



Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant
DATE: June 13, 2007
RE: QuickSilver Resources, Inc. / 061-24661-00036
FROM: Nisha Sizemore
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Registration

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 4-21.5-3-4(d) this order is effective when it is served. When served by U.S. mail, the order is effective three (3) calendar days from the mailing of this notice pursuant to IC 4-21.5-3-2(e).

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FN-REGIS.dot 03/23/06



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
(317) 232-8603
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Judy Raab
Quicksilver Resources, Inc. - Mann Booster Station
777 West Rosedale Street, Suite 300
Fort Worth, TX 76104

June 13, 2007

Re: Registered Construction and Operation Status,
061-24661-00036

Dear Ms. Raab:

The application from Quicksilver Resources, Inc. - Mann Booster Station, received on April 24, 2007, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1, IDEM has determined that the following gas line compressor station, to be located at 3846 Hwy 337 SE, Corydon, Indiana 47112, is classified as registered:

One (1) 145 hp Caterpillar 3306NA, natural gas-fired, rich-burn compressor engine, identified as E-01, used to compress natural gas, with emissions vented through stack C-1. This engine was approved for construction in 2007.

The following conditions shall be applicable:

- (a) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following:
 - (1) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
- (b) Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

This registration is the first air approval issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.1-2(f)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, IN 46204-2251

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Jason Renzaglia, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (919) 468-7893 to speak directly to Mr. Renzaglia. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, MC 61-53 IGCN 1003 Indianapolis, Indiana, 46204-2251 or call (800) 451-6027, ask for Duane Van Laningham, or extension 3-6878, or dial (317) 233-6878.

Original Signed By:

Nisha Sizemore, Chief
Permits Branch
Office of Air Quality

ERG/JR

cc: File - Harrison County
Harrison County Health Department
Air Compliance – David Harrison
Permit Tracking
Compliance Data Section
Billing, Licensing, and Training - Dan Stamatkin

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.1-2(f)(3).

Company Name:	Quicksilver Resources, Inc. - Mann Booster Station
Address:	3846 Hwy 337 SE
City:	Corydon, Indiana 47112
Phone #:	(812) 738-3338
Registration #:	061-24661-00036

I hereby certify that Quicksilver Resources, Inc. - Mann Booster Station is still in operation and is in compliance with the requirements of Registration 061-24661-00036.

Name (typed):
Title:
Signature:
Date:

**Indiana Department of Environmental Management
Office of Air Quality**

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	Quicksilver Resources, Inc. - Mann Booster Station
Source Location:	3846 Hwy 337 SE, Corydon, Indiana 47112
County:	Harrison
SIC Code:	1311
Operation Permit No.:	061-24661-00036
Permit Reviewer:	ERG/JR

The Office of Air Quality (OAQ) has reviewed an application from Quicksilver Resources, Inc. - Mann Booster Station relating to the construction and operation of a gas line compressor station.

New Emission Units and Pollution Control Equipment

The application includes information relating to the approval for the construction and operation of the following equipment:

One (1) 145 hp Caterpillar 3306NA, natural gas-fired, rich-burn compressor engine, identified as E-01, used to compress natural gas, with emissions vented through stack C-1. This engine was approved for construction in 2007.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on April 24, 2007 with additional information received on May 1, 2007.

Emission Calculations

See Appendix A of this document for detailed emission calculations (Appendix A, pages 1 through 2).

Potential to Emit of the Source Before Controls

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant,

including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential to Emit (tons/yr)
PM	0.10
PM10	0.14
SO ₂	Negligible
VOC	1.78
CO	18.4
NO _x	10.9

HAPs	Potential to Emit (tons/yr)
Formaldehyde	0.10
Acetaldehyde	0.01
Acrolein	0.01
Other HAP	0.03
Total	0.15

- (a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of PM, PM10, SO₂, VOC, CO, and NO_x are less than 25 tons per year and the potential to emit of NO_x is greater than 10 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.5. A registration will be issued.
- (b) Fugitive Emissions
 Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD applicability.

County Attainment Status

The source is located in Harrison County.

Pollutant	Status
PM10	Attainment
PM2.5	Attainment
SO ₂	Attainment
NO ₂	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

Note: Effective October 25, 2006, 326 IAC 1-4-1 has been revised revoking the one hour ozone standard in Indiana.

- (a) Harrison County has been classified as attainment for PM2.5. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM2.5 emissions. Therefore, until the U.S. EPA adopts specific provisions for PSD review for PM2.5 emissions, it has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions. See the State Rule Applicability - Entire Source section.

- (b) Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) emissions are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to ozone. Harrison County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability - Entire Source section.
- (c) Harrison County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability - Entire Source section.
- (d) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD applicability.

Source Status

New Source PSD Definition (emissions after controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	0.10
PM10	0.14
SO ₂	Negligible
VOC	1.78
CO	18.4
NO _x	10.9
Single HAP (Formaldehyde)	0.10
Combination HAPs	0.15

This new source is not a major stationary source under 326 IAC 2-2 (PSD), because no attainment regulated pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons per year.

This is the first air approval issued to this source.

Federal Rule Applicability

- (a) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included in this Registration.
- (1) The provisions of New Source Performance Standards (NSPS) 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (326 IAC 12) are not included in this Registration. The compressor engine E-01 is a spark ignition unit. 40 CFR 60, Subpart IIII applies only to compression ignition internal combustion engines.
 - (2) The requirements of the New Source Performance Standard, 40 CFR 60, Subpart KKK - New Source Performance Standard for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants (326 IAC 12) are not included in this Registration. This NSPS applies only to emission units located at "natural gas processing plants", which are defined in the rule as "...any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products or both." No extraction or fractionation of natural gas liquids occurs at this location.
 - (3) The requirements of the New Source Performance Standards for Onshore Natural Gas Processing: SO₂ Emissions (40 CFR 60.640-60.648, Subpart LLL) are not included in this Registration. This NSPS applies to facilities (called sweetening units) that separate H₂S and CO₂ from sour natural gas streams. The source does not operate any sweetening units at this location.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14, 20 and 40 CFR Part 61, 63) included in this Registration.
- (1) The requirements of 40 CFR 63, Subpart HHH - National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities (326 IAC 20-31) are not included in this Registration. This source is not a major source of HAPs.
 - (2) The requirements of 40 CFR 63, Subpart HH - National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities (326 IAC 20-30) are not included in this Registration. This NESHAP applies to facilities that "process, upgrade, or store natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category." This plant will be in the natural gas transmission and storage source category and does not process, upgrade or store natural gas.
 - (3) The requirements of 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (326 IAC 20-82) are not included in this Registration. This NESHAP applies only to internal combustion engines that are located at plants that are major sources under Section 112 of the Clean Air Act. This source is not a major source of HAPs.

State Rule Applicability – Entire Source

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

This new source is not in one of the 28 listed source categories. The potential to emit all attainment regulated pollutants is less than 250 tons per year. Therefore, the requirements of 326 IAC 2-2 do not apply to this source.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

This source has the potential to emit less than 10 tons per year of a single HAP and less than 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 2-6 (Emission Reporting)

This source is located in Harrison County, is not required to operate under a Part 70 Permit, and has potential lead emissions less than five (5) tons per year. Therefore, this source is subject only to the additional information requests in 326 IAC 2-6-5.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in the permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-4 (Fugitive Dust Emissions)

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)

This source was constructed after December 13, 1985. The only source of fugitive emissions for this source is from roads. The potential fugitive particulate emissions from roads are negligible. Therefore, 326 IAC 6-5 does not apply.

326 IAC 8-6 (Organic Solvent Emission Limitations)

The provisions of 326 IAC 8-6 are not applicable to this source because it will be constructed after January 1, 1980.

326 IAC 10-1 (Nitrogen Oxides Control in Clark and Floyd Counties)

The provisions of 326 IAC 10-1 do not apply to this source because it is not located in Clark or Floyd Counties.

326 IAC 10-3 (Nitrogen Oxide Reduction Program for Specific Source Categories)

The provisions of 326 IAC 10-3 do not apply to this source because they do not operate portland cement kilns or boilers.

State Rule Applicability – Compressor E-01

326 IAC 6-2 (Particulate Emission Limitations for Sources of Indirect Heating)

The provisions of 326 IAC 6-2 do not apply to compressor E-01 because the emission unit is not a source of indirect heating.

326 IAC 6-3 (Particulate Emissions Limitations for Manufacturing Processes)

The provisions of 326 IAC 6-3 do not apply to compressor E-01 because the emission unit has potential particulate emissions less than 0.551 pounds per hour. Pursuant to 326 IAC 6-3-1(b)(14), manufacturing process with emissions less than 0.551 pounds per hour are exempt from 326 IAC 6-3.

326 IAC 7-1.1-1 (Sulfur Dioxide Emission Limitations)

The provisions of 326 IAC 7-1.1-1 do not apply to compressor E-01 because the emission unit does not have potential sulfur dioxide emissions greater than 25 tons per year or 10 pounds per hour.

326 IAC 8-1-6 (General VOC Reduction Requirements)

The compressor E-01 is not subject to 326 IAC 8-1-6 (General VOC Reduction Requirements) because the potential to emit volatile organic compounds is less than twenty-five (25) tons per year.

326 IAC 10-4 (Nitrogen Oxides Budget Trading Program)

The provisions of 326 IAC 10-4 do not apply to compressor E-01 because the emission unit does not meet the definition of an electricity generating unit as defined in 326 IAC 10-4-2(16) or a large affected unit as defined in 326 IAC 10-4-2(27).

Conclusion

The construction and operation of this gas line compressor station shall be subject to the conditions of Registration 061-24661-00036.

**Appendix A: Emission Calculations
Natural Gas Combustion - Compressors**

Company Name: Quicksilver Resources, Inc. - Mann Booster Station
Address: 3846 Hwy 337 SE, Corydon, Indiana 47112
Permit Number: 061-24661-00036
Reviewer: ERG/JR
Date: March 11, 2007

Heat Input Capacity
(hp)
145

Heat Input Capacity
(MMBtu/hr)
1.13

	Pollutant					
	PM (lb/MMBtu) 1.94E-02	PM10 (lb/MMBtu) 2.89E-02	SO ₂ (lb/MMBtu) 5.88E-04	NOx (lb/MMBtu) 2.21	VOC (lb/MMBtu) 0.36	CO (lb/MMBtu) 3.72
Emission Factor*						
Uncontrolled Potential Emission (tons/yr)	0.10	0.14	2.91E-03	10.9	1.78	18.4

* The Permittee provided emission factors from the emission unit manufacturer. The manufacturer's factors were compared to AP-42, Chapter 3.2, Natural Gas-fired Reciprocating Engines, Table 3.2-3, SCC 2-02-002-53 (Supplement F, August 2000). IDEM has used the manufacturer's factor when it resulted in a higher PTE. Therefore, PM, PM10, and VOC emissions calculations were calculated using factors provided by the manufacturer.

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Methodology

Uncontrolled Potential Emission (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 8760 hrs/yr x 1 ton/2,000 lbs

**Appendix A: Emissions Calculations
Natural Gas Combustion**

HAPs Emissions

Company Name: Quicksilver Resources, Inc. - Mann Booster Station
Address: 3846 Hwy 337 SE, Corydon, Indiana 47112
Permit Number: 061-24661-00036
Reviewer: ERG/JR
Date: March 11, 2007

	HAPs						
Emission Factor (lb/MMBtu)	Formaldehyde 2.05E-02	Acetaldehyde 2.79E-03	Acrolein 2.63E-03	Methanol 3.06E-03	Xylene 1.95E-04	Benzene 1.58E-03	Toluene 5.58E-04
Potential Emission (tons/yr)	0.10	0.01	0.01	0.02	9.65E-04	7.82E-03	2.76E-03

Methodology is the same as page 1.

Total HAP (tons/yr) = 0.15

No HAP emission factors were provided by the manufacturer. Emission factors are from AP 42, Chapter 3.2, Natural Gas-fired Reciprocating Engines, Table 3.2-3, SCC 2-02-002-53 (Supplement F, August 2000).
 The seven highest HAPs emission factors are provided above.