

**SETTLEMENT AGREEMENT
BETWEEN SHELL CHEMICAL APPALACHIA LLC
AND CLEAN AIR COUNCIL
AND ENVIRONMENTAL INTEGRITY PROJECT**

WITNESSETH:

WHEREAS, on June 18, 2015, the Commonwealth of Pennsylvania Department of Environmental Protection (“DEP”) issued Plan Approval No. 04-00740A (the “Plan Approval”) to Shell Chemical Appalachia LLC (“Shell”) for Shell’s petrochemical complex to be located in Potter and Center Townships, Beaver County, Pennsylvania (the “Facility”);

WHEREAS, Clean Air Council and Environmental Integrity Project (the “Appellants”) appealed DEP’s issuance of the Plan Approval to the Commonwealth of Pennsylvania Environmental Hearing Board (“EHB”) on August 3, 2015, and that appeal was docketed at EHB Docket No. 2015-111-R (the “Appeal”);

WHEREAS, Counsel for Shell and Counsel for the Appellants first conferred about a settlement of the Appeal on August 12, 2015, and since then have continued to confer to negotiate a mutually acceptable resolution of the Appeal up to the date of this Settlement Agreement;

WHEREAS, DEP is named as a Respondent in the Appeal but is not a party to this Settlement Agreement;

WHEREAS, Shell and the Appellants (the “Parties”) believe that a settlement of the Appeal is in the best interests of the Parties, and for administrative and judicial economy; and

WHEREAS, the Parties seek to resolve the Appeal without further litigation and have agreed to the terms set forth below.

NOW, THEREFORE, the Parties, intending to be legally bound hereby and in consideration of mutual covenants and a mutual exchange of promises, warranties, agreements,

and obligations as recited herein, and for good cause and other good and valuable consideration, the adequacy and sufficiency of which is hereby acknowledged, agree as follows:

1. FENCELINE MONITORING.

A. The Appellants alleged in their August 3, 2015 Appeal of Shell's Plan Approval, among other things, that the Plan Approval does not include requirements to control fugitive emissions that comply with the federal Clean Air Act regulatory standard known as the "Lowest Achievable Emission Rate" or "LAER" because it did not include more stringent leak detection and repair work practices to minimize emissions from sources, including fenceline monitoring. While Shell does not agree that such additional work practices are required by law, are required by "LAER," or are otherwise necessary, Shell agrees to implement a fenceline monitoring program ("FLM program") in accordance with this Paragraph 1 and the criteria, terms, and procedures in Appendix A, which are incorporated herein by reference.

B. Shell will implement the FLM program as set forth in this Paragraph 1 and Appendix A beginning no later than 30 days from the date Shell commences Normal Operations at the Facility. The FLM program shall continue for a period of five (5) years. For purposes of this Agreement, "Normal Operations" shall be defined as the period of time commencing after the Facility has completed construction and temporary operation(s) of all source(s) to facilitate shakedown of the source(s) and air cleaning devices, for a limited time, not to exceed 180 days.

C. Prior to Normal Operations and beginning no later than 30 days after the startup of the ethane cracker unit, Shell will start the Passive Air Monitoring System (PAMS) as described in Appendix A, with the following exceptions: (i) no Action Level is applicable during this period and (ii) Shell will not be required to post the data to a website, as the Monitoring Data Website is not required until the FLM program commences. Shell will provide to counsel for

Appellants the PAMS sorbent tubes concentration data for Chemicals of Potential Concern for each two-week sampling period for all locations within 7 days after Shell receives the sample results from the third party laboratory. To further clarify, the PAMS monitoring set forth in this Paragraph 1.C. is not the FLM program; the FLM program will commence pursuant to Paragraph 1.B. above.

2. FLARES.

A. The Appellants alleged in their August 3, 2015 appeal of Shell's Plan Approval that, among other things, the Plan Approval does not include volatile organic compounds ("VOC") emission limits or monitoring requirements for the Facility's flares to assure that Shell complies with the representations set forth in its February 2015 Plan Approval permit application submitted to DEP, and to assure that the operational limits on each flare system are federally enforceable. While Shell does not agree with the Appellants' assertions, and firmly believes that the Plan Approval addresses the Appellants' concerns, Shell agrees to the following requirements for the flares to be located at the Facility.

B. Applicability and Term—

i. The requirements of this Paragraph 2 shall apply to the following emission units, unless otherwise specified below:

- (a) HP Ground Flare #1 – C205A/S205A,
- (b) HP Ground Flare #2 – C205B/S205B,
- (c) HP Elevated Flare – C205C/S205C, and
- (d) LP Multipoint Ground Flare ("MPGF") – C204B/S204B.

ii. The NHV_{cz} requirements set forth below in Paragraph 2.C.v. shall not apply during "Unplanned Events," which for purposes of this Agreement are defined as any sudden, infrequent, and not reasonably preventable failure of (a) air pollution control equipment, (b) process equipment, (c) monitoring equipment, or (d) a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not considered Unplanned

Events. During any Unplanned Event where one of the above-referenced flares does not meet the NHV_{CZ} set forth in Paragraph 2.C.v. (which do not apply during Unplanned Events), Shell will notify Appellants of the Unplanned Event, and provide information including its date, time, duration, flare(s) affected, and if applicable, any steps taken by Shell to ameliorate the Unplanned Event.

iii. The requirements set forth in this Paragraph 2 shall be implemented no later than 30 days after Shell commences Normal Operations at the Facility, as defined in Paragraph 1.B., and shall continue for a period of five (5) years.

C. Work Practices – The Facility’s flares shall be designed and operated in accordance with the following:

i. 40 C.F.R.¹ § 63.987(c). Operating parameter monitoring shall include flame detection at a minimum.

ii. The Facility’s ethane cracker unit shall be treated as if it is an “affected facility” within the meaning of Subparts A, XX, and YY of 40 C.F.R. Part 63, and shall comply with all of the applicable requirements of Subparts A, XX, and YY as described in the Plan Approval. Each of the Facility’s polyethylene units shall be treated as if it is an “affected facility” within the meaning of Subparts A and FFFF of 40 C.F.R. Part 63, and shall comply with all of the applicable requirements of Subparts A and FFFF as described in the Plan Approval. Shell agrees to operate and maintain the flare monitoring systems described in the Plan Approval in accordance with 40 C.F.R. § 63.671 for the term set forth in Paragraph 2.B.iii. Should EPA, during the term of this Agreement, issue final regulations to amend Subparts XX and/or YY and/or FFFF of 40 C.F.R. Part 63 to include flare system monitoring requirements that can assure compliance with 98-percent destruction efficiency, Shell agrees to comply with the amended final regulations and will no longer be required to comply with 40 C.F.R § 63.671 flare monitoring system requirements described herein.

iii. For each flare, whenever regulated material is routed to the flare for at least 15 minutes, Shell shall comply with 40 C.F.R. § 63.670(d)-(f), (i)-(n), and (p), as applicable. For purposes of this Agreement, a 15-minute block period shall begin when regulated material is routed to the flare. As provided in 40 C.F.R. § 63.670(j), Shell shall keep records to demonstrate the exemption for any applicable streams. Shell agrees to operate and maintain the flares as described in the Plan Approval and in accordance with 40 C.F.R. § 63.670, except as described in sections B., C., and D. of this Paragraph 2, for the term set forth in Paragraph 2.B.iii. Should EPA, during the term of this Agreement, issue final regulations to amend

¹ For purposes of this Agreement, including Appendix A, citations to the Code of Federal Regulation (“C.F.R.”) shall refer to the edition in effect on the Execution Date, except (a) as described in 2.c.ii. and 2.c.iii. below, and (b) to the extent any changes to Method 325B of Appendix A of 40 C.F.R. Part 63 are enacted after the Effective Date, the amended Method shall apply.

Subparts XX and/or YY and/or FFFF of 40 C.F.R. Part 63 to include flare operating requirements that assure 98-percent destruction efficiency, Shell will comply with the amended final regulations and will no longer be required to comply with 40 C.F.R § 63.670 requirements for flare control devices described herein.

iv. Shell shall use a video surveillance camera to monitor images of the flare flame at a reasonable distance and at an angle suitable for visual emissions observations. Shell shall provide real-time video surveillance camera output to the control room or other continuously manned location where the camera images may be viewed at any time.

v. Shell shall operate the flares to maintain the net heating value of flare combustion zone gas (“NHV_{cz}”) as follows:

a. HP Elevated Flare – At or above 270 British thermal units per standard cubic foot (“Btu/scf”), determined on a 15-minute block period basis when regulated material is routed to the flare for at least 15 minutes. Shell shall monitor and calculate NHV_{cz} as specified in the Plan Approval and as specified in this Agreement.

b. HP Ground Flares – At or above 500 Btu/scf, determined on a 15-minute block period basis when regulated material is routed to the flares for at least 15 minutes. Shell shall monitor and calculate NHV_{cz} as specified in the Plan Approval and as specified in this Agreement.

c. MPGF – At or above 500 Btu/scf determined on a 15-minute block period basis when regulated material is routed to the flare for at least 15 minutes. Shell shall monitor and calculate NHV_{cz} as specified in the Plan Approval and as specified in this Agreement.

D. Record Availability – Upon request by the Appellants, but no more than once per quarter based on a calendar year, Shell agrees to present and provide to Appellants flare data, which will include date, time, and NHV_{cz} in Btu/scf on a 15-minute block period when regulated material is routed to the flare for at least 15 minutes. The information will be for the quarter immediately preceding the request. Shell’s compliance requirements for flare reporting are set forth in the Plan Approval, and this Paragraph does not alter the reporting requirements under the Plan Approval.

E. Testing Requirements – Shell conducted a one-time Passive Fourier Transform Infrared (“PFTIR”) test of the MPGF at representative operating conditions to

determine the appropriate limit for the NHV_{cz} to demonstrate 98-percent destruction efficiency. The PFTIR testing protocol was determined by the vendor and included various representative operating conditions using representative gas to determine the optimum NHV_{cz} limit to achieve 98-percent destruction efficiency. As provided in Paragraph 2.G., Shell will file an application to update the NHV_{cz} limit in the Plan Approval if the limit for the NHV_{cz} for the MPGF to achieve 98-percent destruction efficiency is greater than the 500 Btu/scf NHV_{cz} limit for the MPGF required by the Plan Approval (the “500 Btu/scf Limit”). No later than 60 days from the execution of this Agreement, Shell will also provide to the Appellants a copy of the PFTIR test report, which redacts any confidential business information or trade secrets, and includes a performance curve.

F. Recordkeeping Requirements – For each flare, Shell shall keep the following records:

i. The 15-minute block average cumulative flows for flare vent gas and, if applicable, total steam, perimeter assist air, and premix assist air, along with the date and time interval for the 15-minute block average for a minimum of five (5) years; and

ii. The flare vent gas compositions. Retain records of individual component concentrations from each compositional analysis for a minimum of five (5) years.

G. Incorporation of Requirements into Plan Approval – If testing under Paragraph 2.E. demonstrates that the NHV_{cz} limit for the MPGF to achieve 98-percent destruction efficiency is greater than the 500 Btu/scf Limit, Shell shall submit an application for a modification of the Plan Approval to DEP that incorporates this greater NHV_{cz} limit determined by testing under Paragraph 2.E. in place of the 500 Btu/scf Limit as currently stated in the Plan Approval.

3. COVENANTS NOT TO SUE. The Appellants covenant and agree to withdraw their Appeal of Shell’s Plan Approval concurrently with the execution of this Settlement Agreement and hereby release Shell, its successors, assigns or affiliated parties from any and all

claims raised in the Appeal. The Parties further covenant and agree that they will never, individually or with any other person or entity, or through any successors, assigns, beneficiaries, agents or insurers, commence or prosecute against each other or allow any other party to commence or prosecute on their behalf any new action or new proceeding based on any of (1) the claims raised in Appellants' Notice of Appeal of Shell's Plan Approval, dated August 3, 2015, (2) the complaints, objections, and issues regarding the proposed Plan Approval raised in Appellants' written comments on the proposed Plan Approval, submitted to DEP on May 15, 2015, or (3) the complaints, objections, and issues regarding the proposed Plan Approval raised in the written and oral testimony of the Appellants' employees presented at DEP's public hearing on "Shell Air Quality" on May 5, 2015, such matters having been fully compromised, settled and released pursuant to this Agreement and withdrawal of the original Appeal. The Appellants covenant and agree further that they will not seek or file an appeal of the operating permit, which may be issued by DEP or EPA for the Facility pursuant to the Clean Air Act and the Pennsylvania Air Pollution Control Act, based on any of (1) the claims raised in Appellants' Notice of Appeal of Shell's Plan Approval, dated August 3, 2015, (2) the complaints, objections, and issues raised in Appellants' written comments on the proposed Plan Approval, submitted to DEP on May 15, 2015, or (3) the complaints, objections, and issues raised in the oral testimony of Appellants' employees presented at DEP's public hearing on "Shell Air Quality" on May 5, 2015, except that, if the operating permit contains one or more material changes from the contents of the Plan Approval, which material change(s) (1) was not available for public comment on the Plan Approval and (2) creates grounds for a claim that could not have been raised by the Parties during the pendency of the Appellants' Appeal of the Plan Approval ("New Claim(s)"), the Appellants may appeal the operating permit solely to raise the New Claim(s). The Appellants further agree that they shall not assist any other

third party in any manner in the commencement or prosecution of any such legal action which is compromised, settled, and released by this Agreement, whether administrative or judicial, related to the Appeal of Shell's Plan Approval.

4. **BREACH OF AGREEMENT.** The Parties agree that in the event of a material breach of all or any part of this Agreement by a Party hereunder, either Party to this Agreement shall have the right to enforce any and all legal and/or equitable remedies that may be available, including without limitation, seeking an injunction for specific performance and/or a declaratory judgment, subject to the mediation provision described in this Paragraph. Specifically, a Party which alleges that the other Party has breached this Agreement, shall be obligated to provide a written notice to the other Party as to their legal position. The Party alleged to be in breach shall have ten (10) days following the receipt of the written notice to cure the alleged breach, or provide notice as to why additional time is necessary. Should the Party fail to cure such alleged breach within the notice and cure period, or if the non-breaching Party determines the request for additional time is unreasonable, the non-breaching Party may submit the dispute to an agreed-upon mediator for mediation. If after thirty (30) days following conclusion of the mediation the Parties have not mutually resolved the dispute, then either Party shall be entitled to enforce any and all legal and/or equitable remedies immediately unless the Parties agree in writing otherwise. Any violation of the Plan Approval shall not be deemed to be a breach of this Agreement.

5. **NO ADMISSION OF LIABILITY.** The Parties' agreement to the terms of this Agreement and the fact of this Agreement shall not be deemed an admission as to the existence and extent of liability concerning any of the underlying claims. Any such liability is expressly denied.

6. **HEADINGS.** The headings in this Agreement are inserted for convenience only and shall not affect the meaning or interpretation of this Agreement or any provision hereof.

7. **NO WAIVER.** No failure or delay on the part of Shell or the Appellants in the exercise of any power or right hereunder shall operate as a waiver thereof. No single or partial exercise of any power or right hereunder shall operate as a waiver of such power or right or of any other power or right.

8. **PENNSYLVANIA LAW.** This Agreement shall be construed and enforced pursuant to the laws of the Commonwealth of Pennsylvania.

9. **NO THIRD PARTY RIGHTS.** Except as specifically set forth herein, this Agreement shall not be deemed or construed in any way to result in the creation of any rights in any person or entity not a Party to this Agreement.

10. **ASSIGNMENT.** Neither Party shall be entitled to assign any right or benefit conferred by this Agreement to any other person, unless the Parties agree in writing to authorize such assignment, which assignment shall not be unreasonably withheld.

11. **PARTIES BOUND.** This Agreement shall be binding upon and inure to the benefit of each Party and their respective beneficiaries, successors and assigns.

12. **INTERPRETATION.** Shell and the Appellants acknowledge that they and their respective Counsel have each had an opportunity to participate, and have participated in the drafting of this Agreement, and they each agree that this Agreement shall be interpreted without reference to any principle which can operate in favor of or against a Party that drafts a written agreement.

13. **NOTICES.** Any notice, report or demand required, permitted, or desired hereunder shall be in writing and delivered by hand, by overnight express service, or by registered or certified

mail, return receipt requested, and shall be deemed to have been given when received by the person to whom it is directed at the following addresses:

As to Shell

Robert P. Scott, Esquire
Blank Rome LLP
717 Texas Avenue, Suite 1400
Houston, TX 77002-2727

Amy Joseph Coles, Esquire
Blank Rome LLP
501 Grant Street, Suite 850
Pittsburgh, PA 15219

Tonya L. Lewis, Esquire
Senior Counsel
Shell Oil Company
150 N. Dairy Ashford, #F0624D
Houston, TX 77079

Pierre M. Espejo, Esquire
Senior Counsel
Shell Oil Company
150 N. Dairy Ashford, #E0344E
Houston, TX 77079

As to Appellants

Joseph Otis Minott, Esquire
Alexander G. Bomstein, Esquire
Ernest Logan Welde, Esquire
Clean Air Council
135 South 19th Street, Suite 300
Philadelphia, PA 19103

Adam Kron, Esquire
Mary E. Greene, Esquire
Environmental Integrity Project
1000 Vermont Avenue, NW, Suite 1100
Washington, DC 20005

14. AUTHORIZATIONS. Shell and the Appellants warrant to each other that all necessary authorizations and other actions have been taken such that execution, delivery, and performance of this Agreement and all other actions taken or to be taken in connection with this Agreement have been fully authorized.

15. COSTS AND ATTORNEY'S FEES. The Parties each agree that this Agreement releases all claims for costs, expenses, and attorney's fees incurred in this Appeal.

16. ADVICE AND AUTHORITY OF COUNSEL. The Parties each warrant and represent that in executing this Agreement, they have relied on legal advice from the attorney of

their choice, that the terms of this Agreement and its consequences have been completely read and explained to them by their respective attorneys, and that they fully understand the terms of this Agreement.

17. AUTHORITY TO EXECUTE SETTLEMENT AND RECEIVE CONSIDERATION. The Parties each warrant that no other person or entity has claimed or now claims any interest in the subject matter of this Agreement, and that each of them has the sole right and exclusive authority to execute this Agreement and to receive the aforesaid consideration. The Parties and each of them warrant that they have not sold, assigned, hypothecated, pledged, subrogated, or otherwise set over to any other person or entity any claim, lien, demand, suit, right, action, proceeding, cause of action, obligation, damage, or liability covered hereby.

18. ENTIRE AGREEMENT AND MODIFICATION. The Parties each warrant and represent that no promise, inducement, or agreement not expressed herein has been made in connection with this Agreement, and that this Agreement constitutes the entire agreement between the Parties and supersedes any and all other agreements and negotiations, whether oral or in writing. It is expressly understood and agreed that this Agreement may not be altered, amended, modified, or otherwise changed in any respect whatsoever except by a writing duly executed by the Parties through their authorized representatives. The Parties hereby agree and acknowledge that they will not claim at any time or place that this Agreement has been orally altered or modified or otherwise changed by oral communication of any kind or character. The Parties further agree and acknowledge that this Agreement does not amend or modify the specific terms and conditions of the Plan Approval.

19. COUNTERPARTS. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original but all of which together shall constitute a single document. The effective date of this Agreement is the date on which the last of the signatories to this Agreement executes this Agreement and said date shall be entered on the last page of this Agreement.

20. EXECUTION. Each of the signatories warrants that they are authorized to sign this Agreement on behalf of the Party for whom they sign and to bind that Party to the terms of this Agreement.

IN WITNESS WHEREOF, and for adequate consideration, the receipt of which is acknowledged by the Parties, the Parties cause this Settlement Agreement to be duly executed on this 25th day of August, 2017.

SHELL CHEMICAL APPALACHIA LLC

By:  . Michel van Beek Date: 25 August 2017
Title: Vice President - Finance

CLEAN AIR COUNCIL

By: _____ Date: _____
Title: _____

ENVIRONMENTAL INTEGRITY PROJECT

By: _____ Date: _____
Title: _____

IN WITNESS WHEREOF, and for adequate consideration, the receipt of which is acknowledged by the Parties, the Parties cause this Settlement Agreement to be duly executed on this 25th day of August, 2017.

SHELL CHEMICAL APPALACHIA LLC

By:
Title: _____

Date:

CLEAN AIR COUNCIL


By:
Title: CHIEF COUNSEL/EXEC DIR

8/25/17
Date:

ENVIRONMENTAL INTEGRITY PROJECT

By:
Title: _____

Date:

IN WITNESS WHEREOF, and for adequate consideration, the receipt of which is acknowledged by the Parties, the Parties cause this Settlement Agreement to be duly executed on this 25th day of August, 2017.

SHELL CHEMICAL APPALACHIA LLC

By: _____

Date: _____

Title: _____

CLEAN AIR COUNCIL

By: _____

Date: _____

Title: _____

ENVIRONMENTAL INTEGRITY PROJECT

By: May O'neil

Date: 8/25/17

Title: Deputy Director

APPENDIX A – FENCELINE MONITORING

A. Definitions – The following terms shall be defined as follows for the purposes of this Appendix:

- i.** “Action Level” shall mean either:
 - a.** with respect to CAMS, an occurrence when the net NMNEVOC concentration arising from the Facility over a 15-minute block averaging period is greater than 56 ppbv for CAMS 1, 63 ppbv for CAMS 2, and 48 ppbv for CAMS 4 (the “Initial Action Levels”) or as reset by Paragraph B.xi. below. The net NMNEVOC concentration on a 15-minute averaging period shall be determined as the average of three 5-minute block concentrations where each 5-minute concentration is calculated by subtracting the background NMNEVOC concentration from NMNEVOC concentration at CAMS 1, 2 or 4. For purposes of this Appendix, a reference to a 5-minute average shall mean a 5-minute block average unless otherwise specified. The background NMNEVOC concentration shall be defined on a 5-minute averaging period as: (1) the CAMS 3 NMNEVOC concentration when the PID Analyzer returns a concentration at or above its detection limit, the 5-minute average wind speed is greater than 1 mile per hour, and the 5-minute average wind direction originates from 191 degrees to 326 degrees, as measured clockwise from due north, or (2) in all other cases, the 6-year average (2010-2015) NMNEVOC concentration as measured from the Beaver Falls DEP VOC monitor (12.986 ppbv). Wind speed and direction shall be measured by the Meteorological Station; or
 - b.** with respect to PAMS, a two-week average Δc value for benzene that is greater than $9 \mu\text{g}/\text{m}^3$ (approximately 2.77 ppbv), where Δc shall be determined from the highest and lowest sample results in accordance with 40 C.F.R. § 63.658(f)(1)(i).
- ii.** “Calendar Days” for establishing shipping deadlines in this Appendix shall exclude legal holidays.
- iii.** “Chemicals of Potential Concern” shall mean benzene, 1,3-butadiene, n-hexane, naphthalene, and toluene.
- iv.** “Continuous Air Monitoring System” or “CAMS” shall mean a system consisting of one PID Analyzer and one Summa canister. The PID Analyzers shall collect data continuously, and reduce and record data in 5-minute averages. When the Action Level is reached, a solenoid valve will be actuated that will fill a six (6) liter evacuated Summa canister for 30 minutes and send a signal to a Shell representative.

On weekdays, Shell will collect and replace the Summa canister within 24 hours of actuation and shall send the Summa canister to a third party laboratory within two (2) Calendar Days of sample collection. On weekends (Friday at 3:00 p.m. through Monday morning at 7:00 a.m.) or legal holidays, Shell will collect and replace the Summa canister no later than the morning of the next business day and send the Summa canister to a third party laboratory that same day.

v. “Data Acquisition System” shall mean a computer-based data collection system that collects, organizes, and presents the data collected by the CAMS. Data from the PID Analyzers shall be recorded in 5-minute averages, continuously.

vi. “Field Investigation” shall mean the investigatory process by which Shell investigates the potential cause(s) of an Action Level exceedance.

vii. “Investigation Team” shall mean one or more Shell employees or contractors that conduct Field Investigations in response to an Action Level exceedance. Shell shall ensure that members of the Investigation Team, before conducting a Field Investigation, have received appropriate training necessary to enable the team members to carry out their responsibilities on the Investigation Team.

viii. “Meteorological Station” shall mean a station that includes: (i) an anemometer for measuring wind speed and direction; and (ii) temperature and barometric pressure sensors for standardizing gas concentration data. The Meteorological Station shall be connected to the Data Acquisition System. The data averaging for the wind speed, wind direction, temperature, and barometric pressure shall be timed to be contemporaneous with the gas concentration measurements taken by the PID Analyzers. The location of the Meteorological Station shall be determined in accordance with Section 8.3 of Method 325A.

ix. “NMNEVOC” shall mean total non-methane, non-ethane hydrocarbon as determined by the PID Analyzer.

x. “Passive Air Monitoring System” or “PAMS” shall mean a location that contains Carbopack-X monitoring sorbent tubes or a functionally equivalent or better alternative sorbent(s) capable of detecting the Chemicals of Potential Concern in accordance with Section 7.1 of Method 325B of appendix A of 40 C.F.R. Part 63. The sorbent tubes shall be installed at each location in accordance with Method 325A of appendix A of 40 C.F.R. Part 63 and the number and locations shall be determined in accordance with Section 8.2 of Method 325A of appendix A of 40 C.F.R. Part 63. The principal of the analysis is passive adsorption of organic molecules on solid media followed by thermal desorption and analysis by GC/MS. PAMS samples shall be collected every two weeks from each monitoring location (or if the regular collection day falls on a holiday, the collection may occur on plus or minus one business day), in accordance with the requirements of 40 C.F.R. § 63.658(e)(1)-(2) and sent to the lab within 2 Calendar Days of collection.

xi. “PID Analyzer” shall mean a Total Volatile Organic Compound Photo Ionization Detector Analyzer. The PID Analyzers shall be capable of achieving a minimum detection limit of 20 ppbv using isobutylene as the calibration gas. The PID Analyzer shall be capable of ionizing gases with an ionization potential below 10.6 eVolts. The PID Analyzer shall be capable of measuring and registering Total NMNEVOC concentrations on a continuous basis and reducing the data to 5-minute averages.

xii. “ppbv” shall mean parts per billion by volume normalized to normal temperature and pressure (68 degrees Fahrenheit and 29.92 inches of mercury).

xiii. “Regular Facility Operations” shall mean all emissions from operations at the Facility, excluding emissions from upsets, startups, shutdowns, malfunctions, emissions not authorized by the Plan Approval, and leaks above the leak detection thresholds in the Plan Approval (*see* Section C, Condition #026 of the Plan Approval).

B. Equipment and Data Collection Requirements

i. Shell shall maintain in good working order the following:

- a.** Each of the CAMS and PAMS;
- b.** The Meteorological Station; and
- c.** The Data Acquisition System.

ii. At least one CAMS shall be located at or near the Facility fenceline in the predominant upwind direction of the Facility, and at least three CAMS shall be located at or near the Facility fenceline in the predominant downwind direction) of the Facility. The upwind and downwind locations shall be determined by Shell using 5-year wind rose data, dispersion modeling, as needed, consideration of the potential impact of other proximal sources, both stationary and mobile, and security. *See* Exhibit 1, attached hereto, for expected locations of the CAMS, including location coordinates. After construction of the Facility, the actual placement of each CAMS must be within 50 feet of the expected location coordinates, but shall be no further from the Facility fenceline than the expected locations, unless the Parties consent in writing to different locations.

iii. The PID Analyzers shall be connected to a Data Acquisition System that shall integrate the gas concentration and meteorological data in order to show the gas concentration and wind direction correlations.

iv. The number and location of the PAMS sorbent tubes shall be determined in accordance with Section 8.2 of Method 325A of appendix A of 40 C.F.R. Part 63.

v. The Meteorological Station shall be located within the Facility. The wind sensors shall: (i) be located on a 10 meter mast unless adjustments are required due to obstructions from the overpass located near to the fenceline, and (ii) to the extent

practicable, be positioned away from, or above, obstructions such as buildings and process units that may interfere with wind direction measurements.

vi. All numerical data collected shall be stored and maintained in a format that can be used in common spreadsheet programs for the duration of the FLM program.

vii. Standard operating procedures shall be developed for the Meteorological Station, the PID Analyzers, and sampling, transport, and analysis by a third party laboratory for the Summa canisters.

viii. PAMS sorbent tube analysis and Summa canister analysis shall be in accordance with an appropriate method capable of detecting the Chemicals of Potential Concern.

ix. Shell shall develop and implement a quality assurance project plan (QAPP) to ensure the accuracy, validity, representativeness, and usability of the data obtained by all monitoring equipment. The QAPP shall comply with the guidelines available in the following publication: "EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, March 2001." Air monitoring system data quality objectives shall be applied to collected data, including measurement parameter, data quality objective, acceptance criteria, recommended frequencies and corrective actions.

x. Uptime – Shell shall operate the FLM program instruments on a continuous basis except during the following periods of downtime: (1) calibration; (2) maintenance; or (3) a sudden, infrequent and not reasonably preventable failure of monitoring equipment to operate in a normal or usual manner. These periods of downtime may not exceed five (5) percent of the 15-minute blocks of the total operating time annually. Instances of downtime, including duration and reason for downtime, shall be recorded and reported among the data posted to the Monitoring Data Website. The reason for downtime shall include information on the specific component that failed, the cause of the failure, and any measures taken to prevent the reoccurrence of the failure.

xi. Protocol to adjust Action Level(s) once FLM program commences.

- a.** The Parties have agreed that the Initial Action Levels with respect to CAMS shall be 56 ppbv for CAMS 1, 63 ppbv for CAMS 2, and 48 ppbv for CAMS 4, as set forth in Paragraph A.i.a. herein.
- b.** The Parties agree and recognize that the Initial Action Levels are based on modeling data and that once the facility commences the FLM program, one or both Parties may seek to adjust the Action Level(s) based on actual data. The Parties agree that this protocol shall be used to revisit and reset the Initial Action Levels.
- c.** Once 180 days of data from the FLM program is available, technical

representatives of the Parties shall meet and review available FLM data (“Six Month Meeting”), including NMNEVOC concentration data collected by the PIDs, the biweekly concentration data collected by the PAMS once the FLM program commences, meteorological data, additional background VOC data, any Action Level exceedances, and associated data produced therefrom, including Field Investigations, corrective actions taken (if appropriate), and previous adjustments to the Action Level(s). In evaluating such actual data, it is the Parties’ goal that their technical representatives will be able to agree on adjusted Action Level(s), if in fact, the Parties determine that amendment of the Initial Action Level(s) is necessary. The adjusted Action Level(s) shall be based on actual measurements of the Facility’s net NMNEVOC concentrations at each CAMS, using a subset of cumulative “Regular Operations Data” since the commencement of the FLM program. “Regular Operations Data” shall be defined as the NMNEVOC data collected at each CAMS excluding the 24 hours following an exceedance deemed by a Field Investigation not to have been caused by Regular Facility Operations. In resetting the Action Level(s), the Parties shall consider the number and frequency of exceedances of the Initial Action Level(s) over the first 180 days (or the lack of exceedances).

- d. In the event that the Action Level(s) need to be reset but the Parties (via their technical representatives) do not reach agreement on a new Action Level(s) as a result of their discussion and review of actual data at the Six Month Meeting, the default protocol below (the “Default Protocol”) shall govern resetting of the Action Level(s). The CAMS Action Level(s) set pursuant to the Default Protocol shall become effective 10 days after the Six Month Meeting takes place (unless the Parties’ technical representatives agree to different revised Action Level(s) before the 10 days expires):
 - 1) If the Initial Action Level for any given CAMS has resulted in 8 or more Field Investigations during the first 180 days of the FLM program due to Regular Facility Operations, the Initial Action Level for that CAMS shall be raised by 10%.
 - 2) If the Initial Action Level for any given CAMS has resulted in 4 or fewer Field Investigations during the first 180 days of the FLM program due to Regular Facility Operations, the Initial Action Level for that CAMS shall be lowered by 10%.
 - 3) If the Initial Action Level for a CAMS has already been adjusted via paragraph B.xi.h., those Field Investigations counted in that adjustment are not to be counted again in the 180-day totals for the Default Protocol.
- e. At the end of the first year of the FLM program, the following adjustment protocol (the “Adjustment Protocol”) shall be applied as

follows:

1) If the Action Level for any given CAMS has resulted in 8 or more Field Investigations during the prior 180 days due to Regular Facility Operations, the Action Level for that CAMS shall be raised by 10%.

2) If the Action Level for any given CAMS has resulted in 4 or fewer Field Investigations during the prior 180 days due to Regular Facility Operations, the Action Level for that CAMS shall be lowered by 10%.

f. At the end of the second year of the FLM program, the Adjustment Protocol shall be applied as follows:

1) If the Action Level for any given CAMS has resulted in 10 or more Field Investigations during the prior year due to Regular Facility Operations, the Action Level for that CAMS shall be raised by 10%.

2) If the Action Level for any given CAMS has resulted in 6 or fewer Field Investigations during the prior year due to Regular Facility Operations, the Action Level for that CAMS shall be lowered by 10%.

3) If the Action Level for any given CAMS has been adjusted via the immediate revision provisions of paragraph B.xi.i., the Field Investigations counted in that adjustment are not to be counted again under the Adjustment Protocol.

g. At the end of the third and fourth years of the FLM program, the Adjustment Protocol shall be applied as follows:

1) If the Action Level for any given CAMS has resulted in 6 or more Field Investigations during the prior year due to Regular Facility Operations, the Action Level for that CAMS shall be raised by 10%.

2) If the Action Level for any given CAMS has resulted in 2 or fewer Field Investigations during the prior year due to Regular Facility Operations, the Action Level for that CAMS shall be lowered by 10%.

3) If the Action Level for a CAMS has been adjusted via the immediate revision provisions of paragraph B.xi.i., the Field Investigations counted in that adjustment are not to be counted again under the Adjustment Protocol.

h. During the first 180 days of the FLM program, the following provisions shall apply to the CAMS Action Levels, resulting in immediate revision of Action Level(s) as follows:

1) If in any given calendar month there are 4 or more Field Investigations triggered by any individual CAMS due to Regular Facility

Operations, the Action Level for that CAMS will be raised by 10%.

2) If in any two consecutive calendar months, there are zero Field Investigations triggered by any individual CAMS due to Regular Facility Operations, the Action Level for that CAMS will be lowered by 10%.

i. During years 2-5 of the FLM program, the following provisions shall apply to the CAMS Action Levels, resulting in immediate revision of Action Level(s) as follows:

1) If in any given calendar month there are 4 or more Field Investigations triggered by any individual CAMS due to Regular Facility Operations, the Action Level for that CAMS will be raised by 5%.

2) If in any 6-month period, there are zero Field Investigations triggered by any individual CAMS due to Regular Facility Operations, the Action Level for that CAMS will be lowered by 5%.

3) For each CAMS, there may be no more than two immediate revisions to raise the Action Level and two immediate revisions to lower the Action Level pursuant to this Paragraph B.xi.i. in a single FLM program year.

j. If Action Level(s) are revised pursuant to Paragraphs B.xi.d-i, the following conditions shall also apply:

1) If an Action Level exceedance for any given CAMS was deemed not to have been caused by Regular Facility Operations and the Action Level exceedance is within the range by which the Action Level would otherwise be eligible for an increase, the Action Level for that specific CAMS shall not be raised above the Action Level exceedance on that instance. The application of this condition for an eligible increase shall not prevent increases to and above that level in future instances, provided the conditions for revision are otherwise met.

2) Other than for CAMS 4, no Action Level for a CAMS shall be lowered below 40 ppbv.

k. Revisions of the Action Level(s) shall not in any way extend or otherwise amend Shell's obligation with respect to the FLM program.

C. Field Investigation – Upon an exceedance of the Action Level, the Investigation Team shall commence a Field Investigation as soon as possible but no later than 24 hours after the exceedance of the Action Level with respect to CAMS, and no later than 24 hours after Shell receives data demonstrating an exceedance of the Action Level with respect to PAMS. No more than one (1) Field Investigation shall take place within a 24-hour period. If an exceedance occurs on weekends (Friday at 3:00 p.m. through Monday morning at 7:00 a.m.) or legal holidays, Shell will commence the Field Investigation on the next business day. The Field Investigation shall proceed as follows:

i. As soon as practicable, but no later than within 24 hours of commencement of a Field Investigation, the Investigation Team shall initially evaluate the data underlying the exceedance of the Action Level in accordance with Shell's QAPP to determine whether the data is valid.

ii. If the Investigation Team determines that the data underlying the exceedance of the Action Level is valid, the Investigation Team shall survey potential sources at the Facility in accordance with the Leak Detection and Repair ("LDAR") program requirements of Section C, Condition #026 of the Plan Approval.

iii. If the Investigation Team discovers during the Field Investigation that the exceedance of the Action Level was caused by a source located at the Facility, the Investigation Team shall take corrective action according to the timelines prescribed in Section C, Condition #026 of the Plan Approval. Within fifteen (15) days following completion of corrective action, the source of the exceedance of the Action Level shall be monitored again according to the terms of Section C, Condition #026 to verify that the corrective action was effective.

D. Monitoring Data Website

i. Shell shall create a publicly-accessible Monitoring Data Website that shall include:

- a.** A description of the systems and equipment installed and operated to implement the requirements of this Appendix.
- b.** The current Action Levels for each CAMS and the PAMS and a history of previous revisions to CAMS Action Levels, including date and reason for each revision.
- c.** The QAPP to ensure written guidelines on data collection and quality are in place and available to the local community.

ii. A link to the Monitoring Data Website shall be included on the "Shell Pennsylvania Chemical Complex" website in a location that is reasonably accessible to the public and reasonably navigable.

iii. Shell shall begin posting data to the Monitoring Data Website within 30 days of the FLM program's commencement.

iv. Shell shall post the following data to the Monitoring Data Website in a tabular format:

- a.** Date and time of the data reading or sample collection;

- b.** PAMS sorbent tubes concentration data for Chemicals of Potential Concern for each two-week sampling period for all locations;
- c.** A description of any downtime for the monitoring equipment;
- d.** Total unspciated NMNEVOC concentration from each PID analyzer on a 15-minute block average (posted by the next business day following its collection);
- e.** 5-minute block average wind speed and direction data collected by Meteorological Station pursuant to Paragraph A.viii.

v. In addition to the above, Shell shall post the following data to the Monitoring Data Website in a tabular format in the event an exceedance of the Action Level occurs:

- a.** The total unspciated NMNEVOC concentration from each PID Analyzer on a 5-minute average;
- b.** If triggered by a CAMS Action Level exceedance, concentration data for each Chemical of Potential Concern from any associated Summa canister sampling;
- c.** A summary of each Field Investigation, including a brief statement of the root cause of excess emissions, if any;
- d.** If triggered by a PAMS Action Level exceedance, the Δc value for benzene; and
- e.** A description of any actions taken by Shell in response to the findings of a Field Investigation.

vi. The QA/QC process for speciated data from Summa canister sampling and passive monitoring sorbent tubes shall be completed and the speciated data posted for the Chemicals of Potential Concern on the Monitoring Data Website no later than seven (7) Calendar Days following the date on which the sample results were received from the third party laboratory.

Exhibit 1 to Settlement Agreement and Appendix A

