Appendix B
Summary of Marine Vessel Emission Regulations

Regulatory Requirements

The proposed Project would comply with all applicable federal, state and BAAQMD air quality rules and regulations designed to reduce emissions.

Crude Oil Storage Tanks

The crude storage tanks are subject to the following rules:

- BAAQMD Regulation 2, Rule 2, New Source Review
- BAAQMD Regulation 8, Rule 5, Storage of Organic Liquids
- 40 CFR 60, Subpart K, Standards of Performance for Storage Vessels for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978 (S334)
- 40 CFR 60, Subpart Ka, Standards of Performance for Storage Vessels for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984 (S340)
- 40 CFR 60, Subpart Kb, Standards of Performance for Storage Vessels for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (S97, S439)
- 40 CFR 63, Subpart G, National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater (S97, S261, S334, S340)
- 40 CFR 63, Subpart CC, National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries

Marine Vessels

Sources of emissions during marine vessel operations include:

1. Main propulsion internal combustion engine (ICE) on ships for transit and maneuvering;
2. Auxiliary ICEs on ship for transit, maneuvering, and hotelling;
3. Auxiliary boilers on ship for maneuvering and hoteling;
4. ICEs on harbor craft such as tug boats for assisting ships;
5. Crude oil tankers operate boilers to generate steam to operate pumps to unload crude oil to the refinery.

Fuels used in marine vessels include:

1. Marine Gas Oil (MGO)
2. Marine Diesel Oil (MDO)

3. Residual Fuel Oil/Heavy Fuel Oil – No. 5 or No. 6 residual fuel oil

MGO or MDO is typically used in ICE, and Residual/Heavy Fuel Oil is typically used in boilers. California regulations require only MGO/MDO to be used in ICEs and boilers within 24 nautical miles (nm) from California coastline (including 24 nm from any island near California). Harbor crafts typically use diesel fuel.

Common Regulations

Vapor Control System Requirement - U.S. Coast Guard (USCG) Regulation 33 CFR Part 154 Subpart E, BAAQMD Regulation 8-44, and California State Lands Commission Structural Requirements for Vapor Control Systems at Marine Terminals (CCR Title 2 Division 3 Chapter 1 Article 5.4) require vapor control systems to limit emissions of organic compounds into the atmosphere from marine tank vessel operations.

BAAQMD Regulations

Marine vessels are only covered under the BAAQMD regulations as "cargo carriers" that are to be included as part of the source which receives or loads the cargo. Accordingly, all emissions from such carriers while operating in the District, or within California Coastal Waters adjacent to the District, shall be included as part of the source emissions and subject to emission offsetting per the following requirements:

- BAAQMD Regulation 2-1-213, Facility
- BAAQMD Regulation 2-2-215, Facility
- BAAQMD Regulation 2-2-302, Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides, NSR
- BAAQMD Regulation 2-2-303, Offset Requirement, PM_{10} and Sulfur Dioxide, NSR

California Regulations

Regulations pertaining to marine vessel, enforced by California Air Resources Board (ARB), are summarized below. These regulations are applicable to marine vessels operating within California waters and 24 nautical miles from the California coastline.

Table 1: California Marine Regulations

Regulation	Requirement	Applicability
CCR, Title 24, Part 2, California Building Code, Chapter 31F - Marine Oil Terminals, Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS)	Include criteria for inspection, structural analysis and design, mooring and berthing, geotechnical considerations, fire, piping, mechanical and electrical systems for MOTs to prevent oil spills and to protect public health, safety and the environment.	Standards apply to all existing and new marine oil terminals in California
CCR, Title 13, Division 3, Chapter 5.1, § 2299.5 - Low Sulfur Fuel	Title 13 § 2299.5 refers to Title 17, § 93118.5. The purpose of this section is to reduce diesel	Applicable to tug-boat

Requirement, Emission Limits and Other Requirements for Commercial Harbor Craft. CCR, Title 17, Division 3, Chapter 1, Subchapter 7.5, § 93118.5 - Airborne Toxic Control Measure for Commercial Harbor Craft. CCR Title 17, Division 3, Chapter 1, Subchapter 7.5, Section 93117, Airborne Toxic Control Measure to Reduce Particulate Emissions from Diesel-Fueled Engines - Standards for Nonvehicular Diesel Fuel Used in Intrastate Diesel-Electric Locomotives and Harborcraft	PM, SOx, and NOx from diesel propulsion and auxiliary engines on harbor craft. The regulation, effective January 1, 2009, includes requirements for both new and in-use diesel engines used on commercial harbor craft operating in Regulated California Waters (24 nm from CA coastline) including internal, estuarine, and coastal waters. ARB began enforcing some of the requirements from Aug 1, 2012. Requirements include: o All diesel engines on commercial harbor craft must be fueled with CARB diesel fuel (sulfur content less than or equal to 15 ppm), an alternative diesel fuel (such as biodiesel, water emulsions in diesel, etc.), or diesel fuels and/or additives that have received ARB verification [section 93118.5(e)(1)]. o Installation (if not already installed) a non-resettable hour meter on each engine of the vessel and keep records of engine and vessel operation [section 93118.5(e)(2)]. o Engines on all new commercial harbor craft vessels will be required to meet the U.S. EPA marine engine emission standards in effect at the time of vessel acquisition [section 93118.5(e)(4)]. o All owners/operators replacing an engine on their existing harbor craft vessel will be required to install an engine that meets the U.S. EPA standards in effect at the time of engine acquisition [section 93118.5(e)(3)]. o Existing Tier 1 and earlier auxiliary and propulsion engines on in-use ferries, excursion vessels, tugboats, towboats, and multipurpose harbor craft must meet U.S. EPA Tier 2 or Tier 3 standards in effect at the time of regulation compliance per a specific compliance schedule [section 93118.5(e)(6)]. o Initial and Compliance plan reporting [section 93118.5(h)(1)]. o Annual recordkeeping of engine operation and maintenance [section 93118.5(g)].	engines
CCR, Title 13, Division 3, Chapter 5.1, § 2299.2 - Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline CCR, Title 17, Division 3, Chapter 1, Subchapter 7.5, § 93118.2 - Airborne Toxic Control Measure for Fuel	The purpose of these sections is to require the use of low sulfur marine distillate fuels in order to reduce emissions of PM, diesel PM, NOx, and SOx from the use of auxiliary diesel and diesel-electric engines, main propulsion diesel engines, and auxiliary boilers on ocean-going vessels within regulated California Waters (24 nm from CA coastline).	Applicable to all ICEs and boilers on oil tankers

<table>
<tr>
<td>Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline.</td>
<td>
<table>
<tr><th>Effective Date</th><th>MGO (DMA) Sulfur Content</th><th>MDO (DMB) Sulfur Content</th></tr>
<tr><td>Aug 1, 2012</td><td>1%</td><td>0.5%</td></tr>
<tr><td>Jan 1, 2014</td><td>0.1%</td><td>0.1%</td></tr>
</table>

All OGVs must switch fuels to MGO/MDO and meet the above sulfur content requirement when operating within 24 nm from CA coastline. There are other recordkeeping, reporting, and monitoring requirements associated with this regulation.
</td>
<td></td>
</tr>
<tr>
<td>CCR, Title 17, Division 3, Chapter 1, Subchapter 7.5, § 93119 - Airborne Toxic Control Measure Limiting Onboard Incineration on Cruise Ships and Oceangoing Ships</td>
<td>The purpose of this control measure is to reduce emissions of toxic air contaminants from the use of incinerators aboard cruise ships and oceangoing ships. This regulation prohibits cruise ships and oceangoing ships from conducting onboard incineration while operating within three miles of the California coast. This control measure is expected to reduce exposure to toxic air contaminants for residents living near ports and along the California coast. There are other recordkeeping, reporting, and monitoring requirements associated with this regulation.</td>
<td>Applicable to oceangoing oil tankers</td>
</tr>
<tr>
<td>CCR, Title 13, Division 3, Chapter 5.1, § 2299.3 - Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port.

CCR, Title 17, Division 3, Chapter 1, Subchapter 7.5, § 93118.3 - Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port</td>
<td>The purpose of this section is to reduce NOx and diesel PM emissions from the operation of auxiliary engines on container vessels, passenger vessels, and refrigerated cargo vessels while these vessels are docked at berth at a California port (The Port of Hueneme, the Port of Los Angeles (POLA) and Port of Long Beach (POLB), the Port of Oakland, the Port of San Diego, and the Port of San Francisco). The regulation limits hours of operation and power generated from Auxiliary diesel engines on container vessels, passenger vessels, and refrigerated cargo vessels while these vessels are docked at berth.</td>
<td>Not applicable to oil tankers</td>
</tr>
</table>

US EPA and IMO Regulations

For the purpose of regulating emissions from marine vessels, marine engines are divided into three categories based on displacement (swept volume) per cylinder, as shown in Table 2. Each of the categories represents a different engine technology. Categories 1 and 2 are further divided into subcategories, depending on displacement and net power output.

Category 1 and Category 2 marine diesel engines typically range in size from about 500 to 8,000 kW (700 to 11,000 hp). These engines are used to provide propulsion power on many kinds of vessels including

tugboats, pushboats, supply vessels, fishing vessels, and other commercial vessels in and around ports. They are also used as auxiliary engines on ocean-going vessels. They are typically operated on diesel fuel

Category 3 marine diesel engines typically range in size from 2,500 to 70,000 kW (3,000 to 100,000 hp). These are main diesel engines used for propulsion power on ocean-going vessels such as container ships, oil tankers, bulk carriers, and cruise ships. They are typically operated on residual fuel oil. This fuel is the by-product of distilling crude oil to produce lighter petroleum products. It possesses high viscosity and density, which affects ignition quality, and it typically has high ash, sulfur and nitrogen content in comparison to marine distillate fuels.

Table 2: US EPA Marine Engine Categories

Category	Displacement per Cylinder (D)			Basic Engine Technology
	Tier 1-2		Tier 3-4	
1	$D < 5$ dm^3, Power ≥ 37 kW	$D < 5$ dm^3, Power < 37 kW	$D < 7$ dm^3, All power ratings	Land-based nonroad diesel
2	5 dm$^3 \leq D < 30$ dm^3, All power ratings		7 dm$^3 \leq D < 30$ dm^3, All power ratings	Locomotive engine
3	$D \geq 30$ dm^3, All power rating			Unique marine engine design

All categories of engines are regulated by USEPA. USEPA's regulations for Category 3 marine engines are equivalent to International Maritime Organization's (IMO) MARPOL Annex VI standards.

Table 3: Federal Marine Regulations

Regulation	Requirement	Applicability
40 CFR 80 SubPart I	Regulates fuel sulfur content in marine diesel fuel and marine fuel used within the Emission Control Area (ECA – 200 nm from the US coastline). Currently, OGVs are allowed to use heavy fuel oil with 1% S within ECA. Beginning January 1, 2015, OGVs will have to use fuel with sulfur content 0f 0.1%. See Table 4 below for compliance schedule.	
40 CFR 89.104	Tiers 1 and 2 useful life & warranty period for marine compression ignition (CI) engines less than 37 kW	
40 CFR 89.112	Tiers 1 and 2 emission standards for NOx, HC, PM and CO for marine CI engines less than 37 kW	
40 CFR 89 Subpart E	Tiers 1 and 2 test procedures for marine CI engines less than 37 kW	
40 CFR 94.8	Tiers 1 and 2 emission standards for NOx, HC, PM and CO for Category 1 (both commercial & recreational), Category 2 and Category 3 engines at or above 37 kW	
40 CFR 94.9	Tiers 1 and 2 useful life for Category 1 (both commercial & recreational), Category 2 and Category 3 engines at or above 37 kW	

40 CFR 94.10	Tiers 1 and 2 warranty period for Category 1 (both commercial & recreational), Category 2 and Category 3 engines at or above 37 kW	
40 CFR 94 Subpart B	Tiers 1 and 2 test procedures for Category 1 (both commercial & recreational), Category 2 and Category 3 engines at or above 37 kW	
40 CFR 1042.101	Tiers 3 and 4 exhaust emission standards for NOx, HC, PM and CO and useful life	
40 CFR 1042.107	Tiers 3 and 4 evaporative emission standards engines using a volatile liquid fuel (e.g., methanol)	
40 CFR 1042.120	Tiers 3 and 4 warranty period	
40 CFR 1042 Subpart F	Tiers 3 and 4 test procedures	
40 CFR part 1043	Regulations implementing MARPOL Annex VI, including requirements for in-use fuels, engines above 130 kW, and vessels with those engines	

Table 4: International Category 3 Ship Engine and Fuel Standards (MARPOL Annex VI)

	Year	Fuel Sulfur Content	NOx
Federal Emission Control Area – 200nm from US coastline	Today to July 2010	15,000 ppm	
	2010	10,000 ppm	
	2015	1,000 ppm	
	2016		Tier III (Aftertreatment-forcing)
Global	Today to January 2011		Tier I (Engine-based controls)
	2011		Tier II (Engine-based controls)
	Today to January 2012	45,000 ppm	
	2012	35,000 ppm	
	2020 [a]	5,000 ppm	

Note:

[a] Subject to a fuel availability study in 2018, may be extended to 2025.

Appendix C
Detailed Project – Specific
Emission Calculations

Marine Vessel Emission Summary

	Emissions Increase (ton/yr)					
	NOx	SO2	PM10	POC	CO	CO2
Ships	28.70	0.72	0.34	0.93	2.32	1,176
Tugboats	4.46	0.03	0.21	0.17	0.38	235
Total	**33.16**	**0.75**	**0.55**	**1.10**	**2.71**	**1,411**

Based on 23.0 ship calls/year, 20.5 mbpd increase
Ship size 70000 DWT 325 kbbl/ship

Increase in Marine Vessel Annual Emissions

	EF (g/kw-hr)		Emissions Within BAAQMD (lb/trip)					Emissions Within BAAQMD (tpy)				
Pollutant	Main Engine	Auxiliary Engine	Cruise Mode	Slow Cruise Mode	Maneu-vering	Hotelling	Total per Trip	Cruise Mode	Slow Cruise Mode	Maneu-vering	Hotelling	Total Per Year
NOx	17.00	13.90	857.89	393.86	331.59	912.44	**2,496**	9.87	4.53	3.81	10.49	**28.7**
SO2	0.36	0.42	18.58	8.64	7.57	27.57	**62**	0.21	0.10	0.09	0.32	**0.7**
PM	0.19	0.18	9.67	4.46	3.81	11.82	**30**	0.11	0.05	0.04	0.14	**0.34**
HC	0.60	0.40	29.98	13.69	11.31	26.26	**81**	0.34	0.16	0.13	0.30	**0.93**
CO	1.40	1.10	70.50	32.33	27.11	72.21	**202**	0.81	0.37	0.31	0.83	**2.32**
CO2	588.79	690.71	30,400	14,136	12,400	45,340	**102,276**	349.6	162.6	142.6	521.41	**1,176.2**

Assumptions:

Main Engine		**Fuel Use MMBtu**
Freighter Deadweight Tons =	70,000	
Engine rating (hp) =	16,140	
Engine rating (kW) =	12,040	
Time in BAAQMD (hours) =	37	
Cruise Fractional Load =	0.6	
Cruise Load (kW) =	7,224	207
Cruise (hr/trip) =	3	
Slow Cruise Fractional Load =	0.4	
Slow Cruise Load (kW) =	4,816	97
Slow Cruise (hr/trip) =	2	
Maneuvering Fractional Load =	0.3	
Maneuvering (kW) =	3,612	76
Maneuvering (hr/trip) =	2	
trips/year =	23.0	
Sulfur in Fuel (%) =	0.1	

Auxiliary Engine		
Engine Rating (kW)	1985	
Cruise Fractional Load =	0.25	
Cruise Power (kW) =	496	16
Slow Cruise Fractional Load =	0.27	
Slow Cruise Power (kW) =	536	12
Maneuvering Fractional Load =	0.50	
Maneuvering Power (kW) =	993	19
Hotelling Fractional Load =	0.50	
Hotelling Power (kW) =	993	290
Hotelling Time (hr/trip) =	30	

Notes:

Emissions based on "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report", US EPA, 2009.

Main engine EFs from Table 2-9, SSD engine MDO fuel. Auxiliary engine EFs from Table 2-16 for MDO fuel.

SO2 EF based on sulfur content of 0.1% due to 2012 S in fuel requirement.

Fuel Consumption (g/kW-hr) = 14.12/(Fractional Load) + 205.717 Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, EPA 2000

1 Kw/-hr = 3.41E-03 MMBtu

Increase in Vessel-Escort Tug Boat Emissions

Pollutant	EF (g/kw-hr)		Emissions Within BAAQMD (lb/trip/tug)					Emissions Within BAAQMD (tpy)				
	Main Engine	Auxiliary Engine	Cruise Mode	Slow Cruise Mode	Maneu-vering	Hotelling	Total Per Trip	Cruise Mode	Slow Cruise Mode	Maneu-vering	Hotelling	Total Per Year
NOx	13.20	10.00	72.28	37.04	19.91	0.00	129.23	2.49	1.28	0.69	0.00	**4.46**
SO2	0.09	0.09	0.48	0.25	0.13	0.00	0.86	0.02	0.01	0.00	0.00	**0.03**
PM	0.62	0.34	3.38	1.72	0.91	0.00	6.02	0.12	0.06	0.03	0.00	**0.21**
HC	0.50	0.27	2.73	1.39	0.73	0.00	4.85	0.09	0.05	0.03	0.00	**0.17**
CO	1.10	1.70	6.07	3.19	1.83	0.00	11.09	0.21	0.11	0.06	0.00	**0.38**
CO2	690.00	690.00	3787.78	1956.26	1073.97	0.00	6818.01	130.68	67.49	37.05	0.00	**235.22**

Assumptions:

Main Engine

		Fuel Use MMBtu
Engine Rating (kW) =	1,540	
Trip in BAAQMD (hours) =	6	
Cruise Fractional Load =	0.8	
Cruise Load (kW) =	1,232	23
Cruise (hr/trip) =	2	
Slow Cruise Fractional Load =	0.4	
Slow Cruise Load (kW) =	616	12
Slow Cruise (hr/trip) =	2	
Maneuvering Load (kW) =	0.2	
Maneuvering (kW) =	308	7
Maneuvering (hr/trip)[1] =	2	
trips/year* =	69	
Sulfur in Fuel (%) =	0.1	

[1]Maneuvering time includes 3 hours each for the escort tug, and 2 assist tugs.

3 tugs per vessel

Auxiliary Engine

Engine Rating (kW)	100	
Cruise Fractional Load =	0.13	
Cruise Power (kW) =	13.00	0.3
Slow Cruise Fractional Load =	0.27	
Slow Cruise Power (kW) =	27.00	0.6
Maneuvering Fractional Load =	0.45	
Maneuvering Power (kW) =	45.00	0.9
Hotelling Fractional Load =	0.00	
Hotelling Power (kW) =	0.00	0
Hotelling Time (hr/trip) =	0	

Notes:

Emissions based on "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report", US EPA, 2009.

EFs from Table 3-8 for Category 2 Tier 0 harbor craft (main engine) Tier 0 (aux engine). Engine sizes from Table 3-10 for Assist Tug.

SO2 EF based on sulfur content of 0.1% due to 2012 S in fuel requirement.

Fuel Consumption (g/kW-hr) = 14.12/(Fractional Load) + 205.717 Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, EPA 2000

Marine Vessel Emission Summary

	Emissions Increase (ton/yr)					
	NOx	SO2	PM10	POC	CO	CO2
Ships	25.84	1.25	0.43	0.92	2.15	2,089
Tugboats	4.46	0.03	0.21	0.17	0.38	235
Total	**30.30**	**1.28**	**0.64**	**1.08**	**2.53**	**2,324**

Based on 23.0 ship calls/year, 20.5 mbpd increase
Ship size 70000 DWT 325 kbbl/ship

Increase in Marine Vessel Annual Emissions

	EF (g/kw-hr)			Emissions Within BAAQMD (lb/trip)					Emissions Within BAAQMD (tpy)				
Pollutant	**Main Engine**	**Auxiliary Engine**	**Auxiliary Boiler**	**Cruise Mode**	**Slow Cruise Mode**	**Maneu-vering**	**Hotelling**	**Total per Trip**	**Cruise Mode**	**Slow Cruise Mode**	**Maneu-vering**	**Hotelling**	**Total Per Year**
NOx	17.00	13.90	2.00	856.07	395.07	310.90	685.19	**2,247**	9.84	4.54	3.58	7.88	**25.8**
SO2	0.36	0.42	0.57	18.63	8.73	6.99	74.53	**109**	0.21	0.10	0.08	0.86	**1.3**
PM	0.19	0.18	0.13	9.65	4.48	3.55	19.84	**38**	0.11	0.05	0.04	0.23	**0.43**
HC	0.60	0.40	0.11	29.93	13.72	10.71	25.24	**80**	0.34	0.16	0.12	0.29	**0.92**
CO	1.40	1.10	0.20	70.36	32.43	25.47	58.62	**187**	0.81	0.37	0.29	0.67	**2.15**
CO2	588.79	690.71	970.00	30,309	14,196	11,372.55	125,775.62	**181,653**	348.6	163.3	130.8	1,446.42	**2,089.0**

Assumptions:

Main Engine		**Fuel Use MMBtu**
Freighter Deadweight Tons =	70,000	
Engine rating (hp) =	16,140	
Engine rating (kW) =	12,040	
Time in BAAQMD (hours) =	37	
Cruise Fractional Load =	0.6	
Cruise Load (kW) =	7,224	207
Cruise (hr/trip) =	3	
Slow Cruise Fractional Load =	0.4	
Slow Cruise Load (kW) =	4,816	97
Slow Cruise (hr/trip) =	2	
Maneuvering Fractional Load =	0.3	
Maneuvering (kW) =	3,612	76
Maneuvering (hr/trip) =	2	
trips/year =	23.0	
Sulfur in Fuel (%) =	0.1	

Auxiliary Engine		
Engine Rating (kW)	1985	
Cruise Fractional Load =	0.24	
Cruise Power (kW) =	476	16
Slow Cruise Fractional Load =	0.28	
Slow Cruise Power (kW) =	556	12
Maneuvering Fractional Load =	0.33	
Maneuvering Power (kW) =	655	14
Hotelling Fractional Load =	0.26	
Hotelling Power (kW) =	516	168
Hotelling Time (hr/trip) =	30	

Auxiliary Boiler	
Boiler Rating (kW)	1593
Cruise Fractional Load =	0
Cruise Power (kW) =	0
Slow Cruise Fractional Load =	0
Slow Cruise Power (kW) =	0
Maneuvering Fractional Load =	0
Maneuvering Power (kW) =	0
Hotelling Fractional Load =	1.00
Hotelling Power (kW) =	1,593
Hotelling Time (hr/trip) =	30

Notes:

Emissions based on "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report", US EPA, 2009.

Auxiliary Boiler size and emission factors from Table II-4 and Table II-9 "Emissions Estimation Methodology for Ocean-Going Vessels", CARB, 2008.

Main engine EFs from Table 2-9, SSD engine MDO fuel. Auxiliary engine EFs from Table 2-16 for MDO fuel.

SO2 EF based on sulfur content of 0.1% due to 2012 S in fuel requirement.

Fuel Consumption (g/kW-hr) = 14.12/(Fractional Load) + 205.717 Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, EPA 2000

1 Kw/-hr = 3.41E-03 MMBtu

Increase in Vessel-Escort Tug Boat Emissions

Pollutant	EF (g/kw-hr)		Emissions Within BAAQMD (lb/trip/tug)					Emissions Within BAAQMD (tpy)				
	Main Engine	Auxiliary Engine	Cruise Mode	Slow Cruise Mode	Maneu-vering	Hotelling	Total Per Trip	Cruise Mode	Slow Cruise Mode	Maneu-vering	Hotelling	Total Per Year
NOx	13.20	10.00	72.28	37.04	19.91	0.00	129.23	2.49	1.28	0.69	0.00	**4.46**
SO2	0.09	0.09	0.48	0.25	0.13	0.00	0.86	0.02	0.01	0.00	0.00	**0.03**
PM	0.62	0.34	3.38	1.72	0.91	0.00	6.02	0.12	0.06	0.03	0.00	**0.21**
HC	0.50	0.27	2.73	1.39	0.73	0.00	4.85	0.09	0.05	0.03	0.00	**0.17**
CO	1.10	1.70	6.07	3.19	1.83	0.00	11.09	0.21	0.11	0.06	0.00	**0.38**
CO2	690.00	690.00	3787.78	1956.26	1073.97	0.00	6818.01	130.68	67.49	37.05	0.00	**235.22**

Assumptions:

Main Engine

		Fuel Use MMBtu
Engine Rating (kW) =	1,540	
Trip in BAAQMD (hours) =	6	
Cruise Fractional Load =	0.8	
Cruise Load (kW) =	1,232	23
Cruise (hr/trip) =	2	
Slow Cruise Fractional Load =	0.4	
Slow Cruise Load (kW) =	616	12
Slow Cruise (hr/trip) =	2	
Maneuvering Load (kW) =	0.2	
Maneuvering (kW) =	308	7
Maneuvering (hr/trip)[1] =	2	
trips/year* =	69	
Sulfur in Fuel (%) =	0.1	

[1]Maneuvering time includes 3 hours each for the escort tug, and 2 assist tugs.

3 tugs per vessel

Auxiliary Engine

Engine Rating (kW)	100	
Cruise Fractional Load =	0.13	
Cruise Power (kW) =	13.00	0.3
Slow Cruise Fractional Load =	0.27	
Slow Cruise Power (kW) =	27.00	0.6
Maneuvering Fractional Load =	0.45	
Maneuvering Power (kW) =	45.00	0.9
Hotelling Fractional Load =	0.00	
Hotelling Power (kW) =	0.00	0
Hotelling Time (hr/trip) =	0	

Notes:

Emissions based on "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report", US EPA, 2009.

EFs from Table 3-8 for Category 2 Tier 0 harbor craft (main engine) Tier 0 (aux engine). Engine sizes from Table 3-10 for Assist Tug.

SO2 EF based on sulfur content of 0.1% due to 2012 S in fuel requirement.

Fuel Consumption (g/kW-hr) = 14.12/(Fractional Load) + 205.717 Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, EPA 2000

Vessel	Operating Mode	Operating Hours	Emissions (pounds/day)					
			NOx	SO_2	PM	HC	CO	CO_2
Ship	Cruise	1.5	429	9	12	15	35	15,200
	Slow Cruise	1	197	4	5	7	16	7,068
	Maneuvering	1	166	4	5	6	14	6,200
	Hoteling	20.5	623	19	22	18	49	30,983
Tugs	Cruise	1	36	0	2	1	3	1,894
	Slow Cruise	1	19	0	1	1	2	978
	Maneuvering	1	10	0	1	0	1	537
Total Emissions, lb/day			**1,480**	**37**	**47**	**48**	**120**	**62,859**

Table 4 provides an emission increase estimate for working losses from Tanks 100, 107, and 109. The baseline throughput for Tanks 100 and 1010 is the average of the actual throughput from 2007 through 2009. The permit limit is used for Tanks 107 and 109.

Table 4 Storage Tank POC Emission Increase

Storage Tank		Throughput (bbl/yr)		POC Emissions
ID	**Source No.**	**Baseline**	**Proposed**	**Increase (lb)**
100	97	6,134,364	15,570,000	1,685
107	334	5,000,000	9,567,000	1,140
109	439	3,650,000	6,107,000	629
1010	261	3,121,951	5,475,000	133
			Total Increase	**3,586**

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 100 Baseline
City:	San Francisco C.O.
State:	California
Company:	Phillips 66
Type of Tank:	External Floating Roof Tank
Description:	Tank 100 Baseline

Tank Dimensions

Diameter (ft):	225.00
Volume (gallons):	12,516,000.00
Turnovers:	20.59

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 100 Baseline - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 100 Baseline - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations

Rim Seal Losses (lb):	2,394.6853
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	225.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	1,095.2375
Annual Net Throughput (gal/yr.):	257,643,288.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	225.0000
Roof Fitting Losses (lb):	326.6429
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	3,816.5657

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	68.8361
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	98.9860
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 100 Baseline - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	2,394.69	1,095.24	326.64	0.00	3,816.57

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 100 New Limit
City:	San Francisco C.O.
State:	California
Company:	Phillips 66
Type of Tank:	External Floating Roof Tank
Description:	Tank 100 New Limit

Tank Dimensions

Diameter (ft):	225.00
Volume (gallons):	12,516,000.00
Turnovers:	52.25

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 100 New Limit - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 100 New Limit - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations

Rim Seal Losses (lb):	2,394.6853
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	225.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	2,779.8886
Annual Net Throughput (gal/yr.):	653,940,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	225.0000
Roof Fitting Losses (lb):	326.6429
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	5,501.2168

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	68.8361
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	98.9860
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 100 New Limit - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	2,394.69	2,779.89	326.64	0.00	5,501.22

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 108 Baseline
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 108 Baseline - Safe Fill

Tank Dimensions

Diameter (ft):	161.00
Volume (gallons):	7,429,800.00
Turnovers:	22.45

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 108 Baseline - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 108 Baseline - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,713.5304
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	161.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	990.8252
Annual Net Throughput (gal/yr.):	166,782,675.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	161.0000
Roof Fitting Losses (lb):	326.6429
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	3,030.9985

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	98.9860
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	68.8361
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 108 Baseline - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,713.53	990.83	326.64	0.00	3,031.00

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 108 New Limit
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 108 New Limit - Safe Fill

Tank Dimensions

Diameter (ft):	161.00
Volume (gallons):	7,429,800.00
Turnovers:	56.53

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 108 New Limit - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 108 New Limit - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,713.5304
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	161.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	2,495.1429
Annual Net Throughput (gal/yr.):	420,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	161.0000
Roof Fitting Losses (lb):	326.6429
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	4,535.3161

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	98.9860
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	68.8361
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 108 New Limit - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,713.53	2,495.14	326.64	0.00	4,535.32

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
Tank 108 Baseline	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	3,031.00
Tank 108 New Limit	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	4,535.32
Total Emissions for all Tanks:				7,566.31

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
Tank 100 Baseline	Phillips 66	External Floating Roof Tank	San Francisco C.O., California	3,816.57
Tank 100 New Limit	Phillips 66	External Floating Roof Tank	San Francisco C.O., California	5,501.22
Total Emissions for all Tanks:				9,317.78

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 1010 Baseline
City:	San Francisco C.O.
State:	California
Company:	Phillips 66
Type of Tank:	External Floating Roof Tank
Description:	Tank 1010 Baseline

Tank Dimensions

Diameter (ft):	130.00
Volume (gallons):	4,158,000.00
Turnovers:	31.53

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 1010 Baseline - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gas Oil	All	58.97	55.12	62.83	56.97	0.0100	N/A	N/A	130.0000			188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 1010 Baseline - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations

Rim Seal Losses (lb):	11.7222
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.0002
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0100
Tank Diameter (ft):	130.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	176.6400
Annual Net Throughput (gal/yr.):	131,121,942.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.2000
Tank Diameter (ft):	130.0000
Roof Fitting Losses (lb):	2.7674
Value of Vapor Pressure Function:	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	191.1296

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.0353
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	0.0617
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	0.5633
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	0.6432
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	0.0129
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	0.5832
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	0.8386
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	0.0291

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 1010 Baseline - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Gas Oil	11.72	176.64	2.77	0.00	191.13

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 1010 New Limit
City:	San Francisco C.O.
State:	California
Company:	Phillips 66
Type of Tank:	External Floating Roof Tank
Description:	Tank 1010 New limit

Tank Dimensions

Diameter (ft):	130.00
Volume (gallons):	4,158,000.00
Turnovers:	55.30

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 1010 New Limit - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gas Oil	All	58.97	55.12	62.83	56.97	0.0100	N/A	N/A	130.0000			188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 1010 New Limit - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations

Rim Seal Losses (lb):	11.7222
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.0002
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0100
Tank Diameter (ft):	130.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	309.7755
Annual Net Throughput (gal/yr.):	229,950,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.2000
Tank Diameter (ft):	130.0000
Roof Fitting Losses (lb):	2.7674
Value of Vapor Pressure Function:	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	324.2651

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.0353
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	0.0617
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	0.5633
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	0.6432
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	0.0129
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	0.5832
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	0.8386
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	0.0291

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 1010 New Limit - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Gas Oil	11.72	309.78	2.77	0.00	324.27

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
Tank 1010 Baseline	Phillips 66	External Floating Roof Tank	San Francisco C.O., California	191.13
Tank 1010 New Limit	Phillips 66	External Floating Roof Tank	San Francisco C.O., California	324.27
Total Emissions for all Tanks:				515.39

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 107 Baseline
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 107 Baseline

Tank Dimensions

Diameter (ft):	161.00
Volume (gallons):	7,498,932.00
Turnovers:	28.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 107 Baseline - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	5.0000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 107 Baseline - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,304.2037
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1032
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.0000
Tank Diameter (ft):	161.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	1,247.5714
Annual Net Throughput (gal/yr.):	210,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	161.0000
Roof Fitting Losses (lb):	248.6147
Value of Vapor Pressure Function:	0.1032
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	2,800.3899

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	3.1690
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	5.5457
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	50.6041
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	57.7872
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.1600
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	52.3926
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	75.3403
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	2.6159

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 107 Baseline - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,304.20	1,247.57	248.61	0.00	2,800.39

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 108 Baseline
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 108 Baseline - Safe Fill

Tank Dimensions

Diameter (ft):	161.00
Volume (gallons):	7,429,800.00
Turnovers:	43.36

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Gasketed	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 108 Baseline - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 108 Baseline - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,713.5304
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	161.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	1,913.7746
Annual Net Throughput (gal/yr.):	322,140,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	161.0000
Roof Fitting Losses (lb):	400.7532
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	154.0048
Average Wind Speed (mph):	8.7250
Total Losses (lb):	4,028.0581

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Gasketed	23	1.30	0.08	0.65	93.3290
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	38	0.82	0.53	0.14	148.6034
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 108 Baseline - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,713.53	1,913.77	400.75	0.00	4,028.06

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 109 Baseline
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 109 Baseline- Safe Fill

Tank Dimensions

Diameter (ft):	157.00
Volume (gallons):	6,707,400.00
Turnovers:	22.86

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 109 Baseline - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 109 Baseline - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,670.9582
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	157.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	933.9304
Annual Net Throughput (gal/yr.):	153,300,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	157.0000
Roof Fitting Losses (lb):	326.6429
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	2,931.5315

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	98.9860
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	68.8361
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 109 Baseline - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,670.96	933.93	326.64	0.00	2,931.53

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
Tank 107 Baseline	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	2,800.39
Tank 108 Baseline	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	4,028.06
Tank 109 Baseline	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	2,931.53
Total Emissions for all Tanks:				9,759.98

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 107 New Limit
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 107 New Limit

Tank Dimensions

Diameter (ft):	161.00
Volume (gallons):	7,498,932.00
Turnovers:	56.01

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 107 New Limit - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	5.0000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 107 New Limit - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,304.2037
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1032
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.0000
Tank Diameter (ft):	161.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	2,495.1429
Annual Net Throughput (gal/yr.):	420,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	161.0000
Roof Fitting Losses (lb):	248.6147
Value of Vapor Pressure Function:	0.1032
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	4,047.9613

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	3.1690
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	5.5457
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	50.6041
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	57.7872
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.1600
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	75.3403
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	52.3926
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	2.6159

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 107 New Limit - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,304.20	2,495.14	248.61	0.00	4,047.96

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 108 New Limit
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 108 New Limit - Safe Fill

Tank Dimensions

Diameter (ft):	161.00
Volume (gallons):	7,429,800.00
Turnovers:	56.53

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Gasketed	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 108 New Limit - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 108 New Limit - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,713.5304
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	161.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	2,495.1429
Annual Net Throughput (gal/yr.):	420,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	161.0000
Roof Fitting Losses (lb):	400.7532
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	154.0048
Average Wind Speed (mph):	8.7250
Total Losses (lb):	4,609.4264

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Gasketed	23	1.30	0.08	0.65	93.3290
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Ungasketed	38	0.82	0.53	0.14	148.6034
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 108 New Limit - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,713.53	2,495.14	400.75	0.00	4,609.43

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 109 New Limit
City:	San Francisco C.O.
State:	California
Company:	ConocoPhillips
Type of Tank:	External Floating Roof Tank
Description:	Tank 109 New Limit- Safe Fill

Tank Dimensions

Diameter (ft):	157.00
Volume (gallons):	6,707,400.00
Turnovers:	62.62

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good

Roof Characteristics

Type:	Pontoon
Fitting Category	Detail

Tank Construction and Rim-Seal System

Construction:	Welded
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: San Francisco C.O., California (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 109 New Limit - External Floating Roof Tank
San Francisco C.O., California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude	All	58.97	55.12	62.83	56.97	6.2000	N/A	N/A	48.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 109 New Limit - External Floating Roof Tank
San Francisco C.O., California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,670.9582
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	8.7250
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.1355
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.2000
Tank Diameter (ft):	157.0000
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	2,558.7134
Annual Net Throughput (gal/yr.):	420,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	157.0000
Roof Fitting Losses (lb):	326.6429
Value of Vapor Pressure Function:	0.1355
Vapor Molecular Weight (lb/lb-mole):	48.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	125.5251
Average Wind Speed (mph):	8.7250
Total Losses (lb):	4,556.3145

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.1635
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	7.2862
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	66.4863
Unslotted Guide-Pole Well/Gasketed sliding Cover, w. Wiper	1	14.00	3.70	0.78	75.9238
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.5241
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	23	1.20	0.14	0.65	98.9860
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	38	0.49	0.16	0.14	68.8361
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1	0.71	0.10	1.00	3.4369

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 109 New Limit - External Floating Roof Tank
San Francisco C.O., California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude	1,670.96	2,558.71	326.64	0.00	4,556.31

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
Tank 107 New Limit	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	4,047.96
Tank 108 New Limit	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	4,609.43
Tank 109 New Limit	ConocoPhillips	External Floating Roof Tank	San Francisco C.O., California	4,556.31
Total Emissions for all Tanks:				13,213.70

Baseline Period	U240 B-401 3 year Average Emissions (tpy) NOx Actual	NOx RACT Adj.	PM	VOC	Baseline Period Note
3/1/09-2/28/10	68.449	48.9	10.7	7.8	Eng Evaluation
3/1/10-2/28/11	53.6855	36.8	8.1	5.8	Eng Evaluation
3/1/11-2/28/12	33.455	27.7	6.1	4.4	Eng Evaluation
Average	51.86	37.8	8.3	6.0	

Emissions Basis:
NOx: based on NOx CEM data
PM: based on EPA AP-42 factor, Table 1.4-2
7.6 lb/mmscf
VOC: based on EPA AP-42 factor, Table 1.4-2
5.5 lb/MMscf
CO: based on source test result
0.5 ppm 3% O2
3.69E-04 lb/MMBtu

Baseline Period	U240 B-401 3 year Average Emissions (tpy) NOx Actual	NOx RACT Adj.	PM	VOC	CO	Baseline Period Note
10/2008 - 09/2011	60.75	43.76	7.42	5.37	0.49	Original
3/4/09 - 3/3/12	51.71	37.51	6.16	4.46	0.42	Application Complete
1/13/09 - 1/12/12	54.89	39.79	6.62	4.79	0.45	Application Submittal

Emissions Basis:
NOx: based on NOx CEM data
PM: based on EPA AP-42 factor, Table 1.4-2
7.6 lb/mmscf
VOC: based on EPA AP-42 factor, Table 1.4-2
5.5 lb/MMscf
CO: based on source test result
0.5 ppm 3% O2
3.69E-04 lb/MMBtu

U240 B-401 Daily Emissions

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
10/1/2008	7.416	8,421	351	0.045	383	278	56.4	40.8	3.1
10/2/2008	7.286	8,268	345	0.043	357	273	55.4	40.1	3.1
10/3/2008	7.422	8,479	353	0.043	368	280	56.4	40.8	3.1
10/4/2008	7.312	8,325	347	0.044	363	275	55.6	40.2	3.1
10/5/2008	7.501	8,551	356	0.045	385	282	57.0	41.3	3.2
10/6/2008	7.513	8,574	357	0.044	376	283	57.1	41.3	3.2
10/7/2008	7.314	8,479	353	0.044	376	280	55.6	40.2	3.1
10/8/2008	7.457	8,769	365	0.044	384	289	56.7	41.0	3.2
10/9/2008	7.483	9,144	381	0.046	418	302	56.9	41.2	3.4
10/10/2008	7.496	8,990	375	0.047	426	297	57.0	41.2	3.3
10/11/2008	7.522	9,038	377	0.049	440	298	57.2	41.4	3.3
10/12/2008	7.490	9,049	377	0.050	449	299	56.9	41.2	3.3
10/13/2008	7.481	9,060	378	0.049	444	299	56.9	41.1	3.3
10/14/2008	7.592	8,966	374	0.047	421	296	57.7	41.8	3.3
10/15/2008	7.592	8,368	349	0.046	387	276	57.7	41.8	3.1
10/16/2008	7.487	8,309	346	0.046	385	274	56.9	41.2	3.1
10/17/2008	7.413	8,241	343	0.047	389	272	56.3	40.8	3.0
10/18/2008	7.499	8,381	349	0.045	379	277	57.0	41.2	3.1
10/19/2008	7.436	8,493	354	0.045	381	280	56.5	40.9	3.1
10/20/2008	7.467	8,482	353	0.046	388	280	56.7	41.1	3.1
10/21/2008	7.464	8,376	349	0.047	396	276	56.7	41.1	3.1
10/22/2008	7.092	7,915	330	0.048	382	261	53.9	39.0	2.9
10/23/2008	7.176	7,946	331	0.049	388	262	54.5	39.5	2.9
10/24/2008	7.329	8,089	337	0.048	392	267	55.7	40.3	3.0
10/25/2008	7.256	8,023	334	0.049	392	265	55.1	39.9	3.0
10/26/2008	7.281	8,155	340	0.046	378	269	55.3	40.0	3.0
10/27/2008	7.149	8,225	343	0.046	382	271	54.3	39.3	3.0
10/28/2008	7.247	8,282	345	0.046	379	273	55.1	39.9	3.1
10/29/2008	7.353	8,334	347	0.046	380	275	55.9	40.4	3.1
10/30/2008	7.330	8,314	346	0.045	377	274	55.7	40.3	3.1
10/31/2008	7.240	8,140	339	0.045	365	269	55.0	39.8	3.0
11/1/2008	7.233	8,120	338	0.043	351	268	55.0	39.8	3.0
11/2/2008	7.537	8,290	345	0.045	375	274	57.3	41.5	3.1
11/3/2008	7.334	8,376	349	0.046	383	276	55.7	40.3	3.1
11/4/2008	7.079	8,158	340	0.047	387	269	53.8	38.9	3.0
11/5/2008	6.548	7,528	314	0.048	359	248	49.8	36.0	2.8
11/6/2008	6.105	6,934	289	0.047	324	229	46.4	33.6	2.6
11/7/2008	6.573	7,350	306	0.046	337	243	50.0	36.1	2.7
11/8/2008	6.803	7,601	317	0.046	347	251	51.7	37.4	2.8
11/9/2008	6.743	7,647	319	0.047	357	252	51.2	37.1	2.8
11/10/2008	6.969	7,795	325	0.046	360	257	53.0	38.3	2.9
11/11/2008	7.102	7,938	331	0.046	367	262	54.0	39.1	2.9
11/12/2008	7.016	7,863	328	0.045	355	259	53.3	38.6	2.9
11/13/2008	7.018	7,817	326	0.046	356	258	53.3	38.6	2.9
11/14/2008	7.082	7,719	322	0.048	369	255	53.8	38.9	2.8
11/15/2008	7.124	7,751	323	0.048	370	256	54.1	39.2	2.9
11/16/2008	7.084	7,814	326	0.046	360	258	53.8	39.0	2.9
11/17/2008	7.030	7,752	323	0.047	361	256	53.4	38.7	2.9
11/18/2008	7.004	7,830	326	0.046	357	258	53.2	38.5	2.9
11/19/2008	7.068	8,134	339	0.046	376	268	53.7	38.9	3.0
11/20/2008	7.014	8,115	338	0.046	375	268	53.3	38.6	3.0
11/21/2008	7.096	8,185	341	0.047	389	270	53.9	39.0	3.0
11/22/2008	7.053	8,203	342	0.048	393	271	53.6	38.8	3.0
11/23/2008	7.110	8,150	340	0.048	389	269	54.0	39.1	3.0
11/24/2008	7.250	8,311	346	0.046	383	274	55.1	39.9	3.1
11/25/2008	7.189	8,316	346	0.047	387	274	54.6	39.5	3.1
11/26/2008	7.327	8,419	351	0.045	378	278	55.7	40.3	3.1
11/27/2008	7.467	8,535	356	0.045	386	282	56.8	41.1	3.1
11/28/2008	7.452	8,585	358	0.046	394	283	56.6	41.0	3.2

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
11/29/2008	7.331	8,448	352	0.044	372	279	55.7	40.3	3.1
11/30/2008	7.308	7,645	319	0.042	322	252	55.5	40.2	2.8
12/1/2008	7.403	8,415	351	0.042	353	278	56.3	40.7	3.1
12/2/2008	7.366	8,376	349	0.042	353	276	56.0	40.5	3.1
12/3/2008	7.229	8,350	348	0.043	356	276	54.9	39.8	3.1
12/4/2008	7.152	8,320	347	0.043	362	275	54.4	39.3	3.1
12/5/2008	7.162	8,327	347	0.045	372	275	54.4	39.4	3.1
12/6/2008	7.217	8,422	351	0.044	372	278	54.8	39.7	3.1
12/7/2008	7.143	8,389	350	0.044	372	277	54.3	39.3	3.1
12/8/2008	7.066	7,938	331	0.044	352	262	53.7	38.9	2.9
12/9/2008	7.076	8,261	344	0.045	371	273	53.8	38.9	3.0
12/10/2008	7.069	8,234	343	0.046	379	272	53.7	38.9	3.0
12/11/2008	6.891	7,934	331	0.045	357	262	52.4	37.9	2.9
12/12/2008	7.177	8,224	343	0.043	356	271	54.5	39.5	3.0
12/13/2008	7.149	8,208	342	0.045	368	271	54.3	39.3	3.0
12/14/2008	7.133	8,275	345	0.044	363	273	54.2	39.2	3.1
12/15/2008	7.057	8,221	343	0.045	369	271	53.6	38.8	3.0
12/16/2008	6.918	8,057	336	0.045	363	266	52.6	38.0	3.0
12/17/2008	6.603	7,750	323	0.045	349	256	50.2	36.3	2.9
12/18/2008	6.345	7,452	310	0.043	322	246	48.2	34.9	2.7
12/19/2008	6.373	7,366	307	0.045	333	243	48.4	35.1	2.7
12/20/2008	6.610	7,673	320	0.047	358	253	50.2	36.4	2.8
12/21/2008	6.743	7,800	325	0.045	351	257	51.2	37.1	2.9
12/22/2008	6.619	7,690	320	0.046	352	254	50.3	36.4	2.8
12/23/2008	6.675	7,765	324	0.046	361	256	50.7	36.7	2.9
12/24/2008	6.809	7,885	329	0.046	361	260	51.7	37.4	2.9
12/25/2008	7.089	8,064	336	0.048	385	266	53.9	39.0	3.0
12/26/2008	6.876	7,976	332	0.050	396	263	52.3	37.8	2.9
12/27/2008	7.097	8,123	338	0.049	395	268	53.9	39.0	3.0
12/28/2008	6.945	7,997	333	0.049	393	264	52.8	38.2	3.0
12/29/2008	7.039	8,060	336	0.049	397	266	53.5	38.7	3.0
12/30/2008	7.043	8,100	338	0.049	396	267	53.5	38.7	3.0
12/31/2008	7.190	8,293	346	0.048	395	274	54.6	39.5	3.1
1/1/2009	7.199	8,348	348	0.049	405	275	54.7	39.6	3.1
1/2/2009	6.962	7,976	332	0.047	377	263	52.9	38.3	2.9
1/3/2009	7.015	8,106	338	0.050	408	268	53.3	38.6	3.0
1/4/2009	6.944	8,014	334	0.051	407	264	52.8	38.2	3.0
1/5/2009	6.946	7,950	331	0.050	394	262	52.8	38.2	2.9
1/6/2009	7.072	7,983	333	0.050	395	263	53.8	38.9	2.9
1/7/2009	7.204	8,232	343	0.051	418	272	54.8	39.6	3.0
1/8/2009	7.326	8,391	350	0.051	426	277	55.7	40.3	3.1
1/9/2009	7.380	8,396	350	0.052	435	277	56.1	40.6	3.1
1/10/2009	7.391	8,453	352	0.051	433	279	56.2	40.6	3.1
1/11/2009	7.380	8,456	352	0.048	407	279	56.1	40.6	3.1
1/12/2009	7.225	8,127	339	0.048	386	268	54.9	39.7	3.0
1/13/2009	7.254	8,094	337	0.047	384	267	55.1	39.9	3.0
1/14/2009	7.293	8,112	338	0.046	373	268	55.4	40.1	3.0
1/15/2009	7.275	8,139	339	0.046	376	269	55.3	40.0	3.0
1/16/2009	7.307	8,175	341	0.047	382	270	55.5	40.2	3.0
1/17/2009	7.571	8,543	356	0.045	384	282	57.5	41.6	3.2
1/18/2009	7.443	8,433	351	0.048	403	278	56.6	40.9	3.1
1/19/2009	7.380	8,336	347	0.047	394	275	56.1	40.6	3.1
1/20/2009	7.227	8,210	342	0.047	387	271	54.9	39.7	3.0
1/21/2009	7.282	8,438	352	0.047	394	278	55.3	40.1	3.1
1/22/2009	7.335	8,511	355	0.045	380	281	55.7	40.3	3.1
1/23/2009	7.249	8,309	346	0.044	368	274	55.1	39.9	3.1
1/24/2009	7.422	8,457	352	0.045	378	279	56.4	40.8	3.1
1/25/2009	7.393	8,464	353	0.046	386	279	56.2	40.7	3.1
1/26/2009	7.429	8,620	359	0.047	406	284	56.5	40.9	3.2
1/27/2009	7.305	8,754	365	0.050	440	289	55.5	40.2	3.2
1/28/2009	7.280	8,758	365	0.046	405	289	55.3	40.0	3.2

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
1/29/2009	7.161	8,505	354	0.048	406	281	54.4	39.4	3.1
1/30/2009	7.317	8,486	354	0.047	403	280	55.6	40.2	3.1
1/31/2009	7.489	8,701	363	0.047	411	287	56.9	41.2	3.2
2/1/2009	7.442	8,585	358	0.050	430	283	56.6	40.9	3.2
2/2/2009	7.087	8,150	340	0.046	374	269	53.9	39.0	3.0
2/3/2009	7.112	8,058	336	0.046	370	266	54.1	39.1	3.0
2/4/2009	7.201	8,231	343	0.046	378	272	54.7	39.6	3.0
2/5/2009	7.297	8,304	346	0.044	366	274	55.5	40.1	3.1
2/6/2009	7.353	8,428	351	0.044	371	278	55.9	40.4	3.1
2/7/2009	7.471	8,591	358	0.045	385	283	56.8	41.1	3.2
2/8/2009	7.534	8,650	360	0.045	386	285	57.3	41.4	3.2
2/9/2009	7.590	8,686	362	0.046	402	287	57.7	41.7	3.2
2/10/2009	7.546	8,763	365	0.046	407	289	57.3	41.5	3.2
2/11/2009	7.485	8,711	363	0.045	395	287	56.9	41.2	3.2
2/12/2009	7.559	8,708	363	0.046	397	287	57.5	41.6	3.2
2/13/2009	7.546	8,644	360	0.045	392	285	57.3	41.5	3.2
2/14/2009	7.532	8,509	355	0.046	390	281	57.2	41.4	3.1
2/15/2009	7.383	8,408	350	0.045	379	277	56.1	40.6	3.1
2/16/2009	7.616	8,719	363	0.045	389	288	57.9	41.9	3.2
2/17/2009	7.697	8,835	368	0.044	390	292	58.5	42.3	3.3
2/18/2009	7.619	8,716	363	0.045	396	288	57.9	41.9	3.2
2/19/2009	7.285	8,469	353	0.047	401	279	55.4	40.1	3.1
2/20/2009	7.408	8,481	353	0.047	398	280	56.3	40.7	3.1
2/21/2009	7.101	8,092	337	0.047	377	267	54.0	39.1	3.0
2/22/2009	6.586	7,554	315	0.044	332	249	50.1	36.2	2.8
2/23/2009	6.631	7,579	316	0.044	336	250	50.4	36.5	2.8
2/24/2009	6.995	8,186	341	0.046	380	270	53.2	38.5	3.0
2/25/2009	7.100	8,246	344	0.046	380	272	54.0	39.0	3.0
2/26/2009	7.158	8,213	342	0.046	376	271	54.4	39.4	3.0
2/27/2009	7.340	8,378	349	0.046	387	276	55.8	40.4	3.1
2/28/2009	6.572	7,497	312	0.045	339	247	49.9	36.1	2.8
3/1/2009	7.014	7,909	330	0.044	349	261	53.3	38.6	2.9
3/2/2009	6.049	6,566	274	0.043	280	217	46.0	33.3	2.4
3/3/2009	5.948	6,310	263	0.043	273	208	45.2	32.7	2.3
3/4/2009	5.435	5,708	238	0.040	228	188	41.3	29.9	2.1
3/5/2009	4.853	5,038	210	0.035	175	166	36.9	26.7	1.9
3/6/2009	0.963	6,474	270	0.046	300	214	7.3	5.3	2.4
3/7/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/8/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/9/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/10/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/11/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/12/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/13/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/14/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/15/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/16/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/17/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/18/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/19/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/20/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/21/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/22/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/23/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/24/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/25/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/26/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/27/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/28/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/29/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
3/30/2009	0	0	0	0.000	0	0	0.0	0.0	0.0

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
3/31/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/1/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/2/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/3/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/4/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/5/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/6/2009	0	0	0	0.000	0	0	0.0	0.0	0.0
4/7/2009	1.190	3,355	140	0.065	218	111	9.0	6.5	1.2
4/8/2009	5.090	6,274	261	0.057	356	207	38.7	28.0	2.3
4/9/2009	5.853	7,436	310	0.048	357	245	44.5	32.2	2.7
4/10/2009	5.827	7,497	312	0.050	374	247	44.3	32.0	2.8
4/11/2009	5.953	7,692	321	0.051	392	254	45.2	32.7	2.8
4/12/2009	5.872	7,579	316	0.049	374	250	44.6	32.3	2.8
4/13/2009	5.971	7,725	322	0.050	389	255	45.4	32.8	2.8
4/14/2009	6.467	8,247	344	0.053	441	272	49.1	35.6	3.0
4/15/2009	6.530	8,346	348	0.052	437	275	49.6	35.9	3.1
4/16/2009	6.538	8,384	349	0.052	433	277	49.7	36.0	3.1
4/17/2009	6.574	8,400	350	0.051	429	277	50.0	36.2	3.1
4/18/2009	6.514	8,388	349	0.050	422	277	49.5	35.8	3.1
4/19/2009	7.223	9,181	383	0.052	478	303	54.9	39.7	3.4
4/20/2009	7.549	9,259	386	0.047	438	306	57.4	41.5	3.4
4/21/2009	7.099	9,045	377	0.046	420	298	54.0	39.0	3.3
4/22/2009	6.729	8,556	357	0.045	387	282	51.1	37.0	3.2
4/23/2009	6.023	7,720	322	0.043	333	255	45.8	33.1	2.8
4/24/2009	5.714	7,375	307	0.045	329	243	43.4	31.4	2.7
4/25/2009	6.004	7,635	318	0.044	333	252	45.6	33.0	2.8
4/26/2009	6.241	7,899	329	0.044	345	261	47.4	34.3	2.9
4/27/2009	6.297	7,918	330	0.044	346	261	47.9	34.6	2.9
4/28/2009	6.480	8,112	338	0.045	363	268	49.2	35.6	3.0
4/29/2009	6.824	8,393	350	0.044	368	277	51.9	37.5	3.1
4/30/2009	6.744	8,337	347	0.044	363	275	51.3	37.1	3.1
5/1/2009	6.663	8,289	345	0.042	351	274	50.6	36.6	3.1
5/2/2009	6.402	8,203	342	0.043	352	271	48.7	35.2	3.0
5/3/2009	6.387	8,156	340	0.042	347	269	48.5	35.1	3.0
5/4/2009	5.767	7,767	324	0.047	366	256	43.8	31.7	2.9
5/5/2009	5.820	7,958	332	0.047	375	263	44.2	32.0	2.9
5/6/2009	5.616	7,678	320	0.048	365	253	42.7	30.9	2.8
5/7/2009	5.852	7,925	330	0.049	392	262	44.5	32.2	2.9
5/8/2009	5.845	7,892	329	0.050	396	260	44.4	32.1	2.9
5/9/2009	5.890	7,959	332	0.051	406	263	44.8	32.4	2.9
5/10/2009	6.145	8,245	344	0.051	422	272	46.7	33.8	3.0
5/11/2009	6.192	8,302	346	0.051	427	274	47.1	34.1	3.1
5/12/2009	6.071	8,239	343	0.052	429	272	46.1	33.4	3.0
5/13/2009	5.996	8,296	346	0.046	380	274	45.6	33.0	3.1
5/14/2009	6.185	8,361	348	0.041	346	276	47.0	34.0	3.1
5/15/2009	6.269	8,375	349	0.049	411	276	47.6	34.5	3.1
5/16/2009	6.355	8,443	352	0.049	417	279	48.3	35.0	3.1
5/17/2009	6.327	8,430	351	0.049	416	278	48.1	34.8	3.1
5/18/2009	5.521	7,156	298	0.048	344	236	42.0	30.4	2.6
5/19/2009	4.804	5,407	225	0.048	262	178	36.5	26.4	2.0
5/20/2009	4.836	5,061	211	0.049	250	167	36.7	26.6	1.9
5/21/2009	5.953	6,926	289	0.050	346	229	45.2	32.7	2.6
5/22/2009	6.826	8,103	338	0.051	409	267	51.9	37.5	3.0
5/23/2009	6.914	8,139	339	0.051	415	269	52.5	38.0	3.0
5/24/2009	6.568	7,513	313	0.051	386	248	49.9	36.1	2.8
5/25/2009	6.787	7,768	324	0.050	390	256	51.6	37.3	2.9
5/26/2009	6.874	7,892	329	0.049	384	260	52.2	37.8	2.9
5/27/2009	6.931	7,976	332	0.047	374	263	52.7	38.1	2.9
5/28/2009	6.846	7,873	328	0.046	358	260	52.0	37.7	2.9
5/29/2009	6.766	7,316	305	0.046	338	241	51.4	37.2	2.7
5/30/2009	6.750	7,375	307	0.046	338	243	51.3	37.1	2.7

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
5/31/2009	6.494	7,205	300	0.047	341	238	49.4	35.7	2.7
6/1/2009	6.614	7,651	319	0.047	357	252	50.3	36.4	2.8
6/2/2009	6.896	7,699	321	0.047	359	254	52.4	37.9	2.8
6/3/2009	6.942	7,893	329	0.047	375	260	52.8	38.2	2.9
6/4/2009	7.135	8,165	340	0.048	388	269	54.2	39.2	3.0
6/5/2009	7.186	8,203	342	0.047	384	271	54.6	39.5	3.0
6/6/2009	7.206	8,787	366	0.046	400	290	54.8	39.6	3.2
6/7/2009	7.124	8,534	356	0.045	387	282	54.1	39.2	3.1
6/8/2009	6.976	7,451	310	0.046	346	246	53.0	38.4	2.7
6/9/2009	7.006	7,697	321	0.046	358	254	53.2	38.5	2.8
6/10/2009	6.960	7,559	315	0.047	354	249	52.9	38.3	2.8
6/11/2009	7.066	7,607	317	0.047	354	251	53.7	38.9	2.8
6/12/2009	7.224	7,986	333	0.046	366	264	54.9	39.7	2.9
6/13/2009	6.975	7,437	310	0.046	343	245	53.0	38.4	2.7
6/14/2009	7.076	8,034	335	0.047	376	265	53.8	38.9	3.0
6/15/2009	7.059	7,865	328	0.047	367	260	53.6	38.8	2.9
6/16/2009	7.140	8,463	353	0.047	394	279	54.3	39.3	3.1
6/17/2009	7.236	9,566	399	0.046	439	316	55.0	39.8	3.5
6/18/2009	7.251	9,634	401	0.045	431	318	55.1	39.9	3.6
6/19/2009	7.213	9,691	404	0.045	441	320	54.8	39.7	3.6
6/20/2009	7.176	9,702	404	0.046	447	320	54.5	39.5	3.6
6/21/2009	7.177	9,557	398	0.047	448	315	54.5	39.5	3.5
6/22/2009	7.087	9,465	394	0.047	444	312	53.9	39.0	3.5
6/23/2009	7.129	9,446	394	0.046	436	312	54.2	39.2	3.5
6/24/2009	7.184	9,507	396	0.045	431	314	54.6	39.5	3.5
6/25/2009	7.310	9,656	402	0.045	436	319	55.6	40.2	3.6
6/26/2009	7.240	9,709	405	0.045	436	320	55.0	39.8	3.6
6/27/2009	7.174	9,538	397	0.044	419	315	54.5	39.5	3.5
6/28/2009	7.185	9,386	391	0.043	402	310	54.6	39.5	3.5
6/29/2009	7.177	9,510	396	0.045	424	314	54.5	39.5	3.5
6/30/2009	7.121	9,344	389	0.044	411	308	54.1	39.2	3.4
7/1/2009	6.706	8,882	370	0.046	406	293	51.0	36.9	3.3
7/2/2009	6.886	9,071	378	0.046	413	299	52.3	37.9	3.3
7/3/2009	6.992	9,241	385	0.045	420	305	53.1	38.5	3.4
7/4/2009	7.072	9,144	381	0.045	412	302	53.7	38.9	3.4
7/5/2009	7.183	9,226	384	0.046	420	304	54.6	39.5	3.4
7/6/2009	7.150	9,265	386	0.046	424	306	54.3	39.3	3.4
7/7/2009	7.321	9,164	382	0.044	404	302	55.6	40.3	3.4
7/8/2009	7.370	9,545	398	0.045	427	315	56.0	40.5	3.5
7/9/2009	7.081	9,228	385	0.046	420	305	53.8	38.9	3.4
7/10/2009	7.180	9,493	396	0.046	437	313	54.6	39.5	3.5
7/11/2009	7.137	9,510	396	0.047	442	314	54.2	39.3	3.5
7/12/2009	7.163	9,551	398	0.046	439	315	54.4	39.4	3.5
7/13/2009	7.237	9,648	402	0.047	449	318	55.0	39.8	3.6
7/14/2009	7.089	9,395	391	0.046	430	310	53.9	39.0	3.5
7/15/2009	7.161	9,284	387	0.045	419	306	54.4	39.4	3.4
7/16/2009	7.402	9,571	399	0.045	428	316	56.3	40.7	3.5
7/17/2009	7.277	9,602	400	0.045	429	317	55.3	40.0	3.5
7/18/2009	7.233	9,498	396	0.045	423	313	55.0	39.8	3.5
7/19/2009	7.163	9,553	398	0.044	424	315	54.4	39.4	3.5
7/20/2009	7.100	9,546	398	0.045	425	315	54.0	39.1	3.5
7/21/2009	7.087	9,606	400	0.044	419	317	53.9	39.0	3.5
7/22/2009	7.029	9,507	396	0.043	409	314	53.4	38.7	3.5
7/23/2009	7.189	9,729	405	0.043	414	321	54.6	39.5	3.6
7/24/2009	7.238	9,715	405	0.044	423	321	55.0	39.8	3.6
7/25/2009	7.263	9,797	408	0.044	428	323	55.2	39.9	3.6
7/26/2009	7.268	9,759	407	0.043	420	322	55.2	40.0	3.6
7/27/2009	7.242	9,687	404	0.043	421	320	55.0	39.8	3.6
7/28/2009	7.236	9,620	401	0.043	418	317	55.0	39.8	3.5
7/29/2009	7.285	9,672	403	0.043	419	319	55.4	40.1	3.6
7/30/2009	7.289	9,612	401	0.044	418	317	55.4	40.1	3.5

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
7/31/2009	7.405	9,841	410	0.043	425	325	56.3	40.7	3.6
8/1/2009	7.378	9,654	402	0.043	417	319	56.1	40.6	3.6
8/2/2009	7.329	9,650	402	0.045	431	318	55.7	40.3	3.6
8/3/2009	7.222	9,564	399	0.045	433	316	54.9	39.7	3.5
8/4/2009	7.168	9,493	396	0.045	430	313	54.5	39.4	3.5
8/5/2009	7.098	9,459	394	0.045	428	312	53.9	39.0	3.5
8/6/2009	7.023	9,329	389	0.046	430	308	53.4	38.6	3.4
8/7/2009	6.945	9,191	383	0.047	430	303	52.8	38.2	3.4
8/8/2009	6.916	9,225	384	0.046	427	304	52.6	38.0	3.4
8/9/2009	6.774	9,075	378	0.046	418	299	51.5	37.3	3.3
8/10/2009	6.770	9,157	382	0.045	415	302	51.4	37.2	3.4
8/11/2009	6.697	9,061	378	0.045	411	299	50.9	36.8	3.3
8/12/2009	6.540	8,840	368	0.045	402	292	49.7	36.0	3.3
8/13/2009	6.690	9,128	380	0.046	418	301	50.8	36.8	3.4
8/14/2009	6.909	9,347	389	0.046	426	308	52.5	38.0	3.4
8/15/2009	6.737	9,017	376	0.045	408	298	51.2	37.1	3.3
8/16/2009	6.861	9,303	388	0.045	417	307	52.1	37.7	3.4
8/17/2009	6.914	9,310	388	0.044	414	307	52.5	38.0	3.4
8/18/2009	6.749	9,084	378	0.044	404	300	51.3	37.1	3.4
8/19/2009	7.013	9,178	382	0.044	400	303	53.3	38.6	3.4
8/20/2009	7.206	9,361	390	0.045	418	309	54.8	39.6	3.5
8/21/2009	7.154	9,338	389	0.045	419	308	54.4	39.3	3.4
8/22/2009	7.226	9,312	388	0.045	419	307	54.9	39.7	3.4
8/23/2009	7.178	9,306	388	0.046	426	307	54.5	39.5	3.4
8/24/2009	7.422	9,566	399	0.045	430	316	56.4	40.8	3.5
8/25/2009	7.427	9,638	402	0.044	428	318	56.4	40.9	3.6
8/26/2009	7.415	9,688	404	0.044	431	320	56.4	40.8	3.6
8/27/2009	7.526	9,733	406	0.045	440	321	57.2	41.4	3.6
8/28/2009	7.454	9,762	407	0.045	442	322	56.6	41.0	3.6
8/29/2009	7.382	9,748	406	0.045	439	322	56.1	40.6	3.6
8/30/2009	7.589	9,797	408	0.044	430	323	57.7	41.7	3.6
8/31/2009	7.698	9,375	391	0.045	421	309	58.5	42.3	3.5
9/1/2009	6.925	8,433	351	0.046	387	278	52.6	38.1	3.1
9/2/2009	6.229	8,433	351	0.046	387	278	47.3	34.3	3.1
9/3/2009	5.604	8,433	351	0.046	387	278	42.6	30.8	3.1
9/4/2009	7.748	9,387	391	0.045	424	310	58.9	42.6	3.5
9/5/2009	7.677	9,780	407	0.044	426	323	58.3	42.2	3.6
9/6/2009	7.713	9,786	408	0.044	434	323	58.6	42.4	3.6
9/7/2009	7.710	9,840	410	0.045	443	325	58.6	42.4	3.6
9/8/2009	7.748	11,015	459	0.046	505	364	58.9	42.6	4.1
9/9/2009	8.023	10,998	458	0.043	471	363	61.0	44.1	4.1
9/10/2009	7.899	10,770	449	0.042	453	355	60.0	43.4	4.0
9/11/2009	7.946	10,590	441	0.041	436	349	60.4	43.7	3.9
9/12/2009	7.888	10,686	445	0.040	426	353	60.0	43.4	3.9
9/13/2009	8.098	10,955	456	0.040	435	362	61.5	44.5	4.0
9/14/2009	8.114	10,894	454	0.039	425	359	61.7	44.6	4.0
9/15/2009	7.927	10,573	441	0.038	405	349	60.2	43.6	3.9
9/16/2009	6.637	9,327	389	0.041	380	308	50.4	36.5	3.4
9/17/2009	6.905	9,594	400	0.040	385	317	52.5	38.0	3.5
9/18/2009	7.160	9,736	406	0.041	396	321	54.4	39.4	3.6
9/19/2009	7.322	9,972	415	0.040	403	329	55.6	40.3	3.7
9/20/2009	7.304	10,105	421	0.040	409	333	55.5	40.2	3.7
9/21/2009	7.416	10,147	423	0.040	407	335	56.4	40.8	3.7
9/22/2009	7.477	10,018	417	0.040	404	331	56.8	41.1	3.7
9/23/2009	7.742	10,213	426	0.039	402	337	58.8	42.6	3.8
9/24/2009	7.285	9,768	407	0.039	384	322	55.4	40.1	3.6
9/25/2009	6.135	8,448	352	0.040	340	279	46.6	33.7	3.1
9/26/2009	7.845	9,821	409	0.039	388	324	59.6	43.1	3.6
9/27/2009	6.807	8,640	360	0.038	328	285	51.7	37.4	3.2
9/28/2009	6.542	8,746	364	0.038	336	289	49.7	36.0	3.2
9/29/2009	6.694	8,725	364	0.040	346	288	50.9	36.8	3.2

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
9/30/2009	6.165	8,276	345	0.042	346	273	46.9	33.9	3.1
10/1/2009	5.460	7,645	319	0.043	331	252	41.5	30.0	2.8
10/2/2009	5.738	8,001	333	0.042	339	264	43.6	31.6	3.0
10/3/2009	6.117	8,633	360	0.043	373	285	46.5	33.6	3.2
10/4/2009	5.912	8,517	355	0.044	375	281	44.9	32.5	3.1
10/5/2009	5.907	8,587	358	0.044	379	283	44.9	32.5	3.2
10/6/2009	5.999	8,534	356	0.045	381	282	45.6	33.0	3.1
10/7/2009	6.017	8,510	355	0.044	376	281	45.7	33.1	3.1
10/8/2009	5.793	8,525	355	0.044	374	281	44.0	31.9	3.1
10/9/2009	5.794	8,568	357	0.044	376	283	44.0	31.9	3.2
10/10/2009	5.494	8,192	341	0.044	358	270	41.8	30.2	3.0
10/11/2009	5.520	8,454	352	0.044	368	279	42.0	30.4	3.1
10/12/2009	6.164	9,037	377	0.043	387	298	46.8	33.9	3.3
10/13/2009	7.169	9,976	416	0.041	405	329	54.5	39.4	3.7
10/14/2009	6.922	9,687	404	0.041	401	320	52.6	38.1	3.6
10/15/2009	6.557	9,182	383	0.041	374	303	49.8	36.1	3.4
10/16/2009	6.586	9,422	393	0.042	399	311	50.1	36.2	3.5
10/17/2009	6.591	9,488	395	0.043	404	313	50.1	36.3	3.5
10/18/2009	6.464	9,499	396	0.044	422	313	49.1	35.5	3.5
10/19/2009	6.450	9,700	404	0.044	428	320	49.0	35.5	3.6
10/20/2009	6.433	9,705	404	0.045	437	320	48.9	35.4	3.6
10/21/2009	6.182	9,391	391	0.046	429	310	47.0	34.0	3.5
10/22/2009	6.421	9,384	391	0.045	424	310	48.8	35.3	3.5
10/23/2009	5.811	8,541	356	0.045	386	282	44.2	32.0	3.2
10/24/2009	5.115	7,389	308	0.043	320	244	38.9	28.1	2.7
10/25/2009	5.522	7,929	330	0.045	359	262	42.0	30.4	2.9
10/26/2009	6.163	8,694	362	0.045	389	287	46.8	33.9	3.2
10/27/2009	6.355	9,162	382	0.049	446	302	48.3	35.0	3.4
10/28/2009	6.793	9,629	401	0.049	473	318	51.6	37.4	3.6
10/29/2009	6.696	9,606	400	0.048	464	317	50.9	36.8	3.5
10/30/2009	6.759	9,477	395	0.047	441	313	51.4	37.2	3.5
10/31/2009	6.845	9,509	396	0.045	432	314	52.0	37.6	3.5
11/1/2009	7.057	9,383	391	0.045	424	310	53.6	38.8	3.5
11/2/2009	6.662	9,219	384	0.046	422	304	50.6	36.6	3.4
11/3/2009	6.794	9,309	388	0.045	423	307	51.6	37.4	3.4
11/4/2009	6.562	9,206	384	0.045	417	304	49.9	36.1	3.4
11/5/2009	5.980	8,578	357	0.046	391	283	45.4	32.9	3.2
11/6/2009	5.862	8,414	351	0.045	378	278	44.6	32.2	3.1
11/7/2009	6.206	8,849	369	0.047	414	292	47.2	34.1	3.3
11/8/2009	6.204	8,895	371	0.048	426	294	47.1	34.1	3.3
11/9/2009	6.458	9,107	379	0.047	426	301	49.1	35.5	3.4
11/10/2009	6.260	8,923	372	0.047	418	294	47.6	34.4	3.3
11/11/2009	6.345	9,069	378	0.046	419	299	48.2	34.9	3.3
11/12/2009	5.802	8,346	348	0.047	391	275	44.1	31.9	3.1
11/13/2009	6.085	8,752	365	0.047	409	289	46.2	33.5	3.2
11/14/2009	5.921	8,681	362	0.047	411	286	45.0	32.6	3.2
11/15/2009	6.444	9,306	388	0.048	446	307	49.0	35.4	3.4
11/16/2009	6.529	9,478	395	0.047	448	313	49.6	35.9	3.5
11/17/2009	6.610	9,608	400	0.045	436	317	50.2	36.4	3.5
11/18/2009	6.705	10,004	417	0.047	470	330	51.0	36.9	3.7
11/19/2009	6.669	9,995	416	0.049	485	330	50.7	36.7	3.7
11/20/2009	6.906	10,097	421	0.047	470	333	52.5	38.0	3.7
11/21/2009	6.863	10,196	425	0.047	479	336	52.2	37.7	3.8
11/22/2009	7.046	10,092	420	0.046	463	333	53.6	38.8	3.7
11/23/2009	7.109	10,225	426	0.047	483	337	54.0	39.1	3.8
11/24/2009	7.129	10,150	423	0.048	488	335	54.2	39.2	3.7
11/25/2009	7.139	10,120	422	0.047	476	334	54.3	39.3	3.7
11/26/2009	7.134	10,146	423	0.046	471	335	54.2	39.2	3.7
11/27/2009	7.121	10,327	430	0.047	482	341	54.1	39.2	3.8
11/28/2009	7.378	10,460	436	0.049	512	345	56.1	40.6	3.9
11/29/2009	7.306	10,328	430	0.048	499	341	55.5	40.2	3.8

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
11/30/2009	7.404	10,568	440	0.046	482	349	56.3	40.7	3.9
12/1/2009	7.345	10,665	444	0.045	476	352	55.8	40.4	3.9
12/2/2009	7.472	10,893	454	0.043	471	359	56.8	41.1	4.0
12/3/2009	7.526	11,122	463	0.043	482	367	57.2	41.4	4.1
12/4/2009	7.496	11,353	473	0.045	508	375	57.0	41.2	4.2
12/5/2009	7.402	11,405	475	0.047	542	376	56.3	40.7	4.2
12/6/2009	7.492	11,344	473	0.048	543	374	56.9	41.2	4.2
12/7/2009	7.550	11,357	473	0.047	539	375	57.4	41.5	4.2
12/8/2009	7.055	9,883	412	0.043	427	326	53.6	38.8	3.6
12/9/2009	5.747	8,013	334	0.043	345	264	43.7	31.6	3.0
12/10/2009	5.534	8,113	338	0.044	359	268	42.1	30.4	3.0
12/11/2009	4.880	7,538	314	0.046	345	249	37.1	26.8	2.8
12/12/2009	5.305	8,176	341	0.045	371	270	40.3	29.2	3.0
12/13/2009	6.946	10,691	445	0.046	490	353	52.8	38.2	3.9
12/14/2009	6.897	10,672	445	0.048	510	352	52.4	37.9	3.9
12/15/2009	6.745	10,400	433	0.049	512	343	51.3	37.1	3.8
12/16/2009	6.876	10,677	445	0.051	542	352	52.3	37.8	3.9
12/17/2009	7.224	10,911	455	0.051	556	360	54.9	39.7	4.0
12/18/2009	7.828	11,251	469	0.050	560	371	59.5	43.1	4.2
12/19/2009	7.731	11,283	470	0.051	570	372	58.8	42.5	4.2
12/20/2009	7.764	11,265	469	0.050	560	372	59.0	42.7	4.2
12/21/2009	7.716	11,045	460	0.049	539	364	58.6	42.4	4.1
12/22/2009	7.658	11,454	477	0.054	618	378	58.2	42.1	4.2
12/23/2009	7.394	11,513	480	0.058	671	380	56.2	40.7	4.2
12/24/2009	7.443	11,368	474	0.058	661	375	56.6	40.9	4.2
12/25/2009	7.424	11,382	474	0.057	649	376	56.4	40.8	4.2
12/26/2009	6.426	9,801	408	0.055	535	323	48.8	35.3	3.6
12/27/2009	6.191	9,411	392	0.053	503	311	47.1	34.1	3.5
12/28/2009	6.112	9,050	377	0.054	485	299	46.4	33.6	3.3
12/29/2009	6.411	9,558	398	0.053	505	315	48.7	35.3	3.5
12/30/2009	6.016	9,010	375	0.052	470	297	45.7	33.1	3.3
12/31/2009	5.850	8,707	363	0.052	454	287	44.5	32.2	3.2
1/1/2010	5.591	8,447	352	0.051	435	279	42.5	30.8	3.1
1/2/2010	5.569	8,523	355	0.052	441	281	42.3	30.6	3.1
1/3/2010	5.750	8,877	370	0.053	467	293	43.7	31.6	3.3
1/4/2010	6.054	9,302	388	0.053	493	307	46.0	33.3	3.4
1/5/2010	5.795	9,220	384	0.054	494	304	44.0	31.9	3.4
1/6/2010	6.106	9,556	398	0.053	509	315	46.4	33.6	3.5
1/7/2010	6.070	9,531	397	0.053	504	315	46.1	33.4	3.5
1/8/2010	6.039	9,558	398	0.053	505	315	45.9	33.2	3.5
1/9/2010	5.477	8,863	369	0.054	481	292	41.6	30.1	3.3
1/10/2010	5.569	8,651	360	0.052	449	285	42.3	30.6	3.2
1/11/2010	5.249	8,005	334	0.052	419	264	39.9	28.9	3.0
1/12/2010	5.785	8,753	365	0.051	449	289	44.0	31.8	3.2
1/13/2010	5.877	8,771	365	0.052	456	289	44.7	32.3	3.2
1/14/2010	5.857	9,021	376	0.053	480	298	44.5	32.2	3.3
1/15/2010	5.390	8,059	336	0.053	425	266	41.0	29.6	3.0
1/16/2010	5.397	7,909	330	0.047	371	261	41.0	29.7	2.9
1/17/2010	5.383	7,926	330	0.047	370	262	40.9	29.6	2.9
1/18/2010	5.347	7,813	326	0.046	359	258	40.6	29.4	2.9
1/19/2010	5.583	8,292	345	0.045	375	274	42.4	30.7	3.1
1/20/2010	5.700	8,602	358	0.045	385	284	43.3	31.3	3.2
1/21/2010	5.631	8,763	365	0.046	406	289	42.8	31.0	3.2
1/22/2010	5.343	8,306	346	0.048	395	274	40.6	29.4	3.1
1/23/2010	5.194	7,915	330	0.048	378	261	39.5	28.6	2.9
1/24/2010	4.997	7,747	323	0.048	375	256	38.0	27.5	2.9
1/25/2010	4.986	7,591	316	0.047	356	251	37.9	27.4	2.8
1/26/2010	5.194	7,762	323	0.046	355	256	39.5	28.6	2.9
1/27/2010	5.079	7,783	324	0.046	354	257	38.6	27.9	2.9
1/28/2010	4.961	7,799	325	0.048	374	257	37.7	27.3	2.9
1/29/2010	4.828	7,412	309	0.047	350	245	36.7	26.6	2.7

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
1/30/2010	4.748	7,269	303	0.046	337	240	36.1	26.1	2.7
1/31/2010	4.759	7,272	303	0.047	341	240	36.2	26.2	2.7
2/1/2010	4.720	7,097	296	0.047	332	234	35.9	26.0	2.6
2/2/2010	4.687	7,024	293	0.046	320	232	35.6	25.8	2.6
2/3/2010	4.854	7,367	307	0.045	333	243	36.9	26.7	2.7
2/4/2010	5.040	7,657	319	0.046	351	253	38.3	27.7	2.8
2/5/2010	5.282	8,067	336	0.046	373	266	40.1	29.0	3.0
2/6/2010	5.400	8,210	342	0.047	384	271	41.0	29.7	3.0
2/7/2010	5.448	8,348	348	0.048	401	275	41.4	30.0	3.1
2/8/2010	5.178	8,163	340	0.049	397	269	39.4	28.5	3.0
2/9/2010	4.761	7,400	308	0.047	351	244	36.2	26.2	2.7
2/10/2010	4.702	7,345	306	0.047	347	242	35.7	25.9	2.7
2/11/2010	4.790	7,406	309	0.048	352	244	36.4	26.3	2.7
2/12/2010	4.938	7,620	317	0.047	356	251	37.5	27.2	2.8
2/13/2010	5.163	7,799	325	0.047	369	257	39.2	28.4	2.9
2/14/2010	4.979	7,431	310	0.047	350	245	37.8	27.4	2.7
2/15/2010	5.120	7,578	316	0.046	345	250	38.9	28.2	2.8
2/16/2010	5.380	7,959	332	0.045	360	263	40.9	29.6	2.9
2/17/2010	5.364	7,987	333	0.045	361	264	40.8	29.5	2.9
2/18/2010	5.222	7,994	333	0.045	362	264	39.7	28.7	2.9
2/19/2010	5.017	7,714	321	0.046	359	255	38.1	27.6	2.8
2/20/2010	5.042	7,692	320	0.047	358	254	38.3	27.7	2.8
2/21/2010	5.066	7,774	324	0.046	358	257	38.5	27.9	2.9
2/22/2010	5.145	7,914	330	0.047	372	261	39.1	28.3	2.9
2/23/2010	5.651	8,572	357	0.047	401	283	42.9	31.1	3.2
2/24/2010	5.085	7,884	329	0.047	371	260	38.6	28.0	2.9
2/25/2010	5.228	7,728	322	0.046	353	255	39.7	28.8	2.9
2/26/2010	5.197	7,724	322	0.045	350	255	39.5	28.6	2.8
2/27/2010	5.268	7,827	326	0.045	353	258	40.0	29.0	2.9
2/28/2010	5.130	7,797	325	0.046	362	257	39.0	28.2	2.9
3/1/2010	4.969	7,745	323	0.047	366	256	37.8	27.3	2.9
3/2/2010	5.020	7,624	318	0.046	354	252	38.2	27.6	2.8
3/3/2010	5.180	7,870	328	0.047	368	260	39.4	28.5	2.9
3/4/2010	4.881	7,505	313	0.048	360	248	37.1	26.8	2.8
3/5/2010	4.903	7,362	307	0.047	346	243	37.3	27.0	2.7
3/6/2010	5.005	7,483	312	0.047	350	247	38.0	27.5	2.8
3/7/2010	4.958	7,363	307	0.046	336	243	37.7	27.3	2.7
3/8/2010	5.068	7,616	317	0.049	369	251	38.5	27.9	2.8
3/9/2010	5.513	8,290	345	0.050	416	274	41.9	30.3	3.1
3/10/2010	5.116	7,570	315	0.049	373	250	38.9	28.1	2.8
3/11/2010	4.984	7,122	297	0.048	345	235	37.9	27.4	2.6
3/12/2010	5.043	7,008	292	0.046	322	231	38.3	27.7	2.6
3/13/2010	5.428	7,694	321	0.049	379	254	41.3	29.9	2.8
3/14/2010	5.111	7,315	305	0.050	363	241	38.8	28.1	2.7
3/15/2010	5.793	8,103	338	0.048	393	267	44.0	31.9	3.0
3/16/2010	5.979	8,496	354	0.048	411	280	45.4	32.9	3.1
3/17/2010	5.841	8,439	352	0.048	407	278	44.4	32.1	3.1
3/18/2010	5.978	8,460	353	0.049	411	279	45.4	32.9	3.1
3/19/2010	6.582	8,864	369	0.049	439	293	50.0	36.2	3.3
3/20/2010	6.014	8,392	350	0.047	393	277	45.7	33.1	3.1
3/21/2010	5.600	8,009	334	0.048	382	264	42.6	30.8	3.0
3/22/2010	6.044	8,973	374	0.049	441	296	45.9	33.2	3.3
3/23/2010	6.312	9,351	390	0.050	466	309	48.0	34.7	3.4
3/24/2010	6.541	9,677	403	0.047	456	319	49.7	36.0	3.6
3/25/2010	6.386	9,624	401	0.048	457	318	48.5	35.1	3.6
3/26/2010	6.291	9,569	399	0.049	465	316	47.8	34.6	3.5
3/27/2010	6.228	9,403	392	0.049	462	310	47.3	34.3	3.5
3/28/2010	6.048	8,970	374	0.048	429	296	46.0	33.3	3.3
3/29/2010	5.870	8,651	360	0.045	390	285	44.6	32.3	3.2
3/30/2010	5.353	8,116	338	0.046	372	268	40.7	29.4	3.0
3/31/2010	4.953	7,796	325	0.047	365	257	37.6	27.2	2.9

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
4/1/2010	5.005	7,831	326	0.047	369	258	38.0	27.5	2.9
4/2/2010	4.981	7,731	322	0.047	362	255	37.9	27.4	2.9
4/3/2010	5.610	8,714	363	0.048	419	288	42.6	30.9	3.2
4/4/2010	5.760	9,008	375	0.047	424	297	43.8	31.7	3.3
4/5/2010	5.405	8,557	357	0.048	408	282	41.1	29.7	3.2
4/6/2010	5.361	8,398	350	0.049	411	277	40.7	29.5	3.1
4/7/2010	5.037	7,966	332	0.049	389	263	38.3	27.7	2.9
4/8/2010	4.905	6,857	286	0.048	329	226	37.3	27.0	2.5
4/9/2010	5.154	7,857	327	0.047	373	259	39.2	28.3	2.9
4/10/2010	5.179	7,823	326	0.047	365	258	39.4	28.5	2.9
4/11/2010	5.072	7,801	325	0.046	362	257	38.5	27.9	2.9
4/12/2010	5.277	7,987	333	0.046	367	264	40.1	29.0	2.9
4/13/2010	5.051	7,683	320	0.046	353	254	38.4	27.8	2.8
4/14/2010	4.966	7,741	323	0.047	366	255	37.7	27.3	2.9
4/15/2010	4.945	7,791	325	0.047	364	257	37.6	27.2	2.9
4/16/2010	4.819	7,300	304	0.046	333	241	36.6	26.5	2.7
4/17/2010	4.770	7,205	300	0.044	319	238	36.3	26.2	2.7
4/18/2010	4.733	7,198	300	0.044	320	238	36.0	26.0	2.7
4/19/2010	4.684	7,212	300	0.044	320	238	35.6	25.8	2.7
4/20/2010	4.544	7,079	295	0.045	319	234	34.5	25.0	2.6
4/21/2010	4.595	7,167	299	0.045	323	237	34.9	25.3	2.6
4/22/2010	4.625	7,184	299	0.045	323	237	35.1	25.4	2.7
4/23/2010	4.739	7,129	297	0.044	315	235	36.0	26.1	2.6
4/24/2010	4.784	7,281	303	0.046	333	240	36.4	26.3	2.7
4/25/2010	5.527	8,183	341	0.047	388	270	42.0	30.4	3.0
4/26/2010	5.620	8,210	342	0.047	387	271	42.7	30.9	3.0
4/27/2010	6.176	9,192	383	0.046	419	303	46.9	34.0	3.4
4/28/2010	5.992	9,094	379	0.049	448	300	45.5	33.0	3.4
4/29/2010	5.166	7,730	322	0.048	369	255	39.3	28.4	2.9
4/30/2010	5.439	7,859	327	0.048	374	259	41.3	29.9	2.9
5/1/2010	5.810	8,318	347	0.046	381	274	44.2	32.0	3.1
5/2/2010	5.700	8,217	342	0.046	378	271	43.3	31.3	3.0
5/3/2010	5.684	8,391	350	0.046	384	277	43.2	31.3	3.1
5/4/2010	5.729	8,493	354	0.045	385	280	43.5	31.5	3.1
5/5/2010	5.543	8,161	340	0.046	373	269	42.1	30.5	3.0
5/6/2010	6.213	8,781	366	0.045	398	290	47.2	34.2	3.2
5/7/2010	5.722	8,400	350	0.045	379	277	43.5	31.5	3.1
5/8/2010	5.479	7,753	323	0.045	350	256	41.6	30.1	2.9
5/9/2010	5.417	8,088	337	0.047	378	267	41.2	29.8	3.0
5/10/2010	5.606	8,447	352	0.049	412	279	42.6	30.8	3.1
5/11/2010	5.732	8,691	362	0.050	438	287	43.6	31.5	3.2
5/12/2010	5.753	8,584	358	0.049	418	283	43.7	31.6	3.2
5/13/2010	5.905	8,786	366	0.049	427	290	44.9	32.5	3.2
5/14/2010	5.975	8,842	368	0.048	428	292	45.4	32.9	3.3
5/15/2010	5.907	8,685	362	0.048	414	287	44.9	32.5	3.2
5/16/2010	5.785	8,687	362	0.049	424	287	44.0	31.8	3.2
5/17/2010	5.230	7,975	332	0.047	379	263	39.7	28.8	2.9
5/18/2010	5.951	8,808	367	0.049	433	291	45.2	32.7	3.2
5/19/2010	6.110	9,073	378	0.049	449	299	46.4	33.6	3.3
5/20/2010	5.622	8,538	356	0.050	423	282	42.7	30.9	3.1
5/21/2010	5.359	8,149	340	0.050	410	269	40.7	29.5	3.0
5/22/2010	5.453	8,508	355	0.052	442	281	41.4	30.0	3.1
5/23/2010	5.591	8,609	359	0.052	445	284	42.5	30.8	3.2
5/24/2010	5.401	8,218	342	0.050	413	271	41.0	29.7	3.0
5/25/2010	5.193	7,973	332	0.048	384	263	39.5	28.6	2.9
5/26/2010	5.095	7,867	328	0.050	392	260	38.7	28.0	2.9
5/27/2010	5.040	8,104	338	0.051	414	267	38.3	27.7	3.0
5/28/2010	5.199	8,195	341	0.051	420	270	39.5	28.6	3.0
5/29/2010	5.318	8,025	334	0.050	405	265	40.4	29.2	3.0
5/30/2010	5.375	8,019	334	0.050	398	265	40.8	29.6	3.0
5/31/2010	5.322	7,987	333	0.049	391	264	40.4	29.3	2.9

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
6/1/2010	5.237	7,945	331	0.049	390	262	39.8	28.8	2.9
6/2/2010	5.044	7,660	319	0.048	366	253	38.3	27.7	2.8
6/3/2010	4.916	7,497	312	0.047	351	247	37.4	27.0	2.8
6/4/2010	4.828	7,330	305	0.045	332	242	36.7	26.6	2.7
6/5/2010	4.780	7,309	305	0.046	337	241	36.3	26.3	2.7
6/6/2010	4.793	7,228	301	0.046	330	239	36.4	26.4	2.7
6/7/2010	4.865	7,350	306	0.047	344	243	37.0	26.8	2.7
6/8/2010	5.064	7,593	316	0.048	366	251	38.5	27.8	2.8
6/9/2010	4.870	7,311	305	0.047	343	241	37.0	26.8	2.7
6/10/2010	4.734	7,205	300	0.048	342	238	36.0	26.0	2.7
6/11/2010	4.855	7,164	298	0.047	336	236	36.9	26.7	2.6
6/12/2010	4.852	6,956	290	0.048	333	230	36.9	26.7	2.6
6/13/2010	5.137	7,406	309	0.046	343	244	39.0	28.3	2.7
6/14/2010	5.764	8,491	354	0.048	409	280	43.8	31.7	3.1
6/15/2010	5.871	9,619	401	0.050	481	317	44.6	32.3	3.5
6/16/2010	5.547	7,949	331	0.049	391	262	42.2	30.5	2.9
6/17/2010	5.289	7,492	312	0.047	352	247	40.2	29.1	2.8
6/18/2010	5.160	7,394	308	0.046	339	244	39.2	28.4	2.7
6/19/2010	4.794	7,164	298	0.047	336	236	36.4	26.4	2.6
6/20/2010	4.903	7,300	304	0.047	341	241	37.3	27.0	2.7
6/21/2010	4.920	7,142	298	0.046	328	236	37.4	27.1	2.6
6/22/2010	4.543	6,833	285	0.044	303	226	34.5	25.0	2.5
6/23/2010	4.493	6,866	286	0.044	305	227	34.1	24.7	2.5
6/24/2010	4.379	7,098	296	0.047	334	234	33.3	24.1	2.6
6/25/2010	4.431	7,062	294	0.047	330	233	33.7	24.4	2.6
6/26/2010	4.558	7,096	296	0.047	331	234	34.6	25.1	2.6
6/27/2010	4.661	7,124	297	0.046	324	235	35.4	25.6	2.6
6/28/2010	4.609	6,895	287	0.044	304	228	35.0	25.3	2.5
6/29/2010	4.483	6,242	260	0.044	278	206	34.1	24.7	2.3
6/30/2010	4.350	6,772	282	0.047	316	223	33.1	23.9	2.5
7/1/2010	4.482	7,056	294	0.048	339	233	34.1	24.7	2.6
7/2/2010	4.929	7,151	298	0.046	330	236	37.5	27.1	2.6
7/3/2010	4.918	5,029	210	0.048	242	166	37.4	27.0	1.9
7/4/2010	4.776	7,123	297	0.047	333	235	36.3	26.3	2.6
7/5/2010	4.799	7,367	307	0.046	341	243	36.5	26.4	2.7
7/6/2010	4.536	7,085	295	0.046	328	234	34.5	24.9	2.6
7/7/2010	4.935	7,631	318	0.046	353	252	37.5	27.1	2.8
7/8/2010	6.215	9,396	392	0.046	429	310	47.2	34.2	3.5
7/9/2010	5.576	8,420	351	0.047	393	278	42.4	30.7	3.1
7/10/2010	5.456	8,389	350	0.050	417	277	41.5	30.0	3.1
7/11/2010	5.646	8,607	359	0.049	425	284	42.9	31.1	3.2
7/12/2010	5.613	8,746	364	0.050	434	289	42.7	30.9	3.2
7/13/2010	5.337	8,315	346	0.046	384	274	40.6	29.4	3.1
7/14/2010	5.555	8,485	354	0.046	392	280	42.2	30.6	3.1
7/15/2010	5.497	8,300	346	0.046	380	274	41.8	30.2	3.1
7/16/2010	5.417	8,314	346	0.045	375	274	41.2	29.8	3.1
7/17/2010	5.283	8,378	349	0.046	384	276	40.2	29.1	3.1
7/18/2010	5.364	8,219	342	0.046	379	271	40.8	29.5	3.0
7/19/2010	5.567	8,440	352	0.046	388	279	42.3	30.6	3.1
7/20/2010	5.346	8,265	344	0.045	375	273	40.6	29.4	3.0
7/21/2010	5.108	7,987	333	0.046	369	264	38.8	28.1	2.9
7/22/2010	4.942	7,837	327	0.046	360	259	37.6	27.2	2.9
7/23/2010	4.581	7,213	301	0.045	326	238	34.8	25.2	2.7
7/24/2010	4.826	7,369	307	0.045	330	243	36.7	26.5	2.7
7/25/2010	4.972	7,548	315	0.046	348	249	37.8	27.3	2.8
7/26/2010	4.961	7,736	322	0.046	356	255	37.7	27.3	2.9
7/27/2010	5.078	7,805	325	0.046	359	258	38.6	27.9	2.9
7/28/2010	4.992	7,606	317	0.046	351	251	37.9	27.5	2.8
7/29/2010	5.098	7,305	304	0.046	333	241	38.7	28.0	2.7
7/30/2010	5.046	7,619	317	0.045	341	251	38.3	27.8	2.8
7/31/2010	5.255	8,004	334	0.045	362	264	39.9	28.9	3.0

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
8/1/2010	5.430	8,370	349	0.047	393	276	41.3	29.9	3.1
8/2/2010	5.588	8,486	354	0.047	395	280	42.5	30.7	3.1
8/3/2010	5.670	8,696	362	0.047	411	287	43.1	31.2	3.2
8/4/2010	5.708	8,715	363	0.048	414	288	43.4	31.4	3.2
8/5/2010	5.578	8,607	359	0.048	410	284	42.4	30.7	3.2
8/6/2010	5.042	7,983	333	0.047	374	263	38.3	27.7	2.9
8/7/2010	4.821	7,630	318	0.046	351	252	36.6	26.5	2.8
8/8/2010	4.894	5,727	239	0.046	263	189	37.2	26.9	2.1
8/9/2010	4.715	7,446	310	0.046	343	246	35.8	25.9	2.7
8/10/2010	4.828	7,519	313	0.046	347	248	36.7	26.6	2.8
8/11/2010	4.679	7,174	299	0.045	325	237	35.6	25.7	2.6
8/12/2010	4.661	7,030	293	0.044	311	232	35.4	25.6	2.6
8/13/2010	4.535	6,973	291	0.045	313	230	34.5	24.9	2.6
8/14/2010	4.389	6,851	285	0.046	314	226	33.4	24.1	2.5
8/15/2010	4.417	6,865	286	0.046	314	227	33.6	24.3	2.5
8/16/2010	4.538	6,886	287	0.045	309	227	34.5	25.0	2.5
8/17/2010	4.540	6,951	290	0.044	308	229	34.5	25.0	2.6
8/18/2010	4.632	7,095	296	0.045	318	234	35.2	25.5	2.6
8/19/2010	4.623	6,929	289	0.044	304	229	35.1	25.4	2.6
8/20/2010	4.622	6,963	290	0.044	306	230	35.1	25.4	2.6
8/21/2010	4.658	7,117	297	0.045	321	235	35.4	25.6	2.6
8/22/2010	4.782	7,127	297	0.045	322	235	36.3	26.3	2.6
8/23/2010	5.019	7,395	308	0.048	353	244	38.1	27.6	2.7
8/24/2010	5.522	8,048	335	0.049	391	266	42.0	30.4	3.0
8/25/2010	5.517	7,977	332	0.047	373	263	41.9	30.3	2.9
8/26/2010	5.574	8,541	356	0.047	400	282	42.4	30.7	3.2
8/27/2010	5.415	8,306	346	0.046	385	274	41.2	29.8	3.1
8/28/2010	5.439	8,292	346	0.046	379	274	41.3	29.9	3.1
8/29/2010	5.416	8,316	347	0.046	379	274	41.2	29.8	3.1
8/30/2010	5.481	8,265	344	0.045	372	273	41.7	30.1	3.0
8/31/2010	5.348	8,170	340	0.044	363	270	40.6	29.4	3.0
9/1/2010	5.165	7,710	321	0.045	344	254	39.3	28.4	2.8
9/2/2010	5.016	7,354	306	0.043	313	243	38.1	27.6	2.7
9/3/2010	4.753	7,160	298	0.042	302	236	36.1	26.1	2.6
9/4/2010	4.445	6,790	283	0.042	283	224	33.8	24.4	2.5
9/5/2010	4.484	6,803	283	0.042	288	224	34.1	24.7	2.5
9/6/2010	4.450	6,694	279	0.043	285	221	33.8	24.5	2.5
9/7/2010	4.402	6,678	278	0.041	276	220	33.5	24.2	2.5
9/8/2010	4.460	6,747	281	0.042	283	223	33.9	24.5	2.5
9/9/2010	4.534	6,851	285	0.043	297	226	34.5	24.9	2.5
9/10/2010	2.650	6,395	266	0.045	290	211	20.1	14.6	2.4
9/11/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/12/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/13/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/14/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/15/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/16/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/17/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/18/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/19/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/20/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/21/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/22/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/23/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/24/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/25/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/26/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/27/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/28/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/29/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
9/30/2010	0	0	0	0.000	0	0	0.0	0.0	0.0

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
10/1/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/2/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/3/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/4/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/5/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/6/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/7/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/8/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/9/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/10/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/11/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/12/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/13/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/14/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/15/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/16/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/17/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/18/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/19/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/20/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/21/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/22/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/23/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/24/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/25/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/26/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/27/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/28/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/29/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/30/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
10/31/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/1/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/2/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/3/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/4/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/5/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/6/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/7/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/8/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/9/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/10/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/11/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/12/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/13/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/14/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/15/2010	0	0	0	0.000	0	0	0.0	0.0	0.0
11/16/2010	0.917	3,735	156	0.057	214	123	7.0	5.0	1.4
11/17/2010	3.124	4,637	193	0.075	348	153	23.7	17.2	1.7
11/18/2010	4.559	6,842	285	0.065	448	226	34.7	25.1	2.5
11/19/2010	4.485	6,689	279	0.062	413	221	34.1	24.7	2.5
11/20/2010	4.505	6,767	282	0.065	437	223	34.2	24.8	2.5
11/21/2010	4.547	6,886	287	0.068	466	227	34.6	25.0	2.5
11/22/2010	4.731	6,870	286	0.066	452	227	36.0	26.0	2.5
11/23/2010	4.576	6,752	281	0.068	456	223	34.8	25.2	2.5
11/24/2010	4.606	6,978	291	0.071	499	230	35.0	25.3	2.6
11/25/2010	4.738	6,946	289	0.071	492	229	36.0	26.1	2.6
11/26/2010	4.772	6,926	289	0.069	479	229	36.3	26.2	2.6
11/27/2010	4.763	6,920	288	0.066	456	228	36.2	26.2	2.6
11/28/2010	4.765	7,033	293	0.068	477	232	36.2	26.2	2.6
11/29/2010	4.876	7,231	301	0.067	481	239	37.1	26.8	2.7
11/30/2010	5.072	7,598	317	0.060	453	251	38.5	27.9	2.8

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
12/1/2010	5.084	7,377	307	0.058	427	243	38.6	28.0	2.7
12/2/2010	4.944	7,241	302	0.058	419	239	37.6	27.2	2.7
12/3/2010	4.900	7,149	298	0.056	403	236	37.2	27.0	2.6
12/4/2010	4.938	7,236	302	0.056	404	239	37.5	27.2	2.7
12/5/2010	4.958	7,187	299	0.055	394	237	37.7	27.3	2.7
12/6/2010	4.988	7,248	302	0.055	400	239	37.9	27.4	2.7
12/7/2010	5.004	7,284	304	0.055	400	240	38.0	27.5	2.7
12/8/2010	4.938	6,880	287	0.053	363	227	37.5	27.2	2.5
12/9/2010	5.079	7,404	308	0.052	384	244	38.6	27.9	2.7
12/10/2010	5.130	7,375	307	0.051	380	243	39.0	28.2	2.7
12/11/2010	5.373	7,729	322	0.051	398	255	40.8	29.6	2.9
12/12/2010	5.420	7,823	326	0.054	420	258	41.2	29.8	2.9
12/13/2010	5.731	8,139	339	0.053	434	269	43.6	31.5	3.0
12/14/2010	5.508	7,850	327	0.051	400	259	41.9	30.3	2.9
12/15/2010	4.895	7,196	300	0.051	367	237	37.2	26.9	2.7
12/16/2010	5.029	7,424	309	0.052	385	245	38.2	27.7	2.7
12/17/2010	4.985	7,264	303	0.048	352	240	37.9	27.4	2.7
12/18/2010	4.852	7,111	296	0.048	341	235	36.9	26.7	2.6
12/19/2010	4.854	7,099	296	0.048	343	234	36.9	26.7	2.6
12/20/2010	4.888	7,185	299	0.050	356	237	37.1	26.9	2.7
12/21/2010	4.877	7,156	298	0.049	353	236	37.1	26.8	2.6
12/22/2010	4.795	7,093	296	0.047	336	234	36.4	26.4	2.6
12/23/2010	4.784	7,308	304	0.049	361	241	36.4	26.3	2.7
12/24/2010	4.719	7,103	296	0.048	344	234	35.9	26.0	2.6
12/25/2010	4.665	6,873	286	0.048	329	227	35.5	25.7	2.5
12/26/2010	4.686	6,856	286	0.049	336	226	35.6	25.8	2.5
12/27/2010	4.800	6,999	292	0.049	340	231	36.5	26.4	2.6
12/28/2010	4.778	7,095	296	0.048	341	234	36.3	26.3	2.6
12/29/2010	4.761	7,323	305	0.050	366	242	36.2	26.2	2.7
12/30/2010	4.700	7,403	308	0.050	369	244	35.7	25.9	2.7
12/31/2010	4.780	7,451	310	0.049	367	246	36.3	26.3	2.7
1/1/2011	4.771	7,355	306	0.049	358	243	36.3	26.2	2.7
1/2/2011	4.799	7,438	310	0.049	362	245	36.5	26.4	2.7
1/3/2011	4.895	7,390	308	0.048	354	244	37.2	26.9	2.7
1/4/2011	4.915	7,397	308	0.048	355	244	37.4	27.0	2.7
1/5/2011	4.852	7,328	305	0.048	354	242	36.9	26.7	2.7
1/6/2011	4.817	7,421	309	0.048	359	245	36.6	26.5	2.7
1/7/2011	4.833	7,533	314	0.049	372	249	36.7	26.6	2.8
1/8/2011	4.832	7,413	309	0.049	362	245	36.7	26.6	2.7
1/9/2011	4.945	7,502	313	0.049	368	248	37.6	27.2	2.8
1/10/2011	4.704	7,194	300	0.050	357	237	35.7	25.9	2.7
1/11/2011	4.780	7,375	307	0.049	364	243	36.3	26.3	2.7
1/12/2011	5.289	7,889	329	0.049	385	260	40.2	29.1	2.9
1/13/2011	5.127	7,561	315	0.047	353	250	39.0	28.2	2.8
1/14/2011	5.105	7,536	314	0.047	357	249	38.8	28.1	2.8
1/15/2011	5.222	7,736	322	0.049	376	255	39.7	28.7	2.9
1/16/2011	5.715	8,508	355	0.049	420	281	43.4	31.4	3.1
1/17/2011	5.654	8,462	353	0.051	429	279	43.0	31.1	3.1
1/18/2011	5.155	7,554	315	0.046	348	249	39.2	28.4	2.8
1/19/2011	4.781	7,048	294	0.045	318	233	36.3	26.3	2.6
1/20/2011	4.743	6,998	292	0.046	324	231	36.0	26.1	2.6
1/21/2011	4.873	7,081	295	0.045	318	234	37.0	26.8	2.6
1/22/2011	4.912	7,146	298	0.046	330	236	37.3	27.0	2.6
1/23/2011	4.856	7,045	294	0.047	335	232	36.9	26.7	2.6
1/24/2011	5.038	7,341	306	0.046	335	242	38.3	27.7	2.7
1/25/2011	4.961	7,436	310	0.046	343	245	37.7	27.3	2.7
1/26/2011	4.979	7,526	314	0.047	352	248	37.8	27.4	2.8
1/27/2011	5.013	7,633	318	0.047	356	252	38.1	27.6	2.8
1/28/2011	5.065	7,808	325	0.047	364	258	38.5	27.9	2.9
1/29/2011	5.063	7,790	325	0.046	356	257	38.5	27.8	2.9
1/30/2011	5.247	7,803	325	0.044	340	257	39.9	28.9	2.9

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
1/31/2011	5.521	7,897	329	0.039	305	261	42.0	30.4	2.9
2/1/2011	5.365	7,624	318	0.038	289	252	40.8	29.5	2.8
2/2/2011	5.297	7,700	321	0.043	329	254	40.3	29.1	2.8
2/3/2011	5.236	7,647	319	0.043	331	252	39.8	28.8	2.8
2/4/2011	5.151	7,641	318	0.043	332	252	39.1	28.3	2.8
2/5/2011	5.063	7,363	307	0.043	315	243	38.5	27.8	2.7
2/6/2011	5.074	7,178	299	0.056	404	237	38.6	27.9	2.6
2/7/2011	5.155	7,486	312	0.045	338	247	39.2	28.4	2.8
2/8/2011	5.095	7,584	316	0.049	369	250	38.7	28.0	2.8
2/9/2011	5.193	7,746	323	0.048	371	256	39.5	28.6	2.9
2/10/2011	5.256	7,644	318	0.046	355	252	39.9	28.9	2.8
2/11/2011	5.178	7,556	315	0.046	351	249	39.4	28.5	2.8
2/12/2011	5.243	7,641	318	0.047	356	252	39.9	28.8	2.8
2/13/2011	5.280	7,788	325	0.045	352	257	40.1	29.0	2.9
2/14/2011	5.117	7,541	314	0.044	335	249	38.9	28.1	2.8
2/15/2011	5.008	7,437	310	0.046	341	245	38.1	27.5	2.7
2/16/2011	4.959	7,506	313	0.046	344	248	37.7	27.3	2.8
2/17/2011	4.922	7,660	319	0.046	349	253	37.4	27.1	2.8
2/18/2011	5.025	7,805	325	0.045	352	258	38.2	27.6	2.9
2/19/2011	5.039	7,757	323	0.045	350	256	38.3	27.7	2.9
2/20/2011	5.112	7,744	323	0.046	354	256	38.9	28.1	2.9
2/21/2011	2.785	3,634	151	0.046	166	120	21.2	15.3	1.3
2/22/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
2/23/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
2/24/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
2/25/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
2/26/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
2/27/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
2/28/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
3/1/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
3/2/2011	0	0	0	0.000	0	0	0.0	0.0	0.0
3/3/2011	1.679	3,842	160	0.077	298	127	12.8	9.2	1.4
3/4/2011	3.011	3,197	133	0.117	376	106	22.9	16.6	1.2
3/5/2011	4.915	6,844	285	0.064	438	226	37.4	27.0	2.5
3/6/2011	4.824	6,840	285	0.046	311	226	36.7	26.5	2.5
3/7/2011	4.934	7,059	294	0.048	338	233	37.5	27.1	2.6
3/8/2011	5.177	7,322	305	0.045	331	242	39.3	28.5	2.7
3/9/2011	5.235	7,409	309	0.045	333	245	39.8	28.8	2.7
3/10/2011	5.259	7,576	316	0.045	342	250	40.0	28.9	2.8
3/11/2011	5.275	7,572	316	0.047	354	250	40.1	29.0	2.8
3/12/2011	5.193	7,461	311	0.047	353	246	39.5	28.6	2.8
3/13/2011	4.719	6,707	279	0.046	307	221	35.9	26.0	2.5
3/14/2011	4.946	7,116	296	0.045	320	235	37.6	27.2	2.6
3/15/2011	4.860	6,915	288	0.044	304	228	36.9	26.7	2.6
3/16/2011	4.803	7,018	292	0.045	319	232	36.5	26.4	2.6
3/17/2011	4.751	7,126	297	0.046	326	235	36.1	26.1	2.6
3/18/2011	4.702	7,075	295	0.045	315	233	35.7	25.9	2.6
3/19/2011	4.784	7,222	301	0.045	322	238	36.4	26.3	2.7
3/20/2011	4.838	7,222	301	0.044	317	238	36.8	26.6	2.7
3/21/2011	4.954	7,174	299	0.044	313	237	37.6	27.2	2.6
3/22/2011	4.917	7,220	301	0.044	321	238	37.4	27.0	2.7
3/23/2011	4.789	7,070	295	0.044	311	233	36.4	26.3	2.6
3/24/2011	4.898	7,113	296	0.043	308	235	37.2	26.9	2.6
3/25/2011	4.981	7,110	296	0.044	314	235	37.9	27.4	2.6
3/26/2011	5.017	7,150	298	0.044	312	236	38.1	27.6	2.6
3/27/2011	5.027	7,183	299	0.045	322	237	38.2	27.6	2.6
3/28/2011	5.025	7,158	298	0.045	323	236	38.2	27.6	2.6
3/29/2011	5.061	7,123	297	0.044	313	235	38.5	27.8	2.6
3/30/2011	5.075	7,005	292	0.042	296	231	38.6	27.9	2.6
3/31/2011	5.118	6,868	286	0.043	292	227	38.9	28.2	2.5
4/1/2011	5.171	6,915	288	0.042	290	228	39.3	28.4	2.6

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
4/2/2011	5.165	7,064	294	0.045	317	233	39.3	28.4	2.6
4/3/2011	5.240	7,303	304	0.048	349	241	39.8	28.8	2.7
4/4/2011	5.038	7,155	298	0.047	334	236	38.3	27.7	2.6
4/5/2011	5.076	7,167	299	0.045	323	237	38.6	27.9	2.6
4/6/2011	5.093	7,114	296	0.046	324	235	38.7	28.0	2.6
4/7/2011	5.344	7,535	314	0.047	353	249	40.6	29.4	2.8
4/8/2011	5.513	7,778	324	0.048	373	257	41.9	30.3	2.9
4/9/2011	5.187	7,282	303	0.047	345	240	39.4	28.5	2.7
4/10/2011	5.528	7,774	324	0.049	378	257	42.0	30.4	2.9
4/11/2011	5.473	7,648	319	0.048	366	252	41.6	30.1	2.8
4/12/2011	5.551	7,640	318	0.047	361	252	42.2	30.5	2.8
4/13/2011	5.554	7,778	324	0.049	382	257	42.2	30.5	2.9
4/14/2011	5.456	7,703	321	0.051	390	254	41.5	30.0	2.8
4/15/2011	5.293	7,228	301	0.048	346	239	40.2	29.1	2.7
4/16/2011	5.242	7,084	295	0.045	319	234	39.8	28.8	2.6
4/17/2011	5.138	6,997	292	0.045	317	231	39.1	28.3	2.6
4/18/2011	5.103	7,158	298	0.046	330	236	38.8	28.1	2.6
4/19/2011	5.047	7,074	295	0.047	331	233	38.4	27.8	2.6
4/20/2011	5.028	7,083	295	0.046	328	234	38.2	27.7	2.6
4/21/2011	4.953	7,060	294	0.047	334	233	37.6	27.2	2.6
4/22/2011	5.001	7,205	300	0.048	344	238	38.0	27.5	2.7
4/23/2011	4.948	7,128	297	0.047	336	235	37.6	27.2	2.6
4/24/2011	4.923	7,236	302	0.047	338	239	37.4	27.1	2.7
4/25/2011	5.009	7,339	306	0.047	344	242	38.1	27.6	2.7
4/26/2011	5.141	7,491	312	0.048	363	247	39.1	28.3	2.8
4/27/2011	5.184	7,455	311	0.048	354	246	39.4	28.5	2.8
4/28/2011	5.195	7,480	312	0.047	355	247	39.5	28.6	2.8
4/29/2011	5.158	7,505	313	0.049	369	248	39.2	28.4	2.8
4/30/2011	5.094	7,484	312	0.051	380	247	38.7	28.0	2.8
5/1/2011	5.078	7,473	311	0.049	367	247	38.6	27.9	2.8
5/2/2011	5.011	7,405	309	0.049	360	244	38.1	27.6	2.7
5/3/2011	4.942	7,046	294	0.047	333	233	37.6	27.2	2.6
5/4/2011	4.925	7,461	311	0.047	349	246	37.4	27.1	2.8
5/5/2011	4.737	7,122	297	0.046	331	235	36.0	26.1	2.6
5/6/2011	4.870	6,935	289	0.045	310	229	37.0	26.8	2.6
5/7/2011	5.122	7,138	297	0.042	302	236	38.9	28.2	2.6
5/8/2011	5.173	3,943	164	0.042	167	130	39.3	28.5	1.5
5/9/2011	5.085	5,134	214	0.046	236	169	38.6	28.0	1.9
5/10/2011	5.093	7,050	294	0.044	307	233	38.7	28.0	2.6
5/11/2011	5.215	7,238	302	0.043	313	239	39.6	28.7	2.7
5/12/2011	5.136	7,217	301	0.044	318	238	39.0	28.2	2.7
5/13/2011	5.012	7,105	296	0.044	314	234	38.1	27.6	2.6
5/14/2011	5.079	7,170	299	0.044	314	237	38.6	27.9	2.6
5/15/2011	5.148	7,172	299	0.044	319	237	39.1	28.3	2.6
5/16/2011	5.232	7,226	301	0.044	316	238	39.8	28.8	2.7
5/17/2011	5.493	7,314	305	0.040	293	241	41.7	30.2	2.7
5/18/2011	5.177	7,275	303	0.038	278	240	39.3	28.5	2.7
5/19/2011	5.357	7,210	300	0.037	264	238	40.7	29.5	2.7
5/20/2011	5.212	7,263	303	0.038	273	240	39.6	28.7	2.7
5/21/2011	5.222	7,217	301	0.038	271	238	39.7	28.7	2.7
5/22/2011	5.156	7,201	300	0.038	276	238	39.2	28.4	2.7
5/23/2011	5.130	7,239	302	0.038	278	239	39.0	28.2	2.7
5/24/2011	5.101	7,240	302	0.039	280	239	38.8	28.1	2.7
5/25/2011	5.304	7,285	304	0.036	266	240	40.3	29.2	2.7
5/26/2011	5.229	7,214	301	0.037	267	238	39.7	28.8	2.7
5/27/2011	5.072	7,059	294	0.037	262	233	38.5	27.9	2.6
5/28/2011	4.996	7,122	297	0.038	273	235	38.0	27.5	2.6
5/29/2011	5.026	7,070	295	0.039	272	233	38.2	27.6	2.6
5/30/2011	4.800	7,007	292	0.040	280	231	36.5	26.4	2.6
5/31/2011	4.928	7,099	296	0.038	272	234	37.5	27.1	2.6
6/1/2011	4.992	7,191	300	0.039	281	237	37.9	27.5	2.7

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
6/2/2011	4.839	6,291	262	0.040	250	208	36.8	26.6	2.3
6/3/2011	5.364	6,477	270	0.036	236	214	40.8	29.5	2.4
6/4/2011	6.466	7,604	317	0.031	234	234	49.1	35.6	2.8
6/5/2011	7.320	8,748	365	0.031	268	268	55.6	40.3	3.2
6/6/2011	6.718	8,324	347	0.031	258	258	51.1	37.0	3.1
6/7/2011	6.572	8,007	334	0.030	242	242	49.9	36.1	3.0
6/8/2011	6.766	8,353	348	0.030	253	253	51.4	37.2	3.1
6/9/2011	6.683	8,112	338	0.031	248	248	50.8	36.8	3.0
6/10/2011	6.575	8,018	334	0.031	245	245	50.0	36.2	3.0
6/11/2011	6.329	7,804	325	0.030	237	237	48.1	34.8	2.9
6/12/2011	6.310	7,660	319	0.030	230	230	48.0	34.7	2.8
6/13/2011	6.514	7,963	332	0.029	234	234	49.5	35.8	2.9
6/14/2011	6.405	7,719	322	0.030	231	231	48.7	35.2	2.8
6/15/2011	5.929	7,501	313	0.034	253	248	45.1	32.6	2.8
6/16/2011	5.716	7,354	306	0.036	263	243	43.4	31.4	2.7
6/17/2011	5.829	7,543	314	0.035	265	249	44.3	32.1	2.8
6/18/2011	5.861	7,521	313	0.035	260	248	44.5	32.2	2.8
6/19/2011	5.716	7,252	302	0.035	253	239	43.4	31.4	2.7
6/20/2011	5.352	6,832	285	0.036	248	225	40.7	29.4	2.5
6/21/2011	5.216	6,668	278	0.035	236	220	39.6	28.7	2.5
6/22/2011	5.447	6,857	286	0.033	229	226	41.4	30.0	2.5
6/23/2011	5.469	6,986	291	0.034	235	231	41.6	30.1	2.6
6/24/2011	5.585	6,989	291	0.034	238	231	42.4	30.7	2.6
6/25/2011	5.645	7,125	297	0.035	247	235	42.9	31.0	2.6
6/26/2011	5.528	7,069	295	0.036	252	233	42.0	30.4	2.6
6/27/2011	5.401	7,061	294	0.036	255	233	41.0	29.7	2.6
6/28/2011	5.413	7,100	296	0.035	245	234	41.1	29.8	2.6
6/29/2011	5.297	7,125	297	0.036	253	235	40.3	29.1	2.6
6/30/2011	5.183	6,970	290	0.036	251	230	39.4	28.5	2.6
7/1/2011	5.167	6,815	284	0.036	246	225	39.3	28.4	2.5
7/2/2011	5.184	6,878	287	0.036	244	227	39.4	28.5	2.5
7/3/2011	5.453	6,719	280	0.036	244	222	41.4	30.0	2.5
7/4/2011	5.528	6,696	279	0.038	256	221	42.0	30.4	2.5
7/5/2011	5.598	6,989	291	0.039	270	231	42.5	30.8	2.6
7/6/2011	5.908	7,361	307	0.038	283	243	44.9	32.5	2.7
7/7/2011	5.822	7,498	312	0.039	290	247	44.2	32.0	2.8
7/8/2011	5.601	7,268	303	0.038	277	240	42.6	30.8	2.7
7/9/2011	5.294	7,145	298	0.040	284	236	40.2	29.1	2.6
7/10/2011	5.220	7,077	295	0.039	279	234	39.7	28.7	2.6
7/11/2011	5.093	7,092	296	0.039	276	234	38.7	28.0	2.6
7/12/2011	5.056	7,106	296	0.038	267	234	38.4	27.8	2.6
7/13/2011	5.054	7,026	293	0.038	267	232	38.4	27.8	2.6
7/14/2011	4.999	7,062	294	0.039	276	233	38.0	27.5	2.6
7/15/2011	4.989	7,064	294	0.039	272	233	37.9	27.4	2.6
7/16/2011	5.023	7,114	296	0.038	272	235	38.2	27.6	2.6
7/17/2011	5.078	7,165	299	0.039	281	236	38.6	27.9	2.6
7/18/2011	5.323	7,145	298	0.038	274	236	40.5	29.3	2.6
7/19/2011	5.278	7,221	301	0.039	279	238	40.1	29.0	2.7
7/20/2011	5.048	6,817	284	0.039	265	225	38.4	27.8	2.5
7/21/2011	5.054	6,870	286	0.039	267	227	38.4	27.8	2.5
7/22/2011	5.067	7,025	293	0.039	274	232	38.5	27.9	2.6
7/23/2011	5.187	7,168	299	0.039	279	237	39.4	28.5	2.6
7/24/2011	5.402	7,600	317	0.041	309	251	41.1	29.7	2.8
7/25/2011	5.549	7,317	305	0.039	286	241	42.2	30.5	2.7
7/26/2011	5.408	7,040	293	0.039	271	232	41.1	29.7	2.6
7/27/2011	5.150	7,101	296	0.038	273	234	39.1	28.3	2.6
7/28/2011	5.114	7,146	298	0.039	277	236	38.9	28.1	2.6
7/29/2011	5.288	7,301	304	0.039	282	241	40.2	29.1	2.7
7/30/2011	5.208	7,266	303	0.039	285	240	39.6	28.6	2.7
7/31/2011	5.258	7,293	304	0.039	288	241	40.0	28.9	2.7
8/1/2011	5.260	7,257	302	0.040	289	239	40.0	28.9	2.7

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
8/2/2011	5.254	6,673	278	0.039	263	220	39.9	28.9	2.5
8/3/2011	5.281	7,236	301	0.038	278	239	40.1	29.0	2.7
8/4/2011	5.342	7,283	303	0.039	281	240	40.6	29.4	2.7
8/5/2011	5.346	7,237	302	0.038	277	239	40.6	29.4	2.7
8/6/2011	5.358	7,351	306	0.039	286	243	40.7	29.5	2.7
8/7/2011	5.334	7,382	308	0.039	289	244	40.5	29.3	2.7
8/8/2011	5.332	7,383	308	0.039	289	244	40.5	29.3	2.7
8/9/2011	5.396	7,334	306	0.039	285	242	41.0	29.7	2.7
8/10/2011	5.386	7,323	305	0.038	281	242	40.9	29.6	2.7
8/11/2011	5.386	7,333	306	0.038	282	242	40.9	29.6	2.7
8/12/2011	5.279	7,324	305	0.039	287	242	40.1	29.0	2.7
8/13/2011	5.275	7,310	305	0.040	289	241	40.1	29.0	2.7
8/14/2011	5.346	7,345	306	0.040	295	242	40.6	29.4	2.7
8/15/2011	5.438	7,343	306	0.039	288	242	41.3	29.9	2.7
8/16/2011	5.575	7,507	313	0.039	292	248	42.4	30.7	2.8
8/17/2011	5.491	7,466	311	0.039	293	246	41.7	30.2	2.8
8/18/2011	5.496	7,513	313	0.040	298	248	41.8	30.2	2.8
8/19/2011	5.450	7,587	316	0.040	302	250	41.4	30.0	2.8
8/20/2011	5.429	7,594	316	0.040	300	251	41.3	29.9	2.8
8/21/2011	5.355	7,323	305	0.038	278	242	40.7	29.5	2.7
8/22/2011	5.253	7,264	303	0.038	278	240	39.9	28.9	2.7
8/23/2011	5.480	7,400	308	0.038	284	244	41.6	30.1	2.7
8/24/2011	5.496	7,347	306	0.039	288	242	41.8	30.2	2.7
8/25/2011	5.354	7,272	303	0.038	276	240	40.7	29.4	2.7
8/26/2011	5.387	7,278	303	0.038	280	240	40.9	29.6	2.7
8/27/2011	5.374	7,233	301	0.038	275	239	40.8	29.6	2.7
8/28/2011	5.233	7,248	302	0.039	282	239	39.8	28.8	2.7
8/29/2011	5.293	7,182	299	0.039	279	237	40.2	29.1	2.6
8/30/2011	5.291	7,289	304	0.039	287	241	40.2	29.1	2.7
8/31/2011	5.291	7,290	304	0.039	286	241	40.2	29.1	2.7
9/1/2011	5.276	7,291	304	0.039	287	241	40.1	29.0	2.7
9/2/2011	5.308	7,292	304	0.040	288	241	40.3	29.2	2.7
9/3/2011	5.349	7,293	304	0.040	289	241	40.7	29.4	2.7
9/4/2011	5.385	7,294	304	0.040	290	241	40.9	29.6	2.7
9/5/2011	5.268	7,295	304	0.040	291	241	40.0	29.0	2.7
9/6/2011	5.243	7,296	304	0.040	292	241	39.8	28.8	2.7
9/7/2011	5.412	7,297	304	0.040	293	241	41.1	29.8	2.7
9/8/2011	5.398	7,298	304	0.040	294	241	41.0	29.7	2.7
9/9/2011	5.421	7,299	304	0.040	295	241	41.2	29.8	2.7
9/10/2011	5.504	7,300	304	0.041	296	241	41.8	30.3	2.7
9/11/2011	5.440	7,301	304	0.041	297	241	41.3	29.9	2.7
9/12/2011	5.379	7,302	304	0.041	298	241	40.9	29.6	2.7
9/13/2011	5.275	7,303	304	0.041	299	241	40.1	29.0	2.7
9/14/2011	5.400	7,304	304	0.041	300	241	41.0	29.7	2.7
9/15/2011	5.470	7,305	304	0.041	301	241	41.6	30.1	2.7
9/16/2011	5.509	7,306	304	0.041	302	241	41.9	30.3	2.7
9/17/2011	5.479	7,307	304	0.042	303	241	41.6	30.1	2.7
9/18/2011	5.471	7,308	304	0.042	304	241	41.6	30.1	2.7
9/19/2011	5.439	7,309	305	0.042	305	241	41.3	29.9	2.7
9/20/2011	5.301	7,310	305	0.042	306	241	40.3	29.2	2.7
9/21/2011	5.348	7,311	305	0.042	307	241	40.6	29.4	2.7
9/22/2011	5.384	7,312	305	0.042	308	241	40.9	29.6	2.7
9/23/2011	5.331	7,313	305	0.042	309	241	40.5	29.3	2.7
9/24/2011	5.281	7,314	305	0.042	310	241	40.1	29.0	2.7
9/25/2011	5.287	7,315	305	0.043	311	241	40.2	29.1	2.7
9/26/2011	5.394	7,316	305	0.043	312	241	41.0	29.7	2.7
9/27/2011	5.328	7,317	305	0.043	313	241	40.5	29.3	2.7
9/28/2011	5.074	7,318	305	0.043	314	241	38.6	27.9	2.7
9/29/2011	5.123	7,319	305	0.043	315	242	38.9	28.2	2.7
9/30/2011	5.430	7,320	305	0.043	316	242	41.3	29.9	2.7
10/1/2011	5.625	8,331	347	0.032	266	266	42.7	30.9	3.1

Date	Fuel	Firing Rate		NOx	NOx, lb		PM	VOC	CO
	MMscf	MMBtu	MMBtu/hr	lb/MMBtu	Actual	Ract Adj.	lb	lb	lb
10/2/2011	5.715	8,430	351	0.032	267	267	43.4	31.4	3.1
10/3/2011	5.718	8,476	353	0.032	274	274	43.5	31.5	3.1
10/4/2011	5.969	8,906	371	0.030	269	269	45.4	32.8	3.3
10/5/2011	6.893	9,509	396	0.026	248	248	52.4	37.9	3.5
10/6/2011	6.876	9,453	394	0.027	252	252	52.3	37.8	3.5
10/7/2011	6.868	9,068	378	0.027	241	241	52.2	37.8	3.3
10/8/2011	6.828	9,101	379	0.026	237	237	51.9	37.6	3.4
10/9/2011	6.837	9,177	382	0.026	234	234	52.0	37.6	3.4
10/10/2011	6.457	9,083	378	0.024	222	222	49.1	35.5	3.4
10/11/2011	6.549	9,001	375	0.025	224	224	49.8	36.0	3.3
10/12/2011	6.781	8,791	366	0.026	229	229	51.5	37.3	3.2
10/13/2011	6.762	8,599	358	0.026	226	226	51.4	37.2	3.2
10/14/2011	6.784	9,038	377	0.026	237	237	51.6	37.3	3.3
10/15/2011	6.989	9,247	385	0.027	245	245	53.1	38.4	3.4
10/16/2011	6.983	9,405	392	0.026	246	246	53.1	38.4	3.5
10/17/2011	6.785	9,065	378	0.026	233	233	51.6	37.3	3.3
10/18/2011	3.659	3,179	132	0.025	79	79	27.8	20.1	1.2
10/19/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/20/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/21/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/22/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/23/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/24/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/25/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/26/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/27/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/28/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/29/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/30/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0
10/31/2011	0.000	0	0	0.000	0	0	0.0	0.0	0.0

Note: Heater shutdown from 10/19/2011 until present (7/12)

Appendix D
Air Health Risk Screening Evaluation

INTEROFFICE MEMORANDUM
October 4, 2012

TO: **Brenda Cabral** **Via:** **Daphne Chong**
FROM: **Ted Hull**

SUBJECT: **Results of Health Risk Screening Analysis for ConocoPhillips (Rodeo, CA) Plant #16, Application #022904**

SUMMARY: Per your request, we have completed a health risk screening analysis (HRSA) for the above referenced permit application. The analysis estimates the health risk impacts resulting from toxic air contaminant (TAC) emissions from an increase of shipping emissions at the ConocoPhillips Rodeo Refinery. Mobile source TAC emissions are not subject to Regulation 2, Rule 5 "New Source Review of Toxic Air Contaminants", but were evaluated in order to establish the significance of these impacts with respect to CEQA guidelines. Specifically, the intent is to demonstrate that a proposed increase in tanker crude oil deliveries will not lead to significant risk impacts. For 23 tanker ships per year (plus accompanying tugs), the highest cancer risk impact was found to be 7.2 in a million and the chronic HI was 0.003. In the BAAQMD, a significant air quality impact with respect to emissions of toxic air contaminants is an increased cancer risk above 10.0 in a million or a non-cancer chronic hazard index above 1.0. Since the health risk impacts associated with this project are below these levels they are not considered to be significant for the purpose of CEQA review or public notification under the Air Toxics Hot Spots Program.

EMISSIONS: Diesel PM emissions from shipping operations (cargo ships and escort tugs) are based on those provided with the application, but include only the area from the shipping channel to the pier because of diminishing impacts further from the pier. Emissions were adjusted for toxicity and assumed exposure levels, so that a single risk based emission value was entered for each source component (See Spreadsheet Tables 3, 4, and 5). Model runs were set up to estimate the maximum project risk in the following categories: (1) Cancer Risk and (2) Chronic Hazard Index for Residential and Off-site Worker receptors.

MODELING: The ISCST3 air dispersion computer model was used to estimate annual average and concentrations. The model was run with Phillips Rodeo meteorological data. Elevated terrain was considered using one ninth arc second NED data for Contra Costa, Napa, and Solano Counties. Model runs were made with rural dispersion coefficients to best represent the land use in the vicinity of the source. Stack and building parameters for the analysis were based on information provided by the applicant. Shipping lanes were modeled as a series of connected area sources to approximate ship and tug travel. Pollutant release heights were used to approximate the stack heights of a cargo ship or a tug. Initial vertical dimensions (3 meters) were added to the release heights to account for mechanical mixing.

HEALTH RISK: Estimates of residential risk assume potential exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimates for offsite workers assume potential exposure occurs 8 hours per day, 245 day per year, for 40 years. Cancer risk adjustment factors (CRAFs) were used to calculate all cancer risk estimates. The CRAFs are age-specific weighting factors used in calculating cancer risks from exposures of infants, children and adolescents, to reflect their anticipated special sensitivity to carcinogens. The estimated health risks for this permit application are presented in the table below.

Receptor	NAD 83 UTM Coordinates (meters)		Cancer Risk (in a million)	Non-cancer Hazard Quotient
	Easting (x)	Northing (y)		
Resident	566,702	4,214,222	7.2	0.003
Worker	564,776	4,213,724	1.5	0.001

Phillips 66 - Application #022904
Health Risk Assessment - Ships

Table 1: Exposure Adjustment Factors (EAFs)

	Daily (hours/day	Weekly (days/week)	Annually (weeks/year)	Lifetime (years per 70-yr lifetime)	Exposure Adjustment Factors (EAFs)[1]	
Resident is Present While Source is Operating	24	7	50	70		
Worker is Present While Source is Operating	8	5	49	40		
Student is Present While Source is Operating	10	5	36	9	(cancer risk)	(non-cancer hazard)
Source is Operating	24	7	52	70		
Fraction of Time **Resident** is Present While the Source is Operating	1.00	1.00	0.96	1.00	1.63	0.96
Fraction of Time **Worker** is Present While the Source is Operating	0.33	0.71	0.94	0.57	0.13	0.22
Fraction of Time **Student** is Present While the Source is Operating	0.42	0.71	0.69	0.13	0.08	0.21

Exposure Parameters:

Receptor	Breathing Rate (BR)[2] (L/kg-day)	Exposure Time (ET) (hours/day)	Exposure Frequency (EF) (day/year)	Exposure Duration (ED) (years)	Units Conversion Factor (UCF) $(mg\text{-}m^3)/(ug\text{-}L)$	Averaging Time (70 years) (days)
Resident	302	24	350	70	1.0E-06	25,550
Worker	447	8	245	40	1.0E-06	25,550
Student	581	10	180	9	1.0E-06	25,550

Notes:

1. The fraction of time that a receptor is present while a source is operating can not exceed one. Thus, if a receptor is present 10 hours/day, but the source operates only 8 hours/day, the maximum that the receptor can be present while the source is operating is the number of hours the source is operating (e.g., 8 hours). In accordance with OEHHA Guidelines, cancer risk adjustment factors have been added as follows: Resident (1.7 x), Worker (1.0 x), Student (3.0 x).
2. Based on a 24-hour day. Worker breathing rate is 149 L/kg-day (for an 8-hour workday), and 447 L/kg-day (for a 24-hour day).

Table 2: Diesel PM Risk Based Adjustment Factors

	Cancer Risk			Chronic Risk		
Receptor	Inhalation Dose Factor (mg/kg-day)	Inhalation Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Risk x E-6 Emission Factor Adjustment	Exposure Adjustment Factor	Inhalation REL ($\mu g/m^3$)	Chronic Risk Emission Factor Adjustment
Resident	4.94E-04	1.10E+00	**5.43E+02**	0.96	5.00E+00	**1.92E-01**
Worker	5.73E-05	1.10E+00	**6.30E+01**	0.22	5.00E+00	**4.49E-02**
Student	4.62E-05	1.10E+00	**5.08E+01**	0.21	5.00E+00	**4.12E-02**

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Health Risk Assessment - Ships

Table 3: Ship Traffic - Diesel PM Emissions Calculation

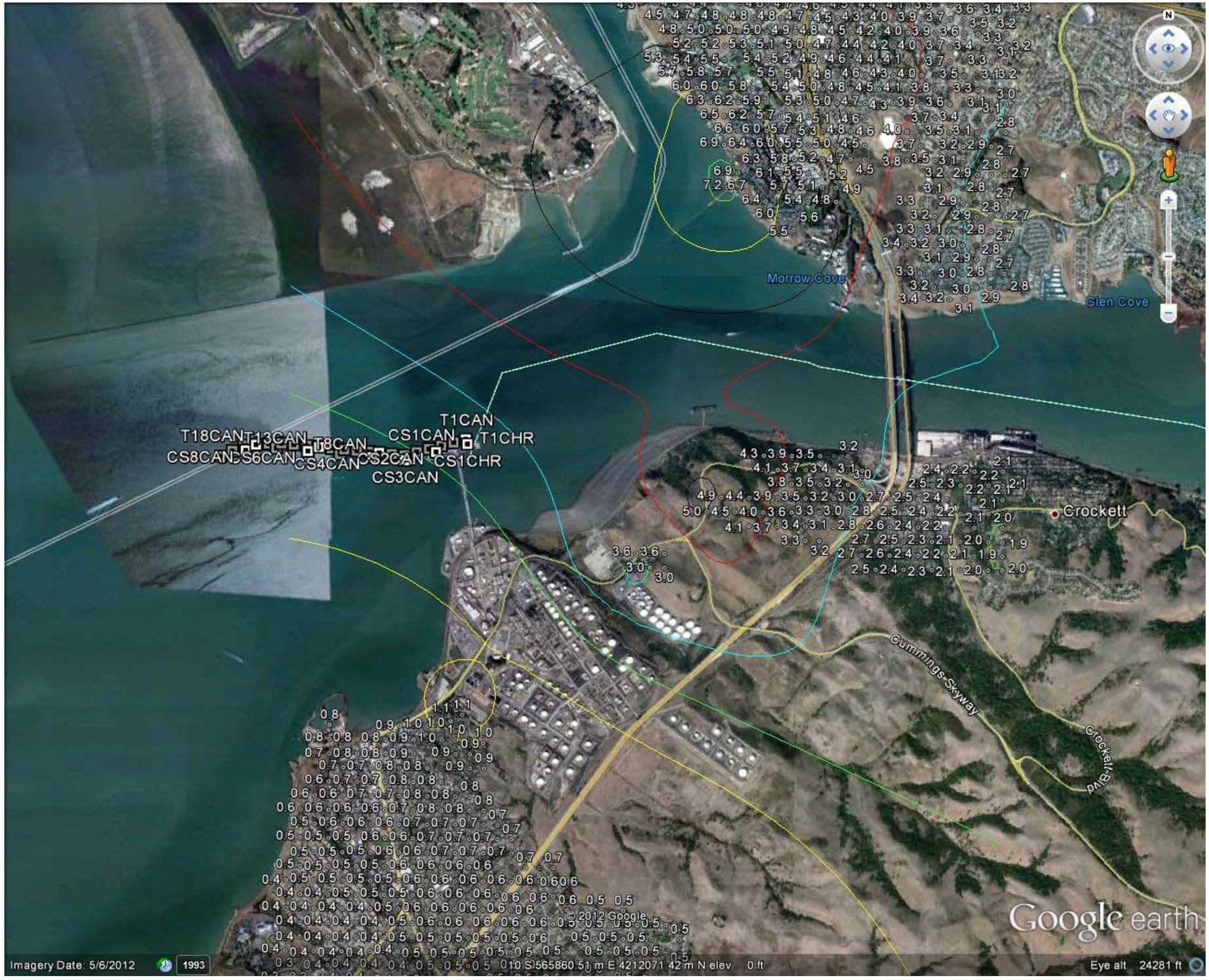
Ship Type	Operating Mode	Diesel PM per trip (lb)	Total Trips per year	Diesel PM Emissions (lb/yr)
Cargo Carrier	Maneuvering, Harbor	13.0	23	299.0
	Hotelling, Pier:	32.2	23	740.6
Tug	Manuvering, Harbor/Pier	20.9	23	480.0

Table 4: Cargo Carrier - Risk Adjusted Inputs

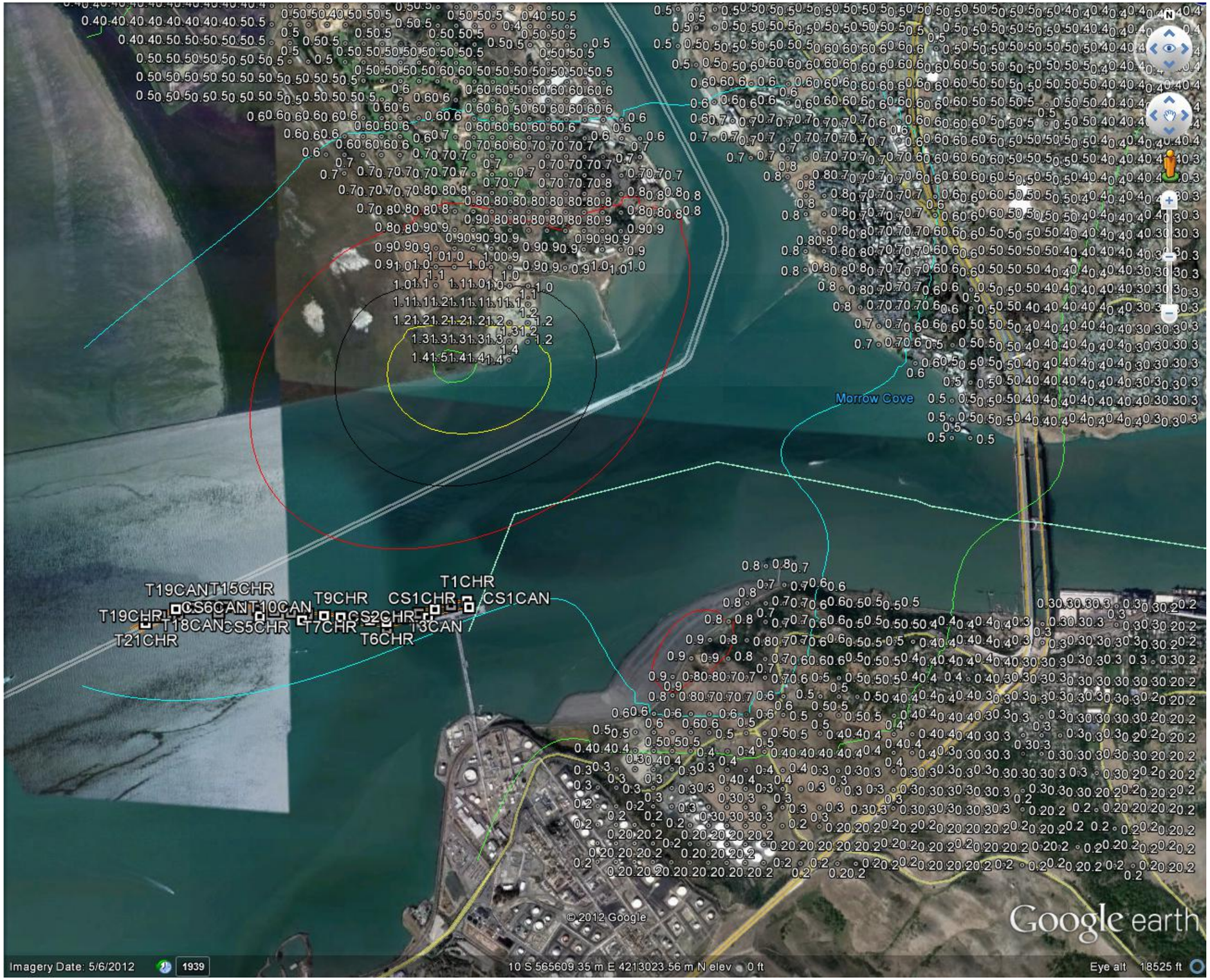
Source ID	Source Description	Diesel PM (g/s)	Res. Cancer Risk Input	Worker Cancer Risk Input	Res. Chronic Risk Input	Worker Chronic Risk Input
CS1	Cargo Ship Hotelling	1.0652E-02	5.7845E+00	6.7152E-01	2.0486E-03	4.7800E-04
CS2	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05
CS3	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05
CS4	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05
CS5	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05
CS6	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05
CS7	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05
CS8	Cargo Ship	6.1439E-04	3.3362E-01	3.8730E-02	1.1815E-04	2.7569E-05

Table 5: Tug Escort - Risk Adjusted Inputs

Source ID	Source Description	Diesel PM (g/s)	Res. Cancer Risk Input	Worker Cancer Risk Input	Res. Chronic Risk Input	Worker Chronic Risk Input
T1	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T2	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T3	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T4	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T5	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T6	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T7	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T8	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T9	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T10	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T11	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T12	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T13	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T14	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T15	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T16	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T17	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T18	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T19	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T20	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05
T21	Tug Escort	3.2878E-04	1.7853E-01	2.0726E-02	6.3226E-05	1.4753E-05



Modeled Cancer Risk/Chronic Hazard Index for Residential Receptors



Modeled Cancer Risk/Chronic Hazard Index for Off-Site Worker Receptors