

**Oil Spill Incident Report**

**CITGO OIL SPILL**

**Oil Spill Incident at the CITGO Petroleum Refinery in Sulphur,  
Louisiana, June 19, 2006**



## DEPARTMENT OF ENVIRONMENTAL QUALITY

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**Facility:** CITGO Petroleum Corp.  
4401 Highway 108 S.  
Sulphur, LA 70669

**Report by:** Greg Fruge Jr. *GF*

**Approved by:** Scott Wilkinson *SW*

**Parish:** Calcasieu

**Report Date:** 07/25/2006

**Alt. ID #:** LA0005941

**AI #:** 1250

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On June 19, 2006, an oil spill occurred in the Calcasieu Estuary near Lake Charles, LA. CITGO Petroleum Corp. has been established as the responsible party for the oil spill. The U.S. Coast Guard is the lead agency for the clean up operations and emergency response. The incident occurred at the facility's wastewater treatment plant. The wastewater treatment plant located at the main refinery treats process wastewaters generated as a result of petroleum oil refining activities and storm water that falls within process unit boundaries. In May 1994, a new wastewater treatment plant was built and put into service. The new system eliminated the use of the 36 acre surge basin. The treated wastewater is discharged through outfall 003 into the Calcasieu River (B/S 030301). The plant has two (2) primary sewers: the oily water sewer and the Panama Canal. The two (2) sewers are collected into lift stations. All dry weather flow from the two (2) sewers is combined and transferred to the wastewater treatment plant. The plant includes four (4) API separators, a flocculation box, two (2) dissolved gas flotation units, an evaporative cooling tower, equalization tank, three (3) aeration tanks, two (2) clarifiers, and two (2) polishing ponds. All storm water is transferred to two (2) storm water storage tanks. Over a period of time, minimum amounts of oil collects inside the storm water storage tanks. Skimmers are in place to collect the oil and send the collected oil to tanks 512 or 513. Storm water may be directed through primary treatment or directly to aeration. Compliance sampling and flow measurement is collected at the discharge point from the final polishing pond prior to discharge into the Calcasieu River. All sanitary water is directed to the sanitary oxidation pond and then to the final polishing pond.

**ENVIRONMENTAL COMPLIANCE**

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During dry weather flow, the flow of wastewater/process water collects at lift stations. When the level reaches a certain point in the lift station, the flow is pumped to the API separators. Oil is skimmed off of the top of the water at the API separators. The oil from the skimmers is sent to tanks 512 or 513. From the API separators, the flow is sent to the aeration basin and clarifiers (respectively). Solids are separated and the flow continues through the two (2) polishing ponds. From the ponds the flow is sent through outfall 003, thence to the Calcasieu River. When rainfall is occurring at the facility, the routing of wastewater is changed. Lift stations pump water from the sumps to tanks 320 and 330. From tanks 320 and 330, the water flows into tanks 310 (the equalization tank). Then the flow routes through the API separators, aeration basin, clarifiers, polishing ponds, and outfall 003, respectively. In 2003, the facility started an expansion project at the wastewater treatment facility. An additional storm water storage tank (Tank# 340) was proposed to be built.

This would serve as the third storm water storage tank. On January 13, 2005, the facility requested, to the Army Corps of Engineers, approval to dredge and fill, as necessary, to relocate a drainage ditch (West ditch) to facilitate the storm water treatment facility, and construct containment levees and fencing at the CITGO Refinery. On April 7, 2005, the Army Corps of Engineers granted the facility that request. The facility moved the West ditch and placed/buried a junction box inside the containment berm. The junction box is located south of tank 340. The junction box routes drainage coming from areas south of the facility, and redirects drainage flow to the West ditch. (Note: Approximately two weeks prior to the oil spill incident, a contractor' crew dug an area of soil to expose the Northwest corner of the junction box. This was conducted to collect a GPS reading to obtain an accurate location of the junction box for future reference. Once this was completed, the area of disturbed soil was compacted in place).

**Abstract:** On Monday June 19, 2006, about 5:00 a.m., central daylight savings time, storm water tanks 320 and 330 began to overflow into its containment berm. Each of these tanks is rated for approximately 10 million gallons of storage. Prior to the overflow, heavy rains had fallen in the area in a short period of time. The overflow consisted of both oil and water. Although the product inside of containment did not breach or overtop any of the levees, there were various areas of oil seepage through the walls of the levees, causing a visible sheen on the Indian Marias. There was approximately 18" of oil inside the containment area. It was estimated that approximately 100,000 bbls. of oil overflowed into the containment area. A Single Point of Contact (SPOC) notification was called in at 6:17 a.m. by Ross Turpin of CITGO Petroleum. The report stated that there were multiple problems, releases of sulfur dioxide and hydrogen sulfide throughout some of the units. They had a shelter-in-place at the lube facility. In addition, Don Broussard of CITGO Petroleum reported an oil sheen on the Indian Marias going to the Calcasieu River. This was due to several unit upsets caused by the heavy rain. Sometime Monday evening/Tuesday morning, oil was observed coming out of the West ditch starting at the head of the West ditch culvert.

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In addition, there was clear water flowing from drainage areas south of the containment area, but there was black water flowing from the culverts at the head of the West ditch. The flow coming out of the West ditch was observed at a high rate of speed by several CITGO personnel. Either Monday evening/Tuesday morning, an earthen dam was built in the West ditch to help contain the flow of oil into the Indian Marias.

At or around 12:00 p.m. Tuesday June 20, 2006, a contractor at the incident site observed a vortex coming from the area where the junction box had been installed. The vortex was not continuous and would be observed start/stop basis. The contractor obtained a work permit to throw sandbags in the area of where the vortex was observed in order to fill the hole. In addition, the earthen dam built in the West ditch was busted at or around 2:30 p.m. Tuesday June 20, 2006. The dam was repaired by 5:00 p.m. Tuesday. The sandbags halted the flow of water/oil in the West ditch. CITGO had booms deployed at various locations of the Indian Marias.

The following timeline serves as additional information pertaining to the events of the overflow at the storm water tanks, and events leading to the oil spill incident. The following information was gathered from interviews conducted with Lt. Chris Coutu of the U.S. Coast Guard, Greg Fruge Jr. with the Louisiana Department of Environmental Quality, John M. Elsley of Royston, Rayzor, Vickery & Williams, L.L.P. representing the CITGO Refinery, and various personnel of CITGO and CITGO contractors responsible for the wastewater treatment unit and assistance with the oil spill incident.

**Monday June 19, 2006**

- 2:00 a.m.** Rain starts to fall at a minimum, with a intensified increase amounts over a short period of time according to Warren Washington, wastewater console operator. The level in both tanks (320 & 330) is at approximately 17 feet.
- 3:00 a.m.** Rains continues to fall at the facility. The level in the tanks is at approximately 19 feet.
- 4:00 a.m.** Rain is falling at the facility at increased amounts. The level in the tanks is at approximately 30 feet. Mr. Washington states that they started to open the valves to tie all the 300 series tanks (310, 320, and 330) together. The rate of flow coming into the wastewater system was at or around 105,000 gallons per minute (gpm). The rate of flow from tanks 320 & 330 to tank 310 (equalization tank) is at or around 6,000 gpm. The rate of flow coming from the wastewater unit to the Indian Marias is at or around 12,000 gpm.

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- 4:30 a.m.** Curtis Miller, wastewater supervisor, phones the wastewater operation room to check the operations of the unit. Mr. Washington informs him that there could be a problem concerning the level of the storm water tanks because of increased flow over a short period of time.
- 5:00 a.m.** The level in the tanks is at or around 41 feet. Mr. Curtis Miller arrives at the wastewater unit. The personnel at the unit realize that there is a concern of overflow of both the 320 & 330 tanks. Sometime between 5:00 a.m. and 6:00 a.m. the tanks start to overflow. Oil is seen pouring out of the window of the tanks. Mr. Miller and Mr. Washington attempt to open the diversion valve to divert the storm water flow from the tanks to the berm. As the water flows into the berm, Mr. Miller smells hydrocarbons and instructs Mr. Washington to close the valve (Mr. Miller did not want to cause an ignition because of the combination of the hydrocarbon smell and lightning occurring in the area).
- 5:45 a.m.** Kathy Gauthier Scott, wastewater chief operator and console operator, arrives at the facility to relieve Mr. Washington on the console duty (shift change). She stated that Irvin Guillory was the chief operator for the Sunday night/Monday morning shift. When she arrived at the wastewater plant, they had the storm water tanks (310, 320, 330) lines opened and running to the aeration tanks (350, 360, 370). She estimated that the pumps were running between 10,000 gpm to 12,000 gpm.
- 6:00 a.m.** Jenny Peck, wastewater chief operator, arrives at the facility for shift change to relieve Irvin Guillory. She states that the storm water tanks were overflowing, and she helped open the lines to tie in tanks 310, 320, and 330. The valves were manually opened. This procedure lasted for about an hour. At this time oil was inside the berm. She stated that she could see seepage of oil through isolated locations of the levees (Northeast corner levee and West levee). She checked other areas of the wastewater unit and helped call vacuum trucks for assistance. She stated that there were three (3) operators on site at this time. The product level inside the berm was continuously rising. The tank levels are: tank 320 was at 45 foot and tank 330 was at 42 foot.
- 6:17 a.m.** Ross Turpin, CITGO employee, notifies Single Point of Contact (SPOC) of the following incidents: due to the weather, they are reporting multiple problems concerning hydrogen sulfide and sulfur dioxide being flared from their acid plant. Hydrogen sulfide and sulfur dioxide are being released to the B12 uncracker flare. They have a shelter in place at the lube facility. Hydrogen sulfide personal monitors went off and they sheltered as a precaution.

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In addition, Don Broussard, CITGO employee, reported to have an oil sheen on the Indian Marais going to the Calcasieu River, all due to several unit upsets caused by the heavy rains.

**7:00 a.m.** The valves are opened to the levee drains (2-on the South levee, 1-on the West levee to decant the water inside the containment berm. These valves were opened between 7:00 a.m. and 12:00 p.m. Vacuum trucks are collecting pools of oil that have seeped outside of the containment berm. Diana Webster helped make the call to deploy booms because of trace amounts of oil sheen at the West ditch.

**7:30 a.m.** Roy Siller, 01 Operator of the wastewater unit, arrives at the facility. He states that he observed water flowing out of the tops of the storm water tanks.

**8:00 a.m.** Will Richards, wastewater chief operator, arrives at the facility. At the time of his arrival, he is unaware that the storm water tanks have overflowed. When he reaches the wastewater unit, he realizes that the tanks are overflowing. He states that there is about 2 foot of freeboard inside the containment berm.

**9:00 a.m.** Roy Siller is instructed by either Will or Curtis to drain the firewall (this was done through two 6 inch drains. He stated that there was about 2 foot of freeboard inside the containment berm. He also stated that there was no oil coming out of the drains, just water. No oil in the South ditch. There was oil around the 300 series tanks (310, 320, 330). Vacuum trucks were collecting the oil.

**12:00 p.m.** Roy Siller closes the two (2), 6 inch drains. He accompanies Jenny Peck to help inspect other areas of the wastewater unit (i.e. lift stations, digesters).

**1:00 p.m.** Roy Siller states that he noticed that the West ditch was flowing with clean water.

**3:00 p.m.** The drains on South side were closed.

**4:00 p.m.** The lines that tied in all the 300 tanks together were closed. All of the 300 tanks were pumping to the clarifiers. The rate of flow coming out of tanks 320 & 330 was at 6,000 gpm.

**5:00 p.m.** Jenny Peck stated she observed increased amounts of oil flowing in the West ditch. There was no oil coming out of the drains. CITGO personnel walked upstream to try to find the source of oil.

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**8:00 p.m.** CITGO personnel began deploying sheets of plywood at the West ditch culvert to stop the flow. Oil was observed gushing from under the plywood. Jenny Peck closed the drain valve at the West ditch. No oil was observed coming out of the drain. It should be noted that there was a tremendous amount of water flowing in the West ditch. Contractors with Marine Spill Response Corp. arrive sometime Monday night with a pump (Eureka CM 150 Pump, diesel powered, hydraulically driven. This type of pump can operate at a capacity of 75,000 bbls/day) to help mitigate the containment area.

**Tuesday June 20, 2006**

**8:00 a.m.** Sometime Tuesday, Phil Andrews, CITGO Environmental & Safety Industrial Hygiene Supervisor, had his crew monitor the spill area and Indian Marais all the way to the Calcasieu River. There were approximately 21 monitoring sites (Some are permanently placed, other are manually deployed. Phil stated that they found low concentration levels of benzene and VOCs.

**10:00 a.m.** Calvin B. Smith Jr., aka "Skipper", response supervisor with Marine Spill Response Corp., arrives at the wastewater unit. He stated that his pump that arrived Monday night was placed near tank 310 on the Southeast corner of the containment area.

**12:00 p.m.** A contractor at the wastewater unit (near tank 340) observes a vortex coming from an area inside the containment berm south of tank 340. The contractor obtains a work permit to fill the area of the observed vortex with sandbags.

**2:30 p.m.** Contractors with Marine Spill Response Corp. was ordered to move their pump to the West ditch on the culvert side of the berm. Calvin "Skipper" Smith observed oil/water flowing in the West ditch and coming out of the culverts into the Indian Marais. He also noticed that the earthen dam in the West ditch was busted. They started pumping from the West ditch to the berm before the dam was secure. He informed CITGO personnel of the busted dam.

**3:30 p.m.** Will Richards arrives at the unit. He stated that he saw that the water going into culvert on the South side was clear, and water going out of the culvert at the West ditch was black (oil). He also stated that he detected an odor and compared that odor to slop oil.

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**5:00 p.m.** The busted dam was secured and flow was stopped in the West ditch.

**Wednesday June 21, 2006**

**2:15 a.m.** Bob Barlow with CITGO left a voice message at the Southwest Regional Office stating that the Coast Guard shut down the ship channel from mark 109-100 due to oil on the Calcasieu River at Clifton Ridge, Pecan Grove, and W.R. Grace.

**Areas of Concern:** During the investigation, it was determined that the skimmers for tanks 320 & 330 had not been operating since two (2) years of the completion of the new wastewater treatment system in 1994. The facility failed to properly operate and maintain all facilities and systems of treatment and control, in violation of **LAC 33IX.2701.E**. According to Curtis Miller, at or around the year 2003, a company was contracted to completely clean the storm water tanks. The company was working on this project for a month and was unsuccessful at completing the project. The company only worked on one of the tanks and did not complete this application. On July 7, 2006, an interview with Jenny Peck, Wastewater Chief Operator with CITGO, stated that the use of the skimmers worked at the start of the new system in the past, but within a couple of years, this operation was unsuccessful. She felt that the tanks should be used solely for stormwater and not process water. In addition, the personnel at the wastewater treatment unit had informed the engineers that there was a capacity problem. She also stated that within the first five years of operation, at one time, the tanks came close to overflowing (the tanks reached a level of 41 feet). An interview with Curtis Miller, wastewater supervisor, confirmed that the skimmers were inoperable when he began his job at the wastewater unit approximately in 2001.

It was determined that the oil inside the containment berm seeped at various locations through the walls and/or gates of the berm. In addition, oil had escaped through a junction box that was located inside the berm. This containment berm did not serve as appropriate containment and/or diversionary structures of equipment to prevent an applicable spilled substance from reaching waters of the state in violation of **LAC 33:IX.907.D**. According to Louisiana Oil Spill Coordinator's Office (LOSCO) Executive Summary #25 report, it is estimated that approximately 47,595 bbls (1,998,990 gal) escaped the berm, discharging approximately 25,595 bbls (1,074,990 gal) into the Calcasieu River and 20,000 bbls (840,000 gal) into the Indian Marais, a tributary of the Calcasieu River.

This incident had caused the temporary shut down of the Calcasieu River Ship Channel. The facility allowed free or floating oil or grease to be present in quantities large enough to interfere with the designated water uses, and allowed emulsified oils to be present in quantities large enough to interfere with the designated uses, in violation of (**LAC 33:IX.1113.B.6**).



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The facility gave a SPOC notification on Monday June 19, 2006, of an oil sheen on the Indian Marais going to the Calcasieu River. However, the facility failed to immediately notify the Department of an adverse change in the nature of the spill or rate of discharge that occurred sometime Monday evening/Tuesday morning in violation of **LAC 33:I.3915.A.3**. This violation states that additional notifications must be made for discharges of multiple constituents when they originate from different causes or sources or they are substantially different in nature from the discharges in the initial notification.

The Standard Operating Procedure (SOP) for normal wastewater treatment plant operation prior to and during a heavy rain event states that prior to any rain event, every effort should be made to lower the levels in tanks 310, 320, 330 to the low level targets. Low level targets are defined as for tank 310: 14 feet, tanks 320 & 330: 5.5 feet. According to the records (provided by CITGO) of the storm water tank levels prior to the heavy rainfall event on June 19, 2006, (in a 24 hour period), the levels of the storm water tanks was at a range varying from 17 feet to 20 feet. According to the interview with Mrs. Jenny Peck, she felt that the difference in the levels prior to the spill would not have made a difference if the tanks were at their low level targets prior to the incident. The SOP states that when tanks 320 & 330 reaches the level of 35 feet, the storm water tanks should be diverted to the firewall. If excessive rainfall requires a diversion to the dike area, in order to get approval for diversion into the firewall, the following approval needs to be made by:

1. Unit Supervisor
2. Area Manager
3. Operations Manager
4. Vice President of Lake Charles Manufacturing Complex

The diversion of storm water begins when the tanks reach the level of 38 feet.

In addition, the various interviews revealed that there were no drills or exercises to address the operations of the SOP dealing with the normal wastewater treatment plant operation prior to and during a heavy rain event.

**Facility Name:** Citgo Petroleum Corp.

**AI #:** 1250

**City:** Sulphur

**Parish:** Calcasieu

**Photographer:** Greg Fruge

**Date:** 06/29/06

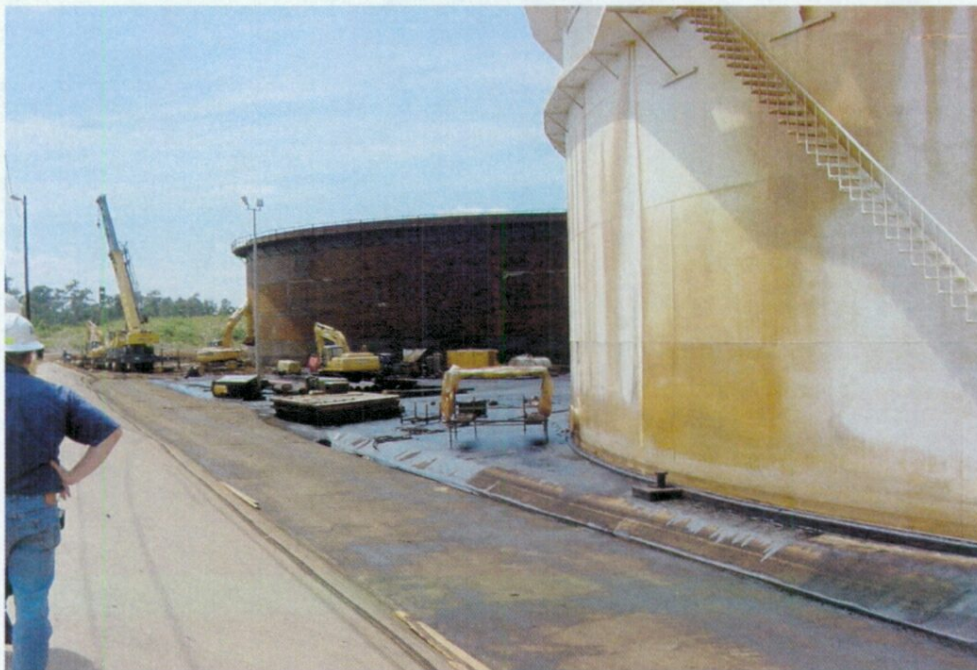
**Reason:** Incident

**Other ID #:** LA0005941



**Photo:** # 1 of 6      **Time:** 15:51

**Description:** Picture taken from the Southeast area overlooking a portion of the containment area of the storm water tanks.



**Photo:** # 2 of 6      **Time:** 15:51

**Description:** South area of the containment berm.

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**Other ID #:** LA0005941



**Photo:** #3 of 6

**Time:** 15:51

**Description:** Junction box located within the south containment area berm.



**Photo:** #4 of 6

**Time:** 15:51

**Description:** Junction box located within the south containment area berm.

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**Date:** 06/29/06

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**Photo:** #5 of 6

**Time:** 15:51

**Description:** Northwest corner of the junction box cover/top.



**Photo:** #6 of 6

**Time:** 15:51

**Description:** Underneath the junction box cover.