LPDES PERMIT NO. LA0052051, AI No. 26003

LPDES FACT SHEET and RATIONALE
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

I. **Company/Facility Name:** Valero Refining - New Orleans, LLC
St. Charles Refinery
Post Office Box 518
Norco, Louisiana 70079-0518

II. **Issuing Office:** Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

III. **Prepared By:** Jenniffer Sheppard
Level 1 Industrial Permits Section
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Date Prepared: November 20, 2007

IV. **Permit Action/Status:**

A. Reason For Permit Action:

Proposed reissuance of an existing Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46*.

* In order to ease the transition from NPDES to LPDES permits, dual regulatory references are provided where applicable. The LAC references are the legal references while the 40 CFR references are presented for informational purposes only. In most cases, LAC language is based on and is identical to the 40 CFR language. 40 CFR Parts 401, 405-415, and 417-471 have been adopted by reference at LAC 33:IX.4903 and will not have dual references. In addition, state standards (LAC 33:IX Chapter 11) will not have dual references.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

B. NPDES permit - NPDES permit effective date: N/A
NPDES permit expiration date: N/A
EPA has not retained enforcement authority.

C. LPDES permit - LPDES permit effective date: March 1, 2003.
LPDES permit expiration date: February 29, 2008.
LPDES permit minor modification effective date: August 1, 2003.
LPDES permit minor modification effective date: June 1, 2004.
LPDES permit major modification effective date: February 1, 2007.

D. Application received on August 1, 2007.

V. Facility Information:

A. Location - 14902 River Road in New Sarpy

B. Applicant Activity -

According to the application, Valero Refining - New Orleans, LLC, St. Charles Refinery, is a petroleum refinery. The refinery is an integrated crude operation (high conversion) that includes crude distillation, catalytic reforming, catalytic cracking, hydrocracking, alkylation, coking, and sulfur recovery processing units. Product capabilities include gasoline, diesel, distillates, and sulfur as well as by-products such as petroleum coke.

C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401, 405-415, and 417 471 have been adopted by reference at LAC 33:IX.4903)

Guideline	Reference
Refinery Guidelines	40 CFR 419, Subpart B (Cracking)
Feedstock rate to Topping Unit(s), 1000 bbl/day -	230
Process Unit Rates, 1000 bbl/day:	
Atmospheric Crude Distillation	230
Vacuum Crude Distillation	167
Crude Desalting	230
Fluid Catalytic Cracking (FCCU)	110
Delayed Coking	80
H_2SO_4 Alkylation	25
Catalytic Reforming	30

Stormwater flow, 76.78 - 1000 gal/day, based on a rainfall of 60 inches over 749,232 acres/sq. feet.

Other sources of technology based limits:
LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).
LDEQ Hydrostatic Test General Permit
Best Professional Judgement

D. Fee Rate -
1. Fee Rating Facility Type: major
2. Complexity Type: V
3. Wastewater Type: II
4. SIC code: 2911

E. Continuous Facility Effluent Flow - 4.74 MGD.

VI. Receiving Waters: Mississippi River (Outfalls 001 & 005) and Bayou LaBranche (Outfalls 002, 003, 004, 006 & 007)

Bayou LaBranche (Outfalls 002, 003, 004, 006 & 007)
1. River Basin: Lake Pontchartrain, Segment No. 041201
2. Designated Uses:
The designated uses are primary contact recreation, secondary contact recreation, fish and wildlife propagation, and outstanding natural resource waters.

Mississippi River (Outfalls 001 & 005)
1 TSS (15%), mg/L: 31.4
2. Average Hardness, mg/L $CaCO_3$: 152.7
3. Critical Flow, cfs: 141955
4. Mixing Zone Fraction: 0.3333
5. Harmonic Mean Flow, cfs: 366748
6. River Basin: Mississippi River, Segment No. 070301
7. Designated Uses:
The designated uses are primary contact recreation, secondary contact recreation, fish and wildlife propagation, and drinking water supply.

Information based on the following: Water Quality Management Plan, Volume 5A, 1994; LAC 33:IX Chapter 11;/Recommendation(s) from the Engineering Section. Hardness and 15% TSS data come from monitoring station #47 and #48 on the Mississippi River on the east and west bank ferry landing at Luling listed in Hardness and TSS Data for All LDEQ Ambient Stations for the Period of Record as of March 1998, LeBlanc. This information was included in a memorandum from Will Barlett to Jenniffer Sheppard dated November 5, 2007 (See Appendix C).

VII. **Outfall Information:**

Outfall 001

A. Type of wastewater - the discharge of process wastewater, condensate, boiler blowdown, hydrostatic test water, first flush process area stormwater (1 million gallons/event), cooling tower blowdown, tankage, Belco effluent, Alky effluent, service water, and softener regeneration water.

B. Location - at the point of discharge from the treatment facility located near Barge Dock 5 on the Mississippi River, prior to combining with other discharges, at Latitude 29°59'57", Longitude 90°23'43".

C. Treatment - treatment of process wastewaters consists of:
- sour water stripper
- waste water treatment plant
  - equalization
  - dissolved gas flotation unit
  - activated sludge system
  - clarification
  - polishing ponds

treatment of utility wastewaters consists of:
- waste water treatment plant

treatment of Belco wastewaters consists of:
- waste water treatment plant
- aerated ponds

treatment of boiler blowdown and softener regeneration wastewater consists of:
- aerated ponds

D. Flow - Continuous Flow 4.63536 MGD.

Process Wastewater*	3.04272 MGD
Utility Wastewater*	1.59264 MGD

* Specific component waste streams are defined at Appendix A-1 and Appendix E.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 002

A. Type of wastewater - the discharge of non-process area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

B. Location - at the point of discharge from the northeast corner of the refinery's west site prior to combining to a ditch located along the west side near Post 1 along Prospect Avenue, thence to Bayou LaBranche, at Latitude 29°59'46", Longitude 90°23'53".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Bayou LaBranche

F. Basin and segment - Lake Pontchartrain Basin, Segment 041201

Outfall 003

A. Type of wastewater - the discharge of non-process area, tank farm, and LPG storage area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

B. Location - at the point of discharge at the corner of the Northern Railroad and Prospect Street, prior to commingling with others waters and Bayou LaBranche, at Latitude 29°59'51", Longitude 90°23'25".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Bayou LaBranche

F. Basin and segment - Lake Pontchartrain Basin, Segment 041201

Outfall 004

A. Type of wastewater - the discharge of non-process area, tank farm, and administrative building stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

B. Location - at the point of discharge at the North of the Administration Building along the rail line, prior to commingling with others waters and Bayou LaBranche, at Latitude 29°59'23", Longitude 90°23'24".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Bayou LaBranche

F. Basin and segment - Lake Pontchartrain Basin, Segment 041201

Outfall 005

A. Type of wastewater - the discharge to the Mississippi River of the intake water clarifier blowdown, sandfilter blowdown, clarified water, and cooling tower blowdown.

B. Location - at the point of discharge near Barge Dock 5, prior to combining with the waters of the Mississippi River, at Latitude 29°59'57", Longitude 90°23'43".

C. Treatment - None

D. Flow - Continuous Flow 0.14 MGD.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 006

A. Type of wastewater - the discharge of non-process area stormwater from the tank farm and post first flush process areas; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

B. Location - at the point of discharge adjacent to the sanitary wastewater plant near Prospect Avenue, prior to commingling with others waters and Bayou LaBranche, at Latitude 29°59'49", Longitude 90°23'47".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Bayou LaBranche

F. Basin and segment - Lake Pontchartrain Basin, Segment 041201

Outfall 007

A. Type of wastewater - the discharge of stormwater runoff from the LPG storage area; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

B. Location - at the point of discharge north of Outfall 006 prior to combining to a ditch located along near the LPG storage area and discharging to Bayou LaBranche, at Latitude 29°59'20" Longitude 90°23'47"

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Bayou LaBranche

F. Basin and segment - Lake Pontchartrain Basin, Segment 041201

Internal Outfall 102

A. Type of wastewater - the discharge of hydrostatic test wastewater.

B. Location -at the point of discharge from the vessel or pipeline being tested prior to combining with any other waters. May be discharged through any final outfall.

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River (Outfall 001 and 005) and Bayou LaBranche (Outfalls 002, 003, 004, 006, and 007).

F. Basin and segment - Lake Pontchartrain Basin, Segment 041201
Mississippi River Basin, Segment 070301

VIII. Proposed Permit Limits:

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

Summary of Proposed Changes From the Current LPDES Permit:

A. Outfall 001 - Permit limits have been assigned for BOD_5, TSS, COD, Oil & Grease, Ammonia As N), Sulfide (as S), Total Chromium and Chromium (6+) based on the increase in production from 190 K bbl/day in the March 1, 2003 permit to 230 K bbl/day.

B. Outfalls 002, 003, and 007 - Valero has requested a monitoring frequency reduction for flow, TOC, Oil and Grease, and pH from 1/month to 1/6 months based on the EPA guidance document "Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies". This request has been partially granted. The frequency for flow, TOC, Oil and Grease, and pH has been reduced from 1/month to 1/quarter based on compliance history, similarly permitted discharges, the LPDES Multi-Sector General Permit (LAR050000), and best professional judgment.

C. Outfalls 004 and 006 - Valero has requested a monitoring frequency reduction for flow, TOC, Oil and Grease, and pH from 1/month to 1/6 months based on the EPA guidance document "Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies". This request has been partially granted. The frequency for flow, TOC, and Oil and Grease has been reduced from 1/month to 1/quarter based on compliance history, similarly permitted discharges, the LPDES Multi-Sector General Permit (LAR050000), and best professional judgment. The monitoring frequency for pH has not been reduced due to pH excursions at both outfalls.

D. Outfall 005 - pH monitoring requirements have been added to this outfall in accordance with LAC 33:IX.1113.C.1.

IX. Permit Limit Rationale:

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII.

1. Outfall 001 - Process Wastewaters & Utility Wastewaters

***Outfall 001** - the discharge of process wastewater, condensate, boiler blowdown, hydrostatic test water, first flush process area stormwater (1 million gallons/event), cooling tower blowdown, tankage, Belco effluent, Alky effluent, service water, and softener regeneration water.

Valero Refining - New Orleans, LLC, St. Charles Refinery is subject to Best Practicable Control Technology Currently Available (BPT) and Best Available Technology Economically Achievable (BAT) effluent limitation guidelines listed below:

Manufacturing Operation
Refinery

Guideline
40 CFR 419, Subpart B (Cracking)

PARAMETER	MONTHLY AVERAGE (LBS/DAY)	DAILY MAXIMUM (LBS/DAY)
Flow (MGD)	Report	Report (continuous recording)
pH, Std. Units	Report	Report (continuous recording)
BOD_5	2532	4558
TSS	2026	3177
Oil & Grease	737	1382
COD	17674	34068
Ammonia (as N)	1372	3018
Sulfide (as S)	13.3	29.7
Phenolic Compounds	8.2	16.8
Total Chromium	12.5	35.8
Chromium (6+)	1.0	2.3

Calculations and basis of permit limitations are found at Appendix A and associated appendices. See below for site-specific considerations.

Site-Specific Consideration(s)

Flow - This requirement has been retained from the current LPDES permit, effective on March 1, 2003 and established in accordance with LAC 33:IX.2707.I.1.b. Flow shall be monitored continuously.

PH - these limitations have been retained from the current LPDES permit, effective on March 1, 2003 and are established in accordance with LAC 33:IX.1113.C.1. PH shall be monitored continuously.

BOD_5, TSS, Oil & Grease, COD, Ammonia (as N), Sulfide (as S), Total chromium, and Chromium (6+) - limits have been established in accordance with the Refinery Guidelines at 40 CFR 419, based on the increase in production from 190 K bbl/day in the March 1, 2003 permit to 230 K bbl/day.

Phenolic Compounds - limitations have been retained from the current LPDES permit effective on March 1, 2003 due to application of the Anti-Backsliding Rule. The limitation was originally established based on a state permit requirement in the May

28, 1981 LWDPS permit (WP0050) which was more stringent that the Petroleum Refining Point Source Category BCT/BAT guidelines promulgated October 18, 1982 and July 12, 1985. These limitations were then used in the development of the September 8, 1987 NPDES permit and have since been used in subsequent permits. In accordance with state and federal regulations and the requirements in Section 301(b)(1)(c) of the Clean Water Act, each NPDES/LPDES permit shall include conditions incorporating more stringent limitations, treatment standards, or schedule of compliance. Therefore, the more stringent limitations have been applied.

2. Outfall(s) 002, 003, 004, 006, and 007 - Stormwater & Utility Wastewater

***Outfall 002** - the discharge of non-process area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 003** - the discharge of non-process area, tank farm, and LPG storage area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 004** - the discharge of non-process area, tank farm, and administrative building stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 006** - the discharge of non-process area stormwater from the tank farm and post first flush process areas; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 007** - the discharge of stormwater runoff from the LPG storage area; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Uncontaminated or low potential contaminated stormwater discharged through discrete outfall(s) not associated with process wastewater shall receive the following BPJ limitations in accordance with this Office's guidance on stormwater, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).

PARAMETER	MONTHLY AVERAGE (MG/L)	DAILY MAXIMUM (MG/L)
Flow (MGD)	Report	Report
TOC	---	50
Oil & Grease	---	15
pH, Std. Units	6.0	9.0

Site-Specific Consideration(s)

Flow - this requirement has been retained from the current LPDES permit, effective on March 1, 2003 and established in accordance with LAC 33:IX.2707.I.1.b.

PH - these limitations have been retained from the current LPDES permit, effective on March 1, 2003 and are established in accordance with LAC 33:IX.1113.C.1.

TOC and Oil & Grease - These limitations have been retained from the current LPDES permit, effective on March 1, 2003 and applied based on BPJ in accordance with this Office's guidance on stormwater, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6) and similarly permitted discharges.

In accordance with LAC 33:IX.2707.I.3 and [40 CFR 122.44(I)(3) and (4)], a Part II condition is proposed for applicability to all storm water discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. The Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit, along with other requirements. If the permittee maintains other plans that contain duplicative information, those plans could be incorporated by reference to the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasures Plan (SPCC), Best Management Plan (BMP), Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of stormwater associated with industrial activity, as defined in LAC 33:IX.2522.B.14 [40 CFR 122.26(b)(14)].

3. Outfall(s) 005 and Internal Outfall 102 Utility Wastewater

***Outfall 005** - the discharge to the Mississippi River of the intake water clarifier blowdown, sandfilter blowdown, clarified water, and cooling tower blowdown.

Utility wastewaters being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

PARAMETER	MONTHLY AVERAGE (LBS/DAY)	DAILY MAXIMUM (LBS/DAY)
Flow (MGD)	Report	Report
pH, Std. Units	6.0	9.0
Coagulents	Inventory Calculation	Inventory Calculation

Site-Specific Consideration(s)

Flow - this requirement has been retained from the current LPDES permit, effective on March 1, 2003 and established in accordance with LAC 33:IX.2707.J.1.b.

PH - established in accordance with LAC 33:IX.1113.C.1.

Coagulents - reporting requirement established based on best professional judgment and similarly permitted discharges. These records shall be retained for three years. No DMR reporting required.

***Internal Outfall 102** - the discharge of hydrostatic test wastewater.

Hydrostatic test discharges shall receive the following limitations:

PARAMETER	MONTHLY AVERAGE (MG/L)	DAILY MAXIMUM (MG/L)
Flow (MGD)	Report	Report
TSS	---	90
Oil & Grease	---	15
TOC	---	50
Benzene	---	50 μg/L
Total BTEX	---	250 μg/L
Total Lead	---	50 μg/L
pH, Std. Units	6.0	9.0

Site-Specific Consideration(s)

Flow - this requirement has been retained from the current LPDES permit, effective on March 1, 2003 and established in accordance with LAC 33:IX.2707.I.1.b.

PH - these limitations have been retained from the current LPDES permit, effective on March 1, 2003 and are established in accordance with LAC 33:IX.1113.C.1.

TSS, Oil & Grease, TOC, Benzene, Total BTEX, and total Lead - These limitations have been retained from the current LPDES permit, effective on March 1, 2003 and applied based on BPJ in accordance with the Hydrostatic Test General Permit (LAG670000) and similarly permitted discharges.

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limits by following guidance procedures established in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008. Calculations, results, and documentation are given in Appendix B.

In accordance with LAC 33:IX.2707.D.1/40 CFR § 122.44(d)(1), the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ,April 16, 2008, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix B.

The following pollutants received water quality based effluent limits:

PARAMETER(S)
None

Minimum quantification levels (MQL's) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008. They are also listed in Part II of the permit.

TMDL Waterbodies

Outfalls 001 and 005
The discharges from outfalls 001 and 005 include process wastewater, process area stormwater, utility wastewater, and non-process area stormwater runoff and are discharged to the Mississippi River, Segment No. 070301. The Mississippi River is not listed on the 303(d) report as being impaired. Therefore, no additional requirements have been established in this permit.

Outfalls 002, 003, 004, 006, and 007
The discharges from outfalls 002, 003, 004, 006, and 007 include non-process area stormwater runoff and miscellaneous wastewaters including fire system test water, eye wash and safety shower water, steam trap blowdown, and previously tested hydrostatic test wastewater to Bayou LaBranche, Segment No. 041201. Bayou LaBranche is listed on the 303(d) report as being impaired with organic enrichment/low DO, nitrate/nitrite, and phosphorus. A TMDL is scheduled to be completed by March 31, 2012. The suspected caused for all impairments was listed as forced drainage pumping and natural sources. Based on the evaluation of the type of effluent discharges, it was determined that the facility does not have the potential to cause further nitrate/nitrite and phosphorus impairments. Therefore, no additional requirements were placed in the proposed permit for these parameters.

Organic Enrichment/Low DO
TOC is a means of measuring organic materials in a discharge, therefore, the daily maximum limit of 50 mg/L TOC has been retained from the current LPDES permit effective on March 1, 2003 for all outfalls.

Monitoring frequencies for water quality based limited parameters are established in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001.

Site-Specific Consideration(s)

None

D. Biomonitoring Requirements

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall(s) 001 and 005 are as follows:

TOXICITY TESTS	FREQUENCY
Acute static renewal 48-hour definitive toxicity test using Daphnia pulex	1\year
Acute static renewal 48-hour definitive toxicity test using fathead minnow (Pimephales promelas)	1\year

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to the Office of Environmental Compliance. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report. This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 0.07%, 0.09%, 0.12%, 0.16%, and 0.21%. The low-flow effluent concentration (critical dilution) is defined as 0.16% effluent.

E. MONITORING FREQUENCIES

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [LAC 33:IX.2715/40 CFR 122.48(b)] and to assure compliance with permit limitations [LAC 33:IX.2707.I./40 CFR 122.44(I)]. The following section(s) explain the rationale for the monitoring frequencies stated in the draft permit.

Outfall 001 - Process Wastewaters & Utility Wastewaters

Outfall 001 - the discharge of process wastewater, condensate, boiler blowdown, hydrostatic test water, first flush process area stormwater (1 million gallons/event), cooling tower blowdown, tankage, Belco effluent, Alky effluent, service water, and softener regeneration water.

Flow and pH shall be monitored continuously. These monitoring frequencies have been retained from the current permit, effective on March 1, 2003.

PARAMETER(S)	MONITORING FREQUENCY
Flow	Continuous
pH	Continuous

Sulfide (as S) shall be monitored 5/week. This frequency has been retained from the current permit, effective on March 1, 2003 (modification with 5/week frequency for this parameter effective on February 1, 2007). A monitoring frequency of 5/week for the following listed pollutant is considered adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

PARAMETER(S)	MONITORING FREQUENCY
Sulfide (as S)	5/week

BOD_5, TSS, Oil & Grease, COD, Ammonia (as N), and Phenolic Compounds shall be monitored 3/week. These monitoring frequencies have been retained from the current permit, effective on March 1, 2003. A monitoring frequency of 3/week for the following listed pollutants is considered adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

PARAMETER(S)	MONITORING FREQUENCY
BOD_5	3/week
TSS	3/week
Oil & Grease	3/week
COD	3/week
Ammonia (as N)	3/week
Phenolic Compounds	3/week

Total Chromium, and Chromium (6+) shall be monitored 1/month. These monitoring frequencies have been retained from the current permit, effective on March 1, 2003. A monitoring frequency of 1/month for the following listed pollutants is considered

adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

PARAMETER(S)	MONITORING FREQUENCY
Total Chromium	1/month
Chromium (6+)	1/month

2. Outfall(s) 002, 003, 004, 006, and 007 - Stormwater & Utility Wastewater

***Outfall 002** - the discharge of non-process area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 003** - the discharge of non-process area, tank farm, and LPG storage area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 007** - the discharge of stormwater runoff from the LPG storage area; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Stormwater and utility wastewater pollutants being discharged to discrete outfalls (002, 003, and 007) shall receive monitoring frequencies according to the following schedule:

Flow, TOC, Oil and Grease, and pH - Valero has requested a monitoring frequency reduction for from 1/month to 1/6 months based on the EPA guidance document "Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies". This request has been partially granted. The frequency for flow, TOC, Oil and Grease, and pH has been reduced from 1/month to 1/quarter based on compliance history, similarly permitted discharges, the LPDES Multi-Sector General Permit (LAR050000), and best professional judgment.

PARAMETER(S)	MONITORING FREQUENCY
Flow	1/quarter
TOC	1/quarter
Oil & Grease	1/quarter
pH	1/quarter

***Outfall 004** - the discharge of non-process area, tank farm, and administrative building stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

***Outfall 006** - the discharge of non-process area stormwater from the tank farm and post first flush process areas; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Stormwater and utility wastewater pollutants being discharged to discrete outfalls (004 and 006) shall receive monitoring frequencies according to the following schedule:

PH - Valero has requested a monitoring frequency reduction for from 1/month to 1/6 months based on the EPA guidance document "Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies". This request has been denied based on PH excursions at both outfalls.

PARAMETER(S)	MONITORING FREQUENCY
PH	1/month

Flow, TOC, and Oil and Grease - Valero has requested a monitoring frequency reduction for from 1/month to 1/6 months based on the EPA guidance document "Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies". This request has been partially granted. The frequency for flow, TOC, and Oil and Grease has been reduced from 1/month to 1/quarter based on compliance history, similarly permitted discharges, the LPDES Multi-Sector General Permit (LAR050000), and best professional judgment.

PARAMETER(S)	MONITORING FREQUENCY
Flow	1/quarter
TOC	1/quarter
Oil & Grease	1/quarter
pH	1/quarter

3 Outfall(s) 005 and Internal Outfall 102 - Utility Wastewater

***Outfall 005** - the discharge to the Mississippi River of the intake water clarifier blowdown, sandfilter blowdown, clarified water, and cooling tower blowdown.

utility wastewater pollutants being discharged to discrete outfalls shall receive monitoring frequencies according to the following schedule:

Flow and pH shall be monitored 1/week. These monitoring frequencies have been retained from the current permit, effective on March 1, 2003.

PARAMETER(S)	MONITORING FREQUENCY
Flow	1/week
pH	1/week

***Internal Outfall 102 -** the discharge of hydrostatic test wastewater.

Hydrostatic test discharges shall receive monitoring frequencies according to the following schedule:

Flow, TSS, Oil & Grease, TOC, Benzene, Total BTEX, Total Lead, and pH shall be monitored 1/event. These monitoring frequencies have been retained from the current permit, effective on March 1, 2003.

PARAMETER(S)	MONITORING FREQUENCY
Flow	1/event
TSS	1/event
Oil & Grease	1/event
TOC	1/event
Benzene	1/event
Total BTEX	1/event
Total Lead	1/event
pH	1/event

X. Compliance History/DMR Review:

A compliance history/DMR review was done covering the period of January 2001 to November 2007.

A. DMR Excursions Reported

DATE	PARAMETER	OUTFALL	REPORTED VALUE	PERMIT LIMITS
08/31/05	Total Sulfide	001	15.4 lbs/day, Monthly Average	11.0 lbs/day, Monthly Average
			76.7 lbs/day, Daily Maximum	24.6 lbs/day, Daily Maximum
09/30/05	Total Sulfide	001	42.8 lbs/day, Daily Maximum	24.6 lbs/day, Daily Maximum
09/30/05	pH	006	10.1 Std. Units, Maximum	9.0 Std. Units, Maximum
04/30/06	Total Sulfide	001	21.0 lbs/day, Monthly Average	11.0 lbs/day, Monthly Average
			60.9 lbs/day, Daily Maximum	24.6 lbs/day, Daily Maximum
03/31/07	pH	004	9.2 Std. Units, Maximum	9.0 Std. Units, Maximum
06/30/07	TOC	102	107 mg/L, Daily Maximum	50 mg/L, Daily Maximum
06/30/07	TSS	102	362 mg/L, Daily Maximum	90 mg/L, Daily Maximum
06/30/07	Oil & Grease	102	220 mg/L, Daily Maximum	15 mg/L, Daily Maximum

B. Inspections - A facility inspection was conducted on June 13, 2007. No items of concern were noted.

C. Compliance History - WE-CN 04 0209, effective on November 23, 2004.

1. Permit limit excursions - 8 violations.
2. Pond Overflows - 9 violations.
3. Unauthorized discharge of less than 1 gallon of Vacuum Gas Oil (VGO) into the Mississippi River.
4. Unauthorized discharge of 10 gallons of Slurry Oil to the Mississippi River.
5. Permittee failed to obtain any pH or flow data for 3.176 days in July 2004.
6. Permittee failed to properly submit DMRs.

XI. "IT" Questions - Applicant's Responses

This is a major facility which did not request any major changes to the renewed LPDES permit, therefore, IT Questions were not required to be answered.

XII. Endangered Species:

The receiving waterbody, Subsegment 070301 of the Mississippi River Basin, has been identified by the U.S. Fish and Wildlife Service (FWS) as habitat for the Pallid Sturgeon, which are listed as an endangered species. This draft permit has been submitted to the FWS for review in accordance with a letter dated 10/24/07 from Boggs (FWS) to Brown (LDEQ). As set forth in the Memorandum of Understanding between the LDEQ and the FWS, and after consultation with FWS, LDEQ has determined that the issuance of the LPDES permit is not likely to have an adverse effect upon the Pallid Sturgeon. Effluent limitations are established in the permit to ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. The more stringent of technology and water quality based limits (as applicable) have been applied to ensure maximum protection of the receiving water.

XIII. Historic Sites:

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

XIV. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in the application.

XV. Variances:

No requests for variances have been received by this Office.

XVI. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

Appendix A

BEST COPY OF THE NEXT 8 PAGES

PARAMETER	lb/day	lb/mo	[illegible]
Conventional			
BOD5	2635	4645	1
TSS	2117	3181	1
Oil and Grease	[illegible]	1442	1
Nonconventional			
COD	18130	35391	.
TOC			
Ammonia	1671	3691	1
Sulfide	14.3	33.1	1
Total Phenolics	8.2	16.5	1
Metals			
Chromium (Total)	13.5	38.2	1
Chromium (6+)	1.1	2.4	1

Cut Oil

Cracking

Input in Table 2

Conversion Utilities:

mg/L-->lbs/day	8.34
gpm-->MGD	0.00144
gpm-->K gal/day	1.44
[illegible] -->gal	7.480519
inches -->feet	0.083333
acres -->sq. ft	43560

[illegible] RATE

[illegible] PROCESSES

[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0	[illegible]	0	6	[illegible]
[illegible]	6	111	225 0.418161		6 0.869505	
[illegible] Cracking	7	0	[illegible]	0	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	6	0
[illegible]	16	60	120 0.347876		6 0.050917	
[illegible]	1[illegible]	0	230	0	6	0
[illegible]	54	0	Not Applicable to Refinery Process Config. Factor			

[illegible] CRACKING AND COKING PROCESSES FEEDSTOCK RATE: 190

[illegible] PROCESSES

[illegible] Hydrofinishing, Lube Hydrofinishing	21	0	230	0	13	0
[illegible] Manufacture	22	0	230	0	13	0
[illegible] Deasphalting, [illegible], Deresining	23	0	230	0	13	0
[illegible] Treating, Solvent Extraction, [illegible] Treating, Solvent Dewaxing, Solvent Deasphalt	24	0	230	0	13	0
[illegible] Tower, Oil Fractionation, Batch [illegible] (Naphtha Strip), Bright Stock Treating	25	0	230	0	13	0
[illegible] and Chilling	26	0	230	0	13	0
Dewaxing MEK, [illegible] MEK Toluene	27	0	230	0	13	0
[illegible] Wax	28	0	230	0	13	0
[illegible] Extraction	29	0	230	0	13	0
[illegible]	30	0	230	0	13	0
[illegible] Pressing	34	0	230	0	13	0
[illegible] (with Neutral Separation)	35	0	230	0	13	0
[illegible] Treating	36	0	230	0	13	0
[illegible] Percolation	37	0	230	0	13	0
[illegible]	38	0	230	0	13	0
[illegible]	[illegible]	[illegible]	230	0	13	
[illegible]	4[illegible]		13	[illegible]	13	

[illegible] FEEDSTOCK RATE

```
                    [illegible]                       [illegible]

      [illegible] BY RATE

  [illegible] ALKYLATION PROCESSES
                                                    10  Not Applicable to Refinery Process Config. Factor
                                                    10  Not Applicable to Refinery Process Config. Factor
    [illegible] AND ALKYLATION PROCESS FEEDSTOCK RATE=    55
      [illegible] CONFIGURATION FACTOR=                                           7.68

            TABLE 3                   TABLE 4                  TABLE 5
    [illegible] FACTORS BY SUBPART    SIZE FACTORS BY SUBPART
                                  K bbl/day                  PROCESS GROUP FEEDSTOCK RATES:
 [illegible]        Cracking      Feedstock      Cracking
 [illegible]        Subpart       (Stream Day)   Subpart       Process Group:            Feedstock Rate, K bbl/day
                       B                             B         Crude=                          627
 [illegible]        0.58               < 24.9      0.91        Cracking and Coking=            190
 [illegible]        0.63          25.0 to 49.9     0.95        Lube=                             0
 [illegible]        0.74          50.0 to 74.9     1.04        Asphalt=                          0
 [illegible]        0.88          75.0 to 99.9     1.1[illegible]   Reforming and Alkylation=  55
 [illegible]        1            100.0 to 124.9    1.23
 [illegible]        1.09         125.0 to 149.9    1.35
 [illegible]        1.19         150.0 to 174.9    1.41
 [illegible]        1.29         175.0 to 199.9    1.41
 [illegible]        1.41         200.0 to 224.9    1.41
 [illegible]        1.53              >=225.0      1.41
 [illegible]        1.6[illegible]
 [illegible]        1.82    PROCESS FACTOR INPUT.
 [illegible]        1.99    Refinery Configuration =     7.68
 [illegible]        1.89
 [illegible]        1.89    SIZE FACTOR INPUT.
 [illegible]        1.89    Feedstock. K bbl/day =        230
 [illegible]        1.89
 [illegible]        1.89
 [illegible]        1.89                         FACTOR REFERENCE
 [illegible]        1.[illegible]    PROCESS FACTOR =    1.41 419 23.b
                    [illegible]    SIZE FACTOR =       1.41 419 23.c

 [illegible]   [illegible] * Process Factor * Size Factor
```

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Total Recoverable Phenolics, Total Chromium, and Chromium (6+)

[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Total Recoverable Phenolics, Total Chromium, and Chromium (6+)

Table 2

Rate, K bbl/day

[illegible]								
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] and Acrylates	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] BAT							[illegible]	[illegible]
[illegible]								
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] and Acrylates	[illegible]	BAT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]							[illegible]	[illegible]

[illegible]

[illegible] BAT or BPT for Total Recoverable Phenolics, Total Chromium, and Chromium [illegible]

[illegible]	Subpart B Category, Cracking	Treatmt Tech	Cracking Subpart B lb/K gal Avg	Cracking Subpart B lb/K gal Max	Discharge Fraction Through Flow Outfall	Cracking Subpart B lb/day Avg	Cracking Subpart B lb/day Max
[illegible]							
[illegible]	419 241c'	BCT	0 21	0 4	[illegible]	[illegible]	[illegible]
[illegible]	419 241c	BCT	0.17	0 36	[illegible]	[illegible]	[illegible]
[illegible]	419 241c'	BCT	0 067	0 126	[illegible]	[illegible]	[illegible]
[illegible]							
[illegible]	419 23 d	BAT	[illegible]	[illegible] 9	[illegible]		

TABLE 7

TOTAL ALLOCATIONS - Process WW - Ballast Water - Contaminated SW (lbs/day)

	PROCESS WASTEWATER		BALLAST		STORMWATER		TOTAL ALLOCATION	
	(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)
	Cracking Subpart B	Cracking Subpart B	Cracking Subpart B	Cracking Subpart B	Cracking Subpart B	Cracking Subpart B	Cracking Subpart B	Cracking Subpart B
	lb/day Avg	lb/day Max	lb/day Avg	lb/day Max	lb/day Avg	lb/day Max	lb/day Avg	lb/day Max
[illegible]	[illegible] 4570.904	---	---	16.89071	30.73038		2833.637	4557.634
[illegible]	[illegible] 2015.118	---	---	13.81967	21.49727		2025.777	3176.612
[illegible]	[illegible] 1371.789	---	---	5.140989	9.980874		736.7648	1381.77
[illegible]	[illegible] 33637.46	---	---	335.1039	730.3279		17674.66	34067.79
[illegible]	[illegible]	---	---	---	---		---	---
[illegible]	[illegible] 2017.936	---	---	---			1371.789	2017.936
[illegible]	[illegible] 29.7221	---	---	---			13.26063	29.7221
[illegible]	[illegible] 36.63748	---	---	0.107466	[illegible]		10.58649	36.73211
[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]

APPENDIX A, [illegible]

Documentation and Explanation of Technology, Calculations
and Associated Lotus Spreadsheet

This is a technology spreadsheet covering the effluent guidelines for petroleum refining, 40 CFR 419. The refinery guidelines consists of 5 Subparts; Subpart A-Topping, Subpart B-Cracking, Subpart C-Petrochemical, Subpart D-Lube and Subpart E-Integrated. Treatment technologies consist of Best Available Technology Economically Achievable (BAT), Best Conventional Technology (BCT), and Best Practicable Control Technology Currently Available (BPT). For most effluent guidelines with toxic and non-conventional pollutants, BAT represents the most stringent guideline and the one that is used in most permitting applications. However, in refinery guidelines there are cases where BPT or BCT is sometimes more stringent than BAT and these limitations are applied to the parameter of concern. BCT is used for conventional pollutants. The final calculations are screened against limitations established in a previous permit by BPJ. These limitations are now BAT for that facility and must be screened against the calculated effluent guideline limitations with the most stringent applying in order to address anti-backsliding concerns (40 CFR 122.44.l, LAC 33.IX.2707.L). The term "Daily Average" as it is used in this documentation and in the spreadsheet is assumed to be equivalent to "Monthly Average". The spreadsheet is set up in a table and column/section format. Each table represents a general category for data input or calculation points. Each reference column or section is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*8). These columns or sections represent inputs, existing data sets, calculation points, or results for determining technology based limits for an effluent of concern.

Introductory Notes to Petroleum Refining Effluent Limitations Calculations:

Regulatory Basis

Unless otherwise stated, the technology-based permit effluent limitations presented in this appendix are calculated using national effluent limitations and standards listed at 40 CFR Part 419 - Petroleum Refining Point Source Category. Technical data supporting the national effluent limitations and standards for the Petroleum Refining Point Source Category will be found at the following development documents:

1974 Development Document
Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category, USEPA, EPA-44011-74-014a, April 1974

1982 Development Document
Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category, USEPA, EPA 440/1-82/014, October 1982

Example Calculations

Example calculations for deriving petroleum refining permit effluent limitations will be found at:

40 CFR
Part 419.42(a)(3)
Part 419.43(c)(2)

Development Documents
1974 Development Document (Section IX, Pages 148-151)
1982 Development Document (Section I, Pages 1-14)

1985 Guidance
Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry, USEPA, Industrial Technology Division, June 1985

[illegible]
[illegible] 26003
[illegible]

Description of EPA Refining Processes Used in Calculations

Crude Processes	EPA Process Number
Atmospheric Crude Distillation	1
Crude Desalting	2
Vacuum Crude Distillation	3
Cracking and Coking Processes	
Visbreaking	4
Thermal Cracking	5
Fluid Catalytic Cracking	6
Moving Bed Catalytic Cracking	7
Hydrocracking	10
Delayed Coking	15
Fluid Coking	16
Hydrotreating*	54
Lube Processes	
Hydrofining, Hydrofinishing, Lube Hydrofinishing	21
White Oil Manufacture	22
Propane: Dewaxing, Deasphalting, Fractioning, Derinsing	23
Duo Sol, Solvent Treating, Solvent Extraction Duotreating, Solvent Dewaxing, Solvent Deasphalt	24
Lube Vacuum Tower, Oil Fractionation, Batch Still (Naphtha Strip), Bright Stock Treating	25
Centrifuge & Chilling	26
Dewaxing: MEK, Ketone, MEK-Toluene	27
Deoiling (Wax)	28
Naphthenic Lube Production	29
SO2 Extraction	30
Wax Pressing	34
Wax Plant (with Neutral Separation)	35
Furfural Extracting	36
Clay Contacting - Percolation	37
Wax Sweating	38
Acid Treating	39
Phenol Extraction	40

[illegible]
[illegible] 26003
[illegible]

Asphalt Processes	
Asphalt Production	18
200 Deg. F Softening Point Unfluxed Asphalt	32
Asphalt Oxidizing	43
Asphalt Emulsifying	69
Reforming and Alkylation Processes	
H2SO4 Alkylation*	8
Catalytic Reforming*	12

* These processes are not included in the refinery process configuration factor calculations.

EPA Process Numbers will be found at Appendix A to 40 CFR 419. They can be cross-referenced in Table III-7, pages 49-54 of the 1982 Development Document.

Refining processes used in Table 2 (except as noted) lead to the calculation of all BPT/BCT permit effluent limitations for ammonia (as N), sulfide (as S), and COD only. The Table 2 refining processes are listed at Section IX, Table 51, page 151, of the 1974 Development Document. A detailed discussion of the refining processes used in the refinery process configuration factor (Table 2) is found in the "1974" Flow Model at Section IV, pages 55-62, of the 1974 Development Document and at Section IV, pages 63-65 of the 1982 Development Document. Also see "Process Groupings Included in 1974 Flow Model" at page 19 of the 1985 Guidance. Because certain petroleum refining processes [Hydrotreating; 200 Deg. F Softening Point Unfluxed Asphalt; H2SO4 Alkylation; and Catalytic Reforming] were not included in the 1974 flow model, they are not included as a process in the refinery process configuration factor calculations (Table 2). In 1976, the U.S. Court of Appeals upheld the 1974 BPT and NSPS regulations [see discussion at Section IV, pages 61-62, of the 1982 Development Document]. Refining processes not included in the 1974 Flow Model [the basis for all BPT/BCT permit effluent limitations and BAT permit effluent limitations for ammonia (as N), sulfide (as S), and COD only] are not considered in the refinery process configuration factor calculations (Table 2).

Refining processes and categories used in Tables 2 and 5 lead to the calculation of amended BAT permit effluent limitations for total recoverable phenolics, chromium (total), and chromium (6+). These refining processes are listed at Appendix A to 40 CFR Part 419. A detailed discussion of the refining processes used in BAT permit effluent limit calculations will be found in the discussion of the Refined Flow Model at Section IV, pages 67-68, of the 1982 Development Document. Also see "Process Groupings Included in 1979 Flow Model" at page 20 of the 1985 Guidance. Refining processes not included in the 1979 Flow Model [the basis for Appendix A to 40 CFR Part 419] are not considered in BAT permit effluent limitations for total recoverable phenolics, chromium (total), and chromium (6+).

Organizations or individuals desiring the inclusion of other refining processes in the previously mentioned calculations should petition the U.S. Environmental Protection Agency under the Administrative Procedures Act, 5-U.S.C. Sec. 553(e), which authorizes interested parties to petition the issuance, amendment, or repeal of a rule.

[illegible]
[illegible] 26003
[illegible]

Table 1

Table 1 is a data input area.

(*1) Facility Information

Generalized input information for the facility:

Permittee- Permittee name.

Permit Number- LPDES permit number.

Concentration flow, (MGD)- If concentration limits are desired, then a flow for determining concentration limits is placed here.

Anti-backsliding, GL vs Old, 0=n, 1=y, 2=GL + Old: This switch establishes how previously established Best Professional Judgement (BPJ) permit limits will be screened. "0" indicates that no screening will occur. "1" indicates that the BPJ Technology permit limits will be screened. "2" indicates that the guideline values will be added to the previously established BPJ-Technology limitations. This is only used when significant increases in production have occurred since the last permit was issued. Guideline values are calculated only on the basis of the increase.

Outfall number: Generally written as an abbreviation, e.g., "Out. 001".

40 CFR 419 Subpart, (A, B, C, D, or E): The subpart that the spreadsheet uses is specified by putting the designated subpart letter in the indicated cell. Input can be in either lower case or upper case.

Refinery type: The spreadsheet automatically specifies the refinery type, Topping, Cracking, Petrochemical, Lube, or Integrated based on the subpart specified.

(*2) Throughput Rates

Feedstock (Crude Oil and NGL) Rate to Topping Unit(s): As defined in the guidelines, the term "feedstock" shall mean the crude oil and natural gas liquids (NGL) fed to the topping unit(s).

Process Unit Rates: These values are input in Table 2 on the row indicating the specific process under the column labeled, "Unit Process Rate K bbl/day."

(*3) Flow Rates

Ballast Flow, K gal/day: As defined in the guidelines, "ballast" shall mean the flow of waters, from a ship, that is treated along with refinery wastewaters in the main treatment system. Units as specified.

Stormwater Calculations: The refinery effluent guidelines give an allowance for contaminated runoff. This is calculated using an areal estimate of the process area in either square feet or acres and an annual rainfall estimate in inches.

Process area, sq. ft. (or acres): The process area size is specified in the cell with the appropriate units.

Annual rainfall, inches. Estimate of annual rainfall as specified

Contaminated stormwater to Treatment System. Input here is optional. This is the calculated value utilizing the process area size and amount of rainfall specified above or a precalculated value (from DMR's or other sources) submitted by the applicant. If you are utilizing a precalculated value, then inputs in the Process area, sq. ft. (or acres):or Annual rainfall, inches:fields are not necessary.

(*4) TOC:BOD5. TOC to BOD5 Ratio. A TOC to BOD5 ratio of 2.2 to 1 is established on a BPJ basis consistent with EPA Region 6 and the refinery effluent guidelines. COD:BOD5 1=y default G/L calculated values for san. This field is used and will appear only when a sanitary allocation to process wastewaters is being calculated. A "1" placed in this field will take the default COD:BOD5 ratio calculated from the total loadings of COD and BOD5 from the refinery guidelines.

(*5) Discharge fraction, default =1: If the process wastewater is not discharged at 100% through the regulated outfall, then the fraction that is discharged through the regulated outfall is placed here. Examples where a facility may split a process flow include, deep well injection, POTW's, other facilities, etc. This is in accordance with 40 CFR 122.50/LAC 33:IX.2717.

(*6) Sanitary Flow, MGD: On rare occasions sanitary wastewaters are given a flow allocation in MGD. This allocation will be given only to facilities that currently have significant sanitary wastewaters included in their process wastewater BOD5 and TSS allocations. "Significant", in this case, is defined when the sanitary wastewaters contribute 5% or more of the total BOD5 or TSS loading of the wastewater treatment system. This allocation will not be given to facilities that have not received this allocation before or facilities adding additional sanitary wastewaters to their process wastewater treatment systems in accordance with anti-backsliding regulations (40 CFR 122.44.l, LAC 33.IX.2707.L). This section will not appear if sanitary wastewater is not granted an allocation.

(*6),(*7) Anti-backsliding Information:

The previous permit limitations established by BPJ (now BAT) are put under the appropriate column (*A) "Avg" for daily maximum 30-day average, and (*B) "Max" for daily maximum on the row with the specified parameter. Column (*C) utilizes the same switches described in section (*1) under the discussion on anti-backsliding. The only difference here is that the switch can be specified on a parameter specific basis. If sanitary wastewater is granted an allocation, this will become section (*7), otherwise it will remain section (*6).

(*7), (*8) Conversion Utilities:

This section contains useful conversions for calculations throughout the spreadsheet. A section is dedicated to calculating COD:BOD5 ratios or inputting COD concentrations in mg/L for the exclusive purpose of calculating COD loadings attributed to sanitary wastewater. As stated above under section (*4), default COD:BOD5 ratios are calculated by dividing total guideline COD loading by total guideline BOD5 loading. The use of a more stringent ratio or concentration in a previously issued permit would preclude using the default calculation procedure. All fields containing information about COD ratios or concentrations will not appear if sanitary wastewaters are not granted an allocation for BOD5. If sanitary wastewater is granted an allocation, this will become section (*8), otherwise it will remain section (*7).

Table 2

Table 2 calculates the total refinery process configuration factor by summing all contributing unit process configuration factors (except processes noted).

(*1) Specifies refinery processes under 5 different categories, crude processes, cracking and coking processes, lube processes, asphalt processes, and reforming and alkylation processes. Footnoted processes are not included in the total refinery process configuration factor.

(*2) EPA process number. From Table III-7, Pages 49-54, Final Development Document for Effluent Limitations Guidelines and Standards for the Petroleum Refining Point Source Category, EPA 440/1-82/014, October, 1982.

(*3) Unit Process Rate, K bbl/day. Process rate is placed on the row with the specified process. Unit process rates are summed for each process group for use in determining BAT limitations for Total Chromium, Chromium (6+), and Total Recoverable Phenolics in Table 6.

(*4) Total Feedstock Rate, K bbl/day. This column contains the value specified in section (*2) of Table 1.

(*5) Unit Process Rate to Feedstock Rate Ratio. The unit process rate is divided by the feedstock rate specified in column (*4).

(*6) Weighting factor. The spreadsheet uses the weighting factors specified at 40 CFR 419.42(b)(3), Subpart D.

(*7) Unit process configuration factor. The product in this column is the result of multiplying the "Unit Process Rate to Feedstock Rate Ratio" in column (*5) times the weighting factor specified in column (*6). These values are summed to obtain the total refinery process configuration factor.

Tables 3 and 4

Tables 3 and 4 calculate the process and size factors respectively. The input for determining the appropriate process factor is the total refinery process configuration factor. The input for determining the appropriate size factor is the feedstock in K bbl/day. The multiplier used in determining mass loadings for certain parameters specified in Table 6 is determined by multiplying the feedstock times the process factor times the size factor.

Table 5

Table 5 summarizes the process group feedstock rates (crude, cracking and coking, lube, asphalt, reforming and alkylation) specified in Table 2 for use in calculating BAT limitations for Total Recoverable Phenolics (specified as Total Phenolics), Total Chromium, and Chromium (6+) in Table 6.

Table 6

Table 6 is where mass loadings are calculated for each parameter under each applicable wastewater type; process, ballast, stormwater (contaminated) and sanitary wastewaters, when applicable. For Total Recoverable Phenolics (specified as Total Phenolics), Total Chromium, and Chromium (6+), mass loadings

[illegible] allocated twice under the process wastewater section, once with BPT factors and once with BAT factors [illegible] most stringent applicable.

(*1) Parameter

(*2) References. 40 CFR reference applicable to the specified factors and subparts in columns (*4) and (*5).

(*3) Treatmt. Tech. Applicable treatment technology, BPT, BCT, or BPT, for the parameter and factors specified. BPJ is applied to sanitary wastewaters, when sanitary wastewater is granted an allocation.

(*4) Factor, Avg. Daily average (daily maximum 30-day average) factors specified in the guidelines. Sanitary wastewater would be granted a flow based allocation of 30 mg/L for BOD_5 and TSS, when applicable.

(*5) Factor, Max. Daily maximum factors specified in the guidelines. Sanitary wastewater would be granted a flow based allocation of 45 mg/L for BOD_5 and TSS, when applicable.

(*6) Multiplier/Table 2 Group Feedstock Rate, K bbl/day/Flow K gal/day. For the process wastewater, this column contains the multiplier calculated under Tables 3 and 4 or the applicable group feedstock rate from Table 2 in 1000 barrels per day (K bbl/day). For ballast, sanitary (when applicable), and stormwater, flow in 1000 gallons per day (except sanitary in MGD) from the data input table, Table 1.

(*7) Discharge fraction through outfall. This column contains the factor calculated in section (*5) of Table 1.

(*8) Daily average (daily maximum 30-day average) loadings in lbs per day for the specified parameter under the specified subpart.

(*9) Daily maximum loadings in lbs per day for the specified parameter under the specified subpart.

Table 7

Table 7 is a data summary table totaling the allocations from process wastewater, ballast water, contaminated stormwater, and sanitary wastewater (when applicable). The total values represent the refinery effluent guideline limitations.

(*1) Process wastewater daily average (daily maximum 30-day average) loadings in lbs per day for the specified parameter under the specified subpart.

(*2) Process wastewater daily maximum loadings in lbs per day for the specified parameter under the specified subpart.

(*3) Ballast water daily average (daily maximum 30-day average) loadings in lbs per day for the specified parameter under the specified subpart.

(*4) Ballast water daily maximum loadings in lbs per day for the specified parameter under the specified subpart.

(*5) Contaminated stormwater daily average (daily maximum 30-day average) loadings in lbs per day for the specified parameter under the specified subpart.

(*6) Contaminated stormwater daily maximum loadings in lbs per day for the specified parameter under the specified subpart.

(*7) Sanitary wastewater daily average (daily maximum 30-day average) loadings in lbs per day for the specified parameter. This column will not appear if sanitary wastewater is not granted an allocation.

(*8) Sanitary wastewater daily maximum loadings in lbs per day for the specified parameter. This column will not appear if sanitary wastewater is not granted an allocation.

(*7, *9) Total daily average (daily maximum 30-day average) loadings in lbs per day for the specified parameter under the specified subpart. If sanitary wastewater is granted an allocation, this will become column (*9), otherwise it will remain column (*7).

(*8, *10) Total daily maximum loadings in lbs per day for the specified parameter under the specified subpart. If sanitary wastewater is granted an allocation, this will become column (*10), otherwise it will remain column (*7).

Table 8

Table 8 is utilized when anti-backsliding (40 CFR 122.44.l, LAC 33.IX.2707.L) concerns are present. The effluent limitation guideline values are screened against BPJ-Technology values from the previous permit with the most stringent applying.

(*1) Parameter.

(*2) Daily average effluent limitation guideline in lbs/day from column (*7) in Table 7.

(*3) Daily maximum effluent limitation guideline in lbs/day from column (*8) Table 7.

(*4) Daily Average Tech Old in lbs/day. This column is utilized when an anti-backsliding concern (40 CFR 122.44.l, LAC 33.IX.2707.L) is present. This would be indicated by substantially higher limits (≈30% or greater) calculated under guidelines than those previously established in the old permit on a BPJ basis. If the previously issued permit (as applicable) contains limits for the parameter of concern and an anti-backsliding concern is present, the limits from the previously issued permit are placed in this column in lbs/day.

(*5) Daily Maximum Tech Old in lbs/day. Similar to (*7).

(*6) Antiback, 0=no scr., 1=OldvsGL, 2=Old+GL. Anti-Backsliding screening switch. The default is set not to screen. This can be changed under section (*1) in the data input page. If a screen is conducted, a "1" will appear in this column. The more stringent permit limits will appear in columns (*7) and (*8). If the screen indicates that the previously issued permit limit utilizing BPJ-Technology is more stringent and an increase in production has occurred, the technology based limits can be recalculated using guidelines for the increase only. This will be indicated by a "2" in this column. The recalculated guideline limitations in columns (*2) and (*3) are subsequently added to the values

columns (*4) and (*5) yielding technology based effluent limitations in columns (*7) and (*8). The values in this column can be changed on a row-by-row basis for site specific screening situations.

(*6) Daily Average technology based effluent limit in lbs/day. If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*2). When anti backsliding screening is used, see discussion for column (*6).

(*8) Daily Maximum technology based effluent limit in lbs/day. If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*3). When anti backsliding screening is used, see discussion for column (*6).

(*9) Daily Average technology based effluent limit in mg/L. A concentration limit can be calculated using the specified concentration flow from section (*1) under the data input table and the mass limitation calculated under column (*7). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

(*10) Daily Maximum technology based effluent limit in mg/L. Similar to column (*9), a concentration limit can be calculated using the specified concentration flow from section (*1) under the data input table and the mass limitation calculated under column (*8). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

Appendix B

BEST COPY OF THE NEXT 5 PAGES

Mixing Upstream
Fil Hardness
M2 Hardness
Q10 TSS
M2 TSS
Multipliers
WLAa -> LTAa
WLAc -> LTAc
LTA a/c -> WQBL avg
LTA a/c -> WQBL max
LTA h -> WQBL max
WQBL limit reject
WLA Fraction
WQBL Fraction

Conversions
ug/L -> lbs/day Qeff
ug/L -> lbs/day Qec
ug/L -> lbs/day Q: 1183.901
lbs/day -> ug/L Qeff
lbs/day -> ug/L Qeff
diss -> tot Dayton
Cu diss -> tot Dayton
CIR -> MGD 0.8482

Receiving Stream
Default Hardness
Default TSS

Total Arsenic
Total Cadmium
Chromium III
Chromium VI
Total Copper
Total Lead
Total Mercury
Total Nickel
Total Zinc

Aquatic Life, Dissolved
Metal Criteria, ug/l

METALS	ACUTE	CHRONIC
Arsenic	339.8	150
Cadmium	50.30743	1.409555
Chromium III	174.1206	151.7656
Chromium VI	15.712	10.582
Copper	27.45668	17.6372
Lead	111.0147	2.977317
Mercury	1.734	0.012
Nickel	2014.925	174.8842
Zinc	143.6231	146.5541

Site Specific Multiplier Values
CV =
N =
WLAa -> LTAa
WLAc -> LTAc
LTA a/c -> WQBL avg
LTA a/c -> WQBL max
LTA h -> WQBL max

[illegible] LA0052051 [illegible]

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each referenced column is marked by a set of parentheses enclosing a number and asterisk, for example (1) [illegible] (19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Mississippi River (Outfalls 001 & 005)
Critical Flow, Qrc (cfs): 141955
Harmonic Mean Flow, Qrh (cfs): 366748
Segment No.: 070301
Receiving Stream Hardness (mg/L): 152.7
Receiving Stream TSS (mg/L): 31.4
MZ Stream Factor, Fs: 0.3333
Plume distance, Pf: N/A

Effluent Characteristics:

Company: Valero Refining - New Orleans, LLC
Facility flow, Qe (MGD): 4.74
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0052051
Agency Interest Number: 26003

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

[illegible]

[illegible] $\frac{Cr}{\text{[illegible] on factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

Critical Dilution = $\frac{(2.8)\,Pw\,n^{1/2}}{Pf}$

$$WLA = \frac{(Cr-Cu)\,Pf}{(2.8)\,Pw\,n^{1/2}}$$

Discharge from a canal:

Critical Dilution = $\frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$

$$WLA = \frac{(Cr-Cu)\,Pf^{1/2}}{2.38\,Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

Critical Dilution = $\frac{(2.8)\,Pw\,n^{1/2}}{Pf}$

$$WLA = \frac{(Cr-Cu)\,Pf^{*}}{(2.8)\,Pw\,n^{1/2}}$$

Discharge from a canal:

Critical Dilution = $\frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$

$$WLA = \frac{(Cr-Cu)\,Pf^{1/2*}}{2.38\,Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

[illegible]

[illegible]

[illegible] site specific dilution is used. WLA are calculated by subtracting Cu from C and multiplying by the site [illegible] for human health and aquatic life criteria

WLA = (C - Cu) [illegible]
site specific dilution

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

concentration(ug/L): $\frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}}$ = ug/L

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.

(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).

(*3) Monthly average effluent or technolgy value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.

(*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.

(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and

included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*18) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.
Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(hardness)] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(hardness)] + 3.6880)}$
Copper	$e^{(0.9422[\ln(hardness)] - 1.2884)}$
Lead	$e^{(1.2730[\ln(hardness)] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(hardness)] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(hardness)] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier
Copper	$1 + (10^{4.86} \times TSS^{-0.77} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33:IX.1113.C.6 Table 1, Numerical Criteria for Specific Toxic Substances, freshwater [illegible] or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(hardness)] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(hardness)] + 0.7614)}$
Copper	$e^{(0.8545[\ln(hardness)] - 1.3860)}$
Lead	$e^{(1.2730[\ln(hardness)] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(hardness)] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(hardness)] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non primary contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAa formulas for streams:

$$WLAa = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAc formula:

$$WLAc = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).

If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula.

$$WLAh = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc, Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.

(*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{limiting\ aquatic}$ X 1.31 = $WQBL_{monthly\ average}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{monthly\ average}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.

(*20) End of pipe Water Quality Based Limit (WQBL) daily maxium in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.

(*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Monthly average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = monthly average WQBL, lbs/day.

[illegible]

[illegible] 2600-

[illegible]

[illegible] Effluent Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL [illegible] 1000 x facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

[illegible] Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.

Appendix C

MEMORANDUM

TO: Jenniffer L. Sheppard

FROM: Will Barlett

DATE: November 5, 2007

RE: Stream Flow and Water Quality Characteristics for the Mississippi River, receiving water for Valero Refining – New Orleans, LLC (Permit No. LA0052051, AI: 26003)

Determinations of water quality characteristics for Outfalls 001 and 005 were taken from ambient monitoring stations #47 and #48 on the Mississippi River on the east and west bank ferry landing at Luling, LA.

The following results were obtained:

Average hardness	=	152.7 mg/l
15th percentile TSS	=	31.4 mg/l

The 7Q10 at this location has been determined to be 141,955 cfs and the harmonic mean has been determined to be 366,748 cfs.

If you have additional questions or comments, please contact me at 2-3468.

WGB: wb

Appendix D

BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: LA0052051
Facility Name: Valero Refining New Orleans, LLC/St. Charles Refinery
Previous Critical Biomonitoring Dilution 0.1099% (10:1 ACR)
Proposed Critical Biomonitoring Dilution: 0.16% (10:1 ACR)
Date of Review: 11/15/07 Name of Reviewer: Laura Keen

Recommended Frequency by Species:

Pimephales promelas (Fathead minnow): Once / Year[1]
Daphnia pulex (water flea): Once / Year[1]

Recommended Dilution Series: 0.07%, 0.09%, 0.12%, 0.16%, and 0.21%

Number of Tests Performed during previous 5 years by Species:

Pimephales promelas (Fathead minnow): 4
Daphnia pulex (water flea): 4
Daphnia magna (water flea): N/A – Testing of species was not required
Ceriodaphnia dubia (water flea): N/A – Testing of species was not required

Number of Failed Tests during previous 5 years by Species:

Pimephales promelas (Fathead minnow): No failures on file during the past 5 years
Daphnia pulex (water flea): No failures on file during the past 5 years
Daphnia magna (water flea): N/A – Testing of species was not required
Ceriodaphnia dubia (water flea): N/A – Testing of species was not required

Failed Test Dates during previous 5 years by Species:

Pimephales promelas (Fathead minnow): No failures on file during the past 5 years
Daphnia pulex (water flea): No failures on file during the past 5 years
Daphnia magna (water flea): N/A – Testing of species was not required
Ceriodaphnia dubia (water flea): N/A – Testing of species was not required

Previous TRE Activities: N/A – No previous TRE Activities

[1] An acute critical biomonitoring dilution of less than 1% shall have an established biomonitoring frequency of once per year

Additional Requirements (including WET Limits) Rationale - Comments Concerning Permitting

Valero Refining New Orleans, LLC/St. Charles Refinery owns and operates a petroleum refinery in New Sarpy, St. Charles Parish, Louisiana. LPDES Permit LA0052051, effective March 1, 2003, contained freshwater acute biomonitoring as an effluent characteristic of Outfall 001 for *Daphnia pulex* and *Pimephales promelas*. The effluent series consisted of 0.0463%, 0.0618%, 0.0824%, 0.1099%, and 0.146% concentrations, with the critical biomonitoring dilution being defined as the 0.1099% effluent concentration. The testing was to be performed once per year for the *Daphnia pulex* and the *Pimephales promelas*. Data on file indicate that the permittee has complied with the biomonitoring requirements contained in LA0052051 with no toxicity failures during the last five years.

It is recommended that acute freshwater biomonitoring continue to be an effluent characteristic of Outfalls 001 (continuous discharge of 4.6 mgd of process wastewater condensate, boiler blowdown, process area stormwater, cooling tower blowdown, tankage, Belco effluent, Alky effluent, service water, and softener regeneration water) and 005 (continuous discharge of 0.14 mgd of intake water clarifier blowdown, sandfilter blowdown clarified water, and non-contact recirculated cooling tower blowdown) in LA0052051. Toxicity tests shall be performed on the flow-weighted composite samples of Outfall 001 and 005. The effluent dilution series shall be 0.07%, 0.09%, 0.12%, 0.16%, and 0.21% with the 0.16% concentration being defined as the critical biomonitoring dilution (the 10:1 Acute-to-Chronic ratio has been implemented). Since the proposed critical dilution is less than 1% (10:1 ACR), the biomonitoring frequency shall be once per year for *Daphnia pulex* and *Pimephales promelas*.

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, EPA Region 6 Post-Third Round Whole Effluent Toxicity Testing Frequencies (Revised June 30, 2000), and the Best Professional Judgement (BPJ) of the reviewer.

APPENDIX E

APPENDIX E

OUTFALL 001 - the discharge of process wastewater, condensate, boiler blowdown, hydrostatic test water, first flush process area stormwater (1 million gallons/event), cooling tower blowdown, tankage, Belco effluent, Alky effluent, service water, and softener regeneration water.

Outfall description was taken from Section 2 Permit Renewal Revision Requests (Request #2), the Section 5 narrative regarding wastewater treatment, Section II.C of the SCC-2 application (page 7 of 37), and the flow balance diagram (Figure 1-3) of the August 31, 2007 application submittal.

PROCESS UNITS	RATES 1000 bbl/day	DOCUMENT LOCATION
Feedstock rate to Topping Unit(s)	230	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
Atmospheric Crude Distillation	230	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
Vacuum Crude Distillation	167	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
Crude Desalting	230	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
Fluid Catalytic Cracking (FCCU)	110	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
Delayed Coking	80	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
H_2SO_4 Alkylation	25	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
Catalytic Reforming	30	Section I.D.4 of the SCC-2 application (page 4 of 37), August 31, 2007 submittal.
STORMWATER RUNOFF	76.78 (1000 gallons/day) - based on a rainfall of 60 inches over 749,232 acres/sq. feet.	

Applicable Guidelines

Guideline	Reference
Refinery Guidelines	40 CFR 419, Subpart B (Cracking)

OUTFALL 001 REQUIREMENTS CONTINUED:

Site Specific Considerations:

Phenolic Compounds - limitations have been retained from the current LPDES permit effective on March 1, 2003 due to application of the Anti-Backsliding Rule. The limitation was originally established based on a state permit requirement in the May 28, 1981 LWDPS permit (WP0050) which was more stringent that the Petroleum Refining Point Source Category BCT/BAT guidelines promulgated October 18, 1982 and July 12, 1985. These limitations were then used in the development of the September 8, 1987 NPDES permit and have since been used in subsequent permits. In accordance with state and federal regulations and the requirements in Section 301(b)(1)(c) of the Clean Water Act, each NPDES/LPDES permit shall include conditions incorporating more stringent limitations, treatment standards, or schedule of compliance. Therefore, the more stringent limitations have been applied.

OUTFALL 002 - the discharge of non-process area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102

Outfall description was taken from the Section 5 (Page 5-2) Wastewater Treatment description and Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 7 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
Stormwater Runoff	Intermittent	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.

OUTFALL 003 - the discharge of non-process area, tank farm, and LPG storage area stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Outfall description was taken from the Section 5 (Page 5-2) Wastewater Treatment description and Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 7 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
Stormwater Runoff	Intermittent	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.

OUTFALL 004 -the discharge of non-process area, tank farm, and administrative building stormwater runoff; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Outfall description was taken from the Section 5 (Page 5-2) Wastewater Treatment description and Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 7 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
Stormwater Runoff	Intermittent	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.

OUTFALL 005 -the discharge to the Mississippi River of the intake water clarifier blowdown, sandfilter blowdown, clarified water, and cooling tower blowdown.

Outfall description was taken from the Section 5 (Page 5-2) Wastewater Treatment description and Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 7 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
Intake water clarifier blowdown	Intermittent	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.
Sandfilter blowdown	Intermittent	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.
Clarified water	Intermittent	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.
Cooling tower blowdown	0.14	Section 5 of submittal and Section III.A.1 of the SCC-2 application (page 21 of 37), August 31, 2007 submittal.

OUTFALL 006 - the discharge of non-process area stormwater from the tank farm and post first flush process areas; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Outfall description was taken from the Section 5 (Page 5-2) Wastewater Treatment description and Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 7 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
Non-Process Area Stormwater from tank farm	Intermittent (De Minimis)	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.
Post first flush stormwater	Intermittent (De Minimis)	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.
Miscellaneous Discharges including fire system test water, eye wash and safety shower water, steam trap blowdown, and previously tested hydrostatic test wastewater.	Intermittent (De Minimis)	Section 5 of submittal and Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.

OUTFALL 007 -the discharge of stormwater runoff from the LPG storage area; miscellaneous wastewaters including fire system test water, eye wash and safety shower water, and steam trap blowdown; and previously tested hydrostatic test wastewater from Internal Outfall 102.

Outfall description was taken from Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 8 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
LPD Storage Area Stormwater	Intermittent	Section II.C of the SCC-2 application (page 8 of 37), August 31, 2007 submittal.
Miscellaneous Discharges including fire system test water, eye wash and safety shower water, steam trap blowdown, and previously tested hydrostatic test wastewater.	Intermittent (De Minimis)	Section II.C of the SCC 2 application (page 8 of 37), August 31, 2007 submittal.

INTERNAL OUTFALL 102 -the discharge of hydrostatic test wastewater.

Outfall description was taken from Section II.C of the of the August 31, 2007 application submittal (SCC-2 application, page 8 of 37).

WASTE STREAMS	FLOW (MGD)	DOCUMENT LOCATION
Hydrostatic Test Wastewater	Intermittent	Section II.C of the SCC-2 application (page 7 of 37), August 31, 2007 submittal.