

**State of California**  
**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**  
**LOS ANGELES REGION**

**MONITORING AND REPORTING PROGRAM NO. 1603**  
**FOR**  
**CHEVRON PRODUCTS COMPANY**  
**(El Segundo Refinery)**  
**NPDES No. CA0000337**

**I. REPORTING REQUIREMENTS**

- A. Chevron Products Company, El Segundo Refinery (hereinafter Chevron or Discharger) shall implement this monitoring program on the effective date of this Order. All monitoring reports should be addressed to the Regional Board, Attention: Information Technology Unit. The first monitoring report (a monthly effluent monitoring report) under this Program is due by May 1, 2007.
- B. Monitoring reports shall be submitted according to the following:
1. Effluent monitoring reports shall be submitted monthly by the first day of the second month following the end of each monthly reporting period. Each report shall clearly indicate any appropriate incremental additions to effluent limitations due to wet weather discharges, water conservation, or treatment of wastes transported to the refinery.
  2. The Discharger shall submit an annual summary report (for both dry and wet weather discharges) containing a discussion of the previous year's effluent and receiving water monitoring data, as well as graphical and tabular summaries of the data. The data shall be submitted to the Regional Board on hard copy and on a 3 1/2" computer diskette. Submitted data must be IBM compatible, preferably using EXCEL software. This annual report is to be received by the Regional Board by March 1 of each year following the calendar year of data collection. The Regional Board and the State Water Resources Control Board (State Board) are developing a database compliance monitoring management system that may require the Discharger to submit the monitoring and annual summary reports electronically when it becomes fully operational.
  3. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and corrective actions taken or planned that may be needed to bring the discharge into full compliance with waste discharge requirements. This section shall clearly list all non-compliance with waste discharge requirements, as well as all excursions of effluent limitations.
  4. The Discharger shall inform the Regional Board well in advance of any proposed

construction activity that could potentially affect compliance with applicable requirements.

5. A quarterly report identifying the type and percentage of each component crude source in the feedstock (crude mix) during the reporting period shall be submitted by the first day of the third month following the end of each calendar quarter. The report may be submitted as confidential business information separately from the monthly discharge monitoring report. Any claim of confidentiality of the data is forfeited if the Discharger makes a request for relief under Section I.B.2 of Discharge Limitations
6. Receiving water quality monitoring reports shall be submitted by the first day of the third month following the end of each sampling period.
7. An annual report discussing the previous year's receiving water monitoring data shall be submitted by the fifteenth of March of the year following data collection. This report shall include an in-depth discussion of the results from sampling programs conducted during the previous year. Temporal and spatial trends in the data shall be analyzed, with particular reference to comparisons between stations with respect to distance from the outfall and comparisons to data collected during previous years. Appropriate statistical tests and indices, subject to the approval of the Executive Officer, shall be calculated and included in the annual report.
8. The table below summarizes the types of reports and due dates for the reports:

<b>Monitoring Report Type</b>	<b>Reporting Period</b>	<b>Report Due</b>	<b>First Report Due</b>
Effluent	Monthly	By the 1 <sup>st</sup> day of the second month after each reporting period	March 1, 2007
Effluent	Annual	March 15 of each year	March 15, 2008
Receiving water	Quarterly	March 15, June 15, September, and December 15	March 15, 2007
Receiving water	Annual	March 15 of each year	March 15, 2008
Feedstock	Quarterly	March 15, June 15, September, and December 15	March 15, 2007

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

- C. Receiving water monitoring reports shall include the following information, if appropriate, at the minimum:
  - 1. A description of climatic and receiving water characteristics at the time of sampling (weather observations, unusual or abnormal amounts of floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling or measurements, tidal stage and height, etc.).
  - 2. The date, exact place and description of sampling stations, including differences unique to each station (e.g., station location, sediment grain size, distribution of bottom sediments, rocks, shell litter, calcareous worm tubes, etc.).
  - 3. A list of individuals participating in field collection of samples or data and description of the sample collection and preservation procedures used in the various surveys.
  - 4. A description of the specific method used for each laboratory analysis, the date(s) the analyses were performed and the individuals participating in these analyses.

## **II. EFFLUENT MONITORING REQUIREMENTS**

- A. Effluent monitoring is required to:
  - 1. determine compliance with NPDES permit conditions;
  - 2. identify operational problems and improve plant performance; and
  - 3. provide information on wastewater characteristics and flows for use in interpreting water quality and biological data.
- B. A sampling station shall be established for each point of discharge and shall be located where representative samples of that effluent can be obtained (after receiving all treatment). In the event that waste streams from different sources are combined for treatment or discharge, representative sampling stations shall be established to ensure that the quantity of each pollutant or pollutant property attributable to each waste source regulated by effluent limitations can be determined.
- C. This Regional Board shall be notified in writing of any change in the sampling stations once established or in the methods for determining the quantities of

pollutants in the individual waste streams.

- D. Pollutants shall be analyzed using the analytical methods described in 40 CFR sections 136.3, 136.4, and 136.5 (revised May 14, 1999); or, where no methods are specified for a given pollutant, by methods approved by this Regional Board or the State Board. Laboratories analyzing effluent samples and receiving water samples shall be certified by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) and must include quality assurance/quality control (QA/QC) data in their reports.
- E. The monitoring reports shall specify the analytical method used, the Method Detection Limit (MDL), and the Minimum Level (ML) for each pollutant. For the purpose of reporting compliance with numerical limitations and receiving water limitations, analytical data shall be reported by one of the following methods, as appropriate:
1. An actual numerical value for sample results greater than or equal to the ML; or,
  2. "Detected, but Not Quantified (DNQ)" if results are greater than or equal to the laboratory's MDL but less than the ML; or,
  3. "Not-Detected (ND)" for sample results less than the laboratory's MDL with the MDL indicated for the analytical method used.

Current MLs are those published by the State Water Resources Control Board in Appendix II of the *Water Quality Control Plan for the Ocean Waters of California* (Ocean Plan).

- F. Where possible, the MLs employed for effluent analyses shall be lower than the permit limitations established for a given parameter. If the ML value is not below the effluent limitation, then the lowest ML value and its associated analytical method shall be selected for compliance purposes. At least once a year, the Discharger shall submit a list of the analytical methods employed for each test and associated laboratory QA/QC procedures.
- G. The Regional Board, in consultation with the State Board Quality Assurance Program, shall establish a ML that is not contained in Appendix II to be included in the Discharger's permit in any of the following situations:
1. When the pollutant under consideration is not included in Appendix II;

2. When the Discharger and Regional Board agree to include in the permit a test method that is more sensitive than that specified in 40 CFR Part 136 (revised May 14, 1999);
  3. When the Discharger agrees to use an ML that is lower than that listed in Appendix II;
  4. When the Discharger demonstrates that the calibration standard matrix is sufficiently different from that used to establish the ML and proposes an appropriate ML for their matrix; or,
  5. When the Discharger uses a method whose quantification practices are not consistent with the definition of an ML. Examples of such methods are the USEPA-approved method 1613 for dioxins and furans, method 1624 for volatile organic substances, and method 1625 for semi-volatile organic substances. In such cases, the Discharger, the Regional Board, and the State Board shall agree on a lowest quantifiable limit and that limit will substitute for the ML for reporting and compliance determination purposes.
- H. Laboratory analyses – all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP). A copy of the laboratory certification shall be submitted with the Annual Report.
- I. Water/wastewater samples must be analyzed within allowable holding time limits as specified in 40 CFR section 136.3. All QA/QC items must be run on the same dates the samples were actually analyzed, and the results shall be reported in the Regional Board format, when it becomes available, and submitted with the laboratory reports. Proper chain of custody procedures must be followed, and a copy of the chain of custody shall be submitted with the report.
- J. All analyses shall be accompanied by the chain of custody, including but not limited to data and time of sampling, sample identification, and name of person who performed sampling, date of analysis, name of person who performed analysis, QA/QC data, method detection limits, analytical methods, copy of laboratory certification, and a perjury statement executed by the person responsible for the laboratory.

III. EFFLUENT MONITORING PROGRAM

A. The following shall constitute the effluent monitoring program:

<b>Constituent</b>	<b>Units</b>	<b>Type of Sample</b>	<b>Minimum Frequency of Analysis</b>
Total waste flow <sup>[1]</sup>	gal/day	continuous	---
Temperature <sup>[1]</sup>	°F	continuous	---
pH <sup>[1]</sup>	pH units	continuous	---
Oil and grease	mg/L	grab	weekly
BOD <sub>5</sub> 20°C	mg/L	24-hour composite	weekly
COD	mg/L	24-hour composite	weekly
Suspended solids	mg/L	grab	weekly
Ammonia as nitrogen	mg/L	24-hour composite	weekly
Settleable solids	ml/L	24-hour composite	monthly
Sulfide	mg/L	24-hour composite	monthly
Phenolic compounds	µg/L	24-hour composite	monthly
Turbidity	NTU	24-hour composite	monthly
Total chromium	µg/L	24-hour composite	monthly
Arsenic	µg/L	24-hour composite	monthly
Cadmium	µg/L	24-hour composite	monthly
Copper	µg/L	24-hour composite	monthly
Lead	µg/L	24-hour composite	monthly
Mercury	µg/L	24-hour composite	monthly
Nickel	µg/L	24-hour composite	monthly

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Selenium	µg/L	24-hour composite	monthly
Silver	µg/L	24-hour composite	monthly
Zinc	µg/L	24-hour composite	monthly
Cyanide	µg/L	grab	monthly
Chronic toxicity	TUc	24-hour composite	monthly
Acute toxicity	TUa	grab	monthly
Total coliform	CFU/100 ml or MPN/100 ml	grab	quarterly <sup>1a</sup>
Enterococcus	CFU/100 ml or MPN/100 ml	grab	quarterly <sup>1a</sup>
Fecal coliform	CFU/100 ml or MPN/100 ml	grab	quarterly <sup>1a</sup>
Total chlorine residual	mg/L	grab	quarterly
Hexavalent chromium	µg/L	24-hour composite	quarterly
Toluene	µg/L	grab	quarterly
MTBE <sup>[2]</sup>	µg/L	grab	quarterly
Chlorinated phenolics <sup>[3]</sup>	µg/L	24-hour composite	quarterly
Ethylbenzene	µg/L	grab	quarterly
Benzene	µg/L	grab	quarterly
Tributyltin	µg/L	24-hour composite	semi-annually
1,1,1-Trichloroethane	µg/L	grab	semi-annually
PAHs <sup>[9]</sup>	µg/L	24-hour composite	Semi-annually
PCBs <sup>[10]</sup>	µg/L	24-hour composite	Semi-annually
TCDD equivalents <sup>[11]</sup>	µg/L	24-hour composite	Semi-annually
Trichloroethylene	µg/L	grab	annually

<b>Constituent</b>	<b>Units</b>	<b>Type of Sample</b>	<b>Minimum Frequency of Analysis</b>
1,2-Trans-dichloroethylene	µg/L	grab	annually
Endrin	µg/L	24-hour composite	annually
Tetrachloroethylene	µg/L	grab	annually
Toxaphene	µg/L	24-hour composite	annually
Radioactivity	pci/L	24-hour composite	annually
Antimony	µg/L	24-hour composite	annually
Endosulfan	µg/L	24-hour composite	annually
Acrolein	µg/L	grab	annually
HCH <sup>[4]</sup>	µg/L	24-hour composite	annually
Methylene chloride	µg/L	grab	annually
Bis(2-chloroethoxyl) methane	µg/L	24-hour composite	annually
Bis(2-chloroisopropyl) ether	µg/L	24-hour composite	annually
Chlorobenzene	µg/L	grab	annually
Chloroethane	µg/L	grab	annually
Chromium trivalent	µg/L	24-hour composite	annually
Di-n-butyl phthalate	µg/L	24-hour composite	annually
Dichlorobenzene <sup>[5]</sup>	µg/L	24-hour composite	annually
Diethyl phthalate	µg/L	24-hour composite	annually
Dimethyl phthalate	µg/L	24-hour composite	annually
4,6-dinitro-2-methyl-phenol	µg/L	24-hour composite	annually
2,4-Dinitrophenol	µg/L	24-hour composite	annually



<b>Constituent</b>	<b>Units</b>	<b>Type of Sample</b>	<b>Minimum Frequency of Analysis</b>
Fluoranthene	µg/L	24-hour composite	annually
Hexachlorocyclopentadiene	µg/L	24-hour composite	annually
Nitrobenzene	µg/L	24-hour composite	annually
Thallium	µg/L	24-hour composite	annually
1,1,2,2-Tetrachloroethane	µg/L	grab	annually
1,1,2-Trichloroethane	µg/L	grab	annually
Acrylonitrile	µg/L	grab	annually
Aldrin	µg/L	24-hour composite	annually
Benzidine	µg/L	24-hour composite	annually
Beryllium	µg/L	24-hour composite	annually
Bis(2-chloroethyl) ether	µg/L	24-hour composite	annually
Bis(2-ethylhexyl)phthalate	µg/L	24-hour composite	annually
Di-N-butyl phthalate	µg/L	24-hour composite	annually
Carbon tetrachloride	µg/L	grab	annually
Chloroform	µg/L	grab	annually
Chlordane <sup>[6]</sup>	µg/L	24-hour composite	annually
DDT <sup>[7]</sup>	µg/L	24-hour composite	annually
Chlorodibromomethane	µg/L	24-hour composite	annually
1,4-Dichlorobenzene	µg/L	24-hour composite	annually
1,2,4-Trichlorobenzene	µg/L	24-hour composite	annually

<b>Constituent</b>	<b>Units</b>	<b>Type of Sample</b>	<b>Minimum Frequency of Analysis</b>
3,3'-Dichlorobenzidine	µg/L	24-hour composite	annually
1,2-Dichloroethane	µg/L	grab	annually
1,1-Dichloroethylene	µg/L	grab	annually
Dichlorobromomethane	µg/L	grab	annually
Dichloromethane	µg/L	grab	annually
1,3-Dichloropropene	µg/L	grab	annually
Dieldrin	µg/L	24-hour composite	annually
2,4-Dinitrotoluene	µg/L	24-hour composite	annually
1,2-Diphenylhydrazine	µg/L	24-hour composite	annually
Halomethanes <sup>[8]</sup>	µg/L	grab	annually
Heptachlor	µg/L	24-hour composite	annually
heptachlor epoxide	µg/L	24-hour composite	annually
Hexachlorobenzene	µg/L	24-hour composite	annually
Hexachlorobutadiene	µg/L	24-hour composite	annually
Hexachlorethane	µg/L	24-hour composite	annually
Isophorone	µg/L	24-hour composite	annually
N-nitrosodimethylamine	µg/L	24-hour composite	annually
N-nitrosodiphenylamine	µg/L	24-hour composite	annually
N-Nitrosodi-n-propylamine	µg/L	24-hour composite	annually
2,4,6-Trichlorophenol	µg/L	24-hour composite	annually
Vinyl chloride	µg/L	grab	annually
xylene	µg/L	24-hour composite	annually

**Footnotes:**

- [1]. Where continuous monitoring of temperature, pH and flow is required, the following shall be included in the report:
- Temperature: maximum temperature recorded each day.  
pH: maximum and minimum values recorded each day.  
Flow: total daily flow and peak daily flow rate.
- [1.a]. Initially the samples will be collected and analyzed for first three months on a monthly basis. If the Discharger meets the compliance limits, then the monitoring will be conducted on a quarterly basis.
- [2]. Analyses using USEPA Methods 8020A or 8260.
- [3]. Sum of 2-chlorophenol, 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, and pentachlorophenol.
- [4]. Sum of alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.
- [5]. Sum of 1,2- and 1,3-dichlorobenzene.
- [6]. Sum of chlordane-alpha, chlordane-gamma, chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma and oxychlordane.
- [7]. Sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD and 2,4'-DDD.
- [8]. Sum of bromoform, bromomethane (methylbromide), chloromethane (methyl chloride), chlorodibromomethane and dichlorobromo-methane.
- [9]. Sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.
- [10]. Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.
- [11]. Sum of the concentration of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below:

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

#### IV. TOXICITY MONITORING REQUIREMENTS

##### A. Acute Toxicity Testing

1. Methods and test species. The Discharger shall conduct 96-hour static renewal acute toxicity tests on flow-weighted 24-hour composite effluent samples. When conducting toxicity tests in accordance with a specified chronic test methods manual, if daily observations of mortality make it possible to also calculate acute toxicity for the desired exposure period and the dilution series for the toxicity test includes the acute IWC, such method may be used to estimate the 96-hour LC50.

The presence of acute toxicity shall be estimated as specified in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA 821-R-02-012, 2002), with preference for west coast vertebrate and invertebrate species.

2. Frequency
  - a. Screening - The Discharger shall conduct the first acute toxicity test screening for three consecutive months in 2007. Re-screening is required every 24 months. The Discharger shall re-screen with a marine vertebrate species and a marine invertebrate species and continue to monitor with the most sensitive species. If the first suite of re-screening tests demonstrate that the same species is the most sensitive, then the re-screening does not need to include more than one suite of tests. If a different species is the most sensitive or if there is ambiguity, then the

Discharger shall proceed with suites of screening tests for a minimum of three, but not to exceed five, suites.

- b. Regular toxicity tests - After the screening period, monitoring shall be conducted monthly using the most sensitive marine species.
3. Toxicity Units. The acute toxicity of the effluent shall be expressed and reported in Acute Toxic Units, TU<sub>a</sub>, where,

$$TU_a = \frac{100}{LC50}$$

The Lethal Concentration, 50 Percent (LC50) is expressed as the estimate of the percent effluent concentration that causes death in 50% of the test population, in the time period prescribed by the toxicity test.

#### B. Chronic Toxicity Testing

1. Methods and test species. The Discharger shall conduct critical life stage chronic toxicity tests on 24-hour composite effluent samples in accordance with USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, 1995, (EPA/600/R-95/136). Pursuant to the 2005 California Ocean Plan, upon the approval of the Executive Officer of the Regional Water Board, the Discharger may use a second tier organism (e.g., silverside) if first tier organisms (e.g., topsmelt) are not available. However, the Discharger is required to immediately resume the chronic toxicity test using the original testing organism as soon as this organism becomes available. When a chronic toxicity test method that incorporates a 96-hour acute toxicity endpoint is used to monitor toxicity at the chronic IWC in effluent discharged, the 96-hour acute toxicity statistical endpoint shall also be reported as LC50 and TU<sub>a</sub>.
2. Frequency
  - a. Screening - The Discharger shall conduct the first chronic toxicity test screening for three consecutive months in 2007. Re-screening is required every 24 months. The Discharger shall re-screen with a marine vertebrate species, a marine invertebrate species, and a marine alga species and continue to monitor with the most sensitive species. If the first suite of re-screening tests demonstrate that the same species is the most sensitive, then the re-screening does not need to include more than

one suite of tests. If a different species is the most sensitive or if there is ambiguity, then the Discharger shall proceed with suites of screening tests for a minimum of three, but not to exceed five, suites.

- b. Regular toxicity tests - After the screening period, monitoring shall be conducted monthly using the most sensitive species.
3. Toxicity Units. The chronic toxicity of the effluent shall be expressed and reported in Chronic Toxic Units, TU<sub>c</sub>, where,

$$TU_c = \frac{100}{NOEC}$$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent concentration that causes no observable effect on test organisms, as determined by the results of a critical life stage toxicity test.

#### C. Quality Assurance

1. Concurrent testing with a reference toxicant shall be conducted. Reference toxicant tests shall be conducted using the same test conditions as the effluent toxicity tests (e.g., same test duration, etc).
2. If either the reference toxicant test or effluent test does not meet all test acceptability criteria (TAC) as specified in the test methods manual (EPA-821-R-02-012 and/or EPA/600/R-95/136), then the Discharger must re-sample and re-test within 14 days.
3. Control and dilution water should be receiving water or laboratory water, as appropriate, as described in the manual. If the dilution water used is different from the culture water, a second control using culture water shall be used.

#### D. Accelerated Monitoring

If the effluent chronic toxicity test result exceeds the limitation, then the Discharger shall immediately implement accelerated toxicity testing that consists of six additional tests, approximately every two weeks, over a 12-week period. Effluent sampling for the first test of the six additional tests shall commence within 5 working days of receipt of the test results exceeding the toxicity limitation.

1. If all the results of the six additional tests are in compliance with the toxicity

limitation, the Discharger may resume regular monthly testing.

2. If the result of any of the six additional tests exceeds the limitation, then the Discharger shall continue to monitor once every two weeks until six consecutive biweekly tests are in compliance. At that time, the Discharger may resume regular monthly testing.
3. If the results of any two of the six tests (any two tests in a 12-week period) exceed the limitation, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) and implement the initial investigation Toxicity Reduction Evaluation (TRE) Workplan.
4. If implementation of the initial investigation TRE workplan (see item E below) indicates the source of toxicity (e.g., a temporary plant upset, etc.), then the Discharger shall return to the regular testing frequency.

E. Preparation of an Initial Investigation TRE Workplan

The Discharger shall prepare and submit a copy of the Discharger's initial investigation Toxicity Reduction Evaluation (TRE) workplan to the Executive Officer of the Regional Water Board for approval within 90 days of the effective date of this permit. If the Executive Officer does not disapprove the workplan within 60 days, the workplan shall become effective. The Discharger shall use USEPA manual EPA/833B-99/002 (municipal) as guidance, or most current version. This workplan shall describe the steps the Discharger intends to follow if toxicity is detected, and should include, at a minimum:

1. A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.
2. A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in the operation of the facility; and,
3. If a toxicity identification evaluation (TIE) is necessary, an indication of the person who would conduct the TIEs (i.e., an in-house expert or an outside contractor).

F. Steps in Toxicity Reduction Evaluation (TRE) and Toxicity Identification Evaluation (TIE)

1. If results of the implementation of the facility's initial investigation TRE workplan indicate the need to continue the TRE/TIE, the Discharger shall expeditiously develop a more detailed TRE workplan for submittal to the Executive Officer within 15 days of completion of the initial investigation TRE. The detailed workplan shall include, but not be limited to:
  - a. Further actions to investigate and identify the cause of toxicity;
  - b. Actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
  - c. A schedule for these actions.
2. The following section summarizes the stepwise approach used in conducting the TRE:
  - a. Step 1 includes basic data collection.
  - b. Step 2 evaluates optimization of the treatment system operation, facility housekeeping, and selection and use of in-plant process chemicals.
  - c. If Steps 1 and 2 are unsuccessful, Step 3 implements a Toxicity Identification Evaluation (TIE) and employment of all reasonable efforts using currently available TIE methodologies. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity.
  - d. Assuming successful identification or characterization of the toxicant(s), Step 4 evaluates final effluent treatment options.
  - e. Step 5 evaluates in-plant treatment options.
  - f. Step 6 consists of confirmation once a toxicity control method has been implemented.

Many recommended TRE elements parallel source control, pollution prevention, and storm water control program best management practices (BMPs). To prevent duplication of efforts, evidence of compliance with those requirements may be sufficient to comply with TRE requirements. By requiring the first steps of a TRE to be accelerated testing and review of the facility's TRE workplan, a TRE may be ended in its early stages. All reasonable steps shall be taken to reduce toxicity to the required level. The TRE may be ended at any stage if



monitoring indicates there are no longer toxicity violations.

3. The Discharger shall initiate a TIE as part of the TRE process to identify the cause(s) of toxicity. The Discharger shall use the USEPA acute manual, chronic manual, EPA/600/R-96-054 (Phase I), EPA/600/R-92/080 (Phase II), and EPA-600/R-92/081 (Phase III), as guidance.
4. If a TRE/TIE is initiated prior to completion of the accelerated testing required in Section V.D. of this program, then the accelerated testing schedule may be terminated, or used as necessary in performing the TRE/TIE, as determined by the Executive Officer .
5. The Regional Water Board recognizes that toxicity may be episodic and identification of causes of and reduction of sources of toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based, in part, on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

G. Ammonia Removal

1. Except with prior approval from the Executive Officer of the Regional Water Board, ammonia shall not be removed from bioassay samples. The Discharger must demonstrate the effluent toxicity is caused by ammonia *because of increasing test pH* when conducting the toxicity test. It is important to distinguish the potential toxic effects of ammonia from other pH sensitive chemicals, such as certain heavy metals, sulfide, and cyanide. The following may be steps to demonstrate that the toxicity is caused by ammonia and not other toxicants before the Executive Officer would allow for control of pH in the test.
  - a. There is consistent toxicity in the effluent and the maximum pH in the toxicity test is in the range to cause toxicity due to increased pH.
  - b. Chronic ammonia concentrations in the effluent are greater than 4 mg/L total ammonia.
  - c. Conduct graduated pH tests as specified in the toxicity identification evaluation methods. For example, mortality should be higher at pH 8 and lower at pH 6.
  - d. Treat the effluent with a zeolite column to remove ammonia. Mortality in the zeolite treated effluent should be lower than the non-zeolite treated effluent. Then add ammonia back to the zeolite-treated samples to confirm

toxicity due to ammonia.

2. When it has been demonstrated that toxicity is due to ammonia because of increasing test pH, pH may be controlled using appropriate procedures which do not significantly alter the nature of the effluent, after submitting a written request to the Regional Water Board, and receiving written permission expressing approval from the Executive Officer of the Regional Water Board.

#### H. Reporting

1. The Discharger shall submit a full report of the toxicity test results. Test results shall be reported as Toxicity Units ( $TU_a$  or  $TU_c$ ) with the discharge monitoring reports (DMR) for the month in which the test is conducted.
2. If an initial investigation indicates the source of toxicity and accelerated testing is unnecessary, then those results also shall be submitted with the DMR for the period in which the investigation occurred.
  - a. The full report shall be submitted on or before the end of the month in which the DMR is submitted.
  - b. The full report shall consist of (1) the results; (2) the dates of sample collection and initiation of each toxicity test; (3) the acute toxicity average limit or chronic toxicity limit or trigger; and (4) printout of the toxicity program results (ToxCalc or CETIS).
3. Test results for toxicity tests also shall be reported according to the appropriate manual chapter on Report Preparation and shall be attached to the DMR. Routine reporting shall include, at a minimum, as applicable, for each test:
  - a. Sample date(s);
  - b. Test initiation date;
  - c. Test species;
  - d. End point values for each dilution (e.g., number of young, growth rate, percent survival);
  - e. NOEC value(s) in percent effluent;
  - f.  $IC_{15}$ ,  $IC_{25}$ ,  $IC_{40}$  and  $IC_{50}$  values in percent effluent;
  - g.  $TU_c$  values  $\left( TU_c = \frac{100}{NOEC} \right)$  ;
  - h. Mean percent mortality ( $\pm$  standard deviation) after 96 hours in 100% effluent (if applicable);

- i. NOEC and LOEC values for reference toxicant test(s);
  - j. C<sub>25</sub> value for reference toxicant test(s);
  - k. Any applicable charts; and
  - l. Available water quality measurements for each test (e.g., pH, D.O., temperature, conductivity, hardness, salinity, ammonia).
4. The Discharger shall provide a compliance summary, which includes a summary table of toxicity data from at least twelve months of the most recent samples.
  5. The Discharger shall notify by telephone or electronically, this Regional Board of any toxicity exceedance of the limit within 24 hours of receipt of the results followed by a written report within 14 calendar days of receipt of the results. The verbal or electronic notification shall include the exceedance and the plan the Discharger has taken or will take to investigate and correct the cause(s) of toxicity. It may also include a status report on any actions required by the permit, with a schedule for actions not yet completed. If no actions have been taken, the reasons shall be given.

## **V. RECEIVING WATER MONITORING**

### **A. Purpose of Monitoring Program**

1. Pursuant to the Code of Federal Regulations [40 CFR §122.41(j) and §122.48(b)], the monitoring program for a discharger receiving a National Pollutant Discharge Elimination System (NPDES) permit must determine compliance with NPDES permit terms and conditions, and demonstrate that State water quality standards are met.
2. Compliance monitoring focuses on the effects of a specific point source discharge. It generally is not designed to assess impacts from other sources of pollution (e.g., nonpoint source runoff, aerial fallout) nor to evaluate the current status of important ecological resources in the waterbody. The scale of existing compliance monitoring programs does not match the spatial and, to some extent, temporal boundaries of the important physical and biological processes in the ocean. In addition, the areal coverage provided by compliance monitoring programs is less than ten percent of the nearshore ocean environment. Better technical information is needed about status and trends in ocean waters to guide management and regulatory decisions, to verify the effectiveness of existing programs and to shape policy on marine environmental protection.

3. In an attempt to bridge the foregoing gap in information, this monitoring program for the Chevron El Segundo Refinery is comprised of requirements to demonstrate compliance with the conditions of the NPDES permit, ensure meeting of state water quality standards, and mandate participation in regional monitoring of area-wide studies.

B. Receiving Water Monitoring Objectives

The receiving water monitoring program shall consist of periodic surveys of the area surrounding the discharge point and shall include studies of those physico-chemical characteristics of the receiving waters which may be impacted by the discharge.

1. Location of Sampling Stations (see attached Figure 1).
  - a. Station RW1 - directly inshore of Station RW6, at a depth of 20 feet.
  - b. Station RW3 - at the previous discharge point, at a depth of 20 feet.
  - c. Station RW5 - directly inshore of Station RW10, at a depth of 20 feet.
  - d. Station RW6 - 1000 feet upcoast of the discharge, at a depth of 40 feet.
  - e. Station RW7 - 500 feet upcoast of the discharge, at a depth of 40 feet.
  - f. Station RW8 - at the discharge point, at a depth of 40 feet.
  - g. Station RW9 - 500 feet downcoast of the discharge, at a depth of 40 feet.
  - h. Station RW10 - 1000 feet downcoast of the discharge, at a depth of 40 feet.
  - i. Station RW14 – 100 feet upcoast of the discharge point, at a depth of 40 feet.
  - j. Station RW15 - 100 feet downcoast of the discharge point, at a depth of 40 feet.
  - k. Station RW16 – directly offshore of Station RW6, at a depth of 60 feet.
  - l. Station RW17 - directly offshore of Station RW8, at a depth of 60 feet.
  - m. Station RW18 - directly offshore of Station RW10, at a depth of 60 feet.
  - n. Station S1 - directly inshore of Station RW1, in the surf zone.
  - o. Station S3 - directly inshore of Station RW3, in the surf zone.
  - p. Station S5 - directly inshore of Station RW5, in the surf zone.
2. Type and Frequency of Sampling
  - a. Receiving water measurements shall be performed at stations RW1, RW3, RW5 through RW10, and RW14 through RW18.
  - b. Temperature profiles shall be measured quarterly at each station from surface to bottom at a minimum of one-meter intervals. Dissolved oxygen levels, conductivity, and pH shall be measured at the surface, mid-depth

and bottom, at a minimum. All stations shall be sampled on both a flooding tide and an ebbing tide during each survey.

- c. Receiving water analyses shall be performed at Stations RW1, RW3, RW5 through RW10, RW14 through RW18, S1, S3 and S5.
- d. Grab samples shall be collected semi-annually at each station. Samples shall be analyzed for oil and grease, benzene, toluene, xylene, ethylbenzene, arsenic, cadmium, copper, chromium, lead, mercury, nickel, silver, zinc, selenium, and polynuclear aromatic hydrocarbons.
- e. Grab samples shall be collected monthly at Stations S1, S3, S5, RW1, RW3, and RW5 for analysis of total coliform, fecal coliform, and enterococcus.

3. Benthic Infaunal Sampling.

- a. Benthic infaunal sampling shall be conducted at Stations B1, B5 through B10, B16, and B18. Benthic infaunal sampling stations are identical to Receiving Water monitoring stations (B1 is located at RW1 and B5 is located at RW5).
- b. Benthic infaunal samples shall be collected annually (during August) at each station using a 0.1 square meter Van Veen sediment grab, or equivalent device approved by the Executive Officer.
- c. The entire contents of each sample shall be passed through a 1.0 mm standard mesh screen to retrieve the benthic organisms. All organisms recovered shall be enumerated and identified to the lowest taxon possible. Infaunal organisms shall be reported as concentrations per liter for each replicate and each station. Total abundance, number of species and Shannon-Weiner diversity indices shall be calculated (using natural logs) for each replicate and each station.
- d. Biomass shall be determined as the wet weight in grams or milligrams retained on a 1.0 millimeter screen per unit volume (e.g., 1 liter) of sediment. Biomass shall be reported for each major taxonomic group (i.e., polychaetes, crustaceans, mollusks, echinoderms, all other macroinvertebrates) for each sample.
- e. A separate grab sample shall be collected at each benthic station for sediment chemistry analysis. Sediment grain size analyses shall be

performed on each sediment sample (sufficiently detailed to calculate percent weight in relation to phi size). Sub-samples (upper two centimeters) shall be taken from each sediment sample and analyzed for dissolved sulfides (porewater), total organic carbon, organic nitrogen, trace metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, and selenium), total DDT and derivatives, total PCB and derivatives, total PAH and derivatives, and any priority pollutants detected in the effluent monitoring.

4. Sediment Toxicity Testing.

- a. Sediment toxicity testing shall be conducted at Stations RW6, RW8, RW10, RW16 and RW18.
- b. Sediment grab samples shall be collected annually (during August) at each station using a 0.1 square meter Van Veen sediment grab, or equivalent device approved by the Executive Officer. Three replicate samples shall be collected for testing at each station. Sub-samples (upper two centimeters) shall be taken from each sediment sample and tested with two different test organisms (amphipod Rhepoxynius abronius – survival endpoint, polychaete Neanthes arenaceodentata –survival and growth endpoints) using standard protocols approved by the Executive Officer. Alternative species may be used subject to approval by the Executive Officer.
- c. The following general observations or measurements shall be reported for each station sampled:
  - (1) Tidal stage and time of monitoring.
  - (2) General water conditions.
  - (3) Extent of visible turbidity or color patches.
  - (4) Appearance of oil films or grease, or floatable material.
  - (5) Depth at each station for each sampling period.
  - (6) Presence or absence of red tide.
  - (7) Presence of marine life.
  - (8) Presence and activity of the California least tern and the California brown pelican.

C. Monitoring for the Microbial Mat

1. Chevron shall monitor the accumulation of biosolids in the vicinity of the outfall on a quarterly basis through visual observation to insure that the biosolids does not significantly expand or change from the current condition.

2. The frequency of monitoring may revert to annually if the condition disappears. Chevron shall collect at least one benthic infaunal sample annually from an area affected by the accumulation of biosolids.

## **VI. Regional Monitoring Requirements**

### **A. Basis for Regional Monitoring**

The California Regional Water Quality Control Board, Los Angeles Region, (Regional Board) and the United States Environmental Protection Agency (USEPA), working with other groups have developed a comprehensive basis for effluent and receiving water monitoring appropriate to large industrial and publicly owned treatment works (POTWs) discharging to the waters of the Southern California Bight. The conceptual framework for the Santa Monica Bay Restoration Project's Comprehensive Monitoring Program was designed to be implemented in part through modifications to existing receiving water monitoring programs for major NPDES dischargers into coastal ocean waters. Some elements of this monitoring program already have been implemented, for example through establishment of periodic bight-wide regional monitoring surveys (Southern California Bight Pilot Project'94, Bight'98 and Bight'03) and annual kelp bed monitoring. However, other elements of the program have yet to be developed, including:

- rocky intertidal monitoring
- resident fish monitoring
- pelagic ecosystem monitoring
- wetlands monitoring
- hard bottom benthos monitoring
- bird and mammal monitoring
- commercial shellfish monitoring
- stormwater mass emission loading and plume tracking monitoring.

2. In July of 2000 the Santa Monica Bay Restoration Project (SMBRP) published "An Assessment of the Compliance Monitoring System in Santa Monica Bay" to set forth their recommendations and priorities for compliance monitoring in Santa Monica Bay. Like the Model Monitoring Plan developed by SCCWRP, the SMBRP recommendations are focused on management questions and a reduction in POTW receiving water monitoring where effects are well known. The monitoring plan set forth here is in conformance with the principles of the SMBRP.

### **B. Specific Requirements**

1. Discharger participation in the regional programs now is required as a condition of the NPDES permit. There will be no more resource exchange as in the past. The level of participation shall be similar to that provided by the Discharger in previous permits.
2. The Discharger shall complete collection and analysis of samples in accordance with the schedule established by the Steering Committee directing the regional monitoring surveys.
3. The regional programs where Chevron is required to participate include:
  - a. Bight 2003 Regional Survey and future regional surveys, including benthic infauna, sediment chemistry, fish communities, fish predator risk.
  - b. Central Region Kelp Monitoring Program – coordinated by the Los Angeles Regional Board.

C. Bight 2003 Regional Survey

1. Regular regional monitoring for the California Bight has been established, occurring on 4-5 year intervals that are coordinated through SCCWRP with discharger agencies and numerous other entities. The next regional program is likely to occur in 2008.
2. The Santa Monica Bay Restoration Commission's Technical Advisory Committee is nearing completion in the development of a detailed workplan outlining the monitoring surveys required to complete implementation of the Comprehensive Monitoring Program framework developed in 1993. This workplan includes the formulation of management goals and objectives, identification of suitable monitoring indicators, detailed sampling designs, and cost estimates for each monitoring component. Upon completion of this workplan, USEPA, the Regional Board, affected NPDES permit holders, and other interested agencies and stakeholders will develop implementation plans to collaboratively fund these programs and determine each party's level of participation. It is anticipated that funding for these programs from the Chevron El Segundo Refinery will be supplied through a combination of modifications to the Chevron El Segundo Refinery's Monitoring and Reporting Program, including redirection of existing effort and new monitoring efforts relevant to the Chevron El Segundo Refinery discharge. Redirection of existing monitoring requirements and/or the imposition of additional monitoring efforts will be notified by the Executive Officer of the Regional Board.



3. Regional monitoring is focused on questions that are best answered by a region-wide approach that involves coordinated survey design and techniques. These components address mass emission estimation, public health concerns, monitor trends in natural resources, assess regional impacts from all contaminant sources, and ensure protection of beneficial uses. The major objective of the regional monitoring components is the information required to address how safe it is to swim in the ocean, how safe it is to eat seafood from the ocean, and whether the marine ecosystem is being protected. The final design of regional monitoring programs is developed by means of steering committees and technical committees made up of the participating agencies and organizations. This is not specified in the permit. Instead, for each regional component, the degree and nature of participation of the Discharger is specified. For this permit, these levels of effort are based upon past participation of Chevron El Segundo Refinery in the regional monitoring programs.

D. Regional Kelp Survey

1. The Regional Board has established the Central Region Kelp Survey Consortium to conduct regional kelp bed monitoring. This program is designed to require ocean dischargers in the Los Angeles Regional Board's jurisdiction to undertake a collaborative program (which may include participation by Orange County ocean dischargers) to monitor kelp beds in the Southern California Bight, patterned after the successful program implemented by the San Diego Regional Board since 1985.
2. Data collected in this regional survey will be used to assess status and trends in kelp bed health and spatial extent. The regional nature of the survey will allow the status of beds local to specific dischargers to be compared to regional trends.
3. The regional survey will consist primarily of quarterly aerial overflights to assess the size and health of existing kelp beds. The Discharger shall participate in the management and technical committees responsible for the final survey design and shall provide appropriate financial support to help fund the survey (share based strictly on the number of participants in the study, but not to exceed a maximum of \$10,000 per year).

**E. Special Studies**

1. Special studies are focused on refined questions regarding specific effects or development of monitoring techniques and are anticipated to be of short duration and/or small spatial scale. Being research projects, they are not carried out for demonstration of compliance, nor are their performance or conclusions grounds for violation of the discharge permit. Questions regarding effluent or receiving water quality, discharge impacts, ocean processes in the area of the discharge, or development of techniques for monitoring the same, arising out of the results of core or regional monitoring may be pursued through special studies. These studies are by nature ad hoc and cannot typically be anticipated in advance of the five-year permit cycle. As such questions arise, the permit holder, in coordination with the Regional Board staff, will propose scope, and will conduct special studies.

**VII. Outfall Inspection Requirements**

1. The Chevron ocean outfall shall be externally inspected a minimum of once a year.
2. Inspections shall include general observations and photographic and videographic records of the outfall pipe and adjacent ocean bottom.
3. The pipes shall be visually inspected by a diver, manned submarine, or remotely operated vehicle.
4. A summary report of the inspection findings shall be provided. This written report, augmented with videographic and/or photographic images, will provide a description of the observed condition of the discharge pipes from shallow water to their respective termini.
5. The summary report is due at the time of submittal of the annual monitoring report.

**VIII. HAULING REPORTS**

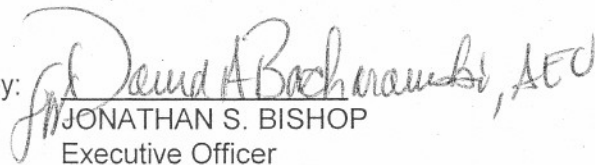
- A. In the event that liquid wastes, solid wastes or sludge are transported offsite during the reporting period, the following shall be reported annually:
1. Types of wastes and quantity of each type.
  2. Location of the final point(s) of disposal for each type of waste.

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

**IX. SPECIAL MONITORING AND REPORTING PROVISIONS**

1. In the event that continuous temperature and/or pH recorders are temporarily out of service, informal backup data are to be obtained from 6 daily grab samples conducted by plant operators at 4-hour intervals. Should the continuous pH recorder be out of service for more than one week, daily grab samples shall commence being obtained and analyzed by a certified laboratory in accordance with current EPA guideline procedures until the recorder is placed back into service.
2. In the event that the continuous flow recorder is temporarily out of service, backup data on total daily flow and peak flow rate shall be obtained by summing readings from the individual flow recorders which together monitor the total effluent stream.
3. Whenever backup procedures are used for daily monitoring of pH, temperature or flow, the report shall so state, together with the dates thereof and the reason(s) the recorder(s) could not be utilized.
4. Methods and procedures used for operator-conducted analyses need not be specified in USEPA guidelines, but are to be identified in the report.

Ordered by:

  
JONATHAN S. BISHOP  
Executive Officer

Date: December 14, 2006