Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 FAX (804) 698-4178
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

Craig R. Nicol
Regional Director

April 29, 2021

Mr. Mark Lieberman
EHS Manager
Kinder Morgan Operating LP "C" - Pier IX/X
1900 Harbor Access Road
Newport News, Virginia 23607

Location: Newport News
Registration No.: 60979

Dear Mr. Lieberman:

Attached is a permit to construct and operate a project at a bulk material handling and storage facility in accordance with the provisions of the Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. This permit supersedes your permit dated September 11, 2015.

In the course of evaluating the application and arriving at a final decision to approve the project, the Department of Environmental Quality (DEQ) deemed the application complete on April 6, 2021.

This permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and/or civil charges. Please read all permit conditions carefully.

This permit approval to construct and operate shall not relieve Kinder Morgan Operating LP "C" - Pier IX/X of the responsibility to comply with all other local, state, and federal permit regulations.

To review any federal rules referenced in the above paragraph or in the attached permit, the US Government Publishing Office maintains the text of these rules at www.ecfr.gov, Title 40, Part 60 and 63.

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a petition with the Board within 30 days after this case decision notice was mailed or delivered to you. Please consult the relevant regulations for additional requirements for such requests.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
PO Box 1105
Richmond, VA 23218

If this permit was delivered to you by mail, three days are added to the thirty-day period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

If you have any questions concerning this permit, please contact Mayanni McCourty at (757) 518-2034 or by email at mayanni.mccourty@deq.virginia.gov.

Sincerely,

Janet F. Weyland
Regional Deputy Director

JFW/JRP/MAM/60979_014_21_mNSRsigamd_KinderMorganLP_PierIX-X_CvrLtr.docx

Attachment: Permit

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 FAX (804) 698-4178
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

Craig R. Nicol
Regional Director

STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE
This permit supersedes your permit dated September 11, 2015.

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution,

Kinder Morgan Operating LP "C"
Pier IX/X Terminal
1900 Harbor Access Road
Newport News, Virginia 23607
Registration No.: 60979

is authorized to construct and operate a project at

a bulk material handling and storage facility

located at

1900 Harbor Access Road
Newport News, Virginia 23607

in accordance with the Conditions of this permit.

Approved on: **April 29, 2021**.

Janet F. Weyland
Regional Deputy Director

Permit consists of 12 pages.
Permit Conditions 1 to 31 and Appendix A.

INTRODUCTION

This permit document is based on the following permit approvals and the respective permit applications:

Minor new source review permit approval dated September 11, 2015 based on the permit application dated September 3, 1980, March 15, 2006, July 18, 2012, and April 10, 2013, including amendment information dated September 15, 1980, March 15, 2006, May 4, 2006, June 27, 2006, July 17, 2012, April 10, 2013, June 19, 2015, July 21, 2015, August 4, 2015, and September 8, 2015.

Minor new source review permit approval dated April 29, 2021 based on the permit application dated June 9, 2020 including supplemental information dated September 8, 2020, October 5, 2020, October 20, 2020, November 4, 2020, December 11, 2020, January 20, 2021, February 10, 2021, February 25, 2021, March 15, 2021, and April 6, 2021.

Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action. In addition, this facility may be subject to additional applicable requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9VAC5-10-10 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses ( ) after each condition. The most recent effective date for a term or condition is listed in brackets [ ]. When identical conditions on approval for an emission unit or units are combined, the effective date listed in this permit does not alter the prior effective date(s) for any such conditions as issued in a previous permit approval. In accordance with 9VAC5-80-1120(F), any condition not marked as state-only enforceable (SOE) is state and federally enforceable.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9VAC5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

Equipment List - Equipment at this facility covered by this permit consists of:

Reference No.	Equipment Description	Rated Capacity	Delegated Federal Requirements
B-1 and B-2	Marine vessel grab unloaders	3,500 tons/hr	-
C-1 - C-5	Conveyor belts for bulk material transport from railcars to storage piles	5,000 tons/hr	-
C-6A and C-6B	Two (2) overhead conveyors for bulk material delivery from existing conveyor system to storage piles	5,000 tons/hr	-
C-7A and C-7B	Two (2) reclaim conveyors for bulk material reclaim from storage piles to reclaim conveyor system	6,000 tons/hr	-
C8 - C11	Reclaim conveyor belts for bulk material transport from storage piles to Ship Loader	6,000 tons/hr	-
C15 - C17	Conveyor belts for transport of bulk material from hoppers to ground storage	3,500 tons/hr	-
H1 and H2	Pier side hoppers	3,500 tons/hr	-
R-1	Railcar rotary dumper	5,000 tons/hr	-
SL-1	Ship Loader	6,000 tons/hr	-
SP	Two (2) Storage Piles in expanded storage yard area and numerous Ground Storage Piles	2,595,000 tons of total storage capacity	-

Specifications included in the above tables are for informational purposes only and do not form enforceable terms or conditions of the permit.

PROCESS REQUIREMENTS

1. Bulk Material Transfer Operations - Operations involving the transfer of delivered bulk material from railcars to the terminal facility's ground storage pile area and the reclaim of the bulk material from the ground storage pile area to marine vessels (ship and barge) for loading shall utilize the following transfer system pathways and associated conveyance equipment:

Bulk Material Transfer Equipment Pathways		
Transfer System	**Reference No.**	**Unit Description**
Bulk material delivery from railcars to storage piles	R-1	Railcar rotary dumper to C-1
Bulk material delivery from railcars to storage piles	C-1	Conveyor belt from R-1 to C-2
Bulk material delivery from railcars to storage piles	C-2	Conveyor belt from C-1 to C-3

Bulk Material Transfer Equipment Pathways		
Bulk material delivery from railcars to storage piles	C-3	Conveyor belt from C-2 to C-4
Bulk material delivery from railcars to storage piles	C-4	Conveyor belt from C-3 to C-5 or C-6A
Bulk material delivery from railcars to storage piles	C-5	Conveyor belt from C-4 to C-6B
Bulk material delivery from railcars to storage piles	C-6A	Conveyor belt from C-4 to Storage Pile or C-6C
Bulk material delivery from railcars to storage piles	C-6B	Conveyor belt from C-5 to Storage Pile
Bulk material delivery from railcars to storage piles	C-6C	Conveyor belt from C-6A to Storage Pile or C-6D
Bulk material delivery from railcars to storage piles	C-6D	Conveyor belt from C-6C to Storage Pile
Bulk material reclaim from storage piles to vessel load-out	C-7A	Conveyor belt from Reclaim Hopper to C-8
Bulk material reclaim from storage piles to vessel load-out	C-7B	Conveyor belt from Reclaim Hopper to C-8
Bulk material reclaim from storage piles to vessel load-out	C-8	Conveyor belt from C-7A or C-7B to C-9
Bulk material reclaim from storage piles to vessel load-out	C-9	Conveyor belt from C-8 to C-10
Bulk material reclaim from storage piles to vessel load-out	C-10	Conveyor belt from C-9 to pier-side C-11
Bulk material reclaim from storage piles to vessel load-out	C-11	Conveyor belt from C-10 to SL-1 Ship Loader
Bulk Material Delivery from Vessels to storage piles	C-15	Conveyor belt from Hopper System to C-16
Bulk Material Delivery from Vessels to storage piles	C-16	Conveyor belt from C-15 to C-17
Bulk Material Delivery from Vessels to storage piles	C-17	Conveyor belt from C-16 to ground storage

(9VAC5-80-1180) [April 29, 2021]

2. Emission Controls - Particulate emissions from handling Groups I, II, IV, V, and VIII materials using each marine vessel grab unloader (Ref. Nos. B-1 and B-2) shall be controlled by an environmental clamshell bucket. The environmental clamshell bucket shall be maintained in proper working order and be periodically inspected to ensure that the rubber sealing strips on the grab lips of the clamshell leaves are seating together properly. (9VAC5-80-1180 and 9VAC5-50-260) [April 29, 2021]

3. Emission Controls - Particulate emissions from each marine vessel unloading hopper (Ref. Nos. H-1 and H-2) shall be controlled by the use of hinged baffles on the hoppers. The hoppers shall be provided with adequate access for inspection. (9VAC5-80-1180 and 9VAC5-50-260) [September 11, 2015]

4. Emission Controls - Particulate emissions from transferring Group VI and Group VII materials through the conveyor belt system associated with marine vessel unloading shall be controlled by wet suppression and covered or enclosed conveyor belts. The conveyors shall be provided with adequate access for inspection.
(9VAC5-80-1180 and 9VAC5-50-260) [April 29, 2021]

5. Emission Controls - Particulate emissions from the rotary railcar dumper (Ref. No. R-1) building shall be controlled by wet suppression using water sprayers located at the railcar entrance and exit and by filters on each exhaust fan opening to the outside air.
(9VAC5-80-1180 and 9VAC5-50-260) [September 11, 2015]

6. Fugitive Emission Controls - Particulate emissions from all ground storage piles (Ref. No. SP) containing Group VI and Group VII materials shall be controlled by a permanent wet suppression system capable of wetting the entire storage pile area. All ground storage piles shall be truncated and compacted so as to minimize fugitive emissions. The wet suppression system shall be provided with adequate access for inspection.
(9VAC5-80-1180, 9VAC5-50-90, and 9VAC5-50-260) [April 29, 2021]

7. Fugitive Emission Controls - Particulate emissions from ground storage piles (Ref. No. SP) containing Group I, II, and III materials shall be controlled by covering the entire storage pile area with a tarping material, except when adding or removing Group I, II, and III materials for a reasonable amount of time not to exceed 10 days. Uncovered Group I, II, and III materials shall be minimized as much as possible during this time period.
(9VAC5-80-1180, 9VAC5-50-90, and 9VAC5-50-260) [April 29, 2021]

8. Wet Suppression System - The wet suppression system for the ground storage piles shall be implemented as specified in Appendix A of the permit or by any other procedure as may be approved by the DEQ prior to its use. Such approval shall be contingent on adequate documentation that any alternative procedure shall achieve at least as high a control efficiency as in Appendix A. This applies to all other dust control measures required by this permit. Requests for changes in procedures shall be accompanied by an explanation of the proposed changes and the anticipated effect they shall have. These requests, if approved by the DEQ, shall be subject to a test and evaluation procedure prior to being accepted as permanent changes to the control procedures.
(9VAC5-80-1180 and 9VAC5-50-260) [September 11, 2015]

9. Operating Work Practices - Marine Vessel (Ship / Barge) Unloading and Transloading - The following best management practices (BMPs) shall be taken to minimize fugitive emissions from bulk material ship/barge unloading operations:

    a. Unloading shall not take place when the sustained wind speed (five-minute average) exceeds 15 mph or results in excessive fugitive emissions. The permittee shall continuously monitor the wind speed during marine vessel unloading operations by using an on-site anemometer. The anemometer shall be equipped with an alarm which sounds

when the sustained wind speed (five-minute average) exceeds 15 mph. The anemometer readings shall be reduced to five-minute averages which shall be recorded using an automated recordkeeping system; [April 29, 2021]

b. The clamshell bucket shall be shaken entirely within the ship hold prior to each transfer in order to dislodge any attached loose material. The clam shell bucket shall be lowered into the material handling hopper on the dock as far as possible without damaging the hopper's baffle system before dumping; [September 11, 2015]

c. The grab buckets shall be completely closed during transfer of material from marine vessel to the receiving hoppers or marine vessel; [September 11, 2015]

d. The permittee shall maintain an optimum level of material in the hopper to minimize emissions; and [September 11, 2015]

e. Spilled material from the hopper or clamshell shall be removed within 24 hours after completion of a marine vessel unloading. Spilled material shall be removed by sweeping, vacuuming, or other best management practices which minimizes fugitive dust emissions. [September 11, 2015]

(9VAC5-80-1180, 9VAC5-50-50, 9VAC5-50-80, and 9VAC5-50-260)

10. Operating Work Practices - Rotary Railcar Dumper (Ref. No. R-1) Building - The following best management practices (BMPs) shall be taken to minimize fugitive emissions from the Rotary Railcar Dumper building:

a. Dumping operations shall be conducted inside a building whose openings are the entrance and exit access ways for the railcars; [September 11, 2015]

b. All suppression sprays shall be fully functional and maintained; and [September 11, 2015]

c. All exhaust fan-driven air shall be filtered and the filtration systems shall be properly maintained. [September 11, 2015]

(9VAC5-80-1180, 9VAC5-50-50, 9VAC5-50-80, and 9VAC5-50-260)

11. Operating Practices - Whenever the permittee:

a. Uses the railcar dumper (Ref. No. R-1), the wet suppression controls shall be utilized, unless the use of such wet suppression controls would otherwise cause a safety hazard or damage to the dumper from freezing; and [September 11, 2015]

b. Uses handling equipment (e.g., conveyors, etc.), the equipment shall be monitored and wet suppression shall be applied as necessary to control particulate emissions. [September 11, 2015]

(9VAC5-80-1180 and 9VAC5-50-260)

12. Operating Practices - Whenever the permittee is using a piece of auxiliary handling equipment (e.g., front-end loader, bulldozer, etc.), the area to be worked shall be monitored and wet suppression shall be applied as necessary to control fugitive particulate emissions. (9VAC5-80-1180 and 9VAC5-50-260) [September 11, 2015]

13. Operating Practices - The following actions shall be taken to maintain control of bulk material fugitive dust emissions:

    a. The permittee shall stop any material movement operation when it becomes known that installed air pollution control system(s) is inoperative and would cause excess emissions; [September 11, 2015]

    b. The permittee shall stop a material movement operation when it becomes known that the material handling equipment required for that operation is malfunctioning or operating significantly below its designated specifications; [September 11, 2015]

    c. The permittee's equipment operators shall take immediate precautions to preclude fugitive dust emissions from the operation of bulldozers, front-end loaders, automobiles, or trucks (e.g., the use of water suppressant or limiting the speed of movement to below ten miles per hour); and [September 11, 2015]

    d. The permittee shall institute a policy that instructs operational personnel to give preference to designated personnel with the responsibility for controlling dust emissions. [September 11, 2015]

    (9VAC5-80-1180 and 9VAC5-50-260)

14. Operating Practices - One person each shift shall be designated as responsible for compliance with the procedures of Appendix A. Required actions in support of these control procedures shall take precedence over routine bulk material handling procedures. (9VAC5-80-1180, 9VAC5-50-50, 9VAC5-50-80, and 9VAC5-50-260) [September 11, 2015]

OPERATING LIMITATIONS

15. Bulk Material Commodities Inventory List - Kinder Morgan Pier IX/X facility is approved to transfer, store, and handle the following bulk materials or equivalent as specified below:

Group Number:	Title and Description:	Materials:
I	Fertilizer Products (non-processed)	Standard Potassium Nitrate Potash
II	Fertilizer Products (prilled or processed)	Granulated Ammonium Nitrate Dried Sludge
III	Non-Fertilizer Products (Moisture Content <4%)	Mined Salt Magnetite/ Ferrous Oxide
IV	Non-Fertilizer Products (Moisture Content >4%)	Granulated Furnace Slag Clay
V	Bauxite/Alumina Products	Distressed Cement Soda Ash
VI	Aggregate Products	Coal Petcoke Sand/ Gravel (garnet and others) Pumice

VII	Metal Products	Pig Iron Shredded Scrap Metal
VIII	Agricultural Products	Soybean Wheat Rye Barley

A change in the bulk material commodities shall be considered a change in the method of operation of the bulk material handling operations and may require a new or amended permit. However, if a change in the material is not subject to new source review permitting requirements, this condition should not be construed to prohibit such a change. (9VAC5-80-850) [April 29, 2021]

16. Wet Suppression Cycles - Each wet suppression cycle shall consist of no less than 20,000 gallons of water and attain 100 percent (100%) coverage of the bulk material storage area. (9VAC5-80-1180, 9VAC5-50-90, and 9VAC5-50-260) [September 11, 2015]

17. Bulk Material Storage - The maximum aggregated quantity of bulk materials in ground storage piles at any time shall not exceed 1,400,000 tons, as determined by daily calculations. (9VAC5-80-1180) [September 11, 2015]

18. Throughput - The annual throughput of bulk materials at Pier IX terminal shall not exceed 25,000,000 tons per year, combined, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9VAC5-80-1180) [April 29, 2021]

19. Bulk Material Throughput - The combined annual throughput for Groups I through VIII commodity materials unloaded during marine vessel unloading operations at Pier X terminal shall not exceed 2,500,000 tons per year, combined, and calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9VAC5-80-1180) [April 29, 2021]

EMISSION LIMITS

20. Emission Limits - Total emissions from the marine handling operations from railcar and ship loading at Pier IX terminal shall not exceed the limits specified below:

PM	39.8 tons/yr
PM10	17.6 tons/yr
PM2.5	2.7 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 1, 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 22, and 23. (9VAC5-80-1180 and 9VAC5-50-260) [April 29, 2021]

21. Emission Limits - Total emissions from the marine vessel unloading operations at Pier X terminal shall not exceed the limits specified below:

PM	51.5 tons/yr
PM10	24.3 tons/yr
PM2.5	3.7 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 1 - 4, 6, 8, 9, 13, 14, 15, 16, 17, 19, 22, and 23. (9VAC5-80-1180 and 9VAC5-50-260) [April 29, 2021]

22. Visible Emission Limit - Visible emissions from any emission point (i.e. stack, vent, conveyance transfer point, or functionally equivalent opening) shall not exceed five percent (5%) opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A). (9VAC5-80-1180, 9VAC5-50-20, and 9VAC5-50-80) [September 11, 2015]

RECORDS

23. On Site Records - The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the DEQ Tidewater Regional Office. These records shall include, but are not limited to:

    a. Daily records of the maximum quantity of all bulk materials in storage (in tons) [September 11, 2015];

    b. Annual combined throughput of Group I through Group VIII bulk commodity materials unloaded during marine vessel unloading operations (in tons), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months; [April 29, 2021]

    c. Annual combined throughput of bulk materials at Pier IX terminal (in tons), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months; [April 29, 2021]

    d. Record log for each marine vessel unloading event which shall include the unloading starting date and time, unloading completion date and time, any date and time periods of ceased operation due to excessive wind speed, and the date and name of the person entering the information; [September 11, 2015]

    e. Records of all 5-minute wind speed averages recorded during each marine vessel unloading event; [September 11, 2015]

    f. A checklist for railcar unloading events, which shall include the following information: daily inspection of the first railcar unloading event for each operating day to ensure the equipment referenced in Condition 10.a. through 10.c. of this permit is fully functional and maintained in proper working order, including the date and the time the observation was made, any corrective actions taken on observed equipment malfunctions, and the name of the person performing the observation. A copy of the facility's current BMPs and completed checklists shall be maintained at the terminal and shall be available for inspection by the DEQ; [September 11, 2015]

    g. Records of malfunctions and notifications, as required by Conditions 27 and 28; [September 11, 2015]

    h. Record log of all bulk materials transferred, stored, and handled; [April 29, 2021]

    i. Record log of days in which ground storage piles for Group I, II, and III materials are uncovered from tarping, as required by Condition 7; and [April 29, 2021]

    j. Record log of gallons of water used in wet suppression cycles, as required by Condition 16. [April 29, 2021]

These records shall be available for inspection by the DEQ and shall be current for the most recent five (5) years.
(9VAC5-80-1180 and 9VAC5-50-50)

GENERAL CONDITIONS

24. Permit Suspension/Revocation - This permit may be suspended or revoked if the permittee:

    a. Knowingly makes material misstatements in the permit application or any amendments to it;

    b. Fails to comply with the conditions of this permit;

    c. Fails to comply with any emission standards applicable to a permitted emissions unit;

    d. Causes emissions from the stationary source which result in violations of, or interfere with the attainment and maintenance of, any ambient air quality standard; or

    e. Fails to operate in conformance with any applicable control strategy, including any emission standards or emissions limitations, in the State Implementation Plan in effect at the time an application for this permit is submitted.

    (9VAC5-80-1210(G))

25. Right of Entry - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:

    a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;

    b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

    c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and

    d. To sample or test at reasonable times.

    For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.
    (9VAC5-170-130 and 9VAC5-80-1180)

26. Maintenance/Operating Procedures - At all times, including periods of start-up, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.
(9VAC5-50-20(E) and 9VAC5-80-1180(D))

27. Record of Malfunctions - The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause), corrective action, preventive measures taken and name of person generating the record.
(9VAC5-20-180(J) and 9VAC5-80-1180(D))

28. Notification for Facility or Control Equipment Malfunction - The permittee shall furnish notification to the Tidewater Regional Office of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour. Such notification shall be made no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within 14 days of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Tidewater Regional Office.
(9VAC5-20-180(C) and 9VAC5-80-1180)

29. Violation of Ambient Air Quality Standard - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9VAC5-20-180(I) and 9VAC5-80-1180)

30. Change of Ownership - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current minor NSR permit issued to the previous owner. The new owner shall notify the Tidewater Regional Office of the change of ownership within 30 days of the transfer.
(9VAC5-80-1240)

31. Permit Copy - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9VAC5-80-1180)

APPENDIX A

This appendix is to be considered a part of the Department of Environmental Quality permit to operate the Kinder Morgan Operating L.P. "C" intermodal dry bulk terminal (Pier IX Terminal). All procedures outlined in this appendix are enforceable as a condition of operating. Appendix A provides a logic trace for an autonomous fugitive dust suppression activity scheduler that was designed during a 1980's collaborative effort between the Dominion Terminal Associates (DTA), the PierIX Terminal and the Virginia Department of Environmental Protection (VADEQ). This system, referred to as the "Kfactor" system, was co-designed by Simpson Weather Associates (consultant to DTA and PierIX) and Mr. John Stewart of the VADEQ. While the original logic for this water cannon activity scheduler was documented in spreadsheet format (Appendix A), SWA, working together with the VADEQ, converted the logic into an executable code for use by coal terminals employing various computer Operating Systems. This Visual BASIC code, which was evaluated by VADEQ to confirm equivalency with the original spreadsheet format, is now known as ProControl V3.0 and is used at both DTA and PierIX.

The "Kfactor" uses inputs from a weather station located within the fence line of a coal terminal. The required weather parameters are air temperature, relative humidity, wind speed/direction and precipitation. Each hour, on the hour, the weather conditions are used to decide if a water cannon cycle is required by the VADEQ Air Permit to suppress fugitive dust emissions from the coal storage piles and the adjacent travel ways.

Based upon an extensive period of monitoring PM(TSP) and PM-10 at several locations to the NE of the PierIX terminal, the VADEQ derived a relationship between the water used for dust suppression and the PM/PM-10 measurements. The annual fugitive coal dust emissions are computed using this VADEQ algorithm, the annual throughput of coal, the average coal ground storage in piles and the efficiency of the facilities use of the "K-factor" driven scheduling of the water cannon usage.

The POCs for this autonomous scheduler for a wet suppression system are:

Dr. G. D. Emmitt
gde@swa.com
434-979-3571

Linn Wood
lsw@swa.com
434-979-3571

Kinder Morgan shall record the following parameters on an hourly basis:

Average hourly temperature (T) in degrees Fahrenheit

Average hourly relative humidity (RH)

Average hourly wind speed in miles per hour (SP)

Average hourly wind direction (DIR)

Hourly rain in inches

Density of air ρ (lb/ft^3) from the equation $\rho = -0.0001478(T) + 0.0853$

Viscosity of air (1.68g lb/ft-hr) from the following equations

$T \leq 32$	$1.68\mu = 0.0001207(T) + 0.0655479$
$32.00 < T \leq 64.40$	$1.68\mu = 0.0001493(T) + 0.0646353$
$64.40 < T$	$1.68\mu = 0.0001344(T) + 0.0655899$

K as determined by the equation: $K = SP(T/RH)(\rho/(1.68\mu))$

Kinder Morgan shall use the data listed above for a computerized spreadsheet in a format as described below, maintaining the records to be submitted to the Board upon request.

The program outlined in Appendix A when properly programmed will provide for an hourly visual display (graph) which depicts the following:

a. CE_{unq} for the KT predicted: will change by the new hourly prediction of KT. At the end of the day will represent the potential uncontrolled coal emissions experienced in the past 24 hours.

b. Slope of the uncontrolled intended movement with time for the PASS-I system without controls: will change by the new hourly prediction of KT.

c. PASS-I line, with hourly markings in proportion depicting the controlled to the hourly K, emission level attained when controls are applied. This line's slope and value will vary as suppression cycles are applied. The extension of this line depicts the near low end of the day value in $\mu g/m^3$ if no further cycles are applied and is the primary control medium. It generates from the uncontrolled slope line (b.).

d. PASS-O line, depicting the controlled emissions level attained when controls are applied. This line's slope as in (c) will vary as suppression cycles are applied. The extension of this line depicts the near high end of the day value in $\mu g/m^3$, if no further cycles are applied. When, due to cycles, the PASS-O line and the PASS-I line are one and the same, their

extension will be the end of the day value attained for coal in $\mu g/m^3$. It generates from the uncontrolled CE_{unc} line (a.).

e. PASS-O (180) line, with hourly markings in proportions to the hourly K, depicting the controlled emission level when the wind direction is between 180^0 and 270^0. This line is activated by wind direction inputs and holds the last highest value during periods when the wind is out of quadrant. Its extension represents the near end of day value in $\mu g/m^3$ at station 180-J if no further cycles are applied. This line also generates from the uncontrolled CE_{unc} line (a.).

COLUMN 1

TM Records the hourly values for a 24 hour day, beginning with a 0 at 0100 hours and ending with a 23 at 2400 hours.

COLUMN 2

K Computes and records the hourly value of K as follows:

$$K = ((WS * TEMP) / RH) * (\rho/(1.68\mu))$$

COLUMN 3

KD Computes and records the K factor adjusted for rain and freeze effects. KD is used to define the need for a cycle (C_i) administered by the computer controlled water suppression system. KD is computed as follows:

$$KD = K * Ffr$$

COLUMN 4

C_i Records the total number of cycles credited on the hour. A 20-minute suppression cycle (24,000 gallons of water) sprayed from the computer controlled water suppression system counts as one cycle as well as a rain event greater than or equal to 0.0225 inches. Rain greater than or equal to 0.01 inches but less than 0.0225 inches is counted as one C_i if the adjusted rain amount for the hour is less than the actual rain amount.

COLUMN 5

SYM Records the type of suppression cycle credited for the hour. Where:

A: represents an ASSURANCE CYCLE (one 20-minute spray cycle per hour from the computer controlled water suppression system).

F: represents a continuous cycle (three 20-minute spray cycles per hour) administered to recover from a freeze event.

1: represents a DEMAND I cycle, where KD is greater than or equal to 10, but less than 15.

2: represents a DEMAND II cycle, where KD is greater than or equal to 15, but less than 30.

3: represents a DEMAND III cycle, where KD is greater than or equal to 30, but less than 45.

4: represents a DEMAND IV cycle, where KD is greater than or equal to 45.

W: represents a cycle called for by the forecast (if applicable).

COLUMN 6

$\sum C_i$ Records the total number of cycles credited since 0000 or the sum of COLUMN 4.

COLUMN 7

IR Records the amount of rain in inches for the hour as measured by the rain gauge.

Note: CIR, the total amount of rain credited for the hour is computed as follows:

CIR = IR if it is raining, but adds 0.0225 to CIR if a DEMAND IV cycle is administered.

IRadj, the adjusted rain amount for the hour is also computed to include the effects of non-consecutive rains,

where:

$IRadj = SUMIR_{n-1} / (HRS_{n\_l} + 1)$	when IR > 0 and HRS > 0
$IRadj = SUMIR_{n-1} / (HRS_{n\_l} + 1)$	when IR = 0 and SUMIR≥0.0225; & FR<0.95; &CYCLES < 3
$IRadj = CIR_{n\_l} / (HRS_{n-l} + 1)$	when IR > 0, SUMIR 0.0225; and HRS = 0
$IRadj = CIR_{n\_l} / (HRS_{n-l} + 1)$	when IR = 0 and SUMIR≥0.0225; & FR<0.95; &CYCLES = 3
IRadj = 0	when IR = 0, and SUMIR < 0.0225; and FR < 0.95

COLUMN 8

HRS Records the number of hours following a rainfall. HRS increases by one each hour after the rain ends, and continues to do so until another rain begins or until the effects of the rain are over ($F_r \geq 0.9$)

Note: If a DEMAND IV cycle is administered in order to recover from a freeze, HRS is initially set to
0.5 instead of l.

HRS = 0	when $C_i = 3$ and $FIR_{n-l} = 0$ or $Ffr_{n-1} < 1$
HRS = 0	when IR > 0 and SUMIR > 0.0225
HRS 0.5	when $C_i = 3$; $FIR_{n-l} > 0$; and $Ffr_{n-1} = 1$
$HRS = HRS_{n-l} + 1$	when IR > 0 and SUMIR ≤ 0.0225
	or when IR=0; SUMIR > 0.0225

Note: If TM = 24 and Fr < 0.9 then HRS and SUMIR are carried forward to the next day. If Fr ≥ 0.9 the post rain effect has reached its limits. On the next hour, Fr =l, HRS = 0, and SUMIR = 0.

COLUMN 9

SUMIR Computes and records the effective sum of the hourly rainfall as follows:

SUMIR= 0	when CIR = 0 and $SUMIR_{n-l} < 0.0225$ or $Fr_{n-1} > 0.95$
$SUMIR = SUMIR_{n-l}$	when CIR = 0 and $SUMIR_{n-1} \geq 0.0225$
SUMIR = CIR	when CIR > 0; $(IR + IR_{n-l}) < 0.0225$; and $Ffr_{n-1}= 1$
SUMIR = CIR	when CIR > 0; $(IR + IR_{n-l}) < 0.0225$ $Ffr_{n-l} < 1$ $CIR_{n-l} > 0$; and $C_i= 3$
$SUMIR = IR + SUMIR_{n-l}$	when CIR > 0; $(IR + IR_{n-l}) < 0.0225$; $Ffr_{n-l} < 1$; $CIR_{n-1} > 0$; and $C_i < 3$

$SUMIR = IRadj_{n-1} + CIR$	when CIR > 0; $(IR + IR_{n-l}) < 0.0225$; $Ffr_{n-l} < 1$ $CIR_{n-l} = 0$ and Temp > 33^0F;
$SUMIR = IRadj_{n-l} + CIR$	when CIR > 0; and $(IR + IR_{n-1}) \geq 0.0225$
$SUMIR = IR + IRadj_{n-1}$	when Temp < 33^0F

Note: If Fr = 1 then SUMIR is set to zero the next hour.

COLUMN 10

F_r Computes and records the post rain recovery factor. Fr ranges from zero to one, with Fr set to zero during a rain. When Fr≥ 0.9, the effects of the rain are considered over, and Fr is set to one on the next hour. Fr is computed as follows:

Fr=0	when CIR < 0.0225 and SUMIR ≥ 0.0225
Fr = l	when CIR < 0.0225 and SUMIR < 0.0225
$Fr = 10^{(-215.66*24*SUMIR/(HRS*KT))}$	when CIR < 0.0225 and SUMIR < 0.0225
$Fr = 10^{(-215.66*24*SUMIR/(HRS*KT))}$	when CIR ≥ 0.0225 and HRS > 0

COLUMN 11

Ffr Computes and records the combined effects of rain and freeze, where Ffr = Fr * Ff ,Ff (the post freeze effect) is calculated as follows:

$F_f = ((SUMKF * FHRS)/ FIR* 10^6)) * 4.02917 + 0.305$	when FIR > 0 and SUMKF> 0
Fr = 1	when FIR = 0 or SUMKF =0

SUMKF (the sum of the freeze shear) is calculated by summing the K values beginning when the temperature reaches 33^0F until Fr $\leq$ 0.1 or until continuous cycles are administered.

FIR (the potential freeze water) is calculated as follows:

FIR = SUMKF/19200	when FIR_{n-1} = 0; SUMIR =0; FHRS = 8; and SUMKF > 0
FIR = FIR_{n-1}	when FIR_{n-1} = 0; SUMIR = 0; FHRS $\neq$ 8 and SUMKF > 0
	or when FIR_{n-1} > 0; and SUMIR+ $SUMIR_{n-1} \leq FIR_{n-1}$
FIR = IR	when FIR_{n-1} >0; IR + $SUMIR_{n-1} \geq FIR_{n-1}$ and Fr $\geq$1
FIR = SUMIR	for all other conditions

FHRS (the potential freeze hours) is calculated as follows:

FHRS = 0	when SUMIR = 0 and SUMKF = 0
FHRS = HRS	when SUMIR > 0 and SUMKF = 0
FHRS = HRS	when SUMKF > 0; TEMP > 34^0F; and Fr <0.1
FHRS = FHRS + 1	when SUMKF > 0; and TEMP 34^0F or Fr $\geq$ 0.1

COLUMN 12

KT Computes and records the predicted sum of K at the end of the day as follows:

$$KT_n = K_1 + K_2 + K_3 + \ldots + K_n(24\text{-}TM)$$

EXAMPLE: TM

1	10
2	10
3	20

KT_3= 10 + 10 + 20 + 20(24-3) = 460

COLUMN 13

Hvi Computes and records the estimated amount of dust entering the HVS during the hour as follows:

$$Hvi = Ksum * Sl * Ffr$$

where:

Ksum is the sum of the K values within the current cycle set.

Sl is the slope of the sumHvi line for the current cycle set, and is computed as follows:

At TM = 1

Sl = sb when Ci=0

where sb(base slope) = CEunc/KT

Sl = sb * (1-eff) when Ci > 0

For all other times (n):

Sl = $Slci_{n-l}$ * $(1\text{-}eff)_n$ where Sl_{ci-l} is the last value of Sl in the previous Ci sequence Sl_{ci-l} =

sb prior to any cycles.

(1-eff) term calculates the efficiency of the last cycle administered and is calculated as follows:

Equation A: $(1\text{-}eff)_a = (1-(36.657299 * 10^{(-0.0018^{*}9215 * Ksum)}/100))C_{seq}$

Equation B: $(1\text{-}eff)_b = (1-((-0.0146913 * Ksum + 14.65059)/100))C_{seq}$

Equation A can be used to calculate the efficiencies when KT < 288 otherwise use Equation B until $slope_{n-l}$ * $(1\text{-}eff)_b$ S sp(shift point) where sp = 0.6256838 - 0.0008297 * KT then switch to Equation A.

Note: At the beginning of the day, (1-eff) = 1 until a cycle occurs. If a cycle is credited at time I (cycle performed at TM 0000) then the equation for (1-eff) changes as follows: KT replaces Ksum, and the calculation is multiplied by Cseq instead of raised to its power. The slope then remains constant until another cycle/cycles are administered.

C is the cycle sequence for the current cycle set.

where: Cseq=0 when Ci = 0

Cseq = $Cseq_{n-1}$ when Ci = C_{in-1}

Cseq = 0.5 when $C_{in} > C_{in-1;}$ Ffr> 1; and Ci = 1

Cseq= l when Ci = 1 or 3 or Ci ≠ 1 and Ffr >1

Cseq=2 when Ci=2

EXAMPLE: KT(at TM=4) = 368.60 i.e. ≥. 288

sb = 0.40804 and sp = 0.31986

TM	K	RBC	Ksum	(I-eff)	Cseq	Sl	Ffr	Hvi1
1	20.10	0	20.10	1.0	0	0.408	1.0	8.2024
2	17.00	0	37.10	1.0	0	0.408	1.0	15.1398
3	16.50	1	16.50	0.85592	1	0.349	1.0	15.7631
4	15.00	1	31.50	0.85592	1	0.350	1.0	11.0307

COLUMN 14

∑Hvi Computes and records the sum of the coal dust in the HVS (Hi Vol Sampler) to the hour as follows:

∑Hvi = Hvi + $\sum Hvi_{cin-1}$

where $\sum Hvi_{cin-1}$ is the last value of ∑Hvi in the previous cycle sequence.

EXAMPLE: Using the values from the previous example:

TM	$\sum Hvi_{cin-l}$	$\sum Hvi$
I	0.0	8.2024
2	0.0	15.1398
3	15.1398	20.9029
4	15.1398	26.1705

COLUMN 15

HVT Computes and records the projected amount of dust on the HVS filter at the end of the day if no further cycles were administered.

$$HVT = \sum Hvi + KL * Sl * ((1\text{-}eff)/100)^{Cseq} \text{ where}$$

$KL = KT - sum(K_1+K_2+K_n)$

(l-eff) is the same as COLUMN 14 except that KL is used in the expression instead of Ksum.

COLUMN 16

TEMP Records the temperature in degrees Fahrenheit.

COLUMN 17

RH Records the relative humidity (percent)

COLUMN 18

WD Records the wind direction (degrees)

COLUMN 19

WS Records the wind speed (mi/hr)

COLUMN 20

#Cc Records the number of suppression cycles credited for hour. The suppression cycles are only credited when the wind is blowing within the 180 to 270 degree quadrant.

COLUMN 21

$\sum Hvi_c$ Computes and records the sum of the dust in the HiVol accumulated when the wind is blowing within the 180 to 270 degree quadrant.