



OECA – Air Enforcement Division INSPECTION REPORT

Inspection Date(s):	04/19/2024	
Media Program:	Air	
Regulatory Program(s)	Title V/NESHAP	
Company Name:	Pemex – Deer Park Refining LP	
Facility Name:	Deer Park Refinery	
Facility Physical Location:	5900 Highway 225	
(city, state, zip code)	Deer Park, TX 77536	
Mailing address:	PO Box 1915	
(city, state, zip code)	Deer Park, TX 77536	
County/Parish:	Harris County	
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FRS Number:	110031267064	
Identification/Permit Number:	Title V O-1669, NSR 21262 and PSDTX928M1	
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Personnel participating in inspection:		
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Greg Moreno	Pemex	VP of EHS
Armando Villanueva	Pemex	NET Production Specialist
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Section I – INTRODUCTION**PURPOSE OF THE INSPECTION**

EPA inspectors Sophia Ong, Sydney Knodl, and Nicolas Studebaker (EPA Region 6), and I (Nicholas Bobbs, EPA Office of Enforcement & Compliance Assurance or “OECA”) arrived at the Pemex – Deer Park Refinery (“DPR” or “the facility”) at 8:00 on April 16, 2024 for an announced inspection. We were accompanied by Mike Miller from the Texas Commission on Environmental Quality (“TCEQ”) and Alexia Scott, Dan Roper, and Elizabeth Hubbard from the Eastern Research Group (“ERG”), contractors for the EPA. We met with James Carlisle, Fugitive Emissions Coordinator, Derrick Stanley, Environmental Supervisor, and other facility representatives at the Opening Conference. I presented my credentials to Mr. Carlisle and informed him that this was an EPA inspection to determine compliance with the facility’s Title V Air Permit and the Clean Air Act (“CAA”). The scope of the inspection was a partial compliance evaluation (“PCE”) and included evaluation of the facility’s compliance with its Title V operating permit and the applicable CAA regulations, focusing particularly on the National Emissions Standards for Hazardous Air Pollutants (“NESHAP”) Subpart CC Fenceline Monitoring regulations (40 CFR 63.658). The inspection was prompted by the facility’s reported benzene fenceline monitoring concentrations, in which the 12-month rolling average exceeded the action level of 9 µg/m³ for at least 8 consecutive calendar quarters. Photographs and videos taken during the inspection can be found in Appendices 1 and 2 respectively. The sign-in sheets for the Opening Conference and Closing Conference are attached as Appendix 3.

FACILITY DESCRIPTION

DPR is a large refinery complex owned and operated by Deer Park Refining Limited Partnership, a wholly owned subsidiary of Pemex, the Mexican state-owned petroleum company. The refinery operates under Title V Federal Operating Permit O-1669, issued on January 4, 2023, and Flexible Permit #21262 and PSDTX928M1 under the New Source Review program.

Deer Park Refining LP was previously a joint venture between Shell and Pemex for 30 years, during which DPR was operated by Shell and included several petrochemical units. Shell divested from the joint venture on January 20, 2022, and separated off the Shell Chemical LP – Deer Park Chemical Plant (“Shell Chemical”) from the rest of the complex.

DPR is subject to 40 CFR part 63 subpart CC, which requires all refineries to implement a fenceline monitoring program for benzene emissions. The regulatory requirements of the program can be found in 40 CFR 63.658 and the reporting requirement can be found in 40 CFR 63.655(h)(8). Fenceline monitoring is required to be performed in accordance with Methods 325A and 325B of 40 CFR part 63 Appendix A.

To meet the requirements for benzene fenceline monitoring in 40 CFR 63.658, DPR installed 24 passive sampling sites (“monitors” or “shelters”) for biweekly analysis of benzene concentrations. DPR started monitoring the fenceline for benzene on January 23, 2018. At that time, the DPR complex included the facility that is now Shell Chemical, so the monitors were placed on the fenceline of the entire complex including Shell Chemical.

Section II – OBSERVATIONS

On April 16, 2024, after presenting credentials and identification to the responsible officials, we (the inspection team) discussed our plans for the inspection with DPR staff. The plan included our intent to deploy real-time benzene analyzers to investigate potential sources of benzene impacting the Facility’s fenceline. Details about the analyzers used, ENMET environmental Gas Chromatographs (“eGCs”), and the resulting data can be found in Appendix 7. The eGCs used by EPA are known as EPA-1 and EPA-2. EPA and TCEQ shared that we would conduct screenings using optical gas imaging (“OGI”) cameras and photoionization detectors (“PID”). EPA also shared that we would be using an UltraRae handheld monitor, which is a PID with a separation tube used to measure benzene. After discussions about safety, scheduling, photographs, videos, and confidential business information (“CBI”), inspectors and DPR staff discussed the records requested on April 10, 2024 (Appendix 5, Document Request).

DPR staff uploaded the requested records to a OneDrive folder shared with the facility on or around April 16, 2024. During the subsequent four days of the inspection, we alternated between reviewing records in the conference room, deploying the eGCs throughout the facility, and investigating benzene plumes upon discovery using OGI cameras, PIDs, and the UltraRae. The following sections of this report organize those activities by date and area of the facility.

April 16, 2024

Mr. Greg Moreno, along with Mr. Carlisle and Mr. Stanley, explained to us the divestiture of Shell and the history of the fenceline monitoring network at DPR. Mr. Moreno said that the general manager of the Deer Park Refinery became the CEO of Deer Park Refining LP, which was no longer a joint venture between Shell and Pemex but now a wholly owned subsidiary of Pemex. DPR is Pemex’s only major asset outside of Mexico. Mr. Carlisle told me that that refinery uses “Maya Crude”, a type of crude oil with a high total acidity number.

Mr. Moreno said that the divestiture was rapid, at that some parcels of land were in dispute up until January 2024. The facility provided us a map of the refinery complex with areas marked in red as no longer being part of DPR following the divestiture. (Appendix 6, Divestiture Map) They explained that the red area of the map includes a chemical plant, specializing in phenols and olefins, owned by Shell Chemical, an epoxy resins plant owned Westlake Epoxy, and a vinyl chloride monomer plant owned by Occidental Petroleum Corporation ("Oxy").

DPR shares an administrative building with Shell Chemical. DPR also provides a security team to Shell, for which they get reimbursed. I asked the facility about any shared pollution control equipment between DPR and Shell Chemical. They said that the east property flare receives flare gas from Shell Chemical.

Mr. Carlisle said that DPR had a meeting with TCEQ on March 2022, and they discussed the impacts from Shell Chemical on the facility's benzene fenceline concentrations.

Mr. Carlisle said that the facility had contracted with Aecom to deploy 2 eGCs at the new boundary between DPR and Shell Chemical. They deployed the eGCs on February 29, 2024, and began collecting data on March 1, 2024. They said the purpose of the eGCs was to quantify the impact of Shell Chemical on the fenceline of DPR.

One of the Aecom eGCs was first deployed by Monitor #13, near DPR's wastewater treatment plant known as the North Effluent Treater ("NET"). The other eGC was deployed near two tanks on the south border of the refinery, G-353 and G-354, which were not in service at the time of the inspection. The tanks are owned by Shell but operated by Pemex. Tank G-354 was used to store benzene concentrate.

The Aecom eGCs were moved to new locations starting April 2024. One eGC was placed on the southeast corner of the refinery, near Monitor #5 and Shell Chemical's wastewater treatment plan known as the South Effluent Treater ("SET"). (Photo 056) This location is also near DPR's aromatics plant, subject to the Hazardous Organic NESHAPs ("HON"). The other eGC was placed on the SW corner of the facility, near tank G-313. (Photo 057)

Mr. Carlisle said that the Aecom eGCs are contracted for 90 days, so they will remain until the end of May 2024. He also said that they get the data from the eGCs on a two-week basis, two weeks after the data is collected, and there are no email/text alerts set for the eGCs. **[AOC 23]** Mr. Carlisle mentioned that DPR may keep one eGC past the 90 days. **[AOC 24]**

In addition to the 24 monitors used for compliance with 40 CFR 63.658, DPR has been collecting additional discretionary samples starting January 3, 2023. The discretionary samples consist of 6 monitors along the new property boundary between DPR and Shell Chemical. The location names are SET 1 (referring to the South Effluent Treater), SET 2, 21st St., G-361, G-313, and AP-19.

North Effluent Treater Aeration Basin

We entered the DPR site at around 10:30 on April 16, 2024 and proceed to the NET aeration basin. We observed Monitor #13, which is on the NW side of the aeration basin.

Prior to the inspection, I reviewed the root cause analysis (“RCA”) and corrective action plan (“CAP”) documents submitted by DPR. There had been several exceedances of the benzene action level at Monitor #13, starting on July 21, 2020 and continuing sporadically up until the time of the inspection. The root cause analyses for these exceedances point to the NET aeration basin as the cause, specifically because the inlet to the aeration basin is positioned above the liquid level as a “pour” fill, as opposed to a “submerged” fill. [AOC 3] [AOC 4]

I asked Mr. Carlisle about these RCAs, and he elaborated that the aeration basin is directly after the dissolved nitrogen flotation (“DNF”) units. He said that the DNF units came online in 2015, as part of the 2014 consent decree with EPA. When the DNFs are active, the wastewater flows from the DNFs to the aeration basin via an inlet pipe positioned above the aeration basin fill level. Therefore, the wastewater pours into the aeration basin, and Mr. Carlisle believed that the wastewater agitation from this “pour” or “splash” fill method contributed to exceedances at Monitor #13.

I asked Mr. Carlisle how he reached this conclusion. Mr. Carlisle said that when the DNFs are bypassed, the wastewater stream enters the aeration basin through a different inlet which is submerged below the aeration basin fill level. He said that during a period where the DNFs were under maintenance and bypassed, they observed that the concentrations at Monitor #13 were lower. He also said that they conducted additional monitoring with passive tubes at and around the aeration basins, and the results of that study indicated that the splash fill inlet to the aeration basin was a source of benzene.

We toured the NET, starting with the DNFs. There are two DNFs, TN-80011 on the east side and TN-80010 on the west side. We also observed the DNF Float Tank TN-80014. DPR staff told me that before the DNFs, the NET had “trickle filters” which were removed and replaced with the DNF units in 2015.

We then went to the top of the NET aeration basin, EWT-11. The aeration basin is divided into two sections, north and south. I took two photos of the aeration basin from the east side of the basin facing west: Photo 002 of the north basin inlet above the aeration basin fill level, and Photo 003 of both the north and south inlets.

At around 12:30, The ERG contractors set up eGC EPA-1 southeast of the NET aeration basin. (Site code EPA 1A in eGC report) (Photos 004 and 05)

The ERG contractors set up the eGC EPA-2 next to Monitor #13 and northwest of the NET aeration basin. (Site code EPA 2A in eGC report) (Photos 006 and 007)

After lunch, we discussed the NET area in the conference room. Mr. Carlisle said that the DNF had been out on maintenance due to plugging from a sediment issue, at that they had noticed a dip in benzene concentrations at Monitor #13 during that time. Armando Villanueva, Production Specialist for the NET, said that the DNFs are cleaned every 2 years, alternating between the two DNFs. He said that the cleaning takes about 60 days.

I asked about the corrective action identified in the CAP for Monitor #13, extending the inlet pipe to the NET aeration basin downward for a submerged fill. The latest CAP for Monitor #13, completed for the sample period starting 8/1/23, said that the change in inlet would be completed by August 30, 2024. I asked DPR staff if this estimate was still accurate, and they confirmed it was. I observed that the corrective action was first identified in an RCA completed 12/6/2022, therefore DPR was allotting approximately a year and 9 months to complete this corrective action. I asked DPR staff why the timeline for this relatively straightforward corrective action was so long. They said that the initial timeline was shorter, but they identified some potential consequences from process change on wastewater operations and therefore a lengthier review process was initiated. **[AOC 5]**

Mr. Villanueva explained more of the wastewater process and provided a process flow diagram. (Appendix 4, NET Process Flow Diagram) He said that the NET has 5 total corrugated plate interceptors ("CPI") which remove oil and solids from the wastewater. Three of the CPIs receive non-NESHAP FF (Benzene Waste Organic NESHAP or "BWON") wastewater from the catalytic cracker lubes plant, the DD-2 distilling plant, and the TC&G unit. Two of the CPIs receive BWON-subject wastewater, NESHAP CPI #1, or T-306, and NESHAP CPI #2, or T-307.

Mr. Villanueva said that the BWON CPIs are nitrogen blanketed, and their emissions are collected in a closed vent system and sent via blowers to the west property flare. He also said that they clean the BWON CPIs every year, and that they are scheduled to clean the south train (CPI #1) this year.

The non-BWON wastewater streams all collect in Manhole 4 ("MH-4").

Root Cause Analyses

I reviewed several of the RCAs provided by DPR during the inspection. I observed that many of the RCAs, especially for Monitors #13, #22, and #23, were near-duplicates of each other with the same boiler plate language and no substantial differences. This was observed for RCAs for the same monitor performed several months or years apart, and differences in process operations, maintenance work performed, or wind data/benzene pollution roses were not taken into account for the new RCA. **[AOC 1]**

I also observed that RCAs for many periods did not address monitor locations with benzene concentrations above the action level if they were not the highest concentration recorded for that period. The reasoning given by the facility was that since the monitors were not the highest benzene concentration during that period, they were not the cause of the exceedance of the annual average action level. I advised that if there were multiple monitors above the action level for a period when the

annual average was also above the action level, then each of those monitors should be investigated, as each has the potential to contribute to the annual average on their own. **[AOC 2]**

I asked Mr. Carlisle about the process for performing RCAs at DPR. Mr. Carlisle said that the RCAs are performed by either himself or Amy Messick in the environmental group. He said that the environmental team will pull in specific process engineers as needed, but that there was no regular RCA team that included process engineers. **[AOC 24]**

I asked Mr. Carlisle why the fenceline monitors were still placed on the old property boundary (including Shell Chemical property) when the divestiture of Shell happened in January 2022. He said that DPR had a meeting with EPA Office of Air Quality Planning and Standards (“OAQPS”) and EPA Region 6 in March 2022, and that EPA personnel had advised him to wait until all the land disputes had been settled before moving the monitors to the new boundary. **[AOC 8]**

Mr. Carlisle said they would submit a Site-Specific Monitoring Plan (“SSMP”) for EPA approval after the Aecom eGC deployment ended, in approximately July 2024. DPR does not currently have an approved SSMP. Mr. Carlisle indicated that he believed the SSMP approval was needed before moving the monitors to new location. I told him that the SSMP approval is not needed for moving monitors, only notification in the next quarterly submission to EPA in accordance with 40 CFR 63.655(h)(8)(iii).

April 17, 2024

We arrived onsite at approximately 8:00.

I asked Mr. Carlisle about DPR’s communications with Shell Chemical regarding exceedances at Monitors #22 and #23, which have been driving DPR’s annual average up since the start of monitoring, particularly in the past year. Mr. Carlisle said that they have communicated verbally the exceedances at #22 and #23 to Shell employees, but that they had not been informed of any specific actions taken by Shell in response. **[AOC 22]**

MH-4 Carbon Beds

We entered the facility at approximately 9:00 and proceeded to the NET carbon beds. We were accompanied by DPR staff and Mr. Larry Brown, an LDAR contractor with Think Environmental who had a TVA 1000B PID for measuring tVOCs.

I asked Mr. Carlisle and Mr. Stanley about the carbon beds. They said that the carbon beds control emissions from MH-4 (Manhole 4), and that the carbon beds are under nitrogen blanket. MH-4 also has an emergency relief device and vacuum breaker.

DPR staff said that when the carbon beds were first put in place, breakthrough occurred every eight to ten months. However, recently the carbon beds have had breakthrough approximately once a week. **[AOC 26]**

There are four total carbon beds, with two active beds at a time as a primary and secondary carbon bed in series. The DPR staff monitor the carbon beds for breakthrough. They monitor for breakthrough once per day at both the primary and secondary bed outlets. They monitor using a PID, as Mr. Carlisle said that a flame ionization detector would flameout due to the nitrogen blanket.

The breakthrough limit is 50 ppm total volatile organic compounds (tVOCs) or 1 ppm benzene. When breakthrough is detected at the primary bed outlet, the facility switches to the other two carbon beds within 24 hours and replaces the carbon in the old beds.

DPR staff informed me that breakthrough on the active eastern carbon beds had been detected last night (4/16/24), first on the outlet of the primary then on the outlet of the secondary. At the time (approximately 10:00 on 4/17/24), they had not yet switched to the other carbon beds as they were still loading in new carbon material.

I recorded a FLIR infrared video of a VOC plume from the gooseneck outlet of the secondary bed. (FLIR0026) We also monitored the benzene concentration at the sampling points for the beds using the UltraRae, and found 0.25 ppm benzene at the outlet of the secondary beds and 0.15 ppm at the outlet of the primary bed. We also monitored the outlet of primary bed and secondary beds with a TVA 2020 and recorded over 10,000 ppm before flaming out the flame ionization detector. [AOC 26] I took photo 008 of the carbon beds, sample points, and outlet, and photo 009 of the carbon beds and the new carbon waiting to be loaded into the bed. The western beds were cleaned and awaiting new carbon, and the eastern beds were active at the time.

The ERG contractors moved the eGC EPA-1 to a new location north of the DNFs, NE of the BWON CPIs and tanks T-301 and T-302, and NW of the aeration basin. (Site EPA 1B in the attached eGC report. Photos 012 and 013)

At approximately 10:40, I went to the top of Tank T-302, one of the BWON equalization and diversion tanks in the NET. I observed a heavy VOC plume with the FLIR camera coming from a vent on the external floating roof. (FLIR0027, Photo 010) I then went to the top of Tank T-301, the other BWON equalization and diversion tank, and observed another heavy VOC plume coming from a similar vent on the external floating roof. (FLIR0028, Photo 011) [AOC 21]

We observed tanks T-305 and T-304, which were out of service. We also observed tank T-303, which DPR staff told us had just been refurbished and was not online yet, but would be used to store recovered oil entrained in the effluent wastewater.

Clean Harbors Sludge Removal

Within the NET and north of the CPIs, we observed a wastewater sludge removal process operated by Clean Harbors/HPC Industrial. Wastewater and solids material removed from the DNF units goes to the

float tank or sludge tank, then to a transfer tank, and from there to the diversion tank. Clean Harbors then takes the material from the diversion tank, removes the solids, and sends it to the equalization tank.

Mr. Villanueva explained that tanks T-301 and T-302 alternate with one being a diversion tank and the other an equalization tank. The equalization tank is part of the BWON wastewater train, between the inlets of the BWON train and the CPIs. At the time of the inspection, tank T-301 was the diversion tank and tank T-302 was the equalization tank. Mr. Villanueva later said that when tanks T-301 and T-302 are switched, the tanks are not landed or cleaned in between swapping roles as equalization tank and diversion tank. **[AOC 25]**

I met with Robert Mika, the Clean Harbors project manager, who explained the process in greater detail. He said that sludge-containing wastewater is pumped from the diversion tank (T-301 or T-302) to one of five 400-barrel fixed roof tanks. The tanks are filled to about 80% capacity, and coagulant and scavenger (for H₂S removal) are mixed into the material. Once full, the mixer stops and the solids are allowed to settle to the bottom of the tank. Approximately two-thirds of the tank will be water which is sent to the equalization tank. The remaining one-third is bottoms (sludge) which is sent to a sixth 400-barrel fixed roof tank used for sludge slurry. From there, the sludge slurry proceeds to a centrifuge where the sludge is squeezed out and gravity fed into a roll-off, and any remaining water is sent to the equalization tank.

Mr. Mika said that all of the six fixed roof tanks used in the process are under a nitrogen purge (4 oz of nitrogen pressure), with a controlled closed vent system that is sent to a three-column scrubber and then to a catalytic oxidizer. He said that they perform leak detection and repair ("LDAR") on the tanks using a 5-gas monitor. (A monitor that has a PID along with other sensors) He said that the LDAR is performed once a week, but that none of the tanks or components are tagged for an LDAR program under BWON. **[AOC 25]** He also said that they have LEL and H₂S fixed monitors in the area. He said they also have an UltraRae benzene monitor, but that they rarely go on top of the tanks or the centrifuge.

Mr. Mika said that the roll-off under the centrifuge is emptied about once a day or every few days. He said that they switch between each of the five tanks, and that it takes about 40 minutes to fill and 15 minutes for the solids to settle out, which they observe through a sample port. He said that they keep the level of solids inside the diversion tank to less than 32 feet. He said that the centrifuge is constantly spinning, but the pump that transfers water from the catch tank (below the centrifuge) to the equalization tank will switch on and off when the catch tank level gauge reaches 50%.

Mr. Studebaker and I observed the Clean Harbors sludge removal centrifuge, a "Flottweg separation technology tricanter". (Photo 014) We recorded benzene concentrations of up to 1800 ppm using the UltraRae at the seal gap on the motor side of the centrifuge. **[AOC 18]** I used the FLIR infrared camera to observe emissions from the centrifuge. (FLIR0029) We observed Clean Harbors employees sitting in the area close to the centrifuge, and told the facility our concerns about their potential exposure to benzene.

At 12:54, Ms. Scott and I collected a summa cannister (SAT003) at the seal gap on the centrifuge. I recorded up to 80 ppm using the UltraRae at the time we collected the cannister. The centrifuge was running at the time. The summa cannister results showed around 9 ppm benzene, as well as 7 ppm toluene and 3 ppm xylene. See the attached eGC report for the full summa cannister results. (Appendix 7, ERG eGC report)

Mr. Mika said that the centrifuge, including the seal cap, should be under a vacuum with the vacuum pressure level set by the catalytic oxidizer based on LEL readings. (When LEL gets too high, the catalytic oxidizer pulls more vacuum to dilute) He said that the sludge removal process has been in place for three years and was installed in 2021.

I observed VOC emissions from the top of several of the six fixed roof tanks in the sludge removal process. (FLIR0030) **[AOC 19]**

At approximately 12:30, ERG contractors moved eGC EPA-2 to a new location on Upper Dock Rd. (Site EPA 2B in the eGC report. Photos 018, 019, and 020) This location is NNW of the NET, CPIS, and Clean Harbors sludge removal operation.

Conference Room

I discussed the MH-4 carbon beds with DPR staff. I asked for the records of the daily breakthrough checks from 2023 up to the time of the inspection. They told me that they monitor for breakthrough using the PID on a TVA-1000B. They monitor for breakthrough at the primary and secondary carbon beds outlets, though only the secondary outlet monitoring is required under the consent decree with EPA.

I asked about why the breakthrough at the MH-4 carbon beds was occurring much more frequently now than in the past. They said that they sample the wastewater streams entering MH-4, and they had found that wastewater from the alkylation unit had a hydrocarbon layer on top of the wastewater. They said that a level indicator on a vessel within the alkylation unit was malfunctioning, so alkylate was overflowing into another vessel and entering the wastewater. They said a temporary new level gauge was installed recently.

They said that wastewater sampling did not reveal this alkylate because the samples were being collected at the bottom of the wastewater stream, while the alkylate floats on top of the stream. The wastewater from the de-isobutanizer ("DIB") wastewater separator (part of the sulfuric acid alkylation unit) was flowing to the wastewater degasser, which moves the wastewater to the MH-4 header, where the wastewater/alkylate mixture is causing breakthrough in the carbon beds. They said a new sampling port was being installed to correct this issue. They were able to identify the problem by correlating breakthrough events with the opening of a process valve within the alkylation unit. **[AOC 26]**

I asked about the leaks on the external floating roofs of tanks T-301 and T-302. Mr. Stanley told me that the facility identified pop-up vents leaking on both tanks. **[AOC 21]** Normally, the pop-up vents activate when the tank is landed to prevent a vacuum forming under the roof, and they should not be open unless the roof is landed. They said the tank roofs have not been landed recently. They also told me that the tank levels at the time I observed emissions (10:50) were 26.4 feet for T-302 and 22.4 feet for T-301.

We discussed the meteorological data reported by the facility with their fenceline monitoring results. They said that DPR does not have an onsite weather station, and that they use the Houston Hobby Airport wind data in their submittals to EPA. They said they've also used the Houston Regional Monitor ("HRM") located on the other side of Highway 225 from the facility e.g., when preparing wind roses for root cause analysis.

I asked about the Clean Harbors sludge removal permitting status. They said that the sludge removal operation was originally permitted under a Texas Permit by Rule ("PBR"), then incorporated into DPR's Flex Permit 21262, which was issued January 2021 and most recently revised on November 22, 2023 (to incorporate the consent decree with EPA).

I asked about the sorbent tube temporary monitoring performed around the NET aeration basin as part of DPR's RCA for the exceedances at Monitor #13. The sorbent tubes were collected daily from 9/19/22 – 9/13/22. They were collected at six locations near the aeration basin, one at the top of the stairs of the aeration basin (near the splash-fill inlet to the aeration basin) and five around the tank farm directly south of the aeration basin. They also created wind roses (using the HRM) for each day and the two-week period. The data showed consistent elevated concentrations of benzene at the top of the aeration basin, as well as some elevated concentrations at the tank farm on one of the sample days. DPR did not collect a daily sample at the Monitor #13 location.

I asked about the benzene containing tanks at the facility, including tanks D-370, D-371, D-380, and D-381. They told me that these tanks are associated with DPR's aromatics concentration unit ("ACU") and contain benzene product. These internal floating roof ("IFR") tanks are in the aromatics tank farm, and the benzene product is shipped offsite from the tanks via pipeline. All of the tanks are closed vent and nitrogen blanketed.

I asked about the benzene storage IFR tank F-360, which is also tied to the ACU. This tank is located in the middle of the plant and is used for intermediate storage before shipping off the benzene product.

I asked about the tanks containing Sulfolane, a benzene-laden material, at the facility, including tanks S-391, S-392, and S-400. They said that Sulfolane is used in the ACU and is a solvent for extracting benzene. The Sulfolane tanks are fixed roof tanks.

I asked about the benzene concentrate tanks, including D-350, D-351, D-352, D-353, J-313, and J-314. These tanks are all in the aromatics tank farm and contain material ranging from 26% to 70% benzene by

weight. They said that D-350 and D-353 used to store benzene concentrate but have been taken out of service. The remaining tanks are in service and are nitrogen blanketed IFRs.

I asked about tanks G-354 and G-353, which are on the border of DPR and Shell Chemical. The tanks are owned by Shell Chemical but operated by DPR and contained benzene concentrate. DPR staff told me that they identified pinholes in the roof of tank G-354 in 2023 due to corrosion. [AOC 9] They said that Shell Chemical degassed the tank at the end of August 2023, and it has been out of service since then. They said that tank G-353 has been out of service for many years but previously stored raffinate.

I asked about pygas (pyrolysis gasoline) stored at the facility. They told me that all pygas in the complex is stored on Shell Chemical property but is loaded and offloaded at docks owned by DPR. They said the pygas is typically unloaded at the west dock, and that the marine vapor recovery and combustor at the dock is also owned by DPR. The west dock also has a booster that goes to the north property flare. DPR staff provided a copy of the standard operating procedure ("SOP") for pygas loading at the west dock and the marine vapor recovery unit.

DPR staff updated us on the Clean Harbors sludge centrifuge. They told us that the centrifuge has a seal with a nitrogen blanket. They said there was condensate in the nitrogen line to the seal which was interfering with the nitrogen blanket, and that the facility corrected the condensate issue. They also said that DPR's industrial health team had been deployed to the centrifuge area.

DPR staff updated us on the Clean Harbors sludge fixed roof tanks. They said that there was corrosion on the weighted manway emergency pressure relief vents, as well as leaks in the rubber gasket seals that they were working to replace.

DPR staff updated us on the equalization and diversion tanks T-301 and T-302. They said that investigation revealed that the pop-up vents were not activated, and that the cause of the leak was a seal issue on the pop-up vents. They said that they were in the process of replacing the seals and making a release calculation for the leaks. [AOC 21]

April 18, 2024

We arrived onsite at approximately 8:00 and entered the facility, proceeding to the NET area. We were accompanied by DPR staff and Mr. Brown, who had a TVA 1000B for measuring tVOCs.

I went on top of the BWON corrugated plate interceptors ("CPIs") within the NET. On the north CPI #2 (T-307), I monitored the pressure-vacuum relief vent ("PVRV") and recorded up to 10 ppm benzene from the vacuum breaker using the UltraRae. (Photo 022.) I also observed emissions from the vacuum breaker using the FLIR camera. (FLIR0031) Mr. Brown recorded up to 450 ppm tVOCs from the vacuum breaker, and up to 120 ppm from the pressure relief vent. I noted that the PVRV had an LDAR tag #90298 and component ID PVN-01412. (Photo 025) [AOC 16]

I noted the manual pressure gauge for the nitrogen blanket on the north CPI #2 was reading 1.8 inches of water column (1.8" WC). (Photo 023) I then went on top of the south CPI #1 (T-306) and observed that the pressure gauge for the nitrogen blanket for that unit was reading -0.2" WC. (Photos 026, 027) I asked Mr. Villanueva why the pressure was slightly negative on the south CPI #1. He indicated that both CPI's nitrogen blankets were interconnected and that the pressures should be identical on both, and that there may be a problem with the manual gauge on the South CPI #1. **[AOC 15]**

I observed VOC emissions with the FLIR camera from the centrate oil tank T-0-007. (FLIR0032 and FLIR0034. Photo 033) The emissions were coming from a weighted manway on top of the tank. Mr. Villanueva said that the weighted manway had been replaced 4 years ago, and that the seal may need to be replaced. **[AOC 20]**

I observed the Induced Gas Floatation ("IGF") Units, which receive BWON regulated wastewater from the CPIs. I first observed emissions from the north IGF #2 (T-309) water seal drain, where I recorded up to 30 ppm benzene with the UltraRae and 315 ppm tVOCs with the Neo PID. (Digital video FLIR0035, Photo 036) I also detected benzene concentrations up to 14.75 ppm from the water seal drain on the south IGF #1. (Photo 046) **[AOC 10]**

Mr. Studebaker and I then went on top of the IGFs. I detected emissions using the FLIR camera from a flange on the north IGF #2. (FLIR0038, Photo 043). The flange was adjacent to agitator RM-9039 on the north IGF #2. We detected concentrations up to 195 ppm benzene and 4,000 ppm tVOCs from the flange leak. **[AOC 11]**

We then observed a leak from agitator RM-9031 on the south IGF #1, T-308. (FLIR0039, Photo 041 and 042) We detected benzene concentrations of at least 100 ppm, the maximum the UltraRae can detect, and tVOC concentration up to 8,092 ppm from the agitator leak. **[AOC 12]** We also observed visible corrosion and gaps where the agitator shaft entered the IGF. **[AOC 14]**

We then observed emissions from the pressure relief valve on the south IGF #1. (FLIR0040) We detected up to 10 ppm benzene and 20 ppm tVOCs from the pressure hood vent. **[AOC 13]** I took photos of north IGF #2 (Photo 044) and south IGF #1 (Photo 045), along with the associated agitators, from the catwalk between the IGFs.

We observed three tanks, T-303, T-304, and T-305 in the NET area, near the IGFs. Mr. Villanueva explained that tank T-303 takes "floatate" from the IGFs and separates it further. From tank 303, the separated oil is sent to the oily water tanks X-315 and X-320 to recover the oil. Tanks T-304 and T-305 were out of service at the time of inspection.

I observed a VOC plume with the FLIR camera from the top of tank X-330, an equalization tank for the non-BWON wastewater stream. (FLIR0048). **[AOC 7]** The plume was emitting from a source at the top of the tank, near the east side of the railing at the top of the stairs. I asked Mr. Carlisle if we could go on

top of the tank to identify the source of the plume, but he informed me a safety issue related to the X-330 tank stairs prevented us from accessing it.

We then went on top of DNF TN-80010. We detected several sources of benzene where the DNF Float Scraper shafts entered the DNF, including up to 100 ppm benzene from RSP-9103 and 12 ppm benzene from RSP-9100. (Photos 050 and 051) **[AOC 17]** I recorded FLIR video FLIR0049 of VOC plumes from several of the float scrapers on the west side of DNF TN-80010. Mr. Brown recorded tVOC measurements from the float scrapers as recorded in table 1.

Table 1

DNF TN-80010 Float Scraper	tVOC Measurement
RSP 9100	4,976 ppm
RSP 9101	1,950 ppm
RSP 9102	4,685 ppm
RSP 9103	10,500 ppm

I observed VOC emissions from a pressure vent hood on top of the DNF TN-80010. (FLIR0052) We also observed some condensation forming from small leaks in the flange on the DNF. (Photos 053 and 054) I took photo 055 of the nameplate for the DNF TN-80010.

April 19, 2024

At approximately 8:00, EPA Inspector Knodl and the ERG contractors arrived at the site and demobilized the two EPA eGCs. They also collected summa cannister #SAT140 from the DNF TN-80010 Float Scraper RSP 9103 where high VOC and benzene concentrations had been observed the previous day. The summa cannister analysis showed 436 ppb benzene and 305 ppb toluene. **[AOC 17]** See attached eGC report for the full summa cannister analysis.

After lunch, I and the rest of the inspectors rejoined the inspection and met with DPR staff in the conference room.

I observed from the facility's site map that tank X-330 in the NET area may be less than 50 meters from the facility boundary and was located roughly in between Monitors #13 and #14. I asked Mr. Stanley and Mr. Carlisle if they had evaluated whether an additional monitor near tank X-330 is needed to comply with Method 325A siting requirements. They said that the siting of the monitors had been performed by another party and did not know if tank X-330's location was taken into consideration. **[AOC 6]**

I reviewed the benzene monitor data provided by DPR and observed that the discretionary benzene samples taken at "G-361", near tank G-354, showed a highly elevated benzene concentration of 421 ppb for the sample period starting May 23, 2023. For the same period, Monitor #23 had a concentration of 60.3 ppb benzene, the highest the monitor had in 2023. I observed a similar correlation between

Monitor “G-361” and Monitors #22 and #23 for many periods in 2023. As noted earlier in the report, tank G-354 was taken out of service in August 2023 due to corrosion of the tank roof, and it stored benzene concentrate. Therefore, it seems likely the emissions from tank G-354, which was operated by DPR, were impacting Monitors #22 and #23 in 2023 and possibly earlier. However, all of the RCAs and corrective actions for #22 and #23 since the divestiture of Shell in January 2022 do not mention tank G-354. The RCAs only identified offsite impacts due to Shell Chemical and the only corrective action documented was notifying Shell Chemical of the exceedances. **[AOC 9]**

I asked Mr. Stanley and Mr. Carlisle if a determination of NESHAP FF (BWON) applicability had been made on the Clean Harbors sludge removal operation from T-301 and T-302. Mr. Stanley said that they had determined that the sludge removal was not subject to BWON because it is prior to the point of generation for waste, and also mentioned that they are recycling some oil back into the process. I asked whether DPR was using the BWON 6BQ or 2MG compliance option, and he said they used the 6BQ option. I asked if the waste stream going to the Clean Harbors operation was being reported as uncontrolled in the TAB (Total Annual Benzene) report. He said it is not included in the TAB because it is upstream of the point of generation. I noted that the wastewater entering the Clean Harbors sludge removal operation is already waste, with the point of generation being sometime before it entered the NET. **[AOC 25]**

Section III – AREAS OF CONCERN

I, Nicholas Bobbs, EPA OECA, conducted a closing conference at Pemex – Deer Park Refinery at approximately 2 pm on April 19, 2024 for the inspection. During the closing conference, I reviewed the 26 Areas of Concern noted during the inspection.

AOC 1 - RCAs lacking details of investigation

The RCAs submitted to EPA and TCEQ do not contain sufficient detail to evaluate whether the RCA was done properly. Additionally, many of the RCAs are duplicative of previous RCAs, and it does not seem that new information was incorporated to the RCA when there were repeated hits at a monitor.

AOC 2 – RCAs were not always performed for monitors above the action level

Pemex did not document an RCA for several monitors during period where those monitors were above the action level. I advised that if there were multiple monitors above the action level, then each of them should be investigated, as each has the potential to contribute to the annual average on their own.

AOC 3 – RCAs for Monitor #13 were not broad enough

The RCAs submitted for continual exceedances at Monitor #13 only mention the NET aeration basin. While the aeration basin is a contributor, our inspection identified many benzene plumes in the NET within a few hundred feet of Monitor #13. If Pemex’s root cause investigations for Monitor #13 had looked at all potential sources in the area, these leaks may have been found sooner.

AOC 4 – Corrective actions for Monitor #13 are not all identified

The corrective action plan for the exceedances at Monitor #13 focus solely on the aeration basin, extending the inlet pipe downward so there is a submerged fill instead of the current splash fill. However, our inspection found many other sources in the NET that may be contributing to the Monitor #13 exceedances. Additionally, from our conversations with the facility there seem to be issues with the wastewater upstream of the aeration basin which are causing high benzene concentrations, and it is unclear if the submerged fill corrective action will solve the issue.

AOC 5 – Timeline for Monitor #13 corrective action is too long

The corrective action that was identified for Monitor #13, extending the aeration basin inlet pipe downward, had not been completed at the time of inspection though the corrective action was first identified the RCA on 12/6/2022. A timeline of 1 year and 9 months to extend the inlet pipe downward is excessively long.

AOC 6 – An additional fenceline monitor may be required by tank X-330

Method 325A section 8.2.1.3 requires that “an extra sampler must be placed near known sources of VOCs if potential emission sources are within 50 meters (162 feet) of the boundary and the source or sources are located between two monitors.” Tank X-330 may trigger this requirement, as it is between Monitors #13 and #14 and may be within 50 meters of the facility boundary.

AOC 7 – FLIR video showed emissions at top of tank X-330

The FLIR video I took of VOC emissions coming from the top of Tank X-330 indicate the presence of a leak. We were not able to pinpoint the source of the leak as we could not go on top of the tank due to safety considerations.

AOC 8 – Fenceline monitors have not been moved to the new property boundary

At the time of the inspection, over two years had passed since the divestiture of Shell Chemical on January 20, 2022, and there were no longer parcels in dispute as of January 2024. However, the fenceline monitors are still at the old boundary. High concentrations at the old property boundary on the south side have not been fully addressed, as Pemex claimed they have no control over that area, which takes away the usefulness of those monitors. We recommended that the fenceline monitors be moved to the new property boundary.

AOC 9 – Emissions from tank G-354 likely affected Monitors #22 and #23; not included in RCAs

We identified that emissions from benzene concentrate Tank G-354 were likely affecting Monitors #22 and #23 in 2023 before the tank was removed from service. The correlation is especially evident for the May 23, 2023 period, when benzene levels of 421 ppb at the G-361 monitor and 60.3 ppb at Monitor #23 were recorded, the highest of the year for both monitors. Tank G-354 was not identified in the RCAs or corrective actions for Monitors #22 and #23.

AOC 10 – Benzene emissions found at IGF water seal drains

We observed benzene concentrations, 15 to 30 ppm, at water seal drains on the Induced Gas Floatation Units #1 and #2, T-308 and T-309, respectively.

AOC 11 – Benzene emissions from flange leak on North IGF T-309

We observed benzene concentrations from a flange leak on North IGF unit T-309. The emissions were observed from the flange on the north side of agitator RM-9039. We observed concentrations of 4,000 ppm VOCs and 195 ppm benzene.

AOC 12 – Benzene emissions from leak in agitator on the South IGF T-308

We observed benzene emissions from a leak in agitator RM-9031 on the South IGF unit. Over 8,000 ppm VOCs and over 100 ppm benzene concentration was detected with the handheld monitors.

AOC 13 – Benzene emissions from South IGF PRV

We observed benzene emissions of up to 10 ppm benzene and 20 ppm tVOCs from the pressure hood vent on south IGF T-308.

AOC 14 – General condition of the IGF Units; rust and corrosion

We observed that the general condition of the IGFs had several spots of severe rust and some corrosion. The leak from AOC 11 was from a rusty flange connection, and the leak from AOC 12 was from a section of the agitator that had visible corrosion gaps.

AOC 15 – Manual pressure gauge stuck on South CPI nitrogen blanket regulator

We observed that the manual pressure gauge for the nitrogen blanket on NESHAP CPI #1 T-306 was malfunctioning and stuck at -0.2" WC.

AOC 16 – Benzene emissions from North CPI vacuum relief valve

We observed benzene emissions from the North CPI orange Pressure/vacuum relief valve, with concentrations of 10 ppm benzene and about 450 ppm VOCs.

AOC 17 – Benzene and VOC emissions from TN-80010 DNF Float Scrapers

We observed benzene and VOC emissions at the TN-80010 DNF Float Scrapers from four points where the scrapers enter the unit, at RSP 9100, 9101, 9102, and 9103. We observed VOC concentrations up to 10,500 ppm VOCs, and summa cannister sampling the next day showed at least 400 ppb benzene.

AOC 18– Benzene emissions from Clean Harbors Sludge Centrifuge

We observed benzene from the centrifuge used by Clean Harbors to dewater sludge taken from the diversion tank in the BWON stream. We detected up to 1800 ppm benzene with the handheld monitor, and around 9 ppm benzene from the summa cannister sample.

AOC 19 – VOC emissions from PRVs of sludge/wastewater Clean Harbors tanks.

We observed VOC plumes using the FLIR camera coming from multiple PRVs on six Clean Harbors tanks used to contain sludgy wastewater tanks prior to centrifuge.

AOC 20 – VOC emissions from Centrate Oil Tank

We observed VOC plumes using the FLIR camera from the weighted manway on top of Centrate Oil Tank T-0-007.

AOC 21 – VOC emissions from Pop-up Vent leaks on NET Diversion and Equalization tanks

We observed VOC plumes using the FLIR camera from pop-up vents on the floating roofs of the NET BWON diversion and equalization tanks, T-301 and T-302. The facility found that the pop-up vent seals were compromised.

AOC 22 – Lack of documented communication between Pemex and Shell

All of the RCAs for Monitors #22 and #23 since Shell's divestiture point to offsite contributions from Shell. Although Pemex staff told us of verbal communications to Shell regarding high concentrations at the monitors on Shell's property (mostly #22 and #23), there was a lack of documentation regarding these communications. We recommend documenting the communications, and closer coordination with Shell regarding high benzene concentrations at fenceline.

AOC 23 – Pemex not getting data directly Aecom eGCs

The eGC real-time benzene data being collected from March to May 2024 was not immediately accessible by Pemex environmental staff and instead was received two weeks after collection. This delay reduces the utility of having these real-time monitors onsite. We recommend for future eGC deployments setting up direct access to the benzene data and making use of the eGC alerts for high concentrations.

AOC 24 – Pemex needs more tools for RCA investigations

We noted that Pemex's continued exceedance of the benzene fenceline action level may be partially attributed to a lack of field equipment for detecting benzene sources. We recommend Pemex acquire more equipment, including benzene continuous portable or stationary gas chromatographs and handheld PIDs with benzene-specific sorbent tubes, to help identify and control benzene emissions.

AOC 25 – Clean Harbors sludge removal operation may be subject to BWON requirements

The Clean Harbors sludge removal operation receives wastewater and solids that comes from the NET DNF tanks, which are part of the wastewater stream and therefore after the point of generation for the waste. Additionally, the wastewater and solids are stored in the diversion tank prior to entering the Clean Harbors operation. Since the diversion tank alternates with the equalization tank (T-301 or T-302) which is part of the BWON stream and is not cleaned when it alternates, the stream contacts benzene

containing material. Therefore, the Clean Harbors sludge removal operation may be subject to BWON requirements, including LDAR, control, and reporting requirements.

AOC 26 – Frequent breakthrough through MH-4 Carbon Beds

The carbon beds controlling VOC emissions from MH-4, as required by the consent decree with EPA, have gone from having breakthrough once every 8 to 10 months to having breakthrough weekly. DPR staff said this drastic increase in breakthrough frequency is due to alkylate leaking into the wastewater; an issue they were working to address. The frequent breakthrough of the carbon beds, which was still occurring at the time of the inspection, has caused significant VOC emissions.

Section IV – FOLLOW UP

No additional information was received by EPA after exiting the Facility on April 19, 2024

Section V – LIST OF APPENDICES

Appendix 1 – Photo Log – 41 photos taken 4/16/2024 – 4/18/2024

Appendix 2 – Video Log – 15 FLIR videos taken 4/16/2024 – 4/18/2024

Appendix 3 – Opening and closing conference sign-in sheets

Appendix 4 – NET Wastewater Process Flow Diagram

Appendix 5 – EPA pre-inspection document request 4/10/24

Appendix 6 – Pemex-Shell Divestiture map

Appendix 7 – ERG eGC report and summa cannister results

Appendix 1

CAA Inspection Report

Photo Log – Pemex Deer Park Refinery

4/16/24 – 4/19/24



Photo 002: NET Aeration Basin and “Pour” Inlet, North Section
4/16/2024 09:57 P4160002.jpg



Photo 003: NET Aeration Basin, North and South "Pour" Inlets
4/16/2024 09:58 P4160003.jpg



04/16/2024 11:20

Photo 004: EPA-1A Location - 4/16/2024 10:20 P4160004.jpg



Photo 005: EPA 1A Location - 4/16/2024 10:20 P4160005.jpg



Photo 006: EPA-2A Location - 4/16/2024 10:25 P4160006.jpg



Photo 007: EPA-2A Location - 4/16/2024 10:25 P4160007.jpg



Photo 008: MH-4 Carbon Beds - 4/17/2024 09:27 P4170008.jpg



Photo 009: MH-4 Carbon Beds - 4/17/2024 09:29 P4170009.jpg



Photo 010: Equalization Tank T-302 Pop-up vent - 4/17/2024 09:46 P4170010.jpg



Photo 011: Diversion Tank T-301 Pop-up vent - 4/17/2024 09:56 P4170011



Photo 012: EPA-1B Location - 4/17/2024 10:08 P4170012.jpg



Photo 013: EPA-1B Location - 4/17/2024 10:09 P4170013.jpg



Photo 014: Clean Harbors sludge removal centrifuge
4/17/2024 10:19 P4170014.jpg



Photo 015: Clean Harbors sludge removal centrifuge
4/17/2024 10:26 P4170015.jpg



Photo 016: Clean Harbors sludge removal centrifuge
4/17/2024 10:27 P4170016.jpg



Photo 017: Clean Harbors sludge holding tanks
4/17/2024 10:29 P4170017.jpg



Photo 018: EPA 2B Location - 4/17/2024 11:36 P4170018.jpg



Photo 019: EPA 2B Location - 4/17/2024 11:36 P4170019



Photo 020: EPA 2B Location - 4/17/2024 11:36 P4170020.jpg



Photo 021: Clean Harbors centrifuge, cannister #SAT003 collection
4/17/2024 11:54 P4170021.jpg



04/18/2024 09:35

Photo 022: CPI #2 Vacuum Breaker - 4/18/2024 P4180022.jpg



Photo 023: CPI#2 nitrogen blanket pressure gauge
4/18/2024 09:37 P4180023.jpg



04/18/2024 09:42

Photo 024: CPI #2 PVRV tag - 4/18/2024 09:42 P4180024.jpg



Photo 025: CPI #2 PVRV LDAR tag - 4/18/2024 09:42 P4180025.jpg



Photo 026: CPI #1 nitrogen blanket pressure gauge - 4/18/2024 09:49 P4180026.jpg



Photo 027: CPI #1 nitrogen blanket pressure gauge - 04/18/2024 09:49 P4180027.jpg



Photo 033: Centrate oil tank T-0-007 nameplate - 4/18/2024 09:58 FLIR0033.jpg



Photo 036: IGF #2 water seal drain - 4/18/2024 10:09 FLIR0036.jpg



Photo 041: IGF #1 agitator RM-9031 - IGF 4/18/2024 11:25 FLIR0041



Photo 042: IGF #1 agitator RM-9031 - 4/18/2024 11:25 FLIR0042.jpg



Photo 043: IGF #2 flange leak; 4/18/2024 11:27 FLIR0043.jpg



Photo 044: IGF #2 - 4/18/2024 11:28 FLIR0044.jpg



Photo 045: IGF #1 - 4/18/2024 11:28 FLIR0045.jpg



Photo 046: IGF #1 water seal drain - 4/18/2024 11:31 FLIR0046.jpg



Photo 050: DNF TN-80010 float scraper RSP-9103 - 4/18/2024 12:03 FLIR0050.jpg



Photo 051: DNF TN-80010 float scraper RSP-9102 - 4/18/2024 12:03 FLIR0051.jpg



Photo 053: DNF TN-80010 flange - 4/18/2024 12:11 FLIR0053.jpg



Photo 054: DNF TN-80010 flange - 4/18/2024 12:11 FLIR0054.jpg



Photo 055: DNF TN-80010 nameplate - 4/18/2024 12:11 FLIR0055.jpg



Photo 056: Aecom eGC near tank G-313 - 4/18/2024 14:09 FLIR0056.jpg



Photo 057: Aecom eGC near Shelter 5 - 4/18/2024 14:29 FLIR0057.jpg

Appendix 2

Video Log



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Video Log

Location: Pemex – Deer Park Refinery		
City: Deer Park	Harris County	State: Texas



File Name: FLIR0026.mp4
Date taken: 04/17/2024
Time taken: 10:22
Videographer: Nicholas Bobbs
Description: OGI video of VOC emissions from outlet of MH-4 carbon beds.



File Name: FLIR0027.mp4
Date taken: 04/17/2024
Time taken: 10:42
Videographer: Nicholas Bobbs
Description: OGI video of VOC emissions from tank T-302 pop-up vent.



File Name: FLIR0028.mp4
Date taken: 04/17/2024
Time taken: 10:56
Videographer: Nicholas Bobbs
Description: OGI video of VOC emissions from tank T-301 pop-up vent.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Appendix 2

Video Log

Location: Pemex – Deer Park Refinery		
City: Deer Park	Harris County	State: Texas



File Name: FLIR0029.mp4
 Date taken: 04/17/2024
 Time taken: 11:27
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from wastewater sludge removal centrifuge.



File Name: FLIR0030.mp4
 Date taken: 04/17/2024
 Time taken: 12:48
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from wastewater sludge removal fixed roof tanks.



File Name: FLIR0031.mp4
 Date taken: 04/18/2024
 Time taken: 10:32
 Videographer: Nicholas Bobbs
 Description: OGI video of CPI #2 vacuum breaker.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Video Log

Location: Pemex – Deer Park Refinery		
City: Deer Park	Harris County	State: Texas



File Name: FLIR0032.mp4
 Date taken: 04/18/2024
 Time taken: 10:56
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from centrate oil tank T-0-007.



File Name: FLIR0034.mp4
 Date taken: 04/18/2024
 Time taken: 11:02
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from centrate oil tank T-0-007.



File Name: FLIR0035.mp4
 Date taken: 04/18/2024
 Time taken: 11:08
 Videographer: Nicholas Bobbs
 Description: Digital video of IGF #2 water seal drain.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Video Log

Location: Pemex – Deer Park Refinery		
City: Deer Park	Harris County	State: Texas



File Name: FLIR0038.mp4
 Date taken: 04/18/2024
 Time taken: 11:14
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from IGF #2 flange.



File Name: FLIR0039.mp4
 Date taken: 04/18/2024
 Time taken: 11:18
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from IGF #1 agitator RM-9031.



File Name: FLIR0040.mp4
 Date taken: 04/18/2024
 Time taken: 11:22
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from IGF #1 pressure relief valve.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Video Log

Location: Pemex – Deer Park Refinery		
City: Deer Park	Harris County	State: Texas



File Name: FLIR0048.mp4
 Date taken: 04/18/2024
 Time taken: 11:51
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from tank X-330.



File Name: FLIR0049.mp4
 Date taken: 04/18/2024
 Time taken: 12:03
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from DNF TN-80010 float scrapers.



File Name: FLIR0052.mp4
 Date taken: 04/18/2024
 Time taken: 12:04
 Videographer: Nicholas Bobbs
 Description: OGI video of VOC emissions from DNF TN-80010 pressure relief valve.

Appendix 3

Opening and Closing Conference Sign-in Sheets

Opening/Pre-Inspection MeetingCommence opening/pre-inspection meeting.....Time: 0830

Name	Title	Representing	Telephone No.
JAMES M. CARLISLE	FOGATIVE COORDINATOR	PEMEX	713-246-4536
DERRICK STANLEY	ASSURANCE SUP.	PEMEX	713-246-6525
Sophia Ong	Physical Scientist	EPA	214-665-2778
Dan Roper	Inspector	ERG R- EPA	
Nicolas Stuebker	Inspector	EPA RG	972 955 7734
Nicholas Bobbs	Inspector	EPA HQ	202 564 0726
Elizabeth Hubbard	contractor	ERG	
Mike Miller	Tech Spec	TCEQ	512 239 0516
Sydney Knoll	Inspector	EPA RG	
Alexia Scott	contractor	ERG	
Bryan Moody	SAFETY & EMERGENCY RESPONSE SUPERVISOR	PEMEX	713.246.6510
Greg Marino	VP of HSE	Pemex	713 408 8282
Armando Villanueva	Production specialist of the NET	Pemex	

Conclude opening/pre-inspection meetingTime: 1000Initials / Date: NS / 4/16/24

Exit interview / Out-briefing MeetingCommenced meeting..... Time: 1408

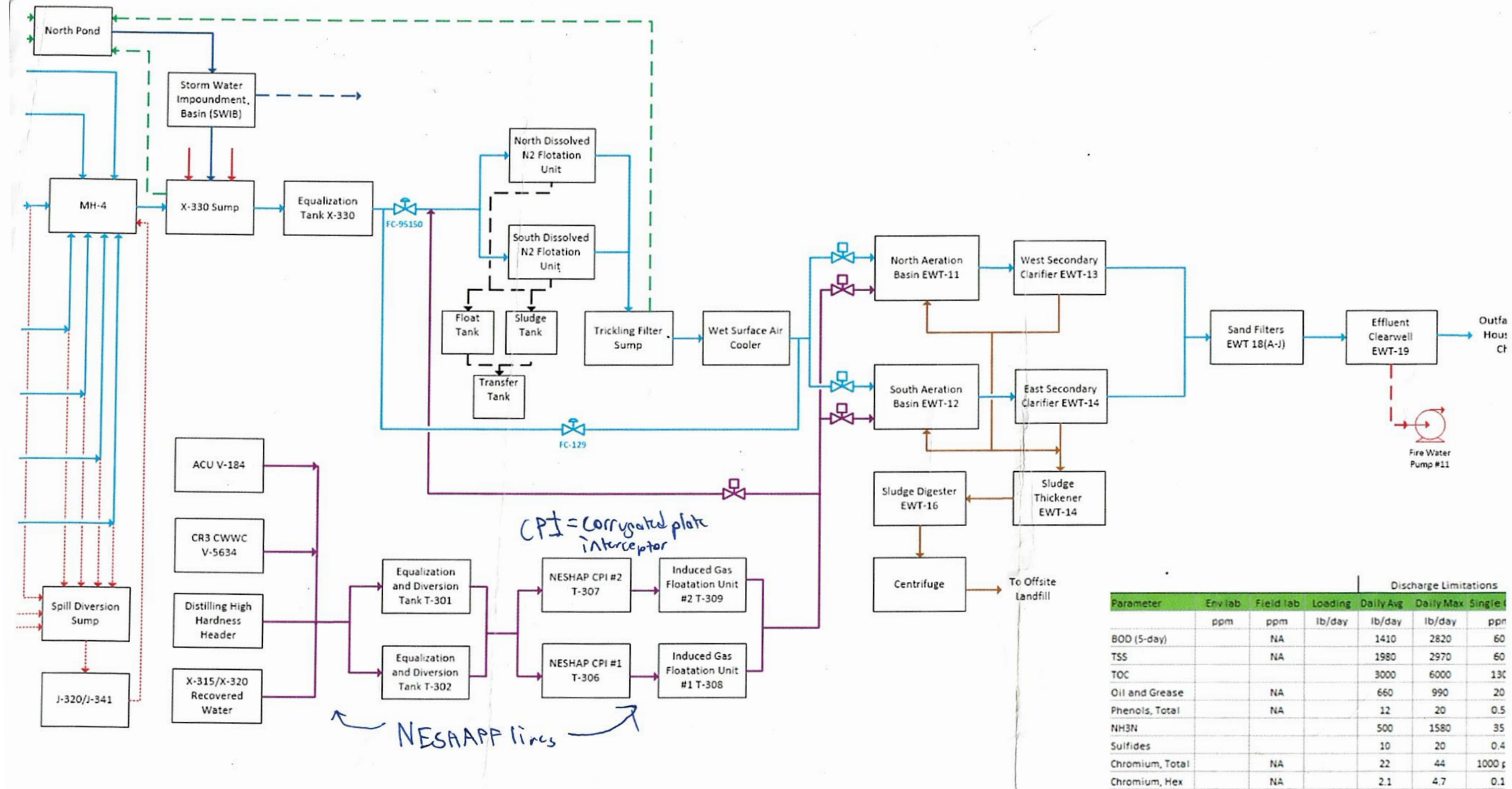
Name	Title	Representing	Telephone No.
Sydney Knott	Inspector	RL EPA	
Sophia Ong	Physical Scientist	EPA RL	214.665.2778
Nicolas Studebaker	Inspector	EPA RL	
Max B. Serrano	Waste Coordinator	PEMEX	
Phyllis Rodriguez	Env. Engr	PEMEX	
JAMES CARLISLE	FUGITIVE COORDINATOR	PEMEX	
CALVIN GREENE	ENV. MANAGER	PEMEX	
Derrick Stanley	Env Super	PEMEX	713.246.6525
Tim Boale	VP Production	PEMEX	713-762-8006
Nicholas Bobbs	EPA Inspector	EPA HQ	
Mike Miller	TCEQ Tech Spec	TCEQ	ERG
Alexia Scott	Contractor	ERG	
Elizabeth Hubbard	Contractor	ERG	
Dan Roper	Contractor	ERG	

Conclude meeting..... Time: 14135Initials / Date: NB / 4/19/2024

Appendix 4

NET Wastewater Process Flow Diagram

NET PROCESS FLOW DIAGRAM



Parameter	Discharge Limitations					
	Env lab	Field lab	Loading	Daily Avg	Daily Max	Single
BOD (5-day)	ppm	ppm	lb/day	lb/day	lb/day	ppm
TSS		NA		1410	2820	60
TOC		NA		1980	2970	60
Oil and Grease		NA		3000	6000	130
Phenols, Total		NA		660	990	20
NH3N		NA		12	20	0.5
Sulfides				500	1580	35
Chromium, Total		NA		10	20	0.4
Chromium, Hex		NA		22	44	1000
				2.1	4.7	0.1

Appendix 5

EPA pre-inspection document request 4/10/24

**Pemex Deer Park Refinery
DEER PARK, TEXAS
EPA RECORDS/DOCUMENTS REQUEST**

GENERAL PROCEDURE

During the Clean Air Act (CAA) compliance investigation at Pemex Deer Park Refinery ("Refinery") inspectors will be reviewing records kept for your facility. To expedite this portion of the investigation, EPA is providing you advanced notification of the records that will likely be reviewed on-site. For most documents, EPA will review the records on-site and request copies, as needed. In certain cases, document copies, either electronic or paper, will be requested for later review by EPA.

In preparation for this compliance investigation, EPA has divided this record and document request into two sections. The first section consists of documents that EPA would like available ((through a shared OneDrive Folder), and copies prepared (as noted) on April 16, 2024. The second section consists of documents that EPA would like available electronically (through a shared OneDrive Folder) no later than April 18, 2024. Additional documents may also be requested that are not listed below. During the investigation, EPA will work with the Refinery to develop a schedule to review these documents.

PART 1 - Please have these documents available on April 16, 2024

1. Provide all benzene air monitoring data in an electronic searchable and editable spreadsheet, for samples taken within and outside the Refinery between the start of monitoring and receipt of this Request. This includes both passive and real-time air monitoring locations.
2. Provide all Corrective Action Plans ("CAP") and Root Cause Analyses ("RCA") related to the benzene fence line monitoring at the Refinery since the start of monitoring.
3. Provide electronic copies of the current Title V and NSR air permits covering the Refinery.
4. Provide barge loading and unloading schedule for week of April 15, 2024 including
 - a. Type of product being loaded or unloaded
 - b. The dock location of the barge loading/unloading, if known
 - c. The tanks being filled/drawn from
 - d. Benzene concentration of product
5. Provide an inventory of all tanks located at the Refinery. Include tank contents, benzene concentration of tank contents, roof type, and whether the tanks are controlled or atmospheric.
6. Provide 6 printed copies of a detailed map of the facility layout which includes tank/unit numbers and FLM locations. This map will be used by the inspectors while inside the plant.

PART 2 - Please have these documents available by April 18, 2024

1. Provide the SOP for vacuum truck operations, relating the prevention of benzene from being released to the atmosphere.

2. Provide the SOP, or written procedures, for the degassing and cleaning of tanks, especially those related to the prevention of air pollutant emissions from being released to the atmosphere.
3. Identify all pressure relief valves subject to MACT CC that are or may be in contact with streams containing 50 wt% or more in benzene. Describe how the valves are monitored and where the benzene is released to (e.g. atmosphere or to closed vent system).

Appendix 6

Pemex-Shell Deer Park Refinery Divestment Map

Land/Process Equipment Ownership – Post Deal



LEGEND

Deer Park Land/Process Equipment Ownership – Post Deal

RED = Tracts to be owned by Shell Chemical LP

GREEN = Tracts to be owned by Deer Park Refinery LP

Hexion, Calpine, and Oxy facilities will all be located on land owned by SCLP at closing

Appendix 7

ERG eGC report and summa cannister results

eGC Air Monitoring TARGETING/INSPECTION REPORT

Inspection Date(s):	April 16, 2024 – April 19, 2024	Inspection Announced: {Yes}
Name	Email	
ERG Staff		
Alexia Scott	Alexia.Scott@erg.com	
Elizabeth Hubbard	Elizabeth.Hubbard@erg.com	
Dan Roper	Dan.Roper@erg.com	
EPA Staff		
Nick Bobbs	Bobbs.Nicholas@epa.gov	

Facilities Inspected:

Name	Address	On Site?	eGC Target Compound	eGC No.	Canister Sample Collected
Pemex Deer Park Refinery	5900 Hwy 225, Deer Park, TX 77536	Yes	Benzene	EPA 1, EPA 2	Yes

SECTION I – INTRODUCTION

Background Information

From April 16, 2024 through April 19, 2024, Alexia Scott, Elizabeth Hubbard and Dan Roper of ERG performed mobile air monitoring using the ENMET environmental Gas Chromatograph (eGC) at Pemex Deer Park Refinery in Deer Park, Texas. ERG was joined by several staff from the EPA and TCEQ who provided direction on eGC placement. The purpose of the inspection was to investigate high levels of fence-line benzene and identify possible sources. The eGCs were deployed to aid in source detection.

ERG deployed both eGCs, EPA 1 and EPA 2, in the facility on April 16th. Both eGCs were left in the facility overnight and then moved to several different locations within the facility during the inspection.

SECTION II – OBSERVATIONS

Quality Assurance

The eGCs are capable of detecting benzene through a semi-continuous 10-minute sample cycle. Enmet advertises the analysis range of the eGCs to be between 0.3 – 200 ppb. A pre-deployment calibration curve was independently generated by ERG to verify the eGCs performance. Both eGCs were independently tested and verified at a range of 0.5 – 50 ppb. The results of this pre-deployment testing are available as Attachment 2.

The eGCs are also equipped with a one-point auto calibration feature, which produces a calibration factor (CalFactor). The eGCs were calibrated with this feature upon initial set up at the site and when they were moved from site to site. All calibrations performed during the inspection are collated in the “Calibration” tab in the data sheet which is available as Attachment 1. The calibrations were also judged for quality based on the QAPP criteria. The QAPP criteria for calibrations stated that calibrations must have a relative percent difference (RPD) of within 15% when compared to the calibration cylinder concentration. Calibration quality fell into three categories:

- Good - Good calibrations satisfied the QAPP criteria, and the subsequent data was not flagged;
- Tentative - tentative calibrations did not satisfy the QAPP criteria but the CalFactors produced were reasonable therefore data was flagged but not corrected. Data flagged after a tentative calibration have their corresponding CalFactors flagged with a yellow highlight.
- Bad - bad calibrations did not satisfy the QAPP criteria and the CalFactor produced was unreasonable therefore data was flagged and post-corrected. Data flagged from a bad calibration was corrected using the nearest reasonable CalFactor. The corrected data's CalFactors have been flagged in the dataset with an orange highlight. The data was corrected using a Concentration Calculator provided by Enmet which is Attachment 3.

The eGCs are also equipped with wind sensors, and these sensors must be directionally oriented to provide accurate data. The wind sensors were appropriately oriented at the initial eGC sites and reoriented whenever the eGCs were moved.

eGC Site Observations



Figure 1. Pemex Deer Park Refinery eGC Sites

EPA 1 Sites– Loading Docks and Fenceline

Table 1. Summary of EPA 1 Sites

Site Code	GPS Location	Start Date/Time	End Date/Time	Highest Reading
EPA 1A	29.7303, -95.1256	4/16/2024 12:16:00 PM	4/17/2024 10:06:00 AM	1.74 ppb
EPA 1B	29.7318, -95.1273	4/17/2024 10:16:00 AM	4/18/2024 10:46:00 AM	6.2 ppb
EPA 1C	29.7328, -95.1344	4/18/2024 11:46:00 AM	4/19/2024 9:16:00 AM	4.43 ppb

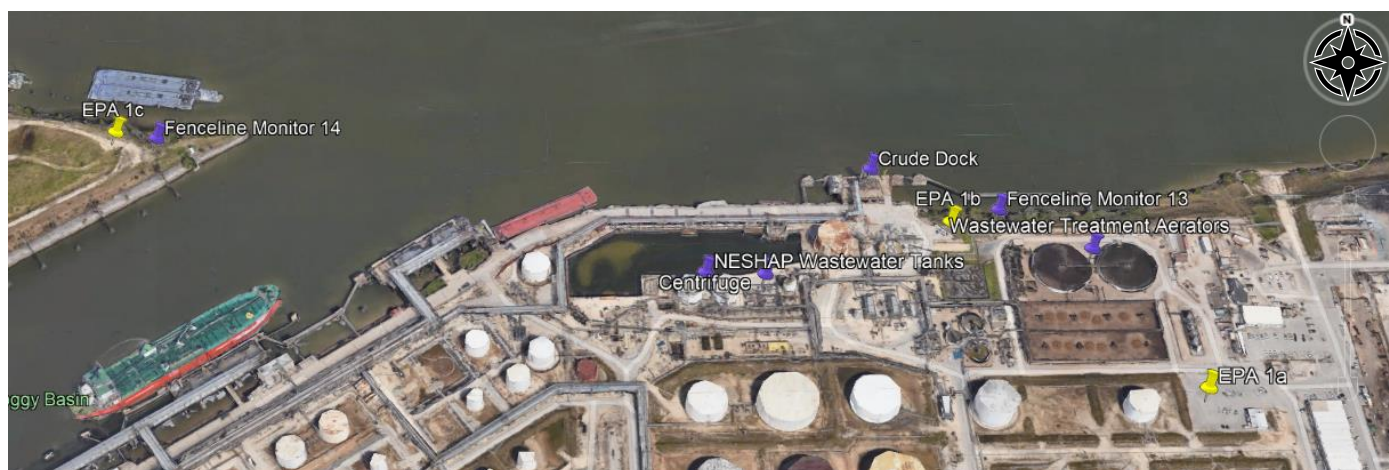


Figure 2. EPA 1 eGC Site Overview

EPA 1A



Figure 3. Site of EPA 1A

Site EPA 1A was the first site that EPA 1 was positioned at; the site is located upwind of the wastewater aerators. EPA 1 was set up at approximately 12:20 PM on April 16, 2024, and ran at site EPA 1A until 10:06 AM on April 17, 2024. The wind during this time frame came predominantly from the southeast and south southeast and varied from 1 mph to 3 mph.

Notable eGC Activity

- There were no eGC readings over 5.0 ppb.

EPA 1B



Figure 4. Site of EPA 1B

Site EPA 1B was the second site of EPA 1, this site was northwest of EPA 1A and immediately west of fenceline monitor 13 and northwest of the wastewater treatment process area. EPA 1 was set up at this site at approximately 10:15 AM on April 17, 2024 and stayed there until 10:46 AM on April 18th, 2024. The wind during this time was predominantly from the east and south, the wind speed was between 2 mph and 3 mph.

Notable eGC Activity

- A significant benzene reading of 5.85 ppb occurred at 6:06 AM on April 18, 2024, at that time wind was from the southeast.
- A significant benzene reading of 6.2 ppb occurred at 8:16 AM on April 18, 2024, at that time wind was from the south southeast.

EPA 1C

Site EPA 1C was the third site of EPA 1, this site was west of EPA 1A and EPA 1B and was immediately adjacent to fenceline monitor 14. EPA 1 was set up at this site at approximately 11:35 AM on April 18th, 2024. It stayed at this location until 9:16 AM on April 19th, 2024. Winds during this time came from the south southeast and changed to southwest, speeds ranged from 1 to 5 mph.

Notable eGC Activity

- There were no eGC readings over 5.0 ppb.

EPA 2 – Loading Dock

Table 2. Summary of EPA 2 Sites

Site Code	GPS Location	Start Date/Time	End Date/Time	Highest Reading
EPA 2A	29.7318, -95.1269	4/16/2024 11:46 AM	4/17/2024 11:46 AM	25.47 ppb
EPA 2B	29.7319, -95.1277	4/17/2024 11:56 AM	4/19/2024 9:56 AM	35.32 ppb

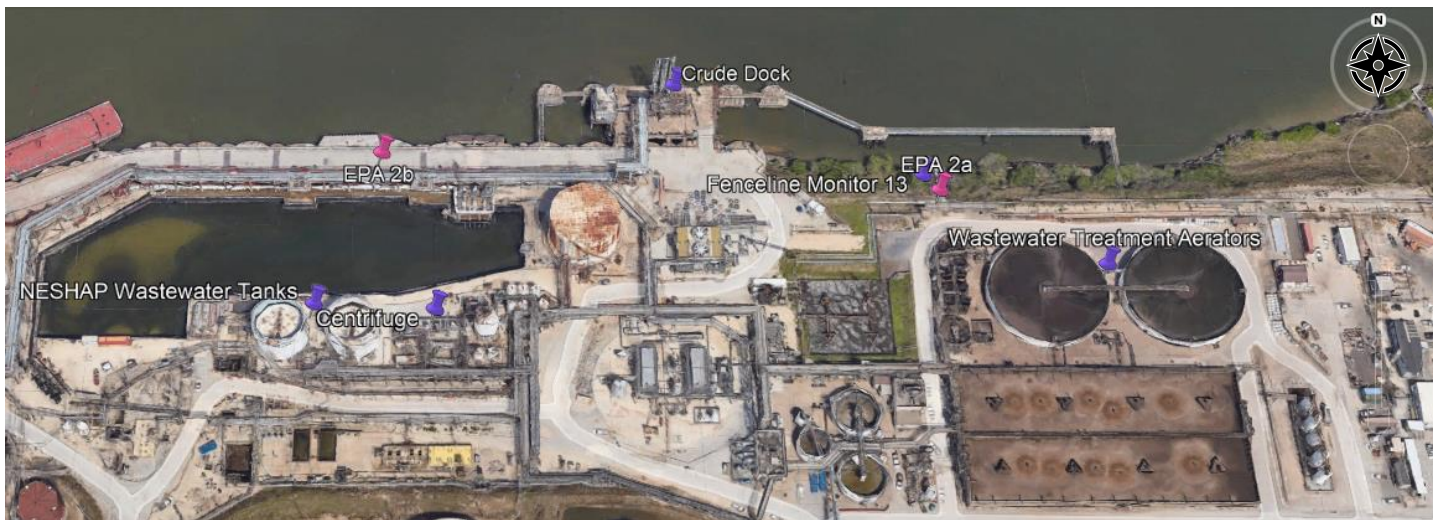


Figure 5. EPA 2 eGC Site Overview

EPA 2A

Figure 6. Site of EPA 2A

Site EPA 2A is the first location EPA 2 was deployed at during the inspection. The site was located north of the wastewater basin and directly next to fenceline monitor 13. EPA 2 was set up at approximately 11:45 AM on April 16, 2024 and stayed at this site until approximately 11:46 AM on April 17, 2024. The wind was coming from the east, southeast at a speed of approximately 1.0 – 3.0 mph on April 16th and then changed to the south at a speed of approximately 1.0 – 3.0 mph on April 17th.

Notable eGC Activity

- Significant benzene readings were reported from EPA 2 between 10:26 PM – 10:16 AM from April 16th to April 17th, 2024. The highest reading during this window was 25.47 ppb at 11:06 PM. Wind during this period was predominantly coming from the south with wind speed at approximately 1.5 – 2.0 mph.

EPA 2B

Figure 7. Site of EPA 2B

Site EPA 2B is the second location EPA 2 was deployed at during the inspection. The site was located north of the wastewater centrifuge and NESHAP wastewater tanks. EPA 2 was set up at approximately 11:56 AM on April 17th, 2024 and remained there until approximately 9:56 AM on April 19th, 2024. The wind during this period was coming from the east and south southeast at a speed of 0.5 – 2.5 mph.

Notable eGC Activity

eGC	Timeframe	Highest reading	Time	Wind Direction	Wind Speed
EPA 2	3:06 AM – 7:16 AM on April 18 th , 2024	15.93 ppb	4:46 AM	South southeast	approximately 1.5 – 3.0 mph
EPA 2	8:46 AM – 10:46 AM on April 18 th , 2024	28.68 ppb	10:06 AM	South southeast	approximately 1.5 – 3.0 mph
EPA 2	5:46 PM – 9:26 PM on April 18 th , 2024	30.96 ppb	8:06 PM	South southeast	Approximately 1.5 – 2.0 mph

EPA 2	5:16 AM – 7:46 AM on April 19 th , 2024	35.32 ppb	6:06 AM	South	approximately 0.0 – 1.0 mph
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Calibration Discussion

By default, the eGCs calibrate every 6 hours and the 15% RDP QA requirement was designed for that calibration schedule. The eGCs were calibrated initially upon setup, followed by their scheduled 6 hours calibration routine. Tentative calibrations followed bad calibrations because eGCs can take several calibrations before they produce “good” calibrations after a bad calibration is performed. Calibration runs display the concentration based off the last previous CalFactor but display the newly generated CalFactor, this means tentative calibrations can look erroneous because of a previously bad calibration even if that tentative calibration generates a good CalFactor. The generated CalFactor is what the subsequent data will be calculated with; therefore, if the CalFactor is reasonable then the subsequent data is also reasonable.

Canister Samples

Two summa canister grab samples were collected during this inspection. Samples were brought back to ERG’s lab and analyzed using Method TO-15.

- Sample 4043049-01

This sample was taken on April 19, 2024 at 11:03 AM on the top of the west Dissolved Nitrogen Flotation unit (DNF).

- Sample 4043049-02

This sample was taken on April 17, 2024 at 12:54 PM at the T-301 divergent tank slug centrifuge.

SECTION III – Results

The data collected by EPA 1 and EPA 2 are included as Attachment 1. The data was downloaded from the Enmet eGC webserver and has been divided into tabs based on site. There are also tabs for the collated calibrations and for the raw corrected data. Table 3 provides a description of each column of the data.

Table 3. Summary of Data Column Labels

Column	Description
DATESTAMP	Universal Time Zone Date and Time
TIMESTAMP	Central Time Zone Date and Time – This time marks the end of the analytical cycle of the device. The sample time starts at the top of every 10-minute mark. Ex: TIMESTAMP 05:26:16 am means a sample was collected starting at 05:20:00 am and the analytical period ended at 05:26:16 am.
RECORD	Number label assigned to that specific data point
RunType	“MEAS” – data point represents a measurement made by the eGC. “CAL” – data point represents a calibration made by the eGC
Vapor	Describes the target compound of that eGC
Concentration	This is the calculated concentration produced from the eGC integration results. This value is based off peak height, the pre-programed linearization coefficients and the r-factor. Reports in part-per-billion, ppb. Orange cells signify corrected data. Yellow cells signify data which follows a Tentative calibration run.
PeakHeight	Reports the height of the target peak for that run
PeakLocation	Reports retention time of the target peak for that run
CalFactor	For MEAS runs, reports the calibration factor used when calculating the concentration for that run, For CAL, reports the new calibration factor generated from the calibration run.
ColTemp	Report the column temperature at the time of reporting
Baseline	Reports the baseline for that run
Ver	Reports the eGC software version
RunCount	Reports the number label of that run
Status	Reports the status of the run, if OK the run was acceptable.
Latitude	Reports the latitude of the eGC at the time of reporting
Longitude	Reports the longitude of the eGC at the time of reporting

WS_ms	WS_ms is a snapshot of the wind speed m/sec when the analysis is complete and is sent to the data logger. The end of the analysis run may vary depending on the application.
WS_avg	WS_avg is the average wind speed during the “sampling” time of the GC. It is during the first two minutes of the cycle.
WindDir	WindDir is in degrees, data is collected every one second for 120 seconds, and the average is displayed example (ENE 76°)
WindDir_Corrected	If the wind sensor was not set up correctly, this column is used to correct wind data. Data from WindDir column is inputted into a formula ($=IF(U2>180,U2-180,U2+180)$) to correct for the sensor base being flipped 180 degrees.
WS10avg	WS10avg is the average wind speed during 5 to 15 minutes of the analysis cycle. Units are m/sec
WD10avg	WD10avg is the average wind direction during 5 to 15 minutes of the analysis cycle. Units are Degrees
WD10avg_Corrected	If the wind sensor was not set up correctly, this column is used to correct wind data. Data from WD10avg column is inputted into a formula ($=IF(U2>180,U2-180,U2+180)$) to correct for the sensor base being flipped 180 degrees.
WD10sd	WD10sd is the deviation during the 10 minutes average of both the Wind Speed and Wind Direction during the measured 10-minute period.
Battery_Voltage	Reports battery voltage at the time of reporting
EnclosureTemp	Reports enclosure temperature in Celsius at the time of reporting
EngineTemp	Reports engine temperature in Celsius at the time of reporting
AlarmLevel	Reports the alarm level based on the reported concentration.

Canister sample results are provided in Attachment 4.

SECTION IV – Conclusions

As of the completion of this report, ERG was not aware of any follow-up activities from the EPA pertaining to any of these facilities. All conclusions and decisions to follow-up on the findings presented here will be solely at the determination of the U.S. EPA.

SECTION V – Appendix

Attachment 1 – Pemex eGC Data (.xlsx file)

Attachment 2 – Pre-deployment eGC Benzene Curves (.xlsx file)

Attachment 3 – eGC Benzene Concentration Calculator (.xlsx file)

Attachment 4 – 3050923_01 Pemex eGC canister data (.xlsx file)



Eastern Research Group
601 Keystone Park Drive
Suite 700
Morrisville, NC 27560

June 14, 2024

Nick Bobbs
Team Leader
2890 Woodbridge Avenue
Edison, NJ 08837
Project Name: EGC

Dear Nick Bobbs,

This report contains the analytical results for the sample(s) received under chain(s) of custody by Eastern Research Group on 04/30/24 14:17.

Values below the MDL for QC results in this report are recorded as ND, however the actual values are reported in the accompanying Excel report with a "U" flag (Under the detection limit). The actual values are reported in AQS.

This test is accredited under the 2016 TNI Standard for Environmental Laboratories (FL DOH Certification # E87673). All analyses were performed as described in the US EPA-approved QAPP, under the contract for National Hazardous Air Pollutant Support (US EPA Contract No. 68HERH22D0002). This cover page is an integral part of this report, and any exceptions or comments are noted on the last page.

Release of the data contained in this data package and in the data submitted in the electronic data deliverable, has been authorized by the Program Manager, or the Program Manager's designee as verified by the following signature.

The issuance of the final Certificate of Analysis takes precedence over any previous Report. If you have any questions, please contact me at 919-468-7924.

Sincerely,

Julie Swift
Program Manager
julie.swift@erg.com

The information contained in this report and its attachment(s) are intended only for the use of the individual to whom it is addressed and may contain information that is privileged, confidential, or exempt from disclosure. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this report is strictly prohibited. If you have received this report in error, please notify julie.swift@erg.com and delete the report without retaining any copies.



CERTIFICATE OF ANALYSIS

OECA

2890 Woodbridge Avenue

Edison, NJ 08837

ATTN: Nick Bobbs

PHONE: (732) 321-6760 FAX: (732) 321-6616

FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

ANALYTICAL REPORT FOR SAMPLES

<u>SampleName</u>	<u>LabNumber</u>	<u>Matrix</u>	<u>Sampled</u>	<u>Received</u>
PEMEX West DNF	4043049-01	Air	04/19/24 11:05	04/30/24 14:17
PEMEX Centrifuge	4043049-02	Air	04/19/24 12:58	04/30/24 14:17



CERTIFICATE OF ANALYSIS

OECA

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Edison, NJ 08837

ATTN: Nick Bobbs

PHONE: (732) 321-6760 FAX: (732) 321-6616

FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Description: PEMEX West DNF

Lab ID: 4043049-01

Sampled: 04/19/24 11:05

Pressure @ Receipt: 10.0

Canister #: SAT140

Received: 04/30/24 14:17

Comments: PID 100ppm

Analyzed: 05/16/24 12:17

Air Toxics by EPA Compendium Method TO-15

Analyte	Results		Flag	MDL
	ppbv	ug/m ³		ppbv
Dichlorodifluoromethane	ND	ND	U	0.0478
Chloromethane	ND	ND	U	0.0767
Dichlorotetrafluoroethane	ND	ND	U	0.0416
Vinyl chloride	ND	ND	U	0.0406
1,3-Butadiene	ND	ND	U	0.174
Ethylene oxide	ND	ND	U	0.202
Bromomethane	ND	ND	U	0.0822
Chloroethane	ND	ND	U	0.108
Acetonitrile	ND	ND	U	0.261
Acrolein	ND	ND	U	0.653
Trichlorofluoromethane	ND	ND	U	0.0751
Acrylonitrile	ND	ND	U	0.0917
1,1-Dichloroethene	ND	ND	U	0.125
Dichloromethane	ND	ND	U	0.185
Carbon Disulfide	ND	ND	U	0.310
Trichlorotrifluoroethane	ND	ND	U	0.166
trans-1,2-Dichloroethylene	ND	ND	U	0.0769
1,1-Dichloroethane	ND	ND	U	0.112
Methyl tert-Butyl Ether	ND	ND	U	0.0799
Chloroprene	ND	ND	U	0.0973
cis-1,2-Dichloroethylene	ND	ND	U	0.104
Bromochloromethane	ND	ND	U	0.0716
Chloroform	ND	ND	U	0.106
Ethyl tert-Butyl Ether	ND	ND	U	0.0706
1,2-Dichloroethane	ND	ND	U	0.0917
1,1,1-Trichloroethane	ND	ND	U	0.0753
Benzene	436	1,400.00	D	0.513
Carbon Tetrachloride	ND	ND	U	0.0593
tert-Amyl Methyl Ether	ND	ND	U	0.0996
1,2-Dichloropropane	ND	ND	U	0.170
Ethyl Acrylate	ND	ND	U	0.0617
Bromodichloromethane	ND	ND	U	0.0703
Trichloroethylene	ND	ND	U	0.0538
Methyl Methacrylate	ND	ND	U	0.261
cis-1,3-Dichloropropene	ND	ND	U	0.0595
Methyl Isobutyl Ketone	ND	ND	U	0.457
trans-1,3-Dichloropropene	ND	ND	U	0.0650
1,1,2-Trichloroethane	ND	ND	U	0.0316
Toluene	305	1,150.00	D	1.93
Dibromochloromethane	ND	ND	U	0.0699
1,2-Dibromoethane	ND	ND	U	0.0522

Eastern Research Group

The results in this report apply only to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



CERTIFICATE OF ANALYSIS

OECA

2890 Woodbridge Avenue

Edison, NJ 08837

ATTN: Nick Bobbs

PHONE: (732) 321-6760 FAX: (732) 321-6616

FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Description: PEMEX West DNF

Lab ID: 4043049-01

Sampled: 04/19/24 11:05

Pressure @ Receipt: 10.0

Canister #: SAT140

Received: 04/30/24 14:17

Comments: PID 100ppm

Analyzed: 05/16/24 12:17

Air Toxics by EPA Compendium Method TO-15

<u>Analyte</u>	<u>Results</u>		<u>Flag</u>	<u>MDL</u>
	<u>ppbv</u>	<u>ug/m³</u>		<u>ppbv</u>
n-Octane	ND	ND	U	0.204
Tetrachloroethylene	ND	ND	U	0.0680
Chlorobenzene	ND	ND	U	0.0648
Ethylbenzene	26.1	114.00	D	0.103
m,p-Xylene	80.2	349.00	D	0.331
Bromoform	ND	ND	U	0.0854
Styrene	ND	ND	U	0.216
1,1,2,2-Tetrachloroethane	ND	ND	U	0.150
o-Xylene	28.7	125.00	D	0.186
1,3,5-Trimethylbenzene	ND	ND	U	0.250
1,2,4-Trimethylbenzene	ND	ND	U	0.253
m-Dichlorobenzene	ND	ND	U	0.137
p-Dichlorobenzene	ND	ND	U	0.289
o-Dichlorobenzene	ND	ND	U	0.288
1,2,4-Trichlorobenzene	ND	ND	U	0.626
Hexachloro-1,3-butadiene	ND	ND	U	0.287

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2890 Woodbridge Avenue

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ATTN: Nick Bobbs

PHONE: (732) 321-6760 FAX: (732) 321-6616

FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Description: PEMEX Centrifuge

Lab ID: 4043049-02

Sampled: 04/19/24 12:58

Pressure @ Receipt: 9.0

Canister #: SAT003

Received: 04/30/24 14:17

Comments: 1800 PPM VOC, 80 ppm Benzene

Analyzed: 05/10/24 20:42

Air Toxics by EPA Compendium Method TO-15

Analyte	Results		Flag	MDL
	ppbv	ug/m ³		ppbv
Dichlorodifluoromethane	2.81	13.90	D, XC, U	5.44
Chloromethane	8.15	16.90	D, XC, U	8.73
Dichlorotetrafluoroethane	ND	ND	D, XC, U	4.74
Vinyl chloride	ND	ND	D, XC, U	4.62
1,3-Butadiene	ND	ND	D, LK, XC, U	19.8
Ethylene oxide	ND	ND	D, LK, XC, U	23.0
Bromomethane	ND	ND	D, LK, XC, U	9.36
Chloroethane	ND	ND	D, LK, XC, U	12.2
Acetonitrile	ND	ND	D, QB-03, XC, U	29.7
Acrolein	57.5	132.00	D, QB-03, XC, U, E	74.4
Trichlorofluoromethane	ND	ND	D, XC, U	8.55
Acrylonitrile	ND	ND	D, XC, U	10.4
1,1-Dichloroethene	ND	ND	D, LK, XC, U	14.2
Dichloromethane	ND	ND	D, LK, QB-03, XC, U	21.1
Carbon Disulfide	39.8	124.00	D, LK, XC, E	35.3
Trichlorotrifluoroethane	ND	ND	D, LK, XC, U	18.9
trans-1,2-Dichloroethylene	ND	ND	D, XC, U	8.75
1,1-Dichloroethane	ND	ND	D, XC, U	12.8
Methyl tert-Butyl Ether	ND	ND	D, XC, U	9.09
Chloroprene	ND	ND	D, XC, U	11.1
cis-1,2-Dichloroethylene	ND	ND	D, XC, U	11.8
Bromochloromethane	ND	ND	D, XC, U	8.15
Chloroform	ND	ND	D, XC, U	12.1
Ethyl tert-Butyl Ether	ND	ND	D, XC, U	8.04
1,2-Dichloroethane	52.2	212.00	D, XC, E	10.4
1,1,1-Trichloroethane	ND	ND	D, XC, U	8.57
Benzene	8640	27,700.00	D, XC, E	9.09
Carbon Tetrachloride	ND	ND	D, XC, U	6.75
tert-Amyl Methyl Ether	ND	ND	D, XC, U	11.3
1,2-Dichloropropane	ND	ND	D, XC, U	19.4
Ethyl Acrylate	ND	ND	D, XC, U	7.02
Bromodichloromethane	ND	ND	D, XC, U	8.00
Trichloroethylene	ND	ND	D, XC, U	6.12
Methyl Methacrylate	ND	ND	D, XC, U	29.7
cis-1,3-Dichloropropene	ND	ND	D, XC, U	6.78
Methyl Isobutyl Ketone	ND	ND	D, XC, U	52.0
trans-1,3-Dichloropropene	ND	ND	D, XC, U	7.40
1,1,2-Trichloroethane	ND	ND	D, XC, U	3.60
Toluene	7290	27,500.00	D, XC, E	34.2
Dibromochloromethane	ND	ND	D, XC, U	7.96

Eastern Research Group

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CERTIFICATE OF ANALYSIS

OECA

2890 Woodbridge Avenue

Edison, NJ 08837

ATTN: Nick Bobbs

PHONE: (732) 321-6760 FAX: (732) 321-6616

FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Description: PEMEX Centrifuge

Lab ID: 4043049-02

Sampled: 04/19/24 12:58

Pressure @ Receipt: 9.0

Canister #: SAT003

Received: 04/30/24 14:17

Comments: 1800 PPM VOC, 80 ppm Benzene

Analyzed: 05/10/24 20:42

Air Toxics by EPA Compendium Method TO-15

<u>Analyte</u>	<u>Results</u>		<u>Flag</u>	<u>MDL</u>
	<u>ppbv</u>	<u>ug/m³</u>		<u>ppbv</u>
1,2-Dibromoethane	ND	ND	D, XC, U	5.94
n-Octane	4060	19,000.00	D, XC, E	23.2
Tetrachloroethylene	ND	ND	D, XC, U	7.74
Chlorobenzene	ND	ND	D, XC, U	7.38
Ethylbenzene	969	4,220.00	D, XC, E	11.7
m,p-Xylene	3370	14,700.00	D, XC, E	37.6
Bromoform	ND	ND	D, XC, U	9.72
Styrene	ND	ND	D, XC, U	24.6
1,1,2,2-Tetrachloroethane	ND	ND	D, XC, U	17.1
o-Xylene	1310	5,700.00	D, XC, E	21.2
1,3,5-Trimethylbenzene	234	1,150.00	D, XC, E	28.5
1,2,4-Trimethylbenzene	596	2,940.00	D, XC, E	28.8
m-Dichlorobenzene	ND	ND	D, XC, U	15.6
p-Dichlorobenzene	ND	ND	D, XC, U	33.0
o-Dichlorobenzene	2.07	12.50	D, XC, U	32.8
1,2,4-Trichlorobenzene	3.82	28.40	D, XC, U	71.3
Hexachloro-1,3-butadiene	3.86	41.30	D, XC, U	32.7

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FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B4E2310 - Summa Canister Prep

Blank (B4E2310-BLK1)

Prepared: 05/13/24 Analyzed: 05/16/24

Dichlorodifluoromethane	ND	ppbv				U
Chloromethane	ND	ppbv				U
Dichlorotetrafluoroethane	ND	ppbv				U
Vinyl chloride	ND	ppbv				U
1,3-Butadiene	ND	ppbv				U
Ethylene oxide	ND	ppbv				U
Bromomethane	ND	ppbv				U
Chloroethane	ND	ppbv				U
Acetonitrile	ND	ppbv				U
Acrolein	ND	ppbv				U
Trichlorofluoromethane	ND	ppbv				U
Acrylonitrile	ND	ppbv				U
1,1-Dichloroethene	ND	ppbv				U
Dichloromethane	ND	ppbv				U
Carbon Disulfide	ND	ppbv				U
Trichlorotrifluoroethane	ND	ppbv				U
trans-1,2-Dichloroethylene	ND	ppbv				U
1,1-Dichloroethane	ND	ppbv				U
Methyl tert-Butyl Ether	ND	ppbv				U
Chloroprene	ND	ppbv				U
cis-1,2-Dichloroethylene	ND	ppbv				U
Bromochloromethane	ND	ppbv				U
Chloroform	ND	ppbv				U
Ethyl tert-Butyl Ether	ND	ppbv				U
1,2-Dichloroethane	ND	ppbv				U
1,1,1-Trichloroethane	ND	ppbv				U
Benzene	ND	ppbv				U
Carbon Tetrachloride	ND	ppbv				U
tert-Amyl Methyl Ether	ND	ppbv				U
1,2-Dichloropropane	ND	ppbv				U
Ethyl Acrylate	ND	ppbv				U
Bromodichloromethane	ND	ppbv				U
Trichloroethylene	ND	ppbv				U
Methyl Methacrylate	ND	ppbv				U
cis-1,3-Dichloropropene	ND	ppbv				U
Methyl Isobutyl Ketone	ND	ppbv				U
trans-1,3-Dichloropropene	ND	ppbv				U

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Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B4E2310 - Summa Canister Prep

Blank (B4E2310-BLK1) Continued

Prepared: 05/13/24 Analyzed: 05/16/24

1,1,2-Trichloroethane	ND	ppbv				U
Toluene	ND	ppbv				U
Dibromochloromethane	ND	ppbv				U
1,2-Dibromoethane	ND	ppbv				U
n-Octane	ND	ppbv				U
Tetrachloroethylene	ND	ppbv				U
Chlorobenzene	ND	ppbv				U
Ethylbenzene	ND	ppbv				U
m,p-Xylene	ND	ppbv				U
Bromoform	ND	ppbv				U
Styrene	ND	ppbv				U
1,1,2,2-Tetrachloroethane	ND	ppbv				U
o-Xylene	ND	ppbv				U
1,3,5-Trimethylbenzene	ND	ppbv				U
1,2,4-Trimethylbenzene	ND	ppbv				U
m-Dichlorobenzene	ND	ppbv				U
p-Dichlorobenzene	ND	ppbv				U
o-Dichlorobenzene	ND	ppbv				U
1,2,4-Trichlorobenzene	ND	ppbv				U
Hexachloro-1,3-butadiene	ND	ppbv				U

Duplicate (B4E2310-DUP1)

Source: 4043049-01

Prepared: 04/19/24 Analyzed: 05/16/24

Dichlorodifluoromethane	ND	ppbv	ND	25	U
Chloromethane	ND	ppbv	ND	25	U
Dichlorotetrafluoroethane	ND	ppbv	ND	25	U
Vinyl chloride	ND	ppbv	ND	25	U
1,3-Butadiene	ND	ppbv	ND	25	U
Ethylene oxide	ND	ppbv	ND	25	U
Bromomethane	ND	ppbv	ND	25	U
Chloroethane	ND	ppbv	ND	25	U
Acetonitrile	ND	ppbv	ND	25	U
Acrolein	ND	ppbv	ND	25	U
Trichlorofluoromethane	ND	ppbv	ND	25	U
Acrylonitrile	ND	ppbv	ND	25	U
1,1-Dichloroethene	ND	ppbv	ND	25	U
Dichloromethane	ND	ppbv	ND	25	U
Carbon Disulfide	ND	ppbv	ND	25	U
Trichlorotrifluoroethane	ND	ppbv	ND	25	U

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FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B4E2310 - Summa Canister Prep

Duplicate (B4E2310-DUP1) Continued Source: 4043049-01 Prepared: 04/19/24 Analyzed: 05/16/24

trans-1,2-Dichloroethylene	ND	ppbv	ND		25	U
1,1-Dichloroethane	ND	ppbv	ND		25	U
Methyl tert-Butyl Ether	ND	ppbv	ND		25	U
Chloroprene	ND	ppbv	ND		25	U
cis-1,2-Dichloroethylene	ND	ppbv	ND		25	U
Bromochloromethane	ND	ppbv	ND		25	U
Chloroform	ND	ppbv	ND		25	U
Ethyl tert-Butyl Ether	ND	ppbv	ND		25	U
1,2-Dichloroethane	ND	ppbv	ND		25	U
1,1,1-Trichloroethane	ND	ppbv	ND		25	U
Benzene	365	ppbv	436.00	17.8	25	D
Carbon Tetrachloride	ND	ppbv	ND		25	U
tert-Amyl Methyl Ether	ND	ppbv	ND		25	U
1,2-Dichloropropane	ND	ppbv	ND		25	U
Ethyl Acrylate	ND	ppbv	ND		25	U
Bromodichloromethane	ND	ppbv	ND		25	U
Trichloroethylene	ND	ppbv	ND		25	U
Methyl Methacrylate	ND	ppbv	ND		25	U
cis-1,3-Dichloropropene	ND	ppbv	ND		25	U
Methyl Isobutyl Ketone	ND	ppbv	ND		25	U
trans-1,3-Dichloropropene	ND	ppbv	ND		25	U
1,1,2-Trichloroethane	ND	ppbv	ND		25	U
Toluene	250	ppbv	305.00	19.7	25	D
Dibromochloromethane	ND	ppbv	ND		25	U
1,2-Dibromoethane	ND	ppbv	ND		25	U
n-Octane	ND	ppbv	ND		25	U
Tetrachloroethylene	ND	ppbv	ND		25	U
Chlorobenzene	ND	ppbv	ND		25	U
Ethylbenzene	26.5	ppbv	26.10	1.45	25	D
m,p-Xylene	81.0	ppbv	80.20	0.951	25	D
Bromoform	ND	ppbv	ND		25	U
Styrene	ND	ppbv	ND		25	U
1,1,2,2-Tetrachloroethane	ND	ppbv	ND		25	U
o-Xylene	29.0	ppbv	28.70	1.02	25	D
1,3,5-Trimethylbenzene	ND	ppbv	ND		25	U
1,2,4-Trimethylbenzene	ND	ppbv	ND		25	U
m-Dichlorobenzene	ND	ppbv	ND		25	U

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FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B4E2310 - Summa Canister Prep

Duplicate (B4E2310-DUP1) Continued **Source: 4043049-01** Prepared: 04/19/24 Analyzed: 05/16/24

p-Dichlorobenzene	ND	ppbv	ND		25	U
o-Dichlorobenzene	ND	ppbv	ND		25	U
1,2,4-Trichlorobenzene	ND	ppbv	ND		25	U
Hexachloro-1,3-butadiene	ND	ppbv	ND		25	U

Batch B4F0314 - Summa Canister Prep

Blank (B4F0314-BLK1) Prepared: 05/09/24 Analyzed: 05/10/24

Dichlorodifluoromethane	ND	ppbv				U
Chloromethane	ND	ppbv				U
Dichlorotetrafluoroethane	ND	ppbv				U
Vinyl chloride	ND	ppbv				U
1,3-Butadiene	ND	ppbv				LK, U
Ethylene oxide	ND	ppbv				LK, U
Bromomethane	ND	ppbv				LK, U
Chloroethane	ND	ppbv				LK, U
Acetonitrile	ND	ppbv				U
Acrolein	ND	ppbv				U
Trichlorofluoromethane	ND	ppbv				U
Acrylonitrile	ND	ppbv				U
1,1-Dichloroethene	ND	ppbv				LK, U
Dichloromethane	ND	ppbv				LK, U
Carbon Disulfide	ND	ppbv				LK, U
Trichlorotrifluoroethane	ND	ppbv				LK, U
trans-1,2-Dichloroethylene	ND	ppbv				U
1,1-Dichloroethane	ND	ppbv				U
Methyl tert-Butyl Ether	ND	ppbv				U
Chloroprene	ND	ppbv				U
cis-1,2-Dichloroethylene	ND	ppbv				U
Bromochloromethane	ND	ppbv				U
Chloroform	ND	ppbv				U
Ethyl tert-Butyl Ether	ND	ppbv				U
1,2-Dichloroethane	ND	ppbv				U
1,1,1-Trichloroethane	ND	ppbv				U
Benzene	ND	ppbv				U
Carbon Tetrachloride	ND	ppbv				U
tert-Amyl Methyl Ether	ND	ppbv				U
1,2-Dichloropropane	ND	ppbv				U
Ethyl Acrylate	ND	ppbv				U

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FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B4F0314 - Summa Canister Prep

Blank (B4F0314-BLK1) Continued

Prepared: 05/09/24 Analyzed: 05/10/24

Bromodichloromethane	ND	ppbv				U
Trichloroethylene	ND	ppbv				U
Methyl Methacrylate	ND	ppbv				U
cis-1,3-Dichloropropene	ND	ppbv				U
Methyl Isobutyl Ketone	ND	ppbv				U
trans-1,3-Dichloropropene	ND	ppbv				U
1,1,2-Trichloroethane	ND	ppbv				U
Toluene	ND	ppbv				U
Dibromochloromethane	ND	ppbv				U
1,2-Dibromoethane	ND	ppbv				U
n-Octane	ND	ppbv				U
Tetrachloroethylene	ND	ppbv				U
Chlorobenzene	ND	ppbv				U
Ethylbenzene	ND	ppbv				U
m,p-Xylene	ND	ppbv				U
Bromoform	ND	ppbv				U
Styrene	ND	ppbv				U
1,1,2,2-Tetrachloroethane	ND	ppbv				U
o-Xylene	ND	ppbv				U
1,3,5-Trimethylbenzene	ND	ppbv				U
1,2,4-Trimethylbenzene	ND	ppbv				U
m-Dichlorobenzene	ND	ppbv				U
p-Dichlorobenzene	ND	ppbv				U
o-Dichlorobenzene	ND	ppbv				U
1,2,4-Trichlorobenzene	ND	ppbv				U
Hexachloro-1,3-butadiene	ND	ppbv				U

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FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2405077

Calibration Check (2405077-CCV1)

Prepared & Analyzed: 05/16/24

Dichlorodifluoromethane	1.04	ppbv	1.0	30.00
Chloromethane	1.07	ppbv	4.5	30.00
Dichlorotetrafluoroethane	1.04	ppbv	0.7	30.00
Vinyl chloride	1.00	ppbv	-2.7	30.00
1,3-Butadiene	0.914	ppbv	-12.0	30.00
Ethylene oxide	1.01	ppbv	5.2	30.00
Bromomethane	1.01	ppbv	-1.9	30.00
Chloroethane	1.07	ppbv	3.3	30.00
Acetonitrile	1.08	ppbv	3.6	30.00
Acrolein	1.02	ppbv	-0.02	30.00
Trichlorofluoromethane	1.05	ppbv	1.4	30.00
Acrylonitrile	1.18	ppbv	5.9	30.00
1,1-Dichloroethene	1.13	ppbv	7.9	30.00
Dichloromethane	1.10	ppbv	6.1	30.00
Carbon Disulfide	1.15	ppbv	5.2	30.00
Trichlorotrifluoroethane	1.05	ppbv	1.6	30.00
trans-1,2-Dichloroethylene	1.02	ppbv	-2.9	30.00
1,1-Dichloroethane	1.09	ppbv	5.0	30.00
Methyl tert-Butyl Ether	1.04	ppbv	0.4	30.00
Chloroprene	1.05	ppbv	0.3	30.00
cis-1,2-Dichloroethylene	1.10	ppbv	5.6	30.00
Bromochloromethane	0.986	ppbv	-4.6	30.00
Chloroform	1.08	ppbv	2.5	30.00
Ethyl tert-Butyl Ether	1.07	ppbv	2.9	30.00
1,2-Dichloroethane	1.09	ppbv	5.2	30.00
1,1,1-Trichloroethane	1.05	ppbv	1.8	30.00
Benzene	1.07	ppbv	2.1	30.00
Carbon Tetrachloride	1.03	ppbv	-1.6	30.00
tert-Amyl Methyl Ether	1.06	ppbv	2.4	30.00
1,2-Dichloropropane	1.17	ppbv	12.4	30.00
Ethyl Acrylate	1.15	ppbv	9.6	30.00
Bromodichloromethane	1.13	ppbv	8.2	30.00
Trichloroethylene	1.03	ppbv	-1.0	30.00
Methyl Methacrylate	1.15	ppbv	10.0	30.00

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REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2405077

Calibration Check (2405077-CCV1) Continued

Prepared & Analyzed: 05/16/24

cis-1,3-Dichloropropene	1.15	ppbv	9.6	30.00
Methyl Isobutyl Ketone	1.81	ppbv	73.0	30.00
trans-1,3-Dichloropropene	1.16	ppbv	10.7	30.00
1,1,2-Trichloroethane	1.11	ppbv	5.6	30.00
Toluene	1.15	ppbv	10.5	30.00
Dibromochloromethane	1.09	ppbv	4.7	30.00
1,2-Dibromoethane	1.09	ppbv	5.0	30.00
n-Octane	1.26	ppbv	20.9	30.00
Tetrachloroethylene	1.02	ppbv	-2.3	30.00
Chlorobenzene	1.03	ppbv	-1.2	30.00
Ethylbenzene	1.08	ppbv	4.3	30.00
m,p-Xylene	2.21	ppbv	6.7	30.00
Bromoform	1.03	ppbv	-0.3	30.00
Styrene	1.12	ppbv	7.7	30.00
1,1,2,2-Tetrachloroethane	1.13	ppbv	8.5	30.00
o-Xylene	1.14	ppbv	9.1	30.00
1,3,5-Trimethylbenzene	0.919	ppbv	-12.0	30.00
1,2,4-Trimethylbenzene	0.946	ppbv	-9.9	30.00
m-Dichlorobenzene	0.979	ppbv	-6.2	30.00
p-Dichlorobenzene	0.951	ppbv	-9.1	30.00
o-Dichlorobenzene	0.967	ppbv	-7.9	30.00
1,2,4-Trichlorobenzene	0.831	ppbv	-23.0	30.00
Hexachloro-1,3-butadiene	1.00	ppbv	-7.3	30.00

Calibration Check (2405077-CCV2)

Prepared & Analyzed: 05/16/24

Dichlorodifluoromethane	1.06	ppbv	2.7	30.00
Chloromethane	1.09	ppbv	6.8	30.00
Dichlorotetrafluoroethane	1.06	ppbv	3.0	30.00
Vinyl chloride	1.04	ppbv	0.5	30.00
1,3-Butadiene	0.954	ppbv	-8.1	30.00
Ethylene oxide	1.05	ppbv	9.5	30.00
Bromomethane	1.02	ppbv	-1.5	30.00
Chloroethane	1.11	ppbv	6.5	30.00
Acetonitrile	1.10	ppbv	5.9	30.00
Acrolein	1.05	ppbv	3.4	30.00

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REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2405077

Calibration Check (2405077-CCV2) Continued

Prepared & Analyzed: 05/16/24

Trichlorofluoromethane	1.08	ppbv	4.2	30.00
Acrylonitrile	1.21	ppbv	9.1	30.00
1,1-Dichloroethene	1.16	ppbv	11.4	30.00
Dichloromethane	1.14	ppbv	9.3	30.00
Carbon Disulfide	1.17	ppbv	7.4	30.00
Trichlorotrifluoroethane	1.08	ppbv	4.8	30.00
trans-1,2-Dichloroethylene	1.03	ppbv	-1.2	30.00
1,1-Dichloroethane	1.12	ppbv	7.8	30.00
Methyl tert-Butyl Ether	1.08	ppbv	4.1	30.00
Chloroprene	1.08	ppbv	3.5	30.00
cis-1,2-Dichloroethylene	1.13	ppbv	8.5	30.00
Bromochloromethane	1.00	ppbv	-3.3	30.00
Chloroform	1.10	ppbv	4.5	30.00
Ethyl tert-Butyl Ether	1.11	ppbv	6.9	30.00
1,2-Dichloroethane	1.11	ppbv	7.3	30.00
1,1,1-Trichloroethane	1.07	ppbv	3.8	30.00
Benzene	1.12	ppbv	7.1	30.00
Carbon Tetrachloride	1.03	ppbv	-1.2	30.00
tert-Amyl Methyl Ether	1.11	ppbv	7.2	30.00
1,2-Dichloropropane	1.20	ppbv	15.4	30.00
Ethyl Acrylate	1.18	ppbv	12.6	30.00
Bromodichloromethane	1.13	ppbv	9.0	30.00
Trichloroethylene	1.04	ppbv	-0.4	30.00
Methyl Methacrylate	1.18	ppbv	13.4	30.00
cis-1,3-Dichloropropene	1.19	ppbv	13.1	30.00
Methyl Isobutyl Ketone	1.46	ppbv	39.8	30.00
trans-1,3-Dichloropropene	1.18	ppbv	12.1	30.00
1,1,2-Trichloroethane	1.12	ppbv	6.6	30.00
Toluene	1.19	ppbv	14.3	30.00
Dibromochloromethane	1.10	ppbv	5.1	30.00
1,2-Dibromoethane	1.10	ppbv	6.3	30.00
n-Octane	1.28	ppbv	23.5	30.00
Tetrachloroethylene	1.02	ppbv	-1.8	30.00
Chlorobenzene	1.06	ppbv	1.2	30.00

QX

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CERTIFICATE OF ANALYSIS

OECA

2890 Woodbridge Avenue

Edison, NJ 08837

ATTN: Nick Bobbs

PHONE: (732) 321-6760 FAX: (732) 321-6616

FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2405077

Calibration Check (2405077-CCV2) Continued

Prepared & Analyzed: 05/16/24

Ethylbenzene	1.07	ppbv	2.9	30.00	
m,p-Xylene	2.21	ppbv	6.6	30.00	
Bromoform	1.03	ppbv	-0.6	30.00	
Styrene	1.08	ppbv	3.8	30.00	
1,1,2,2-Tetrachloroethane	1.14	ppbv	9.3	30.00	
o-Xylene	1.03	ppbv	-1.1	30.00	
1,3,5-Trimethylbenzene	0.973	ppbv	-6.8	30.00	
1,2,4-Trimethylbenzene	0.998	ppbv	-4.9	30.00	
m-Dichlorobenzene	1.00	ppbv	-3.8	30.00	
p-Dichlorobenzene	0.978	ppbv	-6.5	30.00	
o-Dichlorobenzene	0.993	ppbv	-5.4	30.00	
1,2,4-Trichlorobenzene	0.853	ppbv	-21.1	30.00	
Hexachloro-1,3-butadiene	0.997	ppbv	-7.9	30.00	

Sequence 2406006

Calibration Check (2406006-CCV1)

Prepared & Analyzed: 05/10/24

Dichlorodifluoromethane	1.02	ppbv	-1.4	30.00	
Chloromethane	1.07	ppbv	4.6	30.00	
Dichlorotetrafluoroethane	1.04	ppbv	0.8	30.00	
Vinyl chloride	1.06	ppbv	2.5	30.00	
1,3-Butadiene	0.973	ppbv	-6.3	30.00	
Ethylene oxide	1.07	ppbv	12.0	30.00	
Bromomethane	1.04	ppbv	1.1	30.00	
Chloroethane	0.386	ppbv	-62.9	30.00	LK
Acetonitrile	1.08	ppbv	3.9	30.00	
Acrolein	1.14	ppbv	12.1	30.00	
Trichlorofluoromethane	1.04	ppbv	0.2	30.00	
Acrylonitrile	1.12	ppbv	0.8	30.00	
1,1-Dichloroethene	0.546	ppbv	-47.7	30.00	LK
Dichloromethane	0.507	ppbv	-51.2	30.00	LK
Carbon Disulfide	0.594	ppbv	-45.6	30.00	LK
Trichlorotrifluoroethane	0.659	ppbv	-36.1	30.00	LK
trans-1,2-Dichloroethylene	1.04	ppbv	-0.8	30.00	
1,1-Dichloroethane	1.08	ppbv	3.6	30.00	
Methyl tert-Butyl Ether	1.08	ppbv	4.2	30.00	

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AQS SITE CODE:

SITE CODE: EGC

Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2406006

Calibration Check (2406006-CCV1) Continued

Prepared & Analyzed: 05/10/24

Chloroprene	0.997	ppbv	-4.5	30.00
cis-1,2-Dichloroethylene	1.05	ppbv	1.1	30.00
Bromochloromethane	0.988	ppbv	-4.4	30.00
Chloroform	1.06	ppbv	0.2	30.00
Ethyl tert-Butyl Ether	1.04	ppbv	0.4	30.00
1,2-Dichloroethane	1.06	ppbv	2.2	30.00
1,1,1-Trichloroethane	1.08	ppbv	4.6	30.00
Benzene	1.12	ppbv	7.2	30.00
Carbon Tetrachloride	1.08	ppbv	3.1	30.00
tert-Amyl Methyl Ether	1.10	ppbv	5.6	30.00
1,2-Dichloropropane	1.14	ppbv	9.1	30.00
Ethyl Acrylate	1.07	ppbv	1.7	30.00
Bromodichloromethane	1.10	ppbv	6.2	30.00
Trichloroethylene	1.08	ppbv	3.8	30.00
Methyl Methacrylate	1.03	ppbv	-1.0	30.00
cis-1,3-Dichloropropene	1.11	ppbv	5.6	30.00
Methyl Isobutyl Ketone	1.16	ppbv	11.0	30.00
trans-1,3-Dichloropropene	1.08	ppbv	3.1	30.00
1,1,2-Trichloroethane	1.11	ppbv	6.3	30.00
Toluene	1.12	ppbv	7.9	30.00
Dibromochloromethane	1.16	ppbv	10.9	30.00
1,2-Dibromoethane	1.19	ppbv	15.1	30.00
n-Octane	1.30	ppbv	24.8	30.00
Tetrachloroethylene	1.15	ppbv	10.1	30.00
Chlorobenzene	1.18	ppbv	13.0	30.00
Ethylbenzene	1.19	ppbv	15.1	30.00
m,p-Xylene	2.35	ppbv	13.4	30.00
Bromoform	1.11	ppbv	7.0	30.00
Styrene	1.07	ppbv	2.4	30.00
1,1,2,2-Tetrachloroethane	1.25	ppbv	19.4	30.00
o-Xylene	1.22	ppbv	16.8	30.00
1,3,5-Trimethylbenzene	1.07	ppbv	2.6	30.00
1,2,4-Trimethylbenzene	1.13	ppbv	7.3	30.00
m-Dichlorobenzene	1.15	ppbv	10.5	30.00

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AQS SITE CODE:

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Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2406006

Calibration Check (2406006-CCV1) Continued

Prepared & Analyzed: 05/10/24

p-Dichlorobenzene	1.15	ppbv	9.8	30.00	
o-Dichlorobenzene	1.16	ppbv	10.4	30.00	
1,2,4-Trichlorobenzene	1.18	ppbv	9.0	30.00	
Hexachloro-1,3-butadiene	1.17	ppbv	8.5	30.00	

Calibration Check (2406006-CCV2)

Prepared & Analyzed: 05/10/24

Dichlorodifluoromethane	1.03	ppbv	-0.04	30.00	
Chloromethane	1.06	ppbv	4.2	30.00	
Dichlorotetrafluoroethane	1.06	ppbv	3.1	30.00	
Vinyl chloride	1.05	ppbv	2.2	30.00	
1,3-Butadiene	0.323	ppbv	-68.9	30.00	LK
Ethylene oxide	0.362	ppbv	-62.2	30.00	LK
Bromomethane	0.492	ppbv	-52.4	30.00	LK
Chloroethane	1.08	ppbv	4.2	30.00	
Acetonitrile	1.08	ppbv	3.8	30.00	
Acrolein	1.12	ppbv	10.0	30.00	
Trichlorofluoromethane	1.05	ppbv	1.4	30.00	
Acrylonitrile	1.19	ppbv	6.6	30.00	
1,1-Dichloroethene	1.09	ppbv	4.0	30.00	
Dichloromethane	1.10	ppbv	5.5	30.00	
Carbon Disulfide	1.09	ppbv	-0.2	30.00	
Trichlorotrifluoroethane	1.05	ppbv	1.3	30.00	
trans-1,2-Dichloroethylene	1.05	ppbv	0.8	30.00	
1,1-Dichloroethane	1.08	ppbv	3.6	30.00	
Methyl tert-Butyl Ether	1.10	ppbv	6.2	30.00	
Chloroprene	0.986	ppbv	-5.6	30.00	
cis-1,2-Dichloroethylene	1.06	ppbv	2.2	30.00	
Bromochloromethane	1.03	ppbv	-0.8	30.00	
Chloroform	1.08	ppbv	2.2	30.00	
Ethyl tert-Butyl Ether	1.06	ppbv	2.0	30.00	
1,2-Dichloroethane	1.09	ppbv	4.9	30.00	
1,1,1-Trichloroethane	1.07	ppbv	3.7	30.00	
Benzene	1.12	ppbv	7.2	30.00	
Carbon Tetrachloride	1.06	ppbv	1.8	30.00	
tert-Amyl Methyl Ether	1.08	ppbv	4.0	30.00	

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AQS SITE CODE:

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Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 2406006

Calibration Check (2406006-CCV2) Continued

Prepared & Analyzed: 05/10/24

1,2-Dichloropropane	1.11	ppbv	6.7	30.00
Ethyl Acrylate	1.05	ppbv	-0.3	30.00
Bromodichloromethane	1.10	ppbv	5.4	30.00
Trichloroethylene	1.09	ppbv	4.2	30.00
Methyl Methacrylate	1.01	ppbv	-2.8	30.00
cis-1,3-Dichloropropene	1.08	ppbv	3.4	30.00
Methyl Isobutyl Ketone	1.12	ppbv	7.1	30.00
trans-1,3-Dichloropropene	1.05	ppbv	0.3	30.00
1,1,2-Trichloroethane	1.11	ppbv	5.5	30.00
Toluene	1.12	ppbv	7.4	30.00
Dibromochloromethane	1.08	ppbv	3.9	30.00
1,2-Dibromoethane	1.13	ppbv	8.4	30.00
n-Octane	1.18	ppbv	13.4	30.00
Tetrachloroethylene	1.09	ppbv	4.7	30.00
Chlorobenzene	1.11	ppbv	6.5	30.00
Ethylbenzene	1.13	ppbv	8.5	30.00
m,p-Xylene	2.20	ppbv	6.1	30.00
Bromoform	1.05	ppbv	1.0	30.00
Styrene	0.997	ppbv	-4.5	30.00
1,1,2,2-Tetrachloroethane	1.16	ppbv	11.3	30.00
o-Xylene	1.13	ppbv	8.0	30.00
1,3,5-Trimethylbenzene	0.996	ppbv	-4.6	30.00
1,2,4-Trimethylbenzene	1.05	ppbv	-0.01	30.00
m-Dichlorobenzene	1.09	ppbv	4.6	30.00
p-Dichlorobenzene	1.09	ppbv	4.4	30.00
o-Dichlorobenzene	1.10	ppbv	4.7	30.00
1,2,4-Trichlorobenzene	1.13	ppbv	5.1	30.00
Hexachloro-1,3-butadiene	1.13	ppbv	4.1	30.00

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FILE #: 0453.00

REPORTED: 06/14/24 12:54

SUBMITTED: 04/30/24

AQS SITE CODE:

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Notes and Definitions

XC	Canister certification expired.
U	Under Detection Limit
QX	Compound does not meet QC criteria. Results should be considered an estimate.
QB-03	Analyte exceeds sampling media lot blank criteria.
LK	Analyte identified; Reported value may be biased high.
E	The concentration for this analyte is an estimated value above the calibration range of the instrument.
D	This result obtained by dilution.
ND	Analyte NOT DETECTED
NR	Not Reported
MDL	Method Detection Limit
RPD	Relative Percent Difference

Note: This test is accredited under the 2016 TNI Standard; however the following analytes are not accredited: acetylene, bromodichloroethane, dichlorotetrafluoromethane, ethyl tert butyl ether, n-octane, tert amyl methyl ether, trichlorofluoroethane, and bromochloromethane.