

# DRAFT

# STATE OF COLORADO

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
AIR POLLUTION CONTROL DIVISION  
TELEPHONE: (303) 692-3150



## CONSTRUCTION PERMIT

PERMIT NO: **14WE0563**

**Issuance 1**

DATE ISSUED:

ISSUED TO: **Carrizo Oil & Gas, Inc.**

THE SOURCE TO WHICH THIS PERMIT APPLIES IS DESCRIBED AND LOCATED AS FOLLOWS:

Oil and gas facility, known as the Nelson Ranches 1-33, 4-27-10-59, located in the SWSE of Section 28, Township 10N, Range 59W, in Weld County, Colorado.

THE SPECIFIC EQUIPMENT OR ACTIVITY SUBJECT TO THIS PERMIT INCLUDES THE FOLLOWING:

Facility Equipment ID	AIRS Point	Description
TANKS	003	Six (6) 400 BBL Crude Oil Storage Tanks. Emissions from these tanks are controlled by a 48" Cimarron Enclosed Flare (95% destruction efficiency).

THIS PERMIT IS GRANTED SUBJECT TO ALL RULES AND REGULATIONS OF THE COLORADO AIR QUALITY CONTROL COMMISSION AND THE COLORADO AIR POLLUTION PREVENTION AND CONTROL ACT C.R.S. (25-7-101 *et seq*), TO THOSE GENERAL TERMS AND CONDITIONS INCLUDED IN THIS DOCUMENT AND THE FOLLOWING SPECIFIC TERMS AND CONDITIONS:

### REQUIREMENTS TO SELF-CERTIFY FOR FINAL AUTHORIZATION

1. **YOU MUST notify the Air Pollution Control Division (the Division) no later than fifteen days after issuance of this permit, by submitting a Notice of Startup form to the Division.** The Notice of Startup form may be downloaded online at <https://www.colorado.gov/pacific/cdphe/other-air-permitting-notices>. Failure to notify the Division of startup of the permitted source is a violation of Air Quality Control Commission (AQCC) Regulation No. 3, Part B, Section III.G.1 and can result in the revocation of the permit.
2. Within one hundred and eighty days (180) after issuance of this permit, compliance with the conditions contained in this permit shall be demonstrated to the Division. It is the owner or operator's responsibility to self-certify compliance with the conditions. Failure to demonstrate compliance within 180 days may result in revocation of the permit. (Reference: Regulation No. 3, Part B, III.G.2).
3. This permit shall expire if the owner or operator of the source for which this permit was issued: (i) does not commence construction/modification or operation of this source within 18 months after either, the date of issuance of this construction permit or the date

on which such construction or activity was scheduled to commence as set forth in the permit application associated with this permit; (ii) discontinues construction for a period of eighteen months or more; (iii) does not complete construction within a reasonable time of the estimated completion date. The Division may grant extensions of the deadline per Regulation No. 3, Part B, III.F.4.b. (Reference: Regulation No. 3, Part B, III.F.4.)

4. The operator shall complete all initial compliance testing and sampling as required in this permit and submit the results to the Division as part of the self-certification process. (Reference: Regulation No. 3, Part B, Section III.E.)
5. The following information about the enclosed flare shall be provided to the Division within fifteen (15) days after issuance of permit.
  - manufacturer
  - model number
  - serial number

This information shall be included with the Notice of Startup submitted for the equipment. (Reference: Regulation No. 3, Part B, III.E.)

6. The operator shall retain the permit final authorization letter issued by the Division, after completion of self-certification, with the most current construction permit. This construction permit alone does not provide final authority for the operation of this source.

**EMISSION LIMITATIONS AND RECORDS**

7. Emissions of air pollutants shall not exceed the following limitations (as calculated in the Division's preliminary analysis). (Reference: Regulation No. 3, Part B, Section II.A.4)

**Annual Limits:**

Facility Equipment ID	AIRS Point	Tons per Year			Emission Type
		NO <sub>x</sub>	VOC	CO	
<b>TANKS</b>	<b>003</b>	---	7.1	---	Point

See "Notes to Permit Holder" for information on emission factors and methods used to calculate limits.

Facility-wide emissions of each individual hazardous air pollutant shall be less than 8.0 tpy.

Facility-wide emissions of total hazardous air pollutants shall be less than 20.0 tpy.

Compliance with the annual limits shall be determined by recording the facility's annual criteria pollutant emissions, (including all HAPs above the de-minimis reporting level) from each emission unit, on a rolling twelve (12) month total. By the end of each month a new twelve-month total shall be calculated based on the previous twelve months' data. The permit holder shall calculate emissions each month and keep a compliance record on site or at a local field office with site responsibility, for Division review. This rolling twelve-month total shall apply to all permitted emission units, requiring an APEN, at this facility.

8. The emission points in the table below shall be operated and maintained with the control equipment as listed in order to reduce emissions to less than or equal to the limits established in this permit (Reference: Regulation No.3, Part B, Section III.E.)

Facility Equipment ID	AIRS Point	Control Device	Pollutants Controlled
TANKS	003	48" Cimarron Enclosed Flare (95% destruction efficiency)	VOC

## **PROCESS LIMITATIONS AND RECORDS**

9. This source shall be limited to the following maximum processing rates as listed below. Monthly records of the actual processing rates shall be maintained by the owner or operator and made available to the Division for inspection upon request. (Reference: Regulation 3, Part B, II.A.4)

### **Process/Consumption Limits**

Facility Equipment ID	AIRS Point	Process Parameter	Annual Limit
TANKS	003	Crude Oil Throughput	165,217 BBL/yr

The owner or operator shall calculate monthly process rates based on the calendar month.

Compliance with the annual throughput limits shall be determined on a rolling twelve (12) month total. By the end of each month a new twelve-month total is calculated based on the previous twelve months' data. The permit holder shall calculate throughput each month and keep a compliance record on site or at a local field office with site responsibility, for Division review.

## **STATE AND FEDERAL REGULATORY REQUIREMENTS**

10. The permit number and AIRS ID point number (e.g. 123/4567/890) shall be marked on the subject equipment for ease of identification. (Reference: Regulation Number 3, Part B, III.E.) (State only enforceable)
11. Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. Emission control devices subject to Regulation 7, Sections XII.C.1.d or XVII.B.1.c shall have no visible emissions. (Reference: Regulation No. 1, Section II.A.1. & 4.)
12. This permit fulfills the requirement to hold a valid permit reflecting the storage tank and associated control device per the Colorado Oil and Gas Conservation Commission rule 805b(2)(A).
13. This source is subject to the odor requirements of Regulation No. 2. (State only enforceable)
14. The flare covered by this permit is subject to Regulation No. 7, Section XVII.B General Provisions (State only enforceable). If a flare or other combustion device is used to control emissions of volatile organic compounds to comply with Section XVII, it shall be enclosed, have no visible emissions during normal operations, and be designed so that

an observer can, by means of visual observation from the outside of the enclosed flare or combustion device, or by other convenient means approved by the Division, determine whether it is operating properly. The operator shall comply with all applicable requirements of Section XVII.

15. The flare covered by this permit is subject to Regulation No. 7, Section XVII.B General Provisions (State only enforceable). These requirements include, but are not limited to:

XVII.B.1.b If a flare or other combustion device is used to control emissions of volatile organic compounds to comply with Section XVII, it shall be enclosed, have no visible emissions during normal operations, and be designed so that an observer can, by means of visual observation from the outside of the enclosed flare or combustion device, or by other convenient means approved by the Division, determine whether it is operating properly. The operator shall comply with all applicable requirements of Section XVII.

XVII.B.2.d.(ii) All combustion devices installed before May 1, 2014, must be equipped with an operational auto-igniter by or before May 1, 2016, or after the next combustion device planned shutdown, whichever comes first.

16. The storage tanks covered by this permit are subject to Regulation 7, Section XVII.C emission control requirements. These requirements include, but are not limited to:

**Section XVII.C.1. Control and monitoring requirements for storage tanks**

XVII.C.1.b. Owners or operators of storage tanks with uncontrolled actual emissions of VOCs equal to or greater than six (6) tons per year based on a rolling twelve-month total must operate air pollution control equipment that achieves an average hydrocarbon control efficiency of 95%. If a combustion device is used, it must have a design destruction efficiency of at least 98% for hydrocarbons.

XVII.C.1.b.(i)(b) Control requirements of Section XVII.C.1.b. must be achieved by May 1, 2015.

XVII.C.1.d. Beginning May 1, 2014, or the applicable compliance date in Section XVII.C.1.b.(i), whichever comes later, owners or operators of storage tanks constructed before May 1, 2014 subject to Section XVII.C.1. must conduct audio, visual, olfactory (“AVO”) and additional visual inspections of the storage tank and any associated equipment (e.g. separator, air pollution control equipment, or other pressure reducing equipment) at the same frequency as liquids are loaded out from the storage tank. These inspections are not required more frequently than every seven (7) days but must be conducted at least every thirty one (31) days. Monitoring is not required for storage tanks or associated equipment that are unsafe, difficult, or inaccessible to monitor, as defined in Section XVII.C.1.e. The additional visual inspections must include, at a minimum:

XVII.C.1.d.(i) Visual inspection of any thief hatch, pressure relief valve, or other access point to ensure that they are closed and properly sealed;

XVII.C.1.d.(ii) Visual inspection or monitoring of the air pollution control equipment to ensure that it is operating, including that the pilot light is lit on combustion devices used as air pollution control equipment;

XVII.C.1.d.(iii) If a combustion device is used, visual inspection of the auto-igniter and valves for piping of gas to the pilot light to ensure they are functioning properly;

XVII.C.1.d.(iv) Visual inspection of the air pollution control equipment to ensure that the valves for the piping from the storage tank to the air pollution control equipment are open; and

XVII.C.1.d.(v) If a combustion device is used, inspection of the device for the presence or absence of smoke. If smoke is observed, either the equipment must be immediately shut-in to investigate the potential cause for smoke and perform repairs, as necessary, or EPA Method 22 must be conducted to determine whether visible emissions are present for a period of at least one (1) minute in fifteen (15) minutes.

XVII.C.1.e. If storage tanks or associated equipment is unsafe, difficult, or inaccessible to monitor, the owner or operator is not required to monitor such equipment until it becomes feasible to do so.

**XVII.C.2. Capture and monitoring requirements for storage tanks that are fitted with air pollution control equipment as required by Sections XII.D. or XVII.C.1.**

XVII.C.2.a. Owners or operators of storage tanks must route all hydrocarbon emissions to air pollution control equipment, and must operate without venting hydrocarbon emissions from the thief hatch (or other access point to the tank) or pressure relief device during normal operation, unless venting is reasonably required for maintenance, gauging, or safety of personnel and equipment. Compliance must be achieved in accordance with the schedule in Section XVII.C.2.b.(ii).

XVII.C.2.b. Owners or operators of storage tanks subject to the control requirements of Sections XII.D.2., XVII.C.1.a, or XVII.C.1.b. must develop, certify, and implement a documented Storage Tank Emission Management System (“STEM”) plan to identify, evaluate, and employ appropriate control technologies, monitoring practices, operational practices, and/or other strategies designed to meet the requirements set forth in Section XVII.C.2.a. Owners or operators must update the STEM plan as necessary to achieve or maintain compliance. Owners or operators are not required to develop and implement STEM for storage tanks containing only stabilized liquids. The minimum elements of STEM are listed below.

XVII.C.2.b.(i) STEM must include selected control technologies, monitoring practices, operational practices, and/or other strategies; procedures for evaluating ongoing storage tank emission capture performance; and monitoring in accordance with approved instrument monitoring methods following the applicable schedule in Section XVII.C.2.b.(ii) and Inspection Frequency in Table 1.

XVII.C.2.b.(ii) Owners or operators must achieve the requirements of Sections XVII.C.2.a. and XVII.C.2.b. and begin implementing the required approved instrument monitoring method in accordance with the following schedule:

XVII.C.2.b.(ii)(b) A storage tank constructed before May 1, 2014, must comply with the requirements of Sections XVII.C.2.a. and XVII.C.2.b. by May 1, 2015. Approved instrument monitoring method inspections must begin within ninety (90) days of the Phase-In Schedule in Table 1, or within thirty (30) days for storage tanks with uncontrolled actual VOC emissions greater than 50 tons per year.

XVII.C.2.b.(ii)(d) Following the first approved instrument monitoring method inspection, owners or operators must continue conducting approved

instrument monitoring method inspections in accordance with the Inspection Frequency in Table 1.

Table 1 – Storage Tank Inspections		
Threshold: Storage Tank Uncontrolled Actual VOC Emissions (tpy)	Approved Instrument Monitoring Method Inspection Frequency	Phase-In Schedule
$\geq 6$ and $\leq 12$	Annually	January 1, 2016
$> 12$ and $\leq 50$	Quarterly	July 1, 2015
$> 50$	Monthly	January 1, 2015

XVII.C.2.b.(iii) Owners or operators are not required to monitor storage tanks and associated equipment that are unsafe, difficult, or inaccessible to monitor, as defined in Section XVII.C.1.e.

XVII.C.2.b.(iv) STEM must include a certification by the owner or operator that the selected STEM strategy(ies) are designed to minimize emissions from storage tanks and associated equipment at the facility(ies), including thief hatches and pressure relief devices.

**XVII.C.3. Recordkeeping**

XVII.C.3. The owner or operator of each storage tank subject to Sections XII.D. or XVII.C. must maintain records of STEM, if applicable, including the plan, any updates, and the certification, and make them available to the Division upon request. In addition, for a period of two (2) years, the owner or operator must maintain records of any required monitoring and make them available to the Division upon request, including:

XVII.C.3.a. The AIRS ID for the storage tank.

XVII.C.3.b. The date and duration of any period where the thief hatch, pressure relief device, or other access point are found to be venting hydrocarbon emissions, except for venting that is reasonably required for maintenance, gauging, or safety of personnel and equipment.

XVII.C.3.c. The date and duration of any period where the air pollution control equipment is not operating.

XVII.C.3.d. Where a combustion device is being used, the date and result of any EPA Method 22 test or investigation pursuant to Section XVII.C.1.d.(v).

XVII.C.3.e. The timing of and efforts made to eliminate venting, restore operation of air pollution control equipment, and mitigate visible emissions.

XVII.C.3.f. A list of equipment associated with the storage tank that is designated as unsafe, difficult, or inaccessible to monitor, as described in Section XVII.C.1.e., an explanation stating why the equipment is so designated, and the plan for monitoring such equipment.

## OPERATING & MAINTENANCE REQUIREMENTS

17. Upon startup of these points, the owner or operator shall follow the most recent operating and maintenance (O&M) plan and record keeping format approved by the Division, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation. (Reference: Regulation No. 3, Part B, Section III.G.7.)

## COMPLIANCE TESTING AND SAMPLING

### Initial Testing Requirements

18. The owner or operator shall demonstrate compliance with opacity standards, using EPA Method 22 to determine the presence or absence of visible emissions. "Visible Emissions" means observations of smoke for any period or periods of duration greater than or equal to one (1) minute in any fifteen (15) minute period during normal operation. (Reference: Regulation No. 7 Section XVII.All)

### Periodic Testing Requirements

19. The owner or operator shall demonstrate compliance with opacity standards, using EPA Method 22 on a weekly basis to determine the presence or absence of visible emissions as required in the Operating and Maintenance Plan. "Visible Emissions" means observations of smoke for any period or periods of duration greater than or equal to one (1) minute in any fifteen (15) minute period during normal operation. (Reference: Regulation No. 7 Section XVII.All)

## ADDITIONAL REQUIREMENTS

20. A revised Air Pollutant Emission Notice (APEN) shall be filed: (Reference: Regulation No. 3, Part A, II.C)
  - a. Annually by April 30<sup>th</sup> whenever a significant increase in emissions occurs as follows:
    - For any criteria pollutant:**
      - For sources emitting **less than 100 tons per year**, a change in actual emissions of five (5) tons per year or more, above the level reported on the last APEN; or
      - For sources emitting **100 tons per year or more**, a change in actual emissions of five percent or 50 tons per year or more, whichever is less, above the level reported on the last APEN submitted; or
    - For any non-criteria reportable pollutant:**
      - If the emissions increase by 50% or five (5) tons per year, whichever is less, above the level reported on the last APEN submitted to the Division.
  - b. Whenever there is a change in the owner or operator of any facility, process, or activity; or
  - c. Whenever new control equipment is installed, or whenever a different type of control equipment replaces an existing type of control equipment; or
  - d. Whenever a permit limitation must be modified; or
  - e. No later than 30 days before the existing APEN expires.

21. Federal regulatory program requirements (i.e. PSD, NANSR) shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable Federal program threshold will require a full review of the source as though construction had not yet commenced on the source. The source shall not exceed the Federal program threshold until a permit is granted. (Regulation No. 3 Parts C and D).
22. MACT Subpart HH - National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities major stationary source requirements shall apply to this stationary source at any such time that this stationary source becomes major solely by virtue of a relaxation in any permit limitation and shall be subject to all appropriate applicable requirements of Subpart HH. (Reference: Regulation No. 8, Part E)

**GENERAL TERMS AND CONDITIONS**

23. This permit and any attachments must be retained and made available for inspection upon request. The permit may be reissued to a new owner by the APCD as provided in AQCC Regulation No. 3, Part B, Section II.B upon a request for transfer of ownership and the submittal of a revised APEN and the required fee.
24. If this permit specifically states that final authorization has been granted, then the remainder of this condition is not applicable. Otherwise, the issuance of this construction permit does not provide "final" authority for this activity or operation of this source. Final authorization of the permit must be secured from the APCD in writing in accordance with the provisions of 25-7-114.5(12)(a) C.R.S. and AQCC Regulation No. 3, Part B, Section III.G. Final authorization cannot be granted until the operation or activity commences and has been verified by the APCD as conforming in all respects with the conditions of the permit. Once self-certification of all points has been reviewed and approved by the Division, it will provide written documentation of such final authorization. **Details for obtaining final authorization to operate are located in the Requirements to Self-Certify for Final Authorization section of this permit.**
25. This permit is issued in reliance upon the accuracy and completeness of information supplied by the owner or operator and is conditioned upon conduct of the activity, or construction, installation and operation of the source, in accordance with this information and with representations made by the owner or operator or owner or operator's agents. It is valid only for the equipment and operations or activity specifically identified on the permit.
26. Unless specifically stated otherwise, the general and specific conditions contained in this permit have been determined by the APCD to be necessary to assure compliance with the provisions of Section 25-7-114.5(7)(a), C.R.S.
27. Each and every condition of this permit is a material part hereof and is not severable. Any challenge to or appeal of a condition hereof shall constitute a rejection of the entire permit and upon such occurrence, this permit shall be deemed denied *ab initio*. This permit may be revoked at any time prior to self-certification and final authorization by the Air Pollution Control Division (APCD) on grounds set forth in the Colorado Air Quality Control Act and regulations of the Air Quality Control Commission (AQCC), including failure to meet any express term or condition of the permit. If the Division denies a permit, conditions imposed upon a permit are contested by the owner or operator, or the Division revokes a permit, the owner or operator of a source may request a hearing before the AQCC for review of the Division's action.

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28. Section 25-7-114.7(2)(a), C.R.S. requires that all sources required to file an Air Pollution Emission Notice (APEN) must **pay an annual fee** to cover the costs of inspections and administration. If a source or activity is to be discontinued, the owner must notify the Division in writing requesting a cancellation of the permit. Upon notification, annual fee billing will terminate.
29. Violation of the terms of a permit or of the provisions of the Colorado Air Pollution Prevention and Control Act or the regulations of the AQCC may result in administrative, civil or criminal enforcement actions under Sections 25-7-115 (enforcement), -121 (injunctions), -122 (civil penalties), -122.1 (criminal penalties), C.R.S.

By:



Christopher Kester  
Oil and Gas Permit Engineer

**Permit History**

Issuance	Date	Description
Issuance 1	This Issuance	Issued to Carrizo Oil & Gas Inc.

Notes to Permit Holder at the time of this permit issuance:

- 1) The permit holder is required to pay fees for the processing time for this permit. An invoice for these fees will be issued after the permit is issued. The permit holder shall pay the invoice within 30 days of receipt of the invoice. Failure to pay the invoice will result in revocation of this permit (Reference: Regulation No. 3, Part A, Section VI.B.)
- 2) The production or raw material processing limits and emission limits contained in this permit are based on the consumption rates requested in the permit application. These limits may be revised upon request of the owner or operator providing there is no exceedance of any specific emission control regulation or any ambient air quality standard. A revised air pollution emission notice (APEN) and complete application form must be submitted with a request for a permit revision.
- 3) This source is subject to the Common Provisions Regulation Part II, Subpart E, Affirmative Defense Provision for Excess Emissions During Malfunctions. The owner or operator shall notify the Division of any malfunction condition which causes a violation of any emission limit or limits stated in this permit as soon as possible, but no later than noon of the next working day, followed by written notice to the Division addressing all of the criteria set forth in Part II.E.1 of the Common Provisions Regulation. See: <https://www.colorado.gov/pacific/cdphe/agcc-regs>
- 4) The following emissions of non-criteria reportable air pollutants are estimated based upon the process limits as indicated in this permit. This information is listed to inform the operator of the Division's analysis of the specific compounds emitted if the source(s) operate at the permitted limitations.

AIRS Point	Pollutant	CAS #	Uncontrolled Emission Rate (lb/yr)	Are the emissions reportable?	Controlled Emission Rate (lb/yr)
003	Benzene	71432	5,052	Yes	253
	n-Hexane	110543	24,305	Yes	1,215
	Toluene	108883	6,237	Yes	312
	Xylenes	1330207	1,748	Yes	87
	224-TMP	540841	1,752	Yes	88
	Ethylbenzene	100414	322	Yes	16

- 5) The emission levels contained in this permit are based on the following emission factors:

Pollutant	CAS #	Emission Factors Uncontrolled (lb/BBL Condensate Throughput)	Emission Factors Controlled (lb/BBL Condensate Throughput)	Source
VOC	---	1.72	0.086	E&P TANKS
Benzene	71432	0.031	0.0016	
n-Hexane	110543	0.147	0.0074	
Toluene	108883	0.038	0.0019	
Xylenes	1330207	0.011	0.0006	
224-TMP	540841	0.011	0.0006	
Ethylbenzene	100414	0.002	0.0001	

Note: The controlled emissions factors for point 003 are based on the flare control efficiency of 95%.

6) In accordance with C.R.S. 25-7-114.1, each Air Pollutant Emission Notice (APEN) associated with this permit is valid for a term of five years from the date it was received by the Division. A revised APEN shall be submitted no later than 30 days before the five-year term expires. Please refer to the most recent annual fee invoice to determine the APEN expiration date for each emissions point associated with this permit. For any questions regarding a specific expiration date call the Division at (303)-692-3150.

7) This facility is classified as follows:

Applicable Requirement	Status
Operating Permit	Synthetic Minor/Major Source of: <i>VOC &amp; HAP</i>
PSD	Synthetic Minor/Major Source of: <i>VOC &amp; HAP</i>
MACT HH	Major Source Requirements: Not Applicable Area Source Requirements: Not Applicable

8) Full text of the Title 40, Protection of Environment Electronic Code of Federal Regulations can be found at the website listed below:

<http://ecfr.gpoaccess.gov/>

<b>Part 60: Standards of Performance for New Stationary Sources</b>		
NSPS	60.1-End	Subpart A – Subpart KKKK
NSPS	Part 60, Appendixes	Appendix A – Appendix I
<b>Part 63: National Emission Standards for Hazardous Air Pollutants for Source Categories</b>		
MACT	63.1-63.599	Subpart A – Subpart Z
MACT	63.600-63.1199	Subpart AA – Subpart DDD
MACT	63.1200-63.1439	Subpart EEE – Subpart PPP
MACT	63.1440-63.6175	Subpart QQQ – Subpart YYYY
MACT	63.6580-63.8830	Subpart ZZZZ – Subpart MMMMM
MACT	63.8980-End	Subpart NNNNN – Subpart XXXXXX

9) A self certification form and guidance on how to self-certify compliance as required by this permit may be obtained online at: <http://www.colorado.gov/pacific/cdphe/air-permit-self-certification>

# DRAFT STATE OF COLORADO

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
AIR POLLUTION CONTROL DIVISION  
TELEPHONE: (303) 692-3150



## CONSTRUCTION PERMIT

PERMIT NO: **14WE0565**

**Issuance 1**

DATE ISSUED:

ISSUED TO: **Carrizo Oil & Gas Inc.**

THE SOURCE TO WHICH THIS PERMIT APPLIES IS DESCRIBED AND LOCATED AS FOLLOWS:

Oil and gas facility, known as the Nelson Ranches 1-33, 4-27-10-59, located in the SWSE of Section 28, Township 10N, Range 59W, in Weld County, Colorado.

THE SPECIFIC EQUIPMENT OR ACTIVITY SUBJECT TO THIS PERMIT INCLUDES THE FOLLOWING:

Facility Equipment ID	AIRS Point	Description
LOAD	005	Truck loadout of crude oil. Emissions from the loadout are not controlled.

THIS PERMIT IS GRANTED SUBJECT TO ALL RULES AND REGULATIONS OF THE COLORADO AIR QUALITY CONTROL COMMISSION AND THE COLORADO AIR POLLUTION PREVENTION AND CONTROL ACT C.R.S. (25-7-101 et seq), TO THOSE GENERAL TERMS AND CONDITIONS INCLUDED IN THIS DOCUMENT AND THE FOLLOWING SPECIFIC TERMS AND CONDITIONS:

### REQUIREMENTS TO SELF-CERTIFY FOR FINAL AUTHORIZATION

1. **YOU MUST** notify the Air Pollution Control Division (the Division) no later than fifteen days after issuance of this permit, **by submitting a Notice of Startup form to the Division.** The Notice of Startup form may be downloaded online at <https://www.colorado.gov/pacific/cdphe/other-air-permitting-notices>. Failure to notify the Division of startup of the permitted source is a violation of Air Quality Control Commission (AQCC) Regulation No. 3, Part B, Section III.G.1 and can result in the revocation of the permit.
2. Within one hundred and eighty days (180) after issuance of this permit, compliance with the conditions contained in this permit shall be demonstrated to the Division. It is the owner or operator's responsibility to self-certify compliance with the conditions. Failure to demonstrate compliance within 180 days may result in revocation of the permit. (Reference: Regulation No. 3, Part B, III.G.2).

3. This permit shall expire if the owner or operator of the source for which this permit was issued: (i) does not commence construction/modification or operation of this source within 18 months after either, the date of issuance of this construction permit or the date on which such construction or activity was scheduled to commence as set forth in the permit application associated with this permit; (ii) discontinues construction for a period of eighteen months or more; (iii) does not complete construction within a reasonable time of the estimated completion date. The Division may grant extensions of the deadline per Regulation No. 3, Part B, III.F.4.b. (Reference: Regulation No. 3, Part B, III.F.4.)
4. The operator shall retain the permit final authorization letter issued by the Division after completion of self-certification, with the most current construction permit. This construction permit alone does not provide final authority for the operation of this source.

## **EMISSION LIMITATIONS AND RECORDS**

5. Emissions of air pollutants shall not exceed the following limitations (as calculated in the Division's preliminary analysis). (Reference: Regulation No. 3, Part B, Section II.A.4)

### **Annual Limits:**

Facility Equipment ID	AIRS Point	Tons per Year	Emission Type
		VOC	
LOAD	005	8.3	Point

See "Notes to Permit Holder" for information on emission factors and methods used to calculate limits.

Facility-wide emissions of each individual hazardous air pollutant shall be less than 8.0 tpy.

Facility-wide emissions of total hazardous air pollutants shall be less than 20.0 tpy.

Compliance with the annual limits shall be determined by recording the facility's annual criteria pollutant emissions, (including all HAPs above the de-minimis reporting level) from each emission unit, on a rolling twelve (12) month total. By the end of each month a new twelve-month total shall be calculated based on the previous twelve months' data. The permit holder shall calculate emissions each month and keep a compliance record on site or at a local field office with site responsibility, for Division review. This rolling twelve-month total shall apply to all permitted emission units, requiring an APEN, at this facility.

## **PROCESS LIMITATIONS AND RECORDS**

6. This source shall be limited to the following maximum processing rates as listed below. Monthly records of the actual processing rate shall be maintained by the owner or operator and made available to the Division for inspection upon request. (Reference: Regulation 3, Part B, II.A.4)

## Process/Consumption Limits

Facility Equipment ID	AIRS Point	Process Parameter	Annual Limit
LOAD	005	Crude Oil Loaded	165,217 BBL/yr

The owner or operator shall calculate monthly process rates based on the calendar month.

Compliance with the annual throughput limits shall be determined on a rolling twelve (12) month total. By the end of each month a new twelve-month total is calculated based on the previous twelve months' data. The permit holder shall calculate throughput each month and keep a compliance record on site or at a local field office with site responsibility, for Division review.

7. Condensate loading to truck tanks shall be conducted by submerged fill. (Reference: Regulation 3, Part B, III.E)

## **STATE AND FEDERAL REGULATORY REQUIREMENTS**

8. This source is subject to the odor requirements of Regulation No. 2. (State only enforceable)
9. The owner or operator shall follow loading procedures that minimize the leakage of VOCs to the atmosphere including, but not limited to (Reference: Regulation 3, Part B, III.E):
  - a. Hoses, couplings, and valves shall be maintained to prevent dripping, leaking, or other liquid or vapor loss during loading and unloading.
  - b. All compartment hatches (including thief hatches) shall be closed and latched at all times when loading operations are not active, except for periods of maintenance, gauging, or safety of personnel and equipment.
  - c. The owner or operator shall inspect loading equipment and operations onsite at the time of inspections to monitor compliance with Condition 9 (a) and (b) above. The inspections shall occur at least monthly. Each inspection shall be documented in a log available to the Division on request.
10. All hydrocarbon liquid loading operations, regardless of size, shall be designed, operated and maintained so as to minimize leakage of volatile organic compounds to the atmosphere to the maximum extent practicable.

## **OPERATING & MAINTENANCE REQUIREMENTS**

11. This source is not required to follow a Division-approved operating and maintenance plan.

## COMPLIANCE TESTING AND SAMPLING

12. This source is not required to comply with any testing and sampling requirements.

## ADDITIONAL REQUIREMENTS

13. A revised Air Pollutant Emission Notice (APEN) shall be filed: (Reference: Regulation No. 3, Part A, II.C)
- a. Annually by April 30<sup>th</sup> whenever a significant increase in emissions occurs as follows:
- For any criteria pollutant:**  
For sources emitting **less than 100 tons per year**, a change in actual emissions of five (5) tons per year or more, above the level reported on the last APEN; or  
For sources emitting **100 tons per year or more**, a change in actual emissions of five percent or 50 tons per year or more, whichever is less, above the level reported on the last APEN submitted; or
- For any non-criteria reportable pollutant:**  
If the emissions increase by 50% or five (5) tons per year, whichever is less, above the level reported on the last APEN submitted to the Division.
- b. Whenever there is a change in the owner or operator of any facility, process, or activity; or
- c. Whenever new control equipment is installed, or whenever a different type of control equipment replaces an existing type of control equipment; or
- d. Whenever a permit limitation must be modified; or
- e. No later than 30 days before the existing APEN expires.
14. Federal regulatory program requirements (i.e. PSD, NANSR) shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable Federal program threshold will require a full review of the source as though construction had not yet commenced on the source. The source shall not exceed the Federal program threshold until a permit is granted. (Regulation No. 3 Part D).

## GENERAL TERMS AND CONDITIONS

15. This permit and any attachments must be retained and made available for inspection upon request. The permit may be reissued to a new owner by the APCD as provided in AQCC Regulation No. 3, Part B, Section II.B upon a request for transfer of ownership and the submittal of a revised APEN and the required fee.
16. If this permit specifically states that final authorization has been granted, then the remainder of this condition is not applicable. Otherwise, the issuance of this construction permit does not provide "final" authority for this activity or operation of this source. Final authorization of the permit must be secured from the APCD in writing in accordance with the provisions of 25-7-114.5(12)(a) C.R.S. and AQCC Regulation No. 3, Part B, Section

III.G. Final authorization cannot be granted until the operation or activity commences and has been verified by the APCD as conforming in all respects with the conditions of the permit. Once self-certification of all points has been reviewed and approved by the Division, it will provide written documentation of such final authorization. **Details for obtaining final authorization to operate are located in the Requirements to Self-Certify for Final Authorization section of this permit.**

17. This permit is issued in reliance upon the accuracy and completeness of information supplied by the owner or operator and is conditioned upon conduct of the activity, or construction, installation and operation of the source, in accordance with this information and with representations made by the owner or operator or owner or operator's agents. It is valid only for the equipment and operations or activity specifically identified on the permit.
18. Unless specifically stated otherwise, the general and specific conditions contained in this permit have been determined by the APCD to be necessary to assure compliance with the provisions of Section 25-7-114.5(7)(a), C.R.S.
19. Each and every condition of this permit is a material part hereof and is not severable. Any challenge to or appeal of a condition hereof shall constitute a rejection of the entire permit and upon such occurrence, this permit shall be deemed denied *ab initio*. This permit may be revoked at any time prior to self-certification and final authorization by the Air Pollution Control Division (APCD) on grounds set forth in the Colorado Air Quality Control Act and regulations of the Air Quality Control Commission (AQCC), including failure to meet any express term or condition of the permit. If the Division denies a permit, conditions imposed upon a permit are contested by the owner or operator, or the Division revokes a permit, the owner or operator of a source may request a hearing before the AQCC for review of the Division's action.
20. Section 25-7-114.7(2)(a), C.R.S. requires that all sources required to file an Air Pollution Emission Notice (APEN) must **pay an annual fee** to cover the costs of inspections and administration. If a source or activity is to be discontinued, the owner must notify the Division in writing requesting a cancellation of the permit. Upon notification, annual fee billing will terminate.
21. Violation of the terms of a permit or of the provisions of the Colorado Air Pollution Prevention and Control Act or the regulations of the AQCC may result in administrative, civil or criminal enforcement actions under Sections 25-7-115 (enforcement), -121 (injunctions), -122 (civil penalties), -122.1 (criminal penalties), C.R.S.

By:



Christopher Kester  
Oil and Gas Permit Engineer

### Permit History

Issuance	Date	Description
Issuance 1	This Issuance	Issued to Carrizo Oil & Gas Inc.

Notes to Permit Holder at the time of this permit issuance:

- 1) The permit holder is required to pay fees for the processing time for this permit. An invoice for these fees will be issued after the permit is issued. The permit holder shall pay the invoice within 30 days of receipt of the invoice. Failure to pay the invoice will result in revocation of this permit (Reference: Regulation No. 3, Part A, Section VI.B.)
- 2) The production or raw material processing limits and emission limits contained in this permit are based on the consumption rates requested in the permit application. These limits may be revised upon request of the owner or operator providing there is no exceedance of any specific emission control regulation or any ambient air quality standard. A revised air pollution emission notice (APEN) and complete application form must be submitted with a request for a permit revision.
- 3) This source is subject to the Common Provisions Regulation Part II, Subpart E, Affirmative Defense Provision for Excess Emissions During Malfunctions. The owner or operator shall notify the Division of any malfunction condition which causes a violation of any emission limit or limits stated in this permit as soon as possible, but no later than noon of the next working day, followed by written notice to the Division addressing all of the criteria set forth in Part II.E.1. of the Common Provisions Regulation. See: <https://www.colorado.gov/pacific/cdphe/aqcc-regs>
- 4) The following emissions of non-criteria reportable air pollutants are estimated based upon the process limits as indicated in this permit. This information is listed to inform the operator of the Division's analysis of the specific compounds emitted if the source(s) operate at the permitted limitations.

AIRS Point	Pollutant	CAS #	Uncontrolled Emission Rate (lb/yr)	Are the emissions reportable?	Controlled Emission Rate (lb/yr)
005	n-Hexane	110543	1416	Yes	N/A
	Benzene	71432	298	Yes	N/A
	Toluene	108883	361	Yes	N/A

- 5) The emission levels contained in this permit are based on the following emission factors:

Pollutant	CAS #	Emission Factors - Uncontrolled (lb/1000gal)	Source
VOC	---	2.4	AP-42
n-Hexane	110543	0.043	
Benzene	71432	0.052	
Toluene	108883	0.204	

The uncontrolled VOC emission factor was calculated using AP-42, Chapter 5.2, Equation 1 (version 1/95) using the following values:

$$L = 12.46 \cdot S \cdot P \cdot M / T$$

S = 0.6 (Submerged loading: dedicated normal service)

P (true vapor pressure) = 3.4 psia

M (vapor molecular weight) = 50 lb/lb-mol

T (temperature of liquid loaded) = 529.67 °R

The uncontrolled non-criteria reportable air pollutant (NCRP) emission factors were calculated by multiplying the mass fraction of each NCRP in the vapors by the VOC emission factor.

- 6) In accordance with C.R.S. 25-7-114.1, each Air Pollutant Emission Notice (APEN) associated with this permit is valid for a term of five years from the date it was received by the Division. A revised APEN shall be submitted no later than 30 days before the five-year term expires. Please refer to the most recent annual fee invoice to determine the APEN expiration date for each emissions point associated with this permit. For any questions regarding a specific expiration date call the Division at (303)-692-3150.
- 7) This facility is classified as follows:

Applicable Requirement	Status
Operating Permit	Synthetic Minor/Major Source of: <i>VOC &amp; HAP</i>
PSD	Synthetic Minor/Major Source of: <i>VOC &amp; HAP</i>

- 8) Full text of the Title 40, Protection of Environment Electronic Code of Federal Regulations can be found at the website listed below:  
<http://ecfr.gpoaccess.gov/>

<b>Part 60: Standards of Performance for New Stationary Sources</b>		
NSPS	60.1-End	Subpart A – Subpart KKKK
NSPS	Part 60, Appendixes	Appendix A – Appendix I
<b>Part 63: National Emission Standards for Hazardous Air Pollutants for Source Categories</b>		
MACT	63.1-63.599	Subpart A – Subpart Z
MACT	63.600-63.1199	Subpart AA – Subpart DDD
MACT	63.1200-63.1439	Subpart EEE – Subpart PPP
MACT	63.1440-63.6175	Subpart QQQ – Subpart YYYYY
MACT	63.6580-63.8830	Subpart ZZZZ – Subpart MMMMM
MACT	63.8980-End	Subpart NNNNN – Subpart XXXXX

- 9) A self certification form and guidance on how to self-certify compliance as required by this permit may be obtained online at: <http://www.colorado.gov/pacific/cdphe/air-permit-self-certification>

# DRAFT

# STATE OF COLORADO

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
AIR POLLUTION CONTROL DIVISION  
TELEPHONE: (303) 692-3150



## CONSTRUCTION PERMIT

PERMIT NO: **14WE0566**

**Issuance 1**

DATE ISSUED:

ISSUED TO: **Carrizo Oil & Gas Inc.**

THE SOURCE TO WHICH THIS PERMIT APPLIES IS DESCRIBED AND LOCATED AS FOLLOWS:

Oil and gas facility, known as the Konig 2-31-11-59, located in Lot 4 of Section 31, Township 11N, Range 59W, in Weld County, Colorado.

THE SPECIFIC EQUIPMENT OR ACTIVITY SUBJECT TO THIS PERMIT INCLUDES THE FOLLOWING:

Facility Equipment ID	AIRS Point	Description
SEPARATOR	006	Separator controlled by an open flare. Flare has a minimum combustion efficiency of 95%.

THIS PERMIT IS GRANTED SUBJECT TO ALL RULES AND REGULATIONS OF THE COLORADO AIR QUALITY CONTROL COMMISSION AND THE COLORADO AIR POLLUTION PREVENTION AND CONTROL ACT C.R.S. (25-7-101 *et seq*), TO THOSE GENERAL TERMS AND CONDITIONS INCLUDED IN THIS DOCUMENT AND THE FOLLOWING SPECIFIC TERMS AND CONDITIONS:

### REQUIREMENTS TO SELF-CERTIFY FOR FINAL AUTHORIZATION

1. **YOU MUST notify the Air Pollution Control Division (the Division) no later than fifteen days after issuance of this permit, by submitting a Notice of Startup form to the Division.** The Notice of Startup form may be downloaded online at [www.cdphe.state.co.us/ap/downloadforms.html](http://www.cdphe.state.co.us/ap/downloadforms.html). Failure to notify the Division of startup of the permitted source is a violation of Air Quality Control Commission (AQCC) Regulation No. 3, Part B, Section III.G.1 and can result in the revocation of the permit.
2. Within one hundred and eighty days (180) after issuance of this permit, compliance with the conditions contained in this permit shall be demonstrated to the Division. It is the owner or operator's responsibility to self-certify compliance with the conditions. Failure to demonstrate compliance within 180 days may result in revocation of the permit. (Reference: Regulation No. 3, Part B, III.G.2).
3. This permit shall expire if the owner or operator of the source for which this permit was issued: (i) does not commence construction/modification or operation of this source within 18 months after either, the date of issuance of this construction permit or the date on which such construction or activity was scheduled to commence as set forth in the permit application associated with this permit; (ii) discontinues construction for a period of eighteen months or more; (iii) does not complete construction within a reasonable time of the

estimated completion date. The Division may grant extensions of the deadline per Regulation No. 3, Part B, III.F.4.b. (Reference: Regulation No. 3, Part B, III.F.4.)

- 4. The operator shall complete all initial compliance testing and sampling as required in this permit and submit the results to the Division as part of the self-certification process. (Reference: Regulation No. 3, Part B, Section III.E.)
- 5. Within one hundred and eighty (180) days after issuance of this permit, the operator shall install a flow meter to monitor and record volumetric flow rate of natural gas vented from this separator. The operator shall use the gas flow rate listed in the application for actual flow rate until the flow meter is installed, not to exceed one hundred and eighty (180) days after issuance of this permit.
- 6. The operator shall retain the permit final authorization letter issued by the Division, after completion of self-certification, with the most current construction permit. This construction permit alone does not provide final authority for the operation of this source.

**EMISSION LIMITATIONS AND RECORDS**

- 7. Emissions of air pollutants shall not exceed the following limitations (as calculated in the Division's preliminary analysis). (Reference: Regulation No. 3, Part B, Section II.A.4)

**Annual Limits:**

Facility Equipment ID	AIRS Point	Tons per Year			Emission Type
		NO <sub>x</sub>	VOC	CO	
SEPARATOR	006	3.4	59.5	18.3	Point

See "Notes to Permit Holder #4" for information on emission factors and methods used to calculate limits.

Facility-wide emissions of each individual hazardous air pollutant shall be less than 8.0 tpy.

Facility-wide emissions of total hazardous air pollutants shall be less than 20.0 tpy.

The operator shall continuously monitor and record the volumetric flowrate of natural gas vented from the separator using a flow meter. The flow meter shall continuously measure flowrate and record total volumetric flow vented from the separator. The operator shall use monthly throughput records to demonstrate compliance with the process limits and to calculate emissions as described in this permit.

Compliance with the annual limits shall be determined by recording the facility's annual criteria pollutant emissions, (including all HAPs above the de-minimis reporting level) from each emission unit, on a rolling twelve (12) month total. By the end of each month a new twelve-month total shall be calculated based on the previous twelve months' data. The permit holder shall calculate emissions each month and keep a compliance record on site or at a local field office with site responsibility, for Division review. This rolling twelve-month total shall apply to all permitted emission units, requiring an APEN, at this facility.

- 8. The emission points in the table below shall be operated and maintained with the control equipment as listed in order to reduce emissions to less than or equal to the limits established in this permit (Reference: Regulation No.3, Part B, Section III.E.)

Facility Equipment ID	AIRS Point	Control Device	Pollutants Controlled
Separator	006	Separator controlled by an open flare	VOC and HAP

**PROCESS LIMITATIONS AND RECORDS**

9. This source shall be limited to the following maximum processing rates as listed below. Monthly records of the throughput shall be maintained by the applicant and made available to the Division for inspection upon request. (Reference: Regulation 3, Part B, II.A.4)

**Process/Consumption Limits**

Facility Equipment ID	AIRS Point	Process Parameter	Annual Limit
Separator	006	Natural gas flaring	60.2 MMSCF/yr

Compliance with the annual throughput limits shall be determined on a rolling twelve (12) month total. By the end of each month a new twelve-month total is calculated based on the previous twelve months' data. The permit holder shall calculate throughput each month and keep a compliance record on site or at a local field office with site responsibility, for Division review.

**STATE AND FEDERAL REGULATORY REQUIREMENTS**

10. The permit number and AIRS ID number shall be marked on the subject equipment for ease of identification. (Reference: Regulation Number 3, Part B, III.E.) (State only enforceable)
11. Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. (Reference: Regulation No. 1, Section II.A.1. & 4.)
12. No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity for a period or periods aggregating more than six minutes in any sixty consecutive minutes. (Reference: Regulation No. 1, Section II.A.5.)
13. These sources are subject to the odor requirements of Regulation No. 2. (State only enforceable)
14. The open flare covered by this permit has been approved as an alternative emissions control device under Regulation No. 7, Section XVII.B.2.e. The open flare shall have no visible emissions during normal operations and be designed so that an observer can, by means of visual observation from the outside of the open flare or by other convenient means approved by the Division, determine whether it is operating properly. The operator shall comply with all applicable requirements of Section XVII. The owner/operator must equip the open flare with an operational auto-igniter by or before May 1, 2016, or after the next combustion device planned shutdown, whichever comes first. (Regulation No. 7, Section XVII.B.)

## **OPERATING & MAINTENANCE REQUIREMENTS**

15. Upon startup of this point, the applicant shall follow the operating and maintenance (O&M) plan and record keeping format approved by the Division, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation. (Reference: Regulation No. 3, Part B, Section III.G.7.)

## **COMPLIANCE TESTING AND SAMPLING**

### **Initial Testing Requirements**

16. The owner or operator shall demonstrate compliance with opacity requirements using EPA Method 9 to measure opacity from the flare. (Reference: Regulation No. 1, Section II.A.5).

### **Periodic Testing Requirements**

17. The owner or operator shall demonstrate compliance with opacity requirements using EPA Method 22 to measure opacity from the flare on a monthly basis. (Reference: Regulation No. 1, Section II.A.5).
18. On an annual basis, the operator shall complete a site specific extended gas analysis of the natural gas produced at this site that is routed to the flare in order to verify the VOC content (weight fraction) of this emission stream used in the permit application. Results of testing shall be used to determine site-specific emission factors using Division approved methods.

## **ADDITIONAL REQUIREMENTS**

19. A revised Air Pollutant Emission Notice (APEN) shall be filed: (Reference: Regulation No. 3, Part A, II.C)
  - a. Annually whenever a significant increase in emissions occurs as follows:
    - For any criteria pollutant:**  
For sources emitting **less than 100 tons per year**, a change in actual emissions of five (5) tons per year or more, above the level reported on the last APEN; or
    - For any non-criteria reportable pollutant:**  
If the emissions increase by 50% or five (5) tons per year, whichever is less, above the level reported on the last APEN submitted to the Division.
  - b. Whenever there is a change in the owner or operator of any facility, process, or activity; or
  - c. Whenever new control equipment is installed, or whenever a different type of control equipment replaces an existing type of control equipment; or
  - d. Whenever a permit limitation must be modified; or
  - e. No later than 30 days before the existing APEN expires.
20. Federal regulatory program requirements (i.e. PSD, NANSR) shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable Federal program threshold will require a full review of the source as though construction had not yet

commenced on the source. The source shall not exceed the Federal program threshold until a permit is granted. (Regulation No. 3 Part D).

**GENERAL TERMS AND CONDITIONS**

- 21. This permit and any attachments must be retained and made available for inspection upon request. The permit may be reissued to a new owner by the APCD as provided in AQCC Regulation No. 3, Part B, Section II.B upon a request for transfer of ownership and the submittal of a revised APEN and the required fee.
- 22. If this permit specifically states that final authorization has been granted, then the remainder of this condition is not applicable. Otherwise, the issuance of this construction permit does not provide "final" authority for this activity or operation of this source. Final authorization of the permit must be secured from the APCD in writing in accordance with the provisions of 25-7-114.5(12)(a) C.R.S. and AQCC Regulation No. 3, Part B, Section III.G. Final authorization cannot be granted until the operation or activity commences and has been verified by the APCD as conforming in all respects with the conditions of the permit. Once self-certification of all points has been reviewed and approved by the Division, it will provide written documentation of such final authorization. **Details for obtaining final authorization to operate are located in the Requirements to Self-Certify for Final Authorization section of this permit.**
- 23. This permit is issued in reliance upon the accuracy and completeness of information supplied by the applicant and is conditioned upon conduct of the activity, or construction, installation and operation of the source, in accordance with this information and with representations made by the applicant or applicant's agents. It is valid only for the equipment and operations or activity specifically identified on the permit.
- 24. Unless specifically stated otherwise, the general and specific conditions contained in this permit have been determined by the APCD to be necessary to assure compliance with the provisions of Section 25-7-114.5(7)(a), C.R.S.
- 25. Each and every condition of this permit is a material part hereof and is not severable. Any challenge to or appeal of a condition hereof shall constitute a rejection of the entire permit and upon such occurrence, this permit shall be deemed denied *ab initio*. This permit may be revoked at any time prior to self-certification and final authorization by the Air Pollution Control Division (APCD) on grounds set forth in the Colorado Air Quality Control Act and regulations of the Air Quality Control Commission (AQCC), including failure to meet any express term or condition of the permit. If the Division denies a permit, conditions imposed upon a permit are contested by the applicant, or the Division revokes a permit, the applicant or owner or operator of a source may request a hearing before the AQCC for review of the Division's action.
- 26. Section 25-7-114.7(2)(a), C.R.S. requires that all sources required to file an Air Pollution Emission Notice (APEN) must **pay an annual fee** to cover the costs of inspections and administration. If a source or activity is to be discontinued, the owner must notify the Division in writing requesting a cancellation of the permit. Upon notification, annual fee billing will terminate.
- 27. Violation of the terms of a permit or of the provisions of the Colorado Air Pollution Prevention and Control Act or the regulations of the AQCC may result in administrative, civil or criminal enforcement actions under Sections 25-7-115 (enforcement), -121 (injunctions), -122 (civil penalties), -122.1 (criminal penalties), C.R.S.

DRAFT

By:



Christopher Kester  
Oil and Gas Permit Engineer

**Permit History**

Issuance	Date	Description
Issuance 1	This Issuance	Issued to: Carrizo Oil & Gas, Inc.

# DRAFT

Notes to Permit Holder:

- 1) The permit holder is required to pay fees for the processing time for this permit. An invoice for these fees will be issued after the permit is issued. The permit holder shall pay the invoice within 30 days of receipt of the invoice. Failure to pay the invoice will result in revocation of this permit (Reference: Regulation No. 3, Part A, Section VI.B.)
- 2) The production or raw material processing limits and emission limits contained in this permit are based on the consumption rates requested in the permit application. These limits may be revised upon request of the permittee providing there is no exceedance of any specific emission control regulation or any ambient air quality standard. A revised air pollution emission notice (APEN) and application form must be submitted with a request for a permit revision.
- 3) This source is subject to the Common Provisions Regulation Part II, Subpart E, Affirmative Defense Provision for Excess Emissions During Malfunctions. The permittee shall notify the Division of any malfunction condition which causes a violation of any emission limit or limits stated in this permit as soon as possible, but no later than noon of the next working day, followed by written notice to the Division addressing all of the criteria set forth in Part II.E.1 of the Common Provisions Regulation. See: [http://www.colorado.gov/cs/Satellite?c=Document\\_C&childpage=CDPHE-Main%2FDocument\\_C%2FCBONAddLinkView&cid=1251599389641&page=CBONWrapper](http://www.colorado.gov/cs/Satellite?c=Document_C&childpage=CDPHE-Main%2FDocument_C%2FCBONAddLinkView&cid=1251599389641&page=CBONWrapper)
- 4) The following emissions of non-criteria reportable air pollutants are estimated based upon the process limits as indicated in this permit. This information is listed to inform the operator of the Division's analysis of the specific compounds emitted if the source(s) operate at the permitted limitations.

AIRS Point	Pollutant	CAS #	Uncontrolled Emission Rate (lb/yr)	Are the emissions reportable?	Controlled Emission Rate (lb/yr)
006	Benzene	71432	10880	Yes	540
	Toluene	108883	8880	Yes	440
	Xylenes	1130207	2880	Yes	140
	n-Hexane	110543	62260	Yes	3420
	Ethylbenzene	100414	1080	Yes	60

- 5) The emission levels contained in this permit are based on the following emission factors:

CAS #	Pollutant	Weight Fraction of Gas (%)	Emission Factors Uncontrolled	Emission Factors Controlled	Source
---	NOx	---	0.068 lb/MMbtu	---	AP-42
---	CO	---	0.370 lb/MMBtu	---	AP-42
---	VOC	26.7	24.05 lb/MMBtu	1.203 lb/MMBtu	Engineering Calculation
71432	Benzene	0.0804	180.63 lb/MMscf	9.032 lb/MMscf	Engineering Calculation
108883	Toluene	0.0606	147.33 lb/MMscf	7.367 lb/MMscf	Engineering Calculation

CAS #	Pollutant	Weight Fraction of Gas (%)	Emission Factors Uncontrolled	Emission Factors Controlled	Source
1330207	Xylenes	0.0171	47.90 lb/MMscf	2.395 lb/MMscf	Engineering Calculation
110543	n-Hexane	0.4784	1133.8 lb/MMscf	56.69 lb/MMscf	Engineering Calculation
100414	Ethylbenzene	0.0064	17.92 lb/MMscf	0.896 lb/MMscf	Engineering Calculation

Note: The uncontrolled VOC and HAP emissions for this point were calculated using a weighted average of two gas sample collected from the Nelson Ranches 1-33 and 4-27 wells on December 27, 2013. The controlled VOC and HAP emissions factors for point 006 are based on the flare control efficiency of 95%.

- 6) In accordance with C.R.S. 25-7-114.1, each Air Pollutant Emission Notice (APEN) associated with this permit is valid for a term of five years from the date it was received by the Division. A revised APEN shall be submitted no later than 30 days before the five-year term expires. Please refer to the most recent annual fee invoice to determine the APEN expiration date for each emissions point associated with this permit. For any questions regarding a specific expiration date call the Division at (303)-692-3150.
- 7) This facility is classified as follows:

Applicable Requirement	Status
Operating Permit	Synthetic Minor/Major Source of: <i>VOC and HAP</i>
PSD or NANSR	Synthetic Minor/Major Source of: <i>VOC and HAP</i>
MACT HH	Not Applicable

- 8) Full text of the Title 40, Protection of Environment Electronic Code of Federal Regulations can be found at the website listed below:

<http://ecfr.gpoaccess.gov/>

Part 60: Standards of Performance for New Stationary Sources		
NSPS	60.1-End	Subpart A – Subpart KKKK
NSPS	Part 60, Appendixes	Appendix A – Appendix I
Part 63: National Emission Standards for Hazardous Air Pollutants for Source Categories		
MACT	63.1-63.599	Subpart A – Subpart Z
MACT	63.600-63.1199	Subpart AA – Subpart DDD
MACT	63.1200-63.1439	Subpart EEE – Subpart PPP
MACT	63.1440-63.6175	Subpart QQQ – Subpart YYYYY
MACT	63.6580-63.8830	Subpart ZZZZ – Subpart MMMMM
MACT	63.8980-End	Subpart NNNNN – Subpart XXXXXX

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- 9) A self certification form and guidance on how to self-certify compliance as required by this permit may be obtained online at: <http://www.colorado.gov/pacific/cdphe/air-permit-self-certification>