Chromium	mg/kg	Grab	2/Year
Copper	mg/kg	Grab	2/Year
Iron	mg/kg	Grab	2/Year
Lead	mg/kg	Grab	2/Year
Manganese	mg/kg	Grab	2/Year
Mercury	mg/kg	Grab	2/Year
Nickel	mg/kg	Grab	2/Year
Selenium	mg/kg	Grab	2/Year
Silver	mg/kg	Grab	2/Year
Tin	mg/kg	Grab	2/Year
Zinc	mg/kg	Grab	2/Year
PCBs	ng/kg	Grab	2/Year
2,4-DDD	ng/kg	Grab	2/Year
4,4-DDD	ng/kg	Grab	2/Year
2,4-DDE	ng/kg	Grab	2/Year
4,4-DDE	ng/kg	Grab	2/Year
2,4-DDT	ng/kg	Grab	2/Year

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Determination	Units	Type of Sample	Minimum Frequency
4,4-DDT	ng/kg	Grab	2/Year
Aldrin	ng/kg	Grab	2/Year
Alpha-Chlordane	ng/kg	Grab	2/Year
Dieldrin	ng/kg	Grab	2/Year
Endosulfan	ng/kg	Grab	2/Year
Endrin	ng/kg	Grab	2/Year
Gamma-BHC	ng/kg	Grab	2/Year
Heptachlor	ng/kg	Grab	2/Year
Heptachlor Epoxide	ng/kg	Grab	2/Year
Hexachlorobenzene	ng/kg	Grab	2/Year
Mirex	ng/kg	Grab	2/Year
Trans-Nonachlor	ng/kg	Grab	2/Year
Acenapthene	µg/kg	Grab	2/Year
Acenaphthylene	µg/kg	Grab	2/Year
Anthracene	µg/kg	Grab	2/Year
Benzo(a)anthracene	µg/kg	Grab	2/Year
Benzo(o)fluoranthene	µg/kg	Grab	2/Year
Benzo(k)fluoranthene	µg/kg	Grab	2/Year
Benzo(ghi)pyrelene	µg/kg	Grab	2/Year
Benzo(a)pyrene	µg/kg	Grab	2/Year
Benzo(e)pyrene	µg/kg	Grab	2/Year
Biphenyl	µg/kg	Grab	2/Year
Chrysene	µg/kg	Grab	2/Year
Dibenz(ah)anthraces	µg/kg	Grab	2/Year
Fluoranthene	µg/kg	Grab	2/Year
Fluorene	µg/kg	Grab	2/Year
Ideno(123cd)pyrene	µg/kg	Grab	2/Year
Naphthalene	µg/kg	Grab	2/Year
1-Methylnaphthalene	µg/kg	Grab	2/Year
2-Methylnaphthalene	µg/kg	Grab	2/Year
2,6-Dimethylnaphthalene	µg/kg	Grab	2/Year
2,3,5-Trimethylnaphthale	µg/kg	Grab	2/Year
Perylene	µg/kg	Grab	2/Year
Phenanthrene	µg/kg	Grab	2/Year
1-Methylphenanthene	µg/kg	Grab	2/Year
Pyrene	µg/kg	Grab	2/Year

2. **Sediment Toxicity**

a. ***Sediment Toxicity Monitoring Plan.*** Sediment toxicity is a measure of the response of invertebrates exposed to surficial sediments under controlled laboratory conditions. The sediment toxicity line of evidence is used to assess both pollutant related biological effects and exposure. Within 180 days of the effective date of this permit, the Discharger shall, in consultation with the City of San Diego, the San Diego Water Board, and the State Water Board, prepare and submit a Sediment Toxicity Monitoring Plan to implement an on-going acute sediment toxicity monitoring program in conformance with the requirements of Ocean Plan Appendix III, Standard Monitoring Procedures, Aquatic Life Toxicity. The Monitoring Plan shall include the following elements:

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i. Quality Assurance Project Plan. An ELAP approved Quality Assurance Project Plan (QAPP) describing the project objectives and organization, functional activities, and quality assurance/quality control protocols for the sediment monitoring.

ii. Toxicity Testing Protocols. The Ocean Plan requires that acute toxicity testing be conducted utilizing alternative amphipod species (*Eohaustorius estuarius, Leptocheirus plumulosus, Rhepoxynius abronius*).

iii. Spatial Representation. The Sediment Toxicity Monitoring Plan shall be designed to ensure that the sample stations are spatially representative of the sediment within the region of interest. The locations, type, and number of samples shall be identified and shown on a map

iv. Existing Data and Information. The Sediment Toxicity Monitoring Plan design shall take into consideration existing data and information of appropriate quality.

v. Monitoring Frequency. The Sediment Toxicity Monitoring Plan shall include a schedule for all sample collection and analysis and reporting of results to the San Diego Water Board.

vi. Analysis. The Sediment Toxicity Monitoring Plan shall provide for evaluation, interpretation and tabulation of the sediment monitoring data including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station.

b. ***Sediment Toxicity Monitoring Plan Implementation***. The Discharger shall implement the Sediment Toxicity Monitoring Plan sixty (60) days after submission in accordance with the schedule contained in the Sediment Toxicity Monitoring Plan unless otherwise directed in writing by the San Diego Water Board. Before beginning sample collection activities, the Discharger shall comply with any conditions set by the San Diego Water Board.

3. **Benthic Community Condition**

a. ***Benthic Community Sampling Stations and Frequency.*** Sediment samples for assessment of benthic community structure shall be collected twice per year during Winter (e.g., January) and Summer (e.g., July) at each of the 27 offshore stations described above for sediments. One sample per station shall be collected for analysis of benthic community structure.

b. ***Benthic Community Sample Collection Methods.*** Benthic community samples shall be collected using the guidance specified in the most recent field manual developed for the Southern California Bight Regional Monitoring Program. The benthic samples shall be collected using a 0.1-square meter modified Van Veen grab sampler. These grab samples shall be separate from (but adjacent to as much as possible) samples collected for sediment grain-size and chemistry analyses. The samples shall be sieved using a 1.0-millimeter mesh screen. The benthic organisms retained on the sieve shall be fixed in 10 percent buffered formalin, and transferred to at least 70 percent ethanol within two to seven days of storage. Benthic organisms, obtained during benthic monitoring shall be counted and identified to as low a taxon as possible.

c. ***Benthic Community Analysis.*** Analysis of benthic community structure shall include determination of the number of species, number of individuals per species,

and total numerical abundance present. The following parameters or metrics shall be calculated for each 0.1-square meter grab sample and summarized by station as appropriate.

i. Number of species

ii. Total numerical abundance

iii. Benthic Response Index (BRI)

iv. Swartz's 75 percent dominance index

v. Shannon-Weiner's diversity index (H)

vi. Pielou eveness index (J)

In addition to summarizing the above community structure parameters at each station, a more rigorous assessment shall be performed as detailed in this MRP, section IV.E.

d. ***Benthic Random Sampling.*** This MRP, the MRP for the PLOO, and the MRP for the South Bay Water Reclamation Plant (SBWRP)[1] require the City of San Diego and the Discharger to sample and analyze annually for sediment chemistry and benthic community conditions at an additional array of 40 randomly selected stations. The same sampling and processing procedures must be followed as outlined above for core benthic sediment and benthic community condition monitoring. These stations shall be reselected each year by USEPA or their designee to meet the requirements for this MRP, the MRP for the PLOO, and the MRP for the SBWRP using the USEPA probability-based Environmental Monitoring and Assessment Program (EMAP) design. The area of coverage shall extend from the mouth of the San Dieguito River south to the USA/Mexico border.

The random benthic sampling requirement may be suspended as part of a resource exchange agreement to allow for participation in the Southern California Bight Regional Monitoring Surveys at the discretion of the Executive Officer as specified in section II.R of this Order.

[1] Order No. R9-2017-0007, NPDES No. CA0107409, Waste Discharge Requirements and National Pollutant Discharge Elimination System Permit for the City of San Diego E.W. Blom Point Loma Wastewater Treatment Plant Discharge to the Pacific Ocean through the Point Loma Ocean Outfall, Monitoring and Reporting Program (Attachment E)
Order No. R9-2013-0006 as amended by Order Nos. R9-2014-0071 and R9-2017-0023, NPDES Permit No. CA0109045, Waste Discharge Requirements for the City of San Diego South Bay Water Reclamation Plant, Discharge to the Pacific Ocean via the South Bay Ocean Outfall, Monitoring and Reporting Program (Attachment E)

D. Fish and Invertebrate Monitoring Requirements

Many pollutants discharged into receiving waters have the potential to bioaccumulate and persist in tissues of aquatic organisms, including marine fishes. Chemical pollutants that bioaccumulate tend to magnify in concentration as they pass through the aquatic food chain. Therefore, fish monitoring data is required to assess the human health risks for individuals who may consume fish and to assess trends of contaminants levels in the receiving water over time.

Aquatic invertebrates are excellent indicators of ecosystem health because they are ubiquitous, abundant, diverse, and typically sedentary. The growth, survival, and reproduction of many species of aquatic invertebrates are all sensitive to changes in environmental health, making analysis of assemblage structure a good ecosystem monitoring tool.

Fish and invertebrate monitoring is necessary to answer the following questions:

(1) Does the concentration of pollutants in fish, shellfish, or other marine organisms used for human consumption bioaccumulate to levels that are harmful to human health?

(2) Does the concentration of pollutants in marine life bioaccumulate to levels that degrade marine communities?

(3) Are the concentrations of pollutants in fish and other marine organisms changing over time?

(4) Is the health of fish changing over time?

(5) Are the populations of selected species of fish and invertebrates changing over time?

1. Fish and Invertebrate Trawls

a. **Fish and Invertebrate Trawl Frequency and Monitoring Stations.** Epibenthic trawls shall be conducted to assess the structure of demersal fish and megabenthic invertebrate communities, while the presence of priority pollutants in fish will be analyzed from species captured using both trawling and rig fishing techniques (see section IV.D.2 for more information). Single community trawls for fish and invertebrates shall be conducted semi-annually in the winter (e.g., January) and summer (e.g., July) at seven trawl stations designated SD15–SD21 at the locations specified in Table E-1. These stations represent two areas near Discharge Point No. 001 (stations SD-17 and SD-18), two areas up coast of Discharge Point No. 001 (stations SD-19, SD-20, and SD-21), and two areas down coast of Discharge Point No. 001 (stations SD 15 and SD-16). Trawls shall be conducted using a Marinovich 7.62 m (25 ft) head rope otter trawl, using the guidance specified in the most recent field manual developed for the Southern California Bight Regional Monitoring Program. All trawl-captured fishes and megabenthic invertebrates shall be identified at each station.

In order to minimize negative impacts that may occur due to unsuccessful trawling efforts associated with unusual environmental conditions, the requirement to conduct trawls during any given period may be postponed or waived at the discretion of the Executive Officer of the San Diego Water Board, in concurrence with USEPA, upon receipt of written justification provided by the Discharger. Examples of such unusual events include the presence of large populations of pelagic red crabs (*Pleuroncodes planipes*) associated with El Niño and the occurrence of large squid egg masses that prevent hauling in the trawl nets.

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b. **Fish and Invertebrate Community Structure Analysis.** All fish and megabenthic invertebrates collected by trawls should be identified to species if possible. For fish, community structure analysis shall consist of determining the standard length and total wet weight, total number of individuals per species, the total numerical abundance of all fish, species richness, species diversity (H'), and multivariate pattern analyses (e.g., ordination and classification analyses). The presence of any physical abnormalities or disease symptoms (e.g., fin erosion, external lesions, tumors) or external parasites shall also be recorded. For invertebrates, community structure shall be summarized as the total number of individuals per species, the total numerical abundance of all invertebrates, species richness, and species diversity (H').

c. **Fish Tissue Chemical Analysis.** Chemical analyses of fish tissues shall be performed annually (e.g., during October) on target species collected at or near the trawl stations. The seven stations are classified into five zones for the purpose of collecting sufficient numbers of fish for tissue analyses. Trawl Zone 5 represents the nearfield zone, defined as the area within a 1-km radius of stations SD-17 and/or SD-18; Trawl Zone 6 represents the north farfield zone, defined as the area within a 1-km radius of stations SD-19 and/or SD-20; Trawl Zone 7 represents the far-north farfield zone, defined as the area within a 1-km radius of station SD-21; Trawl Zone 8 represents the south farfield zone, defined as the area within a 1-km radius of station SD-16; Trawl Zone 9 represents the far-south farfield zone, defined as the area within a 1-km radius of station SD-15. There are no depth requirements for these five zones with regards to the collection of fishes for tissue analysis.

Liver tissues shall be analyzed during each survey from fishes collected in each of the above five trawl zones. No more than a maximum of five 10-minute (bottom time) trawls shall be required per zone in order to acquire sufficient numbers of fish for composite samples; these trawls may occur anywhere within a defined zone. If sufficient numbers of trawl zone target species cannot be, or are unlikely to be, captured by trawling, fish for tissue analysis from these areas may be collected using alternative methods such as those described below under Rig Fishing in section IV.D.2.b of this MRP (e.g., hook and line, baited lines). Three replicate composite samples shall be prepared from each trawl zone, with each composite consisting of tissues from at least three individual fish of the same species. These liver tissues shall be analyzed for the constituents listed in Table E-9 below.

Table E-9. Fish Tissue Monitoring Requirements

Determination	Units	Type of Sample	Minimum Frequency
Total Lipids	µg/kg	Composite	Annual
Aluminum	mg/kg	Composite	Annual
Antimony	mg/kg	Composite	Annual
Arsenic	mg/kg	Composite	Annual
Cadmium	mg/kg	Composite	Annual
Chromium	mg/kg	Composite	Annual
Copper	mg/kg	Composite	Annual
Iron	mg/kg	Composite	Annual
Lead	mg/kg	Composite	Annual
Manganese	mg/kg	Composite	Annual
Mercury	mg/kg	Composite	Annual
Nickel	mg/kg	Composite	Annual
Selenium	mg/kg	Composite	Annual

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Determination	Units	Type of Sample	Minimum Frequency
Silver	mg/kg	Composite	Annual
Tin	mg/kg	Composite	Annual
Zinc	mg/kg	Composite	Annual
PCBs	µg/kg	Composite	Annual
2,4-DDD	µg/kg	Composite	Annual
4,4-DDD	µg/kg	Composite	Annual
2,4-DDE	µg/kg	Composite	Annual
4,4-DDE	µg/kg	Composite	Annual
2,4-DDT	µg/kg	Composite	Annual
4,4-DDT	µg/kg	Composite	Annual
Aldrin	µg/kg	Composite	Annual
Alpha-Chlordane	µg/kg	Composite	Annual
Dieldrin	µg/kg	Composite	Annual
Endosulfan	µg/kg	Composite	Annual
Endrin	µg/kg	Composite	Annual
Gamma-BHC	µg/kg	Composite	Annual
Heptachlor	µg/kg	Composite	Annual
Heptachlor Epoxide	µg/kg	Composite	Annual
Hexachlorobenzene	µg/kg	Composite	Annual
Mirex	µg/kg	Composite	Annual
Trans-Nonachlor	µg/kg	Composite	Annual
Acenapthene	µg/kg	Composite	Annual
Acenaphthylene	µg/kg	Composite	Annual
Anthracene	µg/kg	Composite	Annual
Benzo(a)anthracene	µg/kg	Composite	Annual
Benzo(o)fluoranthene	µg/kg	Composite	Annual
Benzo(k)fluoranthene	µg/kg	Composite	Annual
Benzo(ghi)pyrelene	µg/kg	Composite	Annual
Benzo(a)pyrene	µg/kg	Composite	Annual
Benzo(e)pyrene	µg/kg	Composite	Annual
Biphenyl	µg/kg	Composite	Annual
Chrysene	µg/kg	Composite	Annual
Dibenz(ah)anthraces	µg/kg	Composite	Annual
Fluoranthene	µg/kg	Composite	Annual
Fluorene	µg/kg	Composite	Annual
Ideno(123cd)pyrene	µg/kg	Composite	Annual
Naphthalene	µg/kg	Composite	Annual
1-Methylnaphthalene	µg/kg	Composite	Annual
2-Methylnaphthalene	µg/kg	Composite	Annual
2,6-Dimethylnaphthalene	µg/kg	Composite	Annual
2,3,5-Trimethylnaphthale	µg/kg	Composite	Annual
Perylene	µg/kg	Composite	Annual
Phenanthrene	µg/kg	Composite	Annual
1-Methylphenanthene	µg/kg	Composite	Annual
Pyrene	µg/kg	Composite	Annual

d. **Fish Targeted for Analysis.** The species of fish targeted for tissue analysis from the trawl sites shall be primarily flatfish, including, but not limited to, Pacific sanddab (*Citharichthys sordidus*), longfin sanddab (*Citharichthys xanthostigma*), bigmouth

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sole (*Hippoglossina stomata*), and hornyhead turbot (*Pleuronichthys verticalis*). If sufficient numbers of these primary flatfish species are not present in a zone, secondary candidate species such as the California scorpionfish (*Scorpaena guttata*) and halfbanded rockfish (*Sebastes semicinctus*) may be collected as necessary.

2. **Rig Fishing**

a. **Rig Fishing Frequency.** Muscle tissues shall be analyzed annually (e.g., during October) from fishes collected in each of the two rig fishing zones described below in order to monitor the uptake of pollutants in species and tissues that are consumed by humans.

b. **Rig Fishing Method and Location.** The fish shall be collected by hook and line or by setting baited lines from within zones surrounding rig fishing stations RF-3 and RF-4 listed in Table E-1. Rig Fishing Zone 3 is the nearfield (near ZID) area centered within a 1-km radius of station RF-3; Rig Fishing Zone 4 is considered the farfield area centered within a 1-km radius of station RF-4. There are no depth requirements for these two zones with regards to the collection of fishes for tissue analysis. The species targeted for muscle tissue analysis in the rig fishing stations shall be representative of those caught by recreational and/or commercial fishery activities in the region. The species targeted for muscle tissue analysis shall be primarily rockfish, which may include, but are not limited to, the vermilion rockfish (*Sebastes miniatus*) and the copper rockfish (*Sebastes caurinus*). If sufficient numbers of these primary species are not present or cannot be caught in a particular zone, secondary target species (e.g., other rockfish, scorpionfish) may be collected and analyzed as necessary. Fish samples shall be identified to species, with number of individuals per species, standard length and wet weight recorded. Physical abnormalities and disease symptoms shall be recorded and itemized (e.g., fin rot, lesions, and tumors).

c. **Rig Fishing Collection.** Three replicate composite samples of the target species shall be obtained from each zone, with each composite consisting of a minimum of three individual fish. Muscle tissue shall be chemically analyzed for the same set of constituents as trawl-caught fish specified in Table E-9 above.

E. Receiving Water Monitoring Reports

1. The Discharger shall submit Interim and Biennial Receiving Water Monitoring Reports to the San Diego Water Board. The Interim Receiving Water Monitoring Reports will cover only one year of receiving water monitoring (e.g., separate reports for calendar years 2016, 2018, and 2020), will only cover even numbered years, and shall be submitted every other year. The Biennial Receiving Water Monitoring Reports will provide a more thorough discussion, evaluation (e.g., detailed statistical analyses), and interpretation than the Interim Receiving Water Monitoring Reports, will cover two years of receiving water monitoring (e.g., biennial reports for calendar years 2016-2017, 2018-2019, and 2020-2021), and shall be submitted the opposite years as the Interim Receiving Water Monitoring Reports. These reports are described below under sections VIII.E.2 and VIII.E.3 and cover the following monitoring requirements:

a. Shoreline, offshore, and kelp monitoring (sections IV.A and IV.B.1 of this MRP);

b. Sediment chemistry (section IV.C.1 of this MRP);

c. Sediment toxicity (section IV.C.2 of this MRP);

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d. Benthic community (section IV.C.3 of this MRP);

e. Fish and invertebrate trawls (section IV.D.1 of this MRP);

f. Rig fishing (section IV.D.2 of this MRP); and

g. Plume tracking (section IV.B.2 of this MRP).

2. The Discharger shall submit Interim Receiving Water Monitoring Reports (Interim Reports, executive summary) as specified in Table E-11, section IV.B of this MRP. The Interim Reports will cover the first "even" year in each biennial reporting cycle as described below in section IV.E.3 (e.g., separate reports for calendar years 2016, 2018, and 2020). The Interim Reports may be submitted as an integrated report covering both the receiving water monitoring required in this MRP, the MRP for the PLOO, and the MRP for the SBWRP (as required under separate waste discharge requirements (WDRs)). The Interim Reports shall include, as a minimum, the following information:

   a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.);

   b. A description of sampling stations, including, if such information is available, differences unique to each station (e.g., station location, sediment grain size, distribution of bottom sediments, rocks, shell litter, calcareous worm tubes, etc.);

   c. A description of the sample collection and preservation procedures used in the survey;

   d. A description of the specific method used for laboratory analysis;

   e. A tabulation of the data; and

   f. A narrative summary of general observations, including any abnormal conditions.

3. The Discharger shall submit Biennial Receiving Water Monitoring and Assessment Reports (Biennial Reports, full assessment) as specified in Table E-11, section VIII.B of this MRP. These Biennial Reports will each cover a full 2-year monitoring cycle beginning with even-numbered years (e.g., biennial reports for calendar years 2016-2017, 2018-2019, 2020-2021). The Biennial Reports may be submitted as an integrated report covering both the receiving water monitoring required in this MRP, the MRP for the PLOO, and the MRP for the SBWRP (as required under separate WDRs). The Biennial Reports shall include, as a minimum, the following information:

   a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.);

   b. A description of sampling stations, including, if such information is available, differences unique to each station (e.g., station location, sediment grain size, distribution of bottom sediments, rocks, shell litter, calcareous worm tubes, etc.);

   c. A description of the sample collection and preservation procedures used in the survey;

   d. A description of the specific method used for laboratory analysis; and

   e. An in-depth discussion, evaluation (e.g., detailed statistical analyses), interpretation and tabulation of the data including interpretations and conclusions as to whether applicable receiving water limitations in this Order have been attained at each station.

4. During the same year that the Biennial Reports are submitted, the Discharger shall provide a Biennial State of the Ocean Report (an oral report) to the San Diego Water Board

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summarizing the conclusions of the Biennial Report over the 2-year monitoring period. If an oral report cannot be scheduled for a San Diego Water Board meeting, the San Diego Water Board may approve submission of a written Biennial State of the Ocean Report instead. The Biennial State of the Ocean Report shall include, as a minimum, a description of the monitoring effort completed during the past two years, the status and trends of receiving waters quality conditions, and plans for future monitoring efforts.

V. REGIONAL MONITORING REQUIREMENTS

Regional ocean water monitoring provides information about the sources, fates, and effects of anthropogenic contaminants in the coastal marine environment necessary to make assessments over large areas. The large scale assessments provided by regional monitoring describe and evaluate cumulative effects of all anthropogenic inputs and enable better decision making regarding protection of beneficial uses of ocean waters. Regional monitoring data assists in the interpretation of core monitoring studies by providing a more accurate and complete characterization of reference conditions and natural variability. Regional monitoring also leads to methods standardization and improved quality control through intercalibration exercise. The coalitions implementing regional monitoring enable sharing of technical resources, trained personnel and associated costs. Focusing these resources on regional issues and developing a broader understanding of pollutants effects in ocean waters enables the development of more rapid and effective response strategies. Based on all of these considerations the San Diego Water Board supports regional approaches to monitoring ocean waters.

The Discharger shall, as directed by the San Diego Water Board, participate with other regulated entities, other interested parties, and the San Diego Water Board in development and implementation of new and improved monitoring and assessment programs for ocean waters in the San Diego Region and discharges to those waters. These programs shall be developed and implemented so as to:

(1) Determine the status and trends of conditions in ocean waters in the San Diego Region with regard to beneficial uses, e.g.,

i. Are fish and shellfish safe to eat?

ii. Is water quality safe for swimming?

iii. Are ecosystems healthy?

(2) Identify the primary stressors causing or contributing to conditions of concern;

(3) Identify the major sources of the stressors causing or contributing to conditions of concern; and

(4) Evaluate the effectiveness (i.e., environmental outcomes) of actions taken to address such stressors and sources.

Development and implementation of new and improved monitoring and assessment programs for ocean waters will be guided by the following:

1. Water Quality Control Plan Ocean Waters of California (Ocean Plan);
2. San Diego Water Board Resolution No. R9-2012-0069, "Resolution in Support of A Regional Monitoring Framework;"
3. San Diego Water Board staff report entitled "A Framework for Monitoring and Assessment in the San Diego Region;" and

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4. Other guidance materials, as appropriate.

A. Kelp Bed Canopy Monitoring Requirements

Kelp consists of a number of species of brown algae. Along the central and southern California coast, giant kelp (Macrocystis pyrifera) is the largest species colonizing rocky, and in some cases sandy, subtidal habitats. Giant kelp is an important component of coastal and island communities in southern California, providing food and habitat for numerous animals. Monitoring of the kelp beds is necessary to answer the following questions:

(1) What is the maximum areal extent of the coastal kelp bed canopies each year?

(2) What is the variability of the coastal kelp bed canopy over time?

(3) Are coastal kelp beds disappearing? If yes, what are factors that could contribute to the disappearance?

(4) Are new coastal kelp beds forming?

The Discharger shall participate with other southern California ocean dischargers in an ongoing regional survey of coastal kelp beds in the Southern California Bight. The intent of these surveys is to provide an indication of the health of these kelp beds, recognizing that the extent of kelp bed canopies may change due to variety of influences.

Kelp beds shall be monitored by means of vertical aerial infrared photography to determine the maximum areal extent of the canopies of coastal kelp beds each year. Surveys shall be conducted as close as possible to when kelp bed canopies are at their greatest extent during the year. The entire San Diego Region coastline, from the international boundary to the San Diego Region/Santa Ana Region boundary shall be photographed on the same day.

The maximum areal extent of kelp bed canopies each year shall be compared to that observed in previous years. Any significant losses that persist for more than one year shall be investigated by divers to document benthic and understory conditions.

The data, analyses, assessment, and images produced by the surveys shall be made available in a user-friendly format on a website that is readily available to the public. In addition to the kelp bed canopies, the images shall show onshore reference points, locations of all ocean outfalls and diffusers, artificial reefs, areas of known hard-bottom substrate (i.e., rocky reefs), and depth contours at intervals of 30-feet mean lower low water (MLLW).

The surveys shall be conducted on a “continuous improvement” basis, i.e., each year improvements shall be made in monitoring, analysis, assessment, and/or documentation. For example, these could include:

1. More sophisticated analysis of patterns, correlations, and cycles that may be related to the extent of kelp bed canopies; or
2. Projects to improve understanding of influences on kelp beds or of how the extent of the canopies of various kelp beds has changed since the early 20th century.

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B. Southern California Bight Monitoring Program Participation Requirements

The Discharger is required to participate in the, Southern California Bight Regional Monitoring Program coordinated by the Southern California Coastal Water Research Project (SCCWRP), or any other coordinator named by the Executive Officer, pursuant to CWC 13267, 13383, and 40 CFR 122.48. The intent of the Southern California Bight Regional Monitoring Program is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled scientific resources of the Southern California Bight.

During these coordinated sampling efforts, the Discharger's receiving water sampling and analytical effort, as defined in section IV of this MRP, may be reallocated to provide a regional assessment of the impact of the discharge of municipal wastewater to the Southern California Bight. In that event, the Executive Officer shall notify the Discharger in writing that the requirement to perform the receiving water sampling and analytical effort defined in section IV of this MRP is suspended for the duration of the reallocation. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and to determine cumulative impacts of various pollution sources. The level of resources in terms of sampling and analytical effort redirected from the receiving water monitoring program required under section IV this MRP shall approximately equal the level of resources provided to implement the regional monitoring and assessment program, unless the Executive Officer, the Discharger and City of San Diego agree otherwise. The specific scope and duration of the receiving water monitoring program reallocation and redirection shall be determined in writing by the Executive Officer in consultation with the Discharger and City of San Diego.

VI. SPECIAL STUDIES REQUIREMENTS

Compliance with Bacteriological Standards

By letter dated January 10, 2013, the City of San Diego provided a tabulation and interpretation of the SBOO receiving water monitoring data for the past 17 years. From 1999 to 2010, the Discharger (USIBWC) discharged advanced primary treated wastewater from the Facility into the Pacific Ocean through the SBOO. During this same time period, sample results at the three offshore receiving water stations closest to the SBOO ranged from 72 to 94 percent in compliance with bacterial water quality objectives and samples at all the offshore receiving water stations for SBOO ranged from 90 to 95 percent in compliance with bacterial water quality objectives. After USIBWC commenced discharging secondary treated effluent from the Facility to meet secondary treatment requirements in January, 2011, sample results at the three offshore stations closest to the SBOO were 99 percent in compliance and sample results at all the offshore stations for SBOO were also 99 percent in compliance.

A new analysis of the receiving water bacterial data is necessary to demonstrate if the SBOO discharge is attaining full compliance with bacteriological receiving water limitations described in section V.A.1 of this Order at all times. The data set used for this analysis must be sufficient to provide statistically defensible conclusions and shall include all receiving water bacterial data collected after July 31, 2012, when the Facility discharge attained substantial compliance with secondary treatment standards, through December 31, 2015. Primary questions to be addressed include the following:

(1) Does the Facility effluent cause or contribute to an exceedance of bacteriological receiving water limitations described in section V.A.1 of this Order in ocean waters outside the zone of initial dilution?

(2) What is the extent and magnitude of any identified exceedance of bacteriological receiving water limitations described in section V.A.1 of this Order?

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(3) Do any identified exceedances impact any marine water contact recreation zones?

(4) If noncompliance with bacteriological receiving water limitations is identified, and if the noncompliance has not been corrected, what is the anticipated time it is expected to continue; and what are the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance?

Bacteriological Standards Compliance Assessment Report. The Discharger shall prepare and submit a technical report, no later than July 1, 2016, based on a study design consistent with the criteria described above. The technical report shall include an evaluation, interpretation and tabulation of the bacterial data used in the analysis. The report shall include interpretations and conclusions as to whether compliance with bacteriological receiving water limitations described in section V.A.1 of this Order has been attained at each sample station. If noncompliance with bacteriological receiving water limitations is identified, and if the noncompliance has not been corrected, the report shall also indicate the anticipated time it is expected to continue; and describe the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

VII. OTHER MONITORING REQUIREMENTS

A. Facilities Spills

For all Facilities Spill Events, as defined in section VI.C.2.a.i, the Discharger shall include a detailed summary of spills in the monthly self-monitoring report for the month in which the spill occurred. All Facilities Spill Events shall be tabulated on a monthly basis and summarized in the monthly self-monitoring report. If no spills occurred during the calendar month, the Discharger shall report no Facilities Spill Events in the monthly self-monitoring report for that calendar month. The following information shall be included for each event:

1. A description of the event and its cause (if known);
2. The location(s) where the event occurred, including the location;
3. The duration of the event (i.e., flow start and stop time, or expected stop time if ongoing due to repairs and maintenance);
4. The volume of the event including a description of any methodology, standardized templates, tables, or pictures used to provide the volume estimate (or flow rate if ongoing);
5. The results of any sampling conducted;
6. The amount of precipitation that occurred in the 72 hours prior to the event start time or during the event (if applicable);
7. Corrective actions taken or planned (if applicable); and
8. A description of any modifications made or planned to the Spill and Transboundary Wastewater Flow Prevention and Response Plan (if applicable).

B. Transboundary Wastewater Flows

The term transboundary wastewater flow is used in this Order to refer to a variety of flows containing pollutants from Tijuana, Mexico that have historically flowed into the United States via the north-draining canyons and ravines identified in this Order as Goat Canyon, Smugglers Gulch, Silva Drain, Canyon del Sol, and Stewart's Drain that empty into the Tijuana River Valley and Estuary. These wastewater flows from Tijuana are attributed to a variety of sources and causes including, but not limited to, treated wastewater effluent discharges, potable water leaks, sewer line leaks and spills, discharges from unsewered areas, and other failures and breakdowns of the wastewater collection infrastructure in

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Mexico. The transboundary wastewater flows consist of treated and untreated municipal and industrial wastewater, potable water, and other miscellaneous flows depending on the source of the flow. These transboundary wastewater flows have adversely impacted the Tijuana River Valley and Estuary as well as adjacent coastal marine waters and beaches.

Monitoring of dry-weather transboundary wastewater flows that pass any one of the five Discharger's canyon collector systems is necessary to answer the following questions:

(1) What is the frequency and volume of dry weather transboundary wastewater flows?

(2) What are the sources of dry weather transboundary wastewater flows?

(3) What pollutants are present in dry weather transboundary wastewater flows and what is their concentration?

(4) Do pollutants in dry weather transboundary wastewater flows affect beneficial uses of the Tijuana River and Estuary?

(5) What is the mass loading of pollutants on the Tijuana River and Estuary from dry weather transboundary wastewater flows over time?

(6) Are the canyon collector systems being properly operated and maintained to ensure compliance with the conditions of the Order?

1. **Scope of Monitoring.** The Discharger shall conduct the monitoring and reporting program set forth below for the following event type:

   a. Transboundary Wastewater Flow Past the Canyon Collector System (Flow Event Type A) A dry weather transboundary treated or untreated wastewater or other flow through a conveyance structure owned and operated by the United States Government into Smuggler Gulch, Goat Canyon, Canyon del Sol, Stewart's Drain, or Silva Drain and not diverted into the canyon collector system for treatment at the Facility.

   b. Transboundary Wastewater Flow Event or Other Spill/Wastewater Flow Event in Mexico (Flow Event Type B). A dry weather spill or dry weather transboundary wastewater or other flow (not categorized in other Event Types) that creates, or threatens to create, pollution or nuisance conditions in waters of the United States and/or State including the Tijuana River (main channel), Yogurt Canyon drainage, other unnamed drainages and nearby coastal marine waters. These spills or transboundary flows include, but are not limited to the following:

      i. A dry weather transboundary treated or untreated wastewater flow in waters of the Tijuana River (main channel) as described in Commitment No. 16 of IBWC Minute No. 283 (*Conceptual Plan for the International Solution to the Border Sanitation Problem in San Diego, California/Tijuana, Baja California, July 2, 1990*).

      ii. A dry weather transboundary treated or untreated wastewater flow through a conveyance structure owned and operated by the United States Government into Yogurt Canyon.

      iii. Spills or wastewater flows occurring in Mexico that the Discharger has knowledge of.

2. **Inspections.** The Discharger shall conduct daily inspections of the international border areas at Smugglers Gulch, Goat Canyon, Canyon del Sol, Stewart's Drain, and Silva

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Drain for the transboundary wastewater flows described in section VI.B.1.b above (see Table E-1 for Transboundary Station Locations). The inspections shall be documented, recorded, and contain the following information:

a. The monitoring location name and/or GPS coordinates, date, and time of inspection;

b. The weather conditions at the time of inspection;

c. The operational condition of the canyon collector system; and

d. If a flow is observed passing the Discharger's canyon collector system, the approximate date/time and amount of the last precipitation event, the estimated total volume diverted into the Discharger's canyon collector system, the estimated total volume that passes the Discharger's canyon collector system, and a description of the flow estimate methodology, including any standardized templates, tables, or pictures used to provide the estimates.

e. If no flow is observed that observation shall be recorded.

In the event that the Discharger is unable to inspect a location due to safety, legal, or other reasons, the inspection can be omitted. The Discharger shall record the circumstances for omitting the inspection.

3. **Monitoring.** If there is a transboundary flow that passes the Discharger's canyon collector system observed at the time of inspection, the Discharger shall monitor the flow for the parameters set forth below:

Table E-10. Spills and Transboundary Wastewater Flow Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Monitoring Location Name and/or GPS coordinates	--	--	--	--
Flow	MGD	Estimate[1]	1/day	--
BOD_5	mg/L	Grab	[2]	[3]
TSS	mg/L	Grab	[2]	[3]
TDS	mg/L	Grab	[2]	[3]
Turbidity	NTU	Grab	[2]	[3]
pH	pH Units	Grab	[2]	[3]
Total Nitrogen	mg/L	Grab	[2]	[3]
Total Phosphorus	mg/L	Grab	[2]	[3]
Enterococcus	number/100mL	Grab	[2]	[3]
Fecal Coliform	number/100mL	Grab	[2]	[3]
Total Coliform	number/100mL	Grab	[2]	[3]
Dissolved Oxygen	mg/L	Grab	[2]	[3]
Pesticides[4]	ug/L	Grab	[2]	[3]
Surfactants (MBAS)	ug/L	Grab	[2]	[3]
Priority Pollutants[5]	ug/L	Grab	[2]	[3]
Chronic Toxicity	TUc	Grab	[2]	[3]

1 A description of any methodology, standardized templates, tables or pictures used to provide the flow estimate shall be included in the report.

2 For transboundary wastewater flows that occur during dry weather (as defined in Attachment A of this Order), monitoring for these parameters is required once per Dry Weather flow event.

3. As required under 40 CFR part 136.

4 CWA section 301(h) pesticides listed at 40 CFR section 125.58(p).

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5 California Toxics Rule; Priority pollutants as specified in 40 CFR section 131.38.

The reported results shall also include daily mass loading for BOD, TSS, TDS, total nitrogen, total phosphorus, pesticides, surfactants, and priority pollutants.

4. **Monthly Report.** All transboundary wastewater flow events shall be tabulated on a monthly basis and summarized in the monthly self-monitoring report. For Flow Event Type A, as defined in section VI.C.2.a.i of this Order, the monthly report shall include all the information set forth below. For Flow Event Type B, as defined in section VI.C.2.a.i of this Order, the monthly report shall include at a minimum the information set forth in items a-d, g, h, l, and m below to the extent such information is available. If no transboundary wastewater flows occurred within the calendar month, the Discharger shall report "no transboundary wastewater flows" for that calendar month in the monthly self-monitoring report. Each monthly report shall also include the rain gauge data from the Goat Canyon ALERT station and any other applicable rain gauge station, regardless of whether there was a transboundary flow event or not.

   a. A description of the event and its cause (if known);

   b. The location(s) where the event occurred, including the Transboundary Station location name (if applicable);

   c. The duration of the event (i.e., flow start and stop time, or expected stop time if ongoing due to repairs and maintenance);

   d. The volume of the event including a description of any methodology, standardized templates, tables, or pictures used to provide the volume estimate (or flow rate if ongoing);

   e. The results of any sampling conducted pursuant to section VI.A.3 of Attachment E, Table E-10 above;

   f. The reported results, if any, shall also include daily mass loading for BOD, TSS, TDS, total nitrogen, total phosphorus, pesticides, surfactants, and priority pollutants;

   g. The amount of precipitation that occurred in the 72 hours prior to the event start time or during the event at the Goat Canyon ALERT station and any other applicable rain gauge station (if applicable);

   h. The location and approximate volume of any related sewage spills that occurred in Tijuana, Mexico that may be contained in the reported transboundary wastewater flow (if known);

   i. If applicable, the reason why the canyon collector(s) did not capture the flow, or the date and time the canyon collector(s) were closed (if the transboundary wastewater flow ran past one or more of the canyon collectors);

   j. The most recent inspection, operation, and maintenance records for the applicable canyon collector(s) (if the transboundary wastewater flow ran past one or more of the canyon collectors);

   k. Corrective actions taken or planned (if applicable) (if the transboundary wastewater flow ran past one or more of the canyon collectors); and

   l. A description of any modifications made or planned to the Spill and Transboundary Wastewater Flow Prevention and Response Plan (if applicable); and

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m. Any coordination with CILA to determine the reasons why the event occurred and any corrective actions planned or taken.

VIII. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D of this Order) related to monitoring, reporting, and recordkeeping.
2. The Discharger shall report all instances of noncompliance not reported under Attachment D, Sections V.E, V.G, and V.H, of this Order at the time monitoring reports are submitted.

B. Self-Monitoring Report (SMR) Submittal

1. The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program website (http://www.waterboards.ca.gov/ciwqs/index.html). SMRs must be signed and certified as required by the Standard Provisions (Attachment D). The CIWQS website will provide additional information for SMR submittal in the event of a planned or unplanned service interruption for electronic submittal. The Discharger shall maintain sufficient staffing and resources to ensure it submits SMRs that are complete and timely. This includes provision for training and supervision of individuals on how to prepare and submit SMRs.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through X. The Discharger shall submit 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. When 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.
3. Unless otherwise noted in the MRP, monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-11. Monitoring Periods and Reporting Schedule

Sampling Frequency/ Report Type	Monitoring Period Begins	Monitoring Period	SMR Due Date
Continuous	First day of the calendar month following the permit effective date or on permit effective date if that date is first day of the month.	All	First day of second calendar month following month of sampling.
1/Day	First day of the calendar month following the permit effective date or on permit effective date if that date is first day of the month.	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of second calendar month following month of sampling.
1/Week	First Sunday of the calendar month following the permit effective date or on permit effective date if that date is on the first Sunday of the calendar month.	Sunday through Saturday	First day of second calendar month following month of sampling.

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Sampling Frequency/ Report Type	Monitoring Period Begins	Monitoring Period	SMR Due Date
1/Monthly[1,2]	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month.	First day of calendar month through last day of calendar month	First day of second calendar month following month of sampling.
1/Quarter	Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date.	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
Interim Receiving Water Monitoring Report (executive summary)[3]	January 1 following (or on) the Order effective date.	One calendar year	July 1 of the year following the even years (e.g., separate reports for calendar years 2016 (due 7/1/2017), 2018 (due 7/1/2019), and 2020 (due 7/1/2021))
Biennial Receiving Water Monitoring and Assessment Report (full assessment) [4]	January 1 following (or on) the Order effective date.	Two calendar years	July 1 of the year following the odd years (e.g., biennial reports for calendar years 2016-2017 (due 7/1/2018), 2018-2019 (due 7/1/2020), and 2020-2021(due 7/1/2022))
Oral/Written Biennial State of the Ocean Report[5]	January 1 following (or on) the Order effective date.	Two calendar years	By December 31 of the year following the odd years (e.g., biennial reports for calendar years 2016-2017 (due 12/2018), 2018-2019 (due 12/2020), and 2020-2021(due 12/2022))

1 Include the Monthly Report as required by sections VI.A and VI.B.4 of this Attachment E of Order No. R9-2014-0009.

2 Include monitoring results for offshore stations (section IV.B of this MRP) in the monthly SMRs

3 As specified in sections IV.E.1 and IV.E.2 of this MRP.

4 As specified in sections IV.B.2.c, IV.E.1, and IV.E.3 of this MRP.

5 As specified in section IV.E.4 of this MRP.

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable reported Minimum Level (reported ML, also known as the Reporting Level, or RL) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136. For each numeric effluent limitation or performance goal for a parameter identified in Table 1 of the Ocean Plan, the Discharger shall not use a ML greater than that specified in Appendix II of the Ocean Plan.

   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).Sample results less than the reported ML, but greater than or equal to the