

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

CHRONIC TOXICITY
MONITORING REQUIREMENTS
FOR

CHEVRON USA PRODUCTS COMPANY, RICHMOND REFINERY,
CHEVRON CHEMICAL COMPANY, RICHMOND PLANT, AND
GENERAL CHEMICAL CORPORATION, RICHMOND WORKS

NPDES NO. CA0005134

ORDER NO. 92-111

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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

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WASTE DISCHARGE REQUIREMENTS FOR:

**CHEVRON USA PRODUCTS COMPANY, RICHMOND REFINERY,
CHEVRON CHEMICAL COMPANY, RICHMOND PLANT, AND
GENERAL CHEMICAL CORPORATION, RICHMOND WORKS,
RICHMOND, CONTRA COSTA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay, (hereinafter called the Board) finds that:

- 1. Chevron USA Products Company, Richmond Refinery, submitted an NPDES Permit application (Report of Waste Discharge) dated December 31, 1991 for reissuance of NPDES Permit No. CA0005134.**
- 2. The discharge of wastewater from Chevron USA Products Company, Richmond Refinery is currently regulated by Waste Discharge Requirements, Order No. 87-073, adopted by the Board on June 17, 1987.**
- 3. Chevron USA operates a petroleum refinery with a crude-run throughput of 265,000 barrels per day, with a crude-run capacity of 365,000 barrels per day. It manufactures fuels, lubricants, asphalt, and petrochemicals and is classified as an integrated refinery as defined by the U.S. Environmental Protection Agency in 40 CFR 419.50. Chevron USA discharges treated process wastewater, cooling water, stormwater, and other wastes as described below into its deepwater outfall located in San Pablo Bay, 1800 feet offshore to the north of Point San Pablo.**
- 4. General Chemical Corporation (formerly Allied Chemical Corporation), Richmond Works, manufactures sulfuric acid and oleum, using alkylation acid and spent sulfuric acid from the refinery as part of its raw material. General Chemical Corporation discharges its wastewater to the Chevron USA wastewater system for treatment.**
- 5. Chevron Chemical Company, Agricultural Division, Richmond Plant manufactures fertilizers, pesticides, fungicides, herbicides, and fuel additives. Exhaust gas scrubber blowdown from its incinerator discharges to the Chevron USA wastewater system.**

6. Chevron USA Products Company, Chevron Chemical Company, and General Chemical Corporation are hereinafter collectively referred to as the discharger.

7. The following discharges, as described below, were included in the submitted Report of Waste Discharge and recent self-monitoring reports:

Sum
a. Waste 001 averages 5.6 million gallons per day (mgd) and consists mostly of refinery process water, cooling water, and storm water. It also contains 0.072 mgd of cooling tower blowdown from General Chemical Corporation, 0.18 mgd of incinerator exhaust scrubber blowdown from Chevron Chemical Company, and small amounts of extracted groundwater and offsite monitoring well purge water. Chevron USA routes approximately 3 mgd of waste 001 through its water enhancement wetlands, an experimental pilot program, prior to discharge. Future plans may include routing all dry weather flows through the wetlands.

Waste 001 treatment consists of flow through one of three API separators and an aerated lagoon. Currently, Chevron USA polishes its treated lagoon effluent with a temporary activated carbon facility. If alternative methods or upstream source controls are found to reduce toxicity, then the activated carbon facilities will be removed. The final discharge is through a deepwater outfall into San Pablo Bay, 1800 feet offshore to the north of Point San Pablo (Lat. 37°58'15", Long. 122°25'45").

Hot water
b. Waste 002 averages 22.5 mgd, and consists of thermal waste (once-through cooling water) from Chevron USA. Chevron USA plans to eliminate its once-through cooling water discharge by July 1995. Waste 002 discharges into Castro Creek, a tributary of San Pablo Bay, at a point approximately 500 yards downstream of its confluence with Wildcat Creek (Lat. 37°57'144", Long. 122°23'15").

Sum
c. Waste 005 averages an estimated 19,444 barrels per year, and consists of non-contaminated stormwater runoff from the tank farm area tributary to a sump labeled "#380". Waste 005 discharges into San Francisco Bay at outfall location E-005 as shown on the attached location map (Lat. 37°57'30", Long. 122°25'30").

Sum
d. Waste 006 averages an estimated 31,000 barrels per year, and consists of non-contaminated stormwater runoff from the tank farm area tributary to a sump labeled "#381". Waste 006 discharges into San Francisco Bay at outfall location E-006 as shown on the attached location map (Lat. 37°57'15", Long. 122°25'15").

- e. Waste 007 averages an estimated 23,313 barrels per year, and consists of non-contaminated stormwater runoff from the tank farm area tributary to a sump labeled "horse pasture sump". Waste 007 discharges into San Francisco Bay at outfall location E-007 as shown on the attached location map (Lat. 37°57'15", Long. 122°25'15").
- f. Waste 008 averages an estimated 2.0 million barrels per year, and consists of non-contaminated stormwater runoff from the plant area segregated from Asphalt Hills, the Vacuum Gas Oil and the #5 Hydrogen Sulfide plant, and the main tank field. Waste 008 discharges into San Francisco Bay at outfall location E-008 as shown on the attached location map (Lat. 37°57'15", Long. 122°23'15").
- g. Waste 009 averages an estimated 578,000 barrels per year, and consists of non-contaminated stormwater runoff from the A-Basin tank field areas. Waste 009 discharges into San Francisco Bay at outfall location E-009 as shown on the attached location map (Lat. 37°56'00", Long. 122°24'15").
- h. Waste 010 consists of an indeterminate amount of non-contaminated stormwater runoff from the Reclamation Yard area. Waste 010 discharges directly into Wildcat Creek and indirectly via a drainage ditch on the North side of Gertrude Street (Lat. 37°57'00", Long. 122°22'30").
- i. Waste 011 consists of an indeterminate amount of contaminated stormwater runoff from areas of the Chevron Chemical Pesticide and Chemical Plant which contain pesticide, herbicide, and heavy metal contaminates. Castro Acres Surge pond, located along the east side of Castro Street, collects Waste 011. Chevron Chemical Company pumps Waste 011 from the Surge pond to ponds west of Castro Street. These ponds have not been permitted to discharge to surface waters, and have been regulated by a separate Board Order. Waste 011 may be discharged from Castro Acres Surge pond into Castro Creek via a drainage ditch on the east side of Castro Street during periods of high intensity rainfall only.
- j. Waste 012 consists of an indeterminate amount of contaminated stormwater runoff from areas of the Chevron Chemical Fertilizer Plant which contain pollutants of nitrogen, phosphorous, and potassium fertilizers. The evaporation ponds west of Castro Street collect Waste 012. These ponds have not been permitted to discharge to surface waters, and have been regulated by a separate Board Order. Waste 012 may be discharged into Castro Creek via a drainage ditch on the west side of Castro Street during periods of high intensity rainfall only.

Same
k. Waste 013 consists of non-contaminated stormwater runoff, of which the sole source is direct rainfall onto portions of Chevron Chemical Company's Integrated Wastewater Pond System. Prior to discharge, Chevron Chemical Company manages Waste 013 in clean, synthetically lined surface impoundments. Waste 013 may be discharged into Castro Creek, at a point approximately 1000 feet upstream its confluence with Wildcat Creek.

1. m
1. 7-Basin averages an estimated 257,000 barrels per year, and consists of non-contaminated stormwater runoff from the clean water sump, and clean tank field non-contact area which discharges to San Francisco Bay (Lat. 37°56'00", Long. 122°24'00").

1. m
m. 9-Basin averages an estimated 629,000 barrels per year, and consists of non-contaminated stormwater runoff from the Castro Point clean water sump, clean hillside and tank field area which discharges to San Francisco Bay (Lat. 37°56'30", Long. 122°24'45").

1. n
n. 12-Basin averages an estimated 357,000 barrels per year, and consists of non-contaminated stormwater runoff from the Point Orient clean water sump, and clean hillside area which discharges to San Francisco Bay (Lat. 37°57'30", Long. 122°24'45").

1. o
o. 1st Pass #1 Oxidation (OX) Pond averages an estimated 3.5 million barrels per year, and consists of non-contaminated stormwater runoff from segregated areas including the Alkane area, Sulfur Recovery Unit hills, Rod and Gun Club, Richmond Lube Oil Plant, and the Poleyard and Alkylation Plants which discharges to Castro Creek (Lat. 37°57'15", Long. 122°23'15").

8. The Board adopted a Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986, and the State Water Resources Control board approved it on May 21, 1987. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Revised Basin Plan) on December 11, 1991, with State Board approval pending. Both the Basin Plan and the Revised Basin Plan contain water quality objectives for San Pablo Bay and contiguous waters.

9. The Basin Plan initiated the Effluent Toxicity Characterization Program (ETCP) in which 25 dischargers (21 majors and 4 minors) were required to monitor their effluent using critical life stage toxicity tests. The ETCP generates information on toxicity test precision, test species sensitivity, and effluent variability to be used in the development of appropriate chronic toxicity effluent limitations.

10. The State Water Resources Control Board (State Board) adopted the California Inland Surface Waters Plan and the California Enclosed Bays and Estuaries Plan on April 11, 1991. These Plans identify water quality objectives for all inland surface waters and enclosed Bays and estuaries in the state, and a strategy for implementation of the objectives. The Enclosed Bays and Estuaries Plan establishes an ambient water quality objective outside discharge mixing zones of no chronic toxicity, expressed as an objective of 1 TUC (chronic toxicity unit). It requires that a chronic toxicity effluent limitation be included in the permits of industrial facilities with reasonable potential to cause toxicity in the receiving waters.
11. The discharger participated in the ETCP, and completed the required tests. Data obtained from the ETCP indicate that the discharger may potentially cause toxicity in the receiving water.
12. The beneficial uses of Castro Creek, Castro Cove, and San Pablo Bay include:
 - a. Water Contact recreation
 - b. Non-contact water recreation
 - c. Navigation
 - d. Ocean commercial and sport fishing
 - e. Wildlife habitat
 - f. Estuarine habitat
 - g. Fish spawning and migration
 - h. Industrial process and service supply
 - i. Preservation of rare and endangered species
 - j. Shellfishing
13. Chevron USA replaces up to 3 mgd of San Francisco Bay water, which is used as firewater, with recycled treated wastewater. In addition to use during fires, Chevron USA uses this water in the process areas, and recycles it back into the wastewater treatment system. The treated wastewater may also be used for dust control and landscape maintenance within the Chevron USA facility.
14. Chevron USA proposes to use approximately 5 mgd of reclaimed water, provided by the West Contra Costa Sanitary District (WCCSD) and the East Bay Municipal Utility District (EBMUD) for cooling tower make-up water and landscape irrigation. EBMUD will own and operate an Advanced Wastewater Treatment (AWT) Plant to provide tertiary treatment to WCCSD effluent water which would then be supplied to Chevron USA. The total discharge of pollutants from the combined discharges of Chevron and WCCSD will be reduced as a result of this project.
15. The State Board, on September 18, 1975, amended the Water

Quality Control Plan for Control of Temperature in the Coastal Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). The Thermal Plan requires that existing thermal waste discharges comply with limitations necessary to assure protection of beneficial uses.

16. The State Board, on May 16, 1974, adopted Resolution No. 74-43, which prescribed a Water Quality Control Policy for the Enclosed Bays and Estuaries of California. This policy states in part:

"Waste discharges shall not cause a blockage of zones of passage required for the migration of anadromous fish."

This policy also states in part:

"Persistent or cumulative toxic substances shall be removed from the waste to the maximum extent practicable through source control or adequate treatment prior to discharge."

17. Wildcat Creek historically supported runs of steelhead trout, an anadromous fish. Efforts are currently in progress to restore the physical conditions in Wildcat Creek such that it may once again support a steelhead trout fishery.
18. The discharge of Waste 002 contains a combination of chemical pollutants, heat, and salinity which may block the migration of steelhead trout upstream into Wildcat Creek.
19. On April 15, 1992, The Regional Board adopted Resolution 92-043 directing the Executive Officer to implement the Regional Monitoring Plan (RMP) for San Francisco Bay. The RMP is designed to collect information from industrial and municipal dischargers on concentrations of pollutants in water, sediment and biota from throughout the estuary. The Regional Board agreed to reduce the monitoring frequency of certain constituents discharged by Chevron USA in return for participation in the RMP.
20. The Regional Board amended the NPDES permits for the six bay area refineries, including Chevron U.S.A., on February 20, 1991 (Order 91-026), and again on June 19, 1991 (Order 91-099), establishing both concentration and mass emission rate limitations for selenium. Order 91-099 required that Chevron USA comply with a selenium mass emission rate running annual average limitation of 2.38 pounds/day upon adoption, and a selenium effluent concentration of 50 ug/l by December 12, 1993.
21. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3

(commencing with Section 21110) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

22. Effluent limitation and toxic effluent standard established pursuant to Sections 208(b), 301, 304, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharge.
23. Effluent limitation guidelines requiring the application of best available technology economically achievable (BAT) have been promulgated by the U.S. Environmental Protection Agency for the Integrated Subcategory of the Petroleum Refining Point Source Category 40 CFR Part 419 on October 18, 1982 and amended on July 12, 1985. Process wastewater and stormwater runoff effluent limitations of this Order are based on these guidelines, the Basin Plan, other State plans and policies, current plant performance, and best engineering judgement. The limitations are considered to be those attainable by BAT in the judgement of the Board.
24. Under 40 CFR 122.44, "Establishing Limitations, Standards, and Other Permit Conditions," NPDES permits should also include toxic pollutant limitations if the discharger uses or manufactures a toxic pollutant as an intermediate or final product or byproduct. This permit may be modified prior to the expiration date, pursuant to 40 CFR 122.62 and 124.5, to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as a part of this Order.
25. This Order contains effluent limits based on recent production rates at this facility. The Board is aware that production can vary and will expedite reissuance of a new permit pursuant to 40 CFR 122.62 and 124.5 upon receipt of an application with new production data.
26. The Board notified the discharger and interested agencies and persons of its intent to reissue waste discharge requirements for the discharge and provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
27. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Water Pollution Control Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Effluent Limitations

1. The discharge of Waste 001 containing constituents in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Maximum Daily</u>
BOD	lbs/day	3657	6883
	kg/day	1659	3122
TSS	lbs/day	3011	4731
	kg/day	1366	2146
TOC	lbs/day	8044	15143
	kg/day	3649	6869
Oil & Grease	lbs/day	1147	2151
	kg/day	520	976
	mg/l	8	15
Phenolic Compounds	lbs/day	17.6	50
	kg/day	8	23
Ammonia as N	lbs/day	1358	2967
	kg/day	616	1346
Sulfide	lbs/day	20	44
	kg/day	9	20
Total Chromium	lbs/day	20.6	59.1
	kg/day	9.4	48
Hexavalent Chromium	lbs/day	1.7	3.8
	kg/day	0.8	1.7
Settleable Solids	ml/l-hr	0.1	0.2
Selenium ¹	lbs/day	2.38	---
	kg/day	1.09	

¹ Mass emission rate shall be based on running annual averages. The running annual averages are to be calculated by taking the arithmetic average of the current daily mass loading value, with all of the previous years values.

2. In addition to the 30-day average and daily maximum pollutant weight allowances shown in A.1, allocations for pollutants attributable to stormwater runoff discharged as a part of Waste 001 are permitted in accordance with the following:

STORMWATER RUNOFF

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Maximum Daily</u>
BOD	mg/l	26	48
TSS	mg/l	21	33
TOC	mg/l	57	106
Oil & Grease	mg/l	8	15
Phenolic Compounds	mg/l	0.17	0.35
Total Chromium	mg/l	0.21	0.60
Hexavalent Chromium	mg/l	0.028	0.062

The total effluent limitation for the discharge is the sum of the stormwater runoff allocation and the mass limits contained in A.1. The total effluent limitation (both maximum and average) is to be computed at the discretion of the discharger on a monthly basis as shown in Part B of the Monitoring Program.

3. The discharge of Waste 001 containing constituents in excess of the following limits is prohibited:

<u>Chemical CONSTITUENT</u>	<u>Units</u>	<u>Daily Average</u>
1,2 Dichloro-benzene ¹	ug/l	180000
1,3 Dichloro-benzene	ug/l	26000
1,4 Dichloro-benzene	ug/l	640
2,4,6 Tri-chlorophenol	ug/l	10
Aldrin	ug/l	0.001
Arsenic	ug/l	200
A-BHC	ug/l	0.13
Benzene	ug/l	200
B-BHC	ug/l	0.46

Cadmium	ug/l	30
Chlordane ¹	ug/l	0.0008
Chloroform	ug/l	4800
Chromium VI ²	ug/l	28
Copper ³	ug/l	30
Cyanide ⁴	ug/l	25
DDT ¹	ug/l	0.006
Dichloro- methane	ug/l	16000
Dieldrin	ug/l	0.001
Endosulfan ¹	ug/l	0.09
Endrin ¹	ug/l	0.02
Fluoranthene	ug/l	420
G-BHC (Lindane)	ug/l	0.62
Halomethanes	ug/l	4800
Heptachlor	ug/l	0.002
Heptachlor Epoxide	ug/l	0.0007
Hexachloro- benzene	ug/l	0.007
Lead	ug/l	53
Mercury	ug/l	0.21
Nickel	ug/l	65
PAHs ¹	ug/l	0.31
PCBs (Total) ¹	ug/l	0.0007
Pentachloro- phenol	ug/l	79
Phenol	ug/l	170
Selenium ^{5,6}	ug/l	50
	lbs/day	2.38
Silver	ug/l	23
TCDD Equivalent ¹	ug/l	1E-07

Toluene	ug/l	3000000
Toxaphene	ug/l	0.002
Tributyltin	ug/l	0.05
Zinc	ug/l	580

- ¹ See Appendix 1 of the California Enclosed Bays and Estuaries Plan for definition of terms.
 - ² Dischargers may, at their option, meet this limitation as total chromium.
 - ³ This copper limitation is performance based.
 - ⁴ Dischargers may, at their option, demonstrate compliance with this limitation by measurement of weak acid dissociable cyanide.
 - ⁵ Mass emission rate shall be based on running annual averages. The running annual averages are to be calculated by taking the arithmetic average of the current daily mass loading value, with all of the previous years values.
 - ⁶ Compliance with concentration limitation shall be demonstrated by December 12, 1993. The Mass emission limitation is already in effect.
4. Waste 001 shall not have a pH less than 6.0 nor greater than 9.0.
 5. Waste 001 shall meet the following acute toxicity limitation:

The survival of test fishes¹ in a 96-hour parallel flow-through bioassay of the effluent as discharged shall be an 11-sample² median value of not less than 90 percent survival, and an 11-sample 90 percentile³ value of not less than 70 percent survival.

¹ The test fishes shall be the two most sensitive species to be determined from concurrent screening of three species: three-spine stickleback, rainbow trout and fathead minnow. Chevron USA conducted concurrent screening and determined the two most sensitive species to be three-spine stickleback and rainbow trout.

² If five or more of the past ten samples are less than 90 percent survival, then survival of less than 90

percent on the next, eleventh, sample represents an effluent limit violation.

³ If one or more of the past ten samples is less than 70 percent survival, then survival of less than 70 percent on the next, eleventh, sample represents an effluent limit violation.

6. Waste 001 shall meet the following chronic toxicity limitation:

An eleven sample median value¹ of 10 TUC²; or a 90 percentile³ value of 20 TUC.

¹ If five or more of the past ten or less samples show toxicity greater than 10 TUC, then a test sample showing chronic toxicity greater than 10 TUC represents consistent toxicity and a violation of this limitation.

² A TUC equals 100/NOEL. The NOEL is the no observable effect level, determined from the IC, EC, or NOEC values. These terms and their usage in determining compliance with the limitations are defined in Attachment A of this Order.

The NOEL shall be based on a critical life stage test using the most sensitive test species as specified by the Executive Officer. The Executive Officer may specify two compliance species if test data indicate that there is alternating sensitivity between the two species. If two compliance test species are specified, compliance shall be based on the maximum TUC value for that discharge sample based on a comparison of TUC values obtained through concurrent testing of the two species.

³ A test sample showing chronic toxicity greater than 20 TUC represents excessive toxicity and a violation of this limitation if one or more of the past ten or less samples shows toxicity greater than 20 TUC.

7. The discharge of Waste 002 containing constituents in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Maximum Daily</u>
pH	pH units	6.5-8.5
Temperature	°F	86

Visible oil observation none

Visible color observation none

8. The discharge of Waste 002 shall not contain a TOC concentration above intake levels in excess of 5 mg/l.

9. The discharges of Wastes 005, 006, 007, 008, 009, 010, 013, 7-Basin, 9-Basin, 12-Basin, and 1st Pass #1 OX Pond containing constituents in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Maximum Daily</u>
Oil & Grease	mg/l	15
TOC	mg/l	110
pH	pH units	6.5-8.5
Visible oil	observation	none
Visible color	observation	none

B. Receiving Water Limitations

1. The discharge of wastes shall not cause the following conditions to exist in waters of the State at any place at levels that cause nuisance or adversely affect beneficial uses:

- a. Floating, suspended, or deposited macroscopic particulate matter or foam;
- b. Bottom deposits or aquatic growths;
- c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
- d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;
- e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of wastes shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

a. Dissolved oxygen: 5.0 mg/l minimum. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.

b. Dissolved sulfide: 0.1 mg/l maximum.

c. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.

d. Un-ionized ammonia (as N): 0.025 mg/l Annual Median;
0.16 mg/l Maximum at any time.

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

C. Discharge Prohibitions

1. The discharge of Waste 001 at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1 is prohibited.
2. The discharge of Waste 002 to Castro Creek or areas where it causes a blockage of anadromous fish into Wildcat Creek is prohibited.
3. The discharge of Waste 011 to waters of the state is prohibited unless approved by the Executive Officer or the following conditions occur:

During any wet season in which a rainfall event occurs which yields a 24-hour precipitation with a return

frequency of once in 25 years, an amount of Waste 011 may be discharged equal to that attributable to the precipitation occurring in excess of the 25-year rainfall event.

4. The discharge of Waste 012 to waters of the state is prohibited unless approved by the Executive Officer or the following conditions occur:

During any wet season in which a rainfall event occurs which yields a 24-hour precipitation with a return frequency of once in 25 years, an amount of Waste 012 may be discharged equal to that attributable to the precipitation occurring in excess of the 25-year rainfall event.

5. The discharge of Waste 013 is prohibited except when it has been demonstrated to the satisfaction of the Executive Officer that it contains only non-contaminated stormwater. This demonstration must include measures to ensure that any synthetically lined surface impoundment which had been previously used for managing other wastewater is adequately decontaminated prior to placing it into Waste 013 service.
6. The discharge of all conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, is prohibited.

D. Provisions

1. The discharger shall comply with the limitations, prohibitions, and other provisions of this Order immediately upon its adoption by the Board.
2. The discharger shall submit a general toxicity identification evaluation (TIE) work plan acceptable to the Executive Officer three months after the date of adoption of this Order.
3. Pursuant to 40 CFR 122.44, 122.62, and 124.5, the definition of the NOEL contained in Attachment A of this Order may be modified prior to the expiration date based on guidance issued by the State Board.
4. If there is a violation of the chronic toxicity effluent limitation, the discharger shall conduct a chronic toxicity reduction evaluation (TRE), which shall initially involve a TIE. The TIE shall be initiated within 30 days of the date of violation. The objective of the TIE shall be to identify the chemical or combination of chemicals that are causing the observed

toxicity. Every effort using currently available TIE methodologies shall be employed by the discharger.

As toxic constituents are identified or characterized, the discharger shall continue the TRE by determining the source(s) of the toxic constituent(s) from the discharge. All reasonable steps shall be taken to reduce toxicity to the required level. The Board recognizes that identification of causes of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the discharger's actions in identifying and reducing sources of persistent toxicity.

5. The discharger shall conduct screening phase compliance monitoring in accordance with a proposal submitted to and acceptable to the Executive Officer. The proposal shall contain, at a minimum, the elements specified in Attachment B of this Order. The purpose of the screening is to determine the most sensitive test species for subsequent compliance monitoring for chronic toxicity. Screening phase compliance monitoring shall be conducted under either of the following conditions:
 - a. Subsequent to any significant change in the nature of the treatment plant effluent through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to pretreatment, source control, and waste minimization efforts; or
 - b. Prior to Permit reissuance, except when the discharger is conducting a TIE/TRE, screening phase monitoring data shall be included in the NPDES Permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.
6. The discharger shall commence monitoring for chronic toxicity within three months upon adoption of this Order in accordance with the attached Chronic Toxicity Monitoring Requirements adopted by the Board. These requirements may be amended by the Board pursuant to EPA regulations 40 CFR 122.62, 122.63, and 124.5.
7. The discharger shall eliminate the discharge of once through salt water (OTSW) through the E-002 discharge point in accordance with the following time schedule:

<u>Task</u>	<u>Deadline</u>
Determine fate of plants currently using OTSW for cooling purposes, and submit plan to Regional Board for staff approval detailing mitigation efforts for Castro Creek including the closing and opening of 250 foot channel dam valves during sensitive migratory windows	December 15, 1992
Develop preliminary budget estimates and obtain funding for alternate cooling process	November 15, 1993
Design and install system for fire pump backup	December 15, 1993
Complete detailed engineering, establish contracts and start construction	April 15, 1994
Complete construction and shutdown of OTSW system	July 1, 1995

8. Reclaimed Water Concentration Limitations

When the discharger uses reclaimed water as influent water for cooling tower make-up water, credit for influent concentrations shall be granted according to the following procedure:

Constituents in the effluent must be sampled at least as frequently as is required in the self-monitoring program for that constituent. Sampling will occur at the AWT by WCCSD, and will be used to determine the influent loading to Chevron. Chevron will determine the time interval between introduction of a given parameter in the influent water at the cooling water towers and the first appearance of this constituent in the final effluent. This determination will be used to calculate credit for influent constituents.

The difference in concentration between the reclaimed water and the EBMUD potable water (adjusted by source) will be termed the influent differential. This influent differential concentration multiplied by total influent reclaimed water flow volume for that monitoring interval will yield an influent mass for each constituent, which is valid for that monitoring interval.

After the appropriate time lag interval, this influent mass of contaminant is then divided by the total effluent flow volume for that monitoring period to give a concentration credit which will apply for the monitoring interval. The monitoring interval is the time interval between sampling days; for example, weekly sampling yields a one week monitoring interval. A schematic example follows:

Sample Calculation

constituent: A
monitoring interval: one week
lag time: 15 days

(influent concentration reclaimed water A - influent concentration potable water A) X (Total influent flow volume for one week) = (Influent mass for constituent A);

(Influent mass for constituent A) / (Total effluent flow volume for one week, 15 days after influent week) = (Concentration credit to be subtracted from the combined effluent concentration, valid for one week);

The adjusted concentration (total - credit) is the Chevron contribution to the effluent and will be reported as Chevron's effluent concentration. These concentrations will be compared to the NPDES limits.

9. Reclaimed Water Mass Limitations

When the discharger uses reclaimed water as influent water for cooling tower make-up, credit for the constituents which are detected in the influent reclaimed water will be given according to the following procedure:

Constituents in the effluent must be sampled at least as frequently as is required in the self-monitoring program for that constituent. Sampling will occur at the AWT by WCCSD, and will be used to determine the influent loading to Chevron. Chevron will determine the time interval between introduction of a given parameter in the influent water at the cooling towers and the first appearance of this constituent in the final effluent. This determination will be used to calculate credit for influent constituents.

The differential influent (the difference between reclaimed water and potable water) concentration multiplied by total influent reclaimed water flow volume for that monitoring interval, and divided by the number of days in that monitoring interval will yield a daily

influent mass for each constituent, which is valid for that monitoring interval.

After the appropriate time lag interval, this daily influent mass of constituent is subtracted from the combined effluent mass, and is valid for a time period equivalent to the monitoring interval. The monitoring interval is the time interval between sampling days; for example, weekly sampling yields a one week monitoring interval. A schematic example follows:

Sample Calculation

constituent: A
monitoring interval: one week
lag time: 15 days

(influent concentration reclaimed water A - influent concentration potable water A) X (Total influent flow volume for one week) = (Influent mass for constituent A);

After a 15 day lag time, Daily influent mass credit is subtracted from the combined effluent mass and is valid for one week. These mass contributions will be compared to the NPDES limits.

10. During periods of acute and chronic fish toxicity that can be attributed to the use of reclaimed water to the satisfaction of the Executive Officer, the discharger shall be granted a variance. This variance will last during the period of time (plus lag time) that the toxicity can be attributed to the use of reclaimed water.
11. Chevron Chemical Company shall provide and maintain stand-by capability and an alternative power source to assure timely operation of the stormwater surge pumps under all emergency conditions.
12. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act, or amendments thereto, and shall take effect at the end of ten days from the date of hearing provided the Regional Administrator, EPA, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.
13. The discharger shall comply with the attached self-monitoring program as adopted by the Board, and as may be amended by the Board pursuant to EPA regulations 40 CFR 122.62, 122.63, and 124.5. Chevron USA, Inc. and Chevron Chemical Company shall separately comply with the

provisions which are pertinent to each facility.

14. All applications, reports, or information submitted to the Board shall be signed and certified pursuant to EPA regulations 40 CFR 122.41(k).
15. Pursuant to EPA regulations 40 CFR 122.44, 122.62, and 124.5, this permit may be modified prior to the expiration date to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as a part of this Order.
16. Pursuant to EPA regulations 40 CFR 122.44, 122.62, and 124.5, the definition of the NOEL contained in Attachment A of this Order may be modified prior to the Permit expiration date based on guidance issued by the State Board.
17. Pursuant to EPA regulations 40 CFR 122.42(a), the discharger must notify the Board as soon as it knows or has reason to believe (1) that they have begun or expect to begin, use or manufacture of a pollutant not reported in the permit application, or (2) a discharge of a toxic pollutant not limited by this permit has occurred, or will occur, in concentrations that exceed the specified limits included in 40 CFR 122.42(a).
18. This Order includes all items of the attached "Standard Provisions, Reporting Requirements and Definitions" dated December 17, 1986.
19. The requirements prescribed by this Order supersede the requirements prescribed by Order No. 87-073 adopted on June 17, 1987. Order No. 87-073 is hereby rescinded.
20. This Order expires on September 16, 1997. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

I, Steven R. Ritchie, Executive Officer do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on September 16, 1992.

Steven R. Ritchie
STEVEN R. RITCHIE
Executive Officer

Attachments:

Location Map

**Standard Provisions & Reporting
Requirements, December 1986**

Self-Monitoring Program

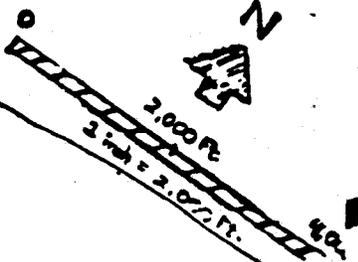
Attachment A - Definition of NOEL

Attachment B - Screening Phase Monitoring Requirements

Chronic Toxicity Monitoring Requirements

207

SAN PABLO STRAIT



E-001

E-005

12 Basin

E-006

E-007

PROPERTY LINE

No. 1 OX Pond

9 or B Basin

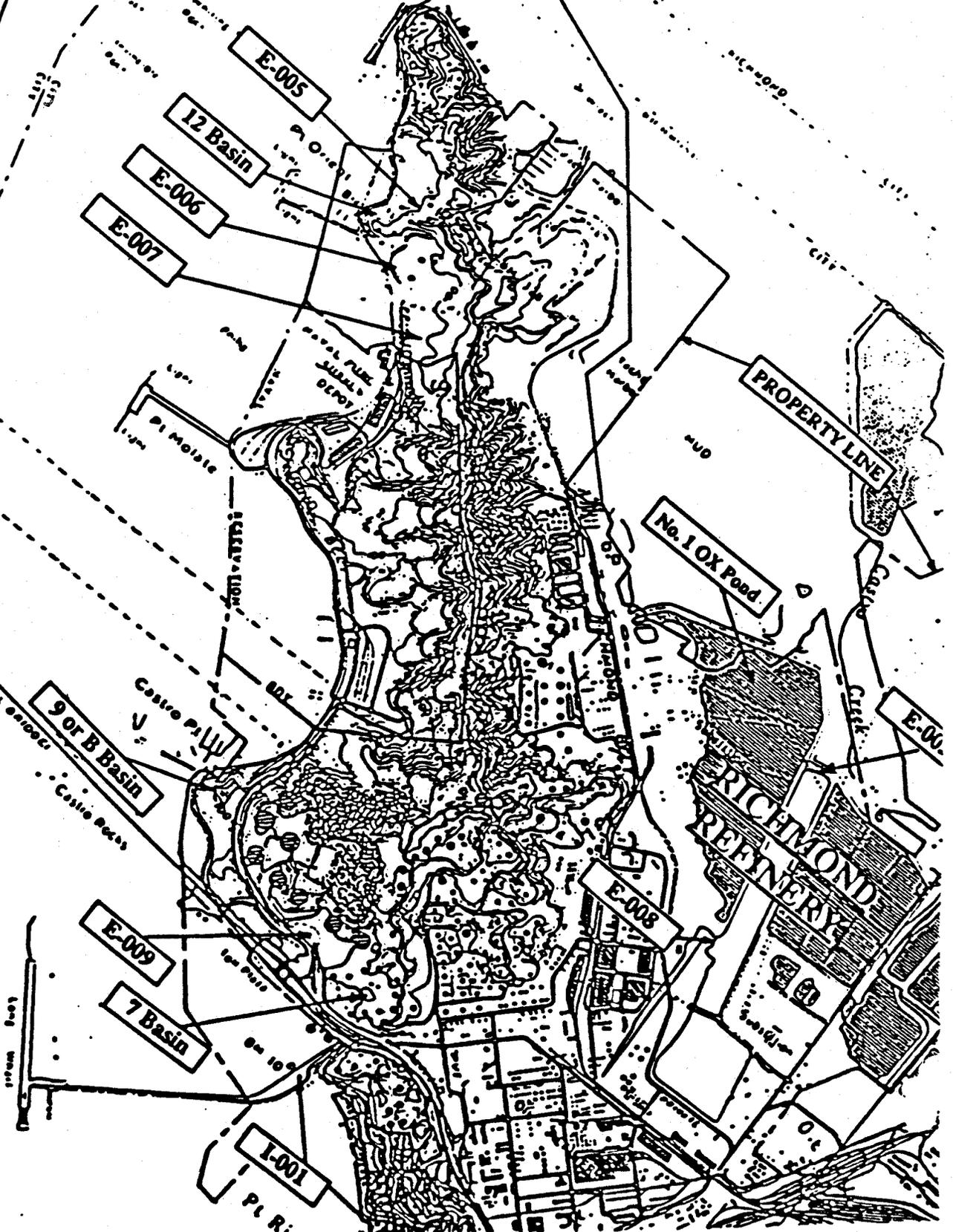
E-009

7 Basin

I-001

RICHMOND REFINERY

E-008



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**SELF-MONITORING PROGRAM
FOR**

**CHEVRON USA PRODUCTS COMPANY, RICHMOND REFINERY,
CHEVRON CHEMICAL COMPANY, RICHMOND PLANT, AND
GENERAL CHEMICAL CORPORATION, RICHMOND WORKS**

NPDES NO. CA0005134

ORDER NO. 92-111

CONSISTS OF

PART A (dated December 1986)

AND

PART B

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT

<u>Station</u>	<u>Description</u>
I-001	At any point in the intake line supplying once-through cooling water such that the sample is representative of the intake water.

B. EFFLUENT

<u>Station</u>	<u>Description</u>
E-001	At any point in the discharge line from the Deep Water Discharge Pump Sump such that the sample is representative of the treated process water.
E-002	At any point from the discharge of Waste 002 in the 250 foot Channel.
E-005	At any point in the outfall from sump #380 such that the sample is representative of the stormwater runoff.
E-006	At any point in the discharge line from sump #381 such that the sample is representative of the stormwater runoff.
E-007	At any point in the discharge line from the "horse pasture sump" such that the sample is representative of the stormwater runoff.
E-008	At any point in the outfall such that the sample is representative of the combined stormwater runoff from the plant area segregated from Asphalt Hills, the Vacuum Gas Oil and the #5 Hydrogen Sulfide plant, and the main tank field.
E-009	At any point in the outfall such that the sample is representative of the combined stormwater runoff from the A-Basin tank field areas.

- E-010 At any point in the outfall such that the sample is representative of the combined stormwater runoff from the Reclamation Yard area.
- E-011 At any point in the outfall from the Castro Acres Surge Pond containing Waste 011 between the point of discharge and the point at which all waste tributary to that outfall is present.
- E-012 At any point in the outfall from the Fertilizer Plant containing Waste 012 between the point of discharge and the point at which all waste tributary to that outfall is present
- E-013 At any point in the discharge line from Chevron Chemical Company's integrated wastewater pond system such that the sample is representative of the non-contaminated stormwater runoff.
- 7-Basin At any point in the outfall such that the sample is representative of the combined stormwater runoff from the clean water sump, and clean tank field non-contact area.
- 9-Basin At any point in the outfall such that the sample is representative of the combined stormwater runoff from the Castro Point clean water sump, clean hillside and tank field area.
- 12-Basin At any point in the outfall such that the sample is representative of the combined stormwater runoff from the Point Orient clean water sump, and clean hillside area.
- 1st Pass #1
Oxidation Pond At any point in the outfall such that the sample is representative of the combined stormwater runoff from segregated areas including the Alkane area, Sulfur Recovery Unit hills, Rod and Gun Club, Richmond Lube Oil Plant, and the Poleyard and Alkylation Plants.

C. RECEIVING WATERS

<u>Station</u>	<u>Description</u>
C-001	At a point in San Pablo Bay, 1800 feet north of Point San Pablo.
C-002	At a point in the drainage ditch, located immediately upstream of the tide gates adjoining Castro Creek.

D. LAND OBSERVATIONS

<u>Station</u>	<u>Description</u>
P-1	At the point of discharge of Waste 011 to the drainage ditch tributary to Castro Creek.
P-3	At the point of discharge of Waste 012 to the drainage ditch tributary to Castro Creek.
P-4	At the point of discharge of Waste 013 to the drainage ditch tributary to Castro Creek.

E. RAINFALL

<u>Station</u>	<u>Description</u>
R-1	The nearest official recording National Weather Service rainfall station or other station acceptable to the Executive Officer.

II. MISCELLANEOUS REPORTING

- A. The Discharger shall record the rainfall on each day of the month.
- B. The discharger shall determine the stormwater runoff/ballast water allocation (daily & monthly) for its discharge using the method described in attached Form A. Form A shall be submitted with the monthly self-monitoring report. The daily maximum allocation must be computed for each day Waste 001 is monitored.
- C. The Discharger shall retain and submit (when requested) the following information concerning the monitoring program for organic and metallic pollutants.

- a. Description of sample stations, times, and procedures.
- b. Description of sample containers, storage, and holding time prior to analysis.
- c. Quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal and surrogate standards.
- D. The Discharger shall submit in the monthly self-monitoring report the metallic & organic test results together with the detection limits (including unidentified peaks). All unidentified (non-Priority Pollutants) peaks detected in the EPA 624 and 625 test methods shall be identified and semi-quantified.

Hydrocarbons detected at < 10 ug/l based on the nearest internal standard may be appropriately grouped and identified together as aliphatic hydrocarbons, aromatic hydrocarbons, and unsaturated hydrocarbons. All other hydrocarbons detected at > 10 ug/l based on the nearest internal standard shall be identified and semi-quantified.

- E. Ballast water treated and discharged as part of Waste 001 shall be metered and the volume recorded in attached Form A for each calendar day. The 30-day average shall be the sum of the daily values in a calendar month divided by the number of days in that month. Ballast-water allocations shall be calculated by multiplying the volume of ballast water, determined above by the appropriate concentration listed under Effluent Limitation A.2. in the permit.
- F. The Discharger shall submit a sketch showing the locations of all ponds, treatment facilities, and points of waste discharge. This shall be updated by the discharger as changes occur.
- G. For any discharge at E-011, E-012 or E-013 sufficient rainfall data acceptable to the Executive Officer shall be submitted by the Discharger showing at least hourly rainfall rates to define a rainfall event that allows discharge. Rainfall data shall be submitted of at least 24 continuous hours to define that a rainfall event exceeding a "25-year, 24 hour" rainfall event has occurred.
- H. Any discharge of Wastes 011, 012, or 013 shall be reported to the Board by telephone immediately following the commencement of discharge.

III. SCHEDULE OF SAMPLING AND ANALYSIS

- A. The schedule of sampling and analysis shall be that given in Table 1 (attached).
- B. Sample collection, storage, and analyses shall be performed according to the latest 40 CFR Part 136 or other methods approved and specified by the Executive Officer.

IV. MODIFICATIONS TO PART A

- A. Exclude paragraph D.3., E.4., F.3., and F.5.
- B. Paragraph D.2.a. shall be modified as follows:

Composite samples of effluent shall be collected on random weekdays, and on any day when substantial changes in flow occur during dry weather conditions.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing Self-Monitoring Program:

- 1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 92-111.
- 2. Is effective on the date shown below.
- 3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer.

Attachments:
Table 1
Form A


STEVEN R. RITCHIE
Executive Officer

Effective Date 9.18.92

TABLE 1

SCHEDULE OF SAMPLING, MEASUREMENT, AND ANALYSIS

<u>Station</u>	<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Frequency of Analysis</u>
I-001	TOC	mg/l	Composite	Monthly
E-001	Flow Rate	MGD	Continuous	Continuous
	BOD, 5-day, @ 20°C	mg/l kg/day	Composite	Monthly
	Settleable Matter	ml/l/hr	Grab (4)	Quarterly
	TSS	mg/l kg/day	Composite	Quarterly
	Oil & Grease	mg/l kg/day	Grab (1) (4)	Quarterly
	Ammonia N	mg/l kg/day	Composite	Quarterly
	Total Sulfides	mg/l	Grab (3)	Quarterly
	TOC	mg/l	Composite	Monthly
	Fish Toxicity	Survival	Composite	Weekly (11)
	pH (2)	Standard Units	Continuous	Continuous
	Temperature	Celsius	Continuous	Continuous
	Arsenic	mg/l kg/day	Composite	Monthly (12)
	Cadmium	mg/l kg/day	Composite	Monthly
	Chromium (total)	"	"	"
	Hexavalent Chromium	"	"	"
	Copper	"	"	"
	Cyanide	"	"	"
	Lead	"	"	"
	Mercury	"	"	"
	Nickel	"	"	"
	Silver	"	"	"
	Selenium (5)	"	"	Weekly
	Zinc	mg/l kg/day	Composite	Monthly
	Phenols	"	"	Quarterly
	PAH's (6)	"	"	"
	TCDD	"	Grab	Once/year
	Equivalents	"	"	"
	Tributyltin	"	Grab	Once/year
	EPA 601 (7)	"	Grab	Once/year
	EPA 608 (8)	"	Grab	Once/year
	EPA 624 (9)	"	Grab	Twice/year
	EPA 625 (10)	"	Grab	Twice/year

<u>Station</u>	<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Frequency of Analysis</u>
E-002	pH	Standard Units	Continuous "	Continuous
	TOC	mg/l	Composite	Monthly
	Temperature	°F	Continuous	Continuous
	Visible Oil	--	--	Monthly
	Visible Color	--	--	Monthly
E-005	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
E-006	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
E-007	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
E-008	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
E-009	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
E-010	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	Each Occurrence
	Visible Color	--	--	Each Occurrence

2. Daily minimum and maximum shall be reported.
3. Receiving water analysis for sulfides should be run when dissolved oxygen is less than 5.0 mg/l.
4. Grab samples shall be collected coincident with samples collected for the analysis of the regulated parameters. In addition, the grab samples must be collected in glass containers.
5. Selenium must be analyzed for only by the atomic absorption, gaseous hydride procedure (EPA method No. 270.3/ Standard Method No. 303E). Alternative methods of analysis must be approved by the Executive Officer.
6. Polynuclear aromatic hydrocarbons PAHs shall be analyzed using EPA Method 610 of the October 1984 Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136. Alternative methods of analysis must be approved by the Executive Officer.
7. Halogenated Volatile Organic Toxic Pollutants shall be analyzed using EPA Method 601 of the October 1984 Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136. Alternative methods of analysis must be approved by the Executive Officer.
8. Organochlorine and other Organohalide Pesticides and Polychlorinated Biphenyl Toxic Pollutants shall be analyzed using EPA Method 608 of the October 1984 Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136. Alternative methods of analysis must be approved by the Executive Officer.
9. Volatile Organic Toxic Pollutants shall be analyzed using EPA Method 624 of the October 1984 Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136. Alternative methods of analysis must be approved by the Executive Officer.
10. Acid and Base/Neutral Extractable Organic Toxic Pollutants shall be analyzed using EPA Method 625 of the October 1984 Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, 40 CFR Part 136. Alternative methods of analysis must be approved by the Executive Officer.
11. Three-spine stickleback, and rainbow trout shall be tested pursuant to Effluent Limitation A.5.
12. Arsenic must be analyzed for by the atomic absorption, gaseous hydride procedure (EPA method No. 206.3/Standard Method No. 303E). Alternative methods of analysis must be approved by the Executive Officer.

**TABLE B-1
CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS**

SPECIES	EFFECT	TEST DURATION	REFERENCE
algae (<u>Skeletonema costatum</u>) (<u>Thalassiosira pseudonana</u>)	growth rate	4 days	1
red algae (<u>Champia parvula</u>)	number of cystocarps	7-9 days	5
giant kelp (<u>Macrocystis pyrifera</u>)	percent germination; germ tube length	48 hours	3
abalone (<u>Haliotis rufescens</u>)	abnormal shell development	48 hours	3
oyster (<u>Crassostrea gigas</u>) mussel (<u>Mytilus edulis</u>)	abnormal shell development; percent survival	48 hours	2
Echinoderms (urchins - <u>Strongylocentrotus</u> <u>purpuratus</u> , <u>S. franciscanus</u>); (sand dollar - <u>Dendraster</u> <u>excentricus</u>)	percent fertilization	1 hour	4
shrimp (<u>Myadopsis bahia</u>)	percent survival; growth; fecundity	7 days	5
silversides (<u>Menidia beryllina</u>)	larval growth rate; percent survival	7 days	5

TOXICITY TEST REFERENCES

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.
2. American Society for Testing Materials (ASTM). 1989. Standard Practice for conducting static acute toxicity tests with larvae of four species of bivalve molluscs. Procedure E 724-89. ASTM, Philadelphia, PA.
3. Anderson, B.B. J.W. Hunt, S.L. Turpen, A.R. Coulon, M. Martin, D.L. McKeown, and F.H. Palmer. 1990. Procedures manual for conducting toxicity tests developed by the marine bioassay project. California State Water Resources Control Board, Sacramento.
4. Dinnel, P.J., J. Link, and G. Stober. 1987. Improved methodology for sea urchin sperm cell bioassay for marine waters. Archives of Environmental Contamination and Toxicology 16:23-32. and S.L. Anderson. September 1, 1989. Technical Memorandum. San Francisco Bay Regional Water Quality Control Board, Oakland, CA.
5. Weber, C.J., W.B. Herring, H. D.J. Klem, T.W. Nehlsel, P.A. Lewis, E.L. Robinson, J. Menkedick, and F. Kessler (eds.). 1988. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. EPA-600/4-87/028. National Technical Information Service, Springfield, VA.

<u>Station</u>	<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Frequency of Analysis</u>	
E-011	Flow Rate	MGD	Composite	Each Occurrence	
	Fish Toxicity	Survival	Grab	Each Occurrence	
	Oil & Grease	mg/l	Grab	Each Occurrence	
	pH	Standard Units	"	"	
	TOC	mg/l	"	"	
	Visible Oil	--	--	"	
	Visible Color	--	--	"	
	Arsenic	mg/l	Grab	Each Occurrence	
	Chromium (Total)	kg/day	"	Each Occurrence	
	Copper	"	Grab	Each Occurrence	
	Zinc	"	"	"	
	Pesticides (Total)	ug/l	Grab	Each Occurrence	
	Benzene	g/day	"	"	
	Toluene	"	"	"	
	Lindane	"	"	"	
	Sevin	"	"	"	
	BHC	"	"	"	
	Trichoro-ethylene	"	"	"	
	Methylene Chloride	"	"	"	
	E-012	Flow Rate	MGD	Composite	Each Occurrence
		Suspended Matter (Total)	mg/l	Grab	Each Occurrence
Oil & Grease		kg/day	Grab	Each Occurrence	
TOC		mg/l	"	"	
Visible Oil		--	--	"	
Visible Color		--	--	"	
Fish Toxicity		Survival	Grab	Each Occurrence	
Phosphate (Total)		mg/l	Grab	Each Occurrence	
Ammonia		mg/l	Grab	Each Occurrence	
Nitrogen		kg/day	"	"	
pH		Standard Units	Grab	"	
E-013	Flow Rate	MGD	Composite	Each Occurrence	
	Oil & Grease	mg/l	Grab	Each Occurrence	
	pH	Standard Units	"	"	
	TOC	mg/l	"	"	
	Visible Oil	--	--	"	
Visible Color	--	--	"		

<u>Station</u>	<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Frequency of Analysis</u>
7-Basin	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
9-Basin	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
12-Basin	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
1st Pass #1 Oxid. Pond	Oil & Grease	mg/l	Grab	Each Occurrence
	pH	Standard Units	"	"
	TOC	mg/l	"	"
	Visible Oil	--	--	"
	Visible Color	--	--	"
C-001 & C-002	pH	Standard Units	Grab	Quarterly
	D.O.	mg/l	Grab	Quarterly
	Temperature	°C	Grab	Quarterly
	Sulfides	mg/l	Grab	Quarterly
	Unionized Ammonia	mg/l	Grab	Quarterly
P-1 & P-3	All Applicable Observations	--	Observation	Each Occurrence
R-1	Rainfall	--	Observation	Monthly

Footnotes for Table 1:

1. Oil and grease sampling shall consist of 3 grab samples taken at 2 hour intervals during the sampling day, with each grab being collected in a glass container. The entire volume of each sample shall be composited prior to analysis. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite wastewater sample for extraction and analysis.

STORMWATER/BALLAST WA.T.R ALLOCATION PROCEDURE

(A) Rainfall (in.)	(B) Stormwater Runoff (MGal/D)	(C) Effluent Flow (MGal/D)	(D) Dry Weather Effluent Flow (MGal/D)	(E) Estimated Processed Stormwater (MGal/D)	(F) Stormwater Bankbook (MGal)	(G) Actual Processed Stormwater (MGal/D)	(H) Ballast Water (MGal/D)
--------------------------	---	-------------------------------------	---	---	---	--	-------------------------------------

Previous Month's Bankbook =

1
2
3
.
.
.
30
TOTAL
AVERAGE
MAXIMUM

Column (B) = Column (A) X Runoff Factor

Column (E) = Column (C) - Column (D) - Column (H).

Column (F): Column (F) = Column (F)(Previous Day) + Column (B) - Column (E).
 Column (F) = 0 if Column (F) < 0.

Column (G): If Column (F) > 0, then Column (G) = Column (E).
 If Column (F) = 0, then Column (G) = Column (B) + Column (F) previous day.

MAXIMUM DAILY LIMITS

DATE	BOD (KG/D)	TSS (KG/D)	O&G (KG/D)	PHENOL (KG/D)	TOTAL CHROME (KG/D)	HEX. CHROME (KG/D)

Maximum Daily Limit = Effluent Limit A.1. + Stormwater Allocation
(Daily Max in kg/day) (Daily Max)

Stormwater Allocations = Effluent Limit A.2. x Daily Processed Stormwater x 3.785 l/gal
(Daily Max in mg/l) (in mgd)

**TABLE B-2
CRITICAL LIFE STAGE TOXICITY TESTS FOR FRESH WATERS**

SPECIES	EFFECT	TEST DURATION	REFERENCE
fathead minnow (<i>Pimephales promelas</i>)	survival; growth rate	7 days	6
water flea (<i>Ceriodaphnia dubia</i>)	survival; number of young	7 days	6
algae (<i>Selenastrum capricornutum</i>)	cell division rate	4 days	6

TOXICITY TEST REFERENCE

6. Horning, W.B. and C.I. Weber (eds.). 1989. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. Second edition. U.S. EPA Environmental Monitoring Systems Laboratory, Cincinnati, Ohio. EPA/600/4-89/001.

STORMWATER/BALLAST WATER ALLOCATION PROCEDURE

This procedure uses a bankbook to inventory stormwater. Any stormwater in excess of the estimated processed stormwater is inventoried. Stormwater allocations are calculated using the actual processed stormwater developed in the attached table.

Definitions:

Dry Weather Season - The months of June to September exclusive of a one-week period following any rainstorm.

Estimated Dry Weather Process Wastewater Flow - The average effluent flowrate during the previous dry weather season.

Stormwater Runoff - The product of the inches of rainfall and the runoff factor.

Estimated Processed Stormwater - The difference between the actual effluent flowrate and the ballast water plus dry weather flowrate.

Stormwater Bankbook - Calculated inventoried stormwater.

Actual Process Stormwater - If the stormwater bankbook is not zero, the actual processed stormwater equals the estimated flow. If the bankbook is zero, the actual processed stormwater is equal to the stormwater runoff for that day plus the bankbook for the previous day.

I. CHRONIC TOXICITY MONITORING REQUIREMENT

- A. Test Species and Frequency: The discharger shall collect 24-hour composite samples from seven consecutive days of Waste 001 for critical life stage toxicity testing as specified below:

<u>Species</u>	<u>Frequency</u>
<u>Menidia beryllina</u>	quarterly''

- B. Conditions for Accelerated Monitoring: If the discharger is required to monitor quarterly, the discharger shall accelerate the frequency of monitoring to monthly (or as otherwise specified by the Executive Officer) when there is an exceedance of either of the following conditions:

1. Three sample median value greater than 10 TUC; or
2. Single sample maximum value greater than 20 TUC.

- C. Methodology: Sample collection, handling and preservation shall be in accordance with EPA protocols. The test methodology used shall be in accordance with the references cited in Order No. 92-111, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.

- D. Dilution Series: The discharger shall conduct tests at 100%, 50%, 25%, 10%, 5%, and 2.5%. The "%" represents percent effluent as discharged. The 100% dilution may be omitted if the marine test species specified is sensitive to artificial sea salt.

II. CHRONIC TOXICITY REPORTING REQUIREMENTS

- A. Routine Reporting: Toxicity test results for the current reporting period shall include at a minimum, for each test

1. sample date(s)
2. test initiation date
3. test species
4. end point values for each dilution (e.g. number of young, growth rate, percent survival)
5. NOEC value(s) in percent effluent
6. IC₁₀, IC₁₅, IC₂₅, and IC₅₀ values (or EC₁₀, EC₁₅ ... etc.) in percent effluent
7. TUC values (100/NOEC, 100/IC₂₅, and 100/EC₂₅)
8. Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)
9. NOEC and LOEC values for reference toxicant test(s)
10. IC₅₀ or EC₅₀ value(s) for reference toxicant test(s)
11. Available water quality measurements for each test (e.g. pH, D.O, temperature, conductivity, hardness,

salinity, ammonia)

- B. Compliance Summary: Each self-monitoring report shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under Section A item numbers 1, 3, 5, 6 (IC₂₅ or EC₂₅), 7, and 8.
- C. Reporting Raw Data in Electronic Format: On a quarterly basis, by February 15, May 15, August 15, and December 15 of each year, the discharger shall report all chronic toxicity data for the previous calendar quarter in the format specified by the Statewide Chronic Toxicity Database Management System.

After at least four test rounds, the discharger may request the Executive Officer to decrease the required frequency of testing, and/or to reduce the number of compliance species to one. Such a request may be made only if toxicity exceeding the TUC values specified in the effluent limitations was never observed using that test species.

	Rainfall (Inches)	Storm Runoff Flow (Inches x Runoff Factor) Gallons	Ballast Flow in gallons
-2			
2-			
3-4			
4-5			
5-6			
6-7			
7-8			
8-9			
9-10			
10-11			
11-12			
12-13			
13-14			
14-15			
15-16			
16-17			
18-19			
19-20			
20-21			
21-22			
22-23			
23-24			
24-25			
25-26			
26-27			
27-28			
28-29			
29-30			
30-31			
31-1			
Total Monthly Average			

MONTH:		YEAR:	
Allocation	A.I.	Total Effluent	
Storm Runoff-Ballast Water Flow Factor (expressed in thousand Gals./MG (kg./1000 Gals.) = (kg./day)	Effluent Limites = Limit (kg./day)	Effluent Limites = Limit (kg./day)	
30-Day Average BOD ₅	x 0.098 =	+	-
Limita- TSS	x 0.079 =	+	-
TOC	0.22	+	-
COD	x 0.68 =	+	-
OSG	x 0.03 =	+	-
PRENOL	x 0.00064 =	+	-
TOTAL CHROME	x 0.00079 =	+	-
HEX CHROME	x 0.00011 =	+	-

San Francisco Bay

San Pablo Bay

Chevron USA Richmond Refinery

No. 1 Oxidation Pond

250 Foot Channel

DWOP Pump Station

Bioreactor

DWOP Channel

Chevron Chemical Company

Scale in Feet

0

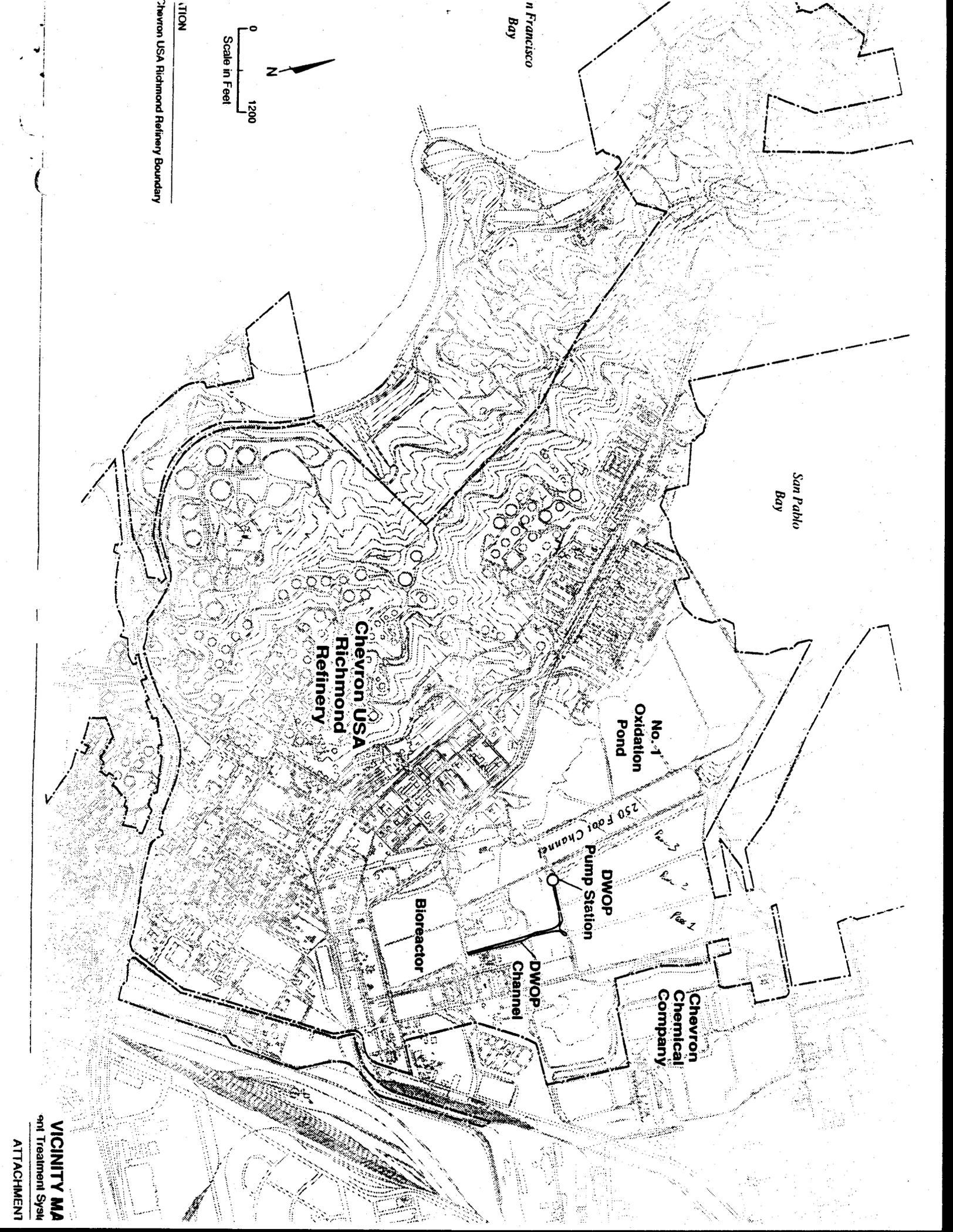
1200

N

Chevron USA Richmond Refinery Boundary

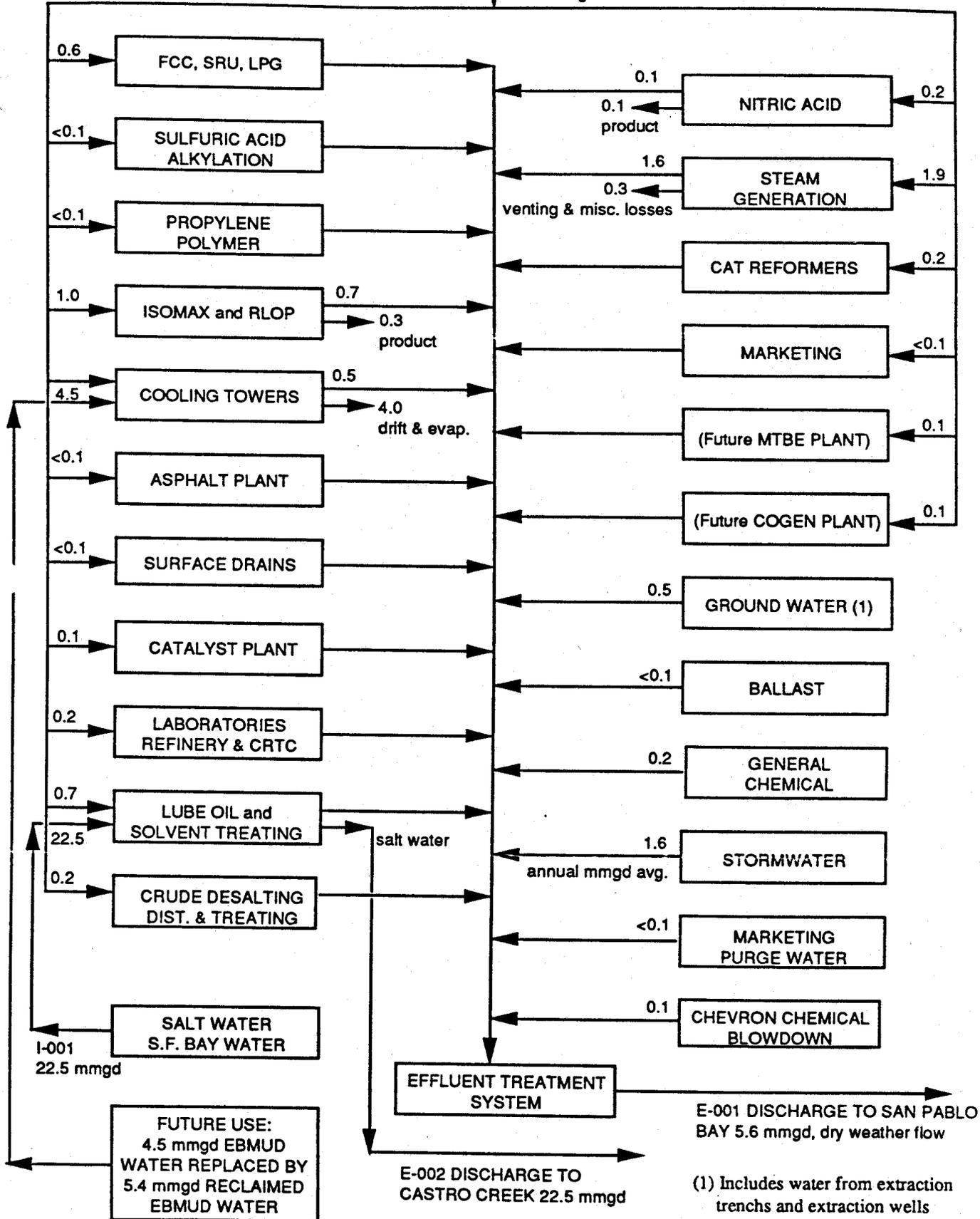
ATTENTION

VICINITY MA
Plant Treatment System
ATTACHMENT



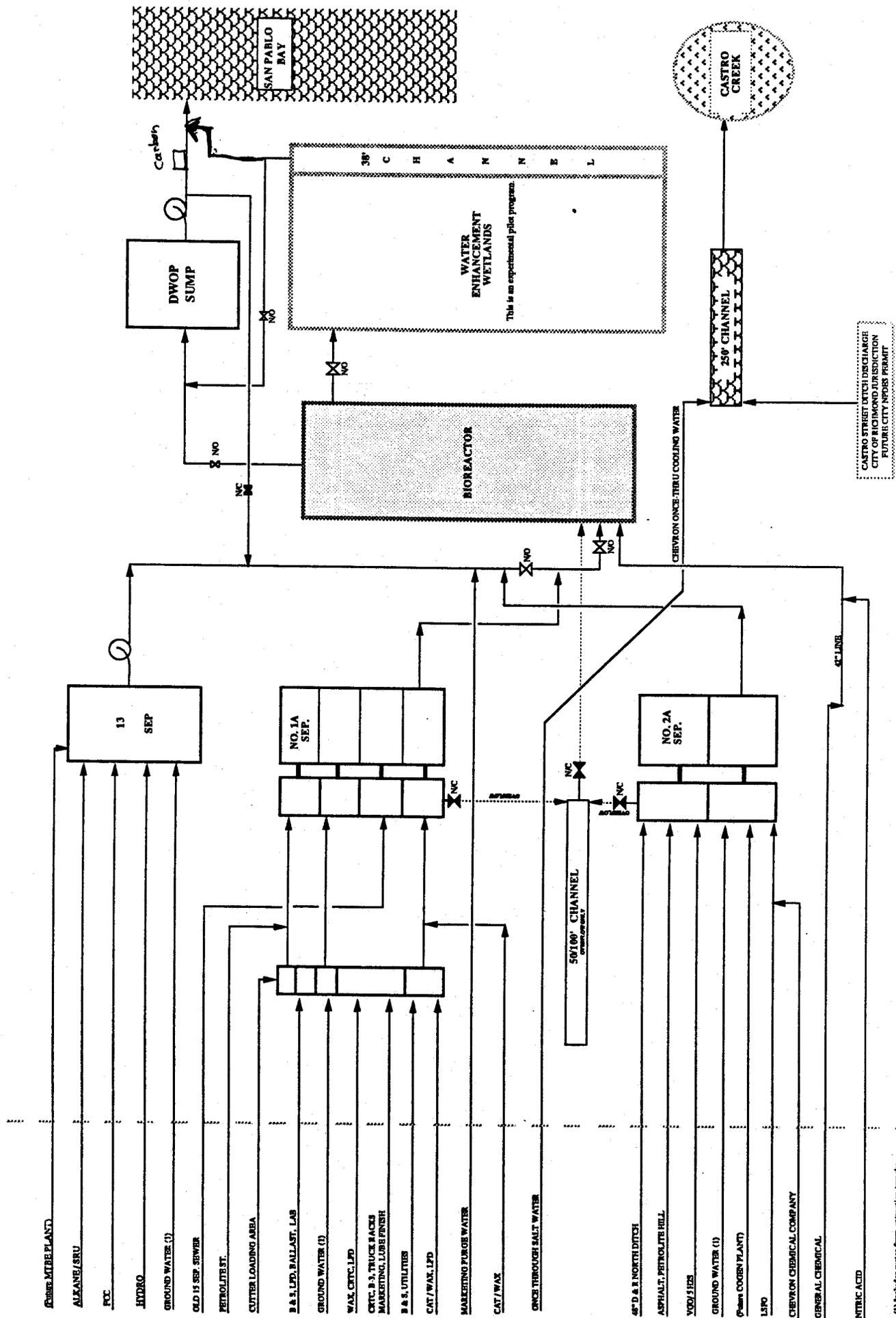
MUNICIPAL WATER SUPPLY

10.3 mmgd



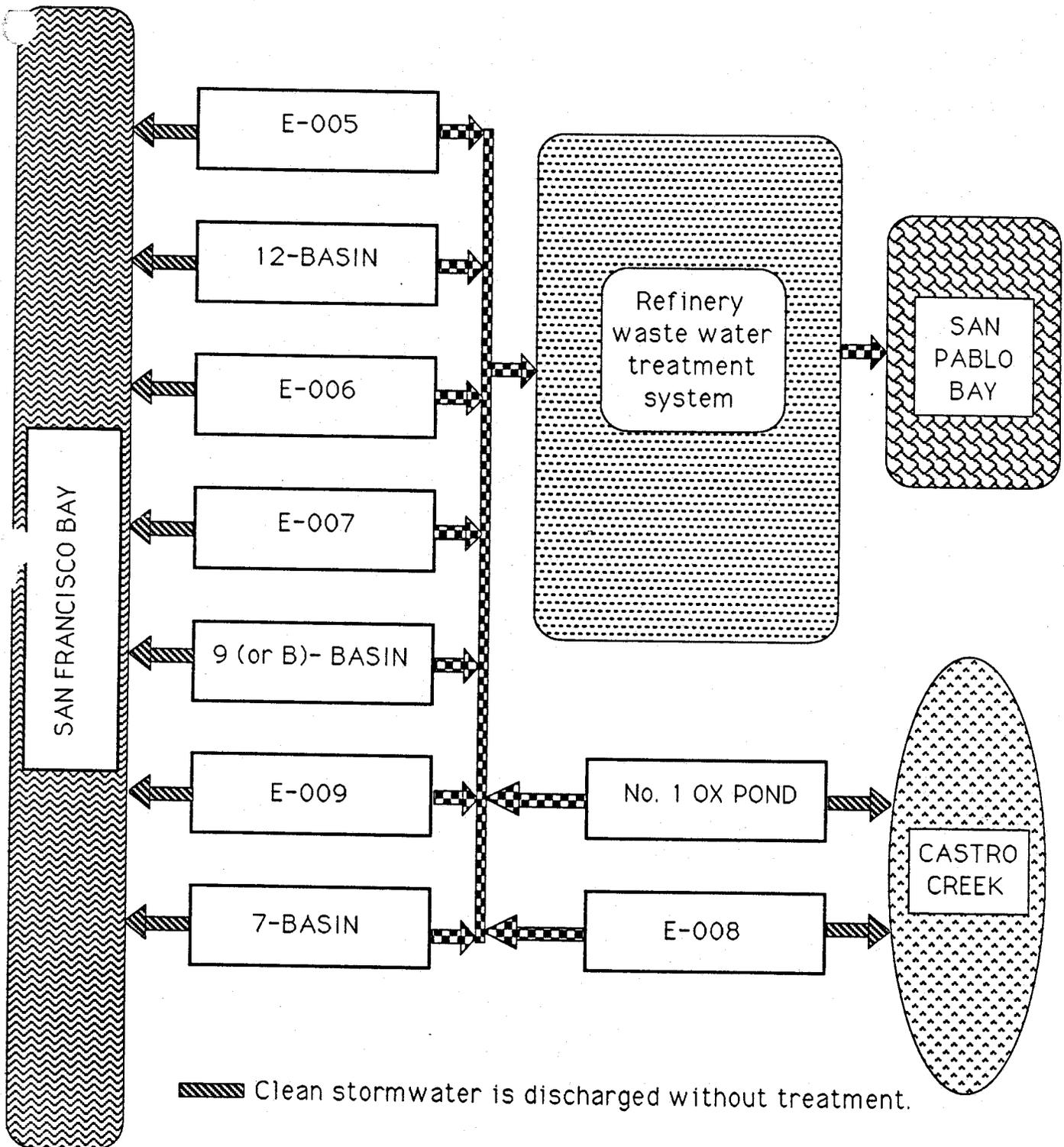
(1) Includes water from extraction trenches and extraction wells (Groundwater Protection System - GPS), construction de-watering and monitoring wells.

EFFLUENT SYSTEM VERVIEW



(1) Includes water from extraction tanks and extraction wells (Groundwater Protective System - GPS), construction de-waxing and monitoring wells.

REFINERY STORMWATER DISCHARGE SYSTEM



 Clean stormwater is discharged without treatment.

 Contaminated stormwater is treated and discharged with the process water.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 97-108
NPDES NO. CA0005134

AMENDING WASTE DISCHARGE REQUIREMENTS FOR:

CHEVRON USA PRODUCTS COMPANY RICHMOND REFINERY,
CHEVRON CHEMICAL COMPANY, RICHMOND PLANT, AND
GENERAL CHEMICAL CORPORATION, RICHMOND WORKS,
RICHMOND, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. The Board issued Waste Discharge Requirements to Chevron USA Products Company, (hereinafter called the Discharger), under the National Pollutant Discharge Elimination System (NPDES) permit number CA0005134, Order No. 92-111 on September 16, 1992.
2. Chevron USA operates a petroleum refinery. It manufactures fuels, lubricants, asphalt, and petrochemicals. The refinery discharges treated process wastewater, cooling water, storm water, and other wastes as described below, into San Pablo Bay, a water of the United States.
3. General Chemical Corporation (formerly Allied Chemical Corporation), Richmond Works, manufactures sulfuric acid and oleum, using alkylation acid and spent sulfuric acid from the refinery as part of its raw material. Treated wastewater from General Chemical Corporation is discharged to the Chevron USA wastewater system.
4. Chevron Chemical Company, Agricultural Division, Richmond Plant, manufactures fertilizers, pesticides, fungicides, herbicides, and fuel additives. Order No. 92-111 permits the exhaust gas scrubber blowdown from its incinerator to be discharged to the Chevron USA wastewater system. Chevron Chemical Company shut down its incinerator on June 27, 1997.
5. The USEPA and the Board classify Chevron USA Products Company as a major Discharger. Treated effluent from the facility discharges to San Pablo Bay through a deepwater outfall, and the effluent limitations contained in Order No. 92-111 are based on a dilution ratio of 10:1.
6. The Discharger intends to discharge storm water runoff to San Pablo Bay from two waste management units on the Refinery property following the installation of low permeability caps. The units include the Parr-Richmond Landfill (Lat. 37°57'15", Long. 122°22'45"), and Gertrude Street Dump sites (Lat. 37°57'15", Long. 122°22'45"), and cap installation is expected by the end of 1997. The USEPA recently approved Chevron's corrective action plans for the two units.
7. The Discharger intends to discharge storm water runoff from five on-site landfarms following the installation of vegetative covers. Storm water would be routed from Landfarm No. 1 to the first pass of the refinery's No. 1 Oxidation pond, and from Landfarms No. 2 through No. 5 to the Water Enhancement Wetland. Discharges from the No. 1 Oxidation pond, and the Water Enhancement Wetland are currently regulated by Order No. 92-111.

8. This Order amends Order No. 92-111 to include the regulation of storm water discharges from the Parr-Richmond Landfill, and the Gertrude Street Dump Site.
9. The amendment of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21000 of Division 13) of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.
10. The Board notified the Discharger, and interested agencies and persons of its intent to amend waste discharge requirements, and has provided them with an opportunity for a public hearing, and an opportunity to submit their written views and recommendations.

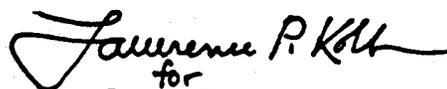
IT IS HEREBY ORDERED that:

- A. The discharges of storm water from Parr-Richmond Landfill, and the Gertrude Street Dump Site containing constituents in excess of the following limits are prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Maximum</u> <u>Daily</u>
Oil & Grease	mg/L	15
TOC	mg/L	110
Visible Oil	Observation	none
Visible Color	Observation	none

- B. The discharges of storm water from Parr-Richmond Landfill, and the Gertrude Street Dump Site shall not have a pH less than 6.5 nor greater than 8.5.
- C. The Self-Monitoring Program contained in Order No. 92-111 shall be amended to include storm water monitoring from the Parr-Richmond Landfill, and the Gertrude Street Dump Site for the constituents specified above. The Discharger shall collect and analyze samples of storm water discharge from at least two storm events during each wet season which produces significant storm water discharge. A significant storm water discharge is a continuous discharge of storm water for approximately one hour or more.
- D. This Order shall serve as an amended National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act, or amendment thereto, and shall become effective 10 days after the date of adoption provided the Regional Administrator, Environmental Protection Agency, has no objections. If the Administrator objects to its issuance, the modifications shall not become effective until such objection is withdrawn.

I, Loretta K. Barsamian, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 17, 1997



for
Loretta K. Barsamian
Executive Officer