BAAQMD Rule 12-15

Quality Assurance Project Plan

Revision 2.0

Phillips 66 Rodeo Refinery

February 2023

Document Control			
Revision #	Revision Date	Description	Signature
1.0	7/9/2021	Original	
2.0	2/10/2023	Amended for new requirements on H_2S monitoring with TDL	

Table of Contents

1- Background

1.1 - Introduction

The purpose of this Quality Assurance Project Plan (QAPP) is to prescribe requirements, procedures, and guidelines for the Phillips 66 Rodeo Refinery (the Refinery) Fence Line Air Monitoring Program. It is intended to serve as a reference document for implementing the Quality Assurance and Quality Control program and describes operational procedures for the measurement processes used by Phillips 66 and contractors in the operation and maintenance of the monitoring equipment. The QAPP is a compilation of QA requirements, procedures, and guidelines that are applicable to air pollution and meteorological measurement systems. These systems are designed to achieve a high percentage of valid data readings while maintaining integrity and accuracy within prescribed limits. This QAPP clearly and thoroughly establishes QA protocols and QC criteria required to successfully implement and maintain the Fence Line Monitoring (FLM) Program in accordance with the Air Monitoring Plan submitted to BAAQMD under Rule 12-15. The QAPP will be evaluated annually and on as-needed basis and will be updated and sent to the BAAQMD for approval if updates are needed before implementation.

1.2 - Project Description

The Refinery Fence Line Monitoring Program is composed of several ambient air monitoring systems meeting the siting requirements specified in BAAQMD Rule 12-15. Data gathered from the monitoring instrumentation is averaged over a 5-minute period and polled by a data logging system that stores each data point in a local database. The data is also copied to a remote server, which is used for the real-time public access web page. Data validation checks will be performed to meet the data quality objectives outlined in this document. A description of the FLM system is presented in the Air Monitoring Plan submitted to the BAAQMD. Table 1 lists the locations of the monitoring equipment sites and Figure 1 shows these locations on an aerial image.

Table 1 – Monitoring Site Locations

Site Name	Equipment	GPS (Latitude)	GPS (Longitude)	Elevation (Feet AGL)	Elevation (Feet Above See Level)	Path-length (m)
North Fence Line Source Tower	FTIR Source, TDL Reflector, and OP-UV Source	38° 2'51.3"N	122°15'7.4"W	~ 15	~ 200	920
North Fence line Receivers	FTIR, TDL and UV workstations	38° 2'32.4"N	122°14'37.6"W	<10	~ 275	920
Organic Gas Detector #1	Organic Gas Detector	38° 2'17.5"N	122°14'24.0"W	<10	~ 240	NA
Organic Gas Detector #2	Organic Gas Detector	38° 2'18.5"N	122°14'37.0"W	<10	~ 350	NA

Figure 1 - Map of Monitoring Equipment

2 - Program Organization

The facility may opt to utilize a contractor to maintain and operate the FLM system equipment. While this arrangement may be changed in the future as appropriate, the FLM program is currently organized between Phillips 66 and a contractor tasked with operating and maintaining the systems.

A project manager at Phillips 66 will be responsible for managing the work performed by the contractor operating and maintaining the fence line system. In addition, the project manager will act as the primary interface between all stakeholders including the refinery management, the BAAQMD, and the public. Field technicians and the operations manager will be responsible for the day-to-day operation of the fence line monitoring system.

Key Personnel

In general, the following organizational roles associated with the fence line monitoring program are outlined below. These roles may change in the future as needed.

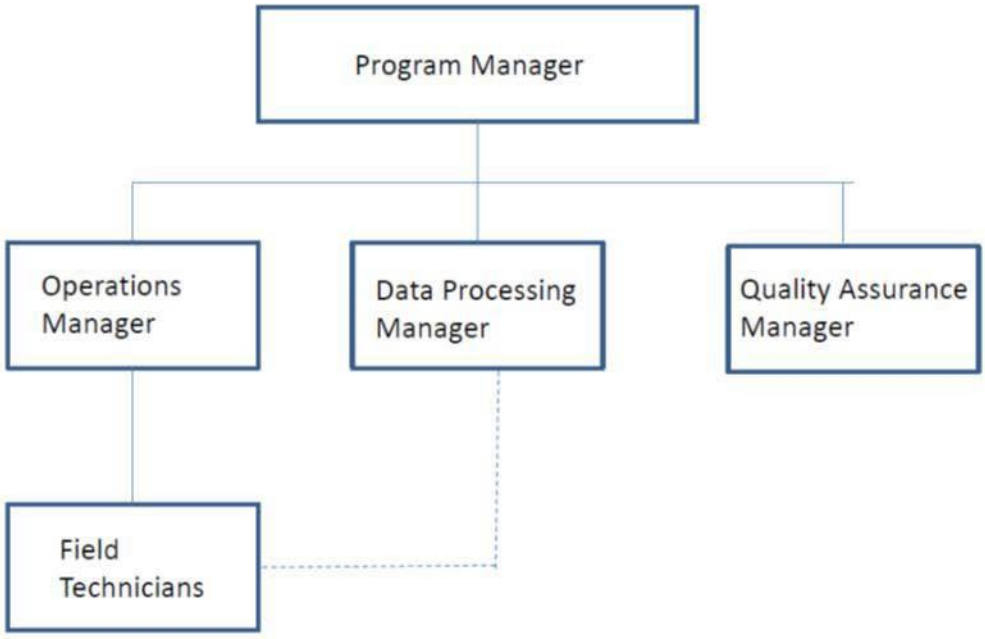
Program Manager – The Program Manager is responsible overall management of the fence line system.

Operations Manager – The Operations Manager is responsible for day-to-day activities associated with the fence line system.

Quality Assurance Manager – The Quality Assurance Manager is responsible for ensuring all Standard Operating Procedures are updated and maintained. Additional responsibilities include maintaining all real-time monitoring databases as well as summarizing and storing all data quality records associated with the fence line monitoring program.

Data Processing Manager – The Data Processing Manager is responsible for report generation and ensuring all measurement quality objectives are met for the fence line monitoring program.

Field Technician – The Field Technician is responsible for the day-to-day operation of the fence line monitoring system including following an equipment operation verification and maintenance schedule to assure data quality.



3 - Data Quality Objectives

3.1 - Instrument Types

Equipment included in this QAPP includes the north fence line source tower and receivers specified in Table 1 which includes FTIR, UV, and TDL devices. There are also 2 organic gas detectors covered as described in Table 1. Please see the Phillips 66 Regulation 12, Rule 15 Air Monitoring Plan (AMP) for further details about this equipment.

3.2 - Operating Schedules - Sampling Frequency and Data Completeness Requirements

All air monitoring equipment specified for the Refinery fence line system are set to collect data on five-minute averages and will meet a minimum of 75% completeness on an hourly basis 90% of the time based on annual quarters. Atmospheric conditions beyond the control of the refinery that affects accurate measurements, such as dense fog, shall not be counted against data completeness requirements if appropriate measurements document times when these conditions exist. After accounting for these instances, the resultant data completeness metric is referred to as on-stream efficiency in this document.

3.3 - Weather Related Exclusions/Downtime

Atmospheric conditions beyond the control of the Refinery that affect accurate measurements are

typically rain, fog, and dust. Light beams produced by the open-path systems are scattered when they interact with water vapor or particles in the air, and the resulting instrument light signal drops below a level where data can be reliably quantified. When an instrument's signal drops below a predetermined level, coincident measurements of optical visibility will be used to identify and flag low-signal events to atmospheric conditions beyond the control of the Refinery.

Other types of atmospheric conditions beyond the control of the refinery can occur including smoke from fires, dust during strong wind events, and earthquakes – all of which affect the ability of an open-path instrument to provide accurate measurements. Data from the meteorological station including wind speed and direction, temperature, and relative humidity will be used to confirm weather-related events where applicable. In the event an instrument indicates a low signal, the data may be flagged as being caused by other environmental factors.

3.4 - Instrument Operation Verification

Throughout the measurement process, each analyzer will be checked for data quality. Each quality check is based on a core Data Quality Objective (DQO) that presents a description of the overall level of data quality to be met by the program. The DQO for the Rule 12-15 fence line monitoring program is to ensure the data obtained from the fence line system meets the quality standards needed for presenting data to the public. Measurement Quality Objectives (MQOs) are evaluations of certain parameters needed to assure the validity of data generated by the monitors. MQOs are designed to evaluate the measurement process to ensure the total measurement confidence needed to meet the DQO. Each MQO includes a data quality indicator which identifies specific criteria used to evaluate whether the instrument performance is satisfactory for that objective. This is referred to as the acceptance criteria below. If an analyzer fails an MQO, corrective action will be initiated to address the issue. The FLM system MQOs and associated acceptance criteria are discussed in the following sections.

3.4.1 – FLM System MQO #1 - Open Path FTIR - Detection Limit for Alkanes

Frequency: Monthly

Description: MQO #1 is to determine the detection limit using the method outlined in the Environmental Protection Agency's (EPA's) Environmental Technology Verification (ETV) Test Protocol for open-path air monitoring systems and to compare this result to the required lower detection limit for alkane gas specified in the Air Monitoring Plan approved July 9, 2018.

Measurement Quality Objective: The minimum detection limit (MDL) is calculated by collecting a series of 26 single-beam spectra taken using the appropriate averaging time (5-min). The single-beam spectra are used to create absorption spectra, using each single beam spectrum as the background for the next spectrum. The absorption spectra are created by using the first and second single-beam spectra, the second and third, the third and fourth, etc. The resulting 25

absorption spectra are analyzed for the target gas. For this MQO, the MDL is defined as two times the standard deviation of the calculated concentrations.

Acceptance Criteria: MQO #1 will be considered to have been met if the calculated minimum detection limit is less than or equal to the required lower detection limit specified in the Air Monitoring Plan approved July 9, 2018.

Corrective Action: If the system does not meet the acceptance criteria, the electronic records saved during the test will be sent to the equipment manufacturer or their representative to troubleshoot the issue.

3.4.2 – FLM System MQO #2 – Open Path FTIR - Concentration Limits for Methane

Frequency: Continuous

Description: MQO #2 is to check that as the FTIR air monitoring system records data, it can detect methane in the ambient air above concentrations of 1.7 ppm. This is the approximate natural concentration of methane in the ambient air. The FTIR includes internal status flags that record whether the quantified methane concentration is above this level. If the system fails this QA/QC check, a data flag is generated.

Measurement Quality Objective: Instrument quantified detection of methane is reviewed for each 5-minute period.

Acceptance Criteria: MQO #2 will be considered to have been met if the real-time measured value of methane gas is greater than or equal to 1.7 ppm.

Corrective Action: If the system does not meet the acceptance criteria, appropriate personnel will be notified via email that the system may not be operating correctly and troubleshooting will occur, as needed.

3.4.3 - FLM System MQO #3 - Open Path FTIR - Signal Strength Validation

Frequency: Monthly

Description: MQO #3 is to check the light signal from the FTIR system and compare it to a known signal strength needed to meet the detection limits listed in Table 2 for the FTIR system.

Measurement Quality Objective: At the end of each month's maintenance activities, the signal strength of the IR Beam will be measured at three different spectral areas as specified in Table 2. The measured value of the light signal must be greater than or equal to the percent of full scale or each wave number.

Table 2 – Infrared Light Wavelength Checks

Wavenumber (cm^{-1})	Percent of Full Scale
950	18.75
2750	2.5
4100	0.625

Acceptance Criteria: MQO #3 will be considered to have been met if the measured light signal is greater than or equal to the percentage of full scale of the light signal as noted in Table 2.

Corrective Action: If the system does not meet the acceptance criteria, the following tasks will be performed to improve the signal strength.

- A realignment of the source and receiver unit will be performed.
- If necessary, all optical components of the system will be cleaned.
- If necessary, the IR source will be replaced.

3.4.4 - FLM System MQO #4 - Open Path FTIR - Challenge of System with Gas

Frequency: Monthly

Description: MQO #4 is to perform a Quality Control check to ensure the FTIR is correctly quantifying alkane gases. Alkane gas will be introduced into the beam path of the FTIR air monitoring system. The values generated by the analyzer will be compared to an independent quantification of the gas concentration in the data spectrum.

Measurement Quality Objective: The real-time concentration results of the FTIR software will be compared to a validation check using an independent method of quantifying the gas.

Acceptance Criteria: MQO #4 will be considered to have been met if the real-time quantified result is within 25% of the expected value (i.e., the independently quantified value).

Corrective Action: If the system does not meet the acceptance criteria, the electronic records saved during the test will be sent to the equipment manufacturer or their representative to troubleshoot the issue.

3.4.5 - FLM System MQO #5 - Open Path UV – Challenge of System with Gas

Frequency: Monthly

Description: MQO #5 is a Quality Control check to ensure the UV air monitoring system is correctly quantifying target gases. A gas cell with a known concentration of Benzene and SO_2 gas will be introduced into the beam path of the UV air monitoring system. The values generated by the analyzer will be compared to the known value of the gas cell. Benzene and

SO_2 are used for this check as they have spectral absorption features that spans the spectral range of the spectrometer.

Measurement Quality Objective: Gas calibration cells that contain a mixture of benzene and SO_2 gas will be inserted into the beam path. The system will collect data with the calibration cells in the beam path and quantify concentrations of each gas.

Acceptance Criteria: MQO #5 will be considered to have been met if the quantified result is within 25% of the expected value (i.e., the gas concentration in the cell).

Corrective Action: If the system does not meet the acceptance criteria, the electronic records saved during the test will be sent to the equipment manufacturer or their representative to troubleshoot the issue.

3.4.6 - FLM System MQO #6 – Open Path UV- Signal Strength Validation

Frequency: Monthly

Description: MQO #6 is to check the light signal from the UV system and compare it to a known signal strength needed to meet the detection limits listed in the Air Monitoring Plan approved July 9, 2018.

Measurement Quality Objective: At the end of each month's maintenance activities, the signal strength of the UV beam will be measured and recorded.

Acceptance Criteria: MQO #6 will be considered to have been met if the system achieves a signal strength of 75% of full scale at a sample integration time of 750 milliseconds or less.

Corrective Action: If the system does not meet the acceptance criteria, the following tasks will be performed:

- A realignment of the source and receiver unit will be performed.
- If necessary, all optical components of the system will be cleaned.
- If necessary, the UV light source will be replaced.

3.4.7 - FLM System MQO #7 – Open Path UV - Signal-to-Noise Check

Frequency: Monthly

Description: MQO #7 is to determine the signal-to-noise ratio of the UV air monitoring system.
Measurement Quality Objective: The MQO is defined by using the following process to measure the system noise:

- Two back-to-back spectra will be subtracted from each other to create an absorbance spectrum.
- The peak-to-peak noise absorbance spectrum will be examined in the region of 252.00

to 255.00 nanometers.

Acceptance Criteria: MQO #7 will be considered to have been met if the peak-to-peak noise is less than 0.003 absorbance units in the measurement region.

Corrective Action: If the system does not meet the acceptance criteria, system troubleshooting will occur. Additional actions such as aligning the source optics, cleaning system optical equipment, and replacing the light sources may be conducted as necessary. If the system fails this MQO upon system recheck, the manufacturer will be contacted for further assistance.

3.4.8 - FLM System MQO #8 - Organic Gas Detector – Calibration and Gas Challenge

Frequency: Quarterly

Description: MQO #8 is to check the response of the OGDs by introducing a calibration gas and noting the instrument response.

Measurement Quality Objective: The operation of the OGDs will be validated by challenging them with a known quantity of methane gas and checking the system response.

Acceptance Criteria: MQO #8 will be considered to have been met if the quantified result is within 25% of the expected value.

Corrective Action: If the system does not meet the acceptance criteria, the manufacturer or their representative will be contacted to troubleshoot the issue.

3.4.9 - FLM System MQO #9 - TDL Hydrogen Sulfide

Frequency: Continuous to Quarterly

Description: MQO #9 is to meet the performance objectives regarding the operation of the Open-path Tunable Diode Laser.

Measurement Quality Objective: The operational performance of the TDL will be validated by assessing the following criteria:

- Detection Limits
- Measurement Robustness
- Measurement Accuracy and Repeatability
- Measurement Linearity
- Bump Checks
- Ambient Gas Validation Checks

Table 3 presents the operational specifications for the Unisearch TDL as provided the instrument manufacturer.

Table 3 – Key performance Characteristics for the Unisearch Open-path UV TDL

Key Operational Parameters	Measurement Threshold
Minimum Light Level*	400 microwatts or a real time Signal Power of 0.4
Measurement of Light Level	Continuous
Measurement of Detection Limits	Continuous
Lower Detection limit Optimal Conditions**	Approximately 3 ppb
Typical Real-time Lower Detection limits***	≤ 25 ppb
Gas Quantification Limit****	125 ppb
Upper Detection Limit	12,000 ppm

* Below this level a Path Quality Flag will be generated which will cause the measurement to be rejected as invalid as per "*the **TAS Data Accumulator Quality Assurance Parameters Unisearch Open Path H2S**, Feb 2020*"
**Optimal operational conditions include the following elements - clear air, non-condensing atmosphere, clean instrument optics, winds less than 15 mph, relative humidity 20-90%
***Detection limits will be based on seven (7) most recent 5-min average concentration values having no analyte in detection; from these seven blank concentration values, detection limits are calculated as 3 times the standard deviation.
*** *The limit of quantitation is typically calculated based on at least 5 times the method detection limit. Optimal precision and accuracy cannot be expected below this limit.

Instrument performance will be demonstrated with an accuracy and repeatability as listed in Table 6. This will be tested using path insertion cells as part of the validation test. The system uses fiber coupled insertion cells with known concentrations of H_2S. The light beam will pass through the cell into the open-air to the retroflector and then back though the cell to light detector. Thus, the calibration check will include the full optical path the system. It is important to note that a response cell is not intended for calibrating the concentration measurements of a system. The introduction of additional windows can affect concentration readings. This test is simply to verify that the system responds to the test gas introduced into the open path. Table 4 presents the approximate concentrations of the test cells used for precision and accuracy measurements.

Table 4 – Concentrations of Fiber Coupled Cells

Cell #	Lower Concentration (ppb)	Upper Concentration (ppb)
1	266	532
2	532	1596
3	1596	3723
Validation Cell	266	532

Table 5 provides a summary of maintenance to be performed on the Unisearch TDL.

Table 5. Schedule of maintenance activities for the TDL

Activity	Monthly	Quarterly
Inspect optics on detector, clean if necessary.	✓	
Check the alignment and confirm signal levels. Signal power should be greater than 400 microwatts	✓	
Ensure there are no obstructions between the detector and the retro-reflector (such as equipment, vegetation, or vehicles).	✓	
Inspect all electrical and optical cables for wear. Replace as needed.	✓	
Backup data to a secondary drive.	✓	
Check system performance indicators (an evolving checklist is maintained).		✓
Perform bump test to verify the system can detect at or below a lower alarm limit. Take corrective action if % accuracy is more than 25%.	✓	
3-point calibration check. Take corrective action if outside of acceptance criteria.		✓

Data Quality Control: All measurements outlined here are subjected to precision and accuracy tests. During these tests, a number (N) of replicated 8 second measurements (x_i) of a standard reference material of known magnitude (x_{std}) will be measured. The average value of these measurements is calculated as

$$\bar{x} = \frac{\sum_i x_i}{N}$$

and the standard deviation (σ) as:

$$\sigma = \sqrt{\frac{\sum(x_i - \bar{x})^2}{N-1}}.$$

From these definitions, %Accuracy is defined as:

$$\%Accuracy = \frac{\bar{x} - x_{std}}{x_{std}} \times 100\%$$

and precision as the coefficient of variation (CV) expressed as a percentage:

$$Precision \equiv \%CV = \frac{\sigma}{\bar{x}} \times 100\%$$

A bump test verifies accuracy, and that the system can detect at or below the target concentration. Sealed cell development (by Unisearch) to enable bump tests and 3-point calibration checks for the TDL is in progress, and the accuracy of this method is under review. Table 4 presents the concentration ranges for the three sealed gas cells to be used for the 3 point calibration check as well as the independent bump check. Standard Operating Procedures describing this process for all maintenance and QA/QC that includes the use of the sealed cells and that includes using the cells in a manner that incorporates the atmospheric beam path during the calibration activity will incorporated into the publicly available QAPP when development activities are completed by Unisearch. Precision, or repeatability, is assessed by evaluating %CV during periods where concentrations are above the MDL and relatively consistent. Measurements should not be performed in the rain, fog, or when ambient concentrations of analytes/interfering species are changing rapidly (e.g., carbon dioxide). Bump test data can be used to calculate precision because many of these requirements are also required for successful bump tests.

Additional QC checks are shown in Table 6. Data that fails checks are brought to the attention of the data reviewer, project manager, and/or the instrument manufacturer for corrective action. Real-time validation procedures use ambient gases such as CO_2 and H_2O as an indicator that the instrumentation can detect gases that are always present in the atmosphere on a real-time basis. In addition, signal strength (recorded as Signal Power) from the TDL air monitoring system will be recorded in real-time and used to assess the validity of the data. Manufacture's guidance states the system can quantify gases if the measured light intensity is greater than 400 micro watts. Any data collected with light intensity below this level will be flagged as invalid and not reported to the community website in real-time. Finally, the raw spectral data files will be saved as single files and made available to the Air District upon request.

Table 6 - Quality control checks, frequency, and acceptance criteria for TDLAS analyzers

QA/QC Checks	Frequency	Acceptance Criteria
Bump test (H_2S) at approx. 125 ppb	Monthly	±25%
3-point calibration	Quarterly	±25% for [H_2S] ≤ 2,000 ppmm ±10% for [H_2S] > 2,000 ppmm
Signal Strength	Continuous	Greater than 400 micro watts or a SignalPower of 0.4*
CO_2	Continuous	Tracks Measurements made by FTIR
H_2O correlation (r)	Continuous	≥0.95

*** A signal power of 0.4 corresponds to a percent transmission of about 3 to 5%**

Acceptance Criteria: MQO #9 will be considered to have been met if all operational performance checks provided in Tables 3 and 6 are met.

Corrective Action: If the system does not meet the acceptance criteria, the electronic records saved during the test will be sent to the equipment manufacturer or their representative to troubleshoot the issue.

4 - Data Management

4.1 - Real-time Data Management

Data generated by the fence line monitoring equipment undergoes review throughout the measurement and reporting process. Included in this process are automated QA/QC checks that occur before data is reported on the real-time website. An automated system conducts the Quality Assurance checks before the data is reported to the website.

Data review will be overseen by the Data Processing Manager. No data will be altered in this process, but rather it will be considered valid or invalid and flagged accordingly. Automated real-time data checks are listed in Table 7.

Table 7 – Summary of Real-time Data Checks

Real-Time Check	System Check	Error Code	Follow-up Activities
Low Signal	Signal Threshold Test for UV or TDL	8	If the signal is below the threshold value: 1) The real-time website reports "Low Signal" to analyzer, and 2) an automated email is sent to the Program Manager, Operations Manager, and Field Technician.
Instrument Error Code	Instrument Error Code	0	The real-time website will report an "off-line" message. An email will be sent to the Program Manager, Operations Manager, and Field Technician notifying them of the situation. If necessary, the website message board will be updated to inform public that analyzer troubleshooting underway. If necessary, the website message board will be updated when system is back online
Analyzer Off-line	Analyzer Communication Check	0	The real-time website will report an "off-line" message. An email will be sent to the Program Manager, Operations Manager, and Field Technician. If appropriate, the website message board will be updated to inform the public that an analyzer is off-line, and troubleshooting is underway. If appropriate the website message board will be updated when system is back online.
Internet Connection Lost	Backup Connection Enabled	7	An email is sent to the Field Technician, Program Manager, and Operations Manager. A backup connection is enabled.
High Detection	Data Detection Above Threshold	4	The real-time website indicates a detection above certain threshold by a background color change for the gas. A notification is sent to the Operations Manager, Program Manager, Shift Supervisor, and Field Technician. The message board on the website will be updated with notification that Phillips 66 personnel are aware of the situation and are performing an investigation. Raw data will be examined to validate or invalidate the detection. The refinery will perform site survey to identify possible sources of the detection. The message board on the website will be updated once further information is available.

4.2 - Post-Processed Data Management

Data from the fence line system will be reviewed and validated monthly with the results stored in a separate portion of the monitoring database from the raw data. Data review and validation includes screening the entire data set for the following invalid data:

- Non-field data such as calibration data,
- Spurious data associated with power or mechanical issues, and
- Data with light signals below predetermined thresholds.

This data review will be overseen by the Data Processing Manager. No data will be altered in this process, but rather it will be considered valid or invalid and flagged accordingly. Table 8 summarizes the process by which monitoring data is reviewed and post processed.

Table 8- Summary of Data Validation Process

Post Process Data Check	System/Data Check	Follow up Activities
Gas Detection	Target Gas Detections	The Data Processing Manager will validate or invalidate all gas detections from the monitoring equipment.
Non-field Data Check	Maintenance logs and QA/QC logs will be checked to see when systems were not in a normal operating mode.	The Data Processing Manager will flag any non- field data such as data obtained during periods of maintenance activities. Such data will be excluded from future reporting.
Spurious Data	Instrument error codes will be reviewed and flagged if instrument error codes are recorded. Data associated with these codes will also be reviewed. As necessary, other spurious data may warrant review on a case by case basis (e.g., event based data, etc.).	The Data Processing Manager will flag any data when instrument error codes are recorded. Such data will be excluded from future reporting. If necessary, the Data Processing Manager will evaluate data of interest on a case-by-case basis and make a determination regarding the confidence of the data to reach a conclusion regarding data validity.
Low Signal	Data will be reviewed for low signal. If low signal is recorded, data will be flagged and the reason for low signal will be recorded.	The Data Processing Manager will flag any data when low signal flags are recorded. Such data will be excluded from future reporting.

4.3 - Corrective Actions

Phillips 66 will investigate any portion of the fence line system that fails to meet the above measurement quality objectives, or on-stream efficiency requirements under Rule 12-15. The investigation team will include members of the fence line management team and appropriate equipment vendors to assess the problem and to initiate corrective action. In addition, improvement opportunities identified will be considered as possible further action to minimize the

chance for similar problems in the future.

Phillips 66 is allowed to upgrade the system, without prior consultation of other parties, with substantially equivalent equipment or software (i.e., equipment that does not diminish the sensitivity of the equipment or the fence line system) as necessary to maintain system operability. Changes to equipment described in this QAPP may trigger a change in the Quality Assurance/Quality Control requirements associated with the updated equipment. If applicable, Phillips 66 will consult the BAAQMD on system modifications.

4.4 - Data Reporting and Availability

4.4.1 Public and BAAQMD Access

Data from the fence line monitors will be transmitted to an internet website where the near-real-time results can be viewed by the public. Automated QA/QC checks that will occur prior to the data being displayed on the public website are discussed in Section 4.1 of this document. Under normal circumstances, a 5-minute average measurement will appear on the website within 10 minutes of the end of the measurement period. However, the data uploaded may be impacted by internet traffic.

Once QA/QC of the final data is completed within 60 days after the end of each calendar quarter, the refinery will provide one-hour average concentration data in tabular format through a comma separated value (csv) data file to the BAAQMD. The report will also include the MDL as well as the measured light signal for each instrument. Data completeness for each instrumentation will be based on 75% completeness on an hourly basis, 90% of the time based on annual quarters. Atmospheric conditions that affect accurate measurements and that are beyond the control of the refinery shall not be counted against data completeness requirements. The BAAQMD may make the one-hour average data available to the public through a BAAQMD website or through a public records request. As needed, the refinery will make data available to BAAQMD upon request prior to the report submittal.

4.4.2 Annual BAAQMD Reporting

Phillips 66 will submit an annual report to the BAAQMD that summarizes overall performance of the fence line monitoring system. The report will include the following performance indicators:

- On-stream efficiency
- Annual averages of gas concentrations
- Any instances of failed MQOs

5 - Maintenance

Specific tasks for periodic testing, inspection, and maintenance are required for the air monitoring equipment to provide sufficient quality control to remain within the manufacturer's operating

specifications and ensure that the quality goals are met. Initial testing of each piece of equipment is conducted to ensure equipment operation is within the manufacturer's specifications. Operational checks are repeated during installation before initial calibration and use in measuring field conditions. Each monitor has manufacturer-recommended maintenance schedules that are found in the operating manuals.