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GARFIELD COUNTY
Building & Planning Department
108 8th Street, Suite 401
Glenwood Springs, Colorado 81601
Telephone: 970.945.8212 Facsimile: 970.384.3470
www.garfield-county.com

RECEIVED
AUG 26 2008
GARFIELD COUNTY
BUILDING & PLANNING

# Special Use Permit

## GENERAL INFORMATION

- Street Address / General Location of Property: 1620 County Road 300, Parachute, Colorado
- Legal Description: See Attachment 4 "Site Plan" for legal description
- Existing Use & Size of Property in acres: Agricultural/Residential 2.755 Acres
- Description of Special Use Requested: Compressor Station and Well Site
- Zone District: Agricultural Residential Rural Density
- Name of Property Owner: Williams Production RMT Company
- Address: 1058 County Road 215 Telephone: 970-285-9377
- City: Parachute State: CO Zip Code: 81635 FAX: 970-285-9377
- Name of Owner's Representative, if any (Attorney, Planner, etc):

Charles S. Bucans, P.E., Star Valley Engineering, Inc.

- Address: 107675 N. US Highway 89 Telephone: 307-890-8013
- City: Etna State: WY Zip Code: 83118 FAX: 307-883-2906

## STAFF USE ONLY

- Doc. No.: SUPU908 Date Submitted: ______ TC Date: ______
- Planner: ______ Hearing Date: ______

PARCEL # 2409.352-00-151
single family modular on-site

such hearing time by certified return receipt mail, and receipts shall be presented at the hearing by the applicant.

c. The site shall be posted such that the notice is clearly and conspicuously visible from a public right-of-way, with notice signs provided by the Planning Department. The posting must take place at least thirty (30) but not more than sixty (60) days prior to the hearing date and is the sole responsibility of the applicant to post the notice, and ensure that it remains posted until and during the date of the hearing.

4. The Applicant is required to appear before the Board of County Commissioners at the time and date of the public hearing at which time the Board will consider the request. In addition, the Applicant shall provide proof, at the hearing, that proper notice was provided.

5. Once the Board makes a decision regarding the Special Use request, Staff will provide the Applicant with a signed resolution memorializing the action taken by the Board. Following the Board's approval, this office will issue the Special Use Permit to the applicant. If the Board's approval includes specific conditions of approval to be met, this office will not issue the Official Special Use Permit certificate until the applicant has satisfied all conditions of approval. The Special Use Permit approval is not finalized until this office has issued the Official Special Use Permit certificate signed by the Chairman of the Board of County Commissioners.

I have read the statements above and have provided the required attached information which is correct and accurate to the best of my knowledge.

(Tom Fiore)

(Signature of Property Owner) Last Revised: 07/2007

## GARFIELD COUNTY BUILDING AND PLANNING DEPARTMENT

### AGREEMENT FOR PAYMENT FORM

*(Shall be submitted with application)*

GARFIELD COUNTY (hereinafter COUNTY) and Williams Production RMT Co. (hereinafter APPLICANT) agree as follows:

1. APPLICANT has submitted to COUNTY an application for Una Compressor Station (hereinafter, THE PROJECT).

2. APPLICANT understands and agrees that Garfield County Resolution No. 98-09, as amended, establishes a fee schedule for each type of subdivision or land use review applications, and the guidelines for the administration of the fee structure.

3. APPLICANT and COUNTY agree that because of the size, nature or scope of the proposed project, it is not possible at this time to ascertain the full extent of the costs involved in processing the application. APPLICANT agrees to make payment of the Base Fee, established for the PROJECT, and to thereafter permit additional costs to be billed to APPLICANT. APPLICANT agrees to make additional payments upon notification by the COUNTY when they are necessary as costs are incurred.

4. The Base Fee shall be in addition to and exclusive of any cost for publication or cost of consulting service determined necessary by the Board of County Commissioners for the consideration of an application or additional COUNTY staff time or expense not covered by the Base Fee. If actual recorded costs exceed the initial Base Fee, APPLICANT shall pay additional billings to COUNTY to reimburse the COUNTY for the processing of the PROJECT mentioned above. APPLICANT acknowledges that all billing shall be paid prior to the final consideration by the COUNTY of any land use permit, zoning amendment, or subdivision plan.

**APPLICANT**

Charles S Bucans - Representative
**Signature**

**Date:** August 21, 2008

Charles S. Bucans
**Print Name**

**Mailing Address:** 107675 N. US HIGHWAY 89
ETNA WY. 83118

**10/2004**

# TABLE OF CONTENTS

BARGATH, INC.
UNA COMPRESSOR STATION
GARFIELD COUNTY, COLORADO

SPECIAL USE PERMIT
2008

Supplementary Information per Garfield County request of September 24, 2008

8. Listing of Adjacent Property Owners adjacent or within 200 feet of the subject property

9. Deed and Legal Description of Property

10. Authority of Authorized Representative

11. Impact Statement – Cover Letter
(The items prepared within section 11 are arranged as specified in the Garfield County Supplemental Regulations Sections 5.03.07 and are additionally compliant with Garfield County Supplemental Regulations Section 5.03.08 items # 1 through #4 Industrial Performance Standards)

1.A. Existing lawful use of water

1. Construction Stormwater Management Plan prepared by HRL Services

2. Spill Prevention Control and Countermeasure Plan prepared by Cordilleran Compliance Services, Inc.

3. Domestic Water System

1.B. Impacts on adjacent land

1. Vapor – Please see copy of Air Pollution Control Division Construction Permit application attached

2. Dust – Statement on Dust Control

3. Smoke - Please see copy of Air Pollution Control Division Construction Permit application attached

4. Noise – Statement on Noise Abatement

5. Glare – Statement on Glare Abatement

6. Vibration – Statement on Vibration Abatement

1.C Impacts on Wildlife

1.D. Impacts on Truck and Automobile Traffic

1. Traffic Analysis Prepared by Felsburg, Holt and Ullevig.

1.E. Distances from Abutting Property. Letter attached regarding contiguous property.

1.F. Mitigation Measures Proposed. Please see mitigation measures noted in each of the submittal items.

2.A. Site Rehabilitation Plan

12. Performance Standards as detailed in Garfield County Supplementary Regulations 5.03.08 (5)

5A. Storage of flammable or explosive solids or gases.

5B. Enclosures. Fencing of site.

5C. Materials or wastes transferred off property.

5D. Storage of heavy equipment.

5E. Storage area sizing.

5F. Lighting to be pointed downward and inward.

6. Water Pollution. Please see submittals in 11.1.A SWMP and SPCC and 12.1.B Air Pollution Control Division Construction Permit.

Garfield County
BUILDING & PLANNING DEPARTMENT

September 24, 2008

Charles Bucans
Star Valley Engineering
107675 N. US Highway 89
Etna, WY 83118

VIA EMAIL

RE: Williams Compressor Station

Dear Mr. Bucans;

We are in receipt of an application for a Special Use Permit (SUP) for "Processing and Material Handling of a Natural Resource" for a compressor station located on CR 300 in Garfield County. Thank you for your phone call today, it has aided in my understanding of the project. I have completed the review for technical completeness and have found that there is some required information that was not included in the application. The application is **Technically Incomplete** until such time as the following information is submitted:

1. The authorization letter in tab 10 does not state what authority Tom Fiore has to speak for Williams or Bargath. There needs to be a Statement of authority or some comparable document to show his authority. Williams is the property owner therefore they are the applicants.
2. The intro letter says that a permit application is pending with the state air pollution control division for 7 of the 8 compressor units. However, Tab 11.1.B.1 includes an application to the state for 5 portable units, no location, but with a stated home base at a site different from the location in the application. Please explain.
3. The application is seeking a maximum of 8 units at this site, however it appears that the supporting information does not necessarily include the impacts and mitigation for the 8 units. Please explain.
4. The intro letter talks about a "compressor station and well site", however the traffic study, tab 11.1.D, is for a well site, pad SG12-35, does this study include the traffic associated with the compressor station?
5. Similar to the above item, the wildlife assessment that was provided states that it complies with 9.07.04(10) which are the pipeline regulations. Are you, or have you applied for a pipeline through Garfield County?

6. Section 3 - information provided regarding provision of water and porta-potties. For the provision of water please information regarding the amount of water to be provided, you could provide an affidavit from Mountain Clear with the pertinent information. Down Valley Septic should information regarding the number of units, and maintenance of the units. We also need the location of where the water will be kept and where the porta-potties will be placed on the site.
7. I just want to reiterate that the public notice requirement and provision of adjacent properties are those within 200' of the subject parcel, not necessarily abutting as stated in Section 11.1.E of the submittal.
8. How will trash be stored? Will the receptacles be placed within a structure? Are bear-proof receptacles needed at this location?
9. Per our discussion, the introduction letter specifies that Williams will proceed "at their own risk" in constructing this facility prior to approvals and should be removed from the application.

This letter is provided as an initial review of the submittal and is not to be construed as a final review or final comments on the application. Staff looks forward to receipt of the required submittal information and cautions that it may result in additional questions or comments. Comments from referral agencies may be incorporated into final review comments if received in time, otherwise individual referral comments will be forwarded to you.

Please feel free to call me with any questions you may have regarding the staff review for technical completeness.

Sincerely,

Kathy Eastley

Kathy Eastley, AICP
Senior Planner

Cc:

STAR VALLEY ENGINEERING

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

October 6, 2008

Ms. Kathy Eastley
Senior Planner
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, CO 81601

Reference: Williams/Bargath Compressor Station
SUP Application Comment Letter of September 24, 2008

Dear Ms. Eastley,

Thank you for your prompt response to our SUP application. This correspondence and attached support documentation are the Williams/Bargath response to those comments.

1. *Comment: The authorization letter in tab 10 does not state what authority Tom Fiore has to speak for Williams or Bargath. There needs to be a Statement of authority or some comparable document to how his authority. Williams is the property owner therefore they are the applicants:*

   Response: Attached is the authorization letter signed by Alan Harrison, VP Denver Region/E&P Piceance Assets for Star Valley Engineering, Inc. to represent Williams Production RMT Co. or Bargath Inc. in the Una CS SUP application process.

2. *Comment: The intro letter says that a permit application is pending with the state air pollution control division for 7 of the 8 compressor units. However, Tab 11.1.B.1 includes an application to the state for 5 portable units, no location, but with a stated home base at a site different from the location in the application. Please explain.*

   Response: Bargath Inc. is providing this response to resolve the above conflicting information provided in the SUP application for the Una Compressor Station. Bargath Inc. has been granted under the Colorado Air Pollution Prevention and Control Act C.R.S. (25-7-101 et seq) to utilize portable air permits for up to 2 years for each portable unit or until a final air construction permit is issued for the full buildout of the permanent compressor units and ancillary equipment at the facility. Because the portable engines are allowed to be moved to different facilities depending upon the need, the permits are not issued under a specific facility location, but rather a generic location which is typically the main (or home) office where they may be held in storage until they are needed for operation. In this case, Bargath Inc. provided a copy of the portable air permit application for 5 separate portable permits because it is expected that the Una compressor station may operate 1 or more of these portable engines for temporary use until the CDPHE issues a final air permit for the permanent compressor station that is currently expected to be 8 compressor engines once it is fully built out.

   Bargath Inc. is also revising its statement that a permit application is pending with the air pollution control division of the CDPHE for seven of the compressor engines. The application for these compressor engines has not yet been submitted to the CDPHE because Bargath Inc. wants to avoid having to submit multiple applications if additional compression will be needed in the future. Based on past experience working with the CDPHE, they prefer the submittal of a single application for the full future buildout of the facility to minimize the chances of having to modify the air permit later which can require a significant amount of additional time and cost. During its construction and operation, Bargath Inc. will comply with all the applicable state and federal air quality control requirements (including the smoke and vapor regulations) under the portable air permits and the future air permit for the permanent compressor station.

3. *Comment: The application is seeking a maximum of 8 units at this site, however it appears that the supporting information does not necessarily include the impacts and mitigation for the 8 units. Please explain.*

   Response: Per our verbal discussion October 1, 2008, the commenter was specifically interested in the supporting information for air emissions, and this issue is addressed in point 2 above.

4. *Comment: The intro letter talks about a "compressor station and well site", however the traffic study, tab 11.1.D, is for a well site, pad SG12-35, does this study include the traffic associated with the compressor station?*

   Response: Please see attached memorandum from FHU to Star Valley Engineering dated 9/28/08 for this response.

5. *Comment: Similar to above item, the wildlife assessment that was provided states that it complies with 9.07.04(10) which are pipeline regulations. Are you, or have you applied for a pipeline through Garfield County?*

   Response: Our wildlife consultant, Westwater Engineering, states that this is a cut and paste error. The reason that this citation is included in Westwater's wildlife reports is that the pipeline regulations are the only place in Garfield County regulations where the content of a wildlife report is detailed. Bargath is not applying for a pipeline through Garfield County via this SUP application.

6. *Comment: Section 3 – information provided regarding provision of water and porta-potties. For the provision of water, please (provide) information regarding the amount of water to be provided, you could provide an affidavit from Mountain Clear with the pertinent information. Down Valley Septic should (provide) information regarding the number of units, and maintenance of the units. We also need the location of where the water will be kept and where the porta-potties will be placed on the site.*

   Response: Williams/Bargath anticipates locating one porta-jon near the control building for the operation phase of the project. In addition, a 5-gallon drinking water fountain would be located inside the control building (refer to site plan for location of the control building). An affidavit from Down Valley Septic for porta-jon and drinking water supply is attached. Williams/Bargath has decided to have Down Valley Septic provide drinking water to the station rather than the originally proposed Mountain Clear.

7. *Comment: I just want to reiterate that the public notice requirement and provison of adjacent properties are those within 200' of the subject parcel, not necessarily abutting as stated in Section 11.1.E of the submittal.*

   Response: We appreciate the reviewers pointing out the distinction reflected in the comment, and respond that the additional 200' from the subject parcel does not change the property owners list in 8.0 or 11.1.E.

8. *Comment: How will trash be stored? Will the receptacles be placed within a structure? Are bear-proof receptacles needed at this location?*

   Response: Williams/Bargath will use a bear-proof steel cage for the storing of trash at the compressor station.

9. *Comment: Per our discussion the introduction specifies that Williams will proceed "at their own risk" in construction this facility prior to approvals and (this statement) should be removed from the application.*

   Response: The statement has been removed from the introduction. A revised introduction is attached.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans

Charles S. Bucans, P.E.
Project Manager

**EXPLORATION & PRODUCTION**
Tower 3, Suite 1000
1515 Arapahoe Street
Denver, CO 80202
303/572-3900
303/629-8282 fax

August 1, 2008

Mr. Fred Jarman
Director
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, Colorado 81601

Dear Mr. Jarman:

By this letter, Williams Production RMT Co. and Bargath, Inc. authorize Star Valley Engineering, Inc. (SVE) to represent us in any and all matters related to the special use permit application known as Bargath, Inc. Una Compressor Station.

This includes the preparation and submission of documents associated with the land use application and representation of this application before the applicable appointed and elected boards.

Sincerely,

Mr. Alan Harrison
VP Denver Region/
E&P Piceance Assets
Williams Production RMT Co.

STAR VALLEY ENGINEERING

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

August 20, 2008

Mr. Fred Jarman
Director
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, CO 81601

Dear Mr. Jarman,

Please consider this packet our application for a Special Use Permit for the Bargath Inc. Una Compressor Station located at 1620 County Road 300, Parachute, Colorado 81635. Bargath Inc. is a wholly owned subsidiary of Williams Production RMT Co.

**1. Project Description**: The proposed compressor station would be located contiguous to a well site on approximately 2.755 acres within a 40 acre parcel owned by Williams Production RMT Co. The proposed compressor station and well site would be placed within this property to reduce impacts on adjacent properties. Refer to Exhibit 6 – Vicinity Map for details.

The Una Compressor Station would gather gas from area natural gas production wells and compress it for transportation to Williams' Parachute Creek Gas Plant. The compressor station would initially consist of four engine/compressor units gathering gas from Williams and other natural gas production wells. The station layout is being configured such that a maximum of eight engine/compressor units could be constructed on the station site. Gas volumes to be compressed would range from 20 to 100 standard cubic feet of natural gas per day (MMSCFD), depending on suction and discharge conditions. This compression is required in order to keep pace with current and projected natural gas production in the area south of the Colorado River.

The station would operate 24 hours a day, 7 days a week, and 265 days a year. One employee would visit the station daily for routine tasks, with maintenance on a planned and emergency basis as required. Bargath estimates that liquid tankers would be required at the station approximately every other day. A traffic analysis appears in section 11.1.D.1.

Initially, seven new Caterpillar 3516 gathering gas compressors would be installed at the station. An additional one identical unit, for a total build-out of eight units, are being allowed for in the station layout and design. Each unit would be equipped with residential grade exhaust silencers, cooler inlet and outlet sound attenuators, and a noise attenuating enclosure or building in order to meet COGCC regulations for sound in the area. These buildings would be installed on each unit and are approximately 30 feet long by 21 feet wide by 20 feet high (at the ridge).

Bargath has applied for an Air Pollution Control Division permit for the seven units proposed for installation this year. Future units would require similar permits prior to installation and operation.

Bargath plans on installing utility electrical power to the compressor station.

Construction Schedule:

A. Site grading: July/August, 2008.
B. Foundation and Underground utility piping and electrical: September/October 2008.
C. Equipment Installation: September/October/November 2008.
D. Piping/Electrical installation: October/November/December 2008.
E. Station startup is scheduled for December 2008.

A grading permit will be applied for and received from Garfield County prior to the site grading of the proposed site of the compressor station.

Refer to attached photographs of the proposed compressor station/well site area and the surrounding area.

**2. Existing Zoning**: The proposed compressor station area is Agricultural Residential Rural Density. The Garfield County Zoning Resolution Section 3.2.03 notes "A/R/RD – AGRICULTURAL/RESIDENTIAL/RURAL DENSITY Uses, special: allowed by permit only "…storage of oil and gas drilling equipment; Site for extraction, processing, storage or material handling of natural resources; utility lines, utility substations…

Therefore the proposed Una Compressor Station meets the Garfield County Agricultural/Residential/Rural Density special use permit designations.

**3. Surrounding Zoning:** Agricultural/Residential/Rural Density and the existing used are Agricultural, Residential, and natural resource production.

**4. Garfield County Comprehensive Plan of 2000**: The Garfield County Comprehensive Plan of 2000 notes that this project is located in Study Area 3. Natural resource extraction is detailed on Section 9 of the "Goals, Objectives, Policies and Programs" located on page 17:

"Garfield County recognizes that under Colorado law, the surface and mineral interests have certain legal rights and privileges, including the right to extract and develop these interests. Furthermore, private property owners also have certain legal rights and privileges, including the right to have the mineral estate developed in a reasonable manner and to have adverse land use impacts mitigated."

Policies Section 9.1 notes:

"Garfield County, to the extent legally possible, will require adequate mitigation to address the impacts of mineral extraction on adjacent landowners. These measures may include the following:

A. Landscaping and screening;
B. Modification of phasing or area to be mined;
C. Roadway improvements and signage;
D. Safe and efficient access routes;
E. Drainage improvements to protect surface and groundwater.

The proposed Una Compressor Station meets the Garfield County comprehensive plan goals, objectives, policies, and programs. We have addressed each of the policies stated in 9.1

**5. Referral Agencies:**

We have had one pre-application meeting with Mr. Fred Jarman of the Garfield County Building and Planning Department. The meeting was held on June 4, 2008 at Mr. Jarman's office.

We have met with many of the referral agencies to review the proposed station construction and to review agency concerns and issues.

Please find below the status of meetings with referral agencies to date.

A. **Garfield County Road & Bridge Department** – May 13, 2008 Jake Mall meeting at the Una CS site. Jake and I review the signage requirement for the entry to the station. We agreed that "Trucks Entering Highway" signs should be installed 250 feet east and west of the driveway on CR 300, and a "Stop" sign at the drive entry point to CR 300. A driveway permit would be required (see driveway permit in Section 5 of this application).

B. **Steve Anthony – Garfield County Vegetative Management** – A meeting was held on August 19, 2008 at the Una CS site. Mr. Anthony's comment on viewing the newly graded site is that he would like the tamarisk on the south boundary of the site removed. Bargath will implement the tamarisk removal protocols shown in the Site Rehabilitation Plan found in submittal 11.2.A.

**6. Impact Statement:**

Refer to Submittal Number 11 in this application for the impact statement.

**7. Performance Standards as detailed in the Garfield County Supplementary Regulations 5.03.08(5)**

Refer to Submittal Number 12 "Performance Standards" in this application.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

FELSBURG
HOLT &
ULLEVIG

*engineering paths to transportation solutions*

## MEMORANDUM

*To*: Mr. Charles Bucans, Project Manager, Star Valley Engineering

*From*: Jeff Ream, P.E., PTOE, Felsburg, Holt & Ullevig

*Date*: September 26, 2008

*Subject*: Williams Well Site Response to Garfield County Comment
FHU Reference No. 08-154

---

FHU has reviewed Garfield County's comments on the above-reference project and offers the following response:

*The intro letter talks about a compressor station and well site, however the traffic study is for a well site. Does this study include traffic associated with a compressor station?*

The traffic study did not include compressor station traffic. Construction of the compressor site would take a crew of 30 people approximately 6 months to complete. Once operational, traffic from that part of the site would be similar to that generated by the well site, namely 1-2 vehicles (2-4 trips) per day, all of which would occur outside the peak hour. Table 1 summarizes compressor site construction traffic and Table 2 updates the trip generation for the operational phase to include both well site and compressor traffic. As the attached level of service sheets indicate, all site driveway movements would operate at LOS A during both the construction and operation phases, so no turn lanes are recommended.

**Table 1. Compressor Site Trip Generation – Construction Phase**

| Trip Type | | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Crew | 30 people | 60 | 30 | 0 | 30 | 0 | 30 | 30 |
| Deliveries | 2 per day | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | **64** | **30** | **0** | **30** | **0** | **30** | **30** |

**Table 2. Compressor and Well Site Trip Generation – Operational Phase**

| Activity | Round-Trip Frequency | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Compressor Monitoring | 2 per day | 4.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Well Monitoring | 1 per day | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Truck (pick up well condensate) | 1 per week | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | **6** | **0** | **0** | **0** | **0** | **0** | **0** |

I trust this information is sufficient for your submittal needs for the project. If you have any questions or comments, please give me a call at (303) 721-1440.

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 15 | 15 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 16 | 16 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 51 | | 99 | 43 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 51 | | 99 | 43 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 100 | 100 |
| cM capacity (veh/h) | | | 1555 | | 890 | 1027 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 51 | 40 | 2 |
| Volume Left | 0 | 16 | 1 |
| Volume Right | 16 | 0 | 1 |
| cSH | 1700 | 1555 | 954 |
| Volume to Capacity | 0.03 | 0.01 | 0.00 |
| Queue Length 95th (ft) | 0 | 1 | 0 |
| Control Delay (s) | 0.0 | 3.0 | 8.8 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 3.0 | 8.8 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.5 | | |
| Intersection Capacity Utilization | 18.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 15 | 15 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 16 | 16 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 98 | 98 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 33 |
| Volume Left | 0 | 1 | 16 |
| Volume Right | 1 | 0 | 16 |
| cSH | 1700 | 1564 | 965 |
| Volume to Capacity | 0.03 | 0.00 | 0.03 |
| Queue Length 95th (ft) | 0 | 0 | 3 |
| Control Delay (s) | 0.0 | 0.2 | 8.9 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.9 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.5 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 1 | 1 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 1 | 1 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 36 | | 61 | 35 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 36 | | 61 | 35 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1575 | | 944 | 1037 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 36 | 25 | 2 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1575 | 989 |
| Volume to Capacity | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.3 | 8.6 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.3 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.4 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 2 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1564 | 965 |
| Volume to Capacity | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.2 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.3 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

**Down Valley Septic, LLC**
P.O. Box 1929 • Rifle, CO 81650
970-625-5556
www.dvseptic.com

September 25, 2008

To Whom It May Concern:

Re: Bargath Inc.
Una Compressor
Bargath/Williams on the Una Compressor Station Site

Please accept this letter as certification that Down Valley Septic will provide Porta Jon service and bottled water.

I certify that Down Valley Septic will provide above services for Star Valley Engineering, Inc for the Wallace Creek Compressor. Service will be provided on a weekly basis unless needed more frequently. Down Valley Septic is available 24 hours a day, 7 days a week, 365 days a year. Collected sewage will be disposed of in the Garfield County Landfill or other certified disposal facilities.

Scott Moyer 9/25/08
(Signature) (Date)

Please contact me if you need any additional information at 970-625-5556.

Thank You
Scott Moyer
COO
Down Valley Septic

Bond No. 6577811

## RECLAMATION (REVEGETATION) BOND

KNOW ALL MEN BY THESE PRESENTS, that the undersigned Bargath, Inc. One Williams Center, MD 48-6 Tulsa, OK 74172 as Principal and Safeco Insurance Company of America as Surety are held and firmly bound unto Board of County Commissioners of Garfield County, Colorado, as Obligee in the penal sum of Eleven Thousand Twenty Dollars and No/100---------------------------------------(\$11,020.00) for the payment of which, well and truly to be made the said Principal and the said Surety, bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has applied for a Garfield County Special Use Permit and Garfield County has required a revegetation bond within condition #13 of the Board of County Commissioners Resolution number 2008-137 Securing Principal's performance under the Garfield County Weed Management Plan and the Principal's "Integrated Vegetation and Noxious Weed Management Plan" dated July 2008 as a condition of approval of the Garfield County Special Use Permit, as more specifically provided in condition 13 of Resolution 2008-137."

NOW, THEREFORE, if such permit is granted and if the Principal shall faithfully perform its duties under the terms of the permit, then this obligation shall be null and void, otherwise to remain in full force and effect.

PROVIDED, that if Surety shall so elect, this bond may be cancelled as to subsequent liability by giving thirty (30) days notice in writing to both the Principal and Obligee.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and scale this 3rd day of December, 2008. The effective date of the bond is December 8, 2008.

(Seal) BARGATH, INC.

Beverly Utter

Surety:

(Seal) Safeco Insurance Company of America

Melissa Haddick

Melissa Haddick, Attorney-in-fact

Safeco®

POWER
OF ATTORNEY

Safeco Insurance Company of America
General Insurance Company of America
Safeco Plaza
Seattle, WA 98185

No. 5713

**KNOW ALL BY THESE PRESENTS:**

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA,** each a Washington corporation, does each hereby appoint

********************AMY FOWLER; DON ALD R. GIBSON; MELISSA HADDICK; JACQUELINE KIRK; JOE MARTINEZ; TANNIS MATTSON; TERRI MORRISON;SANDRA PARKER; MARY PENA; ELIZABETH RHODES; GINA A. RODRIGUEZ; Houston, Texas****************************************************************************************************

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

**IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents**

this 6th day of November , 2008

Edmund C. Kenealy

**Edmund C. Kenealy, Secretary**

TAMikolajewski

**Timothy A. Mikolajewski, Vice President**

**CERTIFICATE**

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Edmund C. Kenealy , Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA,** do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

**IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation**

this 3rd day of December , 2008

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

Edmund C. Kenealy

**Edmund C. Kenealy, Secretary**



S-0974/DS 10/08

WEB PDF

## LIMITED POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that Bargath Inc., a Colorado corporation, having its principal place of business at One Williams Center, Tulsa, Oklahoma, hereinafter referred to as the "Company", does hereby make, constitute and appoint DAVID ENSMINGER, LENORE DUBALDO, SHARON QUIMBY and BEVERLY UTTER, with the full authority hereinafter provided, the true and lawful "Attorney s-in-Fact" of the Company, authorized and empowered on behalf of the Company and in the Company's name, and for the sole and exclusive benefit of the Company and not on behalf of any other person, corporation or association, in whole or in part, to commit the Company under all surety bonds which are used in the ordinary course of business by the Company, giving and granting, individually, unto said Attorneys-in-Fact full and complete power and authority to bind the Company as fully and to the same extent as if signed by the duly authorized officers of the Company; and all the facts of said Attorneys-in-Fact, pursuant to the authority hereby given, are hereby ratified and confirmed, with the qualification that said authority to act shall terminate on December 31, 2009, and shall be expressly limited for the purpose as herein stated.

IN WITNESS WHEREOF, Bargath Inc. has caused its name to be subscribed and its corporate seal to be affixed this 3 day of December, 20 08.

Attest: Bargath Inc.

LaFleur C. Browne
Secretary

By: Ralph A. Hill
Chairman of the Board and
Senior Vice President

## CERTIFICATE

I, the undersigned, Corporate Secretary of Bargath Inc., do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy is in full force and effect on the date of this Certificate, and the Chairman of the Board and Senior Vice President who executed the said Limited Power of Attorney was and is a duly elected officer of Bargath Inc.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Corporate Seal of Bargath Inc. to these presents this 3 day of December, 20 08.

[SEAL]

LaFleur C. Browne
Secretary

STAR VALLEY ENGINEERING

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

August 20, 2008

Mr. Fred Jarman
Director
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, CO 81601

Dear Mr. Jarman,

Please consider this packet our application for a Special Use Permit for the Bargath Inc. Una Compressor Station located at 1620 County Road 300, Parachute, Colorado 81635. Bargath Inc. is a wholly owned subsidiary of Williams Production RMT Co.

1. **Project Description**: The proposed compressor station would be located contiguous to a well site on approximately 2.755 acres within a 40 acre parcel owned by Williams Production RMT Co. The proposed compressor station and well site would be placed within this property to reduce impacts on adjacent properties. Refer to Exhibit 6 – Vicinity Map for details.

The Una Compressor Station would gather gas from area natural gas production wells and compress it for transportation to Williams' Parachute Creek Gas Plant. The compressor station would initially consist of four engine/compressor units gathering gas from Williams and other natural gas production wells. The station layout is being configured such that a maximum of eight engine/compressor units could be constructed on the station site. Gas volumes to be compressed would range from 20 to 100 standard cubic feet of natural gas per day (MMSCFD), depending on suction and discharge conditions. This compression is required in order to keep pace with current and projected natural gas production in the area south of the Colorado River.

The station would operate 24 hours a day, 7 days a week, and 265 days a year. One employee would visit the station daily for routine tasks, with maintenance on a planned and emergency basis as required. Bargath estimates that liquid tankers would be required at the station approximately every other day. A traffic analysis appears in section 11.1.D.1.

Initially, seven new Caterpillar 3516 gathering gas compressors would be installed at the station. An additional one identical unit, for a total build-out of eight units, are being allowed for in the station layout and design. Each unit would be equipped with residential grade exhaust silencers, cooler inlet and outlet sound attenuators, and a noise attenuating enclosure or building in order to meet COGCC regulations for sound in the area. These buildings would be installed on each unit and are approximately 30 feet long by 21 feet wide by 20 feet high (at the ridge).

Bargath has applied for an Air Pollution Control Division permit for the seven units proposed for installation this year. Future units would require similar permits prior to installation and operation.

Bargath plans on installing utility electrical power to the compressor station.

Construction Schedule:

A. Site grading: July/August, 2008.
B. Foundation and Underground utility piping and electrical: September/October 2008.
C. Equipment Installation: September/October/November 2008.
D. Piping/Electrical installation: October/November/December 2008.
E. Station startup is scheduled for December 2008.

A grading permit will be applied for and received from Garfield County prior to the site grading of the proposed site of the compressor station.

Bargath Inc. has agreed to move forward with piping and equipment installation "at their own risk" as the Garfield County Special Use Permit for the proposed station has not been granted.

Refer to attached photographs of the proposed compressor station/well site area and the surrounding area.

**2. Existing Zoning**: The proposed compressor station area is Agricultural Residential Rural Density. The Garfield County Zoning Resolution Section 3.2.03 notes "A/R/RD – AGRICULTURAL/RESIDENTIAL/RURAL DENSITY Uses, special: allowed by permit only "...storage of oil and gas drilling equipment; Site for extraction, processing, storage or material handling of natural resources; utility lines, utility substations...

Therefore the proposed Una Compressor Station meets the Garfield County Agricultural/Residential/Rural Density special use permit designations.

**3. Surrounding Zoning:** Agricultural/Residential/Rural Density and the existing used are Agricultural, Residential, and natural resource production.

**4. Garfield County Comprehensive Plan of 2000**: The Garfield County Comprehensive Plan of 2000 notes that this project is located in Study Area 3. Natural resource extraction is detailed on Section 9 of the "Goals, Objectives, Policies and Programs" located on page 17:

"Garfield County recognizes that under Colorado law, the surface and mineral interests have certain legal rights and privileges, including the right to extract and develop these interests. Furthermore, private property owners also have certain legal rights and privileges, including the right to have the mineral estate developed in a reasonable manner and to have adverse land use impacts mitigated."

Policies Section 9.1 notes:

"Garfield County, to the extent legally possible, will require adequate mitigation to address the impacts of mineral extraction on adjacent landowners. These measures may include the following:

A. Landscaping and screening;
B. Modification of phasing or area to be mined;

C. Roadway improvements and signage;
D. Safe and efficient access routes;
E. Drainage improvements to protect surface and groundwater.

The proposed Una Compressor Station meets the Garfield County comprehensive plan goals, objectives, policies, and programs. We have addressed each of the policies stated in 9.1

5. Referral Agencies:

We have had one pre-application meeting with Mr. Fred Jarman of the Garfield County Building and Planning Department. The meeting was held on June 4, 2008 at Mr. Jarman's office.

We have met with many of the referral agencies to review the proposed station construction and to review agency concerns and issues.

Please find below the status of meetings with referral agencies to date.

A. **Garfield County Road & Bridge Department** – May 13, 2008 Jake Mall meeting at the Una CS site. Jake and I review the signage requirement for the entry to the station. We agreed that "Trucks Entering Highway" signs should be installed 250 feet east and west of the driveway on CR 300, and a "Stop" sign at the drive entry point to CR 300. A driveway permit would be required (see driveway permit in Section 5 of this application).

B. **Steve Anthony – Garfield County Vegetative Management** – A meeting was held on August 19, 2008 at the Una CS site. Mr. Anthony's comment on viewing the newly graded site is that he would like the tamarisk on the south boundary of the site removed. Bargath will implement the tamarisk removal protocols shown in the Site Rehabilitation Plan found in submittal 11.2.A.

**6. Impact Statement:**

Refer to Submittal Number 11 in this application for the impact statement.

**7. Performance Standards as detailed in the Garfield County Supplementary Regulations 5.03.08(5)**

Refer to Submittal Number 12 "Performance Standards" in this application.

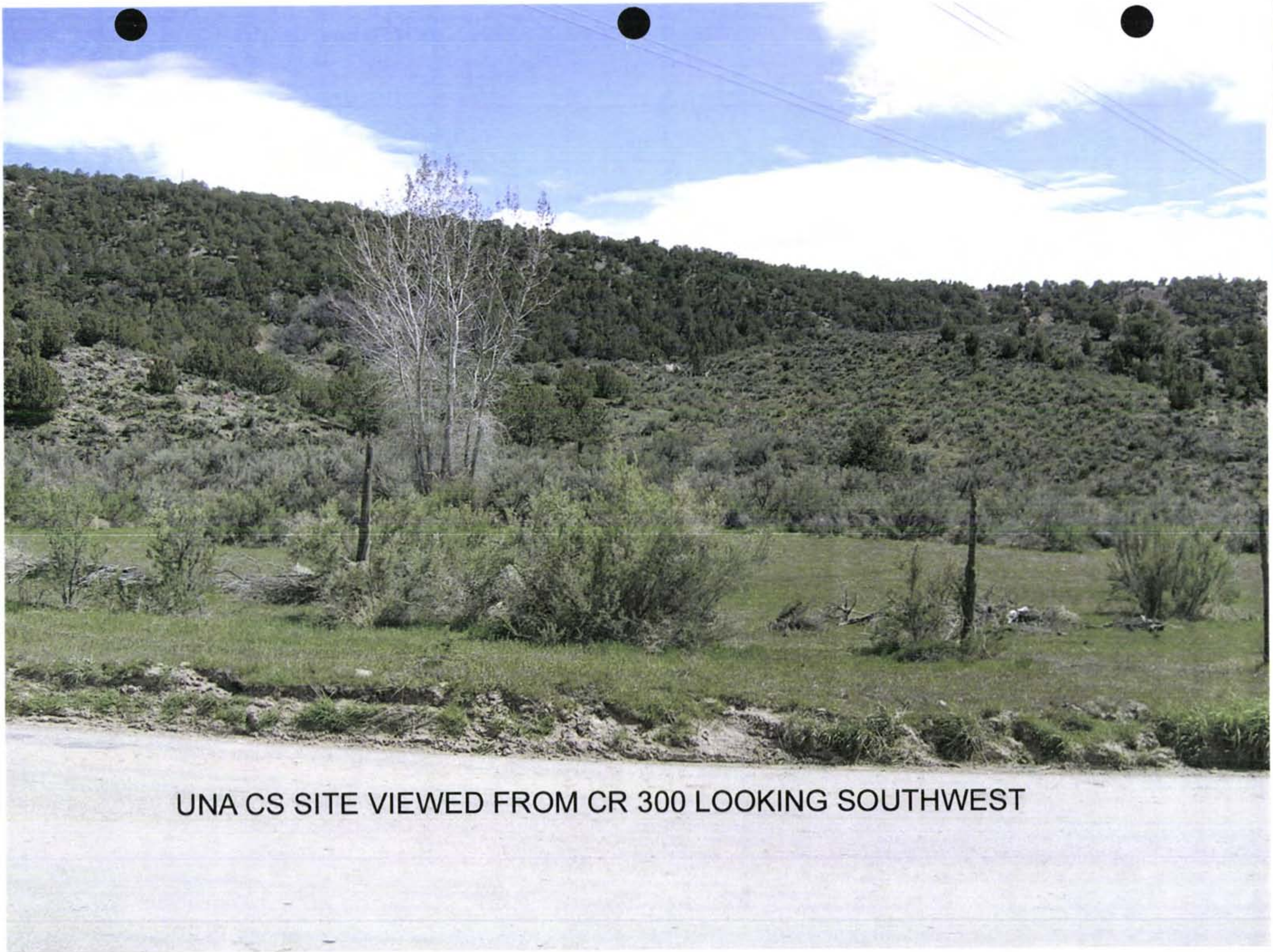
Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

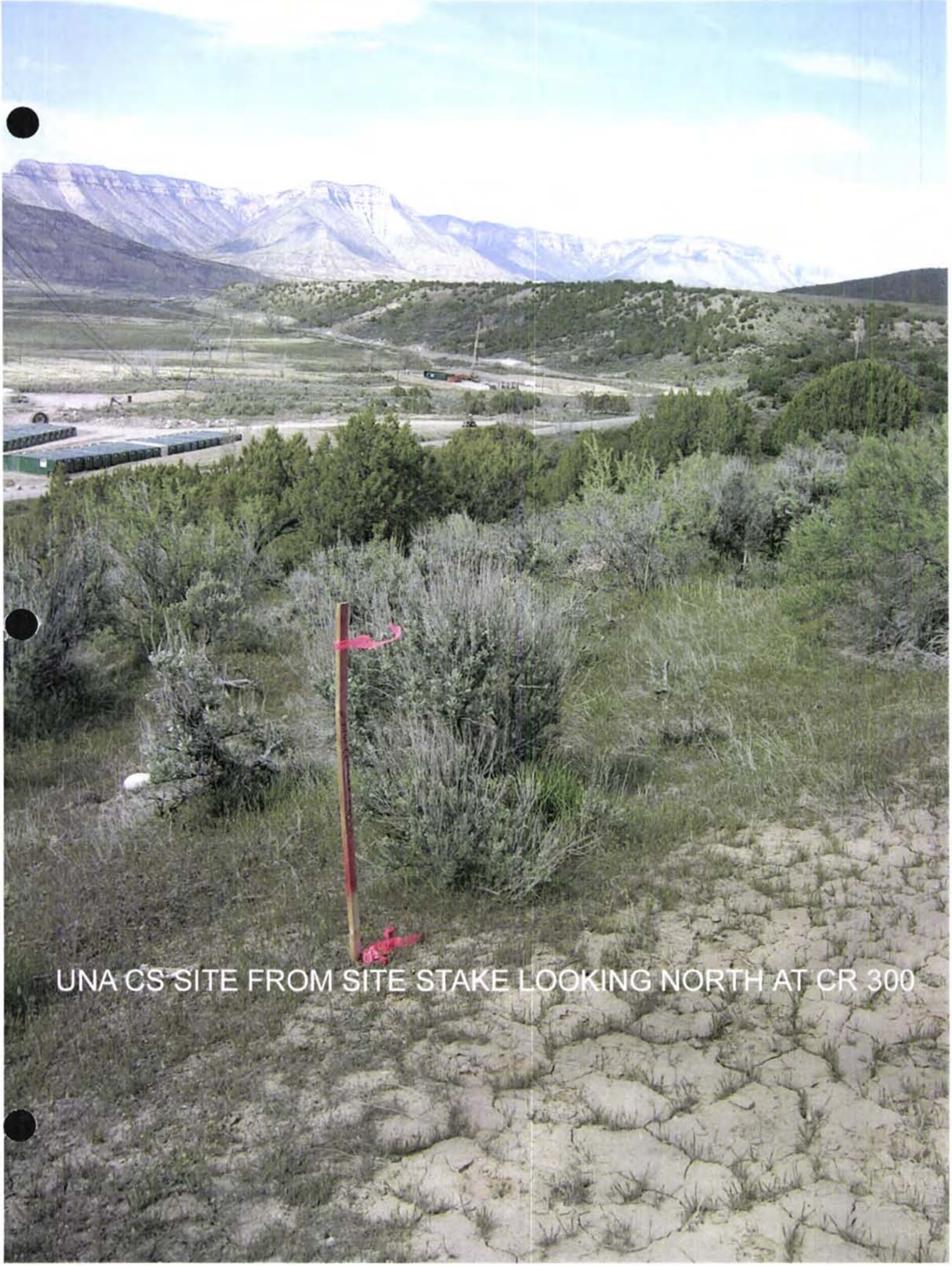
Charles S. Bucans

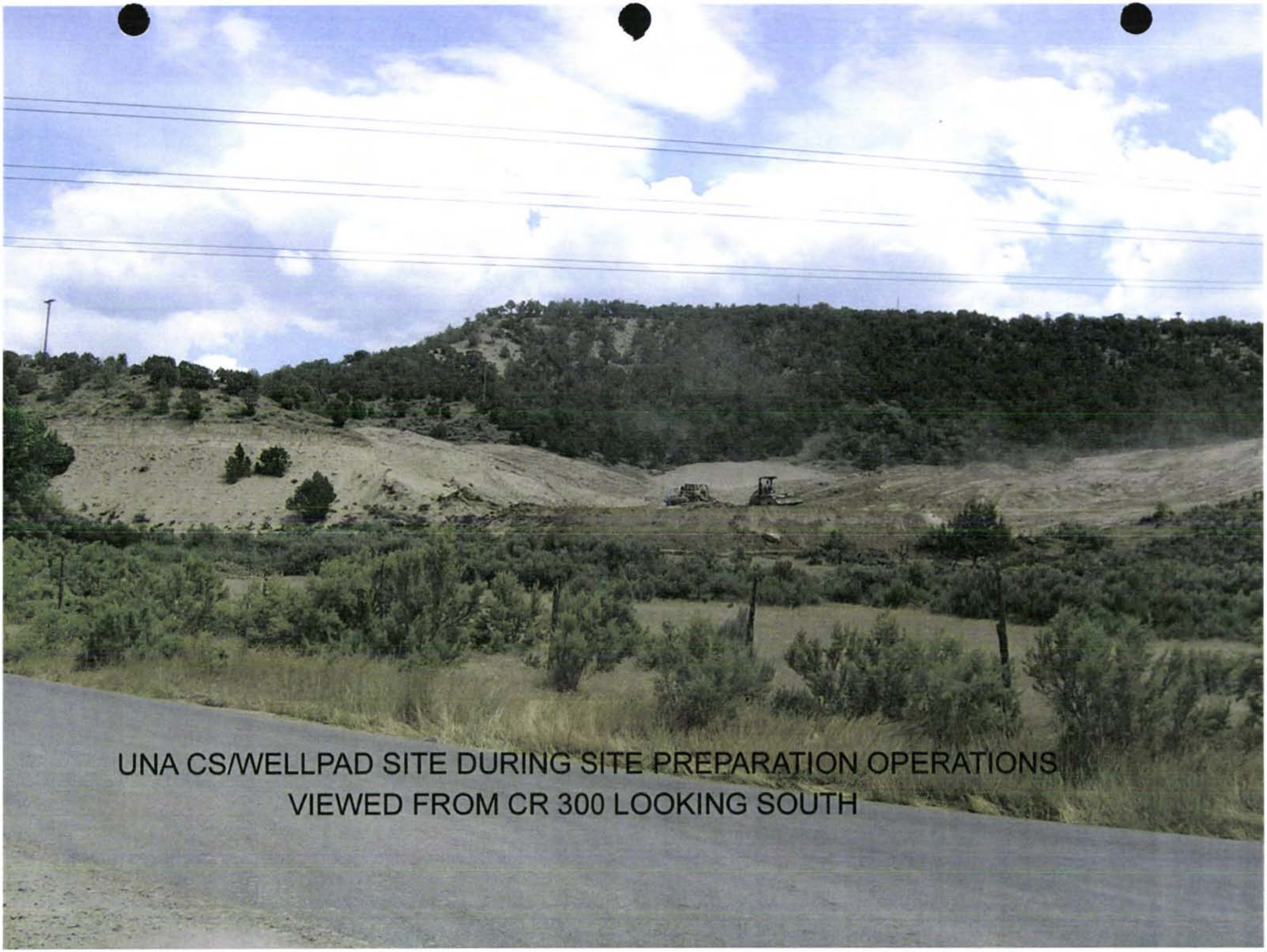
Charles S. Bucans, P.E.
Project Manager


UNA CS DRIVE/ACCESS LOCATION VIEWED FROM CR 300



UNA CS SITE VIEWED FROM CR 300 LOOKING SOUTHWEST


UNA CS SITE FROM SITE STAKE LOOKING NORTH AT CR 300



UNA CS/WELLPAD SITE DURING SITE PREPARATION OPERATIONS
VIEWED FROM CR 300 LOOKING SOUTH

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number: 3. Water Systems**

3a. Domestic Potable Water:

Potable water would be supplied to the station by Mountain Clear in 5 gallon bottles.

3b. Wastewater:

There would be no wastewater system for the station. Bathroom facilities would be portable unit(s) supplied and maintained by Down Valley Septic.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number: 4. Site Plan**

Refer to the following attachments:

A. Aerial photograph of Williams Production RMT property boundary showing approximate location of station/well site location, access road, adjacent landowner parcels, and county road. Photograph and layout prepared by Williams GIS Department

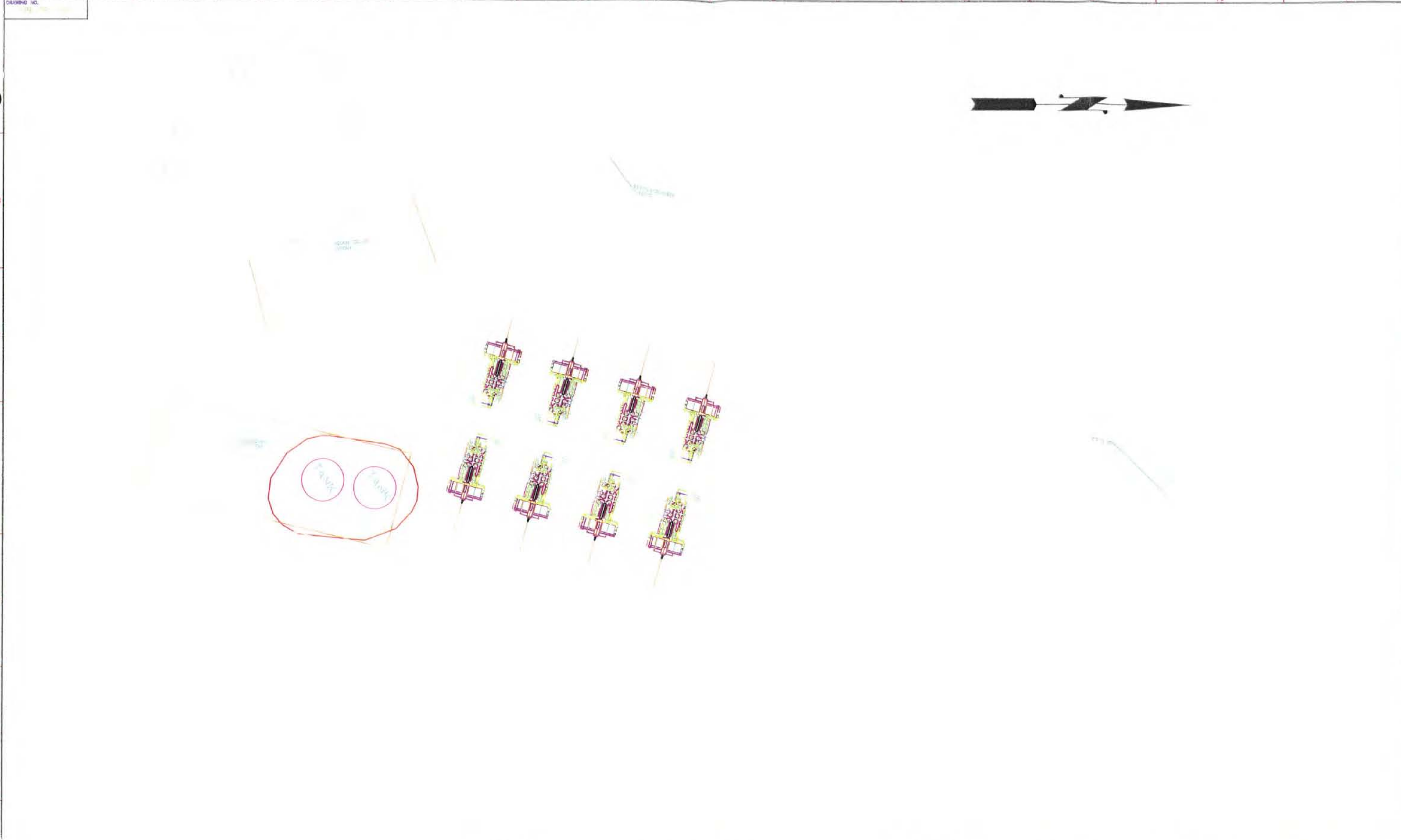
B. Location Layout for SG 12-35 et al, a topographic map showing details of the area being proposed for the station/well site.

C. Williams Production RMT Drawing No. UN-PP-100, Rev. A dated 4/23/08, showing the approximate station layout on the location.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager



| DWG NUMBER | DESCRIPTION |
|---|---|
| | |

REFERENCE DRAWINGS

| REV. | DESCRIPTION | DATE | BY | CK |
|---|---|---|---|---|
| 1 | ISSUED FOR PERMIT | 1/13/08 | CSB | TJF |

REVISIONS

THIS DRAWING IS THE PROPERTY OF WILLIAMS AND IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIFICALLY FURNISHED.

Edited by: Setup User
May 08, 2008 - 2:02pm

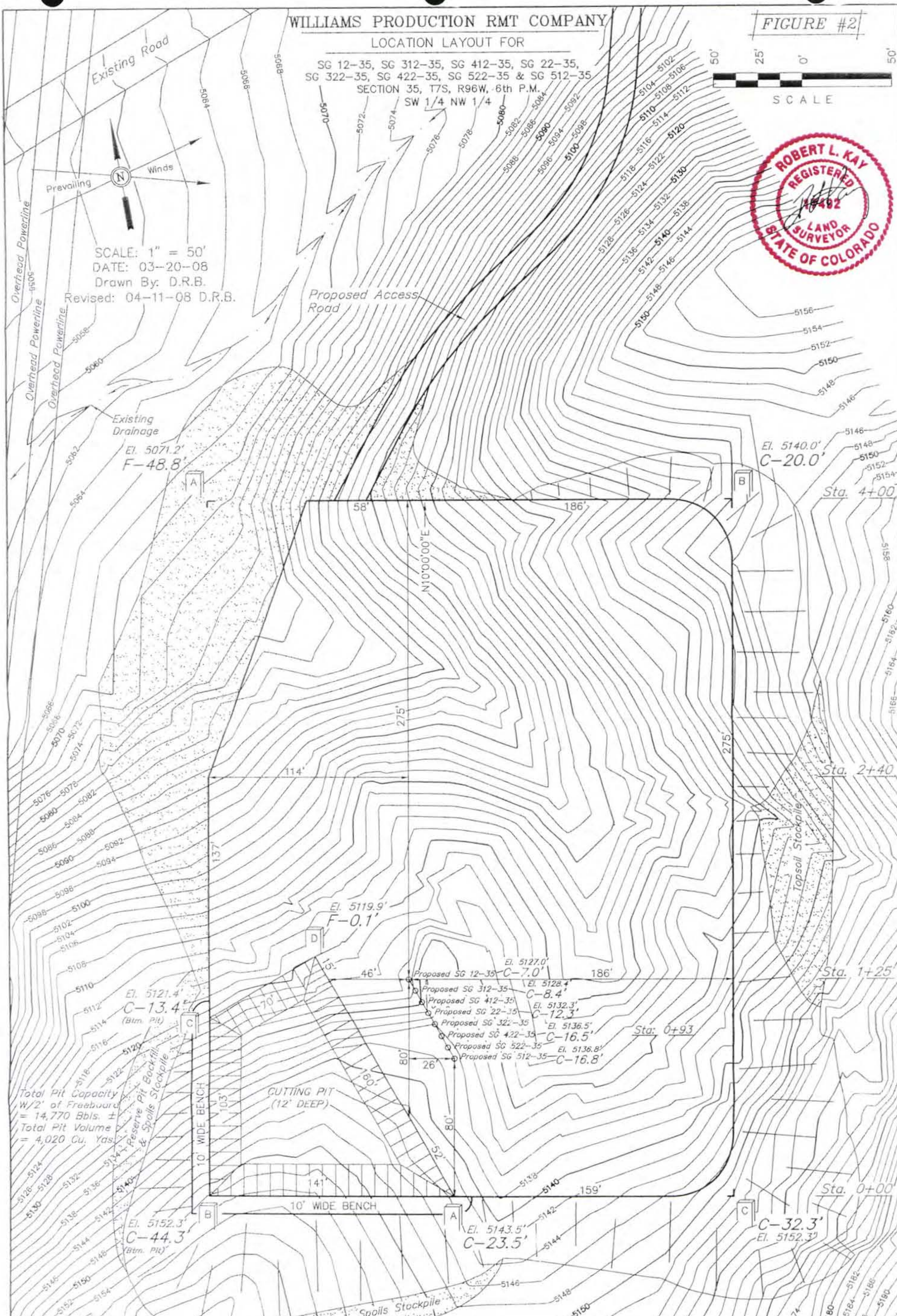
Williams

WILLIAMS PRODUCTION RMT COMPANY

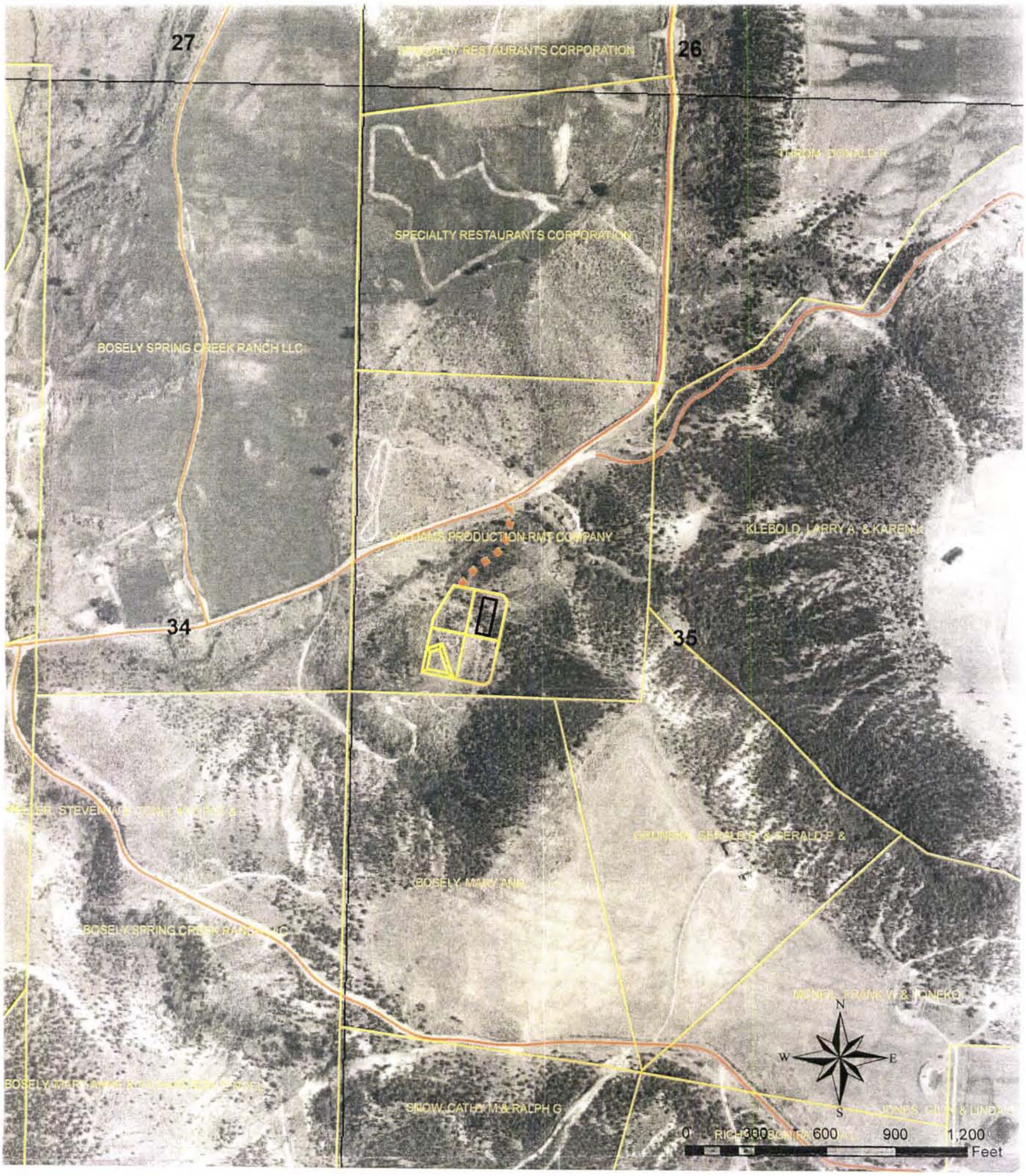
CUSTOMER: COMPRESSOR STATION PARACHUTE, COLORADO

TITLE:

| DRAWN | SCALE | DATE | UNIT NO. | REVISION |
|---|---|---|---|---|
| CSB | 1" = 80'-0" | 4/23/08 | | |
| S.O. NO. | APPROVED | NO. REQ'D | DRAWING NO. | |
| | | ONE | | |



WILLIAMS PRODUCTION RMT COMPANY
LOCATION LAYOUT FOR
SG 12-35, SG 312-35, SG 412-35, SG 22-35,
SG 322-35, SG 422-35, SG 522-35 & SG 512-35
SECTION 35, T7S, R96W, 6th P.M.
SW 1/4 NW 1/4
FIGURE #2
50' 25' 0' 50'
SCALE
ROBERT L. KAY
REGISTERED
LAND
SURVEYOR
STATE OF COLORADO
Existing Road
Prevailing Winds
SCALE: 1" = 50'
DATE: 03-20-08
Drawn By: D.R.B.
Revised: 04-11-08 D.R.B.
Overhead Powerline
Proposed Access Road
Existing Drainage
El. 5071.2'
F-48.8'
El. 5140.0'
C-20.0'
Sta. 4+00
N10°00'00"E
58'
186'
275'
114'
137'
Sta. 2+40
Topsoil Stockpile
El. 5119.9'
F-0.1'
46'
186'
15'
70'
Sta. 1+25
El. 5121.4'
C-13.4'
(Btm. Pit)
Proposed SG 12-35 El. 5127.0' C-7.0'
Proposed SG 312-35 El. 5128.4' C-8.4'
Proposed SG 412-35 El. 5132.3' C-12.3'
Proposed SG 22-35
Proposed SG 322-35 El. 5136.5' C-16.5'
Proposed SG 422-35
Proposed SG 522-35 El. 5136.8' C-16.8'
Proposed SG 512-35
Sta. 0+93
80'
26'
160'
Total Pit Capacity W/2' of Freeboard = 14,770 Bbls. ±
Total Pit Volume = 4,020 Cu. Yds.
Reserve Pit Backfill & Spoils Stockpile
CUTTING PIT (12' DEEP)
10' WIDE BENCH
103'
52'
141'
159'
Sta. 0+00
El. 5152.3'
C-44.3'
(Btm. Pit)
El. 5143.5'
C-23.5'
C-32.3'
El. 5152.3'
Spoils Stockpile
Elev. Ungraded Ground at SG 12-35 Location Stake = 5127.0'
Elev. Graded Ground at SG 12-35 Location Stake = 5120.0'
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East * Vernal, Utah 84078 * (435) 789-1017




Legend

Compressor

Proposed Road

Proposed Pad or Pit

Parcel Ownership

Williams Production RMT

Williams

Compressor Site Location Map
T7S R96W, Section 35

Date Prepared: April 29, 2008

O:\Projects\PIC\GrandValley\08\0325_SG 12-35SUP\SUP.mxd klee 4/29/2008 8:18:24 AM

STAR VALLEY ENGINEERING

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number: 5. Garfield County Road and Bridge Department Access Issues**

I met with Jake Mall on May 13, 2008 at the intersection of GCR #300 and the proposed access road for the station/well site location. Mr. Mall had the following issues:

A. Safety signage needs to be installed: a Stop sign at the access road and "Trucks Entering Roadway" signs on approximately 250 feet on each side of the proposed access road on GCR #300.

B. A driveway permit would be required (see driveway permit attached).

The traffic counts and traffic study are attached in section 12.1.D.1.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans

Charles S. Bucans, P.E.
Project Manager

# Garfield County

Road and Bridge Department
P.O. Box 426
Rifle, CO 81650
Phone-(970)625-8601 Fax- (970)625-8627

## Invoice

**Driveway Permit Number: GRB08-D-50**

**Invoice Date:** 5/15/2008

**Bill To:** Williams Production
1058 CR 215
Parachute ,CO 81635

**$75.00 per Driveway Permit.**

| | |
|---|---|
| **Driveway Permit Fee:** | $75.00 |
| **Total Due:** | $75.00 |

**Thank You!**

Garfield County

## Application for Driveway Permit

*Person Obtaining Permit: Williams Production*
*Application Date: 5/15/2008*
*County Road Number: 300* *District: Silt*

*Permit Number: GRB08-D-50*
*Termination Date: 6/15/2008*
*Inspector: Jake Mall*

---

hereby requests permission and authority from the Board of County Commissioners to construct a driveway approach (es) on the right-of-way off of County Road, **300, 100ft West of 1620 CR 300**, located on the **South** side of road for the purpose of obtaining access to property.

Applicant submits herewith for the consideration and approval of the Board of County Commissioners, a sketch of the proposed installation showing all the necessary specification detail including:

1. Frontage of lot along road.
2. Distance from centerline of road to property line.
3. Number of driveways requested
4. Width of proposed driveways and angle of approach.
5. Distance from driveway to road intersection, if any.
6. Size and shape of area separating driveways if more than one approach.
7. Setback distance of building(s) and other structure improvements.
8. No unloading of equipment on county road, any damage caused to county road will be repaired at subdivision expense.
9. Responsible for two years from the date of completion.

## General Provisions

1) The applicant represents all parties in interest, and affirms that the driveway approach (es) is to be constructed by him for the bona fide purpose of securing access to his property and not for the purpose of doing business or servicing vehicles on the road right of way.

2) The applicant shall furnish all labor and materials, perform all work, and pay all costs in connection with the construction of the driveway(s). All work shall be completed within thirty (30) days of the permit date.

3) The type of construction shall be as designated and/or approved by the Board of County Commissioners or their representative and all materials used shall be of satisfactory quality and subject to inspection and approval of the Board of County Commissioners or their representative.

4) The traveling public shall be protected during the installation with proper warning signs and signals and the Board of County Commissioners and their duly appointed agents and employee shall be held harmless against any action for personal injury or property damage sustained by any reason of the exercise of the Permit.

5) The Applicant shall assume responsibility for the removal or clearance of snow, ice, or sleet upon any portion of the driveway approach (es) even though deposited on the driveway(s) in the course of the County snow removal operations.

6) In the event it becomes necessary to remove any right-of-way fence, the posts on either side of the entrance shall be surely braced before the fence is cut to prevent any slacking of the remaining fence and all posts and wire removed shall be turned over to the District Road Supervisor of the Board of County Commissioners.

7) No revisions or additions shall be made to the driveway(s) or its appurtenances on the right-of-way without written permission of the Board of County Commissioners.

8) Provisions and specifications outlined herein shall apply on all roads under the jurisdiction of the Board of County Commissioners of Garfield County, Colorado, and the Specifications, set forth on the attached hereof and incorporated herein as conditions hereof.

9) **Final inspection of driveway will be required upon completion and must be approved by person issuing permit or representative of person issuing permit.**
**The inspection and sign off must be done prior to any CO from the Building and Planning Department being issued.**

10) **Contractor agrees to all Provisions in Exhibit A.**

**Special Conditions:**

1. **Driveway Width- 100ft**
2. **Culvert required? True Size: 15 inch by 100ft**
3. **Asphalt or concrete pad required? True Size of pad: 100ft wide x 20ft long x 4in thick**
4. **Gravel portion required? True Length: 100ft**
5. **Trees, brush and/or fence need to be removed for visibility? False**
6. **Distance and Direction:**
7. **Certified Traffic Control Required? False**
8. **Work zone signs required? True**
9. **Stop sign required at entrance to County Road**

In signing this application and upon receiving authorization and permission to install the driveway approach (es) described herein the Applicant signifies that he has read, understands and accepts the foregoing provisions and conditions and agrees to construct the driveway(s) in accordance with the accompanying specification plan reviewed and approved by the Board of County Commissioners.

Signed: David Hoover
Williams Production

Address: 1058 CR 215 Parachute CO 81635

Telephone Number: 970-285-9377

Permit granted 5/15/2008, subject to the **provisions, specifications and conditions stipulated herein.**

For Board of County Commissioners' of Garfield County, Colorado:

[signature]

Representative of Garfield County Road and Bridge Signature

# Specifications

1. A driveway approach is understood to be that portion of the county road right-of way between the pavement edge and the property line that is designed and used for the interchange of traffic between the roadway and abutting property.

2. At any intersection, a driveway shall be restricted for a sufficient distance from the intersection to preserve the normal and safe movement of traffic. (It is recommended for rural residence entrances that a minimum intersection clearance of 50 feet be provided and for rural commercial entrances a minimum of 100 feet be provided.)

3. All entrances and exits shall be so located and constructed that vehicles approaching or using them will be able to obtain adequate sight distance in both directions along the county road in order to maneuver safely and without interfering with county road traffic.

4. The Applicant shall not be permitted to erect any sign or display material, either fixed or movable, on or extending over any portion of the county road right-of-way.

5. Generally, no more than one approach shall be allowed any parcel or property the frontage of which is less than one hundred (100) feet. Additional entrances or exits for parcels having a frontage in excess of one hundred 100) feet shall be permitted only after showing of actual convenience and necessity.

6. All driveways shall be so located that the flared portion adjacent to the traveled way will not encroach upon adjoining property.

7. No commercial driveway shall have a width greater than thirty (30) feet measured at right angles to the centerline of the driveway except as increased by permissible radii. No noncommercial driveway shall have a width greater than twenty (20) feet measured at right angles to the centerline of the driveway, except as increased by permissible radii.

8. The axis of an approach to the road may be at a right angle to the centerline of the county road and of any angle between ninety (90) degrees and sixty (60) degrees but shall not be less than sixty (60) degrees. Adjustment will be made according to the type of traffic to be served and other physical conditions.

9. The construction of parking or servicing areas on the county road right-of-way is specifically prohibited. Commercial establishments for customer vehicles should provide off-the-road parking facilities.

10. The grade of entrance and exit shall slope downward and away from the road surface at the same rate as the normal shoulder slope and for a distance equal to the width of the shoulder but in no case less than twenty (20) feet from the pavement edge. Approach grades are restricted to not more than ten percent (10%).

11. All driveways and approaches shall be so constructed that they shall not interfere with the drainage system of the street or county road. The Applicant will be required to provide, at his own expense, drainage structures at entrances and exits, which will become an integral part of the existing drainage system. The Board of County Commissioners or their representative, prior to installation, must approve the dimensions and types of all drainage structures.

**Note: This permit shall be made available at the site where and when work is being done. A work sketch or drawing of the proposed driveway(s) must accompany application. No permit will be issued without drawing, blueprint, or sketch.**

# BOARD OF COUNTY COMMISSIONERS OF GARFIELD COUNTY
## CERTIFICATION AND AFFIDAVIT
## REGARDING ILLEGAL ALIENS

The Contractor, whose name and signature appears below, certifies and agrees as follows:

1. The Contractor shall comply with the provisions of C.R.S. 8-17.5-101 et seq. The Contractor shall not knowingly employ or contract with an illegal alien to perform work for the Board of County Commissioners of Garfield County, Colorado ("BOCC") or enter into a contract with a subcontractor that knowingly employs or contracts with an illegal alien.

2. The Contractor represents, warrants, and agrees that it has verified that it does not employ any illegal aliens; that it has participated or attempted to participate in the Basic Pilot Employment Verification Program administered by the Social Security Administration and Department of Homeland Security; and otherwise shall comply with the requirements of C.R.S. 8-17.5-102(2)(b).

3. The Contractor shall comply with all reasonable requests made in the course of an investigation under C.R.S. 8-17.5-102 by the Colorado Department of Labor and Employment. If the Contractor fails to comply with any requirement of this provision or C.R.S. 8-17.5-101 et seq., the BOCC may terminate work for breach and the Contractor shall be liable for actual and consequential damages to the State.

4. If the Contractor is a sole proprietor, the undersigned hereby swears or affirms under penalty of perjury under the laws of the State of Colorado that (check one):

✓ I am a United States citizen, or

___ I am a Permanent Resident of the United States, or

___ I am lawfully present in the United States pursuant to Federal law.

I understand that this sworn statement is required by law because I am a sole proprietor entering into a contract to perform work for the BOCC. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to starting work for the BOCC. I further acknowledge that I will comply with the requirements of C.R.S. 24-76.5-101 et seq. and will produce the required form of identification prior to starting work.

I acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under C.R.S. 18-8-503.

CERTIFIED and AGREED to this 15 day of May, 2008.

CONTRACTOR:

Williams Production RMT Company 73-1613076

(Contractor Full Legal Name) FEIN or Social Security Number

By: [signature]

Signature of Authorized Rep Title Production Supervisor

Permit Number: GRB08-D-50

Exhibit A

## Driveway Permit Check Off Form

1. Permit Owner : Williams Production RMT Company
2. Mailing Address: PO Box 370
3. City: Carbondale 81623 [ ] Glenwood Springs 81601 [ ]
   New Castle 81647 [ ] Silt 81652 [ ] Rifle 81650 [ ]
   Parachute 81635 [X] Other [ ]
4. Phone No: 970-285-9377 Fax No: 970-285-9573

Fax to
Roy McClung

5. County Rd. No: Cr. 300
6. Nearest Intersection or address: 1620 CR 300
7. Distance from Int. or address: 100 feet west
8. Direction from Int. or address: N [ ] E [ ] S [ ] W [X]
9. Side of road: N [ ] E [ ] S [X] W [ ]
10. Width of driveway: 30-foot [ ] 40-foot [ ] 100-foot [X]
    Other: [ ]
11. Culvert required: Yes [X] No [ ]
12. Size of culvert required: 12-inch [ ] 15-inch [X] 18-inch [ ]
    Other: [ ]
13. Length of culvert required: 30-foot [ ] 40-foot [ ] other 100-foot
14. Asphalt or concrete pad required: Yes [X] No [ ]
15. Size of pad: 30-foot wide X 10-foot long X 4 inches thick: Yes [ ]
    40-foot wide X 10-foot long X 4-inches thick: Yes [ ]
    100-foot wide X 20-foot long X 4-inches thick: Yes [X]
    Other: [ ]

16. Gravel portion required: Yes [X] No [ ]

17. Length of gravel portion: 40-foot [ ] 50-foot [ ] 100-foot [X]

18. Trees or brush removed for visibility: Yes [ ] No [X]

19. Distance and direction from driveway to be removed:

20. Driveway must be no more than 3 % slope away from County road.

21. Drive must be constructed so no drainage accesses County road from driveway.

22. Certified traffic control required: Yes [ ] No [X]

23. Work zone signage only required: Yes [X] No [ ]

24. Stop sign required at entrance to County Rd. Yes [X] No [ ]

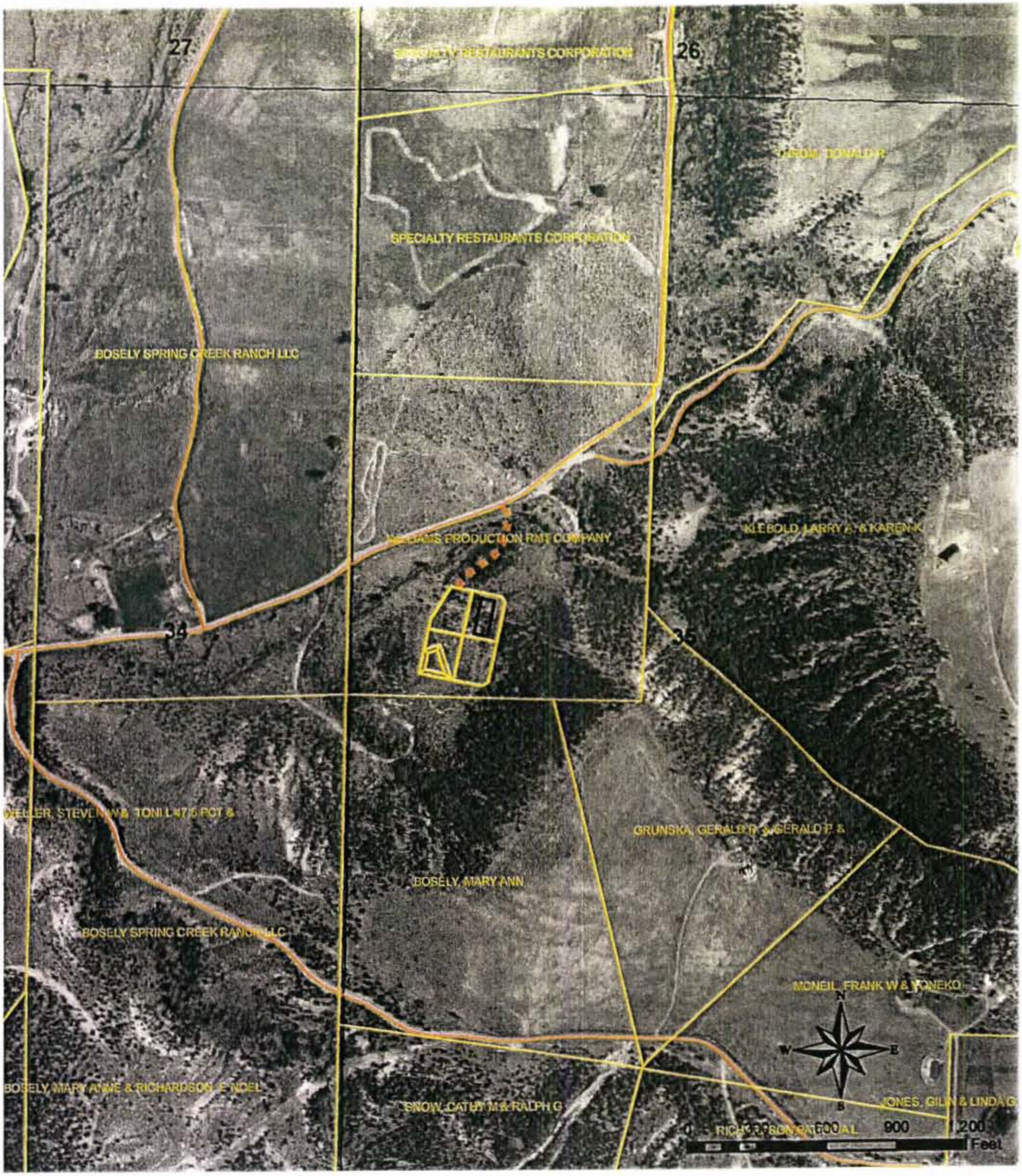
25. Inspection of driveway will required upon completion and must be approved by person issuing permit or representative of person issuing permit.

26. Person Requesting Permit: Roy McClung Williams Production

27. Person issuing permit: Jake B. Mall

28. District permit issued in: 1 [ ] 2 [ ] 3 [X]

29. Date checklist completed: May 14, 2008




**Legend**

Compressor

Proposed Road

Proposed Pad or Pit

Parcel Ownership

Williams Production RMT

Williams

Compressor Site Location Map
T7S R96W, Section 35

Date Prepared: April 29, 2008

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**Legend**

Compressor

Proposed Road

Proposed Pad or Pit

Parcel Ownership

Williams Production RMT

Compressor Site Location Map
T7S R96W, Section 35

Date Prepared: April 29, 2008

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107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number: 7. Garfield County Assessor's Maps**

Refer to the following attachments:

A. Garfield County Assessor Map 2409 current as of 3/3/08.

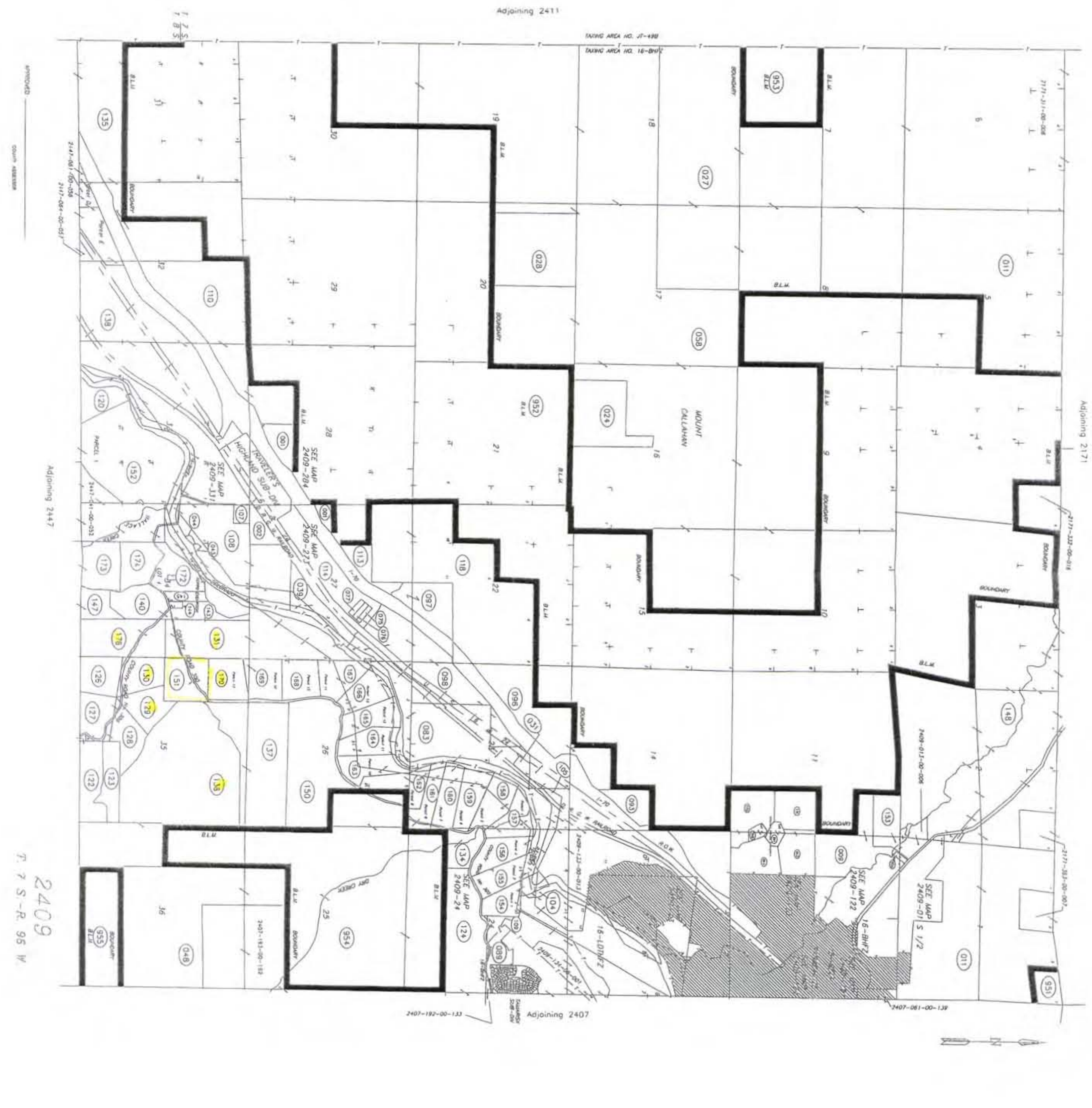
The mineral rights holder of the Williams Production RMT Co. subject property shown on the Garfield County Assessors Map as parcel # 240935200151 is:

Williams Production RMT Co.
1058 County Road 215
Parachute, Colorado 81635

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager


Adjoining 2411
Adjoining 2447
Adjoining 2171
Adjoining 2407
MOUNT CALLAHAN
SEE MAP 2409-122
SEE MAP 2409-24
B.L.M.
BOUNDARY
2409
T 7 S-R 95 W

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number: 8. Adjacent Property Owners**

The following is a list of landowners adjacent to or within 200' of the property on which Bargath Inc. is proposing to build the Una Compressor Station. Private landowners are identified by Assessor's Parcel Number and public lands are listed by address. This information is accurate as of 3/3/08.

| Name | Address | Parcel Number | Account Number | Tax Area |
|---|---|---|---|---|
| SPECIALTY RESTAURANTS CORPORATION | 8191 E. KAISER BLVD ANAHEIM, CA 92808 | 240935200170 | R040896 | 027 |
| BOSELY, MARY ANN | PO BOX 26 WOODY CREEK, CO 81656-0026 | 240935300130 | R470122 | 027 |
| KLEBOLD, LARRY A. & KAREN K. | 301 HIMALAYA AVE BROOMFIELD, CO 80020 | 240935100136 | R470129 | 047 |
| GRUNSKA, GERALD R. & GERALD P. & CAROL D. | 7700 COUNTY ROAD 306 PARACHUTE, CO 81635 | 240935300129 | R470121 | 047 |
| BOSELY, MARY ANN | PO BOX 26 WOODY CREEK, CO 81656-0026 | 240935300130 | R470122 | 027 |
| BOSELY SPRING CREEK RANCH LLC | PO BOX 26 WOODY CREEK, CO 816560-026 | 240934100131 | R470123 | 027 |
| BOSELY SPRING CREEK RANCH LLC | PO BOX 26 WOODY CREEK, CO 816560-026 | 240934400176 | R043246 | 027 |
| GARFIELD COUNTY ROAD & BRIDGE | PO BOX 426 RIFLE, CO 81650 | GARFIELD COUNTY ROAD #300 | | |

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 9: Deed and Legal Description**

Refer to the following attachment:

A. Warranty Deed dated 9/7/06 and recorded 9/8/06.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans

Charles S. Bucans, P.E.
Project Manager

$11 - (1)

706395 09/08/2006 12:08P B1840 P917 M ALSDORF
1 of 2 R 11.00 D 39.50 GARFIELD COUNTY CO

# WARRANTY DEED

Rec Fee $11.00

Doc Fee 39.50

**THIS DEED**, made this 7th day of September, 2006, between
Ronald Ray Sales and Martha J. Sales

of the said County of Garfield and State of Colorado, Grantor, and
Williams Production RMT Company

whose legal address is: 1058 County Road 215, Attn: Sandra C. Hotard,
Parachute CO 81635
of the said County of Garfield and State of Colorado, grantee:

**WITNESS**, that the grantor, for and in consideration of the sum of
( **$10.00** ) **Ten dollars and** Zero cents, the receipt and sufficiency of which is hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm, unto the grantees, their heirs and assigns forever, not in tenancy in common but in joint tenancy, all the real property, together with improvements, if any, situate, lying and being in the County of Garfield and State of Colorado described as follows:

See "Exhibit A" attached hereto
also known by street and number as: **1620 County Road 300, Parachute, CO 81635**

**TOGETHER** with all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and all the estate, right, title, interest, claim and demand whatsoever of the grantor, either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances.

**TO HAVE AND TO HOLD** the said premises above bargained and described, with the appurtenances, unto the grantee, his heirs and assigns forever. And the grantor, for himself, his heirs, and personal representatives, does covenant, grant, bargain, and agree to and with the grantee, his heirs and assigns, that at the time of the ensealing and delivery of these presents, he is well seized of the premises above conveyed, has good, sure, perfect, absolute and indefeasible estate of inheritance, in law, in fee simple, and has good right, full power and lawful authority to grant, bargain, sell and convey the same in manner and form as aforesaid, and that the same are free and clear from all former and other grants, bargains, sales, liens, taxes, assessments, encumbrances and restrictions of whatever kind or nature soever, except
*"general taxes for the year 2006 and subsequent years; and those specific exceptions described by reference to recorded documents as reflected in the Title Documents accepted by Grantee(s) in accordance with Section 8a(Title Review) of the Contract to Buy and Sell Real Estate relating to the above described property; distribution utility easements (including cable TV); those specifically described rights of third parties not shown by the public records of which Grantee has actual knowledge and which were accepted by Grantee(s) in accordance with Section 8b (Matters not shown by the Public Records) and Section 8c (Survey Review) of the Contract to Buy and Sell Real Estate relating to the above described real property, inclusion of the property within any special tax district; and, the benefit and burdens of any declaration and party wall agreements, if any."*

The grantor shall and will **WARRANT AND FOREVER DEFEND** the above-bargained premises in the quiet and peaceable possession of the grantee, his heirs and assigns, against all and every person or persons lawfully claiming the whole or any part thereof. The singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

**IN WITNESS WHEREOF**, the grantor has executed this deed on the date set forth above.

Ronald Ray Sales
Martha J. Sales

2006 0938

**STATE OF** Colorado )
) ss.
**COUNTY OF** Garfield )

The foregoing instrument was acknowledged before me this 7th day of September, 2006, by Ronald Ray Sales and Martha J. Sales

My commission expires: September 6, 2010.

Witness my hand and official seal.

Amy E. Cartwright

NOTARY PUBLIC
AMY E. CARTWRIGHT
STATE OF COLORADO

My Commission Expires 09/06/2010



Return to: Williams Production
PO Box 370
Parachute Co 81635

39.50

432
191

EXHIBIT A
LEGAL DESCRIPTION

Order No.: 20060938

A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 35, TOWNSHIP 7 SOUTH, RANGE 96 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF GARFIELD, STATE OF COLORADO, AND CONSIDERING THE NORTH LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 35 TO BEAR S 89°51'41" E AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 35;
THENCE S 89°51'41" E ALONG THE NORTH LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4) A DISTANCE OF 1329.48 FEET TO THE EAST LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 35;
THENCE S 00°59'44" E ALONG SAID EAST LINE A DISTANCE OF 1339.13 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4);
THENCE N 89°51'06" W ALONG SAID SOUTH LINE A DISTANCE OF 1310.24 FEET TO A POINT ON THE WEST LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 35;
THENCE N 01°48'36" W ALONG SAID WEST LINE A DISTANCE OF 1339.54 FEET TO THE POINT OF BEGINNING.

COUNTY OF GARFIELD
STATE OF COLORADO

SAID LAND IS ALSO KNOWN AS GARFIELD COUNTY TAX ASSESSOR PARCEL #2409350200151 AND CONTAINS 40.56 ACRES MORE OR LESS. IT IS THE INTENT THAT ALL LANDS COVERED BY SAID PARCEL BE CONVEYED WHETHER ACCURATELY DESCRIBED OR NOT.

TOGETHER WITH BUT WITHOUT WARRANTY; ANY OIL , GAS OR OTHER MINERAL INTERESTS OWNED BY SELLER ON THE ABOVE DESCRIBED LANDS BEING CONVEYED BY SELLER.

INCLUDING ANY WATER RIGHTS ADJUDICATED TO AND ASSOCIATED WITH OR HISTORICALLY USED UPON THE REAL PROPERTY LOCATED IN GARFIELD COUNTY DESCRIBED ABOVE BEING CONVEYED BY SELLER.

EXPLORATION & PRODUCTION
4289 CR #215
Parachute, CO 81635
970/285-9377
970/285-1185 fax

August 1, 2008

Mr. Fred Jarman
Director
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, Colorado 81601

Dear Mr. Jarman:

By this letter, Williams Production RMT Co. and Bargath, Inc. authorize Star Valley Engineering, Inc. (SVE) to represent us in any and all matters related to the special use permit application known as Bargath, Inc. Una Compressor Station.

This includes the preparation and submission of documents associated with the land use application and representation of this application before the applicable appointed and elected boards.

Sincerely,

Tom F

Mr. Tom Fiore
Williams Production RMT Co.
Bargath, Inc.

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 11: Impact Statement**

**Please find attached the following items.**

(The items prepared within section 11 are arranged as specified in the Garfield County Supplemental Regulations Sections 5.03.07 and are additionally compliant with Garfield County Supplemental Regulations Section 5.03.08 items # 1 through #4 Industrial Performance Standards)

**1.A. Existing lawful use of water.**

1. Construction Stormwater Management Plan prepared by HRL Compliance, Inc. dated March 2008. Please see attachment 11.1.A.1 Stormwater.

2. Spill Prevention Control and Countermeasure Plan prepared by Dordilleran Compliance Services, Inc. Please see attachment 11.1.2.A.1 SPCC Plan.

3. Domestic Water System – Please see attachment "3a Water System."

The above information illustrates that Bargath Inc. has stormwater management and spill prevention controls and countermeasures that meet the requirements set forth by Garfield County, the State of Colorado, and the USEPA.

**1.B. Impacts on adjacent land**

1. Vapor – Please see attached copy of Air Pollution Control Division Construction Permit Application at 11.1.B.1 APCD app.

2. Dust – See attached statement 11.1.B.2 Dust Control regarding dust control policy at the Una CS.

3. Smoke - Please see attached copy of Air Pollution Control Division Construction Permit Application at 11.1.B.1 APCD app.

4. Noise – Please see attached Noise Impact Analysis prepared by Noise Solutions, Inc. in 11.1.B.4.

5. Glare – See attached statement 11.1.B.5 on Glare Abatement.

6. Vibration – see attached statement 11.1.B.6 on Vibration Abatement.

The above information illustrates that Bargath Inc. has proven that vapor, dust, smoke, noise, glare, and vibration controls meet the requirements set forth by Garfield County, the State of Colorado and the USEPA.

**1.C. Impacts on Wildlife**

See Section 11.1.C Wildlife for a Wildlife Impact and Sensitive Areas Report prepared by WestWater Engineering, dated July, 2008.

The above information illustrates that Bargath Inc. has followed the recommendations set forth by the Colorado Division of Wildlife and the US Fish and Wildlife Service.

**1.D. Impacts of Truck and Automobile Traffic**

1. Traffic Analysis prepared by Felsberg, Holt, and Ullevig. Please see attachment 11.1.D Traffic.

2. Please see submittal #5 "Garfield County Road & Bridge Department Access Issues."

The above information illustrates that Bargath Inc. has proven that the existing and proposed level of service on CR #300 in the area of the proposed station is a Level of Service A during all phases of the project.

**1.E. Distances from Abutting Property.** Letter attached at 11.1.E regarding abutting property.

**1.F. Mitigation Measures Proposed.** Please see mitigation measures detailed in each of the individual submittal items.

**2.A. Site Rehabilitation Plan.** Please see attachment 11.2.A Integrated Vegetation and Noxious Weed Management Plan prepared by WestWater Engineering dated July, 2008. Section 4.0 Revegetation – Reclamation addresses site rehabilitation in detail.

Please note that the above and attached information presented discusses a carefully implemented plan for mitigation of impacts caused by the Una Compressor Station Project.

Sincerely,

**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

Storm Water Management Plan

Una Road Compressor Station

**Garfield County, Colorado**

**March 2008**

Williams.

# Storm Water Management Plan

## Una Road Compressor Station
## Garfield County, Colorado

**Prepared for:**

**Williams Production RMT Company**
**1058 County Road 215**
**Parachute, CO 81635**

**March, 2008**

## TABLE OF CONTENTS



## LIST OF APPENDICES



## LIST OF TABLES

# 1.0 INTRODUCTION

This Storm Water Management Plan (SWMP) is written to comply with the Colorado Department of Public Health and Environment's (CDPHE) General Permit No. COR-03000 issued on May 31, 2007 and will expire on June 30, 2012, and related U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) storm water regulations. This SWMP addresses typical construction activities associated with development of natural gas resources in the Garfield County area. This Una Road Compressor Station SWMP is intended to be periodically updated as needed to address planned developments, new disturbances, and other changes needed to manage storm water and protect surface water quality.

This SWMP is written to contain general storm water management practices, as well as site specific information related to specific construction activities for this project. Site specific information, found in Table 1, includes phased BMP implementation, areas of disturbance, schedule of construction activities, final stabilization measures, current BMPs, and potential pollution sources.

## 1.1 Storm Water Runoff Permitting Requirements

The Federal Clean Water Act [Section 402(p)] requires that discharges of pollutants to waters of the United States from any point source be regulated by NPDES permits. In November 1990, the USEPA published final regulations that established application requirements for storm water associated with construction activity for soil disturbances of 5 acres or more be regulated as an industrial activity and covered by an NPDES permit. In December 1999, the USEPA published final Phase II NPDES regulations that established application requirements for storm water associated with construction activity for soil disturbances to be regulated as an industrial activity and covered by an NPDES permit. These regulations became effective July 1, 2002.

Storm water construction permits are required for oil and gas activities that disturb 1 or more acres during the life of the project, or are part of a larger common plan of development. CDPHE considers a common plan of oil and gas development to mean development of several well pads and/or related infrastructure in a contiguous area either during the same time period or under a consistent plan for long-term development.

## 1.2 Project Description and Background

Williams Production RMT Company (Williams) is charged with construction, operation, and maintenance of the access road, construction pad, and any necessary gas gathering pipelines and facilities. Williams is responsible for implementing storm water management as it pertains to their respective operations related to the Una Road Compressor Station project. This SWMP is developed, maintained, and implemented to suit the needs of each construction activity associated with the project.

The Una Road Compressor Station and associated infrastructure will be located within Section 35, Township 7 South, Range 96 West, of the 6th P.M. Construction activities will include clearing/maintenance of the construction pad, construction/maintenance of access roads, and the eventual construction of natural gas flow and gathering pipelines. The area of disturbance including the construction pad, the access roads and gathering system pipeline will be greater than one acre. The compressor station pad is also going to be utilized as a natural gas well drilling pad. The drilling reserve pit will be used during drilling to hold drilling fluids and cuttings. The reserve pits will be designed, constructed, and reclaimed according to Colorado Oil and Gas Conservation Commission (COGCC) requirements.

## 1.3 Project Owner and Operator

The project owner/operator is Williams; their address is:

**Williams Production RMT Company**
**1058 County Road 215**
**Parachute, CO 81635**

The Williams contact persons for the project are:

- Michael Gardner, Storm Water Plan Administrator
  Main: 970.285.9377
  Mobile: 970.623.4875
- Tom Fiore, Plant Manager
  Main: 970.285.9377
  Mobile: 970.210.1641

Williams will be in charge of all aspects of this project. Contractor(s) will do the actual construction and grading, but all work will be supervised by Williams or its representative(s), and all decisions will be made by Williams, or its representative(s).

# 2.0 SITE LOCATION AND CONSTRUCTION AREA DESCRIPTION

The Una Road Compressor station construction pad, and associated infrastructure will be constructed using conventional cut and fill earthmoving techniques. The working pad surface will have dimensions of approximately 300-feet x 400-feet.

After the pad has been constructed and all necessary facilities have been installed, the pad will be graded to reduce cut and fill slopes and to minimize the overall size of the pad. The pad will be revegetated after grading activities have been completed. This "interim reclamation" phase will exist until 70% stabilization (including revegetation, compacted road surfaces, etc.) has been reached, after which "final stabilization" will be declared. "Final stabilization" will require the 70% stabilization and the removal of any temporary BMPs. The pad will remain in the "final stabilization" phase of the long-term production configuration for as much as 30 years or more. After all wells have been plugged and abandoned and surface facilities removed, the well pad will be graded to restore approximate pre-disturbance contours and will be revegetated.

In areas that are disturbed by the pad construction, topsoil will be stripped and stockpiled near the site. Topsoil stockpiles will be seeded as soon as practicable to preserve the topsoil resource. Soil materials will be managed so that erosion and sediment transport are minimized.

<u>Site Maps</u>

Refer to Appendix E for a map showing the location(s) of the construction pad, access road(s), and their associated storm water BMPs.

## 2.1 Schedule of Construction Activities

The construction activities are scheduled to begin in March 2008 with the necessary clearing and grading of the construction pad and associated access road. Refer to Table 1 for information regarding site specific construction and maintenance activities for the construction pad and access road.

Once an approved drilling permit application has been received from the COGCC, clearing and grading activities will be performed at the pad site. The clearing and grading will be performed during daylight hours to prepare the site prior to drilling. A drill rig will be mobilized to the site and set up for drilling. Once drilling is initiated the work may proceed twenty-four hours per day; seven days a week for short durations until the well is drilled to the approved depth and the well construction is completed.

If the exploratory holes prove to yield economically viable natural gas resources; additional gas well drilling will proceed. Any additional wells that are drilled will need to be added to the SWMP. Once the well is completed and brought into production it will operate as an unmanned facility twenty-four hours per day, seven days per week, and 365 days a year.

Once stabilization is achieved, defined as construction activities being complete and all disturbed areas have been either built on, paved, or a uniform vegetative cover established with a density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed, the CDPS Permit pertaining to this SWMP will be deemed closed. However, if petroleum hydrocarbons or other chemicals impact storm water as a result of industrial activities onsite, the impacted storm water will be addressed by following a Spill Prevention Control and Countermeasures (SPCC) plan.

### 2.2 Runoff Characteristics

Runoff characteristics are based on site topography, soil type, and soil/vegetative cover. According to the Natural Resource Conservation Service (NRCS), soil for the Una Road Compressor Station project consists of the following soil(s):

| SOIL TYPE | ELEVATION RANGE (Feet) | MEAN ANNUAL PRECIPITATION (Inches) | AVAILABLE WATER HOLDING CAPACITY | SALINITY (mmhos/cm) |
|---|---|---|---|---|
| Biedsaw-sunup gravelly loam | 5100-6000 | 12-14 | High | 2.0-4.0 |

# 3.0 POTENTIAL POLLUTION SOURCES

Potential pollution sources associated with construction sites and natural gas development include:

- Sediment resulting from erosion of soil stockpiles and other areas cleared of vegetation;
- Leakage of fuels and lubricants from equipment and spills from fueling;
- Trash and debris from clearing activities, construction materials, and workers.
- Sanitary sewage associated with portable toilets.

The most common source of pollution from road construction is sediment, which can be carried away from the work site with storm water runoff, and ultimately impact the water quality of a receiving stream. Clearing, grading, and otherwise altering previously undisturbed land can increase the rate of soil erosion over pre-disturbance rates.

Petroleum products can also be potential storm water pollutants. These products are used in construction activities to power or lubricate equipment and include: fuel, gear oil, hydraulic oil, brake fluid, and grease.

Debris from lay-down areas, residue from equipment cleaning and maintenance, and solid waste generated from land clearing operations and human activity (trees, brush, paper, trash, etc.) present other potential pollution sources within the construction site.

For site specific potential pollution sources, refer to Table 1. Maps of each well pad will be generated showing the locations of all potential pollution sources.

No concrete washout activities are expected for the project.

All BMPs implemented throughout the project are intended to mitigate for the release of sediment and all other potential pollution sources described above, and listed in Table 1.

# 4.0 DESCRIPTION OF CONTROL MEASURES

## 4.1 Soil Erosion and Sediment Controls

The objective of erosion and sediment controls is to minimize the release of sediments by storm water runoff. This can be accomplished through the use of structural and/or nonstructural controls. This section describes erosion and sediment controls to be used at active construction sites to minimize possible sediment impacts to storm water runoff. The proposed erosion control features include:

- Placement of any topsoil stockpiles along the up-gradient edge of the construction pad to divert run-on.
- Installation of perimeter diversion ditches to divert runoff from the project area.
- Installation of sediment catch basins to collect sediment-laden water from diversion ditches.
- Installation of check dams in areas of concentrated flow.
- Installation of culverts, rolling dips or water bars to provide drainage from road surfaces.
- Installation of straw bale barriers as a temporary BMP to capture sediment from storm water runoff.
- Installation of earthen berms around the edges of the pad to prevent runoff over the sides of the pad.
- Installation of straw wattles/straw rolls to capture sediment.
- Reclamation

Installation details regarding the following storm water BMPs can be found in Appendix C.

### 4.1.1 Run-On Controls

In order to divert surface runoff from up-gradient areas away from well pads and access roads, salvaged topsoil may be placed on the uphill side of the cut slope. The topsoil stockpile may be placed and graded to form a diversion berm that will direct surface water away from the road. In addition, a run-on diversion ditch can be excavated above the cut slope of the project.

### 4.1.2 Well Pad Surface Management

To retain storm water on the pad, and to provide containment for any spills that may occur, the well pad should be excavated at a 1% grade towards the reserve pit.

### 4.1.3 Erosion Bale and Rock Check Dams

Erosion bale check dams, at a minimum may be installed in areas of concentrated flow. Erosion bale check dams may be installed at suitable locations along the new access roads to the well pad. Erosion bale check dams are a temporary BMP that are to be removed upon reclamation.

Rock check dams are a permanent feature that may be installed in areas of concentrated flow. Rock check dams may be used instead of straw bale check dams in areas where steep slopes, high flows, or long-term exposure are expected to result in failure or frequent maintenance of a straw bale structure.

Some sediment will accumulate behind the check dam. After a significant rainfall, check dams should be inspected for sediment and debris. Sediment should be removed from behind the check dams when it has accumulated to one-half of the original height of the dam and properly disposed of. Check dams will be inspected for erosion along the edges of the check dams and repaired as required immediately. Check dams will be removed when their useful life is complete. For temporary ditches and swales, check dams should be removed and the ditch filled in when it is no longer needed. The area beneath the check dams will be seeded and mulched immediately after the check dam is removed.

### 4.1.4 Road Drainage Relief

Culverts, rolling dips or water bars may be used to provide drainage of water from road surfaces as needed to drain low areas or to reduce the amount of water flowing on the road surface. Road drainage relief should be provided as needed and in accordance with generally accepted practices. Guidance for road drainage relief is available in the document "Low-Volume Roads Engineering, Best Management Practices Field Guide," developed by the U.S. Forest Service and available on-line at http://www.blm.gov/bmp/field%20guide.htm. Depending on the location and type of drainage relief installed, additional sediment control features may be needed such as sediment removal at the inlet and erosion protection at the outlet.

### 4.1.5 Culvert Inlet and Outlet Protection

Installation of culverts may be needed in certain areas where the access road intersects intermittent drainages. The culvert inlet area will include a sediment sump that will contain the appropriate dimensions necessary to effectively carry out its purpose. The culvert outlet area will include an energy dissipation feature. Acceptable energy dissipation will include rock lining or turf reinforcement matting (TRM). Rock lining will be 2 to 4 inch diameter rock at least 6 inches deep and having plan dimensions of at least 4 feet wide by 10 feet long.

The area of rock lining should be prepared by removing 6 to 8 inches of soil. The shallow excavation should be filled with rock and the rock secured in-place by bucket tamping or wheel-rolling. The rock outlet should be installed to promote lateral spreading of water as it flows across the rock.

#### 4.1.6 Diversion Berms

Soil berms may be used to divert drainage away from areas of concern or to direct flow toward sediment control structures. Where used, diversion berms shall be constructed of soil with sufficient fines to minimize flow through the berms. Berms shall be at least 19-inches tall and will be compacted in place with suitable rubber tired backhoe.

#### 4.1.7 Straw Wattles/Straw Rolls

Straw rolls are intended to capture and keep sediment on the slopes. Straw rolls are useful to temporarily stabilize slopes by reducing soil creep and sheet and rill erosion until permanent vegetation can be established. Straw rolls will last an average of one to two years. The slope needs to be prepared before the rolls are placed. Small trenches are created across the slope on the contour. The trench should be deep enough to accommodate half the thickness of the roll (about 3"-5"). The trenches need to be 10 to 25 feet apart. The rolls need to be installed perpendicular to water movement, parallel to the slope contour. Start by installing rolls from the bottom of the slope. The rolls need to fit snugly against the soil. No gaps should be between the soil and roll. Willow, wooden stakes, or staples need to be driven through the roll and into the soil. There should only be 1 to 2 inches of stake exposed above the roll. The stakes should be installed every 4 feet.

#### 4.1.8 Seeding of Disturbed Areas

Project areas disturbed by construction will be revegetated/reclaimed as soon as is practicable, upon the completion of construction. Areas that will be revegetated will primarily be cut and fill slopes associated with grading activities. The permanent seed mix, rate, application method, and supplemental materials will be determined and inserted into this SWMP.

#### 4.1.9 Vegetative Buffer Areas

Vegetative buffer areas are either stands of preserved vegetation or vegetative material salvaged from project clearing activities. Vegetative buffers will provide a filtering effect, settling out sediment from storm water, while allowing clean water to continue down a natural migration path.

## 4.2 Storm Water Management Controls

Structural BMPs will be installed, inspected, and maintained when necessary. This SWMP will be revised as needed to address new disturbances. Depending on the type and location of new facilities, it may be necessary to install additional and/or alternate BMPs. In general, new development should be planned while considering storm water quality (e.g. minimize disturbed area and maximize distance from surface water drainages, as practicable).

Other developments on the property, primarily existing and/or improved roads, not currently or specifically addressed in the SWMP will be periodically checked for erosion and drainage problems. This is especially important for access roads located within 100 feet of surface drainages or creeks. If problems are noted, they should be reported to the Site Manager and/or SWMP administrator. Problem areas may be addressed through road maintenance activities, but will likely need to be addressed through BMPs which will be added to the plan as certain conditions arise.

## 4.3 Other Controls

### 4.3.1 Waste Management and Disposal

The construction activities mentioned in this SWMP will generate various other waste materials during the course of construction. These wastes typically include, but are not limited to, the following:

- Trees and shrubs from clearing operations
- Trash and debris from construction materials and workers
- Sanitary sewage

Each of these wastes will be managed so as to not contribute to storm water pollution. Trees and shrubs will be piled along the toe of fill slopes to provide additional sediment control. Construction trash and debris will be collected in appropriate containers and hauled off-site for disposal in suitable landfills. Sanitary waste will be contained in portable toilets or other storage tanks with waste materials regularly pumped and transported off-site for proper disposal at approved facilities.

### 4.3.2 Fuels and Materials Management

Petroleum Products

Petroleum products which may be present at the construction site include: gasoline, diesel fuel, lubricant oils, hydraulic oils, used oils, and solvents. Gasoline and diesel fuel will be stored in portable storage tanks with secondary containment. Lubricant, hydraulic, and miscellaneous oils and solvents will be stored in containers up to 55-gallons in volume.

Pollutants from petroleum products used during construction activities adhere easily to soil particles and other surfaces. In case of a spill or leak, soils contaminated with petroleum products will be contained and removed to a proper disposal site. Proposed soil erosion and sediment control practices will aid in retention of spills or leaks. Use of secondary containment and drip pans will reduce the likelihood of spills or leaks contacting the ground. Proposed maintenance and safe storage practices will reduce the chance of petroleum products contaminating the road site. Oily wastes such as crankcase oil, cans, rags, and paper containing oils will be placed in proper receptacles and disposed of or recycled. An additional source of petroleum contamination is leaks from equipment and vehicles. Routine daily inspections will be conducted to identify leaks and initiate corrective actions, if needed.

The following guidelines for storing petroleum products will be applied.

- All product containers will be clearly and properly labeled.
- Drums will be kept off the ground within secondary containment and stored under cover when necessary.

- Fuel tanks will be stored within areas containing secondary containment.
- Lids of drummed materials will be securely fastened.
- Emergency spill response procedures will be available on-site. Persons trained in handling spills will be on call at all times.
- Spill clean up and containment materials (absorbent, shovels, etc.) will be readily available. Spills will be immediately cleaned up and contaminated materials will be properly stored on site until they can be disposed of in accordance with applicable regulations.
- Storage areas and containers will be regularly monitored for leaks and repaired or replaced as necessary. Construction personnel should be informed about proper storage and handling of materials during weekly subcontractor or safety meetings.

Other Chemical Product Management

Various additional materials will be used and stored on site for use in construction. These materials will be stored appropriately and managed to minimize spills and leaks. Storage areas will be regularly inspected, and any minor spills or leaks will be cleaned up immediately.

Materials Management

The construction contractor will maintain a lay-down or staging area for equipment and materials storage on site. These areas will be maintained with good housekeeping and will be inspected on a regular basis for spills, leaks, and potential contamination.

### 4.3.3 Construction Site Housekeeping

Housekeeping will consist of neat and orderly storage of materials and containerized fluids. Wastes will be temporarily stored in sealed containers and regularly collected and disposed of at appropriate off-site facilities. In the event that a spill occurs, prompt cleanup is required to minimize any commingling of waste materials with storm water runoff.

Routine maintenance will be limited to fueling and lubrication of equipment. Drip pans will be used during routine fueling and maintenance to contain spills or leaks. Any waste product from maintenance will be containerized and transported off site for disposal or recycling. There will be no major equipment overhauls conducted on site. Equipment will be transported off site when major overhauls are necessary.

Cleanup of trash and discarded materials will be conducted at the end of each work day. Cleanup will consist of patrolling the road way, access areas, and other work areas to pickup trash, scrap debris, other discarded materials, along with any contaminated soil. Upon collection, these waste materials will be disposed of properly.

## 4.4 ADDITIONAL BMP REFERENCES

The structural and non-structural BMPs listed in this SWMP are intended to include all BMPs that may be used for gas gathering projects. However, there may be situations where a BMP is needed but not included in this SWMP, or project personnel may need additional information on the installation, use, specifications, and/or maintenance of BMPs. Additional information regarding various BMPs is available by referencing the following:

- For oil and gas operations, the Bureau of Land Management and U.S. Forest Service have developed "Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development," "Gold Book." The most recent version (fourth edition) of this is available on the internet at: http://www.blm.gov./bmp/GoldBook_Draft_v12.pdf.

- For Construction BMPs the Urban Drainage and Flood Control District, a Colorado Front Range group of city and county agencies has developed a BMP manual that is available on the internet at: http://swcc.state.al.us/pdf/ASWC_June_2003_Alabama_Handbook_Construction E&S_Control.pdf.

- For construction BMPs and surface stabilization methods, the Alabama Soil and Water Conservation Committee have developed "Erosion Control, Sediment Control and Storm Water Management on Construction Sites and Urban Areas, Volume 1 Developing Plans and Designing Best Management Practices." This information is available on the internet at: http://www.blm.gov/bmp/field%20guide.htm

- For access roads, the US Forest Service and Bureau of Land Management have developed "Low-Volume Roads Engineering, Best Management Practices Field Guide," which is available online at: http://www.blm.gov/bmp/field%20guide.htm

# 5.0 INSPECTION AND MAINTENANCE PROCEDURES

To meet requirements of the General Permit, inspection and maintenance of erosion and sediment controls must occur during the project. Continued inspection and maintenance is required for specific structures after construction is completed. The inspection program will include the following:

1. A qualified person familiar with the SWMP and control measures will conduct the inspections.
2. Inspections will cover the following items within the construction site:
   - Disturbed areas without stabilization
   - Material storage areas
   - All structural and non-structural BMPs
   - Surface water diversions
   - Down gradient areas
   - New access roads
   - Site vehicle entrance/exit locations.
3. Inspections will occur at least once every 14 calendar days and after a significant precipitation event, or snow melt event that causes potential for erosion.
4. Permanently stabilized areas will be inspected at least every 30 days.
5. A log of inspections will be maintained.
6. Water quality will be visually assessed for all receiving streams and discharge areas during each inspection.
7. Disturbed areas and material storage areas that are exposed to precipitation will be inspected for evidence of pollutants entering nearby drainages.
8. BMPs will be inspected for evidence of deterioration, under-cutting, and build up of sediment. Sediment removal will be required when it has built up from one-third to one-half the height of the straw bales or silt fence.
9. Roads used for vehicle access will be inspected for evidence of off-site sediment transport.
10. Following each inspection, the SWMP will be modified as necessary to include additional controls designed to correct identified problems. Necessary revisions to the SWMP will be made within 7 days of the inspection.
11. An inspection report summarizing the scope of the inspection, the name of the person conducting the inspection, the date of the inspection, and observations relating to proper implementation will be prepared. Inspection reports will be retained for at least 3 years from the date that the site is finally stabilized.
12. Actions taken to modify any storm water control measure will be recorded and maintained with the SWMP.
13. If no deficiencies are found during the inspection, the report will contain certification that the site is in compliance with the SWMP. Signatures will be in accordance with the General Permit Conditions, Part E. 1.

Maintenance Procedures

Maintenance will include prompt repairs and/or adjustments to any erosion and sediment control structures that are deteriorating or found to be performing inadequately. BMP conditions and dates of BMP maintenance will be documented within the storm water inspection checklists. Repairs are to be made as soon as possible and prior to the next anticipated storm event, and no longer than 7 days from the time of discovery. Williams or a designated contractor(s) will maintain on-site all materials necessary to make any reasonably expected repairs such as silt fence, straw bales, and stakes.

Inspection Forms

Inspection forms shall be a part of this SWMP and with include information such as dates of maintenance/modifications of existing BMPs, installation of new BMPs, any site housekeeping requirements, and general comments. Refer to Appendix B for an example storm water compliance inspection checklist.

# 6.0 NON-STORMWATER DISCHARGES

No allowable sources of non-storm water discharges are anticipated from the project. Some possible exceptions include, but are not limited to, fire prevention/suppression or dust control activities.

# 7.0 FINAL STABILIZATION

Areas which have been disturbed are considered to be stabilized when a uniform vegetative cover with a density of 70 percent of the pre-disturbance levels has been established, or when an equivalent permanent, physical erosion reduction method is in place. Refer to Table 1 for areas that have achieved final stabilization.

Areas which are not used for facilities, access roads, material storages yards, or other work areas will undergo reclamation. Areas that are stabilized with vegetation will be considered to have achieved final stabilization when a uniform stand of vegetation with a density of at least 70 percent of the pre-disturbance has been established. Other areas may include facilities, access roads, material storage yards, and other work areas will be stabilized through the use of permanent, physical erosion reduction methods that include, but are not limited to:

- Surface hardening – covering of the soil surface with hardened products such as concrete or asphalt pavement.
- Surface covering – covering of the soil surface with structures that inhibit contact of precipitation with the soil surface, which is generally considered to be placement of a structure (building or tank) over the soil surface.
- Gravel surfacing – gravel surfacing will be applied in areas such as access roads, materials storage yards, and other work surfaces. Some gravel may be lost due to erosion from intense precipitation events or due to vehicle traffic. Gravel surfaces will be periodically inspected to determine the need for gravel replacement. Gravel surfaces will be replaced or repaired (through grading) when inspections reveal that the gravel surface is no longer effectively covering the soil surface, or performing its desired function.
- Surface contouring/ditching – road surfaces that will not be graveled shall be constructed in a manner to prevent excessive erosion. Roads will be sloped in way to encourage positive drainage into bar ditches , and ultimately into sediment control structures. A compact, earthen berm will be constructed at the uphill side of the road slope.

# 8.0 CERTIFICATIONS

## 8.1 Owner/Applicant Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manages the system, or the person(s) directly responsible for gathering the information, I verify that the information submitted within this plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations.

Signature: ____________________

Name: Michael Gardner

Title: SWMP Administrator

Date: ____________________

Signature: ____________________

Name: Tom Fiore

Title: Plant Manager

Date: ____________________

Applicant Name & Address: Williams Production RMT Company
1058 County Road 215
Parachute, CO 81635

Site Name and Location: Una Road Compressor Station
Township 7 South
Range 96 West
Garfield County, Colorado

## 8.2 Contractor/Subcontractor Certification

All contractors and subcontractors that will perform construction activities that could impact storm water will be familiar with the SWMP, and will sign the following certification.

Contractor Certification

I certify under penalty of law that I understand the terms and conditions of the SWMP and associated CDPS General Permit that authorizes storm water discharges associated with industrial activity from the construction sites identified as part of this certification.

Signature: ______________________

Name: ______________________

Title: ______________________

Date: ______________________

Representing:
Company: Williams Production RMT Company

Address: 1058 County Road 215

Address: Parachute, CO 81635

Phone: 970.285.9377

## 8.3 Storm Water Management Plan Administrator

The SWMP Administrator is responsible for developing, implementing, maintaining, and revising the SWMP. This individual is responsible for the accuracy, completeness, and implementation of the SWMP.

SWMP Administrator Certification

I certify under penalty of law that I understand the terms and conditions of the SWMP and associated CDPS General Permit that authorizes storm water discharges associated with industrial activity from the construction sites identified as part of this certification.

| | |
|---|---|
| Signature: | ______________________ |
| Name: | Michael Gardner |
| Title: | SWMP Administrator |
| Date: | 2/27/2008 |

Representing:

| | |
|---|---|
| Company: | Williams Production RMT Company |
| Address: | 1058 County Road 215 |
| Address: | Parachute, CO 80401 |
| Phone: | 970.285.9377 |

# APPENDIX A

## Storm Water Construction Permit Application

STATE OF COLORADO

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
Water Quality Control Division – Stormwater Program

STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY

# FORM ONLY

GENERAL PERMIT APPLICATION

*Revised 7/07*

## ATTENTION

**This document contains only the two-page application form for the CDPS Stormwater Construction Permit. You must obtain and follow the application instructions and the process for developing a Stormwater Management Plan (SWMP).**

**The complete application document is on the Division's web page at:**
**http://www.cdphe.state.co.us/wq/PermitsUnit/stormwater/SWConstructionApplication.pdf**

**Application Completeness**: The application must be completed accurately and in its entirety or the application will be deemed incomplete—processing of the application will not begin until all required information is received. One original copy of the completed application (**no faxes or e-mails**) must be submitted to the Division to initiate the application process.

**Colorado Department of Public Health and Environment**
**Water Quality Control Division**
**WQCD-Permits-B2**
**4300 Cherry Creek Drive South**
**Denver, Colorado 80246-1530**

**Do not include a copy of the Stormwater Management Plan, unless requested by the Division.**

GENERAL PERMIT APPLICATION
STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION ACTIVITY
(Permit No. COR-030000)

| | |
|---|---|
| For Agency Use Only | C O R - 0 3 ___ ___ |
| Date Received: | ___ / ___ / ___ (Month / Day / Year) |
| Billing Code: | 09 9B 00 |

ALL APPLICANTS MUST FOLLOW PART D OF THE INSTRUCTIONS TO COMPLETE THIS FORM

**Please print or type**. All items must be completed accurately and in their entirety, or the application will be deemed incomplete and returned to the applicant. Processing of the application will not begin until all required information is received. Please refer to the instructions for information about the required items. **Original** signatures for Items 8 and 9 are **required**.

1. **Name and address of the permit applicant (legally responsible entity)**:

Company Name Williams Production RMT Company

Mailing Address 1058 County Road 215

City, State and Zip Code Parachute, CO 81635

Legally Responsible Person (application signer) E-mail Address Michael.Gardner@Williams.com

Phone Number (970)285.9377 Who is applying? Owner Developer X Contractor

Local Contact (familiar with facility) Tom Fiore

Title Plant Manager Phone Number (970)285.9377

Local Contact E-mail Address Tom.Fiore@Williams.com

2. **Location of the construction site:**

Street Address (or cross streets) N/A

City (if unincorporated, so indicate) N/A County Garfield

Name of plan, project, or development Una Road Compressor Station

Latitude/Longitude (approximate center of the site) – use one of the following formats:

Latitude ___ / ___ / ___ (degrees / minutes / seconds) Longitude ___ / ___ / ___ (degrees / minutes / seconds) (e.g., 39°42'11", 104°55'57")

-or-

Latitude 39.393 Longitude -108.085 (e.g., 39.703°, 104.933°")

degrees (to 3 decimal places) degrees (to 3 decimal places)

3. **Legal Description (subdivision, block, and lot) or Map Indicating Site Location/Boundaries:**
If a map is attached to provide this information, this must be indicated below. Maps must be folded to 8½ x 11 inches.

Map Attached? X Yes, skip to item 4 No; include legal description **per Instructions** (use separate sheet if needed):

Subdivision(s), Lot(s), Block(s): ___

4. **Area of the construction site**:

Total area of project site (acres) 4.58 acres (initial proposed construction)

Area of project site to undergo disturbance (acres) TBD

Total disturbed area of Larger Common Plan of Development or Sale, if applicable (i.e., total, including all phases, filings, lots, and infrastructure not covered by this application) ___

5. Nature of the construction activity:

Check the appropriate box(s) or provide a brief description that indicates the general nature of the construction activities. (The full description of activities must be included in the Stormwater Management Plan.)

Single Family Residential Development

Multi-Family Residential Development

Commercial Development

X Oil and Gas Production and/or Exploration (including pad sites and associated infrastructure)

Highway/Road Development (not including roadways associated with commercial or residential development)

Other, Describe: ____________________

6. **Anticipated construction schedule:**

Construction Start Date: 4 / 1 / 2008 (month / day / year)

Final Stabilization Date: Ongoing (month / day / yea)

7. **The name of the receiving waters(s).** (If discharge is to a ditch or storm sewer, also include the name of the ultimate receiving water): Unnamed tributary, Spring Creek, and ultimately the Colorado River

**STOP!** A Stormwater Management Plan (see Appendix A) must be completed prior to signing the following certifications!

8. **Stormwater Management Plan Certification**:

"I certify under penalty of law that a **complete Stormwater Management Plan, as described in Appendix A of this application, has been prepared for my activity**. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said SWMP, including the possibility of fine and imprisonment for knowing violations."

Signature of Legally Responsible Person (submission must include original signature) Date Signed

Michael Gardner SWMP Administrator

Name (printed) Title

9. **Signature of Applicant**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

"I understand that submittal of this application is for coverage under the State of Colorado General Permit for Stormwater Discharges Associated with Construction Activity **for the entirety of the construction site/project described and applied for, until such time as the application is amended or the certification is transferred, inactivated, or expired**."

Signature of Legally Responsible Person (submission must include original signature) Date Signed

Michael Gardner Regulatory Technician

Name (printed) Title

# APPENDIX B

## Storm Water Compliance Inspection Form

# Storm Water Inspection Checklist

| Project Name | Project ID | Unique ID | Field Name |
|---|---|---|---|
| | | | |

| Site Type | Permit Name | Permit Date | Proposed Start Date |
|---|---|---|---|
| | | | |

| Latitude | Longitude | Township | Range | Section | Description |
|---|---|---|---|---|---|
| | | | | | |

| Inspection Date | Inspector | Inspection Type | Comments |
|---|---|---|---|
| | | | |

| Acres Disturbed | Acres Subject to Interim Reclamation | Acres Restored |
|---|---|---|
| | | |

| Distance to Receiving Water | Name of Receiving Water(s) | Type | Estimated Runoff Coefficient |
|---|---|---|---|
| | | | |

**Best Management Practices**

| BMP # | Type | Maintenance Required | Date Maintenance Completed | Comment |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
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| 18 | | | | |
| 19 | | | | |

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| 20 | | | | |
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| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | | | | |
| 41 | | | | |
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| | | | | |
| | | | | |

**Processing Equipment**

| # of Tanks | # of Separators | Freeboard in Secondary Containment | Storm Water in Secondary Containment | Comment |
|---|---|---|---|---|
| N/A | N/A | N/A | N/A | None |

**Secondary Wells On Site**

| | | | | |
|---|---|---|---|---|
| None | None | None | None | None |
| None | None | None | None | None |

**Other Equipment**

| Type of Equipment | Comment |
|---|---|
| None | None |
| None | None |
| None | None |

| Housekeeping/Site Trash |
| --- |
| |

| Materials Handling |
| --- |
| |

| Spills or Leaks |
| --- |
| |

Vegetation

| Seed Mix | Date Planted | 70% Revegetated | Comment |
| --- | --- | --- | --- |
| | | | |

Files

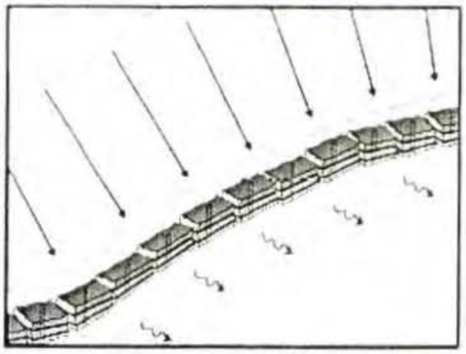
| Type of File | Location |
| --- | --- |
| | |
| | |
| | |
| | |
| | |

| **Site Complies With Storm Water Standards (Yes or No)** |
| --- |
| |

| **Notes:** |
| --- |
| |
| |
| |
| |

# APPENDIX C

## BMP Descriptions and Installation Details



## Description and Purpose

A straw bale barrier is a series of straw bales placed on a level contour to intercept sheet flows. Straw bale barriers pond sheet- flow runoff, allowing sediment to settle out.

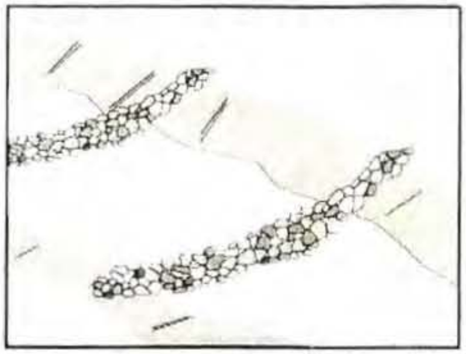
## Implementation

A straw bale barrier consists of a row of straw bales placed on a level contour. When appropriately placed, a straw bale barrier intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. Straw bale barriers also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils.

Straw bale barriers have not been as effective as expected due to improper use. These barriers have been placed in streams and drainage ways where runoff volumes and velocities have caused the barriers to wash out. In addition, failure to stake and entrench the straw bale has allowed undercutting and end flow. Use of straw bale barriers in accordance with this BMP should produce acceptable results.

### *Materials*

- ***Straw Bale Size***: Each straw bale should be a minimum of 14 in. wide, 18 in. in height, 36 in. in length and should have a minimum mass of 50 lbs. The straw bale should be composed entirely of vegetative matter, except for the binding material.
- ***Bale Bindings***: Bales should be bound by steel wire, nylon or polypropylene string placed horizontally. Jute and cotton binding should not be used. Baling wire should be a minimum diameter of 14-gauge. Nylon or polypropylene string should be approximately 12-gauge in diameter with a breaking strength of 80 lbs force.
- ***Stakes***: Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake, or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.



## Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, straw bales, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.

## Implementation

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Reduced slopes reduce the velocity of storm water flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Use of check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap may be placed immediately upstream of the check dam to increase sediment removal efficiency.

### *Design and Layout*

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity must be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, there are several options:

- Don't use check dams. Consider alternative BMPs.
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam. The center section of the dam should be lower than the edge sections so that the check dam will direct flows to the center of the ditch or swale.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products manufactured specifically for use as check dams are also being used, and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber, and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Straw bales can also be used for check dams and can work if correctly installed; but in practice, straw bale check dams have a high failure rate. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam must completely span the ditch or swale to prevent washout. The rock used must be large enough to stay in place given the expected design flow through the channel.

Log check dams are usually constructed of 4 to 6 in. diameter logs. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

Gravel bag and sandbag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet.

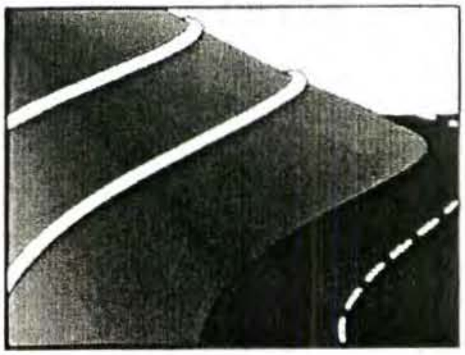
Manufactured products should be installed in accordance with the manufacturer's instructions. If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft from the outfall device and at regular intervals based on slope gradient and soil type.
- Check dams should be placed at a distance and height to allow small pools to form between each check dam.
- Backwater from a downstream check dam should reach the toes of the upstream check dam.
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be re-suspended in subsequent storms, the sediment trap must be cleaned following each storm event.
- High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale.
- Gravel bags may be used as check dams with the following specifications:

### *Materials*

Gravel bags used for check dams should conform to the requirements of gravel bag berms. Sandbags used for check dams should conform to sandbag barrier guidelines. Fiber rolls used for check dams should conform to fiber roll requirements. Straw bales used for check dams should conform to straw bale barrier requirements.



## Description and Purpose

A fiber roll consists of straw, flax, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

## Implementation

### *Fiber Roll Materials*

- Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.

### *Assembly of Field Rolled Fiber Roll*

- Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
- Bind roll at each end and every 4 ft along length of roll with jute-type twine.

### *Installation*

- Locate fiber rolls on level contours spaced as follows:
    - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
    - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
    - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
    - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
    - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.

## Culverts

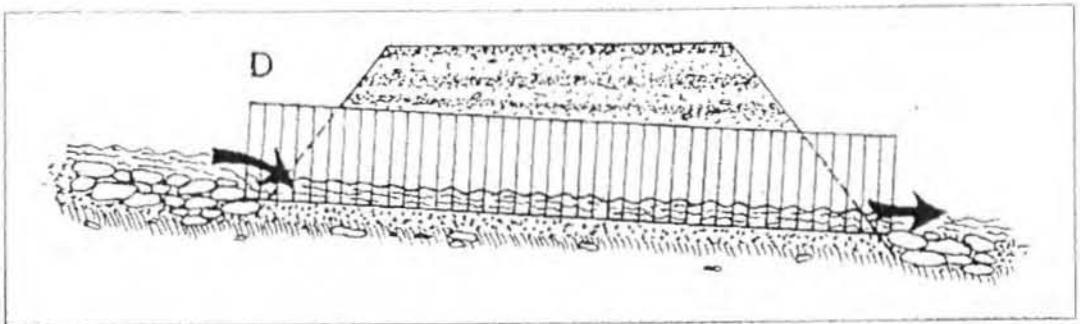



*Figure 69d. Placed correctly (D), the culvert is set slightly below the original stream, grade and protected with armor at the inlet and outlet.*

**Description and Purpose**

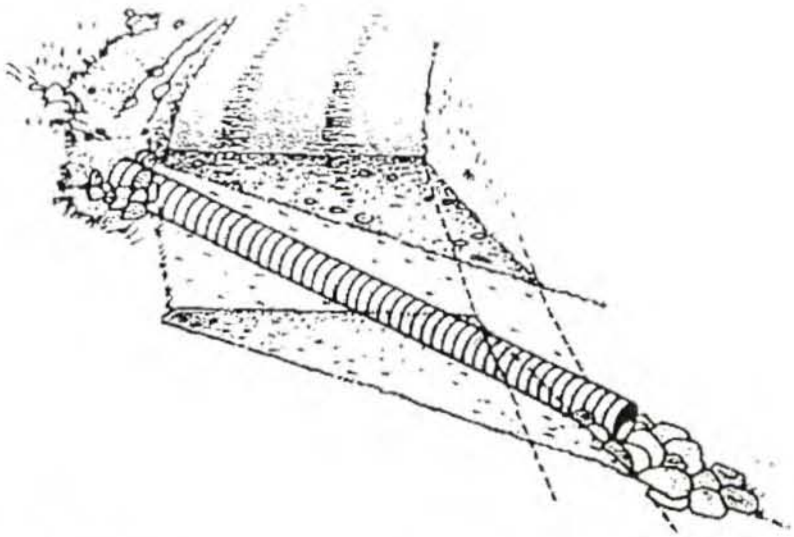
Culverts are used in streams and drainages to allow normal runoff to flow underneath roads. The diameter of the culvert should be determined by the amount of water that is anticipated to flow through the culvert. The culvert gradient should be slightly greater than the approach ditch gradient.

**Inspection and Maintenance**

Culverts should be inspected to determine proper orientation. If the culvert is not initially set properly, the following adverse effects can occur:

- Culvert plugging if the inlet is too low
- Undercutting below the culvert if the inlet is set too high

## Culvert Inlet/Outlet Protection



**Description and Purpose**

Culvert inlet/outlet protection typically consists of gravel riprap that acts as energy dissipation features, thus allowing for the settling of sediments, while preventing piping from occurring at the inlet or outlet. Riprap should consist of small to medium sized gravels that are layered to achieve uniform density

**Inspection and Maintenance**

- Inspect culvert inlet/outlet protection prior to forecast rain, daily during extended rain events, after significant precipitation events, and at 14-day intervals during a non-rainy season
- Repair or fill any unnecessary gaps or holes in the inlet/outlet of culverts

# APPENDIX D

## Construction Plats

# APPENDIX E

## Storm Water BMP Location Map

# TABLE 1

## Site Descriptions

| | | | | | | | | | CONSTRUCTION PHASE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility | Date Constructed | Facility Status | Pad Area (acres)* | Pre-Disturbance Vegetation | Pre-Disturbance % of vegetative ground cover* | Potential Pollution Sources | Receiving Waters | Distance to Receiving Waters (miles) | ACTIVE | I.R. | F.S. | Current BMPs | Comments |
| Una Road Compressor Station | TBD | Proposed | 4.58 | Juniper, sagebrush, various forbs/grasses | 70 | Substance(s) related to maintenance of production equipment. Sediment from pad construction and maintenance | Unnamed tributary/Spring Creek/Colorado River | ~0.15 miles to unnamed tributary | (PROPOSED) | | | TBD | |

# TABLE 2

## SWMP Revision Sheet

REVISION SHEET

| Review Date | Representative/Designee Printed Name | Representative/Designee Signature | Type of revision (e.g. SWMP text, site modification, etc.) | SWMP Amended (Y/N) |
|---|---|---|---|---|
| 3/6/2008 | John Suchar | | Initial SWMP Drafting | N/A |
| | | | | |
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Williams®

# SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

## UNA COMPRESSOR STATION
## GARFIELD COUNTY, COLORADO


WILLIAMS PRODUCTION RMT COMPANY
**P.O. Box 370**
**Parachute, Colorado 81635**


REVISION DATE:
**March 2008**

# TABLE OF CONTENTS

## TABLE OF CONTENTS (Continued)

### FIGURES



### APPENDICES

## SECTION 1.0 MANAGEMENT COMMITMENT CERTIFICATION

Management approval has been extended at a level with authority to commit the necessary resources to implement this Spill Prevention, Control and Countermeasure (SPCC) plan. Pursuant to §112.7(d), this is the written commitment of Williams Production RMT Company (Williams) to provide the manpower, equipment and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful to human health and the environment. A copy of this plan shall be maintained by the operator as described herein and will be made available to the EPA Regional Administrator for on-site review during normal working hours.

Authorized Management Representative:

Signature:______________________________

Name: Steve Soychak

Title: District Manager

Date:______________________________

## SECTION 2.0 ENGINEERING CERTIFICATION

Pursuant to §112.3(d) and by means of this certification, I attest that:

- I am familiar with the requirements of the SPCC rule (40 CFR 112);
- The facility has been visited and examined by myself or my agent;
- This plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of the SPCC rule;
- Procedures for required inspections and testing have been established; and,
- This plan is adequate for the facility.

DRAFT – PENDING CONST.
Signature of Professional Engineer                Date

State Registration No.                State

*Note: The PE's certification does not relieve the owner/operator of the facility of the duty of fully implementing the SPCC plan in accordance with all applicable requirements.*

## SECTION 3.0 INTRODUCTION

The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, authorized the establishment of procedures, methods, equipment and other requirements for the prevention and/or containment of discharges of oil and hazardous substances from vessels and onshore and offshore facilities. In partial response to this authorization, the U.S. Environmental Protection Agency (USEPA) issued Oil Pollution Prevention Regulations for Non-Transportation Related Onshore and Offshore Facilities on December 11, 1973 (effective on January 10, 1974). These regulations were published under title 40 of the Code of Federal Regulations (CFR), Part 112 and specifically outlined requirements for the preparation of Spill Prevention, Control and Countermeasure (SPCC) plans.

On July 17, 2002 the USEPA published modifications to the SPCC requirements in the Federal Register (68 FR, 47042-47152). This SPCC plan has been prepared in accordance with these revised regulations. The SPCC regulations and additional information can be found at: http://www.epa.gov/oilspill/spcc.htm.

The following sections of this plan are presented in the sequence of the SPCC rule, as required by the rule. The substantive requirements (§112.7 and §112.9) are addressed in Sections 6 and 8, respectively. Throughout this plan, where applicable, references to the appropriate subsections of 40 CFR Part 112 are provided, followed by an explanation of how the requirements have been addressed.

## SECTION 4.0 GENERAL APPLICABILITY

The Oil Pollution Prevention Regulations (40 CFR Part 112) require preparation of an SPCC plan for facilities that have discharged or could reasonably be expected to discharge oil into or upon navigable waters of the United States or adjoining shorelines. Specifically, §112.1(d)(2)(ii) requires an SPCC plan to be developed for facilities where the aggregate storage capacity of oil is greater than 1,320 gallons (inclusive of containers with thresholds of 55-gallons or greater). Because the Una Compressor Station near Parachute, Colorado has a collective potential maximum above ground storage capacity of approximately x,xxx gallons, as well as individual stored volumes up to x,xxx gallons each, Williams is required to develop, implement and maintain an SPCC plan for this facility.

This SPCC plan has been developed for the Una Compressor Station in response to the regulations listed above. The purpose of this plan is to identify sources of oil at the Una Compressor Station and outline procedures to prevent the release of oil to navigable waters of the United States.

A release of oil is considered a *discharge* under this plan only if the release is into or upon the navigable waters of the United States, adjoining shorelines, or waters contiguous with the navigable waters of the United States. This is apparent if a release impacts surface water quality by causing a film, sheen or discoloration of the water surface or adjoining shorelines, or causes a sludge or emulsion to be deposited beneath the surface of the adjoining shorelines. Impacts to groundwater also apply if the groundwater is contiguous with navigable waters of the United States (i.e., groundwater discharges to/contributes to the total volume of a surface water body that is itself contiguous with navigable waters of the United States).

Any facility that could, because of its location, be expected to cause substantial harm to the environment by discharging oil into or on navigable waters or adjoining shorelines is required to prepare and submit a facility response plan (FRP) to the USEPA Regional Administrator (RA) in accordance with 40 CFR Part 112.20. The Una Compressor Station is not considered such a facility because it does not meet any of the substantial harm criteria specified in §112.20. These criteria, and the associated applicability determination regarding the Una Compressor Station, are shown in **Appendix A**. This appendix is the *Certification of the Applicability of the Substantial Harm Criteria* required by §112.20 and must be maintained at the facility. Because submittal of an FRP is not required, except at the discretion of the RA, this SPCC plan provides information and procedures for responding to discharges.

## SECTION 5.0 SPCC PLAN ADMINISTRATION: §112.3, §112.4, AND §112.5

### 5.1 Requirement to Prepare: §112.3

This SPCC plan was prepared to comply with the SPCC rule (40 CFR Part 112) that was amended and promulgated on July 17, 2002. In accordance with §112.3(a) and the recent compliance timeline extension announced by the EPA, this plan was completed prior to and will be fully implemented prior to July 1, 2009.

In accordance with §112.3(e)(1) and (2), a complete updated copy of the SPCC Plan and associated files will be maintained at the facility, and at the Williams district office in Parachute, Colorado. During normal working hours at the facility, the plan will be available to authorized representatives of Local, State or Federal governing agencies for on-site review and a copy will be submitted to the EPA if requested.

### 5.2 Amendment by Regional Administrator: §112.4

In accordance with §112.4(a), whenever more than 1,000-gallons of oil have been *discharged* in a single incident or more than 42-gallons of oil have been *discharged* in each of two incidents over a 12-month period, Williams will submit a report to the EPA RA within 60 days (refer to the definition of a discharge previously provided in Section 4). The report must include the following:

- §112.4(a)(1): Name of the facility;
- §112.4(a)(2): Name of the operator;
- §112.4(a)(3): Location of the facility;
- §112.4(a)(4): Maximum storage or handling capacity of the facility and the normal daily throughput;
- §112.4(a)(5): Corrective action and countermeasures that have been taken, including a description of equipment repairs and replacements;
- §112.4(a)(6): An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary;
- §112.4(a)(7): The cause of such discharge as described in 40 CFR 112.1(b), including a failure analysis of the system or subsystem in which the failure occurred;

- §112.4(a)(8): Additional preventive measures taken or planned to minimize the possibility of recurrence; and

- §112.4(a)(9): Such other information as the Regional Administrator may reasonably require pertinent to the SPCC Plan or discharge.

In accordance with 40 CFR 112.4(c), copies of the incident report will also be forwarded to the representative/case manager designated by the appropriate local or tribal agency. Should the RA subsequently propose by certified mail or personal delivery that this SPCC plan be amended, in accordance with §112.4(e) Williams will:

- Submit arguments and supporting information in response to the proposed amendments within 30 days; or

- Amend this SPCC plan within 30 days and implement the amended plan within six months, unless otherwise authorized by the RA.

As required by §112.4(c), technical amendments to the plan will be certified by a Professional Engineer.

### 5.3 SPCC Plan Amendment by Owner/Operator: §112.5

In accordance with §112.5(a), when there is a change in facility design, construction, operation, or maintenance that materially affects the facility's potential for a discharge, Williams will amend this SPCC plan within six months of the change and implement the amended plan within six months of its completion.

In accordance with §112.5(b), Williams will also review this plan at least once every five years from the date of the last review. As a result of the review, the plan will be amended within six months of the review if more effective prevention and control technology has been field-proven at the time of the review and will significantly reduce the likelihood of a discharge. The amended plan will be implemented within six months of its completion. The designated person accountable for oil spill prevention at the facility (the Principal Environmental Specialist, see Section 6.1) will document completion of each five year review, sign a statement as to whether the plan will be amended, and record the results in **Appendix B**.

As required by §112.5(c), technical amendments that require the application of good engineering practice will be certified by a Professional Engineer. Any such amendments to this SPCC plan shall be noted on the Amendment Log included in **Appendix B** of this SPCC plan. Entries into the log will indicate a general description of the changes that were made to the facility, the corresponding changes that were made to the SPCC plan, including plan section and page numbers, and the name and signature of the person making the changes. A new certification page will be signed, sealed and inserted into this plan to complete the amendment process.

Non-technical changes include, but are not limited to, such items as: contact lists, more stringent requirements for stormwater discharges to comply with NPDES rules, phone numbers, product changes if the new product is compatible with conditions in the existing tank and secondary containment materials, and any other changes which do not materially affect the facility's potential to discharge oil. If Williams' personnel are unsure whether the amendment is technical or non-technical, the amendments should be reviewed and certified by a Professional Engineer.

## SECTION 6.0 SPCC PLAN GENERAL REQUIREMENTS: §112.7

This section presents facility-specific details associated with the general requirements for SPCC plans outlined in §112.7. As previously indicated in Sections 1,2 and 3, this SPCC plan has been prepared in accordance with good engineering practice, with management approval at a level with authority to commit the necessary resources for full implementation, and in the sequence of the rule.

### 6.1 General Facility Information

**Name and type of facility:**

The Una Compressor Station is a natural gas compression facility, owned and operated by Williams Production RMT Company. The Una Compressor Station is considered a production facility, as it is upstream of associated custody transfer points to transportation-related systems.

**Location of facility:**

The Una Compressor Station is located in the southwest quarter of the northwest quarter of Section 35 in Township 7 South, Range 96 West in Garfield County, Colorado. See **Figure 1** for additional site location information. The town of Parachute, Colorado, which lies approximately 4.3 miles north-northeast of the facility, is the nearest population center.

**Owner name and address:**

Williams Production RMT Company
1515 Arapahoe, Tower 3, Suite 1000
Denver, Colorado 80202
(303) 573-3900

**Designated personnel accountable for spill prevention:**

Regional/District Contact
Mr. Steve Soychak
District Manager
Williams Production RMT Co.
P.O. Box 370
Parachute, Colorado 81635
(970) 285-9377 office
(970) 216-0922 mobile

SPCC Contact
Mr. Michael Gardner
Senior Environmental Specialist
Williams Production RMT Co.
1058 County Road 215
Parachute, Colorado 81635
(970) 263-2760 office
(970) 640-1855 mobile

Has the facility experienced a reportable oil spill (discharge) event during the past 12 months?

> No, the facility has not experienced a reportable oil spill event during the 12 months preceding the certification date of this SPCC plan.

### 6.2 General Facility Description

The Una Compressor Station is a natural gas compression facility, owned and operated by Williams Production RMT Company. The facility is located in western Colorado, in Garfield County, on private property. The area surrounding the facility is considered multiple-use land and area activities include oil and gas exploration and production. The location of the compressor station is depicted on **Figure 1**. Details of the facility and oil storage areas at the facility are shown on **Figure 2**.

According to U.S. Geological Survey topographic mapping sources (Parachute, Colorado quadrangle), the site lies at an approximate elevation of 5,040 feet above mean sea level, with shallow relief in the immediate vicinity of the site. Information from the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) indicates the soils in the area of the Una Compressor Station are of the Arvada Loam type, which is described as follows:

> *The Arvada series consists of very deep, well drained soils formed in alluvium and colluvium derived from sodic shale. Arvada soils are on alluvial fans, fan remnants, fan terraces and hillslopes. Runoff rates are high or very high and permeability is very slow.*

The Colorado River is located approximately 2,150 feet northwest of the Una Compressor Station. All existing drainages in the vicinity of the facility discharge to the Colorado River. Drainage within the site boundary is governed by surface topography. Downhill slope direction arrows on **Figure 2** indicate the predicted general direction of storm water flow to the south.

The facility consists of metering equipment, dehydration, separation, and processing equipment, above ground storage tanks, and piping systems. Products related to the maintenance and operation of the facility are stored in above ground storage tanks. Natural gas liquids are occasionally taken from the facility via tank truck. The facility operates 24 hours per day and is continuously manned by operations personnel. An inventory of all storage tanks at the facility is provided in Section 6.5. Specific liquids stored at the facility are considered oils, as defined in §112.2, for the purpose of this SPCC plan. The facility is considered a production facility and is hence subject to the specific SPCC requirements of 40 CFR §112.9 for onshore production facilities.

## 6.3 SPCC Plan Conformance and Deviations: §112.7(a)(1) and (2)

This SPCC plan conforms with and does not deviate from the applicable requirements of CFR 40 §112.7, as detailed in the subsequent sections of this SPCC plan. The Una Compressor Station is an onshore production facility and is therefore subject to §112.9.

## 6.4 Facility Layout: §112.7(a)(3)

Oil storage areas at the facility are identified on **Figure 2**. There are no completely buried or bunkered tanks at the facility, or buried pipelines related to the handling of oil as defined by §112.2 of the SPCC regulations, other than lines leading from the separation equipment to storage tanks. Aboveground storage containers and oil-filled equipment applicable to this plan are listed below in Section 6.5

## 6.5 Oil Storage Capacity: §112.7(a)(3)(i)

A summary of the substance, containers and container capacities applicable to this plan is provided in the following table. Although oil-filled equipment are not considered containers as defined by §112.2, the preamble of the SPCC rule (67 FR, 47054-47055) indicates that applicability criteria such as oil storage capacity and potential for a discharge still pertain and the prevention of discharges from such equipment still falls within the scope of the SPCC rule. Consequently, the type of oil and capacity of the oil-filled equipment at the Una Compressor Station are included in the summary.

SPCC-Regulated Storage Containers and Oil-Containing Equipment

| Stored Material | Type of Container/Equipment | Reference ID (See Figure 2) | Storage Capacity (Gallons) |
|---|---|---|---|
| TBD | Above ground storage tank | 1 | 0 |
| TBD | Above ground storage tank | 2 | 0 |
| TBD | Above ground storage tank | 3 | 0 |
| Facility Storage Capacity | | | 0 |

## 6.6 Discharge Prevention Measures: §112.7(a)(3)(ii)

The Una Compressor Station relies on a number of measures to aide in the prevention of a discharge. Descriptions of these measures are provided below.

- Routine maintenance of any oil-containing equipment is performed by trained personnel at the location of the equipment utilizing soaker pads and the available secondary containment structures and/or drip pans as warranted.

- Each storage tank or vessel has a system in place that has been designed and installed in accordance with good engineering practice to prevent discharges. These features may include: adequate containment volume to avoid overfill during normal operations, and; high level sensors and controls to stop liquid flow. All discharge features are inspected at regular intervals.

## 6.7 Discharge or Drainage Controls: §112.7(a)(3)(iii)

The products stored at the Una Compressor Station (natural gas liquids, produced water, and lubricating oil) are noncorrosive materials and are compatible with the materials with which the storage containers and containment structures at the facility are constructed. The containment structures at the facility are, or will be, designed to provide adequate protection against the discharge of oil. Secondary containment is provided for the atmospheric aboveground storage tanks. Secondary containment details are provided in Sections 6.14 and 6.19. Secondary containment deficiencies will be corrected by Williams by July 1, 2009.

Containment capacity calculations and/or specifications are provided in **Appendix D**. Each secondary containment system, including the walls and floor of the respective system, is capable of containing oil and has been constructed so that any discharge from a primary containment system (such as a tank or pipe) will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs.

## 6.8 Countermeasures for Discharge Discovery, Response and Cleanup: §112.7(a)(3)(iv)

As part of routine facility procedures, visual exterior inspections of the oil storage containers and equipment are made several times per week, at a minimum, for signs of deterioration or leaks. Deficiencies noted from these examinations are entered on a check sheet and corrected in a timely manner. Inspection check sheets are kept in a logbook in the facility office. In addition to the regular checks, the oil storage equipment is inspected annually according to the written procedures outlined in Section 6.16 of this plan

In the event of a release, the facility has trained personnel and equipment available to contain and clean up minor volumes of oil. On-site equipment and materials include spill kits, shovels, and sorbent materials (booms, pads, etc.) that may be used to dike, contain and remove minor releases.

In the event of a larger release, specific response procedures have been developed (See **Appendix C**). As part of these procedures, external resources (contractors) have been identified to assist facility personnel. To ensure the commitment of these external resources, Williams Production RMT Company maintains a service agreement with each selected contractor. A list of approved contractors is kept at the facility and at the Williams district office in Parachute, Colorado. At a minimum, contractors identified to assist in a spill response will have the capabilities to provide emergency response, industrial power vacuuming, tank and pipeline cleaning, equipment decontamination, excavation/earthmoving and waste transportation and disposal services.

### 6.9 Recovered Materials Disposal: §112.7(a)(3)(v)

Materials recovered during a spill event will be appropriately containerized or will be remediated on site in accordance with Colorado Oil and Gas Conservation Commission (COGCC) stipulations. Soils and other solids will be placed in 55-gallon drums or roll-off containers, or in other approved containers as warranted. Liquids will be placed in 55-gallon drums or will be collected in a tank truck using industrial power vacuuming. Recovered materials will be labeled, characterized and disposed/recycled in accordance with applicable federal, state and local regulations.

### 6.10 Contact List and Notification Phone Numbers: §112.7(a)(3)(vi)

The contact list for oil spill response activities is provided in **Appendix C**, as part of the Oil Spill Response Procedures developed for the Una Compressor Station.

### 6.11 Reporting and Notification Procedures: §112.7(a)(4)

Reporting and notification requirements are outlined in the Oil Spill Response Procedures provided in **Appendix C**.

### 6.12 Oil Spill Response Procedures: §112.7(a)(5)

Oil Spill Response Procedures for the Una Compressor Station are provided in **Appendix C**.

### 6.13 Discharge Analysis: §112.7(b)

Pursuant to §112.7(b), predictions of the direction, rate of flow, and total quantity of material that could be discharged at the facility, in the event of a breach or failure of the secondary containment structures, are summarized in the table below for oil storage containers or oil-filled equipment.

## Potential Spill Prediction and Control

| Source | Primary Failure Mechanism | Storage Capacity (Gallons) | Discharge Flow Direction | Required Containment Capacity[1] (Gallons) | Current Containment Capacity[2] (Gallons) |
|---|---|---|---|---|---|
| UNA COMPRESSOR STATION | | | | | |
| Storage tank #1 | Leakage, overfilling | 0 | South | 0 | 0 |
| Storage tank #2 | Leakage, overfilling | 0 | South | 0 | 0 |
| Storage tank #3 | Leakage, overfilling | 0 | South | 0 | 0 |

Notes:

1. The indicated capacities are sufficient volumes required to contain the storage capacity of the largest vessel in the specific containment plus at least 2.1 inches of freeboard to accommodate precipitation associated with a 24-hour 25-year storm event. (Source: NOAA Atlas 2)
2. Secondary containment deficiencies exist where the current containment capacity is listed as "0", or where the current containment capacity is less than the required containment capacity.

### 6.14 Spill Containment: §112.7(c)

Oil storage containers at the Una Compressor Station are equipped with secondary containment as noted in this document. Although oil-filled equipment are not considered containers as defined by §112.2, the preamble of the SPCC rule indicates that the requirements of §112.7(c) still apply. Spill containment at the facility is described below:

- Secondary containment is typically provided for the lubricating oil, and condensate above ground storage tanks in the form of earthen dikes or steel-wall containers. Containment for the other oil-filled equipment and vessels and the loading area is provided as described below or in Section 6.19.

- Containment structures are, or will be, configured to contain the storage capacity of the largest tank within the containment area, plus at least 2.1 inches of freeboard to accommodate precipitation associated with a 24-hour 25-year storm event (Source: U.S. Department of Commerce National Oceanic and Atmospheric Administration Atlas 2, Volume II). The containment volume calculations associated with the secondary containment structures are presented in **Appendix D**. Secondary containment deficiencies will be corrected by Williams by July 1, 2009.

### 6.15 Spill Containment Practicability: §112.7(d)

No discussions related to practicability are warranted because this SPCC plan either does not deviate from the requirements of §§112.7(c), 112.7(h)(1), 112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), and 112.14(c), or, where it does deviate, the deviations are not practicability-caused issues.

### 6.16 Inspections, Tests and Records: §112.7(e)

Oil storage containers, oil-filled equipment and related containment structures at the Una Compressor Station are visually examined several times per week, at a minimum, for signs of deterioration or leaks. These inspections are conducted as part of normal facility operations. Deficiencies noted from these examinations are entered on a check sheet and corrected in a timely manner. The equipment is also inspected annually according to the written procedure in **Appendix E**.

Signed and dated records of all inspections and other pertinent information, such as spills, removal and disposal of spill contaminated materials, replacement or repair of equipment, and training are maintained for a minimum of 3 years.

## 6.17 Personnel Training and Discharge Prevention Measures: §112.7(f)

Oil-handling personnel operating the facility are required to have training in the operation and maintenance of equipment to prevent the discharge of oil; discharge procedure protocols; applicable pollution control laws, rules, and regulations; general facility operations; and the contents of the facility SPCC plan. They are under the direct supervision of the Principal Environmental Specialist, who is responsible for establishing performance and duty guidelines and is the designated person accountable for spill prevention at the facility. Regular safety meetings are held to discuss a variety of safety procedures and other pertinent job responsibility criteria. A written record of all training is maintained for 3 years.

At a minimum, training is conducted annually and whenever new spill regulations are promulgated, existing operating systems are modified, personnel responsibilities change, or the SPCC plan is amended. In addition, regular safety meetings will be used as a forum to reinforce understanding of SPCC procedures as necessary. An outline of the topics to be covered during SPCC training is presented in **Appendix F**. Attendance rosters and other training records will be maintained in the main office at the facility for a period of no less than three years.

## 6.18 Security: §112.7(g)

The Una Compressor Station is a remote facility and is typically not subject to trespass or vandalism. General security is controlled by operations personnel during regular duties. Flow valves are generally kept locked or sealed to preclude tampering. The lighting at the facility is adequate for nighttime operations and appropriate for this type of facility.

When a pipe that has potential for re-use is not in service, or it is in a standby service for an extended period of time, any associated valves are kept closed and locked and lines are sealed appropriately and marked as to their tie-in connection.

## 6.19 Facility Tank Car and Tank Truck Loading/Unloading: §112.7(h)

The Una Compressor Station does not have tank car or tank truck unloading racks. Secondary containment for truck loading/unloading areas is discussed in Sections 6.6 and 6.7.

Proper loading procedures will be followed and wheel chocks used by tank truck drivers to prevent vehicles from departing or moving before completed disconnection of flexible or fixed oil transfer lines. All tank truck drivers are required to comply with DOT regulations in 49 CFR Part 177 and facility standard operating procedures. All drivers must be authorized and/or certified by Williams Production RMT Company.

When possible, Williams operations personnel will remain with any delivery truck during filling operations to monitor the transfer; inspect outlets, connections and valves on the delivery tank truck before and after oil-filling operations; and make adjustments as necessary. The driver or an operations personnel member visually inspects all tank trucks before leaving the loading/unloading areas. The lowermost drain and all outlets of transport vehicles shall be inspected and, if necessary, make certain that they are tightened, adjusted, or replaced to prevent liquid discharge while in transit.

## 6.20 Brittle Fracture Analysis: §112.7(i)

The Una Compressor Station has no field-constructed aboveground oil-storage containers that apply to this plan and therefore this section of the regulation is not applicable.

## 6.21 Applicable Requirements: §112.7(j)

Sections 6 and 8 of this plan provide detailed discussions of conformance with the applicable requirements and other effective discharge prevention used at the facility.

# SECTION 7.0 REQUIREMENTS FOR ONSHORE (NON-PRODUCTION) FACILITIES: §112.8

The Una Compressor Station is not an onshore non-production facility. Consequently, the provisions in §112.8 do not apply.

# SECTION 8.0 REQUIREMENTS FOR ONSHORE OIL PRODUCTION FACILITIES: §112.9

## 8.1 Oil Production Facility Drainage: §112.9(b)

Precipitation that may accumulate in any contained area is normally allowed to evaporate. No automatic pumps or ejector devices are present in any of the containment areas. If removal of any water accumulated in the containment areas is necessary, it will be conducted under the direct supervision of responsible personnel as described in this section.

Accumulated precipitation is removed, when necessary, from secondary containment areas using a vacuum truck, pump, or other appropriate method. Removed water is disposed of in accordance with applicable local, state, and federal regulations. Prior to removal of the water from any containment area, the responsible personnel visually inspect the water in the containment structure and note the appearance of the water in the facility logs. The name of the person draining the containment, as well as the date, time, and approximate quantity of water removed will also be recorded in the facility logs and kept on file with the SPCC documents for a period of at least three years. A secondary containment drainage log is included in **Appendix E**.

The drain systems at the Una Compressor Station are of the 'enclosed' type. All process effluents are routed through drain lines to storage tanks. No process effluents, untreated or treated, are released off-site.

All field drainage systems (such as drainage ditches or road ditches) in the vicinity of the facility are inspected at regular intervals for the presence of accumulated oil that may have resulted from a small discharge. Any accumulated oil will be removed from these areas promptly upon discovery.

## 8.2 Oil Production Facility Bulk Storage Containers: §112.9(c)

The products stored at the Una Compressor Station are compatible with the materials with which the storage containers and containment structures at the facility are constructed. Secondary containment is provided for several of the atmospheric above ground storage tanks. Specific secondary containment details are presented in Sections 6.14 and 6.19.

Oil storage containers at the Una Compressor Station are equipped with secondary containment as noted in this document. Although oil-filled equipment are not considered containers as defined by §112.2, the preamble of the SPCC rule indicates that the requirements of §112.7(c) still apply. Spill containment at the facility is described in Section 6.14 and **Appendix D**.

Certain secondary containment structures at the facility are constructed with native soils or road construction-grade fill material. The composition of the native soil is considered sufficiently impervious to contain spilled oil until cleanup operations can commence.

Oil storage containers, oil-filled equipment and related containment structures at the Una Compressor Station are visually examined several times per week, at a minimum, for signs of deterioration or leaks. These inspections are conducted as part of normal facility operations. Deficiencies noted from these examinations are entered on a check sheet and corrected in a timely manner. The equipment is also inspected annually according to the written procedure in **Appendix E**.

Each storage tank or vessel at the Una Compressor Station has a system in place that has been designed and installed in accordance with good engineering practice to prevent discharges. These features may include adequate container volume to avoid overfill and high-level sensors and controls to stop liquid flow. All discharge prevention features are inspected at regular intervals.

### 8.3 Facility Transfer Operations, Oil Production Facility: §112.9(d)

All above ground valves and pipelines are routinely inspected for the general condition of flange joints, valve glands and bodies, drip pans, pipe supports, and other appurtenances. Integrity or leak testing is also performed at the time of any installation, modification, construction, relocation, or replacement of buried piping.

The following procedures and protocols are in place to maintain all flow lines in order to prevent discharges from flow lines:

- All buried piping at the facility is protected by coating or wrapping. Any buried equipment will be visually inspected for corrosion whenever exposed through excavation. Further inspection and repair will be conducted on the affected metal equipment if problems are identified to minimize the chance for a discharge from facility transfer equipment.
- When a pipe that has potential for re-use is not in service, or it is in a standby service for an extended period of time, any associated valves are kept closed and locked and lines are sealed appropriately and marked as to their tie-in connection.
- All pipe supports at the facility are designed to minimize abrasion and corrosion and to allow for expansion and contraction. Pipe supports are routinely inspected as part of the general facility inspections described in this SPCC plan.

## SECTION 9.0 REQUIREMENTS FOR ONSHORE OIL DRILLING AND WORK OVER FACILITIES: §112.10

The Una Compressor Station is not an onshore oil drilling or work over facility. Consequently, the provisions in §112.10 do not apply.

## SECTION 10.0 REQUIREMENTS FOR OFFSHORE OIL DRILLING, PRODUCTION AND WORK OVER FACILITIES: §112.11

The Una Compressor Station is not an offshore oil drilling, production or work over facility. Consequently, the provisions in §112.11 do not apply.

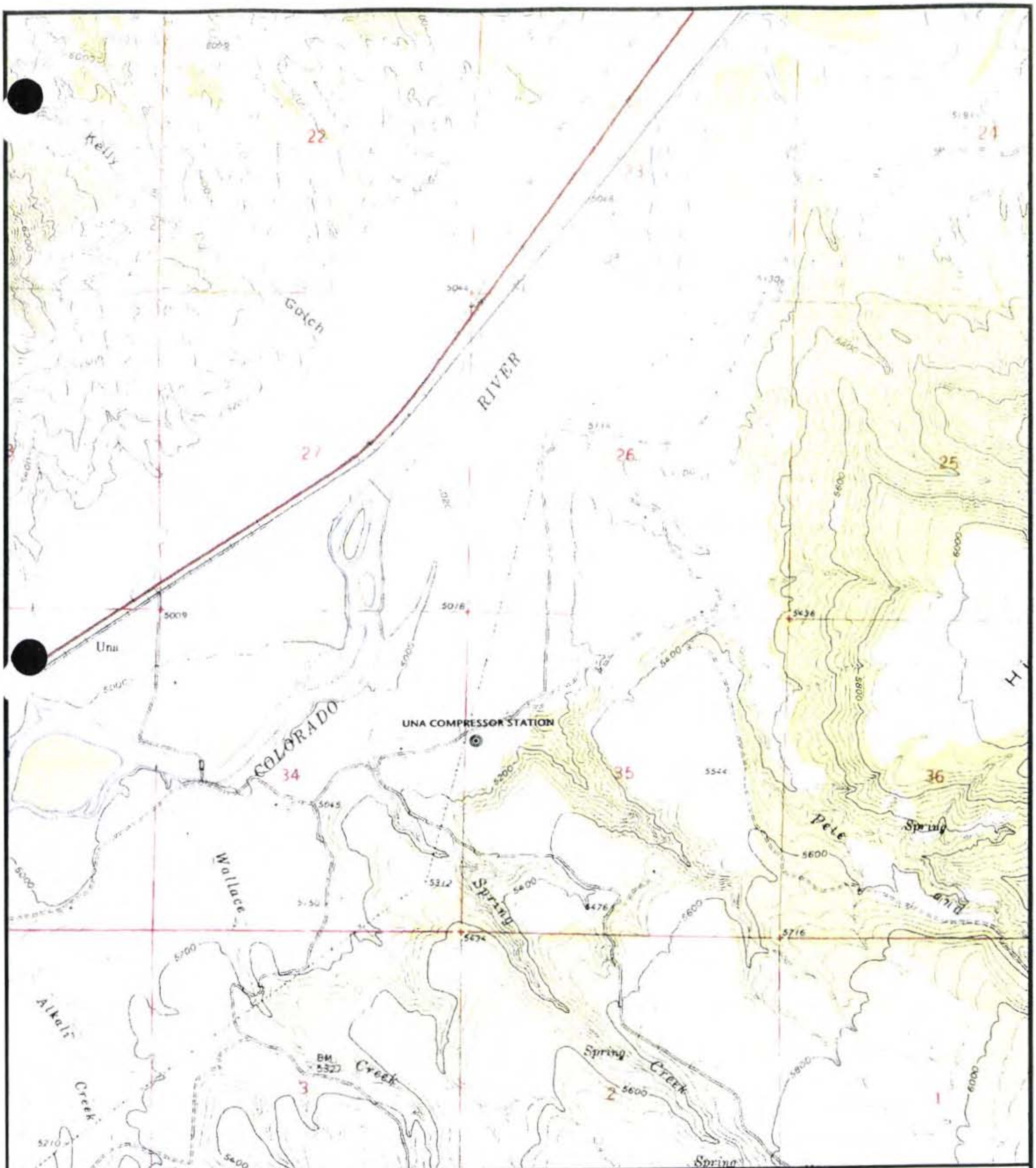


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FIGURE 1
SITE LOCATION MAP
WILLIAMS PRODUCTION RMT CO.
UNA COMPRESSOR STATION
GARFIELD COUNTY, COLORADO

| | |
|---|---|
| REVISION DATE: | 3/3/08 |
| REVISION NUMBER: | 000 |
| DRAWN BY: | DMP |
| APPROVED BY: | DMP |
| PROJECT # EG08073 | |
| SCALE: 1:24,000 | |

CORDILLERAN

MAP SOURCE: 7.5 MINUTE U.S.G.S. TOPOGRAPHIC MAPS
(PARACHUTE QUADRANGLE)
SITE LEGAL LOCATION: SW, NW, SECTION 35, T7S, R96W

# Appendix A

## Certification of the Applicability of the Substantial Harm Criteria

# Certification of the Applicability of the Substantial Harm Criteria

Facility Name: Una Compressor Station

Facility Location: The Una Compressor Station is located in the southwest quarter of the northwest quarter of Section 35 Township 7 South, Range 96 West in Garfield County, Colorado. See **Figure 1** for detailed location information.

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   YES________ NO __X__

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

   YES________ NO __X__

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix {Appendix C to 40 CFR 112} or a comparable formula[1]) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA"s "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" and the applicable Area Contingency Plan.

   YES________ NO __X__

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix {Appendix C to 40 CFR 112} or a comparable formula[1]) such that a discharge from the facility would shut down a public drinking water intake[2]?

   YES________ NO __X__

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

   YES________ NO __X__

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

____________________________ ____________________________

Signature Title

____________________________ ____________________________

Name (please type or print) Date

[1] If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

[2] For the purposes of 40 CFR part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

Appendix B

SPCC Plan Review/Amendment Documentation

## SPCC Plan Review Documentation

In accordance with §112.5(b), this SPCC plan been reviewed to determine if more effective prevention and control technology is available to significantly reduce the likelihood of a discharge.

Pursuant to §112.5(b) and by means of this certification, I attest that I have completed a review and evaluation of this SPCC plan for Williams, and as a result

_____Will

_____Will Not

amend the plan. A Professional Engineer has reviewed technical amendments to the plan and certified the revised document.

______________________________ ______________________________

Signature, Authorized Facility Representative Date

______________________________

Name (Printed)

______________________________

Title

# Five-Year Review Documentation

Original Date of Plan: March 2008

In an effort to document the five-year review process, the facility manager or his representative shall complete the information below:

| Review Dates | Representative Or designee Name and Title | Signature | Plan Amended (Yes or No) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
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## SPCC Plan Amendment Log

| Date of Amendment | General Description of Change Made | Page Numbers of Changes Made | Name of Certifying PE | Name of Management Reviewer |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# Appendix C

## Oil Spill Response Procedures

# Oil Spill Response Procedures

FACILITY NAME: UNA COMPRESSOR STATION

FACILITY ADDRESS: SW NW, SECTION 35 IN TOWNSHIP 7 SOUTH, RANGE 96 WEST IN GARFIELD COUNTY, COLORADO.

NEAR PARACHUTE, COLORADO

REFERENCE: SECTION 6.12 OF SPCC PLAN

WRITTEN PROCEDURES APPROVED BY:

Signature

Title

Name (please type or print)

Date

# Oil Spill Response Procedures

## 1. Response Management Structure

The Spill Coordinator and Alternate Spill Coordinator(s) are responsible for implementing response procedures in the event of an oil spill or discharge emergency. These personnel have the authority to commit the resources necessary to carry out a response. However, all operating personnel at the Una Compressor Station receive training to familiarize themselves with all aspects of the SPCC Plan, facility operations, the location and characteristics of materials handled at the facility, and the location of all records within the facility; and are responsible for proper implementation of response procedures should the Spill Coordinator or Alternate Spill Coordinator(s) be unavailable.

## 2. Initial Response

Releases at the Una Compressor Station will be discovered through observations made during the course of normal work activities, inspections of work areas and equipment, monitoring devices, or by chance. Discovering a release is the first step in initiating a response. Upon discovery, the individual discovering a release should immediately upon discovery:

1. Assess the basic situation.
2. Stop the source of the release if safely possible using available resources (including spill kits).
3. Restrict ignition sources if the material is flammable.
4. Secure the area as off limits.
5. In the event that the incident poses an immediate threat of fire, explosion, or other impact to safety, health, or the environment, contact the local fire department at 911. DO NOT HANG UP after completing the report, let the dispatcher hang up first.
6. Report the release to the Spill Coordinator or an Alternate Spill Coordinator (see attached Oil Spill Incident Notification Phone Numbers).
7. The Spill Coordinator (or alternate) will determine whether the spill incident warrants evacuation of the facility. If so, the procedures outlined in the facility Emergency Action Plan will be followed.
8. The Spill Coordinator (or alternate) will determine whether the spill incident constitutes a discharge as defined in §112.1(b) of the SPCC regulations (see Section 3, below) and will notify appropriate federal, state, and local agencies of the spill/release incident if warranted.
9. If the spill involves a minor volume of oil, it can be cleaned up by facility personnel provided that 1) they are OSHA trained and have received their current refresher training; 2) appropriate material safety data sheets (MSDS sheets) are available for the material spilled; and 3) appropriate personal protective equipment (PPE) is available.

10. If the spill involves a significant volume of oil, or any of the three criteria listed in (9) above are not met, it should be cleaned up by a properly certified outside contractor (see attached Oil Spill Incident Notification Phone Numbers).

## 3. Oil Spill Emergency Reporting

If the release constitutes a *discharge* as defined in §112.1(b) of the SPCC regulations, it will be considered an Oil Spill Emergency. **A release of oil is considered a *discharge* under this Plan only if: the release is into or upon the navigable waters of the United States, adjoining shorelines, or waters contiguous with navigable waters of the United States.** This is apparent if a release impacts surface water quality by causing a film, sheen, or discoloration of the water surface, or upon water or adjoining shorelines, or causes a sludge or emulsion to be deposited beneath the surface of the adjoining shorelines. Impacts to groundwater also apply if the groundwater is contiguous with navigable waters of the United States (i.e., groundwater discharges to/contributes to the total volume of a surface water body that is itself contiguous with navigable waters of the United States).

In summary, if a release directly affects surface water or groundwater at the facility, it must be considered an Oil Spill Emergency. Federal and local authorities to be notified in the event of an Oil Spill Emergency are outlined below.

### State of Colorado

In Colorado, condensate and E&P wastes are to be reported within 24 hours if the spill has entered waters of the state (any surface or groundwater) or entered navigable waters (any surface water) in sufficient quantities to cause a sheen on the water or stain on the shore. Spills less than 5 barrels which can be immediately contained and cleaned up do not need to be reported. Spills greater than 20 barrels must be reported with 24 hours.

All spills and releases of exploration and production waste or produced fluid exceeding five barrels, including those contained within unlined berms, shall be reported in writing on the Colorado Oil and Gas Conservation Commission (COGCC) Spill/Release Report Form 19 within 10 days of discovery of the spill. In addition, spills or releases that exceed twenty barrels of exploration and production waste or produced fluid shall be verbally reported to the COGCC within 24 hours of discovery. Spills or releases of any size that impact or threaten to impact any waters of the state, residence or occupied structure, livestock or public byway, shall be verbally reported to the COGCC as soon as practicable after discovery. See COGCC Rule 906 for more information. If the spill may reach waters of the State (which include surface water, ground water and dry gullies or storm sewers leading to surface water), it must also be reported immediately to the Colorado Department of Public Health and Environment.

Refined petroleum releases must be reported if they have entered navigable waters or if the quantity release exceeds 25 gallons.

Spills of hazardous materials must be reported if they impact navigable waters or their volume exceeds the reportable quantities in Table E1.

In general, verbal or telephone reports are to be made within 24 hours. The District Manager or Environmental Manager will notify regulatory agencies as appropriate. As a practical matter, an evaluation of the specifics of each spill and a determination of reporting requirements will be made. If there is any question about reporting requirements, Williams will over-report rather than under-report.

Written, follow up reports are to be sent within 10 days to:

- Colorado Oil and Gas Conservation Commission
  1120 Lincoln # 801
  Denver, Colorado 80203
  (Use COGCC Spill/Release Form)
- Bureau of Land Management - File an "Undesirable Event Form" with:
  Glenwood Springs Resource Area Office
  50629 Highways 6 and 24
  P.O. Box 1009
  Glenwood Springs, CO 81602

If the Local Emergency Planning Commission (LEPC) was notified of the spill (in the event of a hazardous substance release) a report should also be sent to:

Dale Hancock
Garfield County LEPC
109 8th Street, Suite 300
Glenwood Springs, Colorado 81601

## United States Environmental Protection Agency (EPA)

An oil spill is reportable to the EPA if any of the following criteria are met:

A) Is the spill to navigable waters or adjoining shorelines?
B) Could Water Quality Standards be violated?
C) Could the spill cause a film, "sheen", or discoloration?
D) Could the spill cause a sludge or emulsion?
E) Do any of the reporting exemptions apply?
Exemptions include 1) Properly functioning vessel engines not deemed harmful, 2) Research and Development Releases (approved on a case by case basis), 3) NPDES Permitted Releases, and 4) Discharges Permitted Under the International Convention for the Prevention of Pollution from Ships (MARPOL)

If the answer to any question A through D above is "yes" and none of the exemptions apply then the release is reportable to the EPA.
To report an oil spill or hazardous substance release, call

- **the National Response Center: (800) 424-8802**

For information on EPA's Oil Spill Program, call the Oil Spill Program Information Line at (800) 424-9346.

- Region 8 EPA (CO, MT, ND, SD, UT, WY)
  999 18th Street, Suite 500
  Denver, Colorado 80202-2466
  Telephone: (303) 312-6312
  Fax: (303) 312-6339
  Toll Free: (800) 227-8917
  http://www.epa.gov./region08/
  email: r8eisc@epa.gov

## 4. Follow-up Activities

After the initial response, reporting, and notification associated with a spill incident, the Spill Coordinator (or alternate) will prepare a written report which includes following:

1. Time and date of the incident;
2. Source and exact location of the spill;
3. Material involved;
4. Cause of the incident;
5. Estimated spill volume;
6. Names of any waterways involved;
7. Description of all media impacted by the spill;
8. Description of damages or injuries caused by the spill;
9. Actions taken to stop, remove, and mitigate the effects of the material spilled
10. Names of individuals and organizations contacted (time, day, who received call, who called from Williams, and pertinent notes).
11. Who reported to the scene from Federal, State, and Local agencies (time, day, etc).

In addition, whenever more than 1,000-gallons of oil are discharged in a single incident or more than 42-gallons of oil have been discharged in each of two incidents over a 12-month period, Willliams will submit a report to the United States Environmental Protection Agency (USEPA) Regional Administrator (RA) as outlined in Section 5.2 of the SPCC Plan.

## 5. Sustained Actions

Where prolonged mitigation and recovery actions are required in response to a spill or release, the Spill Coordinator (or alternate) will manage the activities with any or all of the following, as warranted:

1. An outside contractor.
2. An environmental/engineering consultant.
3. Any outside vendor responsible for the incident.
4. The appropriate local, state, and federal agencies.

Most release incidents at the Una Compressor Station are expected to be handled without implementing sustained actions.

## Oil Spill Response Procedures

## Notification Phone Numbers

---

| | | |
|---|---|---|
| EPA 24-Hour Spill Notification Number | | 303.293.1788 |
| Department of Transportation National Response Center | | 800.424.8802 |
| Colorado Department of Public Health & Environment (CDPHE) | | 303.692.3033 |
| CDPHE 24-Hour Spill Hotline | | 877.518.5608 |
| Colorado Oil & Gas Conservation Commission (COGCC) | | 303.894.2100 |
| COGCC 24-Hour Hotline | | 303.860.1435 |
| Colorado Division of Labor, Oil Inspection Section | | 303.620.4300 |
| Colorado PUC Safety and Enforcement Section | | 800.888.0170 |
| Colorado State Patrol Hazmat Service | | 970.242.7283 |
| Hospitals (St. Mary's Hospital – Grand Junction) | | 970.244.2273 |
| (Clagett Memorial – Rifle) | | 970.625.1510 |
| *Garfield County Sheriff | | 970.625.1899 |
| *Rifle Fire Protection District | | 970.625.1220 |
| Parachute Fire Department | | 970.285.7630 |
| U.S. Dept. of Interior, Bureau of Land Management, White River District Office | | 970.244.3000 |
| Williams Production RMT Company Corporate Office | | 303.573.3900 |
| Williams Production RMT Company Parachute Field Office | | 970.285.9377 |
| Steven Soychak, District Manager | Office: | 970.285.9377 |
| | Mobile: | 970.216.0922 |
| Brad Moss, Production & Pipeline Superintendent | Office: | 970.285.9377 |
| | Mobile: | 970.250.3683 |
| Dave Cesark, Principal Environmental Specialist | Office: | 970.683.2281 |
| | Mobile: | 970.260.8309 |
| Rob Bleil, Senior Regulatory Specialist | Office: | 970.263.2704 |
| | Mobile: | 970.210.2050 |
| Michael Gardner, Senior Environmental Specialist | Office: | 970.263.2760 |
| | Mobile: | 970.640.1855 |

* = this is a non-emergency number. Emergency calls should dial 911.

Spill/Release Information Form
Una Compressor Station

Exact name, address, and location of the facility: | Date and time of the discharge:

Name, title and phone number of the person reporting the spill, the responsible party and the contact person:

Source of the discharge:

Type or description of material discharged:

Estimated total quantity of the discharge: | Estimated total quantity discharged as described in §112.1(b):

Names of individuals and/or organizations that have been contacted:

Bodies of water involved, the extent of actual and potential pollution or threat to surface water:

A chronology of all occurred events including: a complete description of circumstances causing the release or spill, actions taken and explanations:

A description of all impacted media:

An description of all damages or injuries caused by the discharge:

Actions being used to stop, remove, or mitigate the effects of the discharge, including disposal and treatment:

Other appropriate information for the particular spill or release:

# Appendix D

## Secondary Containment Information

## SECONDARY CONTAINMENT CAPACITY CALCULATIONS
## UNA COMPRESSOR STATION
## WILLIAMS PRODUTION RMT COMPANY

| | | | | CURRENT CONTAINMENT DIMENSIONS | | | | | Overall Secondary Containment Capacity (T) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Tank Contents/Description | Tank Volume (BBL) | Containment Number | Top Width (W1) (FT) | Bottom Width (W2) (FT) | Top Length (L1) (FT) | Bottom Length (L2) (FT) | Minimum Height (H) (FT) | ($FT^3$) | (GAL) | (BBL) | (%) |
| 1 | TBD | 0 | 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 00 | 0 | #DIV/0! |
| 2 | TBD | 0 | 2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 00 | 0 | #DIV/0! |
| 3 | TBD | 0 | 3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 00 | 0 | #DIV/0! |
| 4 | TBD | 0 | 4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 00 | 0 | #DIV/0! |

Calculation to compensate for multiple tanks and precipitation in containment #1.

| Tank dimensions | | | Displaced Containment Volume | |
|---|---|---|---|---|
| Tank Description/Contents | Largest Volume (BBL) | Diameter (FT) | (GAL) | (BBL) |
| TBD | 0 | 0 | 00 | 00 |
| Total displaced volume due to multiple tanks. | | | 0 | 0 |
| Total displaced volume due to 2.1" rainfall. | | | 0 | 0 |
| Capacity of containment less displaced volumes. | | | 0 | 0 |

Notes:

Total Containment Capacity (T) = (H/3)x[(W1xL1)+(W2xL2)+SQRT(W1xL1xW2xL2)]

W1 = Containment width at top.

W2 = Containment width at bottom.

L1 = Containment length at top.

L2 = Containment length at bottom.

H = Containment Height

BBL = Barrel(s)

GAL = Gallon(s)

$FT^3$ = Cubic Feet

FT = Feet

1 $FT^3$ = 7.481 Gallons

1 Barrel = 42 Gallons

1 Barrel = 5.6 Cubic Feet

# Appendix E

# Inspection Procedures and Records

# Inspection Procedures and Records

FACILITY NAME: UNA COMPRESSOR STATION

FACILITY ADDRESS: SW NW, SECTION 35 IN TOWNSHIP 7 SOUTH, RANGE 96 WEST IN GARFIELD COUNTY, COLORADO.

NEAR PARACHUTE, COLORADO

REFERENCE: SECTION 6.16 OF SPCC PLAN

WRITTEN PROCEDURES APPROVED BY:

Signature ______________________ Title ______________________

Name (please type or print) ______________________ Date ______________________

# Inspection Procedures and Records

## 1. Responsibilities

These procedures establish the requirements for periodic inspections and tests for the oil storage vessels and oil-filled equipment listed at the Una Compressor Station, to minimize the risk of a spill incident. The Principal Environmental Specialist is responsible for the implementation of these procedures. Specifically, the Principal Environmental Specialist is responsible for:

- Conducting the inspections;
- Producing documentation for deficiencies found during the inspections; and
- Making certain that remediation or repair work is properly prioritized and completed in a timely manner.

The Principal Environmental Specialist may designate another personnel member to complete the inspections. Designated personnel will have the authority to commit the resources necessary to carry out a response, if warranted. Operating personnel and tank truck staff working at the Una Compressor Station receive training to familiarize themselves with all aspects of the SPCC Plan, facility operations, the location and characteristics of materials handled at the facility, and the location of pertinent records within the facility.

## 2. Procedures

The Principal Environmental Specialist (or designee) will conduct annual visual deficiency inspection of the oil storage vessels and oil-filled equipment identified in Section 6.5 of the SPCC Plan. The inspections will be documented using the attached inspection forms. The annual inspection includes a visual examination of exterior surfaces for leaks and other deficiencies of the vessel, supports, connected piping and valves and secondary containment. It also includes visual inspection and monitoring of any leak detection system or other monitoring or warning systems (e.g., level indication/alarm or interstitial space monitoring). If any inspection reveals a leak or equipment deficiency outside of normal operating conditions, corrective action must be taken promptly to eliminate the leak or deficiency. Deficiencies noted during the inspection are recorded as a work order. The inspector will complete the following:

1. Visually inspect exterior surfaces of storage vessels and oil-filled equipment, along with associated pipes, valves and other appurtenances and identify any leaks, cracks, area of wear, external wall thinning, swelling, excessive corrosion or mechanical deficiency.
2. Visually inspect vessel/equipment supports and containment structures for excessive settlement, apparent structural weakness, cracks or other deficiency that would allow the secondary containment to leak.

3. Inspect and monitor existing leak detection systems (for example, observation ports on double-bottom tanks), cathodic protection equipment and other warning systems such as alarms and level gauges.

If, during the annual inspection, the inspector observes a spill of oil from any of the equipment the inspector shall immediately initiate the oil spill response procedures outlined in **Appendix C** of this SPCC Plan.

## Inspection Procedures and Records
## Secondary Containment Drainage Log

| Date and Time of Drainage | Containment Area Drained (ID# or description) | Appearance (visual, odor, etc.) Note: Do not discharge water containing any contaminant and/or free oil or an oil sheen. | Approximate Quantity Removed (Gals) | Method of Removal and Disposal |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# Appendix F

## Training Procedures and Records

## Training Procedures and Records
## Spill Prevention Training Outline

FACILITY NAME: UNA COMPRESSOR STATION

FACILITY ADDRESS: SW NW, SECTION 35 IN TOWNSHIP 7 SOUTH, RANGE 96 WEST IN GARFIELD COUNTY, COLORADO.

NEAR PARACHUTE, COLORADO

REFERENCE: SECTION 6.17 OF SPCC PLAN

WRITTEN PROCEDURES APPROVED BY:

Signature ______________________ Title ______________________

Name (please type or print) ______________________ Date ______________________

## Training Procedures and Records
## Topics to be Covered in SPCC Training

1. Introduction/Training Roster

2. Facility Layout

3. General Facility Operations

4. Location of Oil Storage Areas
   a. Above Ground Storage Tanks
   b. Compressors/Separators/Scrubbers
   c. Lubricating Oil Containers

5. Facility SPCC Plan
   a. Physical Location of Plan
   b. Introduce/Review Contents of SPCC Plan
      i. General SPCC Requirements (§112.7)
      ii. Specific Requirements for Onshore Production Facilities (§112.9)

6. Operation of Oil-Filled Equipment and Containment Equipment
   a. Above Ground Storage Tanks
      i. Fill Procedures
   b. Compressors/Separators/Scrubbers
      i. Maintenance Procedures
   c. Lubricating Oil Containers
      i. Handling Procedures

7. Oil Spill/Discharge Response Procedures
   a. Appendix C of SPCC Plan

8. Known Oil Spill/Discharge Incidents at Facility in Past 12 Months

9. Applicable Rules and Regulations
   a. Federal Regulations
      i. 40 CFR 110: Discharge of Oil
      ii. 40 CFR 112: Oil Pollution Prevention
   b. State Regulations (CDPHE)
   c. Local (Garfield County LEPC)

Training Procedures and Records
Oil Discharge Prevention Briefings (Training) Roster

| INSTRUCTOR: | DATE: |
|---|---|

| EMPLOYEE | TITLE | SIGNATURE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Williams.
EXPLORATION & PRODUCTION
Tower 3, Suite 1000
1515 Arapahoe Street
Denver, CO 80202
303/572-3900
303/629-8282 fax

December 07, 2007

Mr. Roland Hea
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Re: **Portable Engine Permit Applications**
**BarGath, Inc.**
**Garfield County, Colorado**

Dear Mr. Hea:

BarGath, Inc. (BarGath) is submitting five portable permit applications to operate natural gas fired compressor engines and associated equipment at different locations in the Piceance Basin. The home base location of each of the portable units will be BarGath's Parachute office, located in the SW ¼ SW ¼ of Sec. 1, T7S, R96W. At this point, BarGath is unable to determine an initial operating location for each unit. With this submittal, BarGath would like to be able to operate up to five (5) portable engines on an as needed basis and requests that five separate permits are issued, one for each of the enclosed permit applications. This would provide much needed flexibility given the inherent variability of the demand for engines and additional compression at BarGath facilities. A completed Construction Permit Application form and two APENs are included with each portable permit application in each respective Appendix.

**Facility-Wide Sources and Emissions**

Internal Combustion Engines
BarGath is requesting to permit five (5) portable compressor engines to be used as needed at BarGath operating facilities in the Piceance Basin (IDs: PORTABLE ENG-01, PORTABLE ENG-02, PORTABLE ENG-03, PORTABLE ENG-04, and PORTABLE ENG-05). Each engine will be a Caterpillar G3516 TALE equipped with emissions control equipment. These units are rated at 1,340 hp and BarGath proposes to site-rate these units at 1,340 hp as well, despite that they will operate at over 5000' base elevation. Each engine will be equipped with an SCO control system and will operate with $NO_x$, CO, and VOC emission factors of 1.7 g/hp-hr, 0.5 g/hp-hr, and 0.5 g/hp-hr, respectively for controlled Caterpillar 3516 TALE engines. Thus, BarGath would like to permit each portable compressor unit with a potential to emit of up to 22.0 tpy $NO_x$ 6.5 tpy CO and 6.5 tpy VOC, respectively.

Condensate Storage Tanks
BarGath would also like to permit a 300-bbl condensate storage tank (ID: TANK) to be moved as needed with each portable compressor engine. Emission estimates are based on a conservative condensate production rate of up to 10 bbl/day. Using E&P TANKS 2.0 and a representative pressurized condensate sample from the Wasatch Compressor Station, estimated potential NMNE VOC emissions from each portable tank are up to 3.6 tpy. A copy of the E&P TANK 2.0 output is provided in each respective Appendix.

Loadout
Condensate liquids from each portable tank will be periodically loaded out into trucks and hauled off-site. Given an estimated condensate liquids collection rate of 10 bpd and using the USEPA loadout equation to estimate VOC emissions, VOCs from loading out these tanks will be well below the APEN reporting limit of 2 tpy, with estimated annual NMNE VOCs of 0.2 tpy .

Maintenance Blowdowns
BarGath calculated potential emissions from routine maintenance compressor blowdowns for each portable unit by conservatively assuming up to 4 blowdowns per month for each portable unit, yielding 48 blowdown events per year with up to 7.5 Mscf of gas vented per blowdown. These calculations indicate that maintenance blowdowns will be below APEN thresholds, with estimated NMNE VOCs of 0.56 tpy.

Fugitive VOC from Leaking Equipment
BarGath used estimated component counts and a representative inlet gas analysis assuming up to 10% NMNE VOC, in conjunction with US EPA Oil and Gas Production Operations emission factors, to estimate fugitive emissions. The calculated fugitive VOC emissions from the equipment associated with the requested portable permits are below APEN thresholds, with estimated VOCs of 1.1 tpy.

**Total Facility-Wide Potential Emissions**

Potential emissions from all sources to be included in each requested portable permit and all sources exempt from permitting at each site are 22.0 tpy $NO_x$, 6.5 tpy CO, and 11.9 tpy VOC. Potential emissions of regulated non-criteria pollutants (HAP) from each portable site are estimated at 1.8 tpy aggregate, with formaldehyde being the highest single HAP with a potential to emit of 1.2 tpy.

We request that the Division invoice BarGath, Inc. for all APEN fees and associated application review fees. If you have any questions related to this submittal or if you require additional information please call me at 303-606-4246.

Sincerely
***BarGath, Inc.***
Dirk L. Wold
Dirk Wold
Principal Air Quality Specialist

## ATTACHMENT 1

PORTABLE ENG-01 **Permit Application**
**Completed APENs**
**Emission Calculations**

## Air Pollution Control Division Construction Permit Application

*PLEASE READ INSTRUCTIONS ON REVERSE SIDE.*

1. Permit to be issued to: BarGath, Inc.
2. Mailing Address: 1515 Arapahoe St., Tower 3, Suite 1000
   Denver, Colorado 80202
3. General Nature of Business: Exploration and Production of Natural Gas
   SIC code (if known) 1311
4. Air Pollution Source Description: Natural Gas Gathering
   (List permit numbers if existing source, attach additional pages if needed)
   Is this a Portable Unit? YES
5. Source Location Address (Include Location Map) If portable, include the initial location and home base location
   **BarGath PORTABLE ENG-01**
   **SW ¼ SW ¼ Sec. 1, T7S, R96W, Garfield County, Colorado (Home Base location)**
   Initial location to be determined
6. Reason for Application: (Check all that apply)

☒ New or Previously Unreported Source
☐ Modification of Existing Source
☐ Request for Synthetic Minor Permit
☒ Other: Portable Permit to be used as needed

*Administrative Permit Amendments*
☐ Transfer of Ownership (Complete Section 9 & 10 below)
☐ Company Name Change (Complete Section 9 below)
☐ Other:

7. Projected Startup Date: February 2008

Dirk L. Wold — 12-07-2007

Signature of Legally Authorized Person of Company listed in Section 1 — Date Signed

Mr. Dirk Wold - Principal Air Quality Specialist — Phone: (303)-606-4246

Type or Print Name and Official Title of Person Signing Above — Fax: (303) 629-8285

8. Check appropriate box if you want:
   ☐ Copy of preliminary analysis conducted by Division
   ☒ To review a draft of the permit prior to issuance

***These sections are to be completed only if a company name change or transfer of ownership has occurred.***

9. Permit previously issued to:
10. Transfer of Ownership Information
    Effective Date of Permit Transfer:

As responsible party for the emission source(s) listed above, I certify that the business associated with this source has been sold, and agree to transfer the permit to said party.

Signature of Legally Authorized Person of Company listed in Section 9 — Date Signed

Phone:

Type or Print Name and Official Title of Person Signing Above — Fax:

Mail completed application, APENs, and filing fee to:

Colorado Department of Public Health and Environment
Air Pollution Control Division
4300 Cherry Creek Drive South, APCD-SS-B1
Denver, Colorado 80246-1530

http://www.cdphe.state.co.us/ap/stationary.asp
Phone: (303) 692-3150

Revised August 2004

## AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit - Internal Combustion Engine -

**Permit Number:** ____________ **Emission Source AIRS ID:** ____ / ____ / ____

(Leave Permit Number and AIRS ID blank if this is a newly reported source. Provide this information if emission source previously reported.)

### Section 01 – Administrative Information

| | | | |
|---|---|---|---|
| Company Name: | BarGath, Inc. | SIC Code: | 1311 |
| Source Name: | BarGath PORTABLE ENG-01 | | |
| Source Location: | To Be Determined | County: | Garfield |
| | | Elevation: | 5,300 Feet |
| Portable Source Home Base: | BarGath Parachute Office | | |
| | SWSW Section 1, T7S, R96W | | |
| Mailing Address: | 1515 Arapahoe St. Tower 3, Suite 1000 | ZIP Code: | 80202 |
| | Denver, CO | | |
| Person To Contact: | Mr. Dirk Wold | Phone Number: | 303-606-4246 |
| E-mail Address: | dirk.wold@williams.com | Fax Number: | 303-629-8285 |

### Section 02 – Requested Action (Check Applicable Request Boxes)

- ☒ Request for New Permit or Newly Reported Emission Source
- ☒ Request Portable Source Permit
- ☐ Request Alternative Operating Scenario (AOS)
- ☐ Request Modification to Existing Permit (Check each box below applies)
  - ☐ Change Fuel or Equipment ☐ Change Company Name
  - ☐ Change Permit Limit ☐ Transfer of Ownership
- ☐ Request APEN Update Only (Check the box below that applies)
  - ☐ Revision to Actual Calendar Year Emissions for Emission Inventory
  - ☐ Update 5-Year APEN Term Without Change to Permit Limits or Previously Reported Emissions

Notes: Request for portable engine permit; no deration requested

### Section 03 – General Information

**For Existing Sources:** Operation of this source began on: ____ / ____ / ____

**For New or Reconstructed Sources:** The projected startup date is: 2 / 1 / 2008

**Normal Hours of Source Operation:** 24 hours/day 7 days/week 52 weeks/year

**General description of equipment purpose:** Natural Gas-fired Compression engine

**Did construction commence or was this engine reconstructed after December 19, 2002?** ☒ Yes ☐ No

**Was this engine be ordered, modified or reconstructed after July 11, 2005** ☒ Yes ☐ No

**Will this engine be operated in Colorado's 8-hour ozone control area?** ☐ Yes ☒ No
(A map may be obtained at www.cdphe.state.co.us/op/regs/airregs/100114aqccambientairquality.pdf)

### Section 04 – Engine Information

Engine Function: ☐ Primary and/or Peaking Power ☐ Emergency Back-Up Power ☒ Compression ☐ Pump Jack ☐ Water Pump ☐ Other: ______

Manufacturer: Caterpillar Model No.: G3516tale Serial No.: ______ # Engines: 1

Manufacturer's Maximum Rated Horsepower @ Sea Level: 1,340 BHP @ 1,400 RPM

Manufacturer's Maximum Site Rated Horsepower: 1,340 BHP @ 1,400 RPM

Engine Brake Specific Fuel Consumption @ 100% Load: 7,541 Btu/HP-hr

Cycle Type: ☐ 2-Stroke ☒ 4-Stroke

Combustion Type: ☒ Lean Burn ☐ Rich Burn

Ignition Source: ☒ Spark ☐ Compression

Aspiration: ☐ Natural ☒ Turbocharged ☐ Supercharged

Electrical Generator Maximum Site Rating: ______ kW

What is the maximum number of hours this engine is used for emergency back–up power? ______ Hours/year

**Colorado Department of Public Health and Environment**
**Air Pollution Control Division**

This notice is valid for five (5) years unless a significant change is made, such as an increased production, new equipment, change in fuel type, etc. An APEN update shall be filed no less than 30 days prior to the expiration date of this APEN form.

Mail this form along with a check for $119.96 to:
**Colorado Department of Public Health & Environment**
**APCD-SS-B1**
**4300 Cherry Creek Drive South**
**Denver, CO 80246-1530**

For guidance on how to complete this APEN form, contact:

**Air Pollution Control Division:** (303) 692-3150
**Small Business Assistance Program (SBAP):** (303) 692-3148 or (303) 692-3175

The following information may be obtained by accessing the Internet:
APEN forms at: http://www.cdphe.state.co.us/ap/downloadforms.html
Application status at: http://www.cdphe.state.co.us/ap/ss/sspcpt.html

☒ Check box to left to request copy of draft permit prior to issuance.

## Section 05 – Stack Information

| Operator Stack ID No. | Stack Discharge Height Above Ground Level (Feet) | Temp. (°F) | Flow Rate (ACFM) | Velocity (ft/min) | Moisture (%) | Note: provide either Lat/Long or UTM coordinate | Latitude (degrees) | Longitude (degrees) | UTM Zone (12 or 13) | UTM Northing (vertical) (meters) | UTM Easting (horizontal) (meters) | Horizontal Datum (NAD27, NAD83, WGS84) | Stack Base Elevation (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PORTABLE-1 | 20 | 855 | 7,684 | 9,784 | NA | | | | | | | | |

Direction of stack outlet (check one): ☒ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe):

Exhaust Opening Shape & Size (check one): ☒ Circular: Inner Diameter (inches) = 12 ☐ Other: Length (inches) = Width (inches) =

## Section 06 – Fuel Consumption Information

| Fuel Use Rate @ 100% Load (SCF/hr, gal/hr) | Type of Fuel Burned | Annual Fuel Consumption (gallons/yr or MMSCF/yr) | | Fuel Heating Value (Indicate units: Btu/lb, Btu/gal, Btu/SCF) |
|---|---|---|---|---|
| | | Actual Reported for Calendar Year | Requested Permit Limit | |
| 10417 scf/hr | Field Gas | | 91.26 mmscfyr | 970 btu/scf |

| Seasonal % Fuel Use: | 25 | Dec-Feb | 25 | Mar-May | 25 | Jun-Aug | 25 | Sep-Nov |
|---|---|---|---|---|---|---|---|---|

## Section 07 – Emission Control Information

| Primary Control Device Description | Secondary Control Device Description | Control Efficiency (% Reduction) | | | | |
|---|---|---|---|---|---|---|
| | | $NO_X$ | CO | VOC | Formaldehyde | Other HAP(s) |
| Catox | | 0 | 75% | 50% | 50% | 50% |

Is this engine equipped with an Air/Fuel ratio controller? ☒ Yes ☐ No

If any "Other HAP(s)" are controlled, list the HAP(s) for which indicated reduction is achieved: Acetaldehyde, Acrolein, BTEX, n-Hexane

## Section 08 – Emissions Inventory Information

Complete this section if you calculated emissions from this source. If emission estimates are provided, **attach a copy of the corresponding emission calculations and emission factor documentation** to this APEN form. If this section is left blank, the Air Pollution Control Division will calculate emissions based on the information contained in the sections above.

**Criteria Pollutant Emissions Inventory**

| Pollutant | Uncontrolled Emission Factor (Include Units) | Actual Calendar Year Emissions | | Requested Permitted Emissions | |
|---|---|---|---|---|---|
| | | Uncontrolled (Tons/Year) | Controlled (Tons/Year) | Uncontrolled (Tons/Year) | Controlled (Tons/Year) |
| $NO_X$ | 1.7 g/hp-hr | | | 22.0 | 22.0 |
| CO | 2.0 g/hp-hr | | | 25.9 | 6.5 |
| VOC | 1.0 g/hp-hr | | | 12.9 | 6.5 |
| | | | | | |

The Calendar Year for which Actual Fuel Consumption and Emission Data Applies is:

**Non-Criteria Reportable Pollutant Emissions Inventory**

| Chemical Name | CAS # | Reporting BIN | Actual Calendar Year Emissions | | Uncontrolled Emission Factor (Include Units) |
|---|---|---|---|---|---|
| | | | Uncontrolled (Pounds/Year) | Controlled (Pounds/Year) | |
| Acetaldehyde | 75-07-0 | A | 740 | 370 | AP-42 |
| Acrolein | 107-02-8 | A | 455 | 227.5 | AP-42 |
| Benzene | 71-43-2 | A | 38.9 | 19.5 | AP-42 |
| Formaldehyde | 50-00-0 | A | 4674 | 2337 | AP-42 |
| | | | | | |

☒ Check box to left if this is a request to limit facility wide emissions of Hazardous Air Pollutants (HAP) below the Potential to Emit.

## Section 09 – Applicant Certification of Statement

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Dirk L. Wold — 12-07-2007

**Signature of Person Legally Authorized to Supply Data** — **Date**

Mr. Dirk Wold — Principal Air Quality Specialist

**Name of Legally Authorized Person (Please print)** — **Title**

| Source of Reference for Emission Factors Listed in Section 08: | |
|---|---|
| Criteria Pollutants: | manufacturer |
| Hazardous Air Pollutants: | Ap42 Table 3.2-2 (7/2000) |

(If manufacturer's emissions factors used, provide documentation.)

# AIR POLLUTANT EMISSION NOTICE

PERMIT No.: ______ AIRS ID.: Pending

FIRM NAME BarGath, Inc.

MAIL ADDRESS 1515 Arapahoe St., Tower 3, Suite 1000 STATE: CO ZIP: 80202

PLANT NAME & LOCATION BarGath PORTABLE ENG-01 COUNTY: Garfield

REQUEST PORTABLE SOURCE PERMIT HOME-BASE FOR PORTABLE SOURCE SW ¼ SW ¼ of Sec. 1, T7S, R96W

PERSON TO CONTACT REGARDING THIS INFORMATION Mr. Dirk Wold TITLE Principal Air Quality Specialist PHONE (303)-606-4246

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Natural Gas Gathering E-MAIL ADDRESS: dirk.wold@williams.com

| A. GENERAL INFORMATION | Normal Operation of This Source | | | Process Seasonal Throughput (% of Annual) | | | | ADDITIONAL INFORMATION OR REMARKS: |
|---|---|---|---|---|---|---|---|---|
| | Hours/Day | Days/Week | Weeks/Year | Dec-Feb | Mar-May | Jun-Aug | Sep-Nov | |
| | 24 | 7 | 52 | 25 | 25 | 25 | 25 | Request for portable tank associated with portable booster |

B. STACK OR VENT INFORMATION (Identify below which stack if plant has two or more; refer to attached sketch of plant layout)

| Height | Diameter | Temperature | Flow Rate | Velocity | Moisture | Plant ID No. for Stack |
|---|---|---|---|---|---|---|
| 15 ft | N/A ft | Ambient F | ACFM | ft/min | NA % | TANK |

| C. FUEL INFORMATION | Design Input Rate ($10^6$ BTU/hr) | Kind of Fuel Burned | Annual Fuel Consumption | | Fuel Heating Value: (BTU/lb, BTU/gal, or BTU/scf) | Percent by Weight | | Seasonal Fuel Use (% of Annual Use) | | | | Space Htg (% Ann.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Description of Combustion Unit | | | Requested level | Actual level (Data year level) | | Sulfur | Ash | Dec-Feb | Mar-May | Jun-Aug | Sep-Nov | |
| | | | | | | | | 25 | 25 | 25 | 25 | |
| Make/Model: NA | | | | | | | | | | | | |
| Serial No. NA | | | | | | | | | | | | |

| D. PROCESS INFORMATION | Raw Materials Used | Raw Materials-Annual Consumption | | Design Process Rate | Finished Product Description | Finished Product-Annual Output | |
|---|---|---|---|---|---|---|---|
| Description of Processing Unit | Description | Requested level | Actual level (Data year level) | (Specify Units/Hour) | | Requested level | Actual level (Data year level) |
| 1-300 BBL CONDENSATE STORAGE TANK | Condensate | | | 10 bbls/day | Condensate | 3,650 bbl/yr | |
| Make/Model: | | | | | | | |
| Serial No.: | | | | | | | |

| E. POLLUTION CONTROL EQUIPMENT | Type of Control Equipment | | Overall Collection Efficiency | ESTIMATED EMISSIONS (TONS/YEAR) AT THROUGHPUTS REQUESTED ABOVE | | ACTUAL EMISSIONS (from data year) | ESTIMATION METHOD |
|---|---|---|---|---|---|---|---|
| Pollutant | Primary | Secondary | | CONTROLLED | UNCONTROLLED | | |
| Particulate | | | | NA | NA | | |
| $PM_{10}$ | | | | NA | NA | | |
| $SO_x$ | | | | NA | NA | | |
| $NO_x$ | | | | NA | NA | | |
| VOC | | | | NA | 3.6 | | E&P Tanks 2.0 |
| CO | | | | NA | NA | | |

**PLEASE USE APCD NON-CRITERIA REPORTABLE AIR POLLUTANT ADDENDUM FORM TO REPORT SUCH POLLUTANTS OR POLLUTANTS NOT LISTED ABOVE.**

**CHECK HERE IF YOU WISH THE DIVISION TO CALCULATE YOUR EMISSIONS. SEE "EMISSION ESTIMATES" INSTRUCTIONS ON BACK.**

CHECK ALL BOXES THAT APPLY

- X New or previously unreported source*
- Requesting modification of existing permit † ‡
- Change in emissions, throughputs or equipment †
- Transfer of ownership (List previous owner in REMARKS section of box A.) †
- Previous APEN is expiring ‡
- Request for Emission Reduction Credit † ‡ (Specify)______

* Complete all applicable portions of APEN
† Complete 'Requested Level' values for permit limits
‡ Complete all information above box A, and those remaining portions which reflect changes

Signature of Person Legally Authorized to Supply Data: Dirk L. Wold DATE: 12-07-2007 YEAR FOR WHICH THE ACTUAL DATA APPLIES:

Typed Name and Title: Dirk Wold, Principal Air Quality Specialist

Date source began or will begin operation: February 2008

**THIS NOTICE IS VALID FOR FIVE YEARS. A revised notice shall be filed prior to this expiration date, whenever a permit limitation must be modified, whenever control equipment is changed, and annually whenever a significant emission change occurs. For specific details see Regulation 3, Part A, ' II.C.1.**

**A $119.96 FILING FEE IS REQUIRED FOR EACH NOTICE FILED.**

Send completed forms with fees to:

Colorado Dept. of Public Health & Environment
Air Pollution Control Division
4300 Cherry Creek Drive South, APCD-SS-B1
Denver, Colorado 80246-1530

APEN #____ of____

For Information, Call (303) 692-3150

# NON-CRITERIA REPORTABLE AIR POLLUTANT EMISSION NOTICE ADDENDUM*

(Instructions on reverse side)

Permit Number Pending – TANK AIRS Number N/A

Company Name: BarGath, Inc.

Plant Location: BarGath PORTABLE ENG-01 SW ¼ SW ¼ of Sec. 1, T7S, R96W County Garfield Zip Code

Person to Contact: Dirk Wold Phone 303 606-4246 Fax 303 629-8285

E-Mail Address: dirk.wold@williams.com

| Chemical Abstract Service Number | Chemical Name | Reporting Bin | Control Equipment/ Efficiency | Emission Factor (include units) | Emission Factor Source | Requested Emissions (lbs/yr) | Actual Emissions from the Data Year (lbs/yr) |
|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | A | N/A | 0.006 lb/hr | E&P Tanks 2.0 | 52.6 | |
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* Use this form for reporting Hazardous Air Pollutants, Ozone Depleting Compounds, and other Non-Criteria Reportable Pollutant

Year For Which The Actual Data Applies: 

Dirk L. Wold

Signature of a Responsible Official (not a vendor or consultant)

12-07-2007

Date

Dirk Wold

Name of a Responsible Official (please print)

Principal Air Quality Specialist

Title

| Equipment ID No. | Field Service | Emission Unit Description | Serial Number | Maximum Operating Hours/Yr | Horsepower SiteRating Hp | Heat Input MMBtu/hr | Fuel Gas Heating Value = Heat Rate Btu/Hp-hr | Fuel Use scf/hr | 970 Fuel Use MMscf/yr | Btu/scf Volumetric Flow acfm | Exhaust Velocity ft/min | Exhaust Velocity ft/sec | Stack Diameter feet | Stack Height feet | Exhaust Temp. deg. F. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Engines* | | | | | | | | | | | | | | | |
| ENG-01 | Gas Compression | Caterpillar 3516 TALE w/SCO | N/A | 8760 | 1340 | 10.1 | 7541 | 10417 | 91.26 | 7684 | 9784 | 163.1 | 1.00 | 20.00 | 855 |
| *Tanks* | | | | | | | | | | | | | | | |
| TANK | Condensate Storage | 1 300-bbl Condensate Tank | NA | 8760 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| *Loadout* | | | | | | | | | | | | | | | |
| LOAD-1 | Condensate Loadout | Exempt Condensate Loadout | NA | 34 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| *Fugitives* | | | | | | | | | | | | | | | |
| FUG-1 | Equipment Leaks | Exempt Fugitive VOC | NA | 8760 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| *Maintenance* | | | | | | | | | | | | | | | |
| MAINT-1 | Equipment Blowdowns | Exempt Routine Maintenance | NA | 216 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

| Equipment ID No. | Field Service | Emission Unit Description | NOx g/bhp-hr | NOx lb/hr | NOx ton/yr | CO g/bhp-hr | CO lb/hr | CO ton/yr | VOC g/bhp-hr | VOC lb/hr | VOC ton/yr | PM10/TSP lb/MMBtu | PM10/TSP lb/hr | PM10/TSP ton/yr | SOx lb/MMBtu | SOx lb/hr | SOx ton/yr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Engines* | | | | | | | | | | | | | | | | | |
| ENG-01 | Gas Compression | Caterpillar 3516 TALE w/SCO | 1.7 | 5.02 | 22.0 | 0.5 | 1.48 | 6.5 | 0.5 | 1.48 | 6.5 | 0.00999 | 0.10 | 0.4 | 0.00059 | 0.01 | 0.0 |
| *Tanks* | | | | | | | | | | | | | | | | | |
| TANK | Condensate Storage | 1 300-bbl Condensate Tank | NA | NA | NA | NA | NA | NA | NA | 0.82 | 3.6 | NA | NA | NA | NA | NA | NA |
| *Loadout* | | | | | | | | | | | | | | | | | |
| LOAD-1 | Condensate Loadout | Exempt Condensate Loadout | NA | NA | NA | NA | NA | NA | NA | 9.72 | 0.2 | NA | NA | NA | NA | NA | NA |
| *Fugitives* | | | | | | | | | | | | | | | | | |
| FUG-1 | Equipment Leaks | Exempt Fugitive VOC | NA | NA | NA | NA | NA | NA | NA | 0.26 | 1.1 | NA | NA | NA | NA | NA | NA |
| *Maintenance* | | | | | | | | | | | | | | | | | |
| MAINT-1 | Equipment Blowdowns | Exempt Routine Maintenance | NA | NA | NA | NA | NA | NA | NA | 23.23 | 0.6 | NA | NA | NA | NA | NA | NA |
| TOTAL (tpy) | | | | | 22.0 | | | 6.5 | | | 11.9 | | | 0.4 | | | 0.0 |

| Equipment ID No. | Field Service | Emission Unit Description | Bin A Acetaldehyde ton/yr | Acetaldehyde lb/yr | Acrolein ton/yr | Acrolein lb/yr | Benzene ton/yr | Benzene lb/yr | Formaldehyde ton/yr | Formaldehyde lb/yr | Bin C Ethylbenzene ton/yr | Ethylbenzene lb/yr | n-Hexane ton/yr | n-Hexane lb/yr | Toluene ton/yr | Toluene lb/yr | Isomers of Xylene ton/yr | Isomers of Xylene lb/yr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Engines* | | | | | | | | | | | | | | | | | | |
| ENG-01 | Gas Compression | Caterpillar 3516 TALE w/SCO | 0.19 | 370.0 | 0.11 | 227.5 | 0.01 | 19.5 | 1.17 | 2336.9 | 0.00 | 1.8 | 0.02 | 49.1 | 0.01 | 18.1 | 0.00 | 8.1 |
| *Tanks* | | | | | | | | | | | | | | | | | | |
| TANK | Condensate Storage | 1 300-bbl Condensate Tank | NA | NA | NA | NA | 0.0 | 52.6 | NA | NA | 0.0 | 17.52 | 0.1 | 192.7 | 0.0 | 96.4 | 0.0 | 70.08 |
| *Loadout* | | | | | | | | | | | | | | | | | | |
| LOAD-1 | Condensate Loadout | Exempt Condensate Loadout | NA | NA | NA | NA | Negl. | Negl. | NA | NA | Negl. | Negl. | Negl. | Negl. | Negl. | Negl. | Negl. | Negl. |
| *Fugitives* | | | | | | | | | | | | | | | | | | |
| FUG-1 | Equipment Leaks | Exempt Fugitive VOC | NA | NA | NA | NA | 0.00 | 3.6 | NA | NA | 0.00 | 0.5 | 0.01 | 12.9 | 0.00 | 7.1 | 0.00 | 3.4 |
| *Maintenance* | | | | | | | | | | | | | | | | | | |
| MAINT-1 | Equipment Blowdowns | Exempt Routine Maintenance | NA | NA | NA | NA | 0.0 | 7.4 | NA | NA | 0.0 | 1.0 | 0.0 | 26.9 | 0.0 | 14.9 | 0.0 | 7.1 |
| TOTAL (tpy) | | | 0.2 | | 0.1 | | 0.0 | | 1.2 | | 0.0 | | 0.1 | | 0.1 | | 0.0 | |
| | | | TOTAL AGGREGATE HAP (tpy): | | | 1.8 | | | | | | | | | | | | |
| | | | HIGHEST SINGLE HAP (tpy): | | | 1.2 | Formaldehyde | | | | | | | | | | | |

**BARGATH PORTABLE ENG-01 FACILITY**
**AP-42 HAP EMISSION FACTORS AND ENGINE EMISSIONS**

| | | | Acetaldehyde | Acrolein | Benzene | Formaldehyde | Ethylbenzene | n-Hexane | Toluene | Xylenes |
|---|---|---|---|---|---|---|---|---|---|---|
| Emission Factor 4-Stroke Rich lb/MMBtu | | | 0.00279 | 0.00263 | 0.00158 | 0.02050 | 0.00002 | 0.00111 | 0.00056 | 0.00020 |
| Emission Factor 2-Stroke Lean lb/MMBtu | | | 0.00776 | 0.00778 | 0.00194 | 0.05520 | 0.00011 | 0.00045 | 0.00096 | 0.00027 |
| Emission Factor 4-Stroke Lean lb/MMBtu | | | 0.00836 | 0.00514 | 0.00044 | 0.05280 | 0.00004 | 0.00111 | 0.00041 | 0.00018 |
| | | MMBtu/hr | ------------------ Emissions (lb/hr) ------------------------ | | | | | | | |
| ENG-01 | 4-stroke lean w SCO* | 10.10 | 0.04 | 0.03 | 0.00 | 0.27 | 0.00 | 0.01 | 0.00 | 0.00 |

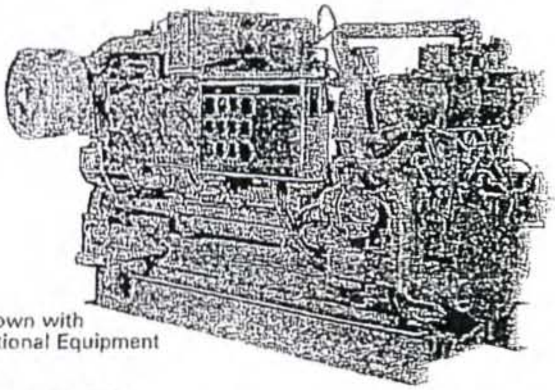
* Assume 50% Reduction in Individual HAP Emissions Achieved Through Use of SCO Catalyst.

CATERPILLAR®

# Gas Petroleum Engine

# G3516

1085-1340 bhp
809-1000 bkW
1200-1400 rpm



Shown with Optional Equipment

## CATERPILLAR® ENGINE SPECIFICATIONS

| | |
|---|---|
| V-16, 4-Stroke-Cycle | |
| Bore — in (mm) | 6.7 (170) |
| Stroke — in (mm) | 7.5 (190) |
| Displacement — cu in (L) | 4,210 (69) |
| Aspiration | Turbocharged-Aftercooled |
| Capacity for Liquids — U.S. gal (L) | |
| Cooling System¹ | 54 (205) |
| Lube Oil System (refill) | 112 (423) |
| Package Shipping Weight | |
| (Dry) — lb (kg) | 17,670 (8015) |

¹Engine only.

## FEATURES

- **FULL RANGE OF ATTACHMENTS**
  - Wide range of bolt-on system expansion attachments, factory designed and tested
- **UNMATCHED PRODUCT SUPPORT OFFERED THROUGH WORLDWIDE CATERPILLAR DEALER NETWORK**
  - More than 1,500 dealer outlets
  - Caterpillar factory-trained dealer technicians service every aspect of your petroleum engine
  - 99.7% of parts orders filled within 24 hours — worldwide
  - Caterpillar parts and labor warranty
  - Preventive maintenance agreements available for "repair before failure" options
  - Scheduled Oil Sampling (S•O•S℠) program matches your oil sample against Caterpillar set standards to determine:
    - internal engine component condition
    - presence of unwanted fluids
    - presence of combustion by-products
- **SINGLE-SOURCE SUPPLIER**
  - Caterpillar:
    - casts engine blocks, heads, cylinder liners, and flywheel housings
    - machines critical components
    - assembles complete engine

    Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable product.
  - Factory-designed systems built at Caterpillar ISO certified facilities
- **G3516**
  - Standard and low emission ratings available
  - Broad operating speed range and ability to burn a wide spectrum of gaseous fuels
  - Cat® Electronic Ignition System (EIS)
  - Robust diesel strength design provides prolonged life and lower owning and operating costs.
- **TESTING**
  - Prototype testing on every model:
    - proves computer design
    - verifies system torsional stability
    - functionality tests every model
  - Every Caterpillar engine is dynamometer tested under full load to ensure proper engine performance.
- **WEB SITE**
  - For additional information on all your petroleum power requirements, visit www.cat-oilandgas.com.

CATERPILLAR FACILITIES ISO 9001 CERTIFIED

CE

# G3516 GAS PETROLEUM ENGINE

CATERPILLAR

## TECHNICAL DATA

### G3516 Gas Petroleum Engine — 1200-1400 rpm

| | | DM0107-04 | DM5154-01 | DM5168-01 | DM5155-01 |
|---|---|---|---|---|---|
| Arrangement Number | | PA4871 w/o AFRC | LA2030 with AFRC | PA5319 w/o AFRC | PA2031 with AFRC |
| **Engine Power** | | | | | |
| @ 100% Load | bhp (bkW) | 1085 (809) | 1151 (859) | 1265 (944) | 1340 (1000) |
| @ 75% Load | bhp (bkW) | 814 (607) | 863 (644) | 949 (708) | 1005 (750) |
| **Engine Speed** | rpm | 1200 | 1200 | 1400 | 1400 |
| **SCAC Temperature** | °F (°C) | 129 (54) | 129 (54) | 129 (54) | 129 (54) |
| **Compression Ratio** | | 8.0:1 | 8.0:1 | 8.0:1 | 8.0:1 |
| **Emissions*** | | | | | |
| $NO_x$ | g/bhp-hr | 2.0 | 1.5 | 2.0 | 1.5 |
| CO | g/bhp-hr | 1.8 | 1.8 | 1.9 | 1.9 |
| Total Hydrocarbons | g/bhp-hr | 3.2 | 3.3 | 2.9 | 3.1 |
| **Fuel Consumption** | | | | | |
| @ 100% Load | Btu/bhp-hr (MJ/bkW-hr) | 7,450 (10.66) | 7,414 (10.49) | 7,548 (10.68) | 7,541 (10.67) |
| @ 75% Load | Btu/bhp-hr (MJ/bkW-hr) | 7,534 (10.93) | 7,591 (10.74) | 7,711 (10.91) | 7,803 (11.04) |
| **Heat Balance** | | | | | |
| Heat Rejection to Jacket Water | | | | | |
| @ 100% Load | Btu/mn (bkW) | 40,605 (687) | 41,174 (724) | 46,747 (822) | 47,828 (841) |
| @ 75% Load | Btu/mn (bkW) | 32,928 (546) | 33,838 (595) | 39,752 (699) | 39,980 (703) |
| Heat Rejection to Aftercooler | | | | | |
| @ 100% Load | Btu/mn (bkW) | 6,142 (109) | 7,564 (133) | 8,246 (145) | 10,350 (182) |
| @ 75% Load | Btu/mn (bkW) | 3,981 (62) | 5,118 (90) | 5,118 (90) | 6,995 (123) |
| Heat Rejection to Exhaust | | | | | |
| @ 100% Load | Btu/mn (bkW) | 37,307 (942) | 39,980 (703) | 45,155 (794) | 48,055 (845) |
| @ 75% Load | Btu/mn (bkW) | 26,956 (700) | 29,857 (525) | 32,359 (569) | 36,624 (644) |
| **Exhaust System** | | | | | |
| Exhaust Gas Flow Rate | | | | | |
| @ 100% Load | cfm ($m^3$/min) | 5,975 (180.0) | 6,413 (181.6) | 7,179 (203.3) | 7,684 (217.6) |
| @ 75% Load | cfm ($m^3$/min) | 4,368 (129.1) | 4,828 (136.7) | 5,177 (146.6) | 5,880 (166.5) |
| Exhaust Stack Temperature | | | | | |
| @ 100% Load | °F (°C) | 842 (462) | 840 (449) | 869 (465) | 855 (457) |
| @ 75% Load | °F (°C) | 820 (462) | 817 (436) | 862 (461) | 840 (449) |
| **Intake System** | | | | | |
| Air Inlet Flow Rate | | | | | |
| @ 100% Load | cfm ($m^3$/min) | 2,264 (72.8) | 2,433 (68.9) | 2,666 (75.5) | 2,885 (81.7) |
| @ 75% Load | cfm ($m^3$/min) | 1,681 (52.1) | 1,865 (52.8) | 1,928 (54.6) | 2,232 (63.2) |
| **Gas Pressure** | | High | High | High | High |

*at 100% load and speed

## BARGATH PORTABLE ENG-01 FACILITY
## E&P TANK2.0 CONDENSATE INPUT

* Pressurized Liquids analysis from Wasatch Gulch C.S.

| | | |
|---|---|---|
| Annual Hrs of Operation | 8760 | (<= 8760 hr/yr) |
| Number of Tanks | 1 | |
| Condensate Flow Rate | 10.0 | bbl/day total |
| Operating Hours/Year | 365 | days/yr |
| Inlet Separator Temperature | 69 | deg F |
| Inlet Separator Pressure | 275 | psig |
| Site Atmospheric Pressure | 12.5 | psia |
| Stable Oil API Gravity | 61.9 | deg. API |
| Stable Oil Reid Vapor Press. | 7.5 | psia |

* Sales Oil RVP estimated

| | |
|---|---|
| Ave. Mol. Wt. C10+ Fraction | 156.8 |
| Spec. Grav. C10+ Fraction: | 0.743 |

**E & P TANK V2.0 Model Output**

| | lb/hr | tpy |
|---|---|---|
| VOC, C3+ | 0.817 | 3.6 |
| Benzene | 0.006 | 0.0 |
| Toluene | 0.011 | 0.0 |
| Ethylbenzene | 0.002 | 0.0 |
| Xylenes | 0.008 | 0.0 |
| n-Hexane | 0.022 | 0.1 |
| Aggregate HAP | 0.05 | 0.2 |
| Methane | 0.811 | 3.6 |
| Carbon Dioxide | 0.165 | 0.7 |
| VOC C3+ Emissions | 46.7 | lb/1000 gal |
| Agg. HAP Emission Rate | 0.3 | lb/1000 gal |

Pressurized Condensate Analysis

| Component | (Mole %) |
|---|---|
| Hydrogen Sulfide | 0 |
| Oxygen | 0 |
| Carbon Dioxide | 0.4127 |
| Nitrogen | 0 |
| Methane | 4.911 |
| Ethane | 1.723 |
| Propane | 1.488 |
| Isobutane | 1.229 |
| n-Butane | 1.530 |
| Isopentane | 1.972 |
| Pentanes | 1.686 |
| Hexanes | 3.209 |
| Heptanes | 23.140 |
| Octanes | 12.274 |
| Nonanes | 9.683 |
| Decanes | 12.539 |
| Benzene | 1.004 |
| Toluene | 5.735 |
| Ethylbenzene | 0.476 |
| Xylenes | 13.648 |
| n-Hexane | 2.693 |
| 2,2,4-Trimethylpentane | 0.647 |
| Total All Constituents | 100.00 |

## BARGATH PORTABLE ENG-01 FACILITY
## CONDENSATE LOADOUT VOC EMISSIONS

USEPA Loadout Equation

L = 12.46 * S * P * MW / (T * (1-eff))
from AP-42 Section 4.4

| | | | | |
|---|---|---|---|---|
| Molecular Weight of Vapors, MW | 31.45 | lb/lb-mol | E&P TANK2.0 | |
| True Vapor Pressure, Pva @ T | 5 | psia | Estimated | |
| Temperature of Bulk Liquid Loaded, T | 80 | F | Estimated | |
| | 540 | R | | |
| Saturation Factor | 0.6 | | Dedicated service | |
| Efficiency of controlled loading (%) | 0.0% | | | |
| Annual throughput, v | 153 | 1000 gallons | | |
| Loading losses, L @ tank | 2.18 | lb/1000 gallons | | |
| L = 12.46 S P MW / T (1-eff) | | | | |
| Annual losses @ tank, L*v | 333.74 | lb/yr | 0.2 | tpy |
| Loading Frequency | 46 | trucks/yr | | |
| Truck Volume | 3360 | gal/truck | | |
| Loading Rate | 75 | gal/min | | |
| Loading Duration | 44.8 | min/truck | | |
| Annual Hrs of Operation | 34.35 | hr/yr | | |
| Hourly VOC During Loading | 9.72 | lb/hr (while loading) | | |

BarGath, Inc.
BarGath PORTABLE ENG-01 Facility Potential Blowdowns (1 Compressor Engine)

Potential Emissions from Maintenance Blowdowns - assumes all vented

| | | Estimated Emissions | | | |
|---|---|---|---|---|---|
| Pollutant | Potential Blowdown Hours | Maximum (lb/hr) | Total (tpy) | Total (lb/yr) | Emission Factor |
| Total NMNE VOC | 48 | 23.23 | 0.56 | 1114.8 | Gas Analysis NMNE VOC |
| Benzene | 48 | 0.15 | 0.00 | 7.4 | Gas Analysis |
| N-Hexane | 48 | 0.56 | 0.01 | 26.9 | Gas Analysis |
| Toluene | 48 | 0.31 | 0.01 | 14.9 | Gas Analysis |
| Xylenes | 48 | 0.15 | 0.00 | 7.1 | Gas Analysis |
| Ethylbenzene | 48 | 0.02 | 0.00 | 1.0 | Gas Analysis |
| Total HAPs | 48 | 1.19 | 0.03 | 57.3 | Gas Analysis (<5% of VOCs) |

48 Blowdowns per compressor/year
7.50 Mcf per compressor blowdown - conservatively high estimate
0.360 MMscf/yr (annual gas volume)
7,500 scf/hr (assumes one blowdown/hr)
1.17 NMNE VOC Gas weight (lb/lb-mol)
0.008 Benzene Gas weight (lb/lb-mol)
0.028 n-Hexane Gas weight (lb/lb-mol)
0.016 Toluene Gas weight (lb/lb-mol)
0.007 Xylenes Gas weight (lb/lb-mol)
0.001 Ethylbenzene Gas weight (lb/lb-mol)
48 Blowdown Hours

```
******************************************************************************
*     Project Setup Information                                              *
******************************************************************************
Project File                : E:\Williams\Portable6\ep_tanks.ept
Flowsheet Selection         : Oil Tank with Separator
Calculation Method          : RVP Distillation
Control Efficiency          : N/A (no controls)
Known Separator Stream      : High Pressure Oil
Entering Air Composition    : No

Filed Name                  : BarGath Portable Booster
Well ID                     : Pressurized Condensate Sample from Wasatch C.S. (6/19/07)
Date                        : 2007.09.16


******************************************************************************
*     Data Input                                                             *
******************************************************************************

Separator Pressure          : 275.00[psig]
Separator Temperature       : 69.00[F]
Ambient Pressure            : 12.50[psia]
Ambient Temperature         : 50.00[F]
C10+ SG                     : 0.7434
C10+ MW                     : 156.78

-- High Pressure Oil ---------------------------------------------------------
  No.     Component              mol %
  1       H2S                   0.0000
  2       O2                    0.0000
  3       CO2                   0.4127
  4       N2                    0.0000
  5       C1                    4.9110
  6       C2                    1.7225
  7       C3                    1.4884
  8       i-C4                  1.2286
  9       n-C4                  1.5296
  10      i-C5                  1.9720
  11      n-C5                  1.6860
  12      C6                    3.2092
  13      C7                   23.1400
  14      C8                   12.2735
  15      C9                    9.6836
  16      C10+                 12.5389
  17      Benzene               1.0044
  18      Toluene               5.7347
  19      E-Benzene             0.4764
  20      Xylenes              13.6483
  21      n-C6                  2.6929
  22      224Trimethylp         0.6470

-- Sales Oil ----------------------------------------------------------------
Production Rate             : 10[bbl/day]
Days of Annual Operation    : 365 [days/year]
API Gravity                 : 61.9
Reid Vapor Pressure         : 7.50[psia]


******************************************************************************
*     Calculation Results                                                    *
******************************************************************************

-- Emission Summary ---------------------------------------------------------
Item              Uncontrolled   Uncontrolled
                  [ton/yr]       [lb/hr]
Total HAPs        0.220          0.050
Page  1------------------------------------------------------ E&P TANK
Total HC          8.866          2.024
VOCs, C2+         5.315          1.213
VOCs, C3+         3.579          0.817

Uncontrolled Recovery Info.
       Vapor      740.0700 x1E-3  [MSCFD]
       HC Vapor   705.8900 x1E-3  [MSCFD]
       GOR        74.01           [SCF/bbl]

-- Emission Composition -----------------------------------------------------
No  Component     Uncontrolled   Uncontrolled
```

| | | (ton/yr) | (lb/hr) |
|---|---|---|---|
| 1 | H2S | 0.000 | 0.000 |
| 2 | O2 | 0.000 | 0.000 |
| 3 | CO2 | 0.724 | 0.165 |
| 4 | N2 | 0.000 | 0.000 |
| 5 | C1 | 3.552 | 0.811 |
| 6 | C2 | 1.736 | 0.396 |
| 7 | C3 | 1.156 | 0.264 |
| 8 | i-C4 | 0.579 | 0.132 |
| 9 | n-C4 | 0.510 | 0.116 |
| 10 | i-C5 | 0.319 | 0.073 |
| 11 | n-C5 | 0.195 | 0.045 |
| 12 | C6 | 0.146 | 0.033 |
| 13 | C7 | 0.371 | 0.085 |
| 14 | C8 | 0.065 | 0.015 |
| 15 | C9 | 0.018 | 0.004 |
| 16 | C10+ | 0.004 | 0.001 |
| 17 | Benzene | 0.028 | 0.006 |
| 18 | Toluene | 0.048 | 0.011 |
| 19 | E-Benzene | 0.001 | 0.000 |
| 20 | Xylenes | 0.034 | 0.008 |
| 21 | n-C6 | 0.095 | 0.022 |
| 22 | 224Trimethylp | 0.010 | 0.002 |
| | Total | 9.591 | 2.190 |

-- Stream Data ----------------------------------------------------------------------

| No. | Component | MW | LP Oil mol % | Flash Oil mol % | Sale Oil mol % | Flash Gas mol % | W&S Gas mol % | Total Emissions mol % |
|---|---|---|---|---|---|---|---|---|
| 1 | H2S | 34.80 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 2 | O2 | 32.00 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 3 | CO2 | 44.01 | 0.4127 | 0.0744 | 0.0691 | 4.6188 | 4.6192 | 4.6188 |
| 4 | N2 | 28.01 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 5 | C1 | 16.04 | 4.9110 | 0.3098 | 0.2372 | 62.1243 | 62.1279 | 62.1244 |
| 6 | C2 | 30.07 | 1.7225 | 0.5584 | 0.5401 | 16.1970 | 16.1934 | 16.1970 |
| 7 | C3 | 44.10 | 1.4884 | 1.0164 | 1.0090 | 7.3574 | 7.3558 | 7.3574 |
| 8 | i-C4 | 58.12 | 1.2286 | 1.1026 | 1.1006 | 2.7954 | 2.7946 | 2.7954 |
| 9 | n-C4 | 58.12 | 1.5296 | 1.4546 | 1.4535 | 2.4617 | 2.4613 | 2.4617 |
| 10 | i-C5 | 72.15 | 1.9720 | 2.0309 | 2.0319 | 1.2391 | 1.2389 | 1.2391 |
| 11 | n-C5 | 72.15 | 1.6860 | 1.7605 | 1.7617 | 0.7597 | 0.7596 | 0.7597 |
| 12 | C6 | 86.16 | 3.2092 | 3.4281 | 3.4316 | 0.4873 | 0.4872 | 0.4873 |
| 13 | C7 | 100.20 | 23.1401 | 24.9147 | 24.9426 | 1.0741 | 1.0739 | 1.0741 |
| 14 | C8 | 114.23 | 12.2735 | 13.2474 | 13.2628 | 0.1639 | 0.1639 | 0.1639 |
| 15 | C9 | 128.28 | 9.6836 | 10.4591 | 10.4714 | 0.0408 | 0.0437 | 0.0408 |
| 16 | C10+ | 156.78 | 12.5389 | 13.5468 | 13.5627 | 0.0073 | 0.0073 | 0.0073 |
| 17 | Benzene | 78.11 | 1.0044 | 1.0771 | 1.0782 | 0.1007 | 0.1008 | 0.1007 |
| 18 | Toluene | 92.13 | 5.7347 | 6.1842 | 6.1913 | 0.1455 | 0.1457 | 0.1455 |
| 19 | E-Benzene | 106.17 | 0.4764 | 0.5144 | 0.5150 | 0.0036 | 0.0036 | 0.0036 |
| 20 | Xylenes | 106.17 | 13.6483 | 14.7388 | 14.7560 | 0.0892 | 0.0893 | 0.0892 |
| 21 | n-C6 | 86.18 | 2.6929 | 2.8846 | 2.8876 | 0.3099 | 0.3099 | 0.3099 |
| 22 | 224Trimethylp | 114.24 | 0.6470 | 0.6971 | 0.6979 | 0.0242 | 0.0242 | 0.0242 |
| | MW | | 100.87 | 106.82 | 106.91 | 26.91 | 26.91 | 26.91 |
| | Stream Mole Ratio | | 1.0000 | 0.9256 | 0.9245 | 0.0744 | 0.0011 | 0.0755 |
| | Heating Value | [BTU/SCF] | | | | 1475.00 | 1475.06 | 1475.00 |
| | Gas Gravity | [Gas/Air] | | | | 0.93 | 0.93 | 0.93 |
| | Bubble Pt. @ 100F | [psia] | 176.76 | 19.05 | 16.63 | | | |
| | RVP @ 100F | [psia] | 39.24 | 8.45 | 7.95 | | | |

Page 2------------------------------------------------------------------ E&P TANK

| | | | | | |
|---|---|---|---|---|---|
| Spec. Gravity @ 100F | | 0.688 | 0.696 | 0.696 | |

# *QUESTAR APPLIED TECHNOLOGY*

1210 D. Street, Rock Springs, Wyoming 82901
(307) 352-7292

| | | | |
|---|---|---|---|
| LIMS ID: | N/A | Description: | Wasatch Comp Sta. |
| Analysis Date/Time: | 6/26/2007 | Field: | Parachute |
| Analyst Initials: | PRP | ML#: | RTU1511 |
| Sample Temperature: | 69 | GC Method: | Quesliq1.M |
| Sample Pressure: | 275 | Data File: | QPC73.D |
| Date Sampled: | 6/19/2007 | Instrument ID: | 1 |

Liquids Analysis

| Component | Mol% | Wt% | LV% |
|---|---|---|---|
| Methane | 4.9111 | 0.7717 | 1.8820 |
| Ethane | 1.7225 | 0.5073 | 1.0444 |
| Propane | 1.4884 | 0.6428 | 0.9278 |
| Isobutane | 1.2286 | 0.6994 | 0.9092 |
| n-Butane | 1.5296 | 0.8708 | 1.0909 |
| Neopentane | 0.1631 | 0.1153 | 0.1413 |
| Isopentane | 1.8089 | 1.2783 | 1.4978 |
| n-Pentane | 1.6860 | 1.1914 | 1.3814 |
| 2,2-Dimethylbutane | 0.1467 | 0.1239 | 0.1386 |
| 2,3-Dimethylbutane | 0.4782 | 0.4037 | 0.4433 |
| 2-Methylpentane | 1.5935 | 1.3450 | 1.4958 |
| 3-Methylpentane | 0.9908 | 0.8363 | 0.9145 |
| n-Hexane | 2.6929 | 2.2730 | 2.5044 |
| Heptanes | 24.1444 | 23.0351 | 22.6964 |
| Octanes | 18.6552 | 19.6217 | 19.1586 |
| Nonanes | 23.8083 | 26.8520 | 24.6907 |
| Decanes plus | 12.5389 | 19.2538 | 18.9238 |
| Nitrogen | 0.0000 | 0.0000 | 0.0000 |
| Carbon Dioxide | 0.4127 | 0.1779 | 0.1591 |
| Total | 100.0000 | 100.0000 | 100.0000 |

| **Global Properties** | | **Units** |
|---|---|---|
| Avg Molecular Weight | 102.1050 | gm/mole |
| Pseudocritical Pressure | 457.62 | psia |
| Pseudocritical Temperatu | 521.07 | degF |
| Specific Gravity | 0.73167 | gm/ml |
| Liquid Density | 6.0998 | lb/gal |
| Liquid Density | 256.19 | lb/bbl |
| Specific Gravity | 3.0676 | air=1 |
| SCF/bbl | 957.04 | SCF/bbl |
| SCF/gal | 22.7868 | SCF/gal |
| MCF/gal | 0.0228 | MCF/gal |
| gal/MCF | 43.901 | gal/MCF |
| Net Heating Value | 4763.8 | BTU/SCF at 60°F |
| Net Heating Value | 17489.4 | BTU/lb at 60°F |
| Gross Heating Value | 5124.6 | BTU/SCF at 60°F |
| Gross Heating Value | 18749.2 | BTU/lb at 60°F |
| Gross Heating Value | 116482.4 | BTU/gal at 60°F |
| API Gravity | 61.9 | |
| MON | 59.8 | |
| RON | 63.5 | |
| RVP | 270.704 | psia |

| Component | Mol% | Wt% | LV% |
|---|---|---|---|
| Benzene | 1.0044 | 0.7684 | 0.6356 |
| Toluene | 5.7347 | 5.1753 | 4.3429 |
| Ethylbenzene | 0.4764 | 0.4954 | 0.4158 |
| M&P Xylene | 12.753 | 13.261 | 11.168 |
| O-Xylene | 0.8953 | 0.9309 | 0.7699 |
| 2,2,4-Trimethylpentane | 0.6470 | 0.7239 | 0.7354 |

Data File: Wasatch Comp Sta Page #2

GRI E&P TANK INFORMATION

| Component | Mol% | Wt% | LV% |
|---|---|---|---|
| H2S | | | |
| O2 | | | |
| CO2 | 0.4127 | 0.1779 | 0.1591 |
| N2 | 0.0000 | 0.0000 | 0.0000 |
| C1 | 4.9111 | 0.7717 | 1.8820 |
| C2 | 1.7225 | 0.5073 | 1.0444 |
| C3 | 1.4884 | 0.6428 | 0.9278 |
| IC4 | 1.2286 | 0.6994 | 0.9092 |
| NC4 | 1.5296 | 0.8708 | 1.0909 |
| IC5 | 1.9720 | 1.3936 | 1.6391 |
| NC5 | 1.6860 | 1.1914 | 1.3814 |
| Hexanes | 3.2092 | 2.7089 | 2.9922 |
| Heptanes | 23.1400 | 22.2667 | 22.0608 |
| Octanes | 12.2735 | 13.7225 | 14.0803 |
| Nonanes | 9.6836 | 12.1647 | 12.3370 |
| Benzene | 1.0044 | 0.7684 | 0.6356 |
| Toluene | 5.7347 | 5.1753 | 4.3429 |
| E-Benzene | 0.4764 | 0.4954 | 0.4158 |
| Xylene | 13.6483 | 14.1919 | 11.9379 |
| n-C6 | 2.6929 | 2.2730 | 2.5044 |
| 2,2,4-Trimethylpentane | 0.6470 | 0.7239 | 0.7354 |
| C10 Plus | [illegible] | [illegible] | [illegible] |
| C10 Mole % | 12.5389 | 19.2538 | 18.9238 |
| Molecular Wt. | 156.7785 | | |
| Specific Gravity | 0.7434 | | |
| Total | 100.00 | 100.00 | 100.00 |

**BARGATH PORTABLE ENG-01 FACILITY**
**FUGITIVE VOC DETAIL SHEET**
**Component Counts Based on Typical Process Unit Counts**
**8760 Hours Per Year**

| Equipment Type | Emission Factor* (lb/hr/source) | Source Count | Percent VOC | Hours of Operation | Control Factor (Percent) | Total HC Emission Rate (lb/hr) | Total HC Emission Rate (tpy) | Total VOC Emission Rate (tpy) |
|---|---|---|---|---|---|---|---|---|
| Valves-Gas/Vapor | 0.009920 | 50 | 10.00% | 8760 | 0.00% | 0.50 | 2.2 | 0.2 |
| Valves-Light Liquids | 0.005510 | 15 | 100.00% | 8760 | 0.00% | 0.08 | 0.4 | 0.4 |
| Relief Valves | 0.019401 | 6 | 10.00% | 8760 | 0.00% | 0.12 | 0.5 | 0.1 |
| Compressor Seals | 0.019401 | 4 | 10.00% | 8760 | 0.00% | 0.08 | 0.3 | 0.0 |
| Pump Seals-Light Liquids | 0.028660 | 2 | 100.00% | 8760 | 0.00% | 0.06 | 0.3 | 0.3 |
| Flanges-Gas/Vapor | 0.000860 | 43 | 10.00% | 8760 | 0.00% | 0.04 | 0.2 | 0.0 |
| Flanges-Light Liquids | 0.000243 | 14 | 100.00% | 8760 | 0.00% | 0.00 | 0.0 | 0.0 |
| Connectors - Gas/Vapor | 0.000440 | 255 | 10.00% | 8760 | 0.00% | 0.11 | 0.5 | 0.0 |
| Connectors - Light Liquids | 0.000440 | 68 | 100.00% | 8760 | 0.00% | 0.03 | 0.1 | 0.1 |
| **Totals** | | | | | | 1.01 | 4.4 | 1.1 |

* Oil and Gas Production Operations equipment leak emission factors (from OAQPS TTN BBS), EPA-453/R-95-017, Table 2-4

| Process Unit | Valves Gas/Vapor | Valves Liquid | Relief Valves | Compressor Seals | Pump Seals | Flanges Gas/Vapor | Flanges Liquid | Connectors Gas/Vapor | Connectors Liquid |
|---|---|---|---|---|---|---|---|---|---|
| Compressor Skid (1) | 40 | 5 | 2 | 4 | 0 | 30 | 2 | 120 | 8 |
| Separator (1) | 6 | 4 | 2 | 0 | 0 | 8 | 2 | 120 | 30 |
| Storage Tank (1) | 4 | 6 | 2 | 0 | 2 | 5 | 10 | 15 | 30 |
| Total Component Counts | 50 | 15 | 6 | 4 | 2 | 43 | 14 | 255 | 68 |

* Assumed up to 10% NMNE VOC by weight due to variability of inlet gas

**Hazardous Air Pollutant Fugitive Emissions**

| Component | Wt% | lb/yr | ton/yr |
|---|---|---|---|
| Benzene | 0.04% | 3.56 | 0.00 |
| Toluene | 0.08% | 7.13 | 0.00 |
| Ethylbenzene | 0.01% | 0.48 | 0.00 |
| Xylenes | 0.04% | 3.39 | 0.00 |
| n-Hexane | 0.15% | 12.94 | 0.01 |

## BARGATH PORTABLE ENG-01 FACILITY
## INLET GAS COMPOSITION

Representative analysis: 11/7/06 (Wasatch C.S. Inlet)

| Pollutant | Molecular Weight (lb/lb-mol) | Volume Percent (%) | Gas Weight (lb/lb-mol) | Weight Fraction (%) | Corrected [1] Wt. Fraction (%) |
|---|---|---|---|---|---|
| Methane | 16.01 | 90.27% | 14.4514 | 74.23% | 79.18% |
| Ethane | 30.02 | 4.83% | 1.4509 | 7.45% | 7.95% |
| *Total HC (Non-VOC)* | | *95.10%* | | *81.68%* | *87.13%* |
| | | | | | |
| Propane | 44.03 | 1.16% | 0.5085 | 2.61% | 2.79% |
| i-Butane | 58.04 | 0.26% | 0.1497 | 0.77% | 0.82% |
| n-Butane | 58.04 | 0.23% | 0.1306 | 0.67% | 0.72% |
| i-Pentane | 72.05 | 0.11% | 0.0764 | 0.39% | 0.42% |
| n-Pentane | 72.05 | 0.07% | 0.0526 | 0.27% | 0.29% |
| n-Hexane | 86.06 | 0.03% | 0.0284 | 0.15% | 0.16% |
| Other Hexanes | 86.06 | 0.12% | 0.1067 | 0.55% | 0.58% |
| Heptanes | 100.07 | 0.05% | 0.0500 | 0.26% | 0.27% |
| Octanes + | 114.08 | 0.04% | 0.0399 | 0.21% | 0.22% |
| Benzene | 78.1 | 0.01% | 0.0078 | 0.04% | 0.04% |
| Toluene | 92.1 | 0.02% | 0.0157 | 0.08% | 0.09% |
| Ethylbenzene | 106.2 | 0.00% | 0.0011 | 0.01% | 0.01% |
| Xylenes | 106.2 | 0.01% | 0.0074 | 0.04% | 0.04% |
| ***Total NMNE VOC*** | | *2.09%* | *1.17* | *6.03%* | ***6.44%*** |
| | | | | | |
| Carbon Dioxide | 43.99 | 2.71% | 1.1930 | 6.13% | NA |
| Nitrogen | 28.02 | 0.09% | 0.0241 | 0.12% | NA |
| Hydrogen Sulfide | 34.06 | 0.00% | 0.0000 | 0.00% | NA |
| Helium | 4.00 | 0.01% | 0.0002 | 0.00% | NA |
| | Totals | 100.00% | 19.4694 | 93.97% | 93.56% |

[1] Weight Fraction corrected to remove Carbon Dioxide,Nitrogen, H2S, and Helium content.

EMPACT ANALYTICAL SYSTEMS, INC
365 SOUTH MAIN STREET
BRIGHTON, CO 80601
(303) 637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

| | | | |
|---|---|---|---|
| PROJECT NO. : | 200610129 | ANALYSIS NO. : | 04 |
| COMPANY NAME : | WILLIAMS PRODUCTION | ANALYSIS DATE: | NOVEMBER 7, 2006 |
| ACCOUNT NO. : | | SAMPLE DATE : | OCTOBER 24, 2006 |
| PRODUCER : | | TO: | |
| LEASE NO. : | | CYLINDER NO. : | 708 |
| NAME/DESCRIP : | WASATCH | | |
| ***FIELD DATA*** | | | |
| SAMPLED BY: | WAYNE GALLAHAN | AMBIENT TEMP.: | |
| SAMPLE PRES. : | 250 SAMPLE TEMP. 60 | GRAVITY : | |
| COMMENTS : | | | |

| COMPONENT | MOLE % | MASS % | GPM@ 14.696 | GPM@ 14.73 |
|---|---|---|---|---|
| HELIUM | 0.005 | 0.001 | --- | --- |
| HYDROGEN | 0.000 | 0.000 | --- | --- |
| OXYGEN/ARGON | 0.000 | 0.000 | --- | --- |
| NITROGEN | 0.086 | 0.131 | --- | --- |
| CO2 | 2.712 | 6.510 | --- | --- |
| METHANE | 90.265 | 78.972 | --- | --- |
| ETHANE | 4.833 | 7.926 | 1.2896 | 1.2926 |
| PROPANE | 1.155 | 2.778 | 0.3175 | 0.3182 |
| I-BUTANE | 0.258 | 0.818 | 0.0842 | 0.0844 |
| N-BUTANE | 0.225 | 0.712 | 0.0708 | 0.0710 |
| I-PENTANE | 0.106 | 0.419 | 0.0386 | 0.0387 |
| N-PENTANE | 0.070 | 0.275 | 0.0253 | 0.0254 |
| HEXANES PLUS | 0.285 | 1.458 | 0.1148 | 0.1148 |
| TOTALS | 100.000 | 100.000 | 1.9408 | 1.9451 |

| **BTEX COMPONENTS** | **MOLE%** | **WT%** | |
|---|---|---|---|
| BENZENE | 0.010 | 0.044 | **LOW** |
| ETHYLBENZENE | 0.001 | 0.005 | |
| TOLUENE | 0.017 | 0.084 | **HIGH** |
| XYLENES | 0.007 | 0.038 | |
| TOTAL BTEX | 0.035 | 0.171 | |

| **BTU @** | **14.696** | **14.73** |
|---|---|---|
| NET DRY REAL : | 962.28 /scf | 964.51 /scf |
| NET WET REAL : | 945.51 /scf | 947.74 /scf |
| GROSS DRY REAL : | 1065.65 /scf | 1068.11 /scf |
| GROSS WET REAL : | 1047.08 /scf | 1049.54 /scf |
| NET DRY REAL : | 19871 /lb | 19917 /lb |
| GROSS DRY REAL : | 22006 /lb | 22057 /lb |
| RELATIVE DENSITY (AIR=1): | | 0.6342 |
| COMPRESSIBILITY FACTOR : | | 0.99764 |

*(CALC: GPA STD 2145 & TP-17 @14.696 & 60 F)*
**DHA (DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
*: ASTM D6730*

EMPACT ANALYTICAL SYSTEMS, INC
365 SOUTH MAIN STREET
BRIGHTON, CO 80601
(303) 637-0150

E & P /GlyCalc Information

| | | | |
|---|---|---|---|
| PROJECT NO. : | 200610129 | ANALYSIS NO. : | 04 |
| COMPANY NAME : | WILLIAMS PRODUCTION | ANALYSIS DATE: | NOVEMBER 7, 2006 |
| ACCOUNT NO. : | | SAMPLE DATE : | OCTOBER 24, 2006 |
| PRODUCER : | | TO: | |
| LEASE NO. : | | CYLINDER NO. : | 708 |
| NAME/DESCRIP : | WASATCH | | |
| ***FIELD DATA*** | | | |
| SAMPLED BY: | WAYNE GALLAHAN | AMBIENT TEMP.: | |
| SAMPLE PRES. : | 250 | GRAVITY : | |
| COMMENTS : | | SAMPLE TEMP. : | 60 |

| Componenet | Mole % | Wt % |
|---|---|---|
| Helium | 0.005 | 0.001 |
| Hydrogen | 0.000 | 0.000 |
| Methanol | 0.005 | 0.009 |
| Carbon Dioxide | 2.712 | 6.510 |
| Nitrogen | 0.086 | 0.131 |
| Methane | 90.265 | 78.972 |
| Ethane | 4.833 | 7.926 |
| Propane | 1.155 | 2.778 |
| Isobutane | 0.258 | 0.818 |
| n-Butane | 0.225 | 0.712 |
| Isopentane | 0.106 | 0.419 |
| n-Pentane | 0.070 | 0.275 |
| Cyclopentane | 0.003 | 0.010 |
| n-Hexane | 0.033 | 0.157 |
| Cyclohexane | 0.019 | 0.085 |
| Other Hexanes | 0.073 | 0.339 |
| Heptanes | 0.050 | 0.273 |
| Methycyclohexane | 0.032 | 0.174 |
| 2,2,4 Trimethylpentane | 0.000 | 0.000 |
| Benzene | 0.010 | 0.044 |
| Toluene | 0.017 | 0.084 |
| Ethylbenzene | 0.001 | 0.005 |
| Xylenes | 0.007 | 0.038 |
| C8+ Heavies | 0.035 | 0.240 |
| ***Subtotal*** | 100.000 | 100.000 |
| Oxygen | 0.000 | 0.000 |
| **Total** | 100.000 | 100.000 |

Bargath Inc.
August 2008

Submittal 11.1.B.2

Dust Control at Una Compressor Station

"All excavation work shall be conducted in a manner that preserves soil and allows for the segregation of soil types in order to facilitate land reclamation in the future. Measures shall be taken to prevent excessive soil erosion by wind or water including the Best Management Practices as detailed in the Stormwater Management Plan for the site. All excavated serfaces shall be maintained with adequate moisture to reduce wind erosion."

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 11.1.B.4: Noise Abatement**

The Una Compressor Station would have the following equipment installed that will produce noise:

8 each Model 3516 Gas Gathering Compressors.

> Each of these compressors will have residential quality exhaust silencers installed. In addition, an engineered noise enclosure with house each engine, and the discharge and engine cooler will have noise attenuators installed on the inlet and outlet to silence the fan sound. The silencers and noise attenuation buildings and equipment are a Best Management Practice and will help ensure that the compressors meet regulations set forth by the State of Colorado for noise.

As per rule 802 – Noise Abatement, of the Colorado Oil and Gas Conservation Comissions, noise emissions from this station to ARRD zoned lands adjacent are 55 dB(A) from 7:00 AM to 7:00 PM and 50 dB(A) from 7:00 PM to 7:00 AM at 350 feet from the emission source. The noise impact assessment included in this section shows that these noise requirements would be met by the Una Compressor Station. In addition, a preliminary sketch of the noise attenuation equipment proposed for each compressor unit is attached.

Please contact me with any questions.

Sincerely,

**Star Valley Engineering, Inc.**

Charles S. Bucans

Charles S. Bucans, P.E.
Project Manager

The Science of Silence®

# Noise Impact Assessment

## Williams Production RMT
**Una SG#12-35 Well Location Compressor Pad**

**Prepared for & Requested By**

Mr. Eric Millar
**Williams Production RMT**

**Prepared By**


Mr. Doug Craig, B.A.
Mr. Andrew Faszer, P. Eng.
Ms. Shannon Barr
**Noise Solutions Inc.**

Mr. Clifford Faszer, P. Eng.
**FFA Consultants in Acoustics and Noise Control Ltd.**


August 25, 2008

Noise Solutions File # 2883.3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Noise Solutions

The Science of Silence®

## Executive Summary

Williams Production RMT (Williams) wanted to assess the environmental noise impact of their proposed compressor station to be located at Una SG#12-35 Well Location Compressor Pad, Colorado. The results of this assessment will determine the potential compliance of this facility with the permissible noise level limits of the Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800 as of November 30, 2006. The assessment additionally provides the foundation to develop and evaluate noise control measures for the proposed facility equipment should the results indicate that the facility exceeds the permissible noise level limits indicated by the COGCC. Noise Solutions Inc. was commissioned by Williams to complete this evaluation.

Sound power levels of the significant noise sources that will be present at the facility were calculated from a combination of manufacturer's sound pressure level data, file data of previously measured units, and theory. These sound power levels were incorporated into RTA Technology Pty. Ltd.'s software, ENM. The noise propagation model was used to predict the facility sound level at 350 feet and at two residence locations following the requirements of Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800. The overall result is compared with the Permissible Noise Levels (PNLs) in order to determine potential compliance. The results of the modeling along with the PNLs are presented in the following table.

**Predicted Sound Levels**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Location & Sound Level Description | Daytime Sound Level (dBA $L_{eq}$) | Nighttime Sound Level (dBA $L_{eq}$) | Permissible Low Frequency Noise Level (dBC $L_{eq}$) |
|---|---|---|---|
| ***350 feet West of the facility*** | | | |
| Predicted Facility Sound Level Contribution | 74.3 | 74.3 | n/a |
| Permissible Noise Levels | 55.0 | 50.0 | n/a |
| ***Residence #1 approximately 742 feet Northwest*** | | | |
| Predicted Facility Sound Level Contribution | n/a | n/a | 80.8 |
| Permissible Noise Levels | 55.0 | 50.0 | 65.0 |
| ***Residence #2 approximately 1232 feet East*** | | | |
| Predicted Facility Sound Level Contribution | n/a | n/a | 75.0 |
| Permissible Noise Levels | 55.0 | 50.0 | 65.0 |

NSI File #2883.1

The results of the environmental noise propagation model indicate that the facility does not comply with the nighttime PNLs as per the COGCC at 350 feet. Noise Solutions Inc. recommends that Williams review and implement the noise control measures outlined in this report. Implementation is predicted to lower the facility sound level sufficiently at 350 feet to be within the allowable nighttime noise level limit.

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# Contents

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# Tables & Figures

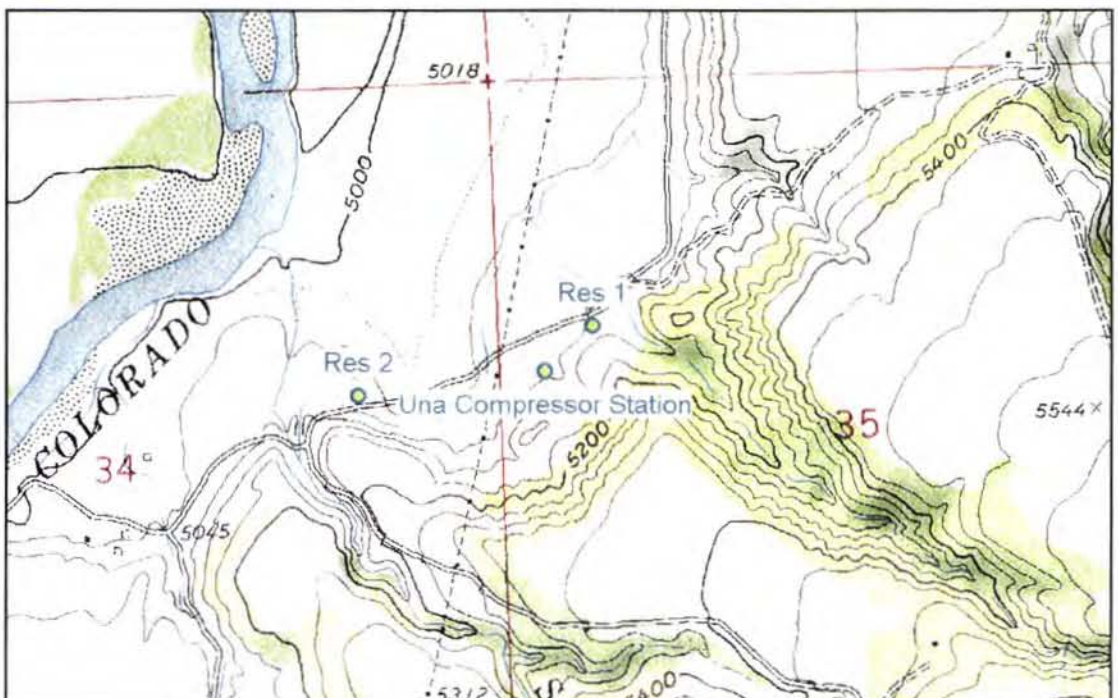
## *Background & Scope*

Williams Production RMT (Williams) wanted to assess the environmental noise impact of their proposed compressor station located at Una SG#12-35 Well Location Compressor Pad. Williams commissioned this assessment to determine the potential compliance of this facility with the permissible noise level limits of the Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800. The assessment additionally provides the foundation to develop and evaluate noise control measures for the facility equipment should the results indicate that the facility exceeds the permissible noise level limits or as a tool to examine mitigation measures that if implemented would possibly resolve the community concern. Noise Solutions Inc. was commissioned by Williams to complete this evaluation.

## *Site Description & Residence Locations*

The Williams facility is located at Una SG#12-35 Well Location Compressor Pad, Colorado, approximately 6.5 miles Southwest of Parachute, Colorado. The topography of the study area is a river valley. Figure 1 presents a map of the study area indicating the location of the surrounding residences and the compressor station site along with other area features.

**Figure 1**
**Study Area Map**
**Williams Una SG#12-35 Well Location Compressor Pad**

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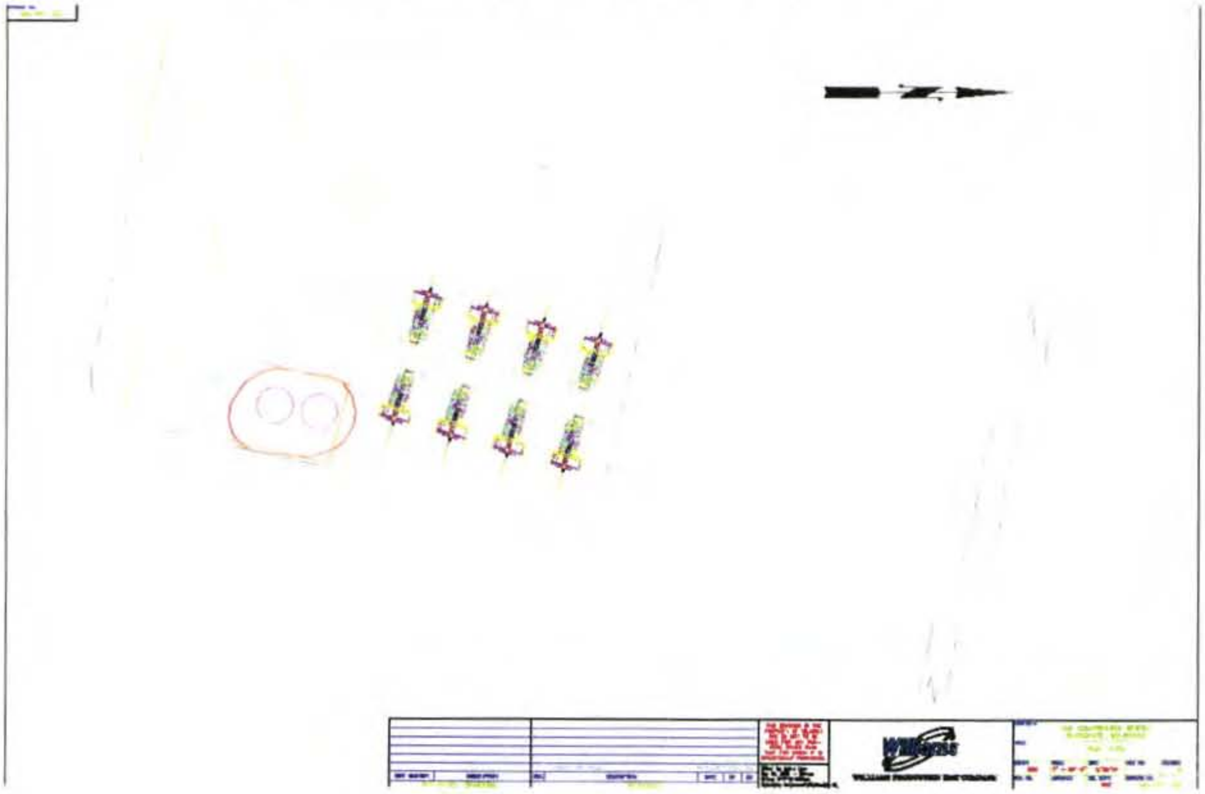
## *Site Description & Residence Locations (continued)*

The facility site in Figure 1 was plotted on this copy of the National Topographic System Universal Transverse Mercator 1000 metre grid map using information provided by Williams.

Figure 2 presents a map of the facility plot plan indicating the location and orientation of all eight (8) proposed compressors on site.

**Figure 2**
**Plot Plan Map**
**Williams Una SG#12-35 Well Location Compressor Pad**



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### *Facility Equipment*

The facility will consist of 8 engine-driven compressor units all housed in insulated metal buildings. A Caterpillar 3516LE engine will drive each compressor unit and also power a cooling fan externally mounted in an Air-X-Changers 156EH cooler. Each unit will be treated with a Zeron® Muffler manufactured by Noise Solutions Inc.

### *Approach*

Noise Solutions Inc. determined sound pressure levels for the significant noise sources associated with the proposed facility equipment. The sound pressure values were compiled from a combination of manufacturer's data, file data, and theory. Using accepted acoustical engineering techniques the sound pressure level data was used to calculate sound power levels for the significant noise sources associated with the proposed facility equipment. Data regarding the topography and vegetation of the area surrounding the proposed facility site was obtained from commercial sources. This information was used as input parameters for an environmental noise propagation computer model to calculate the proposed facility sound level contribution at 350 feet or the fence line of the facility, whichever distance is greater as per the Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800

The results of the model are presented as the individual component sound levels as well as the overall facility sound level contribution. The results were reviewed and compared with the PNLs of Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800 to determine the potential for compliance. Noise control measures if warranted or requested are developed and evaluated within the noise propagation model with the predicted sound level after implementation reported for the point of interest. Acoustical specifications are developed and reported along with the recommendations.

### *Criteria*

Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800 is a location-oriented noise regulation that applies to energy industry facilities in the State of Colorado, USA.

Table 1 presents the Permissible Noise Levels (PNLs) for the receiver locations assessed. Those PNLs are based on the county zoning of Agricultural/Rural.

**Table 1**
**Allowable Noise Level**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Location | Daytime Permissible Noise Level (dBA $L_{eq}$) | Nighttime Permissible Noise Level (dBA $L_{eq}$) | Permissible Low Frequency Noise Level (dBC $L_{eq}$) |
|---|---|---|---|
| 350 feet from the facility | 55.0 | 50.0 | n/a |
| Residences #1 – 742 feet Northwest | n/a | n/a | 65.0 |
| Residences #2 – 1232 feet East | n/a | n/a | 65.0 |

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### *Low Frequency Noise*

The Colorado Oil & Gas Commission (COGCC) Aesthetic and Noise Control Regulations 800 recognizes that low frequency noise (LFN) emanating from a facility can create concern from nearby residents in some situations where the overall dBA value is satisfactory. In response to this issue the COGCC outlines the methodology for the evaluation of facility related low frequency noise. The COGCC recommends that in situations where the complaint of Commission onsite inspection indicates that low frequency noise is a component of the problem, the Commission shall obtain a sound level measurement twenty-five (25) feet from the exterior wall of the residence or occupied structure nearest to the noise source, using a noise meter calibrated to the dBC scale. If this reading exceeds 65 dBC, the Commission shall require the operator to obtain a low frequency noise impact analysis by a qualified sound expert, including identification of any reasonable control measures available to mitigate such low frequency noise impact. Such study shall be provided to the Commission for consideration and possible action.

Noise Solutions recommends using the 65 dBC Low Frequency Noise limit as a facility design criteria because it is significantly more efficient to treat low frequency noise at the design and construction stages, rather than after the facility has been commissioned and is in operation.

### *Sound Power Level Calculations*

Sound power levels of the significant noise sources for the proposed facility were calculated from manufacturer's sound pressure level data, file data of previously measured equipment similar to that proposed, and theory. These calculations followed accepted acoustical engineering evaluation methods for the determination of sound power levels from sound pressure levels for large machinery. Table 2 presents the calculated sound power levels. The values are order ranked from highest to lowest overall dBA sound power level. Table 2 additionally presents the overall dBC sound power level for each source.

## *Sound Power Level Calculations (continued)*

**Table 2**
**Source Sound Power Levels**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Source Description | Sound Power Level (dBZ *re:* $10^{-12}$ W) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Octave Band Centre Frequency (Hz) | | | | | | | | | Sum (dBC) | Sum (dBA) |
| | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | |
| ***Caterpillar G3516 LE 1340 Hp @ 1400 RPM / Air-X-Changers 156EH-112-24 Cooler*** | | | | | | | | | | | |
| Cooler Inlet | 120.2 | 120.2 | 119.2 | 116.2 | 111.2 | 109.2 | 103.2 | 97.2 | 91.2 | 124.5 | 114.2 |
| Cooler Outlet | 116.5 | 116.5 | 115.5 | 112.5 | 107.5 | 105.5 | 99.5 | 93.5 | 87.5 | 120.9 | 110.5 |
| Open Double Doors | 100.1 | 100.1 | 101.6 | 97.8 | 96.3 | 99.4 | 99.1 | 95.1 | 89.5 | 107.6 | 104.4 |
| Open Windows | 96.4 | 96.4 | 97.9 | 94.1 | 92.6 | 95.7 | 95.4 | 91.4 | 85.8 | 103.8 | 100.6 |
| Wall Vents | 95.8 | 95.8 | 97.3 | 93.5 | 92.0 | 95.1 | 94.8 | 90.8 | 85.2 | 103.3 | 100.1 |
| Engine Air Inlet | 94.0 | 97.6 | 100.7 | 95.4 | 87.6 | 89.8 | 88.9 | 86.7 | 85.0 | 103.7 | 95.9 |
| Ridge Vent | 86.5 | 86.5 | 92.0 | 90.2 | 89.7 | 88.8 | 85.5 | 85.5 | 79.9 | 97.4 | 93.8 |
| Building | 112.3 | 106.3 | 101.8 | 94.0 | 90.5 | 80.6 | 79.3 | 68.3 | 62.7 | 111.5 | 92.1 |
| Engine Exhaust System | 88.0 | 81.7 | 83.4 | 86.5 | 79.9 | 76.7 | 72.8 | 75.1 | 73.8 | 91.1 | 83.9 |
| ***Line Heater*** | | | | | | | | | | | |
| Inlet Lw | 101.1 | 99.2 | 92.3 | 84.5 | 91.2 | 91.0 | 92.7 | 91.8 | 91.5 | 103.3 | 98.7 |
| Outlet Lw | 101.0 | 95.9 | 96.2 | 92.7 | 89.0 | 82.1 | 80.4 | 70.9 | 59.8 | 102.2 | 90.3 |
| ***Air Compressor*** | | | | | | | | | | | |
| Air Compressor | 76.0 | 73.0 | 73.0 | 72.0 | 75.0 | 78.0 | 78.0 | 76.0 | 73.0 | 84.3 | 83.6 |

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Order ranked sound pressure levels at a distant point of reception may differ from the facility order ranked sound power levels. This can occur for a number of reasons including the frequency composition of each noise source, the physical height of the noise source above the ground, acoustical shielding at the site or the topography between the site and the receiver.

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## *Noise Model*

ENM Windows, an environmental noise assessment software package from RTA Technology Pty. Ltd., was employed to determine the environmental noise impact of the facility equipment. The noise prediction program completes complex sound propagation calculations that included the effects of the environment, terrain, and topography. The algorithms of the model are based on methods and research well recognized in the acoustics community and follows the CONCAWE algorithms. Acoustics Australia, an acoustics community publication has published two papers regarding algorithms and validation of the ENM software (Tonin 1985, 1997). Noise Solutions Inc. has completed noise impact assessments that have used of the ENM software since 1998 Over 1500 facilities have been modelled using the ENM software since 1998 with the modelled results comparable to the measured results where data was available.

The calculated source sound power levels, complete with information regarding the facility site equipment layout along with the reception locations were entered in the model. The meteorological conditions selected favoured the transmission of sound from the facility site to each point of reception, thus emulating a period during which the facility could experience noise complaints. Table 3 lists the selected conditions.

**Table 3**
**Modeled Conditions**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Parameter | Modeled Input |
|---|---|
| Temperature | 77°F |
| Wind Velocity | 5 mph |
| Wind Direction | From the facility to each reception point. |
| Relative Humidity | 70% |
| Topography | Yes |
| Terrain Category | Rural |
| Ground Type | Grass |
| Receiver Height Above Ground | 1.5m |

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The results of the model are reviewed during the modeling process and, where warranted, additional calculations are completed outside of the model to verify the ENM results.

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*Results*

Tables 4, 5 & 6 presents the overall predicted facility sound pressure level contribution and the source sound pressure level contributions as dBA and dBC values for the facility at 350 feet and at the 2 residences respectively. The source sound level contribution values are order ranked by the "A" weighted contribution level.

**Table 4**
**Order Ranked Sound Pressure Levels**
**350 feet West from facility**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Source | Source Sound Level Contribution (dBC) | Source Sound Level Contribution (dBA) | Source | Source Sound Level Contribution (dBC) | Source Sound Level Contribution (dBA) |
|---|---|---|---|---|---|
| Unit 6 Cooler Inlet | 75.2 | 64.3 | Unit 3 Open Windows | 52.5 | 47.8 |
| Unit 7 Cooler Inlet | 75.1 | 64.3 | Unit 2 Open Windows | 52.5 | 47.7 |
| Unit 5 Cooler Inlet | 74.9 | 64.1 | Unit 4 Open Windows | 52.5 | 47.7 |
| Unit 8 Cooler Inlet | 75.0 | 63.9 | Unit 1 Open Windows | 52.3 | 47.6 |
| Unit 2 Cooler Inlet | 73.7 | 61.5 | Unit 2 Wall Vents | 52.1 | 47.1 |
| Unit 3 Cooler Inlet | 73.7 | 61.4 | Unit 3 Wall Vents | 52.0 | 47.0 |
| Unit 4 Cooler Inlet | 73.7 | 61.4 | Unit 4 Wall Vents | 52.0 | 47.0 |
| Unit 1 Cooler Inlet | 73.6 | 61.3 | Unit 1 Wall Vents | 52.0 | 47.0 |
| Unit 6 Cooler Outlet | 71.1 | 60.5 | Unit 7 Engine Air Inlet | 52.9 | 44.3 |
| Unit 7 Cooler Outlet | 71.2 | 60.5 | Unit 6 Engine Air Inlet | 52.8 | 44.2 |
| Unit 5 Cooler Outlet | 70.9 | 60.3 | Unit 8 Engine Air Inlet | 52.9 | 44.2 |
| Unit 8 Cooler Outlet | 71.0 | 60.3 | Unit 5 Engine Air Inlet | 52.5 | 44.1 |
| Unit 2 Cooler Outlet | 69.8 | 57.7 | Unit 6 Ridge Vent | 46.5 | 42.7 |
| Unit 3 Cooler Outlet | 69.8 | 57.7 | Unit 7 Ridge Vent | 46.4 | 42.6 |
| Unit 1 Cooler Outlet | 69.6 | 57.6 | Unit 5 Ridge Vent | 46.3 | 42.5 |
| Unit 4 Cooler Outlet | 69.8 | 57.5 | Unit 2 Engine Air Inlet | 52.2 | 42.3 |
| Unit 6 Open Double Doors - South | 57.2 | 53.0 | Unit 8 Ridge Vent | 46.1 | 42.3 |
| Unit 7 Open Double Doors - North | 57.1 | 53.0 | Unit 1 Engine Air Inlet | 52.1 | 42.2 |
| Unit 6 Open Double Doors - North | 57.1 | 52.9 | Unit 3 Engine Air Inlet | 52.0 | 42.2 |
| Unit 7 Open Double Doors - South | 57.2 | 52.9 | Unit 4 Engine Air Inlet | 52.1 | 42.1 |
| Unit 8 Open Double Doors - North | 57.1 | 52.9 | Unit 6 Building | 63.9 | 41.2 |
| Unit 5 Open Double Doors - South | 57.0 | 52.8 | Unit 7 Building | 63.9 | 41.2 |
| Unit 8 Open Double Doors -South | 57.0 | 52.7 | Unit 8 Building | 63.8 | 41.1 |
| Unit 5 Open Double Doors - North | 56.8 | 52.5 | Unit 5 Building | 63.6 | 41.0 |
| Unit 3 Open Double Doors - South | 56.2 | 51.4 | Unit 3 Ridge Vent | 44.8 | 40.9 |
| Unit 2 Open Double Doors - South | 56.2 | 51.4 | Unit 2 Ridge Vent | 44.6 | 40.7 |
| Unit 3 Open Double Doors - North | 56.2 | 51.4 | Unit 1 Ridge Vent | 44.7 | 40.7 |
| Unit 4 Open Double Doors - North | 56.1 | 51.3 | Unit 4 Ridge Vent | 44.6 | 40.6 |
| Unit 2 Open Double Doors - North | 56.0 | 51.3 | Unit 3 Building | 62.8 | 40.3 |
| Unit 1 Open Double Doors - South | 56.1 | 51.3 | Unit 2 Building | 62.8 | 40.2 |
| Unit 1 Open Double Doors - North | 55.9 | 51.2 | Unit 4 Building | 62.7 | 40.2 |
| Unit 4 Open Double Doors - South | 56.1 | 51.1 | Unit 1 Building | 62.6 | 40.0 |
| Unit 7 Open Windows | 53.4 | 49.2 | Unit 7 Engine Exhaust System | 41.2 | 32.8 |
| Unit 6 Open Windows | 53.3 | 49.1 | Unit 6 Engine Exhaust System | 41.2 | 32.7 |
| Unit 8 Open Windows | 53.3 | 49.1 | Unit 5 Engine Exhaust System | 41.2 | 32.7 |
| Unit 5 Open Windows | 53.2 | 48.9 | Unit 8 Engine Exhaust System | 41.0 | 32.6 |
| Unit 7 Wall Vents | 53.1 | 48.8 | Unit 2 Engine Exhaust System | 39.9 | 31.1 |
| Unit 6 Wall Vents | 53.0 | 48.7 | Unit 3 Engine Exhaust System | 39.9 | 31.1 |
| Unit 5 Wall Vents | 52.7 | 48.5 | Unit 1 Engine Exhaust System | 39.9 | 30.9 |
| Unit 8 Wall Vents | 53.0 | 48.5 | Unit 4 Engine Exhaust System | 39.7 | 30.9 |
| **Facility Contribution Sum** | | | | **85.3** | **74.3** |

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*Results (continued)*

Table 5
Order Ranked Sound Pressure Levels
Residences #1 – 742 feet Northwest
Williams Una SG#12-35 Well Location Compressor Pad

| Source | Source Sound Level Contribution (dBC) | Source Sound Level Contribution (dBA) | Source | Source Sound Level Contribution (dBC) | Source Sound Level Contribution (dBA) |
|---|---|---|---|---|---|
| Unit 1 Cooler Inlet | 72.2 | 60.5 | Unit 7 Open Windows | 48.1 | 43.8 |
| Unit 2 Cooler Inlet | 67.5 | 59.7 | Unit 4 Open Windows | 49.1 | 43.8 |
| Unit 5 Cooler Inlet | 69.7 | 59.3 | Unit 6 Wall Vents | 46.1 | 43.8 |
| Unit 3 Cooler Inlet | 66.9 | 59.2 | Unit 7 Wall Vents | 48.1 | 43.7 |
| Unit 6 Cooler Inlet | 69.6 | 58.8 | Unit 3 Wall Vents | 48.6 | 43.5 |
| Unit 4 Cooler Inlet | 70.9 | 58.7 | Unit 8 Open Windows | 48.1 | 43.5 |
| Unit 7 Cooler Inlet | 69.6 | 58.1 | Unit 8 Wall Vents | 45.7 | 43.5 |
| Unit 8 Cooler Inlet | 70.4 | 57.9 | Unit 4 Wall Vents | 46.0 | 43.3 |
| Unit 1 Cooler Outlet | 68.3 | 56.5 | Unit 1 Engine Air Inlet | 49.6 | 40.7 |
| Unit 2 Cooler Outlet | 64.1 | 55.9 | Unit 5 Engine Air Inlet | 48.2 | 40.1 |
| Unit 5 Cooler Outlet | 66.0 | 55.5 | Unit 2 Engine Air Inlet | 48.5 | 39.9 |
| Unit 3 Cooler Outlet | 63.4 | 55.3 | Unit 6 Engine Air Inlet | 47.5 | 39.4 |
| Unit 6 Cooler Outlet | 65.7 | 55.1 | Unit 3 Engine Air Inlet | 44.7 | 39.2 |
| Unit 4 Cooler Outlet | 67.3 | 54.9 | Unit 1 Ridge Vent | 43.6 | 39.0 |
| Unit 7 Cooler Outlet | 65.7 | 54.4 | Unit 7 Engine Air Inlet | 47.5 | 38.8 |
| Unit 8 Cooler Outlet | 66.6 | 54.3 | Unit 4 Engine Air Inlet | 47.4 | 38.7 |
| Unit 1 Open Double Doors - South | 53.9 | 49.6 | Unit 2 Ridge Vent | 42.5 | 38.5 |
| Unit 1 Open Double Doors - North | 53.4 | 49.5 | Unit 8 Engine Air Inlet | 48.8 | 38.4 |
| Unit 2 Open Double Doors - North | 53.9 | 49.1 | Unit 5 Ridge Vent | 43.0 | 38.4 |
| Unit 5 Open Double Doors - North | 52.7 | 48.7 | Unit 2 Building | 60.7 | 38.1 |
| Unit 2 Open Double Doors - South | 52.9 | 48.6 | Unit 1 Building | 59.8 | 38.1 |
| Unit 3 Open Double Doors - North | 52.3 | 48.2 | Unit 3 Ridge Vent | 42.0 | 37.8 |
| Unit 5 Open Double Doors - South | 50.5 | 48.2 | Unit 6 Ridge Vent | 41.5 | 37.8 |
| Unit 3 Open Double Doors - South | 50.3 | 48.1 | Unit 7 Ridge Vent | 41.5 | 37.6 |
| Unit 6 Open Double Doors - North | 52.2 | 48.0 | Unit 5 Building | 58.6 | 37.5 |
| Unit 6 Open Double Doors - South | 52.1 | 47.7 | Unit 7 Building | 59.6 | 37.1 |
| Unit 7 Open Double Doors - North | 52.0 | 47.7 | Unit 4 Ridge Vent | 41.3 | 37.0 |
| Unit 4 Open Double Doors - North | 49.9 | 47.6 | Unit 8 Ridge Vent | 40.7 | 37.0 |
| Unit 4 Open Double Doors - South | 51.4 | 47.5 | Unit 8 Building | 59.3 | 36.7 |
| Unit 7 Open Double Doors - South | 52.7 | 47.4 | Unit 6 Building | 59.0 | 36.4 |
| Unit 8 Open Double Doors - North | 52.6 | 47.4 | Unit 3 Building | 54.2 | 36.1 |
| Unit 8 Open Double Doors -South | 52.5 | 47.3 | Unit 4 Building | 55.2 | 35.7 |
| Unit 1 Open Windows | 49.6 | 45.5 | Unit 1 Engine Exhaust System | 37.6 | 29.5 |
| Unit 2 Open Windows | 50.0 | 45.4 | Unit 2 Engine Exhaust System | 38.1 | 28.8 |
| Unit 1 Wall Vents | 49.6 | 45.2 | Unit 3 Engine Exhaust System | 35.0 | 27.9 |
| Unit 3 Open Windows | 49.0 | 44.7 | Unit 5 Engine Exhaust System | 36.3 | 27.8 |
| Unit 5 Open Windows | 48.7 | 44.6 | Unit 4 Engine Exhaust System | 34.5 | 27.6 |
| Unit 2 Wall Vents | 48.4 | 44.5 | Unit 6 Engine Exhaust System | 36.3 | 27.5 |
| Unit 5 Wall Vents | 49.5 | 44.5 | Unit 7 Engine Exhaust System | 36.4 | 26.9 |
| Unit 6 Open Windows | 48.5 | 44.1 | Unit 8 Engine Exhaust System | 35.9 | 26.5 |
| **Facility Contribution Sum** | | | | **80.8** | **70.4** |

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*Results (continued)*

**Table 6**
**Order Ranked Sound Pressure Levels**
**Residences #2 – 1232 feet East**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Source | Source Sound Level Contribution (dBC) | Source Sound Level Contribution (dBA) | Source | Source Sound Level Contribution (dBC) | Source Sound Level Contribution (dBA) |
|---|---|---|---|---|---|
| Unit 6 Cooler Inlet | 64.4 | 53.6 | Unit 8 Wall Vents | 42.1 | 37.4 |
| Unit 7 Cooler Inlet | 64.3 | 53.6 | Unit 1 Open Windows | 42.1 | 37.3 |
| Unit 8 Cooler Inlet | 64.1 | 53.6 | Unit 6 Wall Vents | 41.9 | 37.3 |
| Unit 5 Cooler Inlet | 64.0 | 53.4 | Unit 5 Wall Vents | 41.8 | 37.1 |
| Unit 3 Cooler Inlet | 64.2 | 52.6 | Unit 4 Wall Vents | 41.9 | 37.0 |
| Unit 4 Cooler Inlet | 64.0 | 52.6 | Unit 3 Wall Vents | 41.8 | 36.9 |
| Unit 2 Cooler Inlet | 63.9 | 52.5 | Unit 2 Wall Vents | 41.7 | 36.8 |
| Unit 1 Cooler Inlet | 63.8 | 52.4 | Unit 1 Wall Vents | 41.6 | 36.7 |
| Unit 8 Cooler Outlet | 60.6 | 50.0 | Unit 7 Engine Air Inlet | 41.8 | 33.4 |
| Unit 7 Cooler Outlet | 60.5 | 49.8 | Unit 8 Engine Air Inlet | 41.9 | 33.3 |
| Unit 6 Cooler Outlet | 60.3 | 49.6 | Unit 6 Engine Air Inlet | 41.7 | 33.2 |
| Unit 5 Cooler Outlet | 60.2 | 49.5 | Unit 5 Engine Air Inlet | 41.6 | 33.0 |
| Unit 4 Cooler Outlet | 60.3 | 48.9 | Unit 4 Engine Air Inlet | 41.6 | 32.6 |
| Unit 3 Cooler Outlet | 60.2 | 48.8 | Unit 3 Engine Air Inlet | 41.5 | 32.5 |
| Unit 2 Cooler Outlet | 60.1 | 48.8 | Unit 1 Engine Air Inlet | 41.3 | 32.4 |
| Unit 1 Cooler Outlet | 59.9 | 48.7 | Unit 2 Engine Air Inlet | 41.4 | 32.4 |
| Unit 7 Open Double Doors - South | 46.4 | 42.0 | Unit 8 Ridge Vent | 36.4 | 31.9 |
| Unit 7 Open Double Doors - North | 46.4 | 41.9 | Unit 6 Ridge Vent | 36.3 | 31.8 |
| Unit 8 Open Double Doors - North | 46.3 | 41.9 | Unit 7 Ridge Vent | 36.2 | 31.7 |
| Unit 8 Open Double Doors -South | 46.5 | 41.9 | Unit 5 Ridge Vent | 36.3 | 31.7 |
| Unit 6 Open Double Doors - South | 46.3 | 41.8 | Unit 3 Ridge Vent | 35.8 | 31.5 |
| Unit 6 Open Double Doors - North | 46.2 | 41.7 | Unit 2 Ridge Vent | 35.7 | 31.4 |
| Unit 5 Open Double Doors - South | 46.2 | 41.7 | Unit 4 Ridge Vent | 35.7 | 31.4 |
| Unit 5 Open Double Doors - North | 46.1 | 41.6 | Unit 1 Ridge Vent | 35.7 | 31.3 |
| Unit 3 Open Double Doors - North | 46.0 | 41.2 | Unit 7 Building | 53.2 | 31.1 |
| Unit 4 Open Double Doors - North | 46.1 | 41.1 | Unit 8 Building | 53.3 | 31.1 |
| Unit 4 Open Double Doors - South | 46.0 | 41.1 | Unit 6 Building | 53.4 | 31.1 |
| Unit 2 Open Double Doors - South | 46.1 | 41.1 | Unit 5 Building | 53.0 | 31.0 |
| Unit 1 Open Double Doors - South | 46.0 | 41.1 | Unit 4 Building | 53.3 | 30.7 |
| Unit 3 Open Double Doors - South | 45.8 | 41.1 | Unit 3 Building | 53.2 | 30.6 |
| Unit 2 Open Double Doors - North | 45.9 | 41.0 | Unit 2 Building | 53.1 | 30.5 |
| Unit 1 Open Double Doors - North | 45.8 | 41.0 | Unit 1 Building | 52.9 | 30.3 |
| Unit 7 Open Windows | 42.7 | 38.1 | Unit 8 Engine Exhaust System | 31.0 | 21.9 |
| Unit 8 Open Windows | 42.7 | 38.1 | Unit 5 Engine Exhaust System | 30.8 | 21.7 |
| Unit 6 Open Windows | 42.5 | 38.1 | Unit 6 Engine Exhaust System | 30.9 | 21.7 |
| Unit 5 Open Windows | 42.5 | 38.0 | Unit 7 Engine Exhaust System | 30.6 | 21.7 |
| Unit 4 Open Windows | 42.4 | 37.6 | Unit 4 Engine Exhaust System | 30.7 | 21.7 |
| Unit 3 Open Windows | 42.1 | 37.5 | Unit 3 Engine Exhaust System | 30.5 | 21.4 |
| Unit 7 Wall Vents | 42.3 | 37.5 | Unit 2 Engine Exhaust System | 30.4 | 21.3 |
| Unit 2 Open Windows | 42.2 | 37.4 | Unit 1 Engine Exhaust System | 30.3 | 21.2 |
| **Facility Contribution Sum** | | | | **75.0** | **64.2** |

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Williams has indicated that they anticipate a continued steady-state operation of the equipment at the facility site. All of the compressor units were modeled with the man doors, vents and windows in the open position.

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### *Discussion of Results*

Table 7 presents the overall predicted facility sound level along with the PNLs.

**Table 7**
**Permissible Noise Levels**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Location & Sound Level Description | Daytime Sound Level (dBA $L_{eq}$) | Nighttime Sound Level (dBA $L_{eq}$) | Permissible Low Frequency Noise Level (dBc $L_{eq}$) |
|---|---|---|---|
| ***350 feet West the facility*** | | | |
| Predicted Facility Sound Level Contribution | 74.3 | 74.3 | n/a |
| Permissible Noise Levels | 55.0 | 50.0 | n/a |
| ***Residence #1 approximately 742 feet Northwest*** | | | |
| Predicted Facility Sound Level Contribution | n/a | n/a | 80.8 |
| Permissible Noise Levels | 55.0 | 50.0 | 65.0 |
| ***Residence #2 approximately 1232 feet East*** | | | |
| Predicted Facility Sound Level Contribution | n/a | n/a | 75.0 |
| Permissible Noise Levels | 55.0 | 50.0 | 65.0 |

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A comparison of the predicted sound level to the allowable noise levels indicates that the facility potentially exceeds the nighttime PNL at 350 feet from the facility as well as the low frequency noise limit at the two residences assessed.

### *Recommendations*

The results of the modeling indicate that the facility potentially would not comply with the nighttime PNL. As requested, Noise Solutions Inc. has developed and evaluated noise control measures for the facility to reduce the predicated level sufficiently to be in compliance with the nighttime PNL at 350 feet from the facility and 65 dBC at the two residences assessed. The recommended noise control measures are presented in a progressive list with the understanding that all measures above the selected measure, including the measure under review, require implementation to potentially achieve the corresponding predicted overall sound level.

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*Recommendations (continued)*

Tables 8, 9 & 10 presents a description of each recommended noise control measure along with the predicted facility sound levels for the location 350 feet from the facility and residences #1 and 2 respectively.

**Table 8**
**Noise Control Evaluation**
**350 feet from the Facility**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Step | Noise Control Measure Description | Predicted Sound Levels | |
|---|---|---|---|
| | | Facility Contribution (dBC) | Facility Contribution (dBA) |
| | Predicted facility sound level. | 85.3 | 74.3 |
| 1 | Install NSI "T" Style Cooler Inlet (high specification model) silencers on a all of the Caterpillar 3516 units with Air-X-Changers Model 156EH coolers. | 80.8 | 70.3 |
| 2 | Install NSI "L" Style Cooler Outlet (high specification, low frequency model) silencers on a all of the Caterpillar 3516 units with Air-X-Changers Model 156EH coolers. | 75.4 | 66.1 |
| 3 | Install an NSI acoustically treated "L" Style building ventilation system on the all of the Caterpillar 3516 Compressor Units. The installed system must permit operation of all the units within the building with the compressor building doors and untreated openings closed. | 74.2 | 55.2 |
| 4 | Install an NSI acoustically treated engine air intake silencer on the all of the Caterpillar 3516 Compressor Units. | 74.0 | 52.0 |
| 5 | Install an NSI acoustically treated building (high specification, low frequency model) on the all of the Caterpillar 3516 Compressor Units. | 69.6 | 48.1 |

NSI File #2883.1

The modeling results indicate that implementing the recommended noise control measures would reduce the facility sound level by 26.2 dBA at a receiver location 350 feet west of the facility.

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*Recommendations (continued)*

Table 9
Noise Control Evaluation
Residences #1 – 742 Feet Northwest
Williams Una SG#12-35 Well Location Compressor Pad

| Step | Noise Control Measure Description | Predicted Sound Levels | |
|---|---|---|---|
| | | Facility Contribution (dBC) | Facility Contribution (dBA) |
| | Predicted facility sound level. | 80.8 | 70.3 |
| 1 | Install NSI "T" Style Cooler Inlet (high specification model) silencers on a all of the Caterpillar 3516 units with Air-X-Changers Model 156EH coolers. | 76.5 | 66.4 |
| 2 | Install NSI "L" Style Cooler Outlet (high specification, low frequency model) silencers on a all of the Caterpillar 3516 units with Air-X-Changers Model 156EH coolers. | 71.0 | 62.2 |
| 3 | Install an NSI acoustically treated "L" Style building ventilation system on the all of the Caterpillar 3516 Compressor Units. The installed system must permit operation of all the units within the building with the compressor building doors and untreated openings closed. | 69.7 | 51.3 |
| 4 | Install an NSI acoustically treated engine air intake silencer on the all of the Caterpillar 3516 Compressor Units. | 69.4 | 48.2 |
| 5 | Install an NSI acoustically treated building (high specification, low frequency model) on the all of the Caterpillar 3516 Compressor Units. | 65.0 | 44.2 |

NSI File #2883.1

The modeling results indicate that implementing the recommended noise control measures would reduce the facility sound level by 26.1 dBA & 15.8 dBC at residence #1.

## Recommendations (continued)

**Table 10**
**Noise Control Evaluation**
**Residences #2 - 1232 Feet East**
**Williams Una SG#12-35 Well Location Compressor Pad**

| Step | Noise Control Measure Description | Predicted Sound Levels | |
|---|---|---|---|
| | | Facility Contribution (dBC) | Facility Contribution (dBA) |
| | Predicted facility sound level. | 75.0 | 64.2 |
| 1 | Install NSI "T" Style Cooler Inlet (high specification model) silencers on a all of the Caterpillar 3516 units with Air-X-Changers Model 156EH coolers. | 70.6 | 60.1 |
| 2 | Install NSI "L" Style Cooler Outlet (high specification, low frequency model) silencers on a all of the Caterpillar 3516 units with Air-X-Changers Model 156EH coolers. | 65.1 | 55.5 |
| 3 | Install an NSI acoustically treated "L" Style building ventilation system on the all of the Caterpillar 3516 Compressor Units. The installed system must permit operation of all the units within the building with the compressor building doors and untreated openings closed. | 64.0 | 45.0 |
| 4 | Install an NSI acoustically treated engine air intake silencer on the all of the Caterpillar 3516 Compressor Units. | 63.8 | 42.1 |
| 5 | Install an NSI acoustically treated building (high specification, low frequency model) on the all of the Caterpillar 3516 Compressor Units. | 59.3 | 38.2 |

NSI File #2883.1

The modeling results indicate that implementing the recommended noise control measures would reduce the facility sound level by 26.0 dBA and 15.7 dBC at residence #2.

## Conclusion

The results of the environmental noise propagation model indicate that the facility would exceed the nighttime PNL 350 feet west of the Facility as well as the low frequency limit at the two residences. Noise Solutions recommends that Williams review and implement the noise control measures outlined in this report. Implementation is predicted to lower the facility sound level sufficiently to be within the allowable nighttime noise level limit of the COGCC Directive at 350 feet and meet the 65 dBC at the two residences assessed.

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# Glossary

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| | |
|---|---|
| **Allowable Noise Level (ANL)** | The maximum allowable noise level that a facility should not exceed at 350 feet or at the property line, whichever is greater |
| **Ambient Sound Level** | All noises that exist in an area and are not related to a facility. Ambient noise includes sound from other industrial noise not subject to this directive, transportation sources, animals and nature. |
| **A-weighted sound level** | The sound level as measured on a sound level meter using a setting that emphasizes the middle frequency components similar to the frequency response of the human ear. |
| **Basic Nighttime Sound Level (BSL)** | The A weighted $L_{eq}$ sound level commonly observed to occur in the designated land-use categories with industrial presence (Directive 038 Glossary). The BSL in the initial building block from which the PSL is determined. |
| **Calibration** | A procedure used for the adjustment of a sound level meter using a reference source of a known sound pressure level and frequency. Calibration must take place before and after the sound level measurements. |
| **C-weighted Sound Level** | The C-weighting approximates the sensitivity of human hearing at the industrial noise levels (above 85 dBA). The C-weighted sound level is more sensitive to the sounds used to assess the low-frequencies than the A-weighted sound level. It is sometimes used to assess the low-frequency content of complex sound environments |
| **Daytime** | Defined as the hours from 07:00 to 18:59 |
| **dB (decibel)** | A unit of measure of sound pressure that compresses a large range of numbers into a more meaningful scale. |
| **dBA** | The decibel (dB) sound pressure level filtered through the A filtering network to approximate human hearing response. |

| | |
|---|---|
| **dBC** | The decibel (dB) sound pressure level filtered through the C filtering network.<br>See dB and C-weighted Sound Level. |
| **Energy equivalent sound level ($L_{eq}$)** | The $L_{eq}$ is a single-number average, A-weighted sound level that represents cumulative acoustical energy as measured over a specified time interval. This interval should be specified in brackets following the $L_{eq}$ (e.g.: $L_{eq}$ (9) is a nine-hour $L_{eq}$). |
| **ENM** | Environmental noise prediction software created by RTA Technology Pty. Ltd. |
| **Facility** | Any operation used in exploration, processing, development and transportation of energy resources. |
| **$L_{eq}$** | See Energy equivalent sound level. |
| **Nighttime** | Defined as the hours from 19:00 to 06:59. |
| **Noise** | Generally understood as unwanted sound. |
| **Noise Impact Assessment (NIA)** | Identifies the expected sound level emanating from a facility as measured 15 m from the nearest or most impacted permanently or seasonally occupied dwelling. It also identifies what the permissible sound level is and how it was calculated. |
| **Octave** | A series of electronic filters separate sound into discrete frequency bands, making it possible to know how sound energy is distributed as a function of frequency. The octave band has a centre frequency that is double the centre frequency of the octave band preceding it. |
| **1/3 Octave** | The 1/3 octave band analysis provides a finer breakdown of sound distribution as a function of frequency. |
| **Representative Conditions** | Those conditions typical for an area and/or the nature of a complaint. Sound levels must be taken only when representative conditions exist; this may necessitate a survey of extensive duration (two or more consecutive nights). |

**Sound Level Meter** — An instrument designed and calibrated to respond to sound and to give objective, reproducible measurements of sound pressure levels. It normally has several features that enable its frequency response and averaging times to be changed.

**Sound Pressure Level** — The ratio, expressed in decibels, of sound pressure to a reference pressure equal to the human threshold of hearing.

**Sound Power Level** — The acoustic power radiated from a given sound source related to a reference power level (typically $10^{-12}$ watts) expressed in decibels.

**Spectrum** — A wide range or sequence of frequencies.

**Windscreen** — A specialized piece of porous sponge that fits over the microphone to reduce the noise generated by the wind blowing across the microphone.

# Ambient Sound Level Survey

## Williams Production RMT
Una, Piceance Basin

**Prepared for & Requested By**

Mr. Eric Millar
**Williams Production RMT**

**Prepared By**


Mr. Doug Craig, B.A.
Mr. Andrew Faszer, P. Eng.
Ms. Shannon Barr
**Noise Solutions Inc.**

Mr. Eric Neperud
**Alpine Consulting Engineers, Inc.**

Mr. Cliff Faszer
**FFA Consultants in Acoustics and Noise Control**


August 7, 2008

Noise Solutions File # 2883.3

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## Executive Summary

Prior to the installation and start-up of a multi unit compressor station at Una Piceance Basin in Garfield County, Colorado, Williams Production RMT commissioned an ambient sound level survey. The survey was completed at the proposed facility site. This survey was completed to document the existing ambient sound level for future reference and discussion purposes. Noise Solutions Inc. was retained to conduct this assessment on behalf of Williams.

The ambient sound level survey was completed on July 24-25, 2008. Observations during the sound survey indicate a rural sound environment that included sounds from what is determined to be primarily vehicle traffic.

The results of the survey are summarized in the following table:

**Williams Una Piceance Basin**
**Ambient Sound Level Survey**
**Measured Leq Values**
**July 24 – 25, 2008**

| Residence & Date | Daytime or Nighttime | Measured Sound Level (dBA Leq) | Measured Sound Level (dBC Leq) | Time Period (hours) |
|---|---|---|---|---|
| July 24, 2008 | Day | 65.4 | 77.0 | 9.3 |
| July 24-25, 2008 | Night | 55.8 | 66.7 | 12.0 |
| July 25, 2008 | Day | 70.7 | 78.9 | 2.5 |

The results of the sound level survey indicate a wide-ranging sound environment with largely consisting of vehicle noise which created the highest measured levels during the nighttime period. The survey results provide a documented record of the noise environment of the area prior to the start-up of the proposed compressor station.

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# Contents

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# Tables & Figures

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## Background & Scope

Williams Production RMT commissioned an ambient sound survey at the location of their proposed compressor station. The purpose of this sound survey is to document the existing noise environment at the selected location prior to installation and start-up of the compressor station.

## Measurement Methodology

The sound level measurements were set up and monitored by Mr. Eric Neperud, of Alpine Consulting Engineers, Inc. Table 1 lists the manufacturer and model along with the calibration dates and recorded field calibration levels of the instrumentation used to conduct the sound survey.

**Table 1**
**Monitoring Instrumentation**
**Wiliams, Una Piceance Basin**

| Location | Meter<br>Microphone<br>Meter Calibration Date<br>Outdoor Microphone Kit | Calibration Date | Field Calibration Start (dBA) | Field Calibration Completion (dBA) |
|---|---|---|---|---|
| Latitude - N 39°23.776'<br>Longitude - W 108°05.073' | Brüel & Kjær 2260<br>July 16, 2009<br>Serial #812847 | Brüel & Kjær 4231<br>July 16, 2009<br>Serial #2122969 | 94.0 | 94.0 |

FFA File 107-005-469-02

In addition to the instrumentation listed, a continuous audio recording was completed at the monitoring location using the audio output from the Brüel & Kjær 2260 meter in combination with a digital recording system. The continuous audio recording provides a time-referenced audible record of the noise events that occurred at the monitoring.

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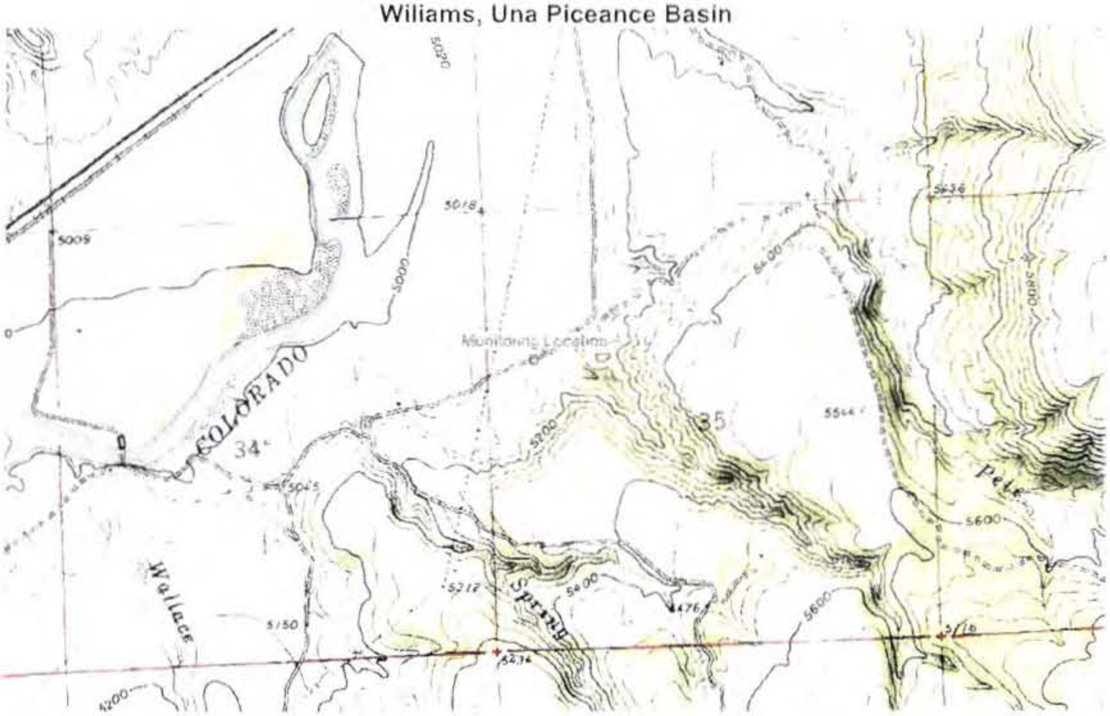
### *Site Description & Monitoring Location*

The Williams Una Piceance Basin facility will be located in Garfield County, Colorado. The topography of the study area is described as rolling hills with the landscape a mix of agricultural lands and shrub land. Figure 1 is a map of the study area indicating the location of the monitoring location along with other area features

**Figure 1**
**Study Area Map**
**Wiliams, Una Piceance Basin**




The facility and residence locations were plotted on this copy of the National Topographic System 1:50000, 1000 metre Transverse Mercator Grid map with information recorded during the site visit with a hand-held global positioning system device.

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### *Results of Measurements*

The monitored one-minute $L_{eq}$ sound levels recorded at the monitoring location are presented graphically in Appendix C, Figures 1.1 to 1.4 for the location in a time history format. Table 3 presents the overall results.

Table 3
Williams, Una Piceance Basin
Ambient Sound Level Survey
Measured Leq Values
July 24-25, 2008

| Residence & Date | Daytime or Nighttime | Measured Sound Level (dBA Leq) | Measured Sound Level (dBC Leq) | Time Period (hours) |
|---|---|---|---|---|
| July 24, 2008 | Day | 65.4 | 77.0 | 9.3 |
| July 24-25, 2008 | Night | 55.8 | 66.7 | 12.0 |
| July 25, 2008 | Day | 70.7 | 78.9 | 2.5 |

### *Observations*

Recorded observations of the sound environment that occurred during the ambient sound monitoring survey indicate that the nature of the sound environment in the area was generally that of a rural noise environment. Short-term sound events included the sounds of wildlife, aircraft, and vehicle traffic noise. Selected observations are indicated on the figures in Appendix C. The results of the background sound monitoring survey are in part, reflective of the season in which the survey was conducted.

### *Conclusion*

The results of the sound level survey indicate a wide-ranging sound environment at the measurement location with road traffic noise creating the highest measured levels. The survey results provide a documented record of the noise environment at the facility site prior to the start-up of the proposed compressor station.

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# Glossary

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# Glossary

| | |
|---|---|
| **Ambient Sound Level** | All noises that exist in an area and are not related to the facility of interest. Ambient noise includes sound from other industrial noise not subject to this facility of interest, transportation sources, animals and nature. |
| **A-weighted sound level** | The sound level as measured on a sound level meter using a setting that emphasises the middle frequency components similar to the frequency response of the human ear. |
| **Calibration** | A procedure used for the adjustment of a sound level meter using a reference source of a known sound pressure level and frequency. Calibration must take place before and after the sound level measurements. |
| **Daytime** | Defined as the hours from 07:00 to 19:00. |
| **dB (decibel)** | A unit of measure of sound pressure that compresses a large range of numbers into a more meaningful scale. |
| **dBA** | The decibel (dB) sound pressure level filtered through the A filtering network to approximate human hearing response.<br>See dB and A-weighted sound level. |
| **Energy equivalent sound level (Leq)** | The $L_{eq}$ is a single-number average, A-weighted sound level that represents cumulative acoustical energy as measured over a specified time interval. This interval should be specified in brackets following the $L_{eq}$ (e.g.: $L_{eq}$ (9) is a nine-hour $L_{eq}$). |
| **Facility** | Any operation used in exploration, processing, development and transportation of energy resources. |
| **Leq** | See Energy equivalent sound level. |
| **Nighttime** | Defined as the hours from 19:00 to 07:00. |
| **Noise** | Generally understood as unwanted sound. |
| **Sound level meter** | An instrument designed and calibrated to respond to sound and to give objective, reproducible measurements of sound pressure levels. It normally has several features that enable its frequency response and averaging times to be changed. |

# Appendix A

# Graphic Presentation of Monitored Results

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**Figure 1.1**
**Williams Production Sound Survey**
**Proposed Una Compressor Station**
**July 24, 2008; 7:00 - 18:59**

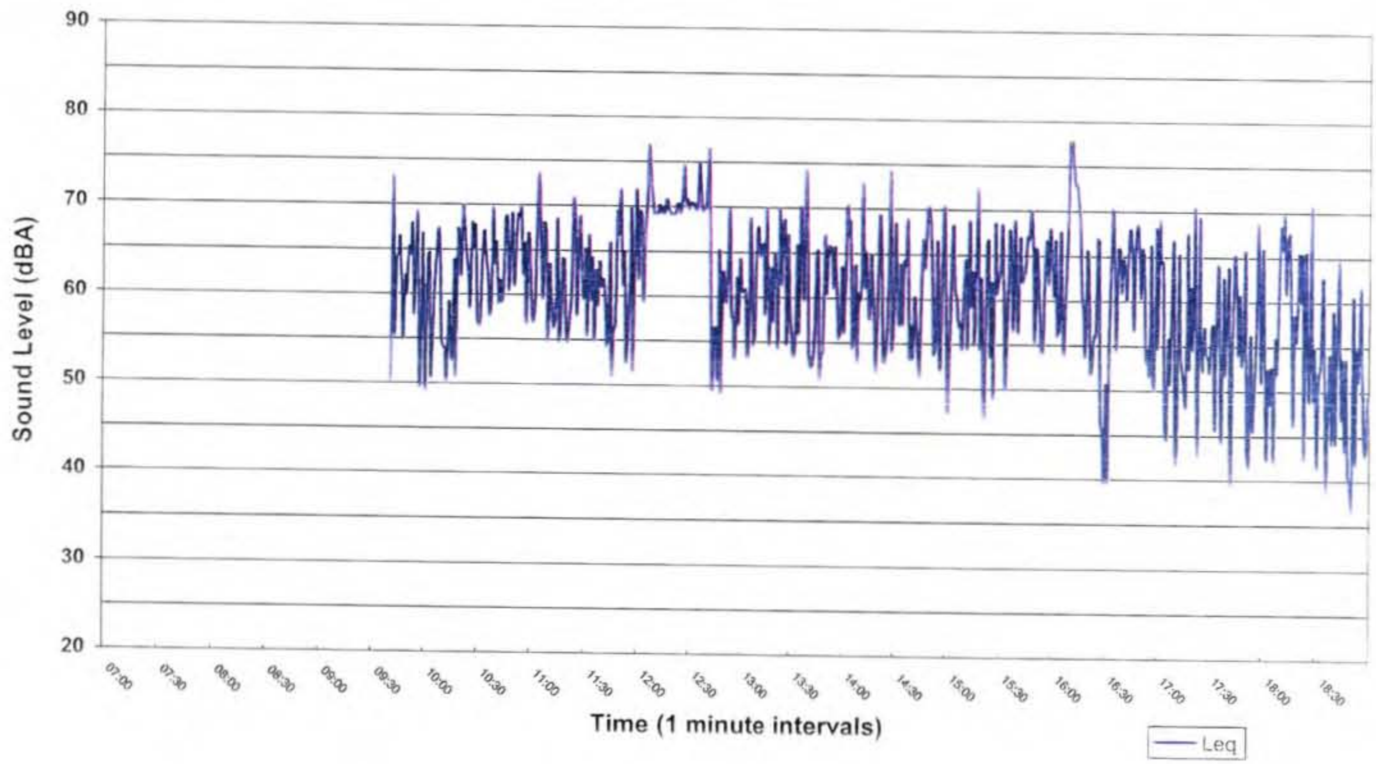
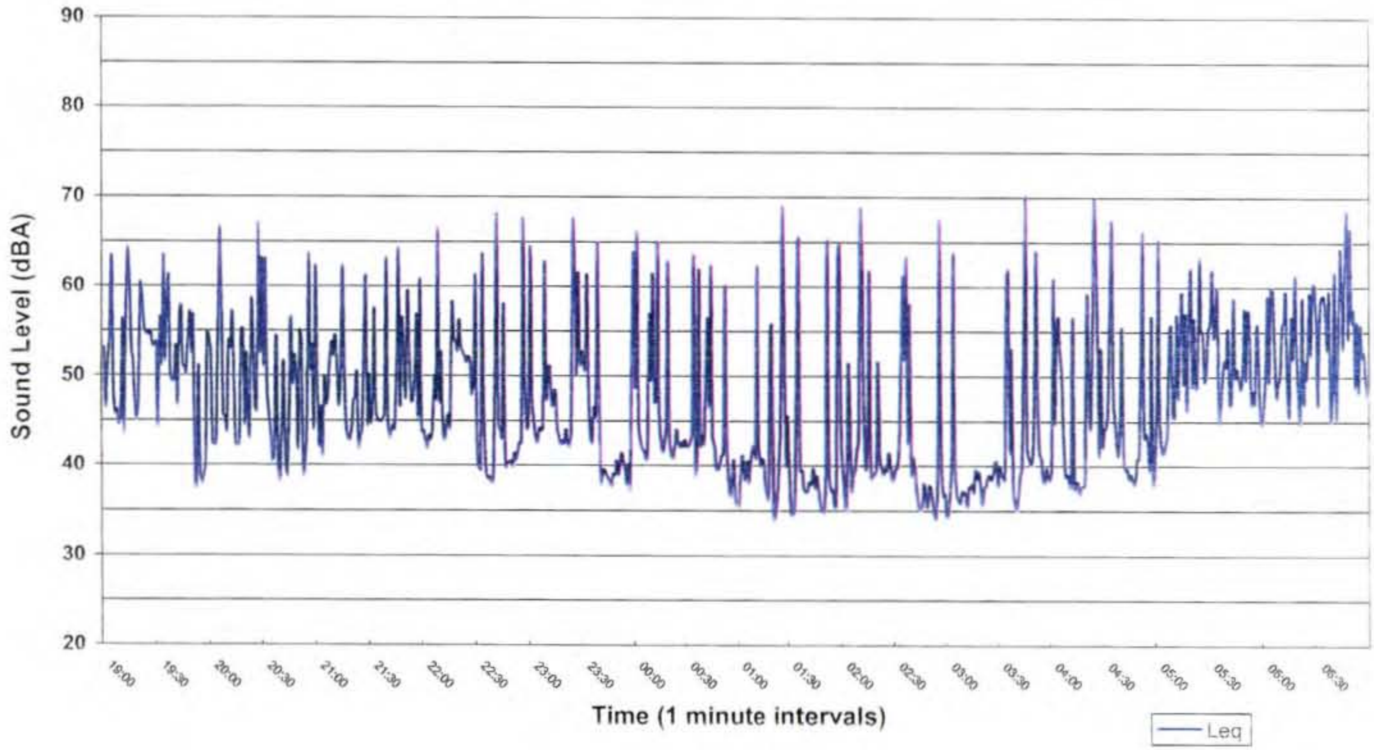


Figure 1.2
**Williams Production Sound Survey**
**Proposed Una Compressor Station**
**July 24 - 25, 2008; 19:00 - 06:59**



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# Figure 1.3 A & C
## Williams Production Sound Survey
**Proposed Una Compressor Station**

**July 24 - 25, 2008; 19:00 - 06:59**

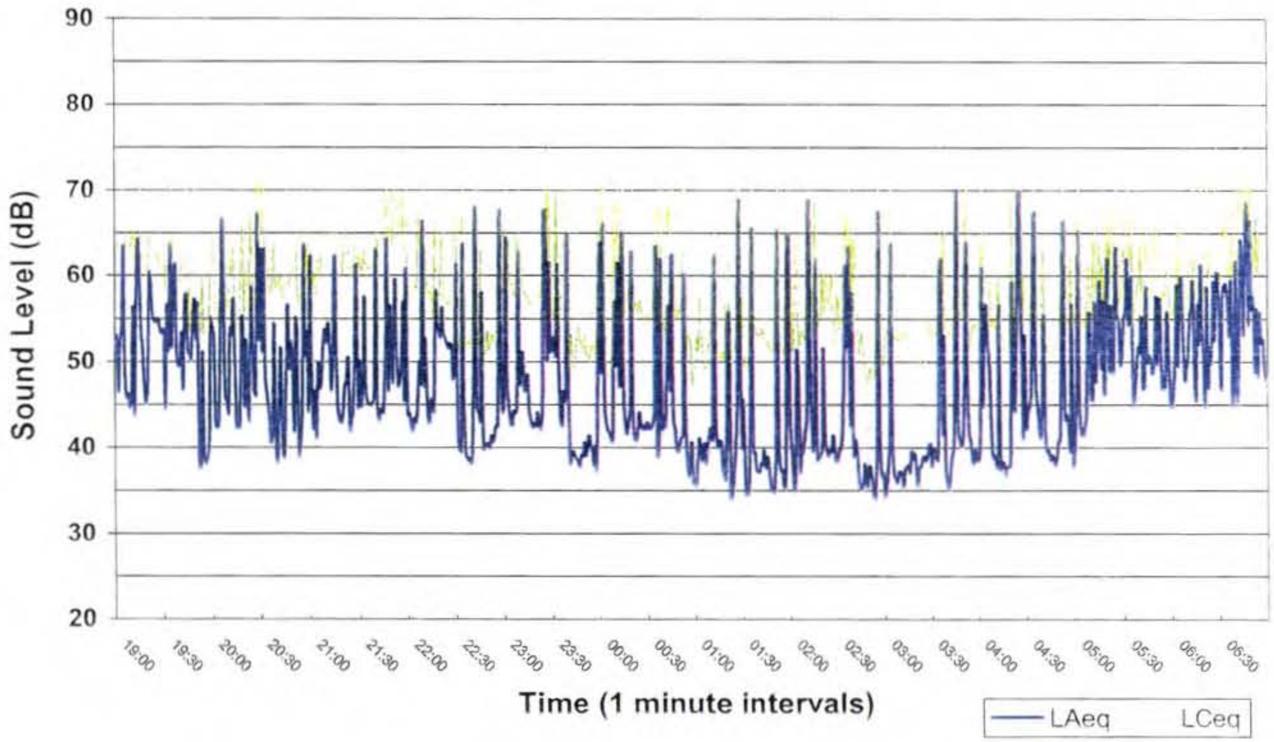

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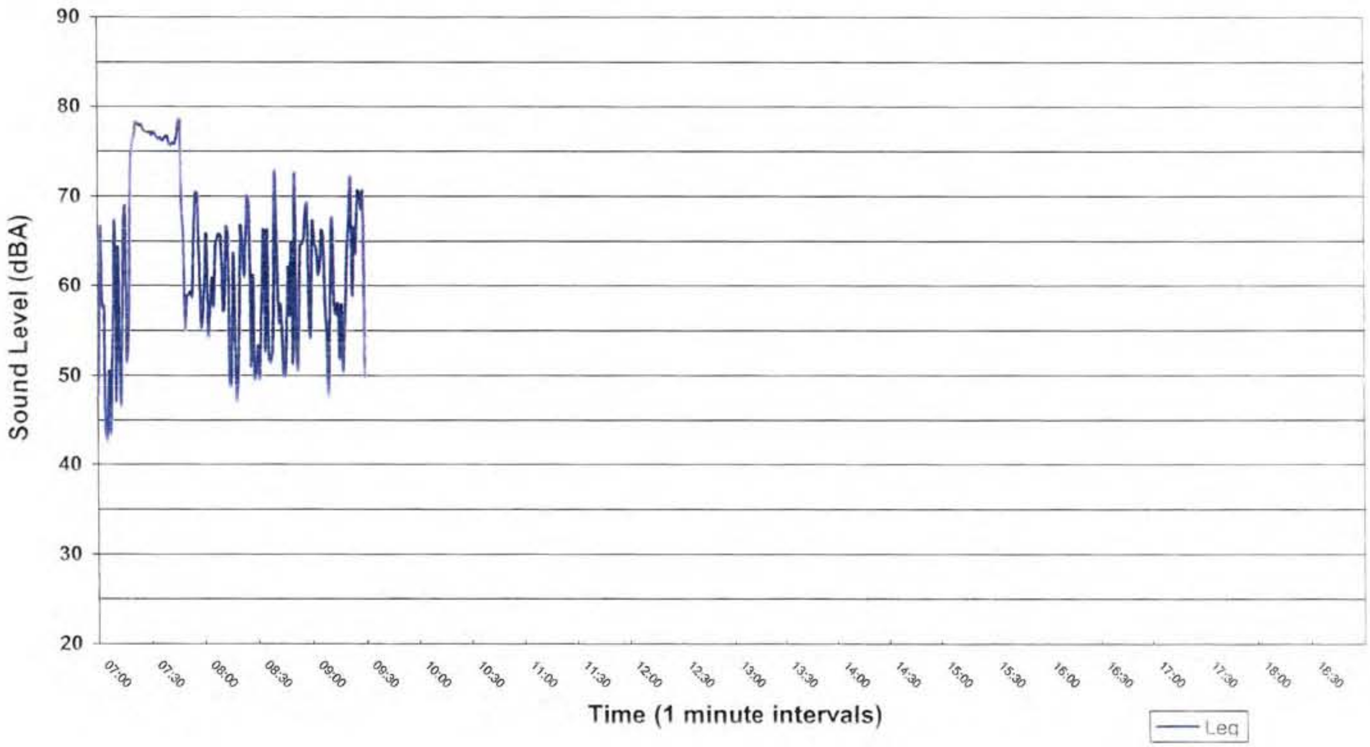
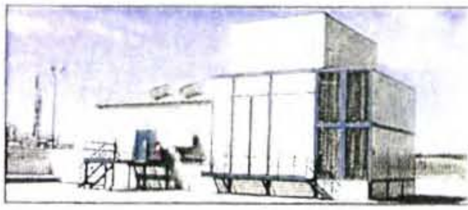
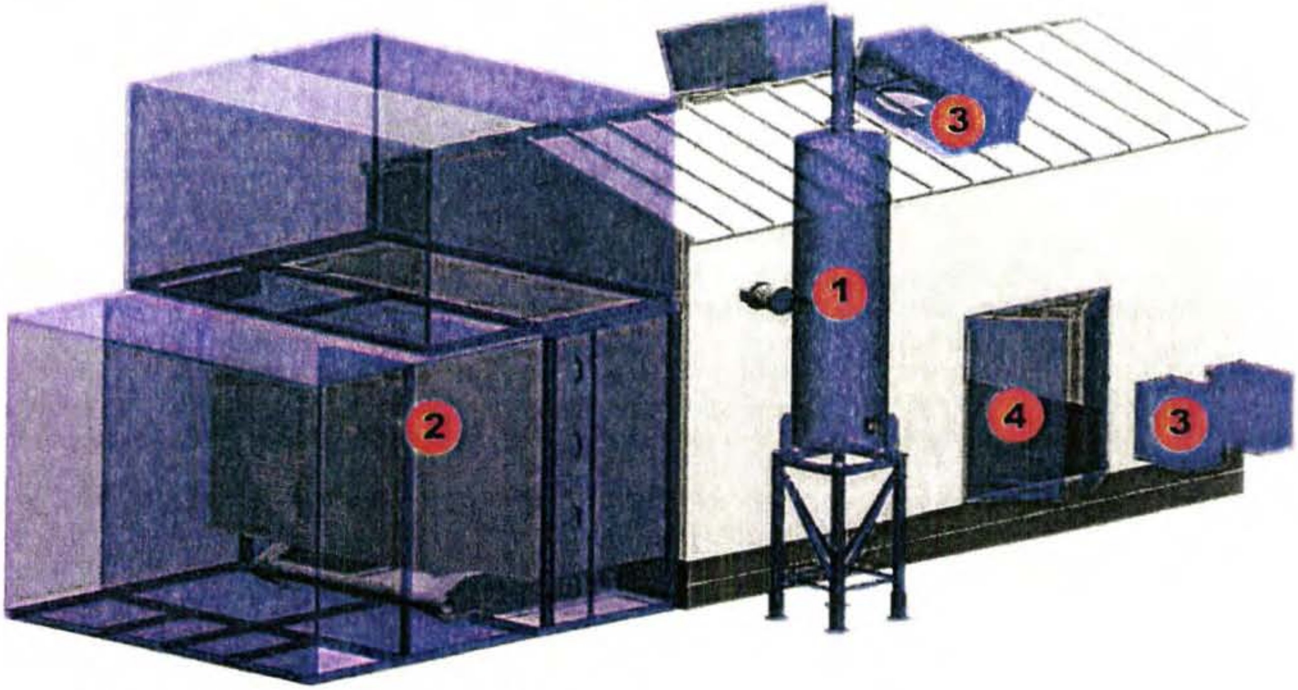
**Figure 1.4**
**Williams Production Sound Survey**
**Proposed Una Compressor Station**
**July 25, 2008; 07:00 - 18:59**





# Noise Solutions Inc.
# Attenuation Products




## 1. Engine Exhaust Silencers (page 3)
Zeron® 'Zero Noise' silencers for engine exhaust outlets.

## 2. Cooler Silencer Packages (page 4)
Industry-leading attenuation for cooler inlets, outlets and frames.

## 3. Building Ventilation (page 5)
Keep buildings cool and quiet without opening windows and doors.

## 4. Acoustical Buildings (page 6)
Silences design by eliminating potential escape points for noise.

STAR VALLEY ENGINEERING

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to. sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 11.1.B.5: Glare Abatement**

Paint Colors: The Una Compressor Station will be painted as per COGCC rule #804 Visual Impact Mitigation, which states "Production Facilities constructed or substantially repainted after May 30, 1002 which are observable from any public highway shall be painted with uniform, non-contrasting, non-reflective color tones, (similar to Munsell Soil Color Coding System) and with colors matched to but slightly darker than the surrounding landscape."

Most industrial structures in the area of the Una CS have utilized the Munsell Soil Color "Desert Brown." The Una CS will match the color of "Desert Brown."

Combustor: There will be one non-smoking combustor which will oxidize fumes from liquid hydrocarbon storage tanks. It will have no visible flame.

Lighting: Any outdoor yard lighting would be directed downward and toward station facilities. Outdoor lighting would not be very noticeable from adjacent lands.

Please contact me with any questions.

Sincerely,

**Star Valley Engineering, Inc.**

Charles S Bucans

Charles S. Bucans, P.E.
Project Manager

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 11.1.B.6: Vibration Abatement**

Vibrations produced by rotating equipment such as engine-driven gas compressors would be minimized through concrete foundation design and vibration isolating foam. Minimization of vibration is also important to prolong equipment life and is a goal of foundation design. The vibration isolating foam has been engineered by a supplier of the foam, Unisorb, Inc., to minimize equipment vibration transmitted to the concrete foundation.

We feel that the combination of utilizing concrete foundations and vibration isolating foam will ensure the minimization of vibration transmitted to the ground.

Please contact me with any questions.

Sincerely,

**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

# WILDLIFE IMPACT AND SENSITIVE AREAS REPORT
# WILLIAMS RMT – UNA COMPRESSOR
# GARFIELD COUNTY, COLORADO

**View of the vegetation and terrain at the Una compressor site**



**Prepared by:**
**WestWater Engineering**
**2570 Foresight Circle #1**
**Grand Junction, CO 81505**



**July 2008**

# 1.0 INTRODUCTION

## 1.1 Project Description

Williams Production RMT (Williams) has requested WestWater Engineering (WWE) to provide a "Wildlife Impact and Sensitive Areas Report" for a proposed "special use permit" in Garfield County, Colorado. Williams is seeking the special use permit to install a natural gas compressor station south of the Colorado River near Una. The site is approximately 4.4 miles southwest of Parachute, Colorado, adjacent to and south of Garfield County Road 300. Williams intends to construct the compressor station on a portion of a proposed natural gas well pad (Williams SG 12-35) (Figure 1). A short segment (approximately 0.07-mile) of new road will be constructed from Garfield County Road 300, south to the pad.

The proposed compressor site is located on property owned by Williams in Section 35, Township 7 South, Range 96 West. The topography at the site varies from small, rolling hills to a steep-sided, rocky slope that leads uphill to a flat mesa located south of the project area. The low hills are composed of sagebrush, greasewood, and a dense infestation of cheatgrass. There are no perennial stream crossings, but several ephemeral draws that generally run from south to north across the property. An irrigation ditch runs across the lower portion of the area and generally parallels Garfield County Road 300 on the south side. Elevations in the project area vary from 5,060 to 5,340 ft. The Colorado River is located about 0.4-mile north of the project area.

Existing natural gas well pads and pipelines are adjacent to the proposed compressor site. Rural residences are widely spaced in the project vicinity; one residential home is located on the Williams property. A set of high voltage power lines and steel support towers bisects the property running from northeast to southwest. The primary use of the surrounding area is agriculture/rangeland, wildlife habitat, and recent natural gas extraction/development.

## 1.2 General Survey Information

In preparation for developing the following report, WWE biologists performed field surveys and assessments of wildlife, wildlife habitats, and habitats for sensitive plant species on the proposed project area. WWE conducted the survey on June 17, 2008. The purposes of the surveys were to determine the wildlife and sensitive plant species that occupy the project area at varying periods during the year and that would potentially be affected as a result of compressor construction and operational activities. Factors considered include: 1) soil type and texture; 2) existing land management; 3) absence or presence of wildlife and plant species; 4) habitat designations by Federal and State wildlife agencies; and 5) the present natural vegetation community. This report provides written documentation that describes survey findings as well as recommended mitigation measures to help offset potential impacts to wildlife and sensitive plants that may occur within the project site and adjacent area. This assessment and mitigation plan meets the wildlife requirement of Garfield County Regulation 9.07.04 (10) (Board of County Commissioners 2006).


Figure 1:
**Williams RMT**
**Una Compressor Station Location Map - July 2008**

Map Source: Z:\Westwater_GIS_Data\Williams RMT\UNA Compressor\UnaCompressorReportOrtho.mxd July 7, 2008 clv

## 2.0 LANDSCAPE SETTING

### 2.1 Vegetation

Vegetation communities in the project area consist of piñon-juniper woodlands and low elevation shrublands; no irrigated agricultural lands occur (Photo 1). Piñon-juniper woodlands are dominated by piñon pine (*Pinus edulis*) and Utah juniper (*Juniperus utahensis*) and are mixed with an understory of predominantly Wyoming sagebrush (*Artemesia tridentata wyomingensis*), basin big sagebrush (*Artemesia tridentata tridentata*), forbs, and grasses. Vegetation along the hillsides and drier sites consists of greasewood *(Sarcobatus vermiculatus)*, rabbitbrush (*Chrysothamnus nauseosus*), and snakeweed *(Guterizzia spp)*. Non-native downy brome (*Bromus tectorum*) is prevalent in the understory of the shrublands well as in portions of the piñon-juniper woodlands throughout the project area.

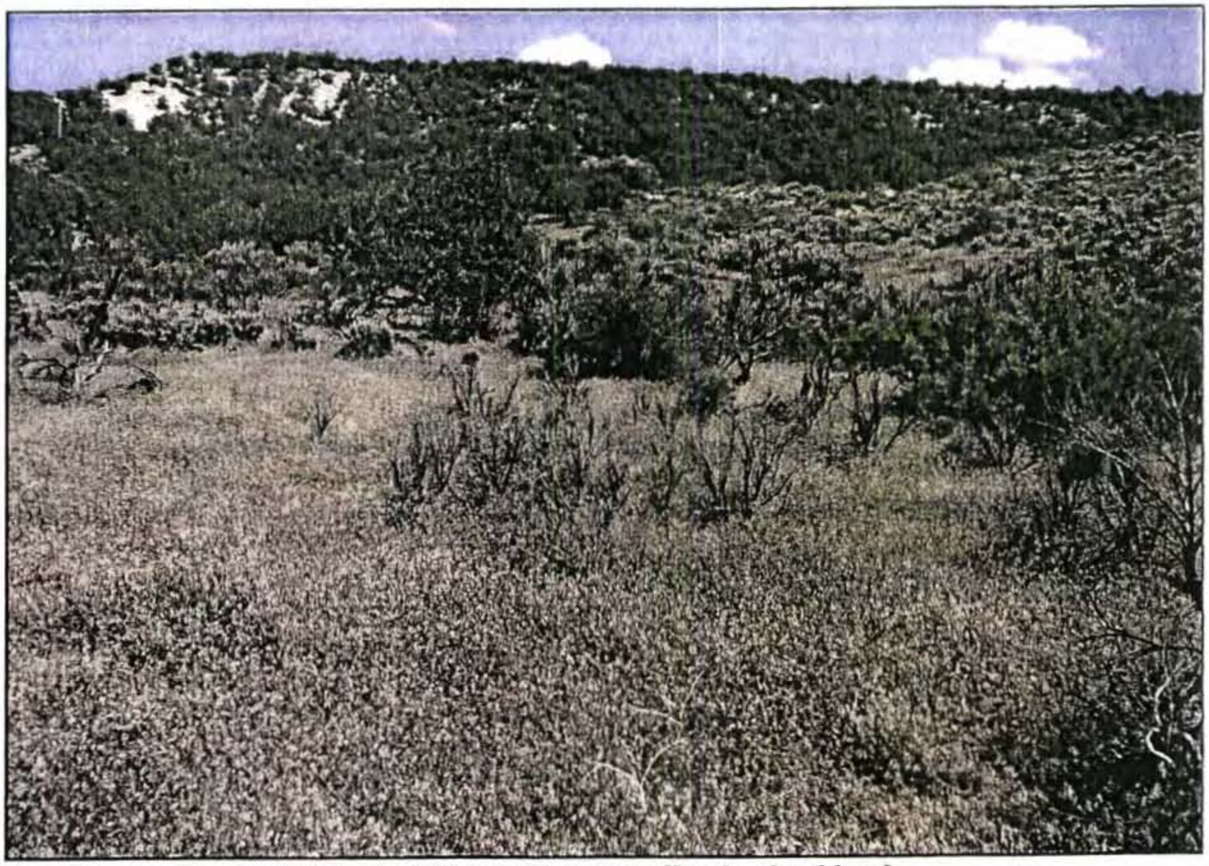


**Photo 1. Piñon-juniper woodlands, shrublands, and cheatgrass understory at the Una compressor site.**

A small irrigation ditch parallels the south side of Garfield County Road 300, running from east to west. The ditch is approximately 18 inches wide and about 10 inches deep and was carrying a small water flow during the survey of the site. Wetland vegetation along the ditch included coyote willow (*Salix exigua)*, inland saltgrass *(Distichlis spicata)*, cattail, bull rush and spike rush. Approximately six small Fremont cottonwood (*Populus fremontii)* trees were growing along the irrigation ditch.

## 2.2 Soils

Soil types and the vegetation that they support vary with elevation and slope aspect. The slope aspects are generally to the north and northwest. Mapped soil types, as published by the Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture (USDA), were reviewed to determine the soil types and vegetation characteristics of the project site and surrounding property (NRCS 2008).

Four soil types are found in the project area and include Arvada loam, Ildefonso stony loam, Potts loam and Torriorthents-Rock outcrop complex.

1. Arvada loam: This soil composes 44.9 percent of the soils. The slope varies from 6 to 20 percent and vegetation typically is composed of sagebrush, greasewood and wheatgrass. Surface runoff is moderately rapid and the erosion hazard is severe.
2. Ildefonso stony loam: This soil composes 17.99 percent of the soils. The stony loam has slopes ranging from 25 to 45 percent. The native vegetation is mainly piñon-juniper with an understory of Indian ricegrass, wheatgrass, junegrass and sagebrush. Surface runoff is medium and the erosion hazard is severe.
3. Potts loam: This soil composes 0.1 percent of the soils. This deep, well drained, moderately sloping to rolling soil is on mesas, benches, and sides of valleys. Its slope ranges from 6 to 12 percent. The vegetation on this soil is mainly wheatgrass, needleandthread, and sagebrush.
4. Torriorthents-Rock outcrop complex: This soil composes 7 percent of the soils occurring at the site. This broadly defined unit consists of exposed sandstone and shale bedrock and stony soils that are shallow to moderately deep. Slopes range from 15 to 70 percent. Native vegetation includes wheatgrass, bluegrass, Indian ricegrass, sagebrush and piñon-juniper.

# 3.0 WILDLIFE AND PLANT SURVEYS

## 3.1 Background Information

Descriptions of critical habitats for federally-listed threatened, endangered and candidate fish and wildlife species were reviewed in the Federal Register, U.S. Department of the Interior, Fish and Wildlife Service (USFWS). Wildlife habitat (activities) maps, provided via the internet web by the Colorado Division of Wildlife's (CDOW) "Natural Diversity Information Source" (NDIS), were reviewed and incorporated into this report in reference to state-listed threatened, endangered and species of "special concern"(CDOW 2008a).

A list of Birds of Conservation Concern (BOCC) and their habitats for the Southern Rocky Mountain Region and the Colorado Plateau was reviewed. This list is published by the USFWS through a Memorandum of Understanding with the Bureau of Management (BLM) and the U.S. Forest Service (USFS), which places high conservation priorities for BOCC species (USFWS 2002). Not all of these BOCC species occur regularly in Colorado, some are present only as seasonal migrants. Of those known to breed in Colorado, only a portion are known or suspected to breed within the vicinity of the proposed project. Avian literature sources such as the "Birds of Western Colorado Plateau and Mesa Country" (Righter et al. 2004) and the "Colorado Breeding Bird Atlas" (Kingery 1998) were reviewed to determine the likelihood for species occurrence within the project area. Bird identification and taxonomic nomenclature are in accordance with that applied by the Colorado Breeding Bird Atlas Project (Kingery 1998)

The determination of the presence/absence of suitable habitat for Threatened, Endangered and "Sensitive Species" (TESS) plants was based on previous WWE observations of typical habitat occupied by BLM or USFS sensitive plants, the Colorado Natural Heritage Program (CNHP) Rare Plant Field Guide (Spackman et al. 1997), and locations of species documented in the CNHP statewide database.

### 3.2 Survey Methods

A preliminary review of the project area, using aerial photography maps, was conducted to familiarize personnel with vegetation types and terrain and as an aid to help determine the likelihood of the presence of threatened, endangered or sensitive wildlife and plant species. Field data including general project location, boundaries and reported features were verified and/or recorded with the aid of a handheld global positioning system instrument (GPS) utilizing NAD83/WGS84 map datum, with all coordinate locations based on the Universal Transverse Mercator (UTM) coordinate system within Zone 12S. WWE biologists physically surveyed the area to identify and locate wildlife species, wildlife sign (tracks, fecal droppings, and vegetation disturbance), vegetation communities and wildlife habitats. Vegetation types were determined through field identification of plants, aerial photography, and on-the-ground assessments of plant abundance. Identification of plant species was aided by using pertinent published field guides (Whitson et al. 2004, CWMA 2007, Kershaw et al. 1998). Visual searches for raptor and other bird species nests were focused on the piñon-juniper woodlands and the power line tower support structures within the project area. Nest searches and bird identification were aided with the use of binoculars and song recognition, where needed. In addition to these visual and audio searching techniques, biologists used the recorded call play-back methodology described by P. Kennedy (Kennedy and Stahlecker 1993; the "Kennedy-Stahlecker-Rinker" method) as modified by R. Reynolds and others (1992) for the southwestern United States. WWE biologists used "Predation MP3 Game Caller" units and played the call of a Great Horned Owl or a Cooper's Hawk alarm call in an attempt to locate raptors who often respond to the presence and calls of other raptors.

Photographs were taken of the general project location, surrounding vegetation and terrain, and specific biological findings.

## 4.0 RESULTS OF SURVEY

### 4.1 TESS Plant Species

Special status species of plants that may be present in the project area, and their habitats, are listed in Tables 1 and 2 in three categories: 1) Federally Listed Threatened or Endangered, 2) Federal Candidate Species, and 3) BLM Sensitive Species. Nomenclature and habitat descriptions are based on the CHNP literature (Spackman et al. 1997).

Table 1. Potential Federally-listed Threatened, Endangered and Candidate plant species

| Scientific Name | Common Name | Status * | Habitat Preference |
|---|---|---|---|
| *Phacelia submutica* | Debeque phacelia | C | Chocolate-brown or Gray clay on Atwell Gulch and Shire members of the Wasatch Formation; sparsely vegetated steep slopes. Elevation: 4,700-6,200 ft |
| *Sclerocactus glaucus* | Colorado hookless cactus | T | Typically xeric and fine textured Quaternary and Tertiary alluvium soils overlain with cobbles and pebbles; cold desert shrub and piñon-juniper communities along river benches, valley slopes, and rolling hills. |

* E= Federal Endangered, T= Federal Threatened, C= Federal Candidate

**Table 2. Potential BLM sensitive plant species**

| Scientific Name | Common Name | Habitat Preference |
|---|---|---|
| *Astragalus debequaeus* | Debeque milkvetch | Varicolored, fine textured, seleniferous, saline soils of the Wasatch formation-Atwell Gulch member. Elevation: 5,100-6,400 ft |
| *Astragalus naturitensis* | Naturita milkvetch | Sandstone mesas, ledges, crevices and slopes in piñon-juniper woodlands. Elevation: 5,000-7,000 ft |
| *Cirsium perplexans* | Rocky Mountain thistle | Barren clay outcrops derived from shales of the Mancos or Wasatch formations; open and disturbed sites in mixed shrubland and piñon-juniper woodland. Elevation: 5,000-8,000 ft |

**Results:** No TESS plants were observed during the biological survey. There were areas on the steep hillside to the east of the compressor that had potential habitat for Debeque milkvetch; however, none was observed during the survey. The closest known sites supporting the Debeque milkvetch are found in the Horsethief Canyon area near Debeque. Suitable habitat for the other TESS plants listed in Tables 1 and 2 was not observed during this survey.

### 4.2 Federal Listed Threatened, Endangered, Candidate Wildlife Species

No federal listed threatened, endangered or candidate wildlife species are known to occupy the area of the proposed compressor site. However, all ephemeral washes drain into a section of the Colorado River that is designated critical habitat for the federally endangered Colorado pikeminnow and razorback sucker (Maddux 1993).

### 4.3 State Listed Threatened, Endangered Special Concern Wildlife Species

WWE biologists determined that one state listed threatened, endangered or special concern species may occur within the project area and are listed in Table 3 (CDOW 2008b).

During the survey, no state listed threatened or endangered wildlife species were observed within the project area of the proposed compressor station. An active Bald Eagle nest with chicks was observed along the north side of Colorado River about 0.7-mile from the project area (BAEA, Figure 2). Based on recent surveys, the Bald Eagle chick(s) will likely fledge by approximately June 20, 2008.

Table 3. Potential State-listed Threatened, Endangered and Special Concern wildlife species

| Scientific Name | Common Name/Map code | State Status | Habitat Preference |
|---|---|---|---|
| *Haliaeetus leucocephalus* | Bald Eagle/BAEA | T | Open Water – Rivers, Lakes, Forested Wetlands, Shrub Dominated Wetlands, Grass/Forb Dominated Wetlands; occurs in Garfield County; common winter migrant along the Colorado River corridor. Elevation: 4,500 - 8,000 ft |

* E= State Endangered, T= State Threatened, SC = Species of Concern

Bald Eagles are common winter residents on the Colorado River and utilize the cottonwood trees for night roosts, hunting perches and nesting. The Colorado River and adjacent mesas and drainages to the south are utilized as hunting areas by the Bald Eagles. The eagles may visit these areas in search of winter forage in the form of live prey and dead animal carcasses.

### 4.4 Birds of Conservation Concern (BOCC)

**Raptors:** Several raptor (birds of prey) species nest, reside, forage or pass through the general area of the proposed project. Raptor species that are common to the area include Golden Eagle, Red-tailed Hawk, American Kestrel, Cooper's Hawk, and Great Horned Owl. The Bald Eagle, a common winter migrant, is discussed in Table 3 of this report. Marginally suitable, Utah junipers as well as a limited number of cottonwood trees are of sufficient height and density for tree nesting raptors. No rock outcrops suitable for nesting raptors were observed during this survey.

Raptor species that are listed as BOCC in the Southern Rockies and the Colorado Plateau, and which may occur in the project area, are listed in Table 4. In addition to the BOCC list, seven other species of raptors that could potentially be found nesting in the project area are also listed in Table 4.

**Table 4. Raptor species that may be present in the project area**

| Common Name | Scientific Name | BOCC | Habitat & Breeding Records |
|---|---|---|---|
| Cooper's Hawk | *Accipiter cooperii* | N | • Cottonwood riparian to spruce/fir forests, including piñon/juniper woodlands. Nests most frequently in pines and aspen. |
| Red-tailed Hawk | *Buteo jamaicensis* | N | • Diverse habitats including grasslands, piñon-juniper woodlands and deciduous, coniferous and riparian forests. Nests in mature trees (especially cottonwood, aspen, and pines) and on cliffs and utility poles. |
| Golden Eagle | *Aquila chrysaetos* | Y | • Grasslands, shrublands, agricultural areas, piñon-juniper woodlands, and ponderosa forests. Prefers nest sites on cliffs and sometimes in trees in rugged areas. |
| American Kestrel | *Falco sparverius* | N | • Coniferous and deciduous forests and open terrain with suitable perches. Nests in cavities in trees, cliffs and buildings. |

Table 4. Raptor species that may be present in the project area

| Common Name | Scientific Name | BOCC | Habitat & Breeding Records |
|---|---|---|---|
| Great Horned Owl | *Bubo virginianus* | N | • Occupies diverse habitats including riparian, deciduous and coniferous forests with adjacent open terrain for hunting. |
| Northern Saw-whet Owl | *Aegolius acadicus* | N | • Mountain and foothills forest and canyon country. Significant use of piñon-juniper woodland and Douglas-fir. |
| Long-eared Owl | *Asio otus* | N | • Occupies mixed shrublands. Nests and roost in sites in dense cottonwoods, willows, scrub oak, junipers, tamarisk and dense forest of mixed conifers and aspens. |

Red-tailed Hawk nesting activity was observed at a power line structure (Photo 2, Figure 2) approximately 150 yards south of the compressor site. The female was flying and vocalizing near the nest when first observed during the survey. The chick appeared to be approximately 3-4 week old and likely fledged by the end of June or first week of July 2008. No other nesting activity or inactive nests were observed during the survey. In this portion of Colorado, the raptor nesting season is generally considered to occur between mid-February and mid-August. Typically, owls and eagles are the first raptors to begin the annual nesting cycle followed by members of the Genus Accipiter, Buteo, Circus and Falco. Usually, by mid-August all young birds have fledged and left the nest.

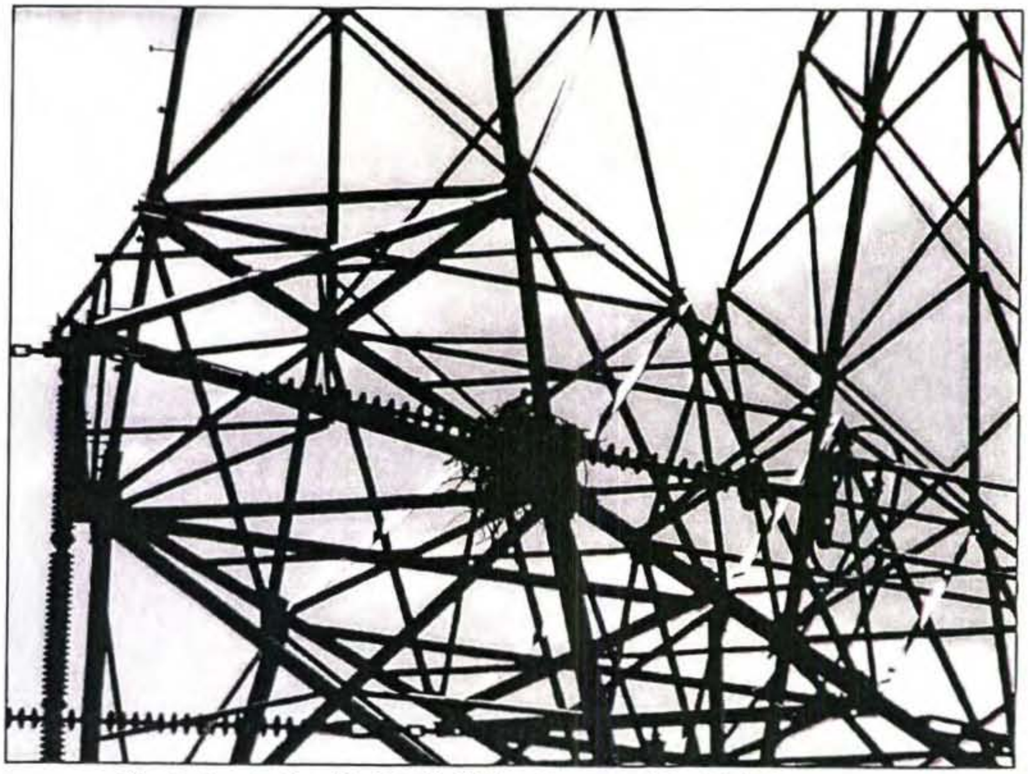


**Photo 2. Active Red-tailed Hawk nest with chick in power line tower located south of the compressor site.**

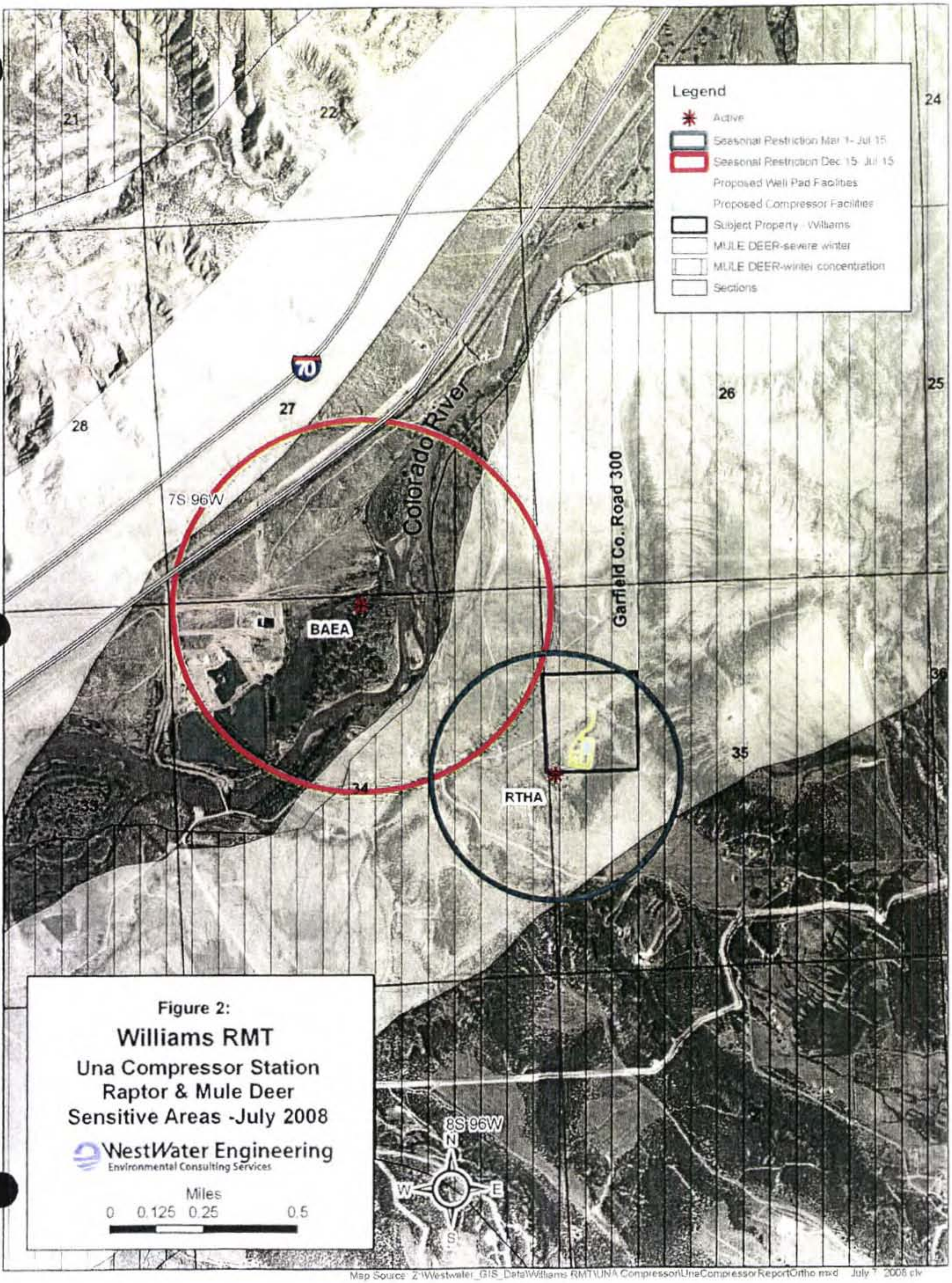



Figure 2:
**Williams RMT**
**Una Compressor Station**
**Raptor & Mule Deer**
**Sensitive Areas -July 2008**

Map Source: Z:\Westwater_GIS_Data\Williams RMT\UNA Compressor\UnaCompressorReportOrtho.mxd July 7, 2008 clv

Location information regarding the Red-tailed Hawk nest observed during this survey is found in Table 5, Photo 2, and Figure 2.

Table 5. Raptor Nest Location, June 2008

| Nest Code | Zone | Easting | Northing | Photo | Status |
|---|---|---|---|---|---|
| RTHA | 12S | 750920 | 4364546 | Yes | Active |

### 4.5 Birds of Conservation Concern (BOCC) other than raptors

In addition to raptors discussed above, WWE biologists surveyed the proposed compressor site for the presence of sensitive or migratory BOCC that could potentially occur in the project area. BOCC habitat and nesting records, as described in the Colorado Breeding Bird Atlas (Kingery 1998), Colorado Birds (Andrews and Righter 1992) and Birds of Western Colorado Plateau and Mesa Country (Righter et al. 2004) in the vicinity of the project area are summarized in Table 6.

**Table 6. BLM sensitive & migratory bird species that may be present in the project area**

| Common Name | Scientific Name | Habitat & Breeding Records |
|---|---|---|
| Pinyon Jay | *Gymnorhinus cyanocephalus* | • Piñon-juniper woodlands; nests in piñons or junipers.<br>• Confirmed breeder in Garfield County in the vicinity of the proposed compressor. |
| Black-throated Gray Warbler | *Dendroica nigrescens* | • Mature piñon-juniper woodlands; nests on horizontal branches in piñon or juniper.<br>• Confirmed breeder in Garfield County in the vicinity of the compressor. |

The species most likely to nest in this project area include the Pinyon Jay and Black-throated Gray Warblers, which prefer mature piñon-juniper woodlands for nesting. The primary suitable habitat for nesting occurs in the piñon-juniper woodlands southeast of the well pad. Neither Pinyon Jays nor Black-throated Gray Warblers were observed during the survey. Migratory songbirds typically begin to arrive in Colorado in late April with the majority arriving and initiating breeding activity during the month of May and June.

### 4.6 Terrestrial Species

#### 4.6.1 American Elk and Mule Deer

The proposed compressor lies within CDOW, Game Management Unit (GMU) 42. In GMU 42, the project area is situated within mule deer and American elk overall range and winter range. The entire project area lies within an elk and deer winter concentration areas and mule deer severe winter range (Figure 2 and 3).

CDOW defines "winter range" as "that part of the overall range where 90 percent of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up". CDOW defines a "winter concentration area" as "that part of the winter range where densities are at least 200 percent greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten". "Severe winter range" is defined as "that part of the range of a species where 90 percent of the individuals are located when the annual snow pack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten."

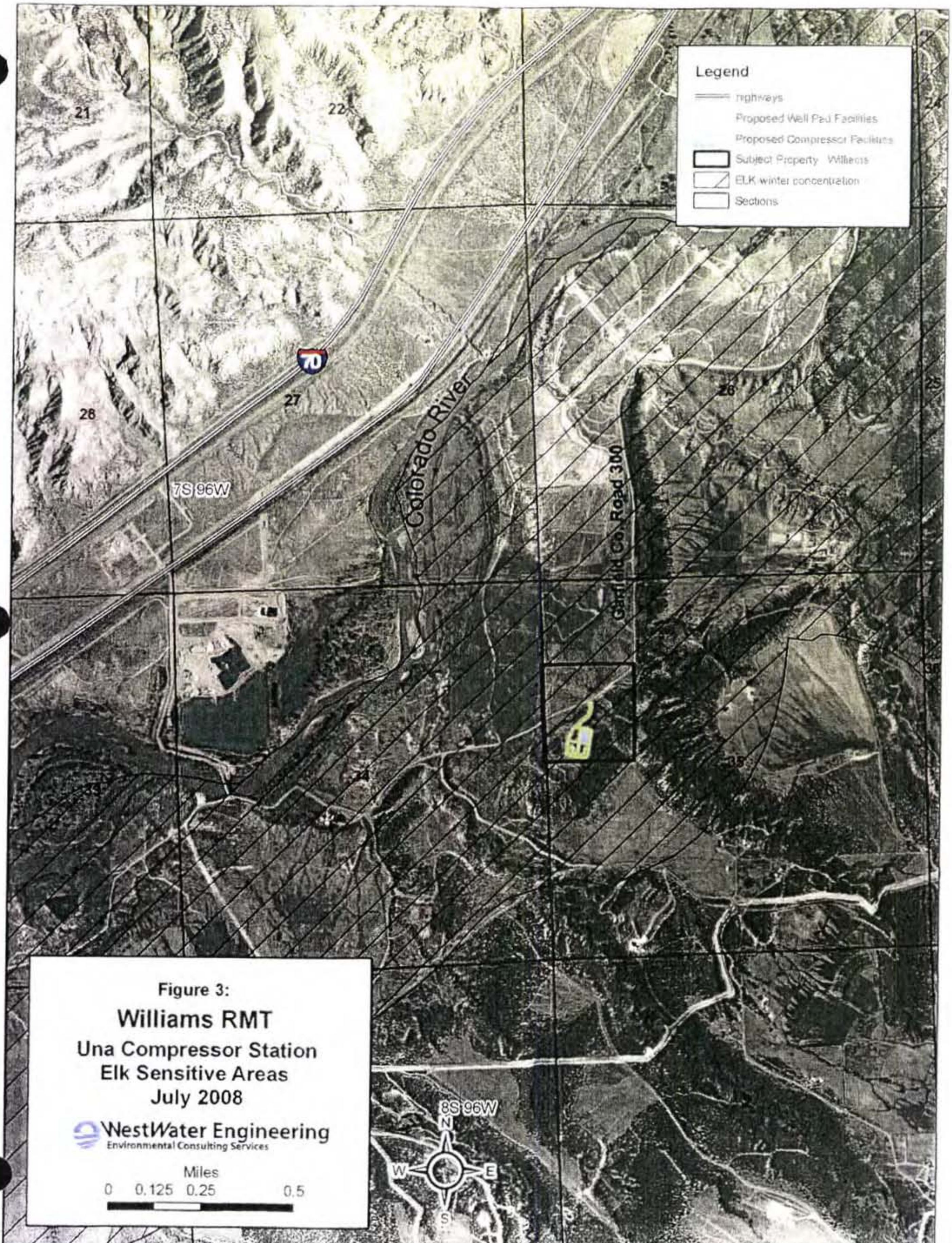



Figure 3:
**Williams RMT**
**Una Compressor Station**
**Elk Sensitive Areas**
**July 2008**
WestWater Engineering
Environmental Consulting Services

Map Source: Z:\Westwater_GIS_Data\Williams RMT\UNA Compressor\UnaCompressorReportOrtho.mxd July 7, 2008 clv

During the survey, mule deer tracks, beds, antler rubs and fecal pellets were observed in areas where sagebrush and/or piñon pine and juniper trees were present. Browsing by deer on available sagebrush and rabbitbrush was observed where these plant species occurred. Evidence of recent deer use was observed in the piñon-juniper woodlands indicating a summer resident population in the area. Mule deer rely on the existing sagebrush and shrubs above the snow for their primary food source, while elk rely primarily on available grasses for food. Adjacent areas of piñon pine and juniper trees provide necessary escape, thermal and loafing cover for deer and elk.

### 4.6.2 Black Bear and Mountain Lion

CDOW "NDIS" mapping shows the proposed compressor to be within the overall range for black bear and mountain lion. The vegetation of the proposed project site does not provide adequate food sources for black bear to be routinely attracted to the area. However, it is not uncommon for black bear to travel through the surrounding area during periods of shortages of natural food supplies at higher elevations. During these periods black bears may be attracted to human-related food sources such as garbage and cooking areas.

Mountain lion primary food source is deer; they typically follow the migrating deer herds. Mountain lion have large territories and are highly mobile as they search for food or new territories. Mountain lion prefer to hunt in rocky terrain with trees or shrubs. This habitat condition occurs within the project area. Mountain lion could travel through and hunt in these areas, especially when deer are present during the winter period. High densities of deer that occur near heavily populated human areas can also attract mountain lions. The project area is not mapped by CDOW as a potential mountain lion conflict area.

### 4.6.3 Small Mammals

Common small mammal species (small game, furbearers, non-game) include mountain cottontail, coyote, bobcat, striped skunk, and rock squirrel. Fringed myotis (bats) and spotted bat are two bat species of the area that are considered "sensitive" by the BLM and could possibly forage for airborne insects through the area of the project (Reid 2006). Roosting, breeding and hibernating habitats for bats in the form of caves, mine shafts, walls and cliffs does not occur near the project area; however, bats could spend time foraging within the project area.

### 4.6.4 Other Bird Species

The project areas' sagebrush, piñon pine, Utah juniper, cottonwood riparian, wetlands and the grass understory provide nesting and foraging habitats for various other migratory and non-migratory bird species, depending on the season of the year. Bird species observed during the survey included American Robin, Black-billed Magpie, Common Raven, Mountain Bluebird, Mourning Dove, Starling, and Vesper Sparrow. Limited habitat for Wild Turkey occurs on the east side of the project area in the piñon-juniper woodlands.

### 4.6.5 Reptiles

Plateau striped whiptail, sagebrush lizard, side-blotched lizard, plateau lizard, bullsnake, and western rattlesnake are reptiles common to this region and could occur in the vegetation and terrain of the project property (Hammerson 1999).

### 4.7 Aquatic Species

#### 4.7.1 Amphibians

Due to the lack of water in the project area, it is unlikely that amphibians would find sufficient habitat to be supported in the area. Great Basin spadefoot is an amphibian species that may occur in the vicinity of the project area since it occurs in ephemeral pools of water in piñon-juniper woodland and sagebrush shrublands of the area (Hammerson 1999). This species breeds during summer periods in temporary pools in ravines and drainages that experience water flow after heavy rain events. No ponds or depressions were observed, which were capable of supporting sufficient ephemeral water suitable for amphibians in the project area.

#### 4.7.2 Fish

Due to the lack of perennial water, no fish species occur.

## 5.0 AFFECTS TO WILDLIFE

### 5.1 Wildlife Affects Assessment

Construction of the compressor station will likely affect site-specific native vegetation and the suitability of wildlife habitat adjacent to the project site. However, the project and its ongoing activities will contribute to the overall cumulative impacts to the wildlife populations of the area that are experiencing gradual habitat loss, fragmentation, alteration and displacement through increased development.

#### 5.1.1 Elk and Mule Deer

Potential affects include the loss of winter range habitat at the construction site and loss of use of surrounding forage and cover due to human disturbance factors associated with the operation and maintenance of the facility. The human disturbance that will be associated with the operation of the compressor will indirectly cause some wildlife species to avoid the area, particularly during periods of human activity. Noise generated by the compressor engines may affect wild ungulate species and the magnitude of the effect is dependent on the reaction of wildlife to the intensity of the noise generated by the compressors.

#### 5.1.2 Birds

The affects to foraging and nesting vegetation/habitat to a small number of bird species are expected to be minimal. The piñon-juniper woodlands east of the compressor site are suitable for species that nest in this habitat type. The potential exists for disturbance to the Red-tailed Hawk nest in the power line tower south of the compressor site. The nest site is located well within the 0.33-mile disturbance buffer that the CDOW recommends for nest protection. All bird species, including raptors, may be affected by human disturbance factors that they are not adapted to, which may cause abandonment of the nest by the adults resulting in the loss of eggs or nestlings.

#### 5.1.3 Endangered Fish

The Colorado pikeminnow and razorback sucker critical habitat in the Colorado River near the project area may be compromised due to decreased water quality conditions from site construction. Recent recovery projects in Debeque Canyon, including fish passage structures, have allowed access to the upper Colorado River near the project area for the first time in approximately 100 years. Any increase in erosion runoff could negatively affect endangered fish recovery due to a decrease in water quality.

## 6.0 MITIGATION RECOMMENDATIONS

The following recommendations for mitigation are presented for maintenance and improvement of wildlife habitat as well as for the prevention of human-caused wildlife losses and/or conflicts.

### 6.1 Maintenance and Restoration of Habitat

In the Rocky Mountain Region, sagebrush communities have gradually declined over the years and continue to do so as a result of development, habitat conversion and invasion of non-native weed species. Sagebrush is a key food source for wintering mule deer on this project site and provides nesting and foraging habitat for migratory birds and small mammals. The residual grass understory of the current sagebrush, piñon-juniper vegetation and adjacent meadows provides limited forage for wintering elk due to the widespread invasion of cheatgrass.

After disturbance and removal, it generally takes decades to return sagebrush to its current condition through natural vegetative succession. Deliberate planting of sagebrush is possible, yet costly. Native Wyoming should be considered and added to the re-vegetation plan of disturbed soils once grass/forb plantings have established themselves. Seed from the existing sagebrush vegetation should be used to create wildlife forage that has a mix of grasses, forbs and sagebrush. Any further energy exploration and/or development in this area should include efforts to maintain and/or restore the sagebrush community.

Installation of adequate compressor mufflers would benefit all wildlife species in the project area and surrounding habitat. Compressor station exhaust noise, which is usually directed vertically, can affect essential habitat located on mesas above project sites that are often located in low lying areas. Directing sound slightly away from sensitive areas can have a significant positive effect on the suitability of wildlife habitats.

Ongoing control of noxious and invasive weeds is recommended as an additional method to maintain native vegetation communities and favorable wildlife habitats. An "Integrated Vegetation and Weed Management Plan" is provided for this project in a separate report.

### 6.2 Planning for Sensitive Time Periods

#### 6.2.1 Mule Deer and Elk

Wintering mule deer and elk would benefit if construction and/or energy exploration/ development activities avoided the critical time for these species, from December 1 to April 30. Energy industry activities are commonly limited during this time period on federal lands in the area in order to accommodate wintering mule deer and elk. Table 7 displays the most critical periods for deer and elk in the area of the compressor project.

**Table 7. Seasonal critical periods for the Una Compressor Station**

| Concern | Period |
|---|---|
| Deer and Elk severe (critical) winter range | December 1 – April 30 |
| Migratory Birds primary nesting season | May 15 – August 1 |

### 6.2.2 Migratory Birds

Vegetation clearing activities, in relation to construction and development projects, would have less impact to migratory birds if conducted outside the primary nesting season of May 15 to August 1 (Table 7).

### 6.2.3 Raptors

The Bald Eagle nest site on the Colorado River is located at a great enough distance from the project area such that it should not affect subsequent nesting at the existing nest site.

In order to reduce the potential for impacts to other potentially nesting raptors, it will be important that the project proponent schedule construction activities such that they are outside the breeding, nesting and brood rearing periods. CDOW's (Craig 2002) recommended raptor nest site avoidance standards for the species observed in this survey are summarized below (Table 8). If the project cannot be completed prior to, or after, the next nesting season, the known nest site in the power line tower should be re-inventoried by qualified biologists to determine nesting activity. If any birds are found behaving in a manner consistent with nesting, every effort should be made to apply the timing limitation within the buffer distance recommendations.

**Table 8. Recommendations for seasonal timing limitations for active raptor nests**

| Species | Buffer Zone - NSO | Seasonal Nesting Period |
|---|---|---|
| Red-tailed Hawk | 0.33 mile | 1 March - 15 July |
| Swainson's Hawk | 0.25 mile | 1 April - 15 August |
| Sharp-shinned Hawk | 0.25 mile | 1 April - 15 August |
| Cooper's Hawk | 0.25 mile | 1 April - 15 August |
| American Kestrel | * | * |
| Peregrine Falcon | 0.5 mile | 15 March - 31 July |
| Prairie Falcon | 0.5 mile | 15 March - 31 July |
| Golden Eagle | 0.25 mile + alt. nests | 1 January - 15 July |
| Bald Eagle | 0.50 mile | 15 December - 15 July |
| Northern Harrier | 0.25 mile | 1 April - 15 August |
| Long-eared Owl | 0.25 mile | 1 March - 15 July |
| Northern Saw-whet Owl | 0.25 | 1 March – 15 July |
| Great Horned Owl | * | * |

* Great Horned Owls and Kestrels are relatively tolerant of human activity. Keep activity to a minimum during breeding season.

Construction outside the typical nesting season will allow raptors the opportunity to relocate to alternate or new nest sites prior to the 2009 nesting season. The close proxmidity of the compressor site and well pad may compromise the suitablity of the existing power line tower nest site.

## 6.3 Other Mitigation Practices

### 6.3.1 Erosion Control and Soil Stability

Efforts to control soil erosion within the project area should be implemented using standard stormwater control techniques. Disturbed soils within the project area are susceptible to erosion and downstream water quality could be negatively affected by increased soil erosion.

Minimizing erosion from the project site will decrease sediment and silt loads from entering endangered fish habitat.

### 6.3.2 Fences

Properly designed fences will prevent deer and elk from being injured or suffering death as a result of becoming entangled as they attempt to jump over or pass through a fence. Generally, wire fences that do not exceed 42 inches in height and have 12-inch spacing between the top two wires will allow deer and elk to pass over a fence without conflict. The BLM utilizes these fence specifications for livestock fencing on federal lands (BLM 1989). The publication presented by CDOW, "Fencing with Wildlife in Mind" provides fence designs that are friendly to wildlife and is available at the CDOW web site at http://wildlife.state.co.us/NR/rdonlyres/B0D65D61-6CB0-4746-94F1-6EE194E1C230/0/fencing.pdf.

### 6.3.3 Traffic

Construction and service vehicle drivers should be encouraged to maintain modest speeds on County Road 300 to reduce the chances of striking wildlife. Advisory signs with this cautionary message could be placed on roadways of the area, if needed. Posting speed limit signs where collisions with wildlife appear most likely on County Road 300 will help reduce losses to wildlife as a result of vehicle encounters.

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*engineering paths to transportation solutions*

## MEMORANDUM

*To:* Mr. Charles Bucans, Project Manager, Star Valley Engineering

*From:* Jeff Ream, P.E., PTOE, Felsburg, Holt & Ullevig

*Date:* July 8, 2008

*Subject:* Williams Well Site Traffic Assessment
FHU Reference No. 08-154

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This memorandum summarizes the traffic impacts created by the Williams Well Site Pad SG 12-35, located on the south side of CR-300 (Battlement Parkway) in Garfield County, approximately four miles south of Parachute. The analysis summarizes the existing traffic volumes on CR 300, provides traffic forecasts for construction and operation of the well site, and analyzes traffic operations at the proposed site driveway on CR 300 during construction and operation of the site.

**Existing Traffic Volumes**

A 24-hour traffic count was conducted on CR 300 in the general location of the proposed well site driveway, which would be approximately 0.4 miles east of Wallace Creek Road. The count indicated that CR 300 currently carries approximately 1,000 vehicles per day (vpd) in that vicinity. The traffic count information is attached.

**Trip Generation**

Trip generation for the eight well site pad was determined based on construction and operation information provided by the developer, Williams Production RMT. Construction would include two separate phases; drilling, which would take approximately 64 days to complete, followed by pad completion, which would take approximately 32 days to complete. Thus, the total construction time would be approximately 96 days. During this time a variety of traffic generating activities would occur, creating a site that would be far more active than during the operational phase, where the site is generally self-sufficient and requires only one vehicle visit a day and 1-2 truck visits a week.

Tables 1 through 3 summarize the trip generation for the two construction phases and the operational phase, by site activity. Since each of the construction activities within each phase would occur at different times and frequencies throughout the construction process, the round-trip frequencies (Column 2) were converted to an average number of daily and peak hour trips (Columns 3 through 9) to provide a representation of the typical trip generation for the site on a daily basis. As the tables indicate, even during the busier construction phases the site would generate, on average, relatively few trips (by way of comparison, a typical single family home generates 10 trips per day), while once complete and fully operational, the number of trips in and out of the site would be negligible.

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www.fhueng.com info@fhueng.com

Table 1. Well Site Trip Generation – Drilling Phase

| Activity | Round-Trip Frequency | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Drilling Rig Crew (1 rig, 2 crews/rig) | 2 per day | 4.0 | 2 | 0 | 2 | 0 | 2 | 2 |
| Conventional Drilling Rig Move | 10 per pad | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drill Bit/Tool Recovery | 6 per week | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mechanics/Welders | 4 per week | 1.6 | 0.8 | 0 | 0.8 | 0 | 0.8 | 0.8 |
| Supply Delivery | 4 per week | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fresh Water Trucks | 3 per day | 6.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fuel Trucks | 5 per week | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wireline unit | 2 per well | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cement trucks and crew | 12 per well | 3.0 | 1.5 | 0 | 1.5 | 0 | 1.5 | 1.5 |
| **Total** | | **21** | **4** | **0** | **4** | **0** | **4** | **4** |

Time Frame: 64 Days (1 conventional drill rig, 1 well pad, 8 wells, 8 days per well)

**Table 2. Well Site Trip Generation – Pad Completion Phase**

| Activity | Round-Trip Frequency | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Service Rig | 4 per well | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Service Rig Crew | 1 per day | 2.0 | 1 | 0 | 1 | 0 | 1 | 1 |
| Wireline Unit | 6 per well | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Consultant | 2 per day | 4.0 | 2 | 0 | 2 | 0 | 2 | 2 |
| Pump Trucks | 6 per well | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sand Trucks | 6 per well | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Equipment Trucks | 2 per well | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Testing and Operations | 8 per well | 4.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | **22** | **3** | **0** | **3** | **0** | **3** | **3** |

Time Frame: 32 Days (1 conventional drill rig, 1 well pad, 8 wells, 4 days per well)

**Table 3. Well Site Trip Generation – Operational Phase**

| Activity | Round-Trip Frequency | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Well Monitoring | 1 per day | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Truck (pick up well condensate) | 1 per week | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | **2** | **0** | **0** | **0** | **0** | **0** | **0** |

**Traffic Operations**

Traffic operations at the site driveway were evaluated according to techniques documented in the Highway Capacity Manual, (Transportation Research Board, 2000) (HCM-2000). Level of service (LOS) is a qualitative measure of traffic operational conditions, based on roadway capacity and vehicle delay. Levels of service are described by a letter designation ranging from LOS A to LOS F, with LOS A representing the best possible conditions and LOS F representing congested conditions. For unsignalized intersections, levels of service are calculated for movements which must yield right-of-way to other traffic movements.

Table 4 summarizes the morning and evening peak hour levels of service at the site driveway. As the table indicates, all movements at that driveway would operate at LOS A during both construction and operation. Given the excellent levels of service and the low peak and daily traffic volume projections, no turning lanes are recommended for the site driveway.

Level of service sheets for both peak periods under all three phases are attached.

**Table 4. Site Driveway Levels of Service**

| Movement | Drilling Phase | | Pad Completion Phase | | Operational Phase | |
|---|---|---|---|---|---|---|
| | AM Peak | PM Peak | AM Peak | PM Peak | AM Peak | PM Peak |
| WB Left Turn | LOS A (1 sec.)[1] | LOS A (1 sec.) | LOS A (1 sec.) | LOS A (1 sec.) | LOS A (1 sec.) | LOS A (1 sec.) |
| NB Left/Right Turn | LOS A (9 sec.) | LOS A (9 sec.) | LOS A (9 sec.) | LOS A (9 sec.) | LOS A (9 sec.) | LOS A (9 sec.) |

1. Average delay per vehicle, in seconds.

**Conclusions and Recommendations**

The proposed Williams Well Pad site would consist of eight wells. Construction would include two separate phases; drilling, which would take approximately 64 days to complete and generate approximately 21 trips per day, followed by pad completion, which would take approximately 32 days to complete and generate approximately 22 trips per day. Once the 96-day construction period is complete, site operations would generate approximately two trips per day.

All movements at the site driveway would operate at LOS A during both construction phases and the operational phase. As a result of these excellent levels of service and the low number of trips generated by the site, no turn lanes are recommended at the site driveway.

I trust this information is sufficient for your submittal needs for the project. If you have any questions or comments, please give me a call at (303) 721-1440.

Site Code: 1
Station ID: 1
CR300 BET RICHARDSON RD & WALLACE CREEK

| Start Time | 26-Jun-08 Thu | EB | WB | Total |
|---|---|---|---|---|
| 12:00 AM | | 6 | 7 | 13 |
| 01:00 | | 5 | 5 | 10 |
| 02:00 | | 2 | 2 | 4 |
| 03:00 | | 4 | 5 | 9 |
| 04:00 | | 16 | 19 | 35 |
| 05:00 | | 18 | 15 | 33 |
| 06:00 | | 27 | 15 | 42 |
| 07:00 | | 33 | 20 | 53 |
| 08:00 | | 32 | 22 | 54 |
| 09:00 | | 31 | 30 | 61 |
| 10:00 | | 41 | **36** | **77** |
| 11:00 | | **43** | 34 | 77 |
| 12:00 PM | | 39 | 26 | 65 |
| 01:00 | | 35 | 31 | 66 |
| 02:00 | | 32 | 38 | 70 |
| 03:00 | | 34 | 31 | 65 |
| 04:00 | | **40** | **39** | **79** |
| 05:00 | | 30 | 27 | 57 |
| 06:00 | | 15 | 25 | 40 |
| 07:00 | | 13 | 10 | 23 |
| 08:00 | | 14 | 10 | 24 |
| 09:00 | | 8 | 7 | 15 |
| 10:00 | | 10 | 5 | 15 |
| 11:00 | | 4 | 9 | 13 |
| Total | | 532 | 468 | 1000 |
| Percent | | 53.2% | 46.8% | |
| AM Peak | | 11:00 | 10:00 | 10:00 |
| Vol. | | 43 | 36 | 77 |
| PM Peak | | 16:00 | 16:00 | 16:00 |
| Vol. | | 40 | 39 | 79 |
| Grand Total | | 532 | 468 | 1000 |
| Percent | | 53.2% | 46.8% | |

ADT    ADT 1,000    AADT 1,000

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 1 | 4 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 1 | 4 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 36 | | 68 | 35 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 36 | | 68 | 35 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1575 | | 934 | 1037 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 36 | 28 | 2 |
| Volume Left | 0 | 4 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1575 | 983 |
| Volume to Capacity | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 1.1 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 1.1 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.8 | | |
| Intersection Capacity Utilization | 14.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 1 | 3 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 1 | 3 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 36 | | 66 | 35 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 36 | | 66 | 35 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1575 | | 938 | 1037 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 36 | 27 | 2 |
| Volume Left | 0 | 3 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1575 | 985 |
| Volume to Capacity | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.9 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.9 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.7 | | |
| Intersection Capacity Utilization | 13.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 1 | 1 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 1 | 1 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 36 | | 61 | 35 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 36 | | 61 | 35 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1575 | | 944 | 1037 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 36 | 25 | 2 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1575 | 989 |
| Volume to Capacity | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.3 | 8.6 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.3 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.4 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 1 | 4 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 1 | 4 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 5 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 4 |
| cSH | 1700 | 1564 | 1001 |
| Volume to Capacity | 0.03 | 0.00 | 0.01 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.2 | 8.6 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.6 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 1 | 3 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 1 | 3 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 4 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 3 |
| cSH | 1700 | 1564 | 995 |
| Volume to Capacity | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.2 | 8.6 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.5 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 2 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1564 | 965 |
| Volume to Capacity | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.2 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.3 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

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Etna, Wyoming 83118
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Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 11.1.E: Distances from Abutting Property**

Please refer to Submittal #6 – Vicinity Map

The Una Compressor Station site is abutted to the north by Specialty Restaurants (boundary approx. 1,000 feet to station site), to the west by Bosely Spring Creek Ranch LLC (boundary approx. 300 feet to station site), to the south by Mary Ann Bosely (boundary approx. 100 feet to station site), on the southeast by Gerald R. and Gerald P. Grunska (boundary approx. 200 feet to station site), and on the east by Larry A. & Karen K. Klebold (boundary approx. 500 feet to station site). Adjacent uses include ranching/hay production and oil & gas well sites.

The Una CS site is within a 40 acre parcel owned by Williams Production RMT Co. that aids in buffering the station. The existing oil & gas well site uses nearby also help to buffer this use.

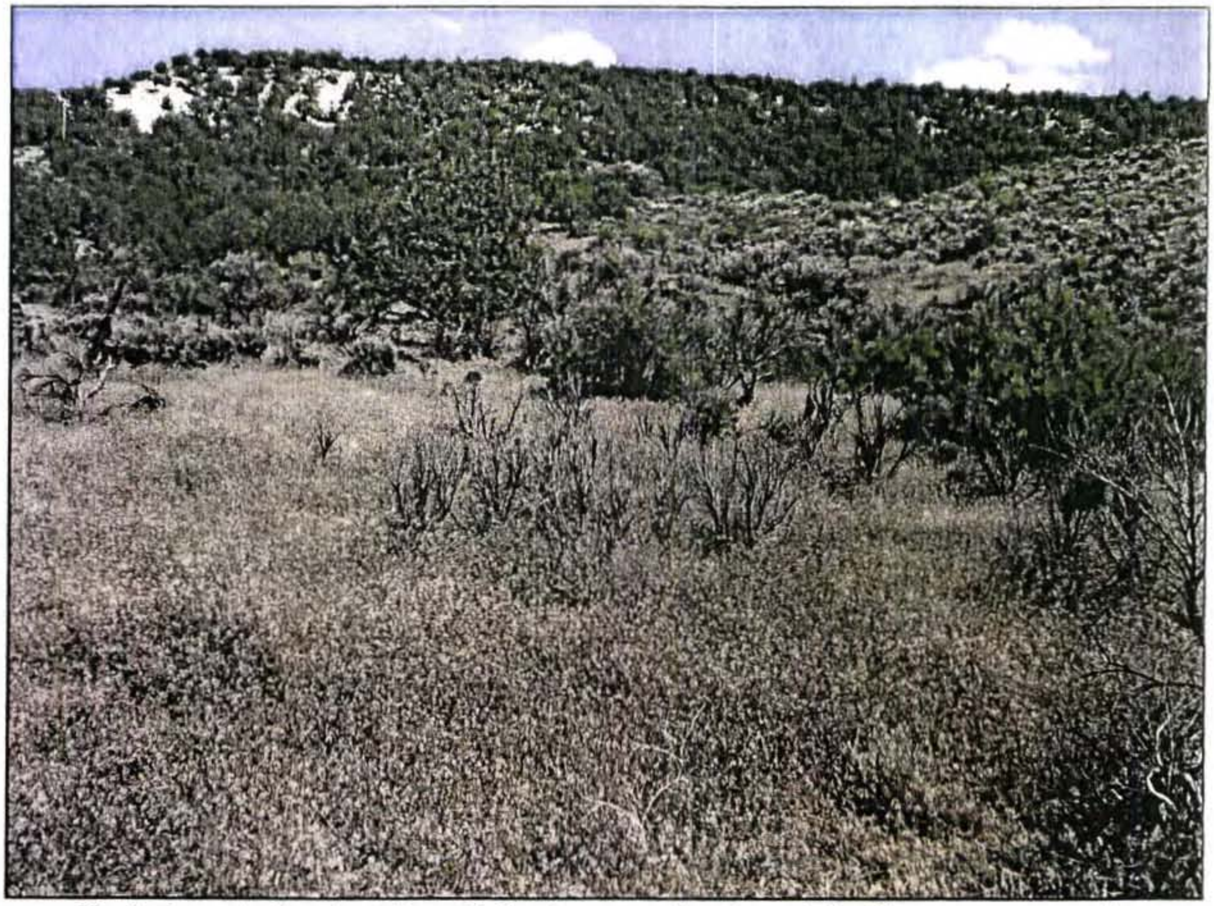
Please contact me with any questions.

Sincerely,

**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

# INTEGRATED VEGETATION AND NOXIOUS WEED MANAGEMENT PLAN
# WILLIAMS PRODUCTION RMT
# UNA COMPRESSOR STATION
# GARFIELD COUNTY, COLORADO



**Typical vegetation, terrain and cheatgrass understory at the Una compressor site**


**Prepared by:**
**WestWater Engineering**
**2570 Foresight Circle #1**
**Grand Junction, CO 81505**


**July 2008**

## 1.0 INTRODUCTION

### 1.1 Project Description

Williams Production RMT (Williams) has requested WestWater Engineering (WWE) to provide an "Integrated Vegetation and Noxious Weed Management Plan" for a proposed special use permit in Garfield County, Colorado. Williams is seeking the special use permit to install a natural gas compressor station at a site adjacent to a natural gas well pad southwest of Parachute, Colorado, approximately 4.4 miles.

The proposed compressor site is located on private land owned by Williams in Section 35, Township 7 South, Range 96 West (Figure 1). The topography at the site varies from small, rolling hills to a steep-sided, rocky slope that leads uphill to a flat mesa located south of the project area. The low hills are composed of sagebrush, greasewood, and a dense infestation of cheatgrass. There are no perennial streams, but several ephemeral draws that generally run from south to north bisect the property. An irrigation ditch runs across the lower portion of the project area and generally parallels Garfield County Road 300. Elevations in the project area vary from 5,060 to 5,340 ft. The Colorado River is located about 0.4-mile north of the project area.

Existing natural gas well pads and pipelines are adjacent to the proposed compressor site. Rural residences are widely spaced in the project vicinity; one residential home is located on the Williams property. A set of high-voltage power lines and steel support towers bisects the property running from northeast to southwest. The primary use of the surrounding area is agriculture/rangeland, wildlife habitat, and recent natural gas extraction/development.

### 1.2 General Survey Information

Mapped soil types, as published by the Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture (USDA), were reviewed to determine the soil types and vegetation characteristics of the compressor site and surrounding property (NRCS 2008).

A field inspection of the project area was conducted by WWE biologists on June 17, 2008. WWE biologists surveyed the area within the Williams parcel ownership boundary (Figure 1) to identify vegetation communities and to search for, identify, and map noxious weed species.

Vegetation types were determined through field identification of plants, aerial photography, and on-the-ground assessment of plant abundance visible during the survey. Identification of plant species was aided by using pertinent published field guides (Whitson et al. 2001, CWMA 2007, Kershaw et al. 1998, Weber and Wittmann 2001). Photographs were taken of the general project location, vegetation, terrain, and other specific biological findings. Locations of weeds and other features included in this report were recorded with the aid of a handheld global positioning system (GPS) instrument using NAD83/WGS84 map datum, with all coordinate locations based on the Universal Transverse Mercator (UTM) coordinate system in Zones 12S.


**Figure 1:**
**Williams RMT**
**Una Compressor Station Location Map - July 2008**

Map Source: Z:\Westwater_GIS_Data\Williams RMT\UNA Compressor\UnaCompressorReportOrtho.mxd July 7 2008 clv

## 2.0 LANDSCAPE SETTING

### 2.1 Vegetation Communities

Vegetation communities in the project area are piñon-juniper woodlands, sagebrush and greasewood shrublands and non-farmed agricultural lands. Piñon-juniper woodlands are dominated by piñon pine (*Pinus edulis*) and Utah juniper (*Juniperus utahensis*) and can be mixed with an understory of mainly Wyoming sagebrush (*Artemisia tridentata wyomingensis*), greasewood *(Sarcobatus vermiculatus)*, forbs, and grasses. Vegetation along the draws and drier sites consists of greasewood, rubber rabbitbrush *(Chrysothamnus nauseosus)*, and basin big sagebrush *(Atermesia tridentata tridentata)*. The shrublands within the project area are composed primarily of Wyoming big sagebrush, greasewood, Indian ricegrass (*Oryzopsis hymenoides*) galletagrass (*Hilaria jamesii)* and various wheatgrass species. Non-native downy brome *(Bromus tectorum)* is dominant in the understory of the shrublands and scattered on the hillsides.

A small irrigation ditch parallels Garfield County Road 300 running from east to west. The ditch is approximately 24 inches wide and was carrying a small water flow during the survey of the site. Wetland vegetation was observed along the ditch including coyote willow (*Salix exigua)*, inland saltgrass (*Distichlis spicata)*, cattail and spike rush. Approximately six small Fremont cottonwood (*Populus fremontii)* trees were growing along the irrigation ditch.

### 2.2 Soil Types and Terrain

Soil types and the vegetation that they support vary with elevation and slope aspect. The slope aspects are generally to the north and northwest. Mapped soil types, as published by the NRCS, USDA, were reviewed to determine the soil types and vegetation characteristics of the project site and surrounding property (NRCS 2008).

Four soil types are found in the project area and include Arvada loam, Ildefonso stony loam, Potts loam and Torriorthents-Rock outcrop complex.

1. Arvada loam: This soil composes 44.9 percent of the soils. The slope varies from 6 to 20 percent and vegetation typically is composed of sagebrush, greasewood and wheatgrass. Surface runoff is moderately rapid and the erosion hazard is severe.
2. Ildefonso stony loam: This soil composes 17.99 percent of the soils. The stony loam has slopes ranging from 25 to 45 percent. The native vegetation is mainly piñon-juniper with an understory of Indian ricegrass, wheatgrass, junegrass and sagebrush. Surface runoff is medium and the erosion hazard is severe.
3. Potts loam: This soil composes 0.1 percent of the soils. This deep, well-drained, moderately-sloping to rolling soil is on mesas, benches, and sides of valleys. Its slope ranges from 6 to 12 percent. The vegetation on this soil is mainly wheatgrass, needleandthread, and sagebrush.
4. Torriorthents-Rock outcrop complex: This soil composes 7 percent of the soils. This broadly defined unit consists of exposed sandstone and shale bedrock and stony soils that are shallow to moderately deep. Slopes range from 15 to 70 percent. Native vegetation includes wheatgrass, bluegrass, Indian ricegrass, sagebrush and piñon-juniper.

## 3.0 NOXIOUS WEEDS

### 3.1 Introduction to Noxious Weeds

Noxious weeds are plants that are not native to an area. Most have come from Europe or Asia, either accidentally or as ornamentals that have escaped. Once established in a new environment they tend to spread quickly since insects, diseases and animals that normally control them are absent. Noxious weeds are spread by man, animals, water, and wind. Prime locations for the establishment of noxious weeds include roadsides, sites cleared for construction, areas that are overused by animals or humans, wetlands, and riparian corridors. Subsequent to soil disturbances, vegetation communities can be susceptible to infestations of invasive or exotic weed species. Vegetation removal and soil disturbance during construction can create optimal conditions for the establishment of invasive, non-native species. Construction equipment traveling from weed-infested areas into weed-free areas could disperse noxious or invasive weed seeds and propagates, resulting in the establishment of these weeds in previously weed-free areas.

The Colorado Noxious Weed Act (State of Colorado 2005) requires local governing bodies to develop noxious weed management plans. Both the State of Colorado and Garfield County maintain a list of plants that are considered to be noxious weeds. The State of Colorado noxious weed list includes three categories. List A species must be eradicated whenever detected. List B species include weeds whose spread should be halted. List C species are widespread, but the State will assist local jurisdictions which choose to manage those weeds.

The Garfield County Weed Advisory Board has compiled a list of 21 plants from the State list considered to be noxious weeds within the county (see Appendix A). Eight of those weed species were found in, or near, the project area. The Garfield County Weed Advisory Board has duties to:

1. Develop a noxious weed list,
2. Develop a weed management plan for designated noxious weeds, and
3. Recommend to the Board of County Commissioners that identified landowners submit an integrated weed management plan for their properties.

### 3.2 Observations

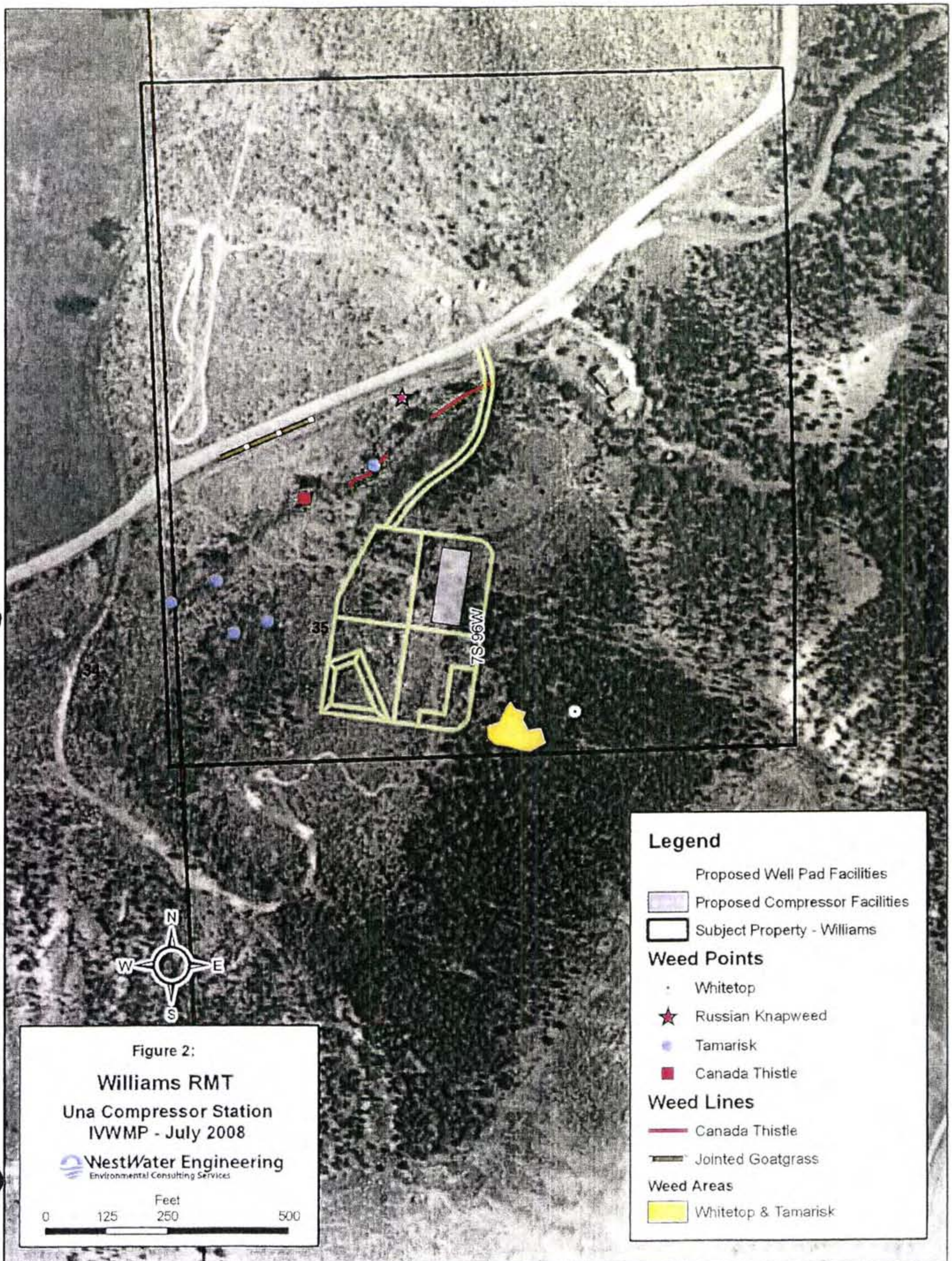
Eight listed weed species are found in the project area, five of which are Garfield County listed species (Table 1 and Appendix B). The most prevalent listed weeds are hoary cress (*Cardaria draba*), downy brome (*Bromus tectorum*), Canada thistle (*Cirsium arvense*) and salt cedar (*Tamarix spp.*). A common problematic, but not listed, weed found in the project area is tumble mustard (*Sisymbrium altissimum*).

The locations of the listed weeds, except for downy brome, field bindweed and redstem filaree, are plotted on the project map (Figure 2). Very dense stands of downy brome were observed in the sagebrush/greasewood shrublands throughout the project area.

Table 1. Observed Noxious Weed Locations in the Project Area

| **Common Name*** <br> **Scientific Name** <br> **USDA Symbol** | **General Location and Comments** |
|---|---|
| Downy Brome[C] <br> *Bromus tectorum* <br> BRTE | Also known as cheatgrass. Can be found throughout much of the project area. Concentrations are very dense in the shrublands. The hillsides to the east of the compressor pad support scattered, less dense cheatgrass stands. |
| Field Bindweed[C] <br> *Convolvulus arvensis* <br> COAR4 | Scattered south of Garfield County Road 300 between the road and an irrigation ditch. |
| **Russian Knapweed[B]** <br> ***Acroptilon repens*** <br> ACRE3 | One site, approximately 20 ft × 20 ft, 40 yards south of Garfield County Road 300. |
| **Canada Thistle[B]** <br> ***Cirsium arvense*** <br> **CIAR4** | Several infestations were noted along the small irrigation ditch. At several locations the infestation were considered by WWE biologists to be very dense. |
| Redstem Filaree[B] <br> *Erodium cicutarium* <br> ERCI6 | Thinly scattered in much of the project area. |
| **Hoary Cress[B]** <br> ***Cardaria draba*** <br> **CADR** | A large infestation was observed on the hillside located southeast of the compressor station. The infestation was mixed in with a dense stand of salt cedar. No water source was observed, but apparently is derived from the irrigated meadows south of the project location. |
| **Salt Cedar[B]** <br> ***Tamarix* spp.** <br> **TARA** | Also called tamarisk. A large infestation was observed on the hillside located southeast of the compressor station. The infestation was mixed in with a dense stand of hoary cress. No water source was observed, but apparently is derived from the irrigated meadows south of the project location. Salt Cedar was scattered along the irrigation ditch that runs through the project area. |
| **Jointed goatgrass[C]** <br> ***Aegilops cylindrical*** <br> **AECY** | Observed in the borrow pit on the south side of Garfield County Road 300 for approximately 150 ft. Infestation was dense in several areas at this location. This species was not observed in other portions of the project area. |

* Government weed listing: **Bold** - Garfield County, Colorado. Superscript - Colorado State B or C list.




Map Source: Z:\Westwater_GIS_Data\Williams RMT\UNA Compressor\UnaCompressorReportOrtho.mxd July 7 2008 clv

A large area of tamarisk with a dense understory of hoary cress was observed southeast of the compressor site (Photo1). The vegetation appears to be supported by high soil moisture content that may be a result of a small spring, although no surface water was observed at the site.

**Photo 1. Heavy infestation of hoary cress and tamarisk southeast of the compressor station**

### 3.3 Treatment and Control of Noxious Weed Infestations

Invasive and noxious weeds commonly occur along ditches, creek corridors and adjacent drainages (especially in riparian areas), abandoned fields, and disturbed areas such as well pads, pipeline routes, and roadsides.

Control methods for the eight weed species found in the project area are described in Table 2. Included in Table 2 are weed life cycle type and recommended control methods for each weed species.

### 3.4 Recommended Treatment Strategies

It is important to know whether the target is an annual, biennial, or perennial to select strategies that effectively control and eliminate the target. Treatment strategies are different depending on plant type, which are summarized in Tables 3 and 4. Herbicides should not always be the first treatment of choice when other methods can be effectively employed.

Table 2. Weed Control Methods

| Common Name* Scientific Name USDA Symbol | Type** | Control Methods |
|---|---|---|
| Downy Brome[C] *Bromus tectorum* BRTE | A | Eliminate seed source. Re-vegetate with native grasses. Herbicide treatment in early spring and fall. Avoid overgrazing. |
| Field Bindweed[C] *Convolvulus arvensis* COAR4 | P | Herbicide application in the fall, plant competitive grasses. |
| **Russian knapweed**[B] ***Acroptilon repens*** **ACRE3** | B | Best management includes cultural control combined with mechanical and/or chemical control techniques. A single control strategy, such as mowing or a herbicide, usually is not sufficient. Russian knapweed is controlled with Tordon 22K (picloram) at 1 to 2 quarts/A. Tordon may be broadcast sprayed up to 1 quart/A or spot sprayed at rates up to 2 quarts/A. Tordon plus 2,4-D (1 to 1.5 pints + 1 quart/A) also will control Russian knapweed. If low rates of Tordon or Tordon plus 2,4-D is used, application for two consecutive years may be necessary to achieve adequate control. Apply Tordon any time the weed is actively growing. |
| **Canada thistle**[B] ***Cirsium arvense*** **CIAR4** | CP | **Chemical control:** Read the label, follow directions and use precautions. Research at Colorado State University shows that Tordon 22K (picloram), Curtail (clopyralid plus 2,4-D), Transline (clopyralid), Banvel/Vanquish/Clarity (dicamba), 2,4-D and Telar (chlorsulfuron) are effective against Canada thistle. These herbicides are most effective when combined with cultural and/or mechanical control. Mowing can be an effective tool if combined with herbicide treatments. |
| Redstem Filaree[B] *Erodium cicutarium* ERCI6 | B/WA | Early Spring tillage before weed emergence in the existing corridor to a depth of 2-4 inches. Herbicide application in Spring while plants are small. |
| **Hoary Cress**[B] ***Cardaria draba*** **CADR** | CP | In general, effective chemical control requires multiple applications. Timing and application rate are crucial for successful control. Application rate is critical; MORE DOES NOT NECESSARILY MEAN BETTER CONTROL. Campaign (glyphosate + 2,4-D) may be applied at 54 oz/A to control hoary cress. However, the glyphosate in Campaign will injure and kill perennial grasses and use of Campaign in successive years should be avoided. Escort (metsulfuron) applied at 0.75 to 1.0 oz/A or Telar (chlorsulfuron) applied at 1 oz/A are effective if combined with an agricultural surfactant at 0.25 % v/v (equivalent to 1 qt of surfactant per 100 gallons of spray solution). The optimum time to apply Escort and Telar for hoary cress control is in the spring when it is flowering or in the fall. |
| **Salt Cedar/Tamarisk**[B] ***Tamarix*** **spp.** **TARA** | P | Repeated flooding prevents seedling establishment. Herbicide treatment on basal portion of young plants. Cut larger plants and treat with herbicide plus adjuvant within 30 minutes. Plant area with native species to shade out tamarisk. Biological with Diorhabda elongata deserticola, the tamarisk leaf beetle (Tamarisk Coalition 2007). |

Table 2. Weed Control Methods

| Common Name* Scientific Name USDA Symbol | Type** | Control Methods |
|---|---|---|
| Jointed goatgrass[C] *Aegilops cylindrical* AECY | WA | **Mowing:** Mow between the flowering and soft dough stages. If done too early, new tillers will form and produce viable seeds. Rough ground and the presence of prostrate jointed goatgrass plants may limit mowing effectiveness. **Chemical:** Atrazine applied in late August and glyphosate will control jointed goatgrass in fallow fields. If jointed goatgrass seedlings are present when atrazine is applied, a contact herbicide such as glyphosate or paraquat must be added to the atrazine. The effectiveness of atrazine is reduced in dry falls when applied at low rates. |

* Government weed listing: **Bold** – Garfield County, Colorado. Superscript - Colorado State B or C list.

** Type: A = annual; B = biennial; CP = creeping perennial; P = perennial; WA = winter annual

### Table 3. Treatment Strategies for Annual and Biennial Noxious Weeds

***Target: Prevent Seed Production***

| |
|---|
| 1. Hand grub (pull), hoe, till, cultivate in rosette stage and before flowering or seed maturity. If seeds develop, cut and bag seed heads. |
| 2. Cut roots with a spade just below soil level. |
| 3. Treat with herbicide in rosette or bolting stage, before flowering. |
| 4. Mow biennials after bolting stage, before seed set. Mowing annuals will not prevent flowering but can reduce total seed production. |

(Sirota 2004)

### Table 4. Treatment Strategies for Perennials

***Target: Deplete nutrient reserves in root system, prevent seed production***

| |
|---|
| 1. Allow plants to expend as much energy from root system as possible, do not treat when first emerging in spring, but allow growth to bud/bloom stage. If seeds develop, cut and bag if possible. |
| 2. Herbicide treatment at bud to bloom stage or in the fall (recommended after August 15 when natural precipitation is present). In the fall, plants draw nutrients into the roots for winter storage. Herbicides will be drawn down to the roots more efficiently at this time due to translocation of nutrients to roots rather than leaves. If the weed patch has been present for a long period of time, another season of seed production is not as important as getting the herbicide into the root system. Spraying in fall (after middle August) will kill the following year's shoots, which are being formed on the roots at this time. |
| 3. Mowing usually is not recommended because the plants will flower anyway; seed production should be reduced. Many studies have shown that mowing perennials and spraying the re-growth is not as effective as spraying without mowing. Effect of mowing is species dependent; therefore, it is imperative to know the species and its basic biology. Timing of application must be done when biologically appropriate, which is not necessarily convenient. |
| 4. Tillage may or may not be effective. Most perennial roots can sprout from pieces only ½" – 1" long. Clean machinery thoroughly before leaving the weed patch. |

Table 4. Treatment Strategies for Perennials

*Target: Deplete nutrient reserves in root system, prevent seed production*

| |
|---|
| 5. Hand pulling is generally not recommended for perennial species unless you know the plants are seedlings and not established plants. Hand pulling can be effective on small patches but is very labor intensive because it must be done repeatedly. |

(Sirota 2004)

Herbicide treatment with two or more herbicide modes of action in fall (after approximately August 15 when natural precipitation is present) is the best method to control difficult species. Some weeds, particularly annuals and biennials, can develop resistance to herbicides. The ability to quickly develop immunity to herbicides, especially when they are used incorrectly, makes it imperative to use the proper chemicals at the correct time in the specified concentration. Most misuse is centered on excessive application, either in frequency or concentration. This results in mostly top kill and an immune phenotype.

### 3.5 Life Cycle and Management Calendars

Best results in the control of certain specific noxious weeds can be achieved by following the recommended timetable presented in Table 5.

**Table 5. Noxious Weed Biology**

| Species | Type[1] | Jan | Feb | March | April | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tamarisk* | P | semi-dormancy | | → | leaves emerge | flowering, seed set | | growth | flowering, seed set | | semi-dormancy | | |
| Hoary cress | CP | Dormancy | | | leaves emerge | Flowering, seed set | | Seed set | | | | | |
| Russian knapweed | CP | Dormancy | | | emerge | Flowering | | | | regrowth | | | |
| Canada thistle | | Dormancy | | | emerge | | Flowering | | | | | | |

1: **A** = annual; **B** = biennial; **CP** = creeping perennial; **P** = perennial; **WA** = winter annual

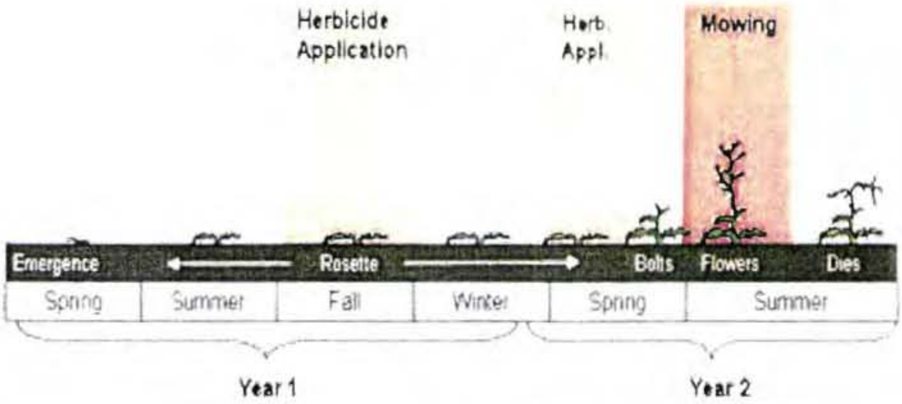
**Shaded areas indicate best control timing.**

* Tamarisk control can be done any time of the year, but is easier when leaves are absent and weather is cooler.

(Sirota 2004)

Figure 3 is an alternative schedule for life cycle and control of biennial thistles such as bull thistle and musk thistle. It is also appropriate to control common mullein. One column that should be added is cutting of rosettes, which can be done any time during the growth of the plant.

Figure 3. Life Cycle and Management strategies for biennial thistles




(Hartzler 2006)

### 3.6 Commercial Applicator Recommendations

A certified commercial applicator is a good choice for herbicide control efforts. Regulations may require a Colorado licensed applicator. An applicator has the full range of knowledge, skills, equipment and experience desired when dealing with tough noxious weeds. Reclamation farming services using multiple seed bin range drills and specialized related equipment is available and should be used for reclamation seeding projects.

> Common chemical and trade names may be used in this report. The use of trade names is for clarity by the reader. Inclusion of a trade name does not imply endorsement of that particular brand of herbicide and exclusion does not imply non-approval. Certified commercial applicators will decide which herbicide to use and at what concentration according to label directions. Landowners using unrestricted products must obey all label warnings, cautions, and application concentrations. The author of this report is not responsible for inappropriate herbicide use by readers.

### 3.7 Best Management Practices – Noxious Weeds

The following practices should be adopted for any construction project to reduce the costs of noxious weed control. The practices include:

- top soil, where present, should be segregated from deeper soils and replaced as top soil on the final grade, a process known as live topsoil handling;
- wetland vegetation, if encountered, should be live handled like sod, temporarily watered if necessary, and placed over excavated sub-soil relative to the position from which the wetland sod was removed;

- cut-off collars should be placed on all wetland and stream crossings to prevent back washing or draining of important aquatic resources;
- in all cases, temporary disturbance should be kept to an absolute minimum;
- equipment and materials handling should be done on established sites to reduce area and extent of soil compaction;
- disturbances should be immediately reseeded with the recommended mix in the re-vegetation section;
- topsoil stockpiles should be seeded with non-invasive sterile hybrid grasses, if stored longer than one growing season;
- prior to delivery to the site, equipment should be cleaned of soils remaining from previous construction sites which may be contaminated with noxious weeds; and
- if working in sites with weed-seed contaminated soil, equipment should be cleaned of potentially seed-bearing soils and vegetative debris prior to moving to uncontaminated terrain.

In areas with slope greater than 3 percent, imprinting of the seed bed is recommended. Imprinting can be in the form of dozer tracks or furrows perpendicular to the direction of slope. When utilizing hydro-seeding followed by mulching, imprinting should be done prior to seeding unless the mulch is to be crimped into the soil surface. If broadcast seeding and harrowing, imprinting should be done as part of the harrowing. Furrowing can be done by several methods, the most simple of which is to drill seed perpendicular to the direction of slope in a prepared bed. Other simple imprinting methods include deep hand raking and harrowing, always perpendicular to the direction of slope.

**Herbicides:** Difficult species, such as Canada thistle, respond better to an application of a combination of two or more chemical modes of action (biological reason for plant death) rather than one (Boerboom 1999). It has also been found that use of two different groups of chemicals in the same mode of action can increase effectiveness on difficult species, e.g., phenoxys and benzoic acids or carboxylic acids and benzoic acids in a mix. Some are commercially pre-mixed, e.g., Crossbow and Super Weed-be-Gone Max, and are available over the counter. However, some of the most effective herbicides are restricted and available for use only by licensed applicators.

Professionals or landowners using herbicides must use the concentration specified on the label of the container in hand. Herbicides generally do not work better at higher concentrations. Most herbicide failures observed by WWE are related to incomplete control caused by high concentrations killing top growth before the active ingredient can be transported to the roots through the nutrient translocation process. Most herbicide applications should use a surfactant if directed on the herbicide label or other adjuvants as called for on the herbicide label.

**Grazing:** Grazing should be deferred, in reclaimed areas, until the desired grass species are established.

**Mechanical:** Canada thistle was found along the irrigation ditch and is an example where control could be accomplished mechanically in concert with chemical applications. Canada thistle that easily re-sprouts will need repeated treatments.

**Alternative Methods:** An alternative method, particularly for downy brome infestations and where there is poor or destroyed topsoil, is the application of vesicular-arbuscular mycorrhizal fungi typically referred to as AMF. These fungi, mostly of the genus *Glomus*, are symbiotic with about 80 percent of all vegetation. Endo-mycorrhizal fungi are associated mostly with grasses and forbs and could be helpful when reclaiming this project. In symbiosis, the fungi increase water and nutrient transfer capacity of the host root system by as much as several orders of magnitude (Barrow and McCaslin 1995).

Over-the-counter commercial products, which are better adapted to coating seeds when re-seeding and treating roots of live seedling trees and shrubs at time of planting, come in powder form and are available from many different sources. Some also come in granular form to be spread with seed from a broadcast spreader. The best AMF products should contain more than one species.

All Colorado State Forest Salida District tree and shrub plantings include the application of AMF. According to District Forester Crystal Tischler, "AMF is worth it" (Tischler 2006). Most, if not all, Colorado Department of Transportation re-vegetation/reseeding projects now require use of AMF and BioSol, a certified by-product of the penicillin manufacturing process composed primarily of mycelium. Compacted soils respond well to fossilized humic substances and by-products called humates. These humates, including humic and fulvic acids and humin were formed from pre-historic plant and animal deposits and work especially well on compacted soils when applied as directed.

Biological control of widespread infestations in the project area, using natural insect agents are available for musk and plumeless thistles, and tamarisk (see Table 2). Musk and plumeless thistles may be controlled by the musk seed head weevil (*Rhinocyllus conicus*), the thistle defoliating beetle (*Cassida rubiginosa*) which feeds on the foliage of Canada, musk, and plumeless thistles, and the musk and plumeless thistle rosette weevil (*Trichosirocalus horridus*) (Sullivan 2004). The latter insect has been trialed on plumeless thistle in Garfield County, but its effectiveness on that species was inconclusive (Garfield County 2002).

## 4.0 REVEGETATION – RECLAMATION

### 4.1 Project Area

The project area includes two basic terrain types including steep-sided slopes and low-elevation rolling hills. Successful reclamation of the project area is dependent upon soil type and texture, slope gradient and aspect, proper weed control, and re-vegetation with suitable plant species.

Based on the soil types, terrain, and the presence of noxious weeds in the project area, successful reclamation is most likely if a seed mix of grasses is used (Table 6). This will allow control of noxious weeds while establishing vegetation in the disturbed areas. The recommended seed mix is based on BLM recommendation for the elevation and vegetation type presently occurring in the project area.

Table 6. Piñon-Juniper Woodland and/or Mountain/Wyoming Big Sagebrush Shrubland

| Common Name | Scientific Names | Variety | Season | Form | PLS lbs/acre* |
|---|---|---|---|---|---|
| **Plant Both of the Following (15% Each, 30% Total)** | | | | | |
| Bottlebrush Squirreltail | *Elymus elymoides, Sitanion hystrix* | VNS | Cool | Bunch | 2.0 |
| Bluebunch Wheatgrass | *Pseudoroegneria spicata, Agropyron spicatum* | Secar, P-7, Anatone, Goldar | Cool | Bunch | 2.8 |
| **and Two of the Following (20% Each, 40% Total)** | | | | | |
| Thickspike Wheatgrass | *Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum* | Critana, Bannock, Schwendimar | Cool | Sod-forming | 3.4 |
| Slender Wheatgrass | *Elymus trachycaulus, Agropyron trachycaulum* | Revenue, Pryor | Cool | Bunch | 3.3 |
| Western Wheatgrass | *Pascopyrum [Agropyron] smithii* | Rosana, Arriba | Cool | Sod-forming | 4.8 |
| **and Two of the Following (15% Each, 30% Total)** | | | | | |
| Indian Ricegrass | *Achnatherum [Oryzopsis] hymenoides* | Paloma, Rimrock | Cool | Bunch | 2.8 |
| Galleta | *Pleuraphis [Hilaria] jamesii* | Viva florets | Warm | Bunch/Sod-forming | 2.5 |
| Muttongrass | *Poa fendleriana* | VNS | Cool | Bunch | 0.4 |
| Sandberg Bluegrass | *Poa sandbergii, Poa secunda* | VNS | Cool | Bunch | 0.4 |

*Based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

**For best results and success, the recommended grass mixture reseeding should be done in late autumn.** The reseeding rate should be doubled for broadcast application (CNHP 1998). Preferred seeding method is multiple seed bin rangeland drill with no soil preparation other than simple grading to slope and imprinting and waterbars where applicable.

Alternative seeding methods include, but are not limited to:

- harrow with just enough soil moisture to create a rough surface, broadcast seed and re-harrow, preferably at a 90 degree angle to the first harrow;
- hydro-seeding (most economical in terms of seed cost); and
- hand raking and broadcast followed by re-raking at a 90 degree angle to the first raking.
- These are not the only means of replanting the site. However, these methods have been observed to be effective in similar landscapes.

After desired grasses are established and control of target weed species is successful, then shrubs, forbs and trees can be planted without concern for herbicide damage. Few native forb seeds are available commercially as cultivars. Most are collected from natural populations. Native shrubs and forbs often do not establish well from seed, particularly when mixed with grasses. Past experience has shown that stabilizing the soil with grasses, accomplishing weed control, and then coming back to plant live, containerized woody species in copses has been the most cost effective method for establishing the woody species component of the plant community.

For sites where soil disturbance will be temporary, grasses should be drilled after construction activities cease and the equipment removed from the site. After two years of controlling weeds (with herbicides) and allowing the grasses to become established, forbs and woody species should be inter-seeded or hand-planted to increase the diversity and value of the reclamation plantings.

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## APPENDIX A
## Garfield County Noxious Weed List

| Species | Common name | Species Code | Growth Form[1] | Life History[2] | State "A" List | State "B" List | State "C" List | Garfield List |
|---|---|---|---|---|---|---|---|---|
| *Acroptilon repens* | Russian knapweed | ACRE3 | F | P | | X | | X |
| *Aegilops cylindrica* | Jointed goatgrass | AECY | G | A | | | X | X |
| *Arctium minus* | Common (Lesser) burdock | ARMI2 | F | B | | | X | X |
| *Cardaria draba* | Hoary cress, Whitetop | CADR | F | P | | X | | X |
| *Carduus acanthoides* | Spiny plumeless thistle | CAAC | F | B, WA | | X | | X |
| *Carduus nutans* | Musk (Nodding plumeless) thistle | CANU4 | F | B | | X | | X |
| *Centaurea diffusa* | Diffuse knapweed | CEDI3 | F | P | | X | | X |
| *Centaurea maculosa* | Spotted knapweed | CEMA4 | F | P | | X | | X |
| *Centaurea solstitialis* | Yellow starthistle | CESO3 | F | A | X | | | X |
| *Chrysanthemum leucanthemum* | Oxeye daisy | CHLE80 | F | P | | X | | X |
| *Cichorium intybus* | Chicory | CIIN | F | P | | | X | X |
| *Cirsium arvense* | Canada thistle | CIAR4 | F | P | | X | | X |
| *Cynoglossum officinale* | Houndstongue, Gypsyflower | CYOF | F | B | | X | | X |
| *Elaeagnus angustifolia* | Russian olive | ELAN | T | P | | X | | X |
| *Euphorbia esula* | Leafy spurge | EUES | F | P | | X | | X |
| *Linaria dalmatica* | Dalmatian toadflax, broad-leaved | LIDA | F | P | | X | | X |
| *Linaria vulgaris* | Yellow toadflax | LIVU2 | F | P | | X | | X |
| *Lythrum salicaria* | Purple loosestrife | LYSA2 | F | P | X | | | X |
| *Onopordum acanthium* | Scotch thistle | ONAC | F | B | | X | | X |
| *Tamarix parviflora* | Smallflower tamarisk | TAPA4 | T | P | | X | | X |
| *Tamarix ramosissima* | Salt cedar, Tamarisk | TARA | T | P | | X | | X |

1 – Growth form: **T** = tree/shrub; **F** = forb/vine; **G** = graminoid 2 – Life history: **A** = annual; **B** = biennial; **P** = perennial; **WA** = winter annual

APPENDIX B

Location of noxious weeds at the Una compressor station site

| UTM Zone | UTM Easting | UTM Northing | Comments |
|---|---|---|---|
| 12S | 751088 | 4364806 | Canada thistle along ditch: linear infestation |
| 12S | 751072 | 4364798 | |
| 12S | 751051 | 4364784 | |
| 12S | 751024 | 4364762 | Canada thistle along ditch: linear infestation |
| 12S | 751012 | 4364749 | |
| 12S | 751003 | 4364746 | |
| 12S | 751001 | 4364742 | |
| 12S | 750973 | 4364735 | Canada thistle along ditch: point location |
| 12S | 751094 | 4364593 | Polygon of hoary cress and tamarisk. |
| 12S | 751086 | 4364590 | |
| 12S | 751096 | 4364598 | |
| 12S | 751101 | 4364606 | |
| 12S | 751104 | 4364601 | |
| 12S | 751111 | 4364599 | |
| 12S | 751109 | 4364594 | |
| 12S | 751112 | 4364588 | |
| 12S | 751120 | 4364589 | |
| 12S | 751121 | 4364578 | |
| 12S | 751123 | 4364579 | |
| 12S | 751141 | 4364599 | Point location hoary cress |
| 12S | 751016 | 4364755 | Tamarisk tree |
| 12S | 750918 | 4364683 | Tamarisk tree |
| 12S | 750890 | 4364669 | Tamarisk tree |
| 12S | 750950 | 4364657 | 3 tamarisk trees |
| 12S | 750929 | 4364650 | 6 tamarisk trees |
| 12S | 751033 | 4364797 | 20'X20' patch of Russian Knapweed |
| 12S | 750978 | 4364784 | Linear patch of jointed goat grass along borrow pit on south side of Garfield County Road 300 |
| 12S | 750920 | 4364760 | |

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Project: Bargath Inc. – Una Compressor Station

**Submittal Item Number 12: Supplementary Regulations 5.03.08 (5) and (6)**

Please find below and attached requirements met as per the Garfield County Supplemental Regulations.

**5.03.08 (5) A. Storage of flammable or explosive solids or gases.**

Bargath Inc. has many compressor stations located in Garfield County, and would meet local, state, and federal codes with relation to flammable materials storage. There would be four 400-barrel storage tanks for the storage of atmospheric natural gas liquids, located as shown on the site plan in Submittal #6. Spacing of these storage tanks would be to minimize impact of fire and allow unobstructed access for outside fire fighting equipment.

Fire extinguishers would be located throughout the station, so personnel could fight incipient stage fires. Fire extinguisher training is provided to Bargath employees on an annual basis.

Truck drivers loading flammable liquids would be given a safety briefing/safety orientation as a matter of contract between Bargath and the hauling contractor.

An Emergency Response Plan (ERP) for the station is attached (dated August 2008).

**5.03.08 (5) B. Enclosures**

Bargath Inc. would install an 7' tall chainlink fence with 3-strand barbed wire on top around the new station perimeter to keep wildlife out of the station and for security.

**5.03.08 (5) C. Materials or wastes transferred off-property.**

Vapor, dust, smoke, noise, glare, and vibration have been addressed in 11.1.B of this application.

Construction stormwater management and spill prevention control and countermeasure have been addressed in 11.1.A in this application.

Bargath Inc. safety regulations and practice ensure that all loose materials and trash are secured so that these items are not transported off-location by strong winds. This practice is required of all contractors and employees working on the station site. Any trash inadvertently allowed to blow off-site would be removed by Bargath. The perimeter fence will aid in this effort.

**5.03.08 (5) D. Storage of heavy equipment.**

With the exception of construction of the station, no heavy equipment will be permanently located on-site.

5003.08 (5) E. Storage Area Sizing – Not Applicable

**5.03.08 (5) F. Lighting**

As per Garfield County Regulations and COGCC rule 803, site lighting would be pointed downward and inward to the property center and shaded to prevent direct reflection on adjacent property. All station lighting would comply with this requirement.

**5.03.08 (6). Water Pollution**

Please see submittals in 11.1.A.1 SWMP and 11.1.A.2 SPCC.

Please note that the above and attached information presented details a carefully implemented plan for mitigation of impacts caused by the Una Compressor Station. These mitigation strategies are utilized by Bargath Inc. in their many compressor stations located in Garfield County.

Please contact me with any questions.

Sincerely,

**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

# UNA Compressor Station
# Emergency Response One Plan

**This copy assigned to:** ______________________________
(Location, Vehicle or Employee)

| Effective: 08/11/08 | Version: # |
|---|---|

## Administrative Information

**Owner/Approver:** Bryan Guderian, Vice President, Tulsa Region/International, E&P

**Approved:** 03-14-2008 **Effective:** 03-14-2008 **Reviewed:** Annually

**Document Change Log**

| Revision Date | Change Description | Concurred By | Submitted By | Made By |
|---|---|---|---|---|
| | | | | |
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| | | | | |

## Emergency Response One Plan
# TABLE OF CONTENTS

# Emergency Response One Plan
# PREFACE

## What Is the One Plan?

| | |
|---|---|
| **What is an Emergency?** | *An emergency is an uncontrolled situation generally of short duration in which life, the environment, or property is endangered and potentially is beyond the routine control of local Company resources. An emergency may or may not involve the release of a hazardous material.*<br><br>The Emergency Response One Plan is designed to help Company Personnel quickly evaluate and effectively manage an incident to limit its consequences. The Plan utilizes an Incident Command System/Unified Command System (ICS/UCS) structure to assist in the management of major incidents. |
| **How is an Incident or Emergency Classified?** | Williams uses a tiered system of classification for incidents in rising levels of serious impact.<br><br>Incidents are classified as:<br>• Near Miss (does not require use of the Emergency Response Plan)<br>• Minor Event<br>• Significant Event<br>• Serious Event<br>• Major Event<br><br>Additional information is found in ***Section II: Core Plan Elements, 2. Incident Classification System*** and the ***E&PWAY Incident Reporting & Investigation Procedure.*** |
| **How to Use One Plan Documents** | One Plan is applicable to a wide range of emergency situations, including those that do not involve the release of a hazardous material.<br><br>Use the One Plan in conjunction with the ***E&PWAY Health & Safety Manual*** as well as other documents referenced throughout the plan. |

# Emergency Response One Plan
# SECTION 1: INTRODUCTION

## 1. Purpose and Scope of Plan Coverage

### A. Plan Details

Emergency response management describes the tactical actions taken to directly mitigate an emergency and protect human life, health, property, and/or the environment from the physical impact of an event (putting out a fire, mopping up a spill, etc.).

This Emergency Response Plan (ERP) specifically applies to the E&P Rabbit Brush Compressor Station located in Garfield County.

This ERP includes details on how to:

- Categorize the incident impact on an increasing scale
- Make the facility and immediate surrounding area safe (people first, then property and environment)
- Isolate the area / facility
- Establish evacuation routes and meeting locations
- Identify medical and rescue responsibilities for trained employees
- Establish methods for reporting fires and other emergency events
- Provide labor, materials, and equipment
- Identify emergency shutdown procedures for affected equipment
- Handle hazardous substances
- Establish and maintain adequate communication with governmental agencies (fire, police, public officials, etc.)

### B. Legal Authority

The intent of this ERP is to comply with One Plan guidelines set forth by the Environmental Protection Agency (EPA) and other governmental agencies working as the National Response Team (NRT). Emergency Planning and Response Regulations *(29 CFR 1910.38)* and Hazardous Waste Operations and Emergency Response (HAZWOPER) Standards *(29 CFR 1910.120)* have been followed where applicable.

### C. Assumptions and Situations

The procedures outlined in this ERP were developed under the assumption that local fire protection and emergency response agencies will respond to emergencies at the Williams site when notified and will assist to the extent of their respective capabilities.

This plan can be followed when responding to any of a number of incidents/events, including but not limited to the following:

*(a) Natural disasters and severe weather conditions including:*

- Floods
- Damaging storms (tornadoes, hurricanes)

- Earthquakes
- Weather extremes (cold, blizzards, heat)
- Lightning
- Wildfires

*(b) Disruption to normal operations:*

- Hazardous material / chemical releases from stationary or mobile sources
- Unscheduled valve closure or safety equipment shutdown, or any unscheduled emergency shutdown
- Major accidents involving Williams' vehicles or equipment owned by contractors
- Bomb threats or other security events
- Threats against employees or Williams' facilities
- Fatalities or multiple hospitalizations involving employees, contractors, or members of the public
- Disturbances on Williams' property
- Damage to Williams' property that interferes with the performance of normal business
- Disruption of service to customers (scheduled or unscheduled)

*(c) Catastrophic failure and/or damage:*

- Major fire
- Major environmental release
- Significant destruction of a facility

The ERP also provides procedures for communications with employees, governmental agencies, and the public during emergencies to assure an effective response during an emergency situation.

**D. Health and Safety**

This ERP reflects Williams' health and safety policies and procedures. When the site/facility, or a portion of the facility, is involved in an emergency event, Company Personnel shall take the appropriate action to safeguard human life and protect the public, surrounding property, and the environment, and to maintain or restore operations if possible.

Field personnel must immediately communicate information about any emergency event to their supervisor. The supervisor will immediately initiate appropriate notification procedures. In the event that the supervisor cannot be reached, field personnel will initiate necessary notifications.

# Emergency Response One Plan
# SECTION II: CORE PLAN ELEMENTS

## 1. Discovery

### A. "First Aware"

When faced with an emergency, an employee first aware of the emergency must exercise good judgment and use their training and experience to handle the situation and keep safe. The employee's first priority always is to immediately take actions required to protect life, the environment, and property.

The "first aware" employee to detect or be notified of an emergency event will use this document to determine what initial steps to take.

Responsibilities include:

- Identify an incident's classification level using the ***Incident Classification System*** in the section below.
- Identify site information for responders by using the ***Appendix 1: Basic Site Information*** form.
- Notify priority contacts, responders and others using the ***Appendix 2: Priority Notification Lists*** and ***Appendix 3: Second-Tier Notification Lists.***
- Initiate procedures outlined in the ERP.
- Initiate defensive measures to control the emergency event.

## 2. Incident Classification System

Understanding the nature and characteristics of emergency events and correctly assessing and classifying them is a critical step in determining or triggering an appropriate level of response.

### A. Minor Event

An accident/incident that results in:

- Estimated aggregate losses or potential liability of less than $5,000, or
- No Employee or Contractor OSHA-recordable injury/illness, or
- A verbal complaint related to EH&S concerns communicated by a private citizen or community organization, or
- An unauthorized release or spill into the environment that is not reportable to a regulatory agency

### B. Significant Event

An event that results in:

- Fire, release, or other event with anticipated aggregate losses or potential liability between $5,000 and $20,000, or
- Employee or Contractor OSHA-recordable injury/illness with no lost time, or

- An alleged or potential violation or warning of non-compliance from a regulatory agency, or
- A written complaint related to EH&S concerns submitted by a private citizen or community organization, or
- An unauthorized release or spill that is reportable to a regulatory agency, but does not impact water, or security event.

**C. Serious Event**

An accident/incident that results in:

- Fire, spill/release, explosion, or other event with anticipated aggregate losses or potential liability of more than $20,000 or less than $500,000, or
- Employee or Contractor OSHA- lost time injury/illness, or
- A written Notice of Violation from a regulatory agency, or
- A lawsuit related to EH&S concerns filed by a private citizen, community, or non-governmental organization, or
- Local or regional adverse media coverage targeted at Williams E&P

**D. Major Event**

An accident/incident that results in:

- Fire, explosion, spill/release, or other event with anticipated aggregate losses greater than $500,000, or
- A fatality, or
- Three or more people hospitalized, or
- National or State media coverage

# 3. Initial Response & Notifications

**A. Emergency Shutdown Procedures**

An emergency shutdown is performed to maximize safety and minimize property or equipment damage.

> **Note: If performing an emergency shutdown will potentially cause injury or death, then personnel should evacuate the facility without completing shutdown procedures.**

If an emergency necessitates that facility operations be terminated, an emergency shutdown (ESD) should be performed by authorized personnel.

- At Una Compressor station no manual shutdown is required since shutdown is automated from the control room.
- At Una Compressor station closure of all necessary valves will be done manually by authorized field personnel.
- After initiating an ESD, the evacuation horn should be activated. The horn is a continuous waling sound accompanied by a blue

light.

- Account for all personnel working at the site. If operations personnel do not know where their partners are, they should make a quick sweep of the area to warn them.
- Follow the evacuation plan in ***Appendix #10: Evacuation & Escape Routes.*** These plans are specific to your site.
- If the first employee to discover an emergency has not completed emergency response training they shall not initiate defensive measures, but shall complete the notification procedures.

**B. Evacuation and Personnel Accountability**

Personnel shall evacuate in a safe, prompt manner, following the appropriate evacuation route described in ***Appendix #10: Evacuation & Escape Routes*** for your site.

Upon evacuation of the location, all personnel shall remain at least 500 feet from the hazard.

All personnel and any visitors to the site at the time of the emergency will be accounted for when evacuation is complete by checking tail-gate sign-in sheets, visitor logs, personnel shift schedules, etc., and by questioning all individuals present.

**C. Regulatory Notifications**

Reporting of incidents to regulatory agencies will be the responsibility of the Safety Engineer and the Principal Environmental Specialist.

The Engineer and/or Principal Environmental Safety Specialist will determine which agencies should be notified and provide information to the proper representatives.

The ***Spill Prevention Control and Countermeasure Plan (SPCC)*** should be referenced for reporting procedures and regulatory contacts related to spills and releases.

If applicable, the Rabbit Brush Compressor Station (air release plan) should be referenced for reporting procedures and regulatory contacts related to releases.

## 4. Establish Response Management System

Use the Incident Classification System described in Step 2 to evaluate the emergency and determine the level of response needed. Examples include:

**A. Fire**

When responding to a fire or explosion, evaluate the situation upon discovery and alert the appropriate Company Personnel of the fire and its location. Provide details of the fire to the Senior Williams' representative as soon as possible.

Describe if the fire (1) can be limited to the immediate incident location, (2) is limited to the confines of the incident location with the potential for migrating off-site, or (3) extends beyond the incident location.

*(1) Limited to immediate incident location:*

- The incident can be mitigated with trained personnel
- If the emergency will not necessitate the shutdown of equipment, secure the area and proceed with containment and control procedures as necessary.
- Only attempt to extinguish incipient (first stage) fires with portable extinguishers and by shutting off the flow of gas to the fire.
- If the fire cannot be quickly controlled, evacuate the hazard area.
- Keep supervision aware of the conditions and whether additional personnel or equipment will be needed.

*(2) Potential for migrating off-site:*

- The situation probably cannot be mitigated without outside assistance from local emergency response agencies.
- The Fire Department and local law enforcement (sheriff and/or police) departments must be alerted via "911".

***Remember:* Depending on your location, calling "911" may not apply. Be sure your site's Notifications Lists contain the appropriate telephone numbers.**

- The senior on-duty Williams representative should take command of the incident until the Incident Commander arrives on scene and assumes control.
- Provide follow-up information to the responding fire department units, including any hazardous material release information.

*(3) Extends beyond incident location:*

- The public could be affected within 60 minutes. The response cannot be mitigated without both Williams and local government resources.
- A more aggressive firefighting posture toward a fire may be attempted with the on-site approval and direction of the Williams' Superintendent/Manager or their superiors.

**B. Hazardous Material Release**

In the event of a hazardous material release, the primary concern and responsibility is the protection of life. The second responsibility is the protection of property and the surrounding environment.

- Notify the Senior Williams representative of the emergency with a brief description of the incident, the location, material, and specific equipment involved.
- Leave the area immediately if potentially harmful levels of flammable vapors/gases are present.
- Do not allow access to the area by unnecessary persons.
- If the hazardous material spill or leak is beyond the capability of Company Personnel, evacuate the area. Personnel should

rendezvous at least 500 feet from the hazard and remain that distance. When possible evacuate up wind of the hazard.

- Refer to the **Material Safety Data Sheets (MSDSs)** for information on the specific materials released in order to evaluate the hazard. **Contact CHEMTREC at 1-800-424-9300 if additional information is required.**
- Attempt to defensively control the leak or reduce the spill size by remotely closing the appropriate valve, reducing operating pressure, or rotating a leaking container so that the hole is above the level of the liquid.
- Proceed within the guidelines of the HAZWOPER standards *(29 CFR 1910.120)* and other appropriate emergency processes to control or contain the extent of the release.
- For additional information, see the following:
    - ***Appendix 8: Standard Emergency Operating Guidelines for Hazardous Product Releases***
    - ***Appendix 9: PPE Levels for Hazardous Product Releases***
    - ***Appendix 10: Defined Hazard Zones***
    - ***Appendix 11: Evacuation & Escape Routes***

**C. Medical Emergency**

A medical emergency must be responded to immediately using available First Aid equipment. Personnel with current First Aid training should be called upon first to control the situation.

Local medical emergency response agencies must be notified immediately. Emergency contacts are contained in the ***Appendices 1: Priority Notification Lists.***

> ***Remember:* Depending on your location, calling "911" may not apply. Be sure your site's Notifications Lists contain the appropriate telephone numbers.**

Be prepared to provide the following information:

- Location of incident with directions to the scene
- Number of people injured
- Type(s) of injuries if known
- Condition of the patient(s) if known
- Whether rescue equipment is needed to extract / transport the victim. For example, if the victim is trapped in machinery, in a confined space, etc.

**D. Severe Weather**

Facility operations personnel will rely on local weather forecasts and media broadcasts for warnings of approaching severe weather.

- Upon notice or alert of severe weather, Company Personnel should secure the facility and seek shelter.

- When possible, monitor or observe facility systems during the weather event. If the facility cannot be monitored safely from an immediate or nearby location, personnel shall leave the area until the severe weather has passed the facility.
- When it is safe to return to the facility, all systems and equipment should be checked for damage and any emergency situations handled in accordance with the One Plan.

**E. Transportation Accident**

Response to vehicle accidents at or near the facility should be appropriate to the extent of injury and property damage.

- Accidents involving Williams or contractor vehicles that cause or have the potential to cause an emergency at the facility shall be reported as soon as safely possible to the Plant Manager and Safety Engineer.
- In the case of any accident involving a Williams' fleet vehicle, follow the instructions listed on the back of the Accident Report Kit and use the provided disposable camera. If this packet is not located in the vehicle, contact the safety engineer.

**F. Vandalism/Sabotage**

Upon discovery of evidence of vandalism or sabotage, an immediate assessment of all equipment and systems on location shall be performed.

- After the assessment is accomplished and a return to normal operations is possible, a thorough documentation of the vandalism should be completed and reported to the Project Supervisor and Safety Engineer.
- Local law enforcement should be contacted as necessary.

**G. Bomb Threat**

Any threat made toward Company Personnel or property should be taken seriously and considered dangerous. This threat could be received by telephone, written or electronic message, through a third party such as the media, or by actual discovery of an explosive device.

- When a threat has been received, promptly notify the Plant Superintendent, the Safety Engineer, Corporate Security, and local law enforcement agencies.
- A decision will be made between site management and Corporate Security personnel regarding notification of the Department of Homeland Security.
- Use the ***Bomb Threat Checklist*** to help assess the threat and properly document the situation.
- Most prank calls involve very general information, which makes it difficult to develop an appropriate response. When the bomb threat contains specific information and has positively identified a target, the threat will be treated as very serious and immediate action should be taken to evacuate the threatened area.
- Obtain as much information as possible about the location of the bomb, when it is set to explode, etc. The caller might refuse to

give any information, or may actually want to provide detailed information so employees can be evacuated.

- Whenever a specific location is included in a bomb threat, a search must be performed, but only a Military Explosive Ordinance Disposal Team, a Police Bomb Squad, or a Fire Department Bomb Squad should conduct the search.

**Williams' personnel should not enter a facility during a bomb threat situation for any reason!**

## 4. Sustained Actions

An emergency response transitions from the initial emergency stage to the sustained action stage where more prolonged actions progress under a response management structure.

### A. Facilities, Supplies, and Equipment

- Equipment and supplies to be used in the event of an emergency shall be stored at the facility or carried in field vehicles (if appropriate).
- Emergency fire equipment will be maintained and located as described in the ***Fire Prevention & Safety Program*** of the ***E&PWAY Health & Safety Manual.***
- Spill or release response materials should be stored in a protected location and replenished immediately after use.
- Emergency equipment should be inspected frequently and deficiencies corrected immediately.
- Additional information on hazardous situations and appropriate personal protective equipment (PPE) are found in the following:
  - ***Appendix 8: Standard Emergency Operating Procedures for Hazardous Product Releases***
  - ***Appendix 9: PPE Levels for Hazardous Product Releases***
  - ***Appendix 10: Defined Hazard Zone***
  - ***Appendix 11: Evacuation & Escape Routes***

### B. Facility Security

- Operations/field personnel control general security during regular duties. Unauthorized personnel should be escorted off site.
- Our site is a fenced facility with specific access points. The electronic and motor control systems are within the facility's property boundaries and not generally accessible to unauthorized personnel.
- During an emergency, the Incident Commander will control security. Access to the site will be restricted to individuals involved in specific emergency response procedures.
- Local law enforcement may be contacted if needed to secure the facility and immediate surroundings.

### C. Media Relations

- Contact Corporate Communications Liaison according to the ***Appendix 2: Priority Notifications Lists.***
- In the event of an emergency, a designated spokesperson (who receives periodic media training) at the site will handle initial communications with the public and the media. See **Appendix 12: Media Relations Guidelines** for additional information.
- The designated spokesperson may give the media a brief outline of known facts at the scene; subsequent responses will be coordinated through Williams' Corporate Communications
- In addition, the designated supervisor, and only that person (usually the Plant Superintendent or the District Manager) who has had media training, shall speak to the media or the public about the emergency event.
- If reporters arrive, the designated supervisor should check their credentials to confirm that they are reporters, assign someone to escort them to the site, and keep them within safe areas.

## 5. Termination & Follow-up Actions

**A. Recovery of Operations**

Facility operations should resume as soon as safely possible following a facility or equipment shutdown event. An inspection and review of affected equipment or systems by safety and engineering staff members may be required before normal operations can be restored.

**B. Documentation**

The Incident Commander shall make certain all calls, conversations, facts, quantities, or other information pertinent to an emergency event are documented using the ***Appendix 7: Activity Log.***

**C. Damage Assessment**

Personnel designated by the Incident Commander shall visually inspect all equipment and systems following an emergency incident.

- Any evidence of damage will be reported to the Incident Commander and properly documented.
- Any damaged equipment that presents an unsafe condition shall be repaired or replaced before returning affected systems to normal operation.

**D. Post-Event Activities**

When the emergency has ended or as soon as practical, the following should be determined where applicable:

- Extent of the damage
- Estimated time required to repair the equipment/facility
- Calling personnel to report to duty if and when they are needed
- Locating pertinent material available from stock or suppliers
- Arranging for contract equipment and personnel
- Preparing plans for returning the facility to service

- Assisting in any other activities affected by the emergency
- Dispatching work crews and equipment to the site as needed
- Restoring facility to service as soon as repairs can be made safely and in accordance with established procedure
- Evaluating the cause of failure and providing a written plan to prevent a reoccurrence of the emergency event
- The Incident Commander will work with appropriate groups and representatives such as insurance adjusters, investigators, human relations personnel (such as counselors), etc.

**E. Incident / Accident Investigation**

Emergency events will be investigated per the requirements of the ***E&PWAY Incident Reporting & Investigation Procedure.***

- Determine the root cause of the emergency event and recommend any needed changes in order to prevent recurrence.
- Assess the effectiveness of the response team and the ERP to determine whether improvements are needed.
- Prepare a ***Lessons Learned*** document, including evaluation of if this incident could happen at other Williams' sites.

## 6. Training & Drills / Exercises

**A. Training**

The Plant Superintendent or Safety Representative will ensure that the One Plan is reviewed with all new employees during their orientation (or first week of employment), and with all employees on an annual basis. Documentation of the individual employee review is required for verification of training. All records of training should be kept up-to-date.

Each employee identified in the ERP shall be current on emergency response training that shall include the appropriate level of HAZWOPER training. Training shall cover the following:

- Responses for specific roles in various emergency response scenarios
- Use of appropriate communication systems and alternate communication methods if the plant system is disabled
- Organizing and actively taking part in a response team drill
- How to locate isolation valves/shutdown controls (if applicable)
- How to respond to specific failures
- How to respond to media questions
- How to interact with public officials
- Evacuation routes and where to meet in the event roads to the station are impassable and/ or communications are unavailable
- Appropriate control, containment, and clean-up procedures
- Information on required Personal Protective Equipment (PPE) necessary for emergency response

B. Drills / Exercises

A Safety Representative will schedule an annual Basin drill (tabletop, unannounced, major, etc.) to assess the effectiveness of the ERP and associated procedures. See the ***Emergency Response/Drill Program Requirements*** for more information.

- The drill shall consist of an emergency scenario that exercises various procedures described in the ***Emergency Response / Drill Procedure.***
- Upon completion of the drill, a review shall be performed and documented. If necessary, the One Plan will be revised to correct any deficiencies noted during the review.
- The drills, activities, and review comments should be recorded on the ***Emergency Response/Drill Critique Checklist*** and kept on file for three years.

The design team responsible for creating drill scenarios should keep the following questions in mind in order to evaluate the effectiveness of the Emergency Response One Plan:

- Was the Emergency Response One Plan implemented in a timely and efficient manner?
- Were evacuation alarms activated, escape routes followed, and personnel accounted for?
- Were the proper authorities and agencies notified in a timely manner?
- Were proper procedures/checklists followed and where they effective in resolving the incident?
- How could the One Plan be chanced to increase its effectiveness?

## 7. Prevention

**A. General Prevention Policy**

Incidents at the facility will be minimized through personnel training, regular safety inspections, and implementation of the policies and procedures outlined in this Emergency Response One Plan and the E&P EH&S programs detailed in the ***EH&S Health & Safety Manual.***

- Primary responsibility for prevention of emergency incidents is place on facility operations personnel.
- Any substation change or addition facility equipment or process will necessitate a review of safety procedures and a revision of applicable procedures in this ERP.

**B. Fire Prevention Policy**

Please refer to the ***Fire Protection & Safet7 Program*** of the E&PWAY Health & Safety Manual for information concerning fire prevention.

**C. Safety Inspections and Audits**

Periodic safety audits, along with regular operations and maintenance routines, will be carried out with the intent of identifying and minimizing potential safety hazards and poor housekeeping practices.

# 8. Regulatory Compliance and Cross-Reference Matrices

| REGULATORY SUBJECT | REGULATORY CITATION | LOCATION IN ONE PLAN |
|---|---|---|
| **OSHA Emergency Response Program** | **29 CFR 1910.120** | |
| • Pre-emergency planning and coordination with outside parties. | (p)(8)(ii)(A) | Section I 1, 2a.2, 2a.3 |
| • Personnel roles, lines of authority, training, and communication. | (p)(8)(ii)(B) | Sections I 1, 3b, 3c, 2a.1 Annex 1b, 3, 5 |
| • Emergency recognition and prevention | (p)(8)(ii)(C) | Sections I 1c, I 1d Annex 1b |
| • Safe distances and places of refuge. | (p)(8)(ii)(D) | Section II 2a.3, II 2b Annex 1a |
| • Site security and control. | (p)(8)(ii)(E) | Section II 3.b |
| • Evacuation routes and procedures. | (p)(8)(ii)(F) | Section II 2a.2 Annex 1a |
| • Decontamination procedures. | (p)(8)(ii)(G) | Section II 4 |
| • Emergency medical treatment and first aid. | (p)(8)(ii)(H) | Section II 2b.3 |
| • Emergency alerting and response procedures. | (p)(8)(ii)(I) | Section II 2 |
| • Critique of response and follow-up. | (p)(8)(ii)(J) | Annex 6 |
| • PPE and emergency equipment. | (p)(8)(ii)(K) | Section II 3a |
| **Emergency Planning** | **1910.120(q)(2)** | |
| • Coordination | (q)(2)(i) | Section II 2 |
| • Lines of authority | (q)(2)(ii) | Annex 3 |
| • Emergency recognition | (q)(2)(iii) | Section II |
| • Safe distances | (q)(2)(iv) | Section II 2b |
| • Security and control | (q)(2)(v) | Section II 3b |
| • Evacuation | (q)(2)(vi) | Section II 2a.3 |
| • Decontamination | (q)(2)(vii) | Section II 2b |
| • Medical treatment | (q)(2)(viii) | Section II 2b.3 |
| • Alerting and response | (q)(2)(ix) | Section II 1, 2 |
| • Critique of response | (q)(2)(x) | Annex 6 |
| • PPE and equipment | (q)(2)(xi) | Section II 3a |
| **Incident Command** | **1910.120(q)(3)** | |
| • Senior officer | (q)(3)(i) | Annex 3 |
| • Size up of conditions | (q)(3)(ii) | Section II 1 |
| • Emergency operations | (q)(3)(iii) | Section II |
| • Use of SCBA | (q)(3)(iv) | Section II 1 |
| • Limiting access | (q)(3)(v) | Section II 3b |
| • Back-up personnel | (q)(3)(vi) | Annex 3 |
| • Safety official | (q)(3)(vii) | Annex 3 |
| • Safety authority | (q)(3)(viii) | Annex 3 |
| • Decontamination | (q)(3)(ix) | Section II 2b |
| • SCBA | (q)(3)(x) | Section II 1 |
| **OSHA Emergency Action Plans** | **29 CFR 1910.38** | |
| • Reporting an emergency | (c)(1) | Section II 2a |
| • Emergency evacuation, including exit routes | (c)(2) | Section II 2a.2 Annex 1a |
| • Critical operations procedures before evacuation | (c)(3) | Section II 2 |

| | | |
|---|---|---|
| • Accounting for employees after evacuation | (c)(4) | Section II 2a 3 |
| • Procedures for employees performing rescue or medical duties | (c)(5) | Section II 2b.3 |
| • Contacts for further information | (c)(6) | Section II 2a.1 |
| • Alarm system | (d) | Section II 2a.2 |
| • Training | (e) | Annex 5 |
| • Review of ERP | (f) | Annex 6 |

## Emergency Response One Plan
# SECTION III: APPENDICES

Contents

# Emergency Response One Plan: Appendix 1
## BASIC SITE INFORMATION

Complete prior to an emergency and keep updated as needed.

| | |
|---|---|
| a) **Full Name of Site / Operation / Facility**<br>*Enter corporate name and, if applicable, commonly used reference name.* | UNA Compressor Station |
| b) **Owner / Operator / Agent**<br>*Enter physical and mailing address and phone number.* | Williams Production, RMT<br>1058 County Rd 215<br>Parachute CO 81635<br>(970) 285-9377 |
| c) **Physical Address of the Facility**<br>*Enter the county / parish / borough, the latitude and longitude (GPS coordinates), and directions to facility.* | 1620 County Road 300<br>Parachute Colorado 81635<br>GPS<br>39.395<br>-108.084 |
| d) **Mailing Address of the Site**<br>*Enter correspondence contact.* | 4289 County Rd 215<br>Parachute Co 81635 |
| e) **Other Identifying Information**<br>*For example, enter ID number(s), NAICS Code, storage start-up date, etc.* | NAICS CODE: 211111 |
| f) **Key Contact(s) and Telephone Numbers**<br>*Enter key contacts for plan development and maintenance.* | Safety Representative – Greg Anoia 263-2744<br>PSM Coordinator – Bruce Reese 263-5307 |
| g) **Site Telephone Number**<br>*Enter main office number.* | 970-263-5331 Main Control Room (24 hours) |
| h) **Site Fax Number**<br>*Enter main fax number.* | 970-285-0121 |
| i) **Date Last Updated**<br>*Enter date this information was last updated.* | |

## Emergency Response One Plan: Appendix 2
# PRIORITY NOTIFICATION LISTS

Complete this form prior to an emergency and update as needed.

If additional internal and/or Enterprise emergency management resources are needed, call 1-888-465-9515.

### Williams E&P Local Contacts

| Notified | Name & Title | Telephone Number(s) |
|---|---|---|
| Time: | **Name: Tom Fiore**<br>Title: Plant Manager | **(970) 285-9377**<br>**(970) 216-1641 (cell)** |
| Time: | **Name: Bob Jeanerette**<br>Title: Operations Team Lead | **(970) 263-2712**<br>**(970) 250-1917 (cell)** |
| Time: | **Name: Roger Decker**<br>Title: Operations Team Lead | **(970) 263-5329**<br>**(970) 216-9962 (cell)** |
| Time: | **Name: Greg Anoia**<br>Title: Plant Safety Coordinator | **(970) 263-2744**<br>**(970) 216-1387 (cell)** |
| Time: | **Name: Kevin McDermott**<br>Title: Safety Engineer | **(970) 285-9377**<br>**(970) 309-1195 (cell)** |
| Time: | **Name: Kirk Graham**<br>Title: Gas Processing Maintenance | **(970) 210-1196** |
| Time: | **Name: Mike Gardner**<br>Title: Environmental Specialist | **(970) 623-4875 (cell)** |
| Time: | **Name: Susan Alvillar**<br>Title: Public Relations | **(970) 216-3878 (cell)** |
| Time: | **Name: Tom Fiore**<br>Title: Plant Manager | **(970) 285-9377**<br>**(970) 216-1641 (cell)** |

### Williams E&P Regional Contacts

| Notified | Name & Title | Telephone Number(s) |
|---|---|---|
| Time: | **Name: Alan Harrison**<br>Title: Vice President E&P | **(303) 606-4079**<br>**(303) 547-2967 (cell)** |
| Time: | **Name: Eric Miller**<br>Title: District Manager Gathering & Production | **(303) 629-8417**<br>**(970) 270-2813 (cell)** |
| Time: | **Name: Mike Paules**<br>Title: EH&S Representative | **(303) 606-4396**<br>**(303) 638-7385 (cell)** |
| Time: | **Name: Elizabeth Joyner**<br>Title: Legal Liaison | **(918) 573-1143**<br>**(918) 261-2618 (cell)** |
| Time: | **Name: Becky Cottingham**<br>Title: RMID Liaison | **(918) 573-5012** |

| | | |
|---|---|---|
| Time: | Name: Donna Gray<br>Title: Communications Liaison | (970) 623-8905<br>(970) 589-1557 (cell) |

**Williams E&P Corporate Contacts**

| Notified | Name & Title | Telephone Number(s) |
|---|---|---|
| Time: | Name: Dennis Elliot<br>Title: EH&S Representative | (918) 573-5854<br>(918) 645-7246 (cell) |
| Time: | Name: Elizabeth Joyner<br>Title: Legal Liaison | (918) 573-1143<br>(918) 261-2618 (cell) |
| Time: | Name: Donna Gray<br>Title: Communications Liaison | (970) 623-8905<br>(970) 589-1557 (cell) |
| Time: | Name: Bruce List<br>Title: Security | (918) 573-2232<br>(918) 629-1542 (cell) |

**Emergency Response Contacts**

| Notified | Entity | Telephone Number(s) |
|---|---|---|
| Time: | **Hospital:** St. Mary's Hospital<br>City/State: Grand Junction, CO | (970) 244-2273 |
| Time: | **Air Life/Life Flight:** St. Mary's Air Life<br>City/State: Grand Junction, CO | 1-800-322-4923 |
| Time: | **Alternate Hospital:** Grand Valley Hospital<br>City/State: Rifle, CO | (970) 625-1510 |

**Fire Department Contacts**

| Notified | Entity | Telephone Number(s) |
|---|---|---|
| Time: | **Fire Department:** Grand Valley Fire Protection District<br>City/State: Parachute, CO | (970) 285-9119 |
| Time: | **Secondary Fire Department:** Rifle Fire Protection District<br>City/State: Rifle, CO | (970) 625-1220 |
| Time: | **HAZMAT:** Colorado State Patrol HAZMAT Service<br>City/State: Parachute, CO | (970) 248-7283 |

**Law Enforcement Contacts**

| Notified | Entity | Telephone Number(s) |
|---|---|---|
| Time: | **County Sheriff:** Garfield County Sheriff<br>City/State: Rifle, CO | (970) 625-1899 |
| Time: | **State Patrol:** State Highway Patrol | (970) 248-7277 |

| | | |
|---|---|---|
| | City/State: CO | |
| Time: | **Homeland Security:** State/Federal: | |

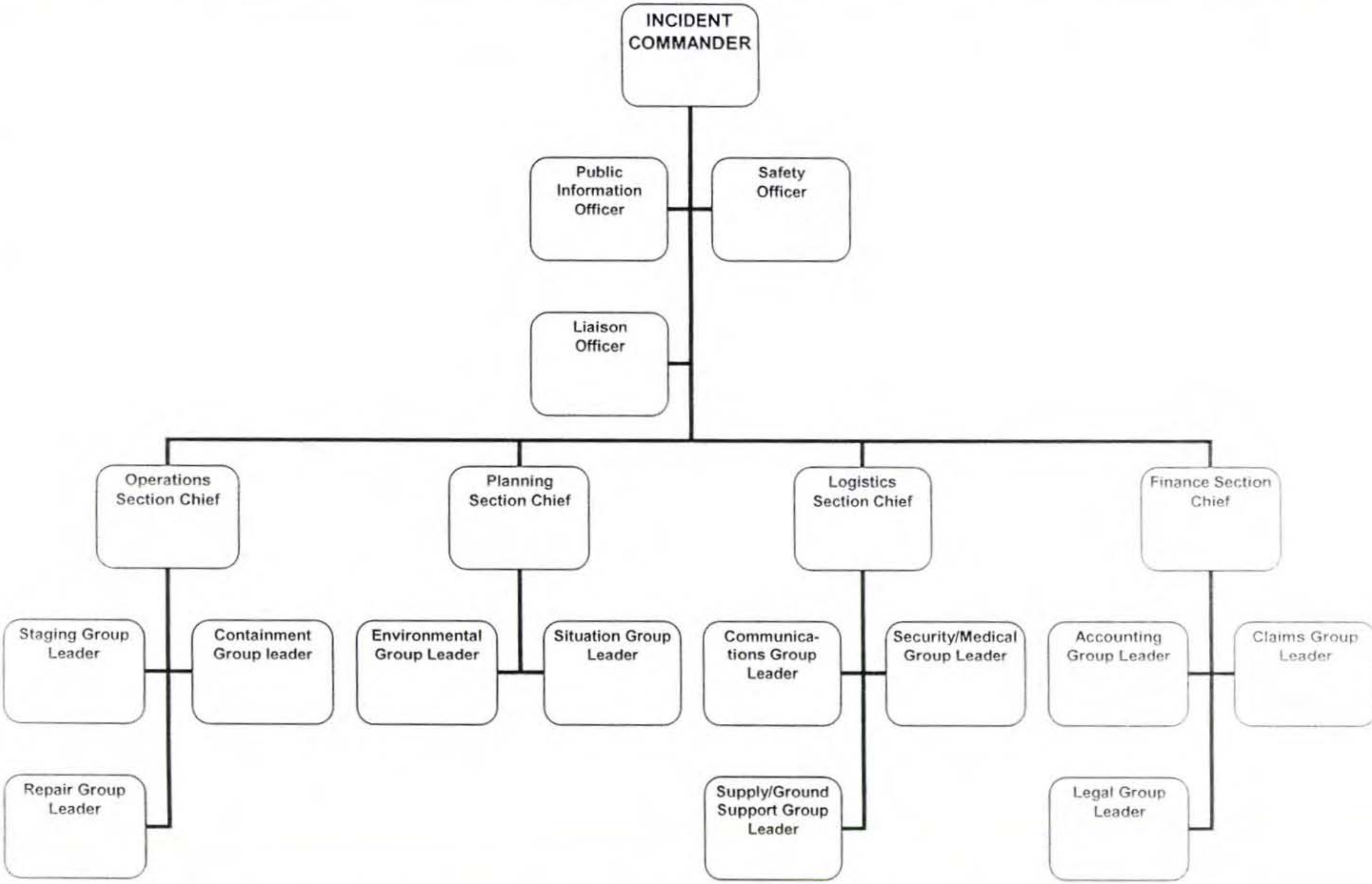
## Regulatory Contacts

| Notified | Entity | Telephone Number(s) |
|---|---|---|
| Time: | **Local Emergency Planning Committee (LEPC):** Garfield County Emergency Planning Committee | (970) 945-8020 |
| Time: | **Colorado Oil & Gas Conservation Commission (COGCC):** Contact: Jaime Adkins State: Colorado | (970) 285-9000 |
| Time: | **State Department of Health:** Colorado Department of Public Health and Environment | (303) 692-2035 |
| Time: | **Federal Environmental Protection Agency:** Environmental Protection Agency | 1-800-227-8917 |

## Emergency Response One Plan: Appendix 4
# Emergency Response Team Organization Chart

**Fill in the names and post in the incident command center.**

# Incident Management Organization Chart



# Emergency Response One Plan: Appendix 5
# Emergency Response Team Roles & Responsibilities

## Roles & Responsibilities Checklists

- Accounting Group Leader
- Claims Group Leader
- Communications Group Leader
- Containment Group Leader
- Environmental Group Leader
- Finance Section Chief
- Incident Commander
- Legal Group Leader
- Liaison Officer
- Logistics Section Chief
- Operations Section Chief
- Planning Section Chief
- Public Information Officer
- Repair Group Leader
- Safety Officer
- Security / Medical Group Leader
- Situation Group Leader
- Staging Group Leader
- Supply / Ground Support Group Leaders

**Emergency Response One Plan**

# Accounting Group Leader

**Accumulates and dispenses funding during an emergency response and ensures that all charges directly attributed to the incident are accounted for in the proper charge areas. Reports to the Finance Section Chief.**

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from Finance Section Chief
- ❒ Periodically advise Finance Section Chief
- ❒ Participate in Finance Section's planning meetings and briefings
- ❒ Participate in development of Finance Section's portion of Incident Action Plan (IAP)
- ❒ Make recommendations for cost savings to Finance and Logistics Section Chiefs
- ❒ Establish accounts as necessary to support the Logistics Section
- ❒ Ensure all invoices are documented, verified, and paid accordingly
- ❒ Involve corporate accounting group for assistance as necessary
- ❒ Participate in critique of response

## Emergency Response One Plan

# Claims Group Leader

Manages all risk management and right-of-way issues at, during, and following an emergency response. Ensure that all claims are investigated and handled expediently. Reports to the Finance Section Chief.

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from Finance Section Chief
- ❒ Participate in Finance Section's planning meetings and briefings
- ❒ Participate in development of Finance Section's portion of Incident Action Plan (IAP)
- ❒ Periodically inform affected parties of status of emergency response
- ❒ Review and authorize payment of all claims
- ❒ Provide for needs of evacuated persons or groups
- ❒ Purchase or acquire property
- ❒ Inform and update necessary insurance groups and underwriters
- ❒ Involve corporate risk management, land, records or claims' groups as needed
- ❒ Participate in critique of response

Emergency Response One Plan

# Communications Group Leader

**Ensures that Incident Command and emergency responders have reliable and effective means of communication. This may involve activation of multiple types of communications equipment and coordination among multiple responding agencies and contractors. Reports to the Logistics Section Chief.**

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Participate in Logistics section planning meetings and briefings
- ❒ Participate in Logistics section planning meetings and briefings
- ❒ Periodically advise Logistics Section Chief on status of communications group
- ❒ Participate in development of Logistics' portion of Incident Action Plan (IAP)
- ❒ Establish an Incident Command communications center
- ❒ Ensure Incident Commander (IC) has communications compatible with other response agencies
- ❒ Identify all communications circuits/equipment used by emergency responders and keep a chart updated with this information
- ❒ Determine the type and amount of communications required to support the response effort (computer, radio, telephone, fax, etc.)
- ❒ Ensure timely establishment of adequate communications equipment and systems
- ❒ Advise Logistics Section Chief on communications capabilities/limitations
- ❒ Establish an equipment inventory control system for communications gear
- ❒ Ensure all equipment is tested and repaired
- ❒ Participates in critique of response

## Emergency Response One Plan

# Containment Group Leader

**Supervises the containment and recovery of spilled product and contaminated environmental media, both on land and on water. Reports to the Operations Section Chief.**

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from Operations Section Chief
- ❒ Participate in Operations Section's planning meetings and briefings
- ❒ Participate in development of Operations' portion of the Incident Action Plan (IAP)
- ❒ Conduct activities in accordance with the IAP
- ❒ Assess overall situation for containment and recovery needs and supervise group activities
- ❒ Periodically advise the Operations Section Chief on the status of containment and recovery actions
- ❒ Ensure hazard zones are established and maintained
- ❒ Ensure adequate communication equipment for the containment group response
- ❒ Determine and requests additional resources as needed
- ❒ Participate in critique of response

Emergency Response One Plan

# Environmental Group Leader

Ensures that all areas impacted by the release are identified and cleaned up following Company and regulatory standards. Supports Planning and Operations groups to minimize and document the environmental impact of the release. Plans future site considerations such as long-term remediation and alternative response strategies in unusually sensitive areas. Reports to the Planning Section Chief.

In a Unified Command Structure (UCS), representatives from federal and state responding agencies are included in this group.

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from the Planning Section Chief
- ❒ Participate in Planning Section meetings and briefings
- ❒ Participate in development of Planning Section's portion of the Incident Action Plan (IAP)
- ❒ Coordinate environmental activities with responding regulatory agencies
- ❒ Periodically advise the Planning Section Chief on status of group activities
- ❒ Request additional personnel/specialists to support response effort
- ❒ Determine environmental group resource needs
- ❒ Identify and develop a prioritized list of natural, cultural, and economic resources at risk
- ❒ Initiate and coordinate Natural Resource Damage Assessment (NRDA) activities
- ❒ Develop a management plan for recovered contaminated media and ensure coordination with Containment Group Leader
- ❒ Ensure proper management of injured/oiled wildlife
- ❒ Determine alternative cleanup strategies for response
- ❒ Participate in critique of response

Emergency Response One Plan

# Finance Section Chief

Responsible for accounting, legal, right-of-way, and risk management functions that support the emergency response effort. In this role, the primary responsibility is supporting Command Staff and Logistics Section matters pertaining to expenses during and following the emergency response. Reports to the Incident Commander and supervises the Communications, Security/Medical, and Situation Group Leaders.

**Responsibilities:**

- ❒ Maintain an Activity Log
- ❒ Obtain briefing from Incident Commander (IC)
- ❒ Participate in Incident Command planning meetings and briefings
- ❒ Conduct planning meetings and briefings for Finance Section
- ❒ Participate in preparation of the Incident Action Plan (IAP)
- ❒ Participate in planning meetings
- ❒ Participate in Unified Command System (UCS) as incident warrants
- ❒ Request assistance of Corporate accounting, legal, right-of-way, or risk management groups as needed
- ❒ Assist with contracting administration
- ❒ Participate in critique of response

## Emergency Response One Plan

# Incident Commander

Manages all activities related to an emergency response and acts as Qualified Individual (QI). As such, the Incident Commander (IC) is familiar with contents of applicable E&P contingency plans, such as the Emergency Response Plan (ERP) and the Spill Prevention Control & Countermeasure Plan (SPCC).

Has overall responsibility for managing the incident. Supervises the Public Information, Safety, and Liaison Officers, and the Operations, Planning, Logistics, and Finance Section Chiefs.

**Responsibilities:**

- ☐ Maintain Activity Log
- ☐ Establish Incident Command Post or Unified Command Post
- ☐ Activate necessary sections of the Incident Command System (ICS) to deal with the emergency
- ☐ Complete appropriate sections of the Incident Command Organization Chart and post it at the Incident Command Center
- ☐ Develop goals and objectives for response
- ☐ Work with Safety Officer and Planning Section Chief to develop a Site Safety Plan (SSP)
- ☐ Approve, authorize, and distribute Incident Action Plan (IAP) and Site Safety Plan
- ☐ Conduct planning meetings and briefings with the Section Chiefs
- ☐ Act as Qualified Individual (QI) and coordinate actions with the Federal On-Scene Coordinator (FOSC) and State On-Scene Coordinator (SOSC)
- ☐ In a multi-jurisdictional response, ensure all agencies are represented in the ICS
- ☐ Coordinate and approve media information releases with the FOSC, SOSC, and Public Information Office (PIO)
- ☐ Keep management informed of developments and progress
- ☐ Authorize demobilization of resources when no longer needed
- ☐ Conduct critique of response and follow-up using the Emergency Response/Exercise Critique Checklist

Emergency Response One Plan

# Legal Group Leader

**Advises the Incident Command Staff and Section Chiefs on all matters that may involve legal issues. Reports to the Finance Section Chief.**

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from Finance Section Chief
- ❒ Periodically advise Finance Section Chief of status
- ❒ Participate in Finance Section's planning meetings and briefings
- ❒ Participate in development of Finance Section's portion of Incident Action Plan (IAP)
- ❒ Conduct investigations per Incident Commander's (IC) request
- ❒ Provide skilled negotiators
- ❒ Communicate to all affected emergency response personnel if work product is declared "Attorney-Client Privilege"
- ❒ Participate in critique of response

## Emergency Response One Plan

# Liaison Officer

**If a Unified Command Structure is not established, the Liaison Officer is appointed as the point of contract for personnel assigned to the incident from assisting or cooperating agencies. Reports to the Incident Commander (IC).**

**Responsibilities:**

- ❐ Maintain Activity Log
- ❐ Obtain briefing from the IC
- ❐ Participate in planning meetings and briefings
- ❐ Identify and maintain communications links with agency representatives, assisting, and coordinating agencies
- ❐ Identify current or potential inter-organization issues and advise IC as appropriate
- ❐ Coordinate with Legal Group Leader and Public Information Officer (PIO) regarding information and documents released to government agencies
- ❐ Participate in critique of response

## Emergency Response One Plan

# Logistics Section Chief

Procures facilities, services, and materials in support of the emergency response effort. Reports to the Incident Commander and supervises the Accounting, Claims, and Legal Group Leaders.

**Responsibilities:**

- ☐ Maintain Activity Log
- ☐ Obtain briefing from the Incident Commander (IC)
- ☐ Participate in Incident Command planning meetings and briefings
- ☐ Conduct planning meetings and briefings for Logistics Section
- ☐ Participate in the preparation of the Incident Action Plan (IAP)
- ☐ Identify services and support requirements for planned operations
- ☐ Identify sources of supply for identified and potential needs
- ☐ Advise IC on current service and support requirements
- ☐ Procure needed materials, equipment, and services from sources by means consistent with the timing requirements of the IAP and operations
- ☐ Ensure all purchases are documented
- ☐ Participate in critique of response

Emergency Response One Plan

# Operations Section Chief

Manages all operations applicable to the field response and site restoration activities and directs field activities based on the Incident Action Plan (IAP) and the Site Safety Plan (SSP). Reports to the Incident Commander (IC) and supervises the Staging, Repair, and Containment Group Leaders.

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from IC
- ❒ Participate in planning meetings and briefings
- ❒ Conduct planning meetings and briefs for Operations Section
- ❒ Develop operations portion of the IAP
- ❒ Supervise implementation of the IAP
- ❒ Make or approve expedient changes to the IAP
- ❒ Request needed resources to implement the IAP
- ❒ Approve lists of resources to be released
- ❒ Ensure safe tactical operations
- ❒ Establish a staging area for personnel and equipment
- ❒ Confirm first-responder actions
- ❒ Confirm completion of rescue/evacuation and administering of first aid
- ❒ Confirm site perimeters are established
- ❒ Coordinate activities of public safety responders, contractors, and mutual assistance organizations
- ❒ Participate in critique of response

**Emergency Response One Plan**

# Planning Section Chief

Collects, evaluates, and disseminates information related to the current and future events of the response effort. Understands the current situation, predicts future course of events, predicts future needs, develops response and cleanup strategies, and reviews the incident once complete.

Coordinates activities with the Incident Commander and other Section Chiefs to ensure that current and future needs are appropriately handled. Reports to the Incident Commander (IC) and supervises the Environmental and Situation Group Leaders.

**Responsibilities:**

- ☐ Maintain Activity Log
- ☐ Obtain briefing from the IC
- ☐ Establish and maintain communications with the IC and other Section Chiefs
- ☐ Advise the IC on any significant changes of incident status
- ☐ Participate in Incident Command planning meetings and briefings
- ☐ Conduct planning meetings and briefings for the Planning Section
- ☐ Coordinate and provide input to the preparation of the Incident Action Plan (IAP)
- ☐ In a multi-jurisdictional response, ensure that all agencies are represented in the Planning Section
- ☐ Coordinate future needs for the emergency response
- ☐ Determine response personnel needs and requests personnel for the Planning Section
- ☐ Assign technical specialists (archeologists, historians, biologists, etc.) where needed
- ☐ Collect and analyze information on the situation
- ☐ Assemble information on alternative response and cleanup strategies
- ☐ Ensure Situation Group unit has a current organization chart of the Incident Command Organization
- ☐ Provide periodic spill movement/migration prediction
- ☐ Participate in critique of response

## Emergency Response One Plan

# Public Information Officer

Provides critical contact between the media/public and emergency responders. Develops and releases information about the incident to news media, incident personnel, appropriate agencies, and the public. Communicates that the Company is conducting an effective response to the emergency. Communicates the needs and concerns of the public to the Incident Commander. Reports to the Incident Commander (IC).

When the response is multi-jurisdictional (involving both federal and state agencies), the PIO coordinates gathering and releasing information with the affected agencies.

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from the IC
- ❒ Participate in all planning meetings and briefings
- ❒ Obtain outside information that may be useful to incident planning
- ❒ Develop goals and objectives regarding public information
- ❒ Establish a Public Information Center (PIC), ensuring all appropriate agencies participate
- ❒ Arrange necessary workspace, materials, telephones, and staffing for the PIC
- ❒ Provide a single point of media contact for the IC
- ❒ Coordinate media access to the response site as approved by the IC
- ❒ Arrange meetings between media and emergency responders
- ❒ Maintain a list of all media present
- ❒ Correct inaccurate media/public information
- ❒ Archive all broadcast and published reports
- ❒ Request assistance of Corporate Communications if necessary
- ❒ Participate in critique of the response

**Emergency Response One Plan**

# Repair Group Leader

Supervises repair and restoration of pipeline/gathering line facilities. Reports to the Operations Section Chief.

**Responsibilities:**

- ☐ Maintain Activity Log
- ☐ Obtain briefing from the Operations Section Chief
- ☐ Periodically advise the Operations Section Chief on status of restoration activities
- ☐ Conduct frequent hazard assessments and coordinates safety needs with Operations Section Chief and Safety Officer
- ☐ Participate in Operations Section's planning meetings and briefings
- ☐ Participate in development of Operations' portion of the Incident Action Plan (IAP)
- ☐ Conduct facility restoration activities in accordance with Company procedures, the Site Safety Plan (SSP), and the IAP
- ☐ Determine and requests additional materials, equipment, and personnel as needed
- ☐ Ensure all equipment is decontaminated prior to being released
- ☐ Participate in critique of response

## Emergency Response One Plan

# Safety Officer

Assesses and monitors hazardous and unsafe situations at the emergency response site. Develops measures that assure the safety of response personnel and the public. Maintains an awareness of active and developing situations, ensuring the preparation and implementation of the Site Safety Plan (SSP) and assessing safety issues related to the Incident Action Plan (IAP). Reports to the Incident Commander (IC).

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from the IC
- ❒ Develop, implement, and disseminate the SSP with the IC and Section Chiefs
- ❒ Participate in planning meetings and briefings
- ❒ Establish safety staff if necessary
- ❒ Identify emergency contact numbers
- ❒ Complete the Emergency Contact Chart and post in the Incident Command Center
- ❒ Conduct safety briefings with all emergency responders
- ❒ Investigate accidents that occur during emergency response
- ❒ Ensure proper hazard zones are established
- ❒ Ensure all emergency responders have appropriate level of training
- ❒ Ensure proper Personal Protective Equipment (PPE) is available and used
- ❒ Advise Security/Medical Group Leader concerning PPE requirements
- ❒ Ensure emergency alarms/warning systems are in place as needed
- ❒ Participate in critique of response

**Emergency Response One Plan**

# Security / Medical Group Leader

Develops a plan to deal with medical emergencies, obtaining medical aid and transportation for emergency response personnel, and preparation of reports and records. Provides safeguards needed to protect personnel and property from loss or damage and controls access to the emergency site and Incident Command Center. Reports to the Logistics Section Leader.

**Responsibilities:**

- ☐ Maintain Activity Log.
- ☐ Obtain briefing from Logistics Section Chief
- ☐ Periodically advise Logistics Section Chief on the status of security and medical problems
- ☐ Participate in Logistics Section's meetings and briefings
- ☐ Participate in development of Logistics Section's portion of Incident Action Plan (IAP)
- ☐ Determine and develop security/medical support plan needs
- ☐ Request medical or security personnel, as needed
- ☐ Work with Safety Officer to identify/coordinate local emergency medical services
- ☐ Coordinate with Safety Officer and Operations Section Chief to establish the Site Safety Plan (SSP) with site boundaries, hazard zones, escape routes, staging areas, Incident Command Center, and Personal Protective Equipment (PPE) requirements
- ☐ Coordinate/develop an identification system in order to control access to the incident site
- ☐ Participate in critique of response

**Emergency Response One Plan**

# Situation Group Leader

Collects, evaluates, displays, and disseminates all information related to the emergency response effort. Establishes and maintains communications with all portions of the Incident Command and the response site in order to collect needed information. Attempts to predict spill movement/migration and identify areas that may be impacted by the emergency. Reports to the Planning Section Chief.

**Responsibilities:**

- ☐ Maintain Activity Log
- ☐ Obtain briefing from Planning Section Chief
- ☐ Participate in Planning Section meetings and briefings
- ☐ Participate in development of Planning Section's portion of Incident Action Plan (IAP)
- ☐ Maintain a master list of response resources ordered, in staging, and in use
- ☐ Collect and display current status of requested response resources
- ☐ Collect and display current status of resources, current spill location, personnel, and weather
- ☐ Analyze current information to determine spill trajectory and potential impacts
- ☐ Disseminate information concerning the situation status upon request from emergency responders
- ☐ Provide photographic services and maps
- ☐ Establish periodic reconnaissance of impacted area to support information needs
- ☐ Collect information on the status of the IAP and displays this information in the Incident Command Center
- ☐ Participate in critique of response

## Emergency Response One Plan

# Staging Group Leader

**Manages all activities within the staging area. Collects, organizes, and allocates resources to the various response locations as directed by the Operations Section Chief. Reports to the Operations Section Chief.**

**Responsibilities:**

- ❒ Maintain Activity Log
- ❒ Obtain briefing from the Operations Section Chief
- ❒ Participate in Operations Section's planning meetings and briefings
- ❒ Advise the Operations Section Chief of equipment location and operational status
- ❒ Periodically advise the Operations Section Chef on inventory status of consumable items (sorbent pads, sorbent booms, etc.)
- ❒ Coordinate with Logistics Section Chief regarding inbound equipment, personnel, and supplies
- ❒ Participate in development of Operations' portion of IAP
- ❒ Establish check-in function and inventory control as appropriate
- ❒ Allocate personnel/equipment to site as requested
- ❒ Establish and maintains boundaries of staging area
- ❒ Post signs for identification and traffic control
- ❒ Demobilize/relocate staging area as needed
- ❒ Participate in critique of response

**Emergency Response One Plan**

# Supply / Ground Support Group Leader

**Procures and makes disposition of personnel, equipment, and supplies in support of the transportation of personnel, supplies, food, and equipment, and the fueling, service, maintenance, and repair of vehicles and equipment. Receives and stores all supplies for the incident, maintains an inventory of supplies, and services non-expendable supplies and equipment. Reports to the Logistics Section Chief.**

**Responsibilities:**

- ☐ Maintain Activity Log
- ☐ Obtain briefing from Logistics Section Chief
- ☐ Periodically advise Logistics Section Chief on status of supply/ground support group
- ☐ Participate in Logistics Section's meetings and briefings
- ☐ Participate in development of Logistics Section's portion of the Incident Action Plan (IAP)
- ☐ Communicate with Staging Group Leader concerning materials equipment and personnel that are inbound and approximate arrival times
- ☐ Coordinate with Section Chiefs to ascertain the priority of needed materials, equipment, and services
- ☐ Coordinate with Finance Section Chief to establish accounts, purchase orders, AFEs, and procedures as necessary
- ☐ Establish an inventory control system for materials and equipment
- ☐ Maintain roads, when necessary
- ☐ Participate in critique of response

# Emergency Response One Plan: Appendix 6:
# DETAILED SITE DESCRIPTION & RISK OVERVIEW

**Provide additional information important to an emergency response for your site.**

**A. Site Overview**

Williams processes its own natural gas and, as a result, Williams has an extensive natural gas gathering system of 280+ miles of pipe in Garfield and Rio Blanco Counties, Colorado. The gathering system transports more than 600 million cubic feet of gas a day. The facility operates 24 hours a day, 365 days a year.

**B. Site Risk Evaluation**

Natural gas production facilities are inherently vulnerable to risk due to the constant presence of flammable gas. Fire or explosion caused by accident or an improper procedure is a serious threat to life, property, and the environment, and is considered to be the greatest risk to the production facilities. Following proper safety guidelines and adhering to safe work practices help mitigate this risk.

Production facilities, including gathering system pipe, runs within close proximity to businesses, homes, ranches, utilities, roads, and other gathering systems. As such, there exists a risk of impact or influence to the facility from offsite sources.

The greatest risk to the facility is when ground is being disturbed. Whenever excavating needs to be done, the "One Call" system must be called. Performing a One Call is required under Colorado law.

**C. Off-site Risk Evaluation**

The Parachute Creek Gas Plan is a semi-remote facility with several other industrial or municipal structures near plant property. The surrounding area is used for livestock grazing and natural gas exploration, production, processing, and transportation. As such, there exists a risk of impact of influence to the facility from off-site sources.

**D. Detailed Site Description Documents**

Attach facility/site maps, drawings, descriptions, layouts, floor plans, aerial views, etc., for the property covered by the Emergency Response Plan.

## Emergency Response One Plan: Appendix 7

# ACTIVITY LOG

Each member of the Emergency Response Team is required to keep an Activity Log.

| Site: | Emergency: |
|---|---|
| | |

| Date | Time | Action | Result |
|---|---|---|---|
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## Emergency Response One Plan: Appendix 8

# STANDARD EMERGENCY OPERATING PROCEDURES FOR HAZARDOUS PRODUCT RELEASES

**All company responders to emergency situations involving product releases will follow the steps covered in annual training.**

1. **Notification:** Notify the Supervisor/Team Leader on discovery of a release or following verification of a suspected release.
2. **Safely Respond:** Approach from upwind, uphill, and upgrade.
3. **Isolate and Deny Entry/Access:** Set an external boundary in a safe area (500 yards or more) and prohibit unauthorized entry into the hot zone.
4. **Command:** If necessary, the Incident Commander will establish the unified commander center.
5. **Identification of Material:** Use monitors, your knowledge, and signs to identify the material and assist in the development of the action plan.
6. **Assessment/Action Plan:** The Incident Commander will assess the scene, monitor to determine zones, and prepare a written action plan for the response team presented through a field briefing. Post at the Incident/Unified Command Center.
7. **Protective Equipment:** All personnel should use appropriate personal protective equipment (PPE) to protect from the hazards identified during the assessment.
8. **Control:** Eliminate ignition sources, evaluate containment/confinement options, and control access to the hazard zone.
9. **Protective Actions:** Determine actions necessary to prevent harm to employees, the public, property, and the environment.
10. **Decontamination:** Set-up decontamination in the Warm Zone prior to entry into the contaminated area.
11. **Disposal:** Legal disposal of captured materials is the responsibility of the Incident Commander.
12. **Termination:** The closure of the emergency phase is the responsibility of the Incident Commander. Status evaluations, personnel debriefings, and assignments for post-incident analysis occur during this phase.
13. **Medical:** Document exposures to personnel. Field medical evaluations are given to exposed personnel and recommendations for further medical attention are given as necessary.
14. **Evaluation:** A post-incident analysis by the Emergency Response Team will occur within 48 hours.
15. **Documentation:** The Incident Commander will ensure that all participants provide emergency phase documentation to the post-incident analysis by way of Activity Logs.

## Emergency Response One Plan: Appendix 9

# PERSONAL PROTECTIVE EQUIPMENT (PPE) LEVELS FOR HAZARDOUS PRODUCT RELEASES

**Use these guidelines to select appropriate PPE when there is the potential for a hazardous product release.**

**Level A**

**(Normally for Williams Contractors only)**

Select this level when (1) the greatest protection for skin, respiratory system, and eyes is required for an identified hazardous material or (2) when conducting operations in confined, poorly ventilated areas and the absence of conditions requiring Level A have not yet been determined.

**Level A equipment:**

- Positive pressure, full-face-piece, self-contained breathing apparatus (SCBA) or positive-pressure, supplied air respirator with an attached SCBA
- Totally encapsulating chemical-protective suit
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel toe and shank
- Disposable protective suit, gloves, and boots may be worn over totally encapsulating suit

**Level B**

**(Normally for Williams Contractors only)**

Select this level when (1) the highest level of respiratory protection is necessary, but a lesser degree of skin protection is needed or the atmosphere contains less than 19.5 percent oxygen or (2) testing equipment detects vapors present but not harmful to the skin.

**Level B equipment:**

- Positive pressure, full face-piece self-contained breathing apparatus (SCBA) or positive-pressure, supplied air respirator with an attached SCBA
- Hooded, chemical-resistant clothing (overalls and long-sleeved jacket)
- Coveralls
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel toe and shank

**Level C**

**(Normally for Williams Contractors only)**

Select this level when (1) the concentrations and types of airborne contaminants are known and the criteria for using air-purifying respirators are met and the airborne contaminants will not adversely affect or be absorbed through the skin, or (2) the types of airborne contaminants have been identified, concentrations measured, and an Air Purifying Respirator (APR) is available that can remove the contaminants.

**Level C equipment:**

- Full-face or half-mask, air-purifying respirator (APR)
- Hooded, chemical-resistant clothing (overalls and long-sleeved jacket)
- Coveralls

- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Hardhat
- Boots, chemical-resistant, steel toe and shank
- Face shield

**Level D**

Select this level when the atmosphere contains no hazard and there is no chance for splashes, immersion or the potential for unexpected inhalation of any airborne contaminant.

**Level D equipment:**

- Coveralls
- Gloves, outer, chemical-resistant
- Boots, chemical-resistant, steel toe and shank
- Hardhat
- Safety glasses/chemical-resistant goggles

## Emergency Response One Plan: Appendix 10
# DEFINED HAZARD ZONES

**If an incident involves release of a hazardous material, basic site control involves an assessment of hazards and marking of safety zones and escape routes. The identification of these zones shall be accomplished through the utilization of any available resource. Specifically for conditions in which explosive mixtures may be present, a combustible gas detector shall be utilized.**

**Zones and escape routes should be duly marked with barricade tape, traffic cones, flags or rope. Before being allowed entry, all affected personnel should be given clear instructions on the location of all zone perimeters, the location of escape routes, and the marking system being used.**

**The Incident Commander must ensure that site security is maintained and that zone violations do not occur.**

**Hot Zone** — **Contaminated or likely to become contaminated:**

- Soil and/or source water contamination ***or***
- Airborne contamination requiring respirators ***or***
- Possible impact by explosion

The **exclusion** area:

- Must be large enough in which to conduct response operations
- Entry is restricted to only the minimum number of personnel
- Requires proper PPE (Personal Protective Equipment)
- Buddy system and backup teams are required in any IDLH (Immediately Dangerous to Life and Health) area

**Warm Zone** — **Transition area between contaminated and clean areas:**

- No soil and/or source water contamination ***and***
- Airborne contamination less than Permitted Exposure Level (LEL) ***and***
- Not impacted in event of explosion

The **contamination reduction** area:

- Decontamination line(s) are set up here
- Backup and emergency medical support personnel stationed here
- Equipment re-supply (PPE, tools, etc.) for Hot Zone done here

**Cold Zone** — **No contamination or risk of contamination:**

- No soil or source water contamination ***and***
- No risk of airborne contamination ***and***
- No risk of impact in event of explosion

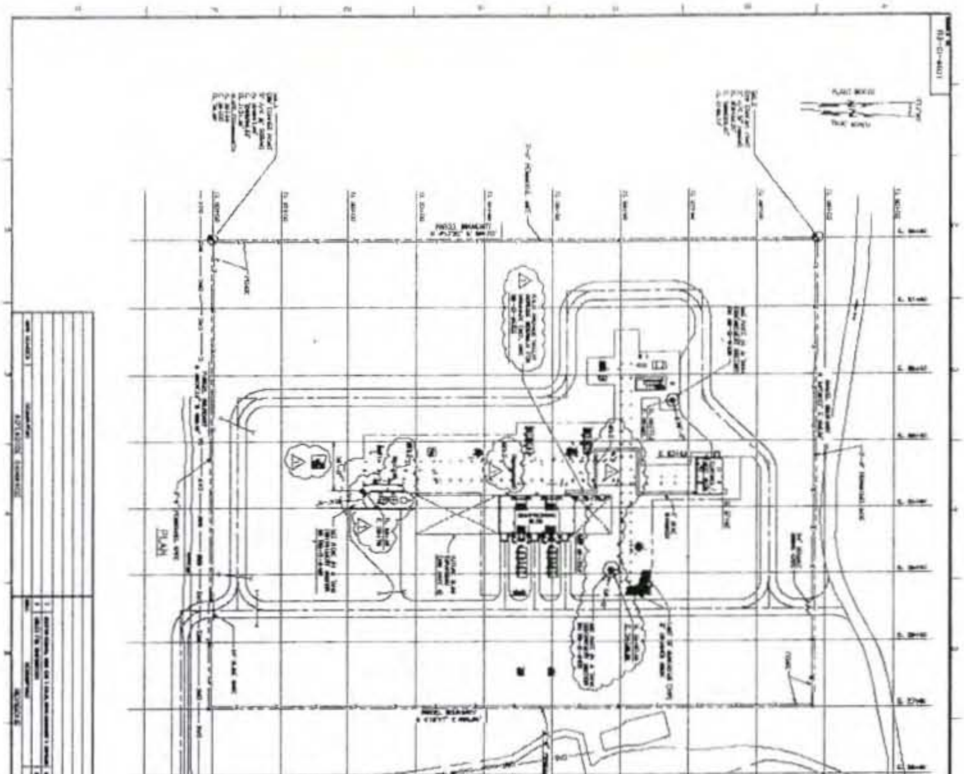
The **support** area:

- Command Post is here
- Staging area is here
- Other support is here
- Media are here
- No PPE is required

**Escape Routes** — **The quickest and safest exits from the hazard area:**

- At least two routes/exits
- Upwind or at right angles to the wind
- Uphill if possible
- Shortest distance possible to routes/exits

# Emergency Response One Plan: Appendix 11
# EVACUATION & ESCAPE ROUTES



# Emergency Response One Plan: Appendix 12
# Media Relations Guidelines

All media contact should be handled by a Corporate Communications representative when possible. However, in a crisis situation, you may be the first company representative at the scene or you may be the senior employee at the site and a Corporate Communications representative may not be available at the site or even by phone in the first hours. Because an immediate response is so important, an on-site primary spokesperson (Communications Group Leader) may be needed until a Corporate Communications representative is available to assist or take over as a company spokesperson.

Depending on the severity of the situation and if time allows, a Corporate Communications representative may be at the site within a few hours and assume responsibility for dealing with the media. However, it may be more effective for Corporate Communications to respond to reporters by phone from Tulsa while the site's senior employee responds to reporters at the site. Even if it is determined that a Corporate Communications representative should travel to the site, they may not be at the site for some time, depending on the location. Remember that many news inquiries occur during the initial hours following an accident and before a Corporate Communications representative can arrive. It is also important to remember that even if a Corporate Communications representative is not available at the site, the on-site spokesperson should work with them over the phone to coordinate the statement and response.

Whether or not Corporate Communications sends a representative to the site does not take away from the fact that an on-site spokesperson will be needed to work with reporters in the first hours of an emergency situation. How that spokesperson deals with those reporters will determine the kind of news coverage E&P Operations receives. For example, if there is a fire, rupture, fatality or explosion, the media may show up unexpectedly and thrust a microphone at the spokesperson. At that point, flames may be roaring in the background, gas may be venting or rescue personnel may be tending to the injured. Should the spokesperson say "no comment" in that type of situation, he and E&P Operations will likely be unhappy with the resulting news coverage.

The crisis itself can be costly, but poor media relations may result in unnecessary extra costs, such as long-term damage to E&P Operations' reputation, many man-hours spent trying to regain control, unfounded litigation arising from erroneous or scandalous media reports, and reduced employee morale and productivity. These risks can be minimized if employees who are in a position to act as on-site spokespersons become thoroughly familiar with the guidelines in this section.

**Summary**
The key to handling media relations during an emergency is to maintain control and to gain the confidence of the media. The latter goal is accomplished by assuring the media that they are being provided factual information as quickly as possible and that they can obtain better information through the official channels than from any other source. In this way, spokespersons can help manage the news published about Operations, which will result in Operations receiving the best possible coverage in an extremely difficult situation.

## Emergency Response One Plan: Appendix 13
# Links to Other Important Documents

**Use these links to ensure you have the most current version of a document.**

| | |
|---|---|
| *These documents are referred to in the Emergency Response One Plan.* | • *Bomb Threat Checklist*<br>• *E&PWAY Health & Safety Manual*<br>• *Emergency Response/Drill Critique Checklist*<br>• *Emergency Response/Drill Procedure*<br>• *Emergency Response Program Requirements*<br>• *Fire Prevention & Safety Program*<br>• *Incident Notification & Investigation Form*<br>• *Incident Reporting & Investigation Procedure*<br>• *Lessons Learned Procedure*<br>• *Spill Prevention, Control & Countermeasure Plan (SPCC)*<br>• *Training Matrix*<br>• *29 CFR 1910.120*<br>• *29 CFR 1910.38* |

**Geotechnical Engineering Group, Inc.**

GEOTECHNICAL INVESTIGATION
UNA Compressor Station
Williams Production RMT Company
Southwest ¼ of the Northwest ¼ of Section 35,
Township 7 South, Range 96 West, 6$^{th}$ Principal Meridian,
Garfield County, Colorado

Prepared For:
Star Valley Engineering
107657 N. U.S. Highway 89
Etna, WY 83118

Attention: Mr. Charles Bucans

Job No. 3,071

November 5, 2008

Geotechnical, Environmental and Materials Testing Consultants
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## SCOPE

This report presents the results of our Geotechnical Investigation for the proposed UNA Compressor Station to be located in the Southwest ¼ of the Northwest ¼ of Section 35, Township 7 South, Range 96 West, $6^{th}$ Principal Meridian in Garfield County, Colorado. Our investigation was conducted to explore subsurface conditions and provide foundation design recommendations for the anticipated construction. The report includes descriptions of subsoil and groundwater conditions found in four exploratory borings made during this investigation, recommended foundation systems, allowable design soil pressures and design and construction criteria for details influenced by the subsurface conditions. This investigation was performed in general conformance with our proposal No. 08-133 dated September 24, 2008.

The report was prepared from data developed during field exploration, laboratory testing, engineering analysis and experience with similar conditions. A brief summary of our conclusions and recommendations follows. Detailed criteria are presented within the report.

## SUMMARY OF CONCLUSIONS

1. Subsoils found in the exploratory borings consisted generally of 5½ to 28½ feet of sandy and gravelly clay with cobbles and boulders. No formational material was encountered to a depth of 28½ feet, the maximum depth explored. Auger refusal was encountered in all exploratory test borings on cobbles and boulders. Groundwater was not encountered in the exploratory test borings on the day of drilling to the depths explored.

2. We believe a deep foundation such as drilled piers can provide a more positive foundation. An alternative, with risk of movement, footing type foundation bearing on a well-compacted structural fill and reinforced mat foundation is also presented. A discussion, including detailed design and construction criteria are included in the text of the report.

3. Surface drainage should be designed for rapid runoff of surface water away from the proposed structures.

## SITE CONDITIONS

The subject site was located in the Southwest ¼ of the Northwest ¼ of Section 35, Township 7 South, Range 96 West, 6th Principal Meridian in Garfield County, Colorado. A project vicinity map is shown on Fig.1. The subject site was an existing staging area site adjacent to an existing well pad. The site was relatively flat and had been stripped of vegetation. The south portion of the site contained existing trailers and an operating drill rig. The area south and west of the site sloped down to the site at a inclination of about 1 horizontal to 1 vertical for a height of about 35 to 40 feet and appeared to be an excavation cut slope. The area above the excavation cut slope sloped down toward the site at an inclination of about 3 horizontal to 1 vertical and contained a cover of sage brush and Juniper trees. The area north and east of the site sloped down from the site at an inclination of about 1.5 horizontal to 1 vertical for a height of about 50 feet and appeared to be a constructed fill slope. The area beyond the placed fill slope sloped down away from the site at an inclination of about 3 horizontal to 1 vertical or flatter and contained a cover of sage brush and Juniper trees.

## PROPOSED CONSTRUCTION

We understand the proposed construction will consist of a gas compressor station. The proposed construction will include buildings, compressor pads and ancillary equipment. Building foundation loads will include column loads up to 30 Kips. Compressor foundation will be about 12 feet by 30 feet and have a total foundation load up to 1,000 Kips. Miscellaneous Equipment will be skid supported with skid dimensions fo 4 feet by 4 feet to 20 feet by 20 feet. Miscellaneous tanks will be 10 feet diameter by 15 feet high to 16 feet diameter by 25 feet high and will be supported by ring-wall foundations. We anticipate differential settlement tolerances for these structures are 2 inches. No below grade construction is planned. Site development may include existing excavation cut slopes up to 35 feet high and existing placed fill slopes up to 50 feet high. If proposed construction changes or is different from what is stated, we should be contacted to review actual construction and our recommendations.

Proposed construction is gas field industrial. There will be no landscaping, irrigation or finished areas.

## SUBSURFACE CONDITIONS

Subsurface conditions at the site were investigated by drilling and sampling four exploratory borings. Locations of the exploratory borings are shown on Fig. 2. Graphic logs of the soils found in the borings and field penetration resistance tests are presented on Figs. 3 through 7. Subsurface conditions encountered consisted generally of 5½ to 28½ feet of sandy and gravelly clay with varying amounts cobbles and boulders. Auger refusal was encountered in all exploratory test borings on cobbles and boulders. When auger refusal was encountered the test boring was offset 5 to 10 feet and re-drilled until auger refusal was encountered. No formational material was encountered to a depth of 28½ feet, the maximum depth explored. Groundwater was not encountered in the exploratory test borings on the day of drilling. The sandy and gravelly clay was medium stiff to stiff, moist and brown. Existing fill was not encountered in the exploratory test boring, however we anticipate existing fill will be encountered near the northwest edge of the compressor site.

Four sandy and gravelly clay sample tested had moisture contents of 3.2 to 11.0 percent, liquid limits of 27 to 30, plasticity indexes of 9 to 16 and had 50 to 68 percent passing a No.200 sieve (silt and clay sized particles). Three sandy and gravelly clay samples tested had moisture contents of 10.8 to 13.0 percent, dry densities of 94 to 115 pcf and exhibited 0.2 to 6.8 percent one-dimensional consolidation when wetted under a confining pressure of 250, 500 and 1,000 psf. One sandy and gravelly clay sample tested had a moisture content of 9.8 percent, a dry density of 105 pcf and exhibited an internal angle of friction of 23 degrees and a cohesion of 300 when tested for direct shear strength properties. Three sandy and gravelly clay samples tested had moisture contents of 3.2 to 11.0 percent and had a water soluble sulfate concentrations of 1,300 to 5,000 ppm. One blended bulk from exploratory test borings TH-2 and TH-3 at a depth of 0 to 5 feet had a liquid limit of 27, a plasticity index of 9, a maximum standard Proctor dry density of 114.5 pcf, an optimum moisture content of 13.0, had 68 percent passing a No.200 sieve, and had a California Bearing Ratio (CBR) of 3.2. Results of laboratory testing are presented on Figs. 8 through 17 and summarized on Tables I and II.

## SITE DEVELOPMENT

The surface in areas to receive additional fill, if any, or support structures should be scarified to a depth of 10 inches, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent of standard Proctor (ASTM D 698) maximum dry density. On-site soils free of deleterious materials, organics and particles over 6-inches diameter can be reused in non-structural areas for general site grading. Fill in structural areas may include special requirements as discussed later under the "**FOUNDATIONS**" section of this report. Additional fill placement should be moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent of standard Proctor (ASTM D698) maximum dry density in 10-inch maximum thickness loose lifts. Subgrade soils and fill greater than 10 foot in depth should be moisture conditioned to within 2 percent of optimum moisture and compacted to at least 100 percent maximum dry density standard Proctor (ASTM D698). Subgrade preparation, and placement and compaction of grading fill should be observed and tested by a representative of our firm during construction. Sample site grading specifications are included in Appendix A.

## Excavation

Soils used to construct additional general site fill slopes, if any, will be obtained from the excavation cut slopes above the pad location. The subject site should be stripped of all vegetation and organic material prior to additional fill slope construction. We recommend that all material disturbed by excavation be removed from excavation areas to expose undisturbed material. The inclination of the cut slopes based on stability analysis will depend on the height of the slope and the soil strength characteristics. Our analysis of the existing excavation cut slope was based on "Effect of Soil Strength Parameters on Stability of Man-Made Slopes" by Awtar Singh. The soil strength characteristics used in our stability analysis were obtained from direct shear strength test data from our laboratory and site soil samples. We used an internal angle of friction of 23 degrees, a cohesion of 300 psf, a moist soil density of 115 pcf and maximum cut slope height of 35 feet in our analysis. We consider a calculated factor of safety against movement of 1.5 or greater is adequate for permanent slopes and a calculated factor of safety of 1.2 is adequate for temporary slopes.

We calculated a minimum factor of safety against slope failure of 1.2 for the existing/proposed cut slope of 1.0 H to 1.0 V with a maximum height of 35 feet. In our opinion, temporary excavations cut slopes should therefore be constructed for at least 1.0 horizontal to 1.0 vertical or flatter if possible. Cut slopes should be adequately treated to mitigate erosion and other potential stability concerns. Our observations and calculations indicate slopes constructed at an inclination of 1.0 horizontal to 1 vertical will require periodic maintenance due to surface erosion. We calculated a factor of safety against slope failure of 1.5 for an inclination of 2 horizontal to 1 vertical or flatter for permanent reclamation excavation cut slopes.

## Embankment

Fill materials, if any, should contain no particles larger than about one half of the lift thickness with the largest scattered pieces no greater than six inches. All areas to receive additional fill should be stripped of all vegetation, organic soils, and other deleterious material prior to fill placement. Our recommendation for general fill materials, preparation and placement are included in APPENDIX A.

Man made fill construction in soils such as those encountered in the area is problematic. Clays can require significant hydration periods. Silts are highly moisture sensitive and shale fragments require breakdown. These factors present more challenge than the moisture content, lift thickness and compactive effort factors involved with other embankment projects. The additional factors involved at the subject site result in less confidence in operator experience or 'dead reckoning' contractor methods and the need for more reliance on engineering controls such as laboratory Proctor and field moisture / density gauge measurements. Compaction equipment including large self propelled sheepsfoot compactor, steel drum vibratory compactor, disc and / or pneumatic breakdown (tractor attached or equivalent), blade and water truck have also been part of successful embankment construction such as that planned on the subject site.

Areas to receive fill should be constructed with a toe key and benched into competent foundation material. The key and bench concept is shown on Fig. 18. We should observe the key and bench preparation to verify that the key and bench extends into competent material and meets our recommendations. Prior to placement of structural fill, the resulting subgrade should be scarified 10-inches, moisture conditioned and compacted as discussed in APPENDIX A. A drain should be constructed at the back of the toe key and each bench in all permanent fill slopes to drain subsurface water that may accumulate at the fill / natural soil contact. The toe key and bench drains should consist of a 4 or 6 inch diameter perforated drain pipe surrounded by at least 3 cubic feet per linear foot of drain, free draining aggregate all wrapped with an appropriate filter fabric. Toe key and bench drain details are shown on Fig. 19.

The inclination of the fill slopes based on stability analysis will depend on the height of the slope and the soil strength characteristics. Our analysis of the embankment fill slope was based on "Effect of Soil Strength Parameters on Stability of Man-Made Slopes", by Awtar Singh. The soil strength characteristics used in our stability analysis were obtained from direct shear strength tests from our laboratory of soil samples from the subject site. We used an internal angle of friction of 23 degrees, a cohesion of 300 psf, a moist soil density of 115 pcf and a maximum fill height of 50 feet in our analysis. Our analysis indicates a temporary fill slope constructed with a slope inclination of 1½ horizontal to 1.0 vertical has a calculated factor of safety against slope failure of about 1.3. Our analysis indicates a permanent reclamation fill slope constructed with a slope inclination of 2.0 horizontal to 1.0 vertical or flatter has a calculated factor of safety of 1.5.

**FOUNDATIONS**

This investigation indicates subsurface conditions at foundation levels generally consist of medium stiff to very stiff sandy, silty clay with volume change potential. The recommendations presented in this report are intended to reduce or mask the influence of swelling or settling soils but will not completely mitigate the influence of swelling or settling soils. In our opinion, a foundation to better mitigate risk of movement should be anchored below the zone of probable moisture variation and concentrate the weight of the structure to resist potential swell of the clay soils. In our opinion, a straight shaft drilled pier, driven pile or screw pile foundation bedded in an underlying competent stratum most nearly satisfies these criteria. Drilled piers, driven piles or screw piles will not likely reach a formational material bearing stratum due to the varying cobble and boulder content of the site subsurface soils. Drilled piers, driven piles or screw piles may be designed as friction piles in the natural undisturbed soils.

We present design and construction criteria for drilled piers, driven piles, screw piles, spread footings and reinforced mat foundations in order of decreasing attractiveness. These criteria were developed from analysis of field and laboratory data and our experience. The additional requirements (if any) of the structural engineer should also be considered.

Based on the soils encountered in the exploratory test borings and observations of the existing site conditions, the proposed compressor station structures will be located entirely on cut areas and will not be supported by existing fill. If existing fill is encountered during foundation construction, the existing fill should be completely removed and replaced with well compacted structural fill as discussed below.

## Driven Friction Piles

1. Pile material should be concrete filled, closed end, steel pipes (10-3/4-inch O.D., 0.25-inch thick walled or heavier). Pipe piles are typically used in this area. Tip reinforcement should be provided to reduce pile damage during hard driving. A maximum allowable service stress of 12,000 psi should not be exceeded. Based on our experience, capacities of 10 tons to 55 tons can be developed during driving. The piles should be driven to a minimum depth of 40 feet and designed using a skin friction value of 400 psf for the portion of pier in native sandy and gravelly clay soils. Skin friction should be neglected for the portion of pier within 5 feet of the ground surface. After installation the pile should be allowed to rest for a minimum of 24 hours then the pile driving hammer reinstalled on the pile and the pile re-struck to verify the skin friction has developed.

2. We did not identify a competent bearing strata to a depth of 28½ feet, the maximum depth explored. The subsurface soils contained varying amounts of cobbles and boulders which may provide varying resistance during pile installation. We anticipate variable and increased depths to competent bearing stratum across the site. Piles should have a minimum length of 40 feet below the finished site grade.

3. Groups of piles placed closer than three diameters, center to center, should be evaluated to determine their reduced capacity.

4. The pile-driving hammer should be operated at the manufacturer's recommended stroke and speed when the "set" is measured.

5. The contractor should select a driving hammer and cushion combination which is capable of installing selected piles without overstressing the pile. The contractor should submit the pile driving plan and the pile hammer cushion combination to the structural engineer for evaluation of the driving stress in advance of the pile installation.

6. We believe a modulus of subgrade reaction of 220 psi/in can be used for lateral resistance of pile caps. A plate load test can be performed to provide a more direct correlation between site soils and modulus of subgrade reaction.

7. There should be at least a 4-inch or thicker continuous void beneath all grade beams and foundation walls, between piles, to concentrate dead load on the piles and provide separation between the bottom of grade beams and site soils.

8. If the pile foundations are designed and constructed as discussed above, we estimate that the post construction total settlement will be about ½ to ¾ inch with about ½ of the total settlement occurring as differential settlement. The estimated settlement is dependent on pile design loads, soil conditions supporting the piles and pile depth. If the pile design loads, soil conditions or the pile depths are different than discussed above, we should be contacted to provide additional settlement considerations.

9. Exterior walls must be protected from frost action. Refer to the local building code for details. We understand the Garfield County Building Department recommends coverage of at least 36 inches at an elevation up to 6,000

feet, at least 42 inches for elevations of 6,000 to 8,000 feet and at least 48 inches for elevations above 8,000 feet for frost protection.

10. A representative of our office should observe and keep records of penetration resistance, pile lengths and other factors that could affect the performance of the foundation, during driving.

11. We recommend performing a load test of select piles to verify the design load has been obtained during installation.

## Drilled Pier and Screw Pile Foundations

1. Piers and / or screw piles should be designed for a maximum allowable end bearing pressure of 4,000 psf and an allowable skin friction value of 400 psf for the portion of pier in native sandy and gravelly clay soils. Skin friction should be neglected for the portion of pier within 5 feet of the ground surface.

2. Piers should be designed for a minimum deadload pressure of 500 psf based on pier cross-sectional area. If this deadload cannot be achieved, pier length should be increased. The native sandy and gravelly clay can be assigned a skin friction value of 300 psf for uplift resistance, at least 5 feet below the pier cap.

3. Piers should penetrate at least 40 feet into the native sandy clay soils and have a total length of at least 40 feet.

4. Piers should be reinforced the full length of the pier with at least two No. 4 Grade 60 reinforcing bars to resist tension in the event of soil movement. Reinforcement should extend into grade beams and foundation walls.

5. Foundation walls and grade beams should be well reinforced; the reinforcement should be designed by a qualified structural engineer.

6. If the pier or screw pile foundations are designed and constructed as discussed above, we estimate that the post construction total settlement will be about ½ to ¾ inch with about ½ of the total settlement occurring as differential settlement. The estimated settlement is dependent on pier oor screw pile design loads, soil conditions supporting the piers or screw piles and pier or screw pile depth. If the pier or screw pile design loads, soil conditions or the pier or screw pile depths are different than discussed above, we should be contacted to provide additional settlement considerations.

7. There should be at least a 4-inch or thicker continuous void beneath all grade beams and foundation walls, between piers, to concentrate dead load on the piers and provide separation between the bottom of grade beams and site soils.

8. Piers should be carefully cleaned prior to placement of concrete. Groundwater was not encountered at the time of this investigation to the depths investigated.

9. We believe problems associated with pier installation can be significantly reduced by using a "drill and pour" construction procedure; that is, placing concrete immediately after pier holes are drilled, cleaned and inspected. Pumping, tremie placement, vacuum truck or auger cast methods may be required for proper dewatering of the pier holes if water is encountered during drilling. Concrete should not be placed in any pier hole containing more than 3 inches water. Due to recent experience with improper installation, we recommend the use of a contractor with previous drilled pier installation experience.

10. Installation of drilled piers should be observed by a representative of our firm to identify the proper bearing strata and confirm proper installation technique. Our representative should be called to visit the site at the time of the first pier excavation and all subsequent pier excavations.

11. Exterior walls must be protected from frost action. Refer to the local building code for details. We understand the Garfield County Building Department recommends coverage of at least 36 inches at an elevation up to 6,000 feet, at least 42 inches for elevations of 6,000 to 8,000 feet and at least 48 inches for elevations above 8,000 feet for frost protection.

12. Formation of mushrooms or enlargements at the top of piers should be avoided during pier drilling and subsequent construction operations. It may be necessary to case the top portion of the pier hole prior to pier concrete placement to prevent flaring of the top of the pier.

13. Installation of drilled piers should be observed by a representative of our firm to identify the proper bearing strata and confirm proper installation technique. Our representative should be called to visit the site at the time of the first pier excavation.

14. We recommend performing a load test of select piers and / or screw piles to verify the design load has been obtained during installation.

## Spread Footings-Structures where more risk of movement is acceptable

1. Footing foundations bearing on at least 4-feet depth of well compacted, structural fill can be designed for maximum soil bearing pressure of 2,500 psf. The soil bearing pressure may be increased by 30 percent for temporary loading such as wind and seismic loads. Loose soils, existing fill, existing foundations, if any, and organic materials should be removed full depth and replaced with a well compacted structural fill.

2. The foundation areas should be over excavated 4-feet. The resulting subgrade should be scarified 10 inches, moisture conditioned and re-compacted to 95 percent of standard Proctor (ASTM D698) to help mitigate potential soil settlement and provide a uniform subgrade. The foundation should bear completely on at least 4-feet uniform depth of well-compacted structural fill to at least 4-feet beyond each footing, horizontally. Loose soils should be completely removed from foundation bearing areas, prior to placing fill or concrete. The structural fill should be a crushed, uniformly graded, granular material with a maximum size of 1.5 inches, maximum of 15 percent passing the No. 200 sieve and maximum liquid limit of 30. A CDOT Class 5 or Class 6 type crushed base course could be used to satisfy these criteria and is recommended. The structural fill should be placed in maximum 10-inch loose lifts, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent maximum standard Proctor (ASTM D

698) dry density. If structural fill soils are required to achieve grade they should consist of a granular material and should be placed and compacted as stated above.

3. We recommend a minimum width of 18 inches for continuous footings. Isolated pads should be at least 30 inches by 30 inches. Foundation walls should be well-reinforced top and bottom. We recommend reinforcement sufficient to span an unsupported distance of at least 12 feet. A qualified structural engineer should design foundation reinforcement.

4. If the footings are designed and constructed as discussed above, we estimate that the post construction total settlement will be about 1 to 1¼ inch with about ½ of the total settlement occurring as differential settlement. The estimated settlement is dependent on foundation bearing pressure, soil conditions supporting the footings and footing width. If the foundation bearing pressures, soil conditions or the footing widths are different than discussed above, we should be contacted to provide additional settlement considerations.

5. Exterior walls must be protected from frost action. Refer to the local building code for details. We understand the Garfield County Building Department recommends coverage of at least 36 inches at an elevation up to 6,000 feet, at least 42 inches for elevations of 6,000 to 8,000 feet and at least 48 inches for elevations above 8,000 feet for frost protection.

6. The completed foundation excavation should be observed by our representative, to test subgrade and fill compaction and to verify subsurface conditions are as anticipated.

**Reinforced Mat Foundations**

1. Reinforced mat foundations bearing on at least 4-feet depth of well compacted, structural fill can be designed for maximum soil bearing pressure of 2,500 psf. The soil bearing pressure may be increased by 30 percent for temporary loading such and wind and seismic loads. Loose

soils, existing fill, existing foundations and organic materials need to be removed full depth and replaced with a well compacted structural fill.

2. The foundation areas should be over excavated 4-feet. The resulting subgrade should be scarified 10 inches, moisture conditioned and re-compacted to 95 percent of standard Proctor (ASTM D698) to help mitigate potential soil settlement and provide a more uniform subgrade. The foundation should bear completely on at least 4-feet uniform depth of well-compacted structural fill to at least 4-feet beyond each footing, horizontally. Loose soils should be completely removed from foundation bearing areas, prior to placing fill or concrete. The structural fill should be a crushed, uniformly graded, granular material with a maximum size of 1.5 inches, maximum of 15 percent passing the No. 200 sieve and maximum liquid limit of 30. A CDOT Class 5 or Class 6 type crushed base course could be used to satisfy these criteria and is recommended. The structural fill should be placed in maximum 10-inch loose lifts, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent maximum standard Proctor dry density (ASTM D 698). If structural fill soils are required to achieve grade they should consist of a granular material and should be placed and compacted as stated above.

3. We performed a California Bearing Ratio (CBR) test in general accordance with ASTM D1883. The CBR test results are presented on Fig. 17. The CBR test results indicate a CBR of 3.2 when compacted to about 95 percent of the maximum dry density as defined by ASTM D698, standard Proctor test. Based on the CBR test results we calculated a modulus of subgrade reaction (K) of 220 psi/in.

4. Mat foundations should be well reinforced, both top and bottom. We recommend reinforcement sufficient to span an unsupported distance of at least 12 feet and to distribute loads over entire mat. Reinforcement should be designed by the structural engineer.

5. If mat foundations are designed and constructed as discussed above, we estimate that the post construction total settlement will be about 1½ to 2 inch with about ½ of the total settlement occurring as differential settlement. The estimated settlement is dependent on foundation bearing pressure, soil conditions supporting the mat foundation and mat foundation width. If the foundation bearing pressures, soil conditions or

the mat foundation widths are different than discussed above, we should be contacted to provide additional settlement considerations.

6. Foundations should be protected from freezing. Refer to local building code for details. We understand the Garfield County Building Department recommends coverage of at least 36 inches at an elevation up to 6,000 feet, at least 42 inches for elevations of 6,000 to 8,000 feet and at least 48 inches for elevations above 8,000 feet for frost protection.

7. The completed foundation excavation should be observed by our representative to verify subsurface foundation conditions are as anticipated from our borings and to test compaction.

**Tank Spread Footing Ring Foundations and Tank Bottom Support**

1. Footing foundations bearing on a 2 feet depth layer of well compacted structural fill can be design for a maximum soil bearing pressure of 2,500psf. Loose soils should be completely removed from foundation bearing areas, prior to placing concrete. We understand the tank bottoms will be supported on grade. The tank bottom can be designed for a maximum soil bearing pressure of 2,500 psf. Loose soils should be completely removed from foundation bearing areas, prior to well compacted structural fill or tank foundations.

2. The completed ring spread footing foundation excavation should be over excavated 1 feet depth below tank bottom bearing level and 2 feet depth below the ring footing bearing elevation. The tank bottom should be supported completely on a layer of well compacted structural fill at least 1 foot thick and the ring foundation should be supported on a layer of well compacted structural fill at least 2 feet thick. The well compacted structural fill should extend horizontally beyond each edge of the ring footing at least 2 feet. The resulting subgrade should be scarified 10-inches, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent of standard Proctor (ASTM D698) maximum dry density. Our representative should be called to test subgrade compaction,

prior to structural fill placement. A granular imported structural fill should consist of a maximum particle size of 1.5-inches, maximum of 30 percent passing the No. 200 sieve and a maximum liquid limit of 30. We recommend structural fill be placed in a maximum 10-inch thickness loose lifts and compacted to at least 95 percent of maximum dry density and within 2 percent of optimum moisture content (ASTM D698). Structural fill should be tested every 1 foot depth of placement. If soft conditions are encountered in the open excavation then stabilization may be necessary. Our representative should be called to test compaction of subgrade and/or observe stabilization, prior to forming.

3. We recommend a minimum width of 1.5 feet for continuous footings. Foundation walls should be well-reinforced top and bottom. We recommend reinforcement sufficient to span an unsupported distance of at least 12 feet. The structural engineer should design reinforcement.

4. Based on a design soil bearing pressure of 2,500 psf, a footing width of about 1.5 feet and footings placed on a 2 feet thick layer of well compacted structural fill the estimated total settlement is about 6 inches at the edge of the tank and about 4 inches at the center of the tank. The tank bottom should be designed with sufficient camber to accommodate the estimated differential settlement between the center and the edge of the tank. Utility lines that will be connected to the tank should be designed with flexible connections to accommodate the total settlement. If the support conditions are modified or the tank support is changed we should be contacted to provide additional settlement analysis and recommendations. The tank and contents will act as a uniformly applied load over the area of the tank and will significantly influence the supporting soil to the depth of about 30. Due to the influence of the tank and contents loads acting as a uniformly applied load on the entire tank bottom area, the settlement of the spread footing type ring foundation will be directly associated with the estimated settlement of the tank bottom as discussed below. The ring footing will likely be nearly uniform to itself

5. Exterior walls should be protected from freezing. We understand the Garfield County Building Department recommends coverage of at least 36 inches at an elevation up to 8,000 feet and at least 42 inches for elevations above 8,000 feet for frost protection. Frost protection concepts are shown in Appendix A. In our experience, a 1.5 inch imported aggregate is not particularly frost sensitive and the proposed construction does not lend

itself well to frost protection. While more risk is involved, frost protection via minimum depth of imported aggregate fill and/or an equivalent styro board type insulation product may be substituted for strict burial.

6. The completed foundation excavation should be observed by our representative prior to placing forms, to verify the foundation bearing conditions, test compaction.

7. Exterior walls should be protected from freezing. We understand the Garfield County Building Department recommends coverage of at least 36 inches at an elevation up to 8,000 feet and at least 42 inches for elevations above 8,000 feet for frost protection. In our experience, a 1.5 inch imported aggregate is not particularly frost sensitive and the proposed construction does not lend itself well to frost protection. While more risk is involved, frost protection via minimum depth of imported aggregate fill and/or an equivalent styro board type insulation product may be substituted for strict burial.

8. The completed foundation excavation should be observed by our representative to verify subsurface foundation conditions are as anticipated from our borings and to test compaction.

## SEISMIC AND VIBRATING FOUNDATION DESIGN CONSIDERATIONS

Foundation and floor systems include structural support from the surficial clay with shale fragment soils. Based on 2000 UBC we believe the site is located in Seismic Zone 1. Based on our understanding of proposed construction and subsurface conditions, we suggest a "Site Class D" be used for foundation seismic design as described in 2006 IBC. Based on the field and laboratory results we calculate a shear modulus of 3,000 psi. We have estimated a modulus of subgrade reaction based on field and laboratory test data. We recommend a modulus of subgrade reaction of 220 psi/inch.

## FLOOR SYSTEMS

The near-surface soils that will support slab-on-grade floors exhibited movement potential. Some movement must be assumed. To our knowledge, the only reliable solution to control floor movement is the construction of floors supported by the foundation system over a minimum 12 inch void. If the owner and builder accept the risk of movement and associated damage, the floors may be constructed as slab on grade floors.

We recommend the following precautions for construction of slabs-on-grade at this site. These precautions will not prevent movement in the event the underlying conditions become wetted; they tend to reduce damage if movement occurs.

1. Slabs should be supported by at least a 1 foot depth of well compacted, structural fill. The completed subgrade should be scarified 10-inches depth, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent of maximum standard Proctor (ASTM D698) dry density, prior to structural fill placement. The compacted structural fill should consist of a non expansive granular material with a maximum size of 1.5 inches, a maximum of 15 percent passing the number 200 sieve, a maximum liquid limit of 35 and a maximum plasticity index of 10. The structural fill should be moisture conditioned to within 2 per cent of optimum moisture content placed in thin lifts and compacted to at least 95 percent of the maximum standard Proctor (ASTM D698) dry density. A Geotechnical Engineering Group, Inc. representative should be called to visit the site to test compaction and observe soils in the excavation bottom

and structural fill.

2. We performed a California Bearing Ratio (CBR) test in general accordance with ASTM D1883. The CBR test results are presented on Fig. 17. The CBR test results indicate a CBR of 3.2 when compacted to about 95 percent of the maximum dry density as defined by ASTM D698, standard Proctor test. Based on the CBR test results we calculated a modulus of subgrade reaction (K) of 220 psi/in.

3. Slab-on-grade construction should be limited to unfinished areas and exterior flatwork where practical.

4. Slabs should be separated from exterior walls and interior bearing members with a slip joint which allows for free vertical movement of slabs.

5. The use of slab-bearing partitions should be minimized. Where such partitions are necessary, a slip joint allowing at least 4 inches of free vertical slab movement should be used. Doorways and stairwells should also be designed for this movement.

6. Underslab plumbing should be eliminated where feasible. Where such plumbing is unavoidable, it should be thoroughly pressure tested during construction for leaks and should be provided with flexible couplings. Plumbing extending through slab on grade floors should be separated from floor slab to allow independent movement.

7. Frequent control joints should be provided to reduce problems associated with shrinkage and curling. The American Concrete Institute (ACI) and Portland Cement Association (PCA) recommend a maximum panel size of 8 to 15 feet depending upon concrete thickness and slump, and the maximum aggregate size. We advocate additional control joints 3 feet off and parallel to grade beams and foundation walls.

## BELOW-GRADE CONSTRUCTION

No below-grade construction is anticipated at this site. Typically, building foundation drains are not required for construction of this type. Crawl space, if any, in building areas should be sloped so that potential moisture will not collect in these areas, but flow out of the crawl space. Crawl space areas should also be well ventilated to reduce potential humidity and musty odors.

## SOIL RESISTIVITY CONSIDERATIONS

Our field study included performing field soil resistivity tests at one location Line on the proposed compressor location. The approximate location of the field soil resistivity test was between exploratory test borings TH1 and TH-2 and between exploratory test borings TH-3 and TH-4 . The field soil resistivity tests were conducted in general conformance with ASTM test method G-57. The field soil resistivity tests indicate a resistivity of about 490 and 1460 Ohm-cm.

## PAVEMENT

The pavement subgrade soils include medium stiff to stiff, sandy and gravelly clay. We tested a combined bulk sample (TH-1, TH-2 and TH-3 at a depth of 0 to 5 feet) for pavement design purposes. The sample was tested for standard Proctor, and California Bearing Ratio (CBR). The sample tested exhibited a maximum dry density of 114.5 pcf, an optimum moisture of 13.0 percent and a California Bearing Ratio (CBR) of 3.2. We used a California Bearing Ratio of 3.2 in our analysis. The results of the laboratory testing are shown on Table II and included on Figs. 16 and 17.

Our design utilized the computer program WinPAS, based on the 1993 AASHTO Guide for Design of Pavements Structures a 20 year design period and our experience. We understand pavements will be used for general drive lanes. We used an Equivalent Single Axle Load (ESAL) of 62,400, 156,000 and 187,200. The ESAL values were calculated using an EDLA of 10, 25 and 30 over a 20 year period. We used a regional factor of 2.0 and a design serviceability index of 2.0. We used an AASHTO developed, non-linear relationship to relate the CBR value to the subgrade resilient modulus ($M_r$), for flexible pavement. Using this relationship, we calculated a $M_r$ value of 4,300 psi. We used this $M_r$ value for flexible pavement design. Using the calculated $M_r$ value we calculated a modulus of subgrade reaction, K value of 220 psi/in for rigid pavement design. The WinPAS analysis results are presented in Appendix B. Table A below shows our recommendations.

## TABLE A

### SUMMARY OF RECOMMENDED PAVEMENT SECTIONS

| Traffic Type | Asphaltic Concrete | Asphalt and Aggregate Base Course | Asphalt, Aggregate Base Course and Aggregate Sub Base Course | Portland Cement Concrete |
|---|---|---|---|---|
| ESAL = 62,400 | 6¼" | 3"+11 " | 3"+ 5" + 8 " | 6" |
| ESAL = 156,200 | 7¼" | 4 " + 11" | 4"+ 5" + 8" | 6" |
| ESAL = 187,200 | 7½ " | 4" + 12 " | 4" + 6" + 8"<br>5" + 5" + 9" | 6" |

Existing fill was not identified in the exploratory borings, however we anticipate that existing fill may exist on site associated with previous development. Existing fill, if any, should not be relied upon for structural support and should be removed full depth and be replaced as a well compacted structural fill as described in the **"SITE DEVELOPMENT"** section of this report. Geotechnical Engineering Group, Inc. representative should be called to confirm adequate stabilization prior to placement of fabric.

Prior to construction of the recommended section, the resulting subgrade should be stripped free of organics and deleterious materials, scarified at least 10-inches depth, moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent standard Proctor (ASTM D698) maximum dry density. Portions of the pavement subgrade areas may encounter soft yielding soils. If yielding soils are encountered it may be necessary to provide subgrade stabilization. Subgrade stabilization may include over excavation about 1 to several feet, placement of a geotechnical stabilization fabric and placement of compacted structural fill. We should be contacted to observe subgrade conditions and provide additional recommendations as needed.

The design of a pavement system is as much a function of paving materials as supporting characteristics of the subgrade. The quality of each construction material is reflected by the strength coefficient used in the calculations. If the pavement system is constructed of inferior material, then the life and serviceability of the pavement will be substantially reduced. Prior to construction of the recommended section, the resulting subgrade should be stripped free of organics and deleterious materials, scarified 10-inches depth, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent standard Proctor (ASTM D698) maximum dry density.

The asphalt component of the pavement was designed assuming at least 1,650 pounds Marshall Stability. Normally, an asphaltic concrete should be relatively impermeable to moisture and should be designed with a well-graded sand/gravel mix.

The oil content, void ratio, flow and gradation need to be considered in the design. We recommend a job mix design be performed and periodic checks are made to verify compliance with these specifications. We can perform these services, as requested.

If construction materials cannot meet the above requirements, then the pavement design should be evaluated based upon available materials. We recommend the materials and placement methods conform to the requirements listed in the Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction". All materials planned for construction should be submitted and tested to confirm their compliance with these specifications.

A primary cause of early pavement deterioration is water infiltration into the pavement system. The addition of moisture usually results in softening of untreated base course and subgrade and eventual failure of the pavement. We recommend drainage be designed for rapid removal of surface runoff. Curb and gutter should be backfilled and the backfill compacted to reduce ponding adjacent to pavements. Final grading of the subgrade should be carefully controlled so that design cross-slope is maintained and low spots in the subgrade which could trap water are eliminated. Seals should be provided between curb and pavement and at all joints to reduce moisture infiltration. Landscaped areas and detention ponds in pavements should be avoided.

We have included construction recommendations for flexible and rigid pavement construction in Appendix C. Routine maintenance, such as sealing and repair of cracks annually and overlays at 5 to 7-year intervals, are necessary to achieve the long-term life of an asphalt pavement system. If the design and construction recommendations cannot be followed or anticipated traffic loads change considerably, we should be contacted to review our recommendations.

## CONCRETE

Three samples (TH-1, TH-2 and TH-3 at a depth of 0 to 5 feet) were tested for water soluble sulfate concentrations. The test results indicate a water soluble sulfate concentration of 1,300 to 5,000 ppm. Sulfate concentrations in this amount are considered to have a severe effect on concrete that comes into contact with the soils. We recommend following the American Concrete Institute (ACI) guidelines for sulfate resistant cement. ACI recommends a Type V (sulfate resistant) cement be used for concrete that comes into contact with the subsoils. In addition, the concrete should have a water cement ratio of 0.45. We understand that Type V cement may not be locally available. Although, not meeting ACI recommendations for sulfate resistant cement, Type II modified cement has been used in similar conditions.

## SURFACE DRAINAGE

Performance of foundations and concrete flatwork is influenced by surface moisture conditions. The site sandy clay soils have significant consolidation potential. The consolidation and / or swell potential typically is mobilized by wetting and or loading. Reducing the potential for moisture migration into the site soil and formational sandstone with reduce the risk of mobilization of consolidation or swell potential of site materials. Risk of wetting foundation soils can be reduced by carefully planned and maintained surface drainage. Surface drainage should be designed to provide rapid runoff of surface water away from the proposed structures. We recommend the following precautions be observed during construction and maintained at all time after the construction is completed.

1. The ground surface surrounding the exterior of the structures should be sloped to drain away from the foundations in all directions. We recommend a slope of at least 12 inches in the first 10 feet around the structures, where possible. In no case should the slope be less than 6 inches in the first 5 feet. The ground surface should be sloped so that water will not pond adjacent to the foundations.

2. Backfill around foundation walls should be moistened and compacted. Foundation backfill should be moisture conditioned to within 2 percent of optimum moisture centered and compacted to at least 90 percent of the maximum standard Proctor (ASTM D698) dry density. Foundation backfill supporting concrete flatwork or other structural components should be moisture conditioned and compacted to at least 95 percent of the maximum standard Proctor dry density.

3. Roof downspouts and drains should discharge well beyond the limits of all backfill. Splash blocks and downspout extenders should be provided at all discharge points.

4. Landscaping, if any, should be carefully designed to minimize irrigation. Plants used close to foundations should be limited to those with low moisture requirements; irrigated grass should not be located within 5 feet of the foundation. Sprinklers should not discharge within 5 feet of foundations. Irrigation should be limited to the minimum amount sufficient to maintain vegetation; application of more water will increase likelihood of slab and foundation movements.

5. Impervious plastic membranes should not be used to cover the ground surface immediately surrounding the structures. These membranes tend to trap moisture and prevent normal evaporation from occurring. Geotextile fabrics can be used to limit the weed growth and allow for evaporation.

## CONSTRUCTION MONITORING

Geotechnical Engineering Group, Inc. should be retained to provide general review of construction plans for compliance with our recommendations. Geotechnical Engineering Group, Inc. should be retained to provide construction-monitoring services during all earthwork and foundation construction phases of the work. This is to observe the construction with respect to the geotechnical recommendations, to enable design changes in the event that subsurface conditions differ from those anticipated prior to start of construction and to give the owner a greater degree of confidence that the additions are constructed in accordance with the geotechnical recommendations.

## LIMITATIONS

Four exploratory borings were drilled in the proposed structure areas at locations requested by Sun Valley Engineering. The exploratory borings are representative of conditions encountered only at the exact boring locations. Variations in the subsoil conditions not indicated by the borings are always possible. Our representative should be called to monitor deep foundation installation and provide actual pile capacities based on actual installation conditions. Our representative should observe open foundation excavations, observe proof roll and test compaction of subgrade and structural fill soils (as applicable) to confirm soils are as anticipated from the borings and foundations are prepared as recommended herein.

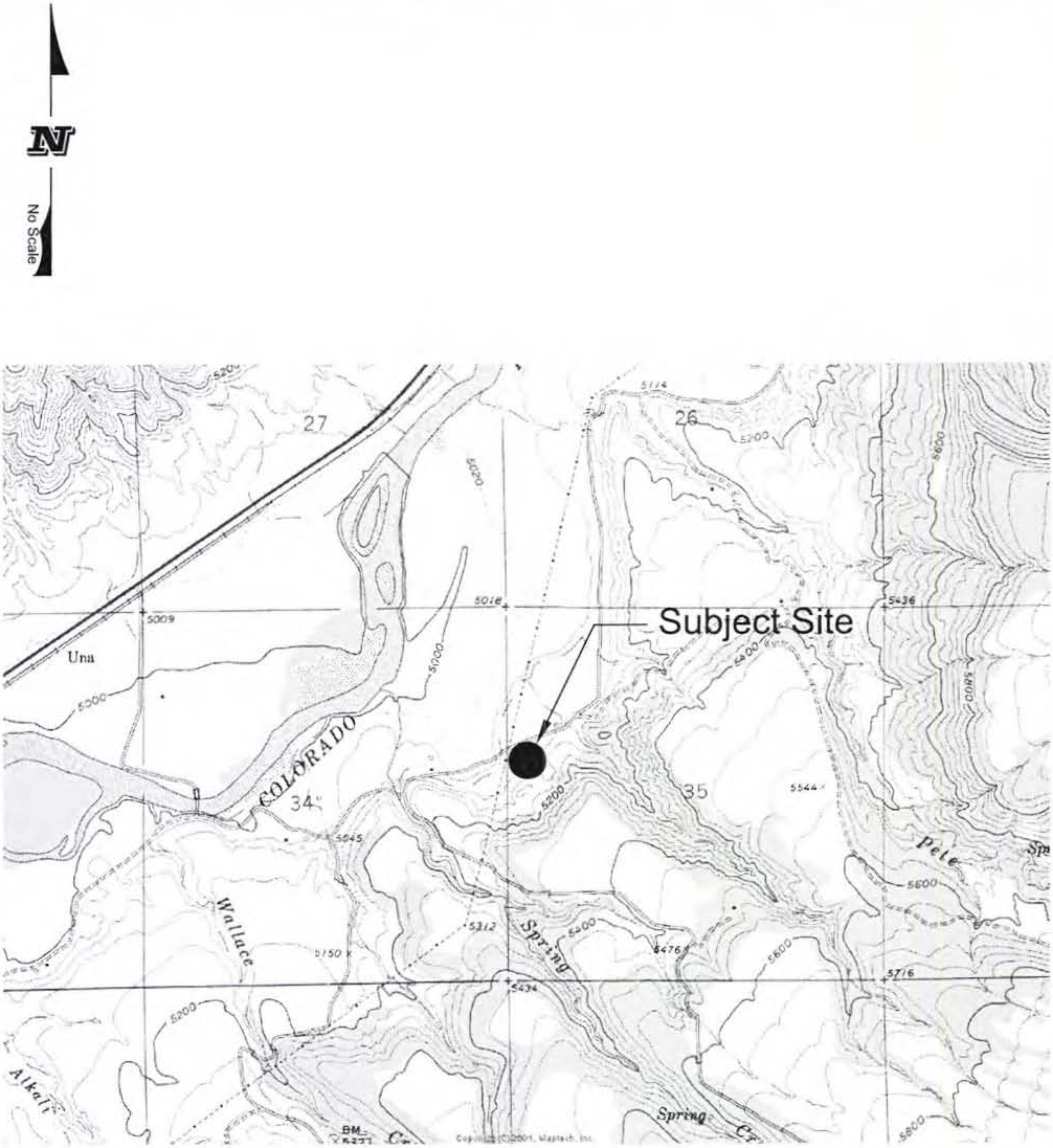
The scope of work performed is specific to the proposed construction and the client identified by this report. Any other use of the data, recommendations and design parameters (as applicable) provided within this report are not appropriate applications. Other proposed construction and / or reliance by other clients will require project specific review by this firm. Changes in site conditions can occur with time. Changes in standard of practice also occur with time. This report should not be relied upon after a period of three years from the date of this report and is subject to review by this firm in light of new information which may periodically become known.

We believe this investigation was conducted in a manner consistent with that level of care and skill ordinarily used by geotechnical engineers practicing in this area at this time. No other warranty, express or implied, is made. If we can be of further service in discussing the contents of this report or the analysis of the influence of the subsurface conditions on the development or design of the proposed construction, please call.

**Sincerely,**
**GEOTECHNICAL ENGINEERING GROUP, INC.**

**Norman W. Johnston, P.E.**
**Senior Engineer**

NWJ:nj
(1 copy sent)
(1 copy by E-mail: sve@silverstar.com)




| | | |
|---|---|---|
| Geotechnical Engineering Group, Inc. | Una Compressor Station | DATE: 10/28/2008 |
| GEG JOB NO. 3,071 | | Fig. 1 |

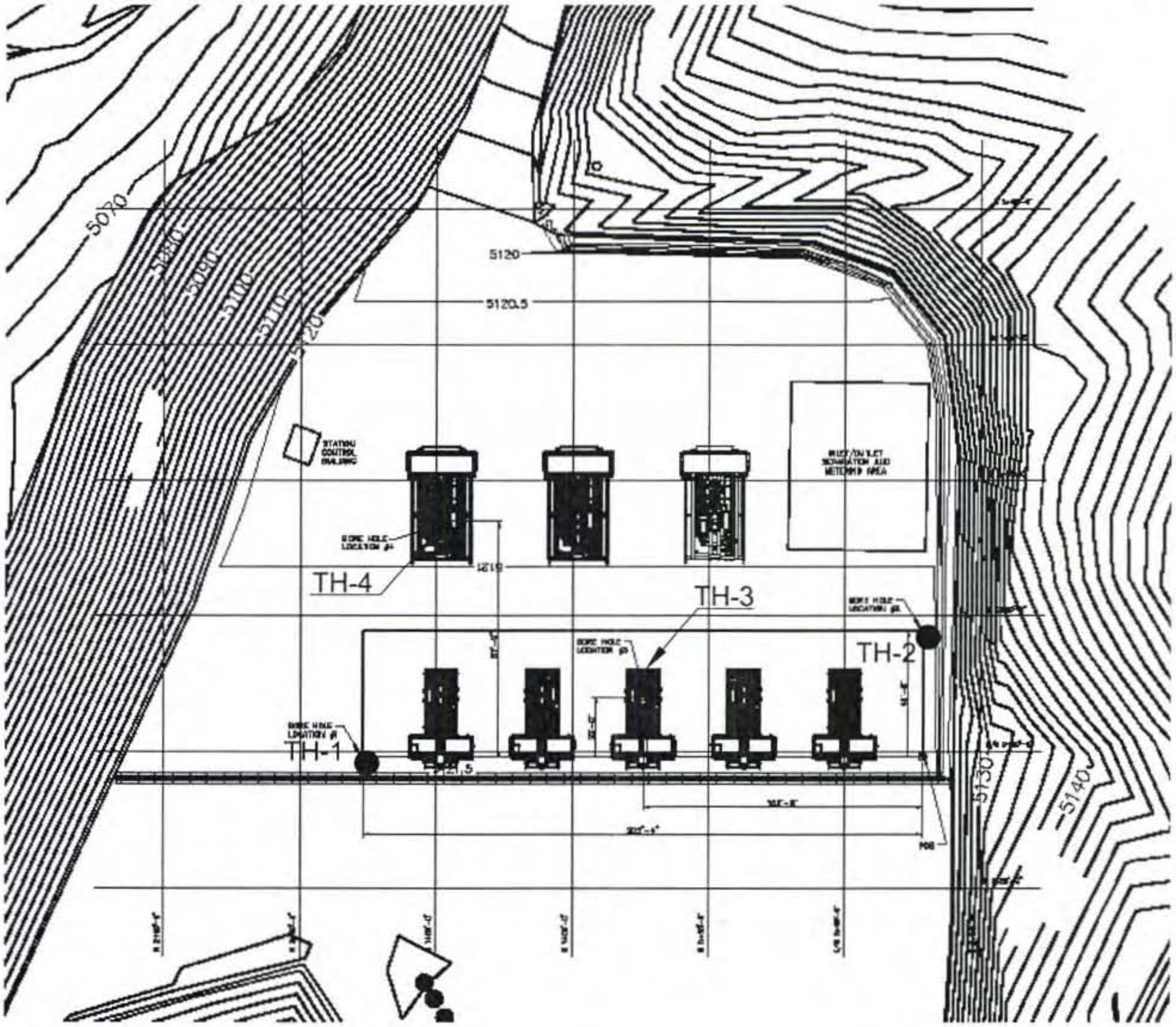
Note: This figure was based on drawing UN-BHL-100.dwg provided by Williams Production RMT Company, dated September, 2008 and notes obtained during our field study, and is intended to show test boring locations only.

Note: Longitude, latitude, and elevation are based on a handheld GPS, and are approximate.

| Bore | Longitude | Latitude | Elevation |
|---|---|---|---|
| TH-1 | 108°5'5.100" | 39°23'42.144" | N/A |
| TH-2 | 108°5'3.804" | 39°23'42.504" | N/A |
| TH-3 | 108°5'6.432" | 39°23'42.072" | N/A |
| TH-4 | 108°5'6.00" | 39°23'42.828" | N/A |

N

No Scale




● Indicates approximate test boring locations.

| | | |
|---|---|---|
| Geotechnical Engineering Group, Inc. | Una Compressor Station<br>Test Boring Location Map | DATE: 10/28/2008 |
| GEG JOB NO. 3,071 | | Fig. 2 |

Geotechnical Engineering Group, Inc.

# KEY TO SYMBOLS

Symbol Description

Strata Symbols

Clay, sandy, slightly gravelly, with cobbles and boulders, medium stiff to stiff, moist, brown (CL)

Boulders, very dense, dry, tan

Notes:

1. SH - Thinwall Tube Sample.
2. CT - Modified California Barrel Sample.
3. STD - Standard Split Barrel Sample.
4. Bulk - Bulk Disturbed Sample.
5. 15/12 - Indicates Standard Penetration test where 15 Blows with a 140 LB hammer falling 30 inches was required to drive the sampler 12 inches.
6. Exploratory test borings were excavated on 10/03/08 using a track mounted 4 inch diameter solid stem power auger.
7. These logs are subject to the interpretation by GEG of the soils encountered and limitations, conclusions, and recommendations in this report.

**Geotechnical Engineering Group, Inc.**

## LOG OF TEST BORING TH-1

PROJECT: UNA Compressor Station Garfield County
PROJECT NO.: 3,071
CLIENT:
LOCATION: See Fig. 2
ELEVATION:
DRILLER: Odell CME 55
LOGGED BY: MF
DEPTH TO WATER> INITIAL: NE
AFTER 24 HOURS:
DATE: 10/03/08
DEPTH TO CAVING:

| Depth (feet) | Description | Graphic | Sample Type | Blow Counts | Notes |
|---|---|---|---|---|---|
| 0 | Clay, sandy, slightly gravelly, with cobbles and boulders, stiff, moist, brown (CL) | | BULK | | |
| 5 | | | CT | 15/12 | |
| | | | CT | 12/12 | |
| 10 | | | CT | 24/12 | |
| | Bottom of boring when terminated: 11.5 ft. Auger Refusal. | | CT | 50/0 | |
| 15 | | | | | |
| 20 | | | | | |
| 25 | | | | | |
| 30 | | | | | |
| 35 | | | | | |

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure 4

Geotechnical Engineering Group, Inc.

## LOG OF TEST BORING TH-2

| | |
|---|---|
| PROJECT: UNA Compressor Station Garfield County | PROJECT NO.: 3,071 |
| CLIENT: | |
| LOCATION: See Fig. 2 | ELEVATION: |
| DRILLER: Odell CME 55 | LOGGED BY: MF |
| DEPTH TO WATER> INITIAL: NE | AFTER 24 HOURS: |
| DATE: 10/03/08 | DEPTH TO CAVING: |

| Depth (feet) | Description | Graphic | Sample Type | Blow Counts | Notes |
|---|---|---|---|---|---|
| 0 | Clay, sandy, slightly gravelly, with cobbles and boulders, stiff, slightly dry, tan, slightly red (CL) | | BULK | | |
| | | | CT | 37/12 | |
| 5 | | | CT | 40/11 | |
| | | | CT | 50/0 | |
| | Bottom of boring when terminated: 5.5 ft. Auger Refusal | | | | |
| 10 | | | | | |
| 15 | | | | | |
| 20 | | | | | |
| 25 | | | | | |
| 30 | | | | | |
| 35 | | | | | |

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure 5

Geotechnical Engineering Group, Inc.

**LOG OF TEST BORING TH-3**

PROJECT: UNA Compressor Station Garfield County | PROJECT NO.: 3,071
CLIENT:
LOCATION: See Fig. 2 | ELEVATION:
DRILLER: Odell CME 55 | LOGGED BY: MF
DEPTH TO WATER> INITIAL: NE | AFTER 24 HOURS:
DATE: 10/02/08 | DEPTH TO CAVING:

| Depth (feet) | Description | Graphic | Sample Type | Blow Counts | Notes |
|---|---|---|---|---|---|
| 0 | Clay, sandy, slightly gravelly, with cobbles and boulders, medium stiff, slightly moist, brown (CL) | | | | |
| | | | BULK | | |
| 5 | | | CT | 7/12 | |
| 10 | | | CT | 12/12 | |
| 15 | | | | | |
| 20 | | | CT | 17/12 | |
| 25 | | | | | |
| 27.5 | Boulders, very dense, dry, tan | | | | |
| | Bottom of boring when terminated: 28.5 ft. Auger Refusal | | SPT | 37/12 50/1 | |
| 30 | | | | | |
| 35 | | | | | |

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Geotechnical Engineering Group, Inc.

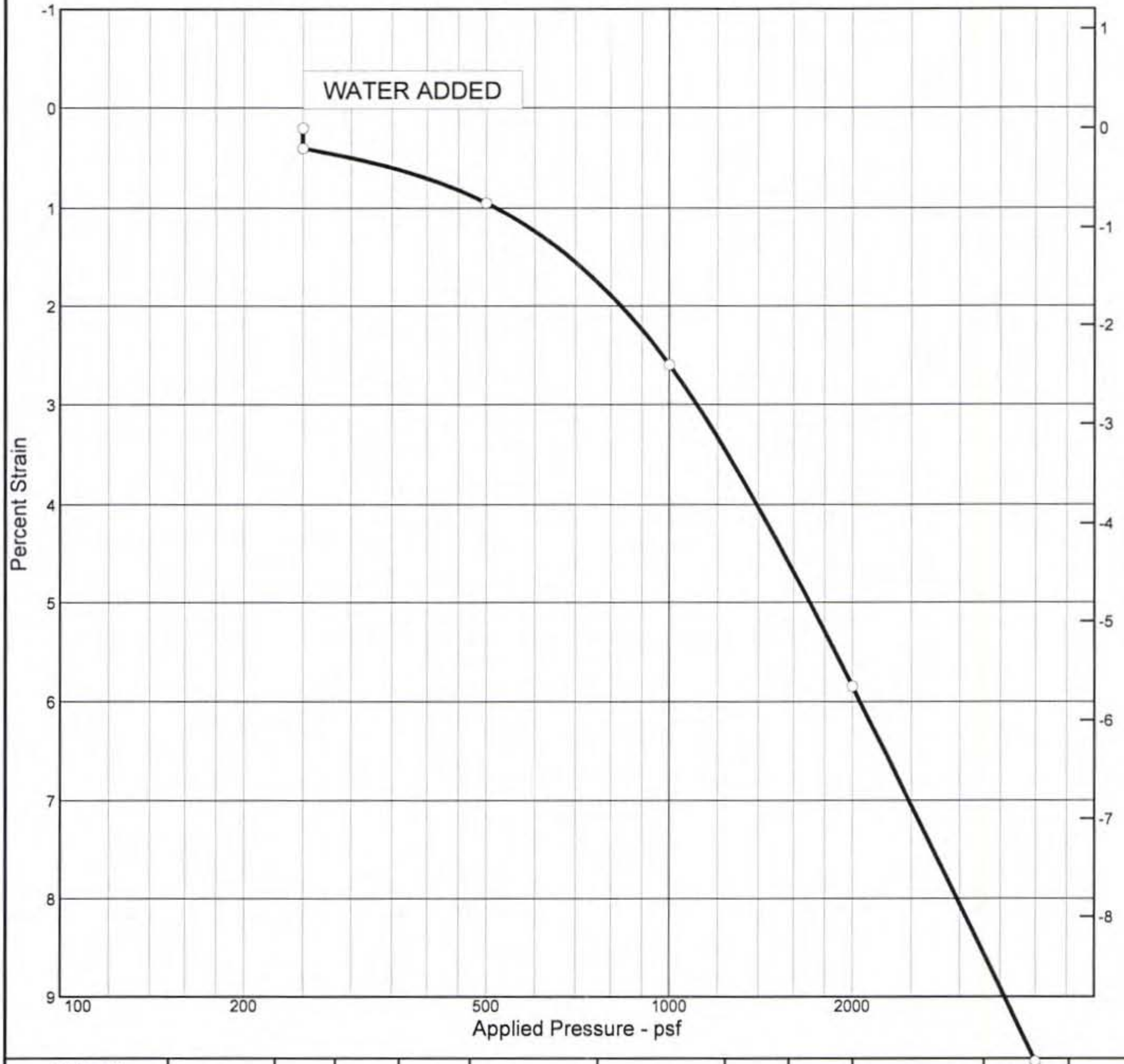
## LOG OF TEST BORING TH-4

PROJECT: UNA Compressor Station Garfield County
PROJECT NO.: 3,071
CLIENT:
LOCATION: See Fig. 2
ELEVATION:
DRILLER: Odell CME 55
LOGGED BY: MF
DEPTH TO WATER> INITIAL: NE
AFTER 24 HOURS:
DATE: 10/02/08
DEPTH TO CAVING:

| Depth (feet) | Description | Graphic | Sample Type | Blow Counts | Notes |
|---|---|---|---|---|---|
| 0 | Clay, sandy, gravelly, with cobbles and boulders, stiff, slightly moist, brown to slightly tan (CL) | | BULK | | |
| 5 | | | CT | 9/12 | |
| 10 | | | CT | 15/12 | |
| 15 | | | | | |
| 20 | | | CT | 19/12 | |
| 25 | | | | | |
| 28.5 | Bottom of boring when terminated: 28.5 ft. Auger Refusal | | CT | 37/9 | |
| 30 | | | | | |
| 35 | | | | | |

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

# SWELL / CONSOLIDATION TEST REPORT




| Natural Sat. | Natural Moist. | Dry Dens. (pcf) | LL | PI | Sp. Gr. | Overburden (psf) | $P_c$ (psf) | $C_c$ | $C_r$ | Swell Press. (psf) | Heave % | $e_o$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10.8 % | 93.7 | | | | | 961 | | | | -0.2 | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| | | |

**Project No.** 3,071 **Client:**

**Project:** UNA Compressor Station Garfield County

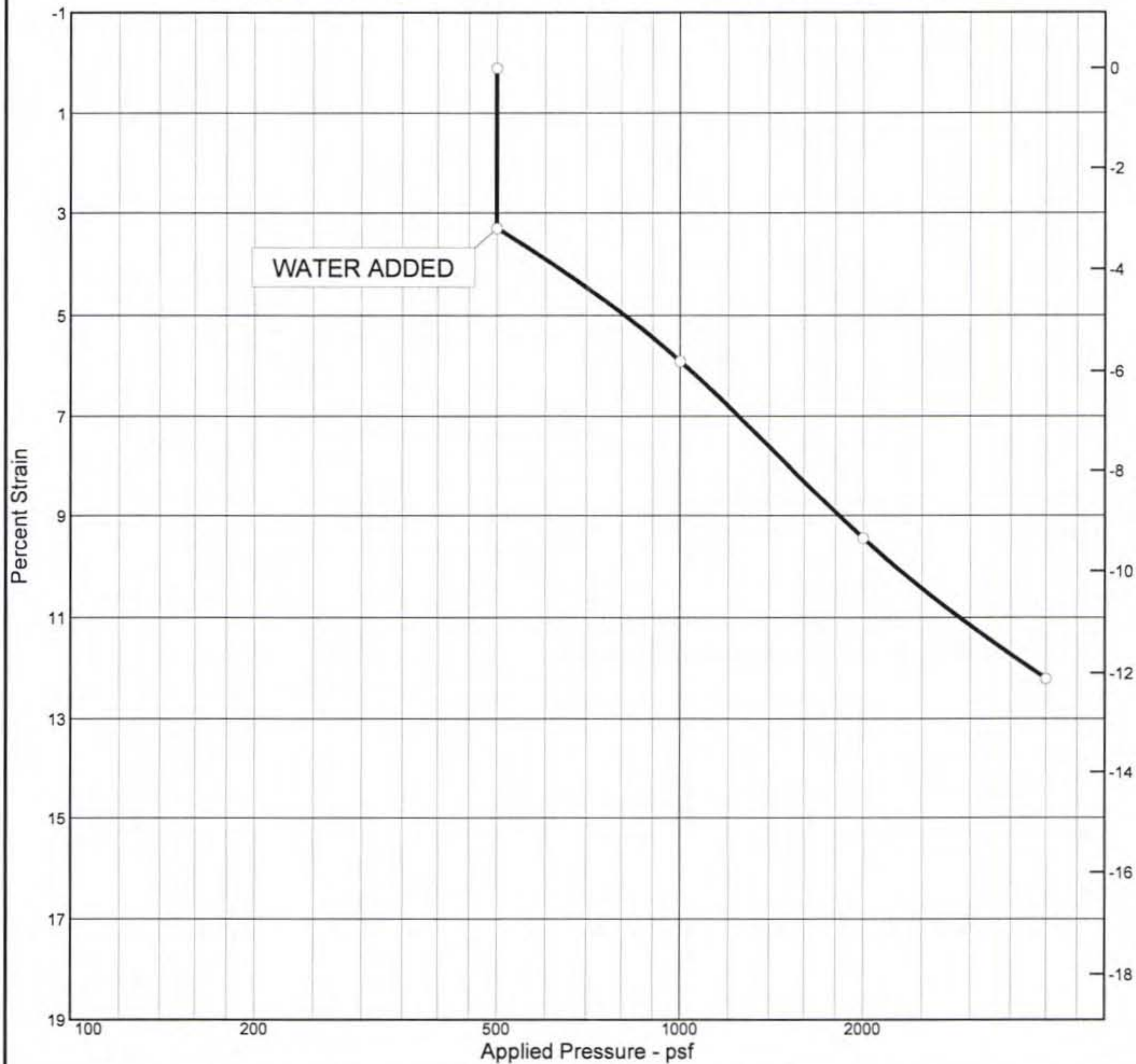
**Source:** TH-1 **Elev./Depth:** 4

Geotechnical Engineering Group, Inc.

**Remarks:**

**Figure** 8

# SWELL / CONSOLIDATION TEST REPORT




| Natural | | Dry Dens. (pcf) | LL | PI | Sp. Gr. | Overburden (psf) | $P_c$ (psf) | $C_c$ | $C_r$ | Swell Press. (psf) | Heave % | $e_o$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sat. | Moist. | | | | | | | | | | | |
| | 13.0 % | 115.0 | | | | | 522 | | | | -3.2 | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| | | |

**Project No.** 3,071 **Client:**

**Project:** UNA Compressor Station Garfield County

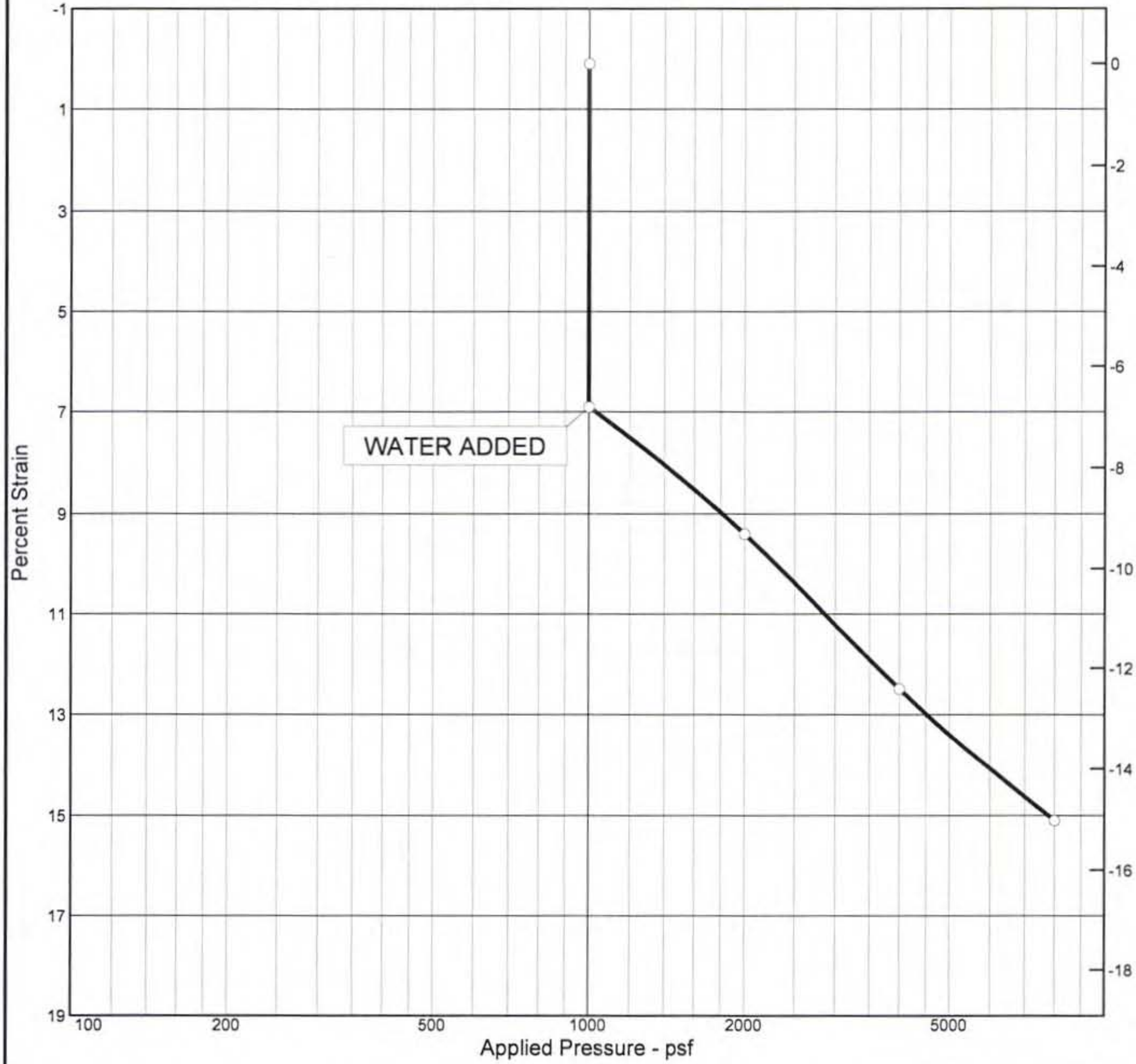
**Source:** TH-3 **Elev./Depth:** 9

**Remarks:**

Geotechnical Engineering Group, Inc.

**Figure** 9

# SWELL / CONSOLIDATION TEST REPORT




| Natural | | Dry Dens. (pcf) | LL | PI | Sp. Gr. | Overburden (psf) | $P_c$ (psf) | $C_c$ | $C_r$ | Swell Press. (psf) | Heave % | $e_o$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sat. | Moist. | | | | | | | | | | | |
| | 12.8 % | 98.4 | | | | | 1351 | | | | -6.8 | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| | | |

**Project No.** 3,071 **Client:**

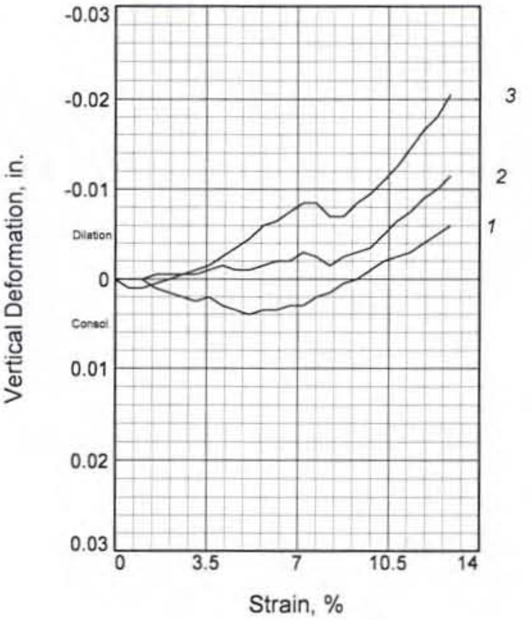
**Project:** UNA Compressor Station Garfield County

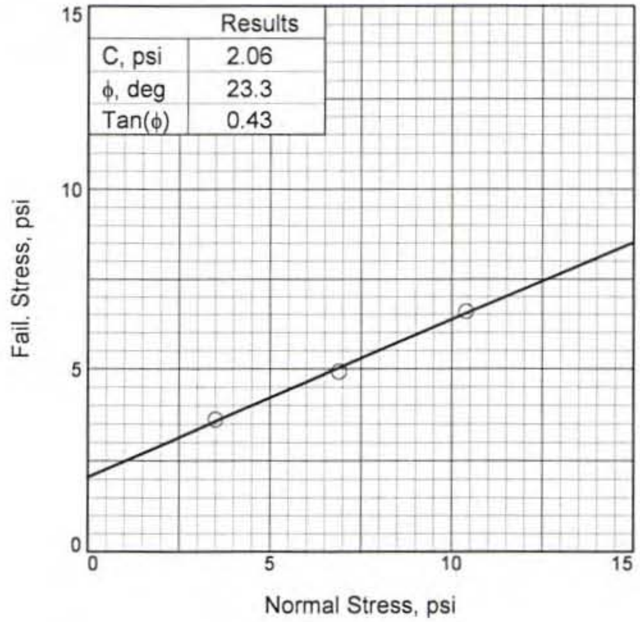
**Source:** TH-4 **Elev./Depth:** 19

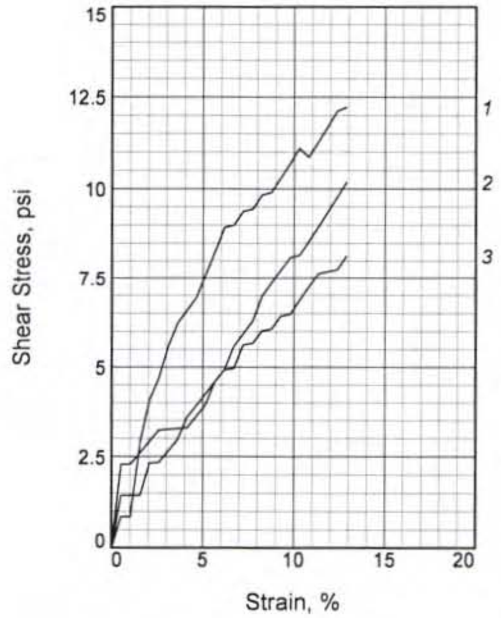
**Remarks:**

Geotechnical Engineering Group, Inc.

**Figure** 10




| | Sample No. | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 9.8 | 9.8 | 9.8 |
| | Dry Density, pcf | 104.6 | 104.6 | 104.6 |
| | Saturation, % | 44.5 | 44.5 | 44.5 |
| | Void Ratio | 0.5809 | 0.5809 | 0.5809 |
| | Diameter, in. | 1.94 | 1.94 | 1.94 |
| | Height, in. | 1.00 | 1.00 | 1.00 |
| At Test | Water Content, % | 20.9 | 20.9 | 20.9 |
| | Dry Density, pcf | 104.6 | 104.6 | 104.6 |
| | Saturation, % | 95.3 | 95.3 | 95.3 |
| | Void Ratio | 0.5809 | 0.5809 | 0.5809 |
| | Diameter, in. | 1.94 | 1.94 | 1.94 |
| | Height, in. | 1.00 | 1.00 | 1.00 |
| Normal Stress, psi | | 10.40 | 6.90 | 3.50 |
| Fail. Stress, psi | | 6.59 | 4.93 | 3.62 |
| Strain, % | | 4.1 | 6.2 | 4.6 |
| Ult. Stress, psi | | | | |
| Strain, % | | | | |
| Strain rate, in./min. | | 0.63 | 0.63 | 0.63 |

**Sample Type:**
**Description:**

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Figure** 11

**Client:**

**Project:** UNA Compressor Station Garfield County

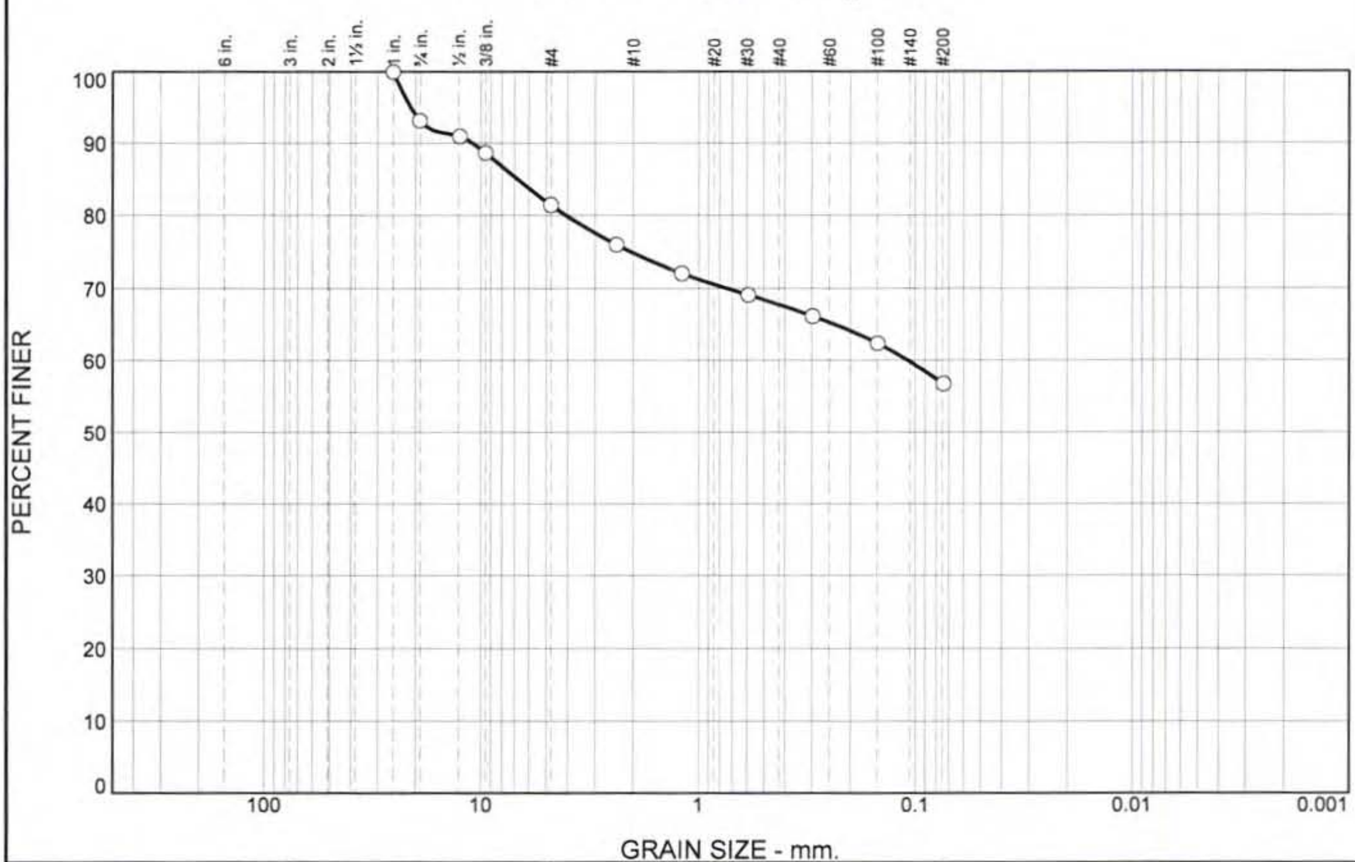
**Source of Sample:** TH-4 **Depth:** 9

**Proj. No.:** 3,071 **Date Sampled:** 10/03/08

Geotechnical Engineering Group, Inc.

**Tested By:** JM **Checked By:** LM

# Gradation Test Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 7 | 12 | 6 | 7 | 11 | 57 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.0" | 100 | | |
| 3/4" | 93 | | |
| 1/2" | 91 | | |
| 3/8" | 89 | | |
| #4 | 81 | | |
| #8 | 76 | | |
| #16 | 72 | | |
| #30 | 69 | | |
| #50 | 66 | | |
| #100 | 62 | | |
| #200 | 57 | | |

* (no specification provided)

**Material Description**

Clay, slightly gravelly, dense, moist, brown (CL)

**Atterberg Limits (ASTM D 4318)**

PL= 14 LL= 28 PI= 14

**Classification**

USCS= CL AASHTO= A-6(5)

**Coefficients**

$D_{85}$= 6.7620 $D_{60}$= 0.1078 $D_{50}$=
$D_{30}$= $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Date Tested:** 10/08/08 **Tested By:** SP

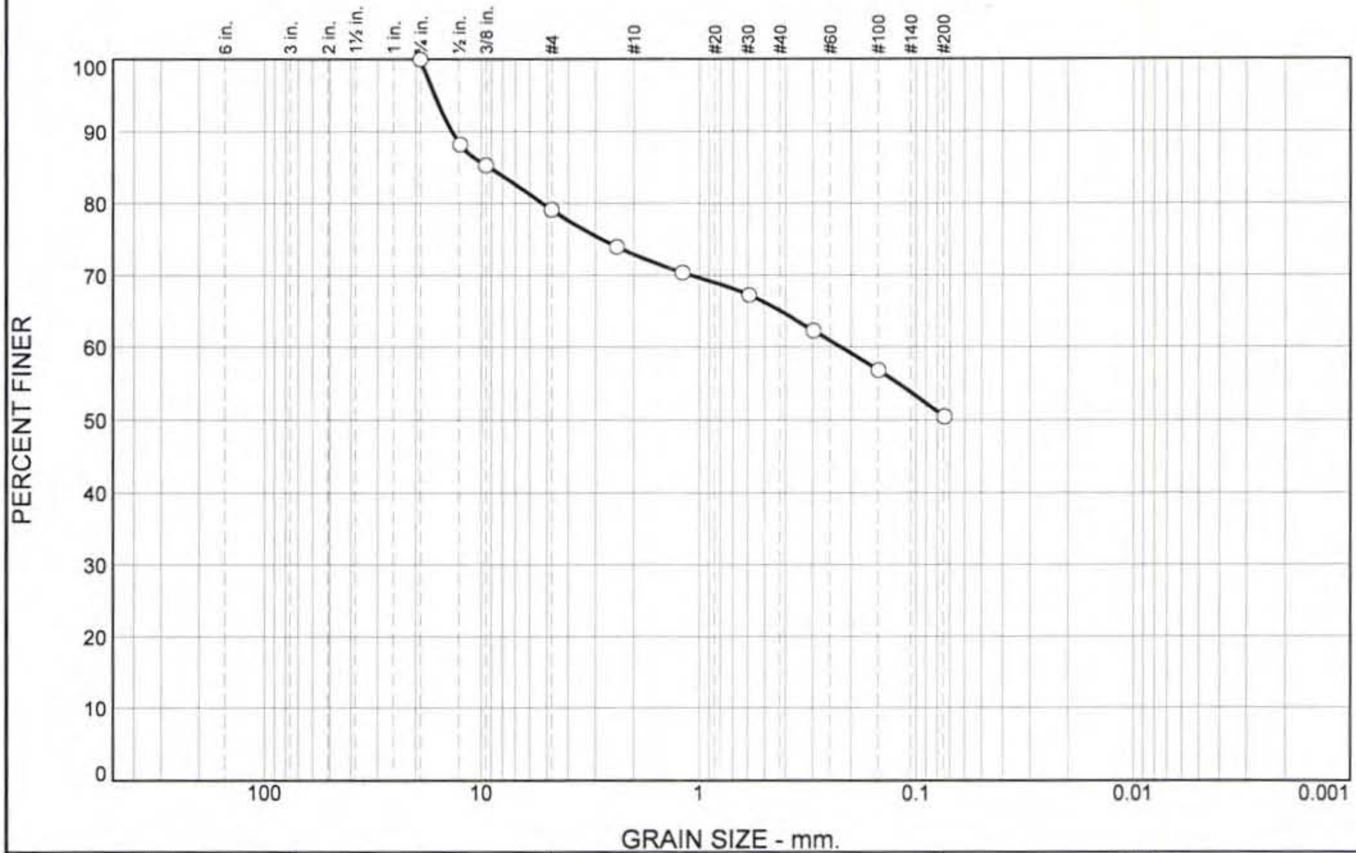
**Remarks**

**Sample No.:** **Source of Sample:** TH-1 **Date Sampled:** 10/03/08
**Location:** **Elev./Depth:** 0-5
**Checked By:** LM **Title:**

Geotechnical Engineering Group, Inc.

**Client:**
**Project:** UNA Compressor Station Garfield County
**Project No:** 3,071 **Figure** 12

# Gradation Test Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 21 | 6 | 8 | 14 | 51 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 3/4" | 100 | | |
| 1/2" | 88 | | |
| 3/8" | 85 | | |
| #4 | 79 | | |
| #8 | 74 | | |
| #16 | 70 | | |
| #30 | 67 | | |
| #50 | 62 | | |
| #100 | 57 | | |
| #200 | 50 | | |

* (no specification provided)

**Material Description**

Clay, slightly gravelly, dense, slightly dry, tan, slightly red (CG)

**Atterberg Limits (ASTM D 4318)**

PL= 14 LL= 27 PI= 13

**Classification**

USCS= CL AASHTO= A-6(3)

**Coefficients**

$D_{85}$= 9.0914 $D_{60}$= 0.2216 $D_{50}$=
$D_{30}$= $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Date Tested:** 10/08/08 **Tested By:** SP

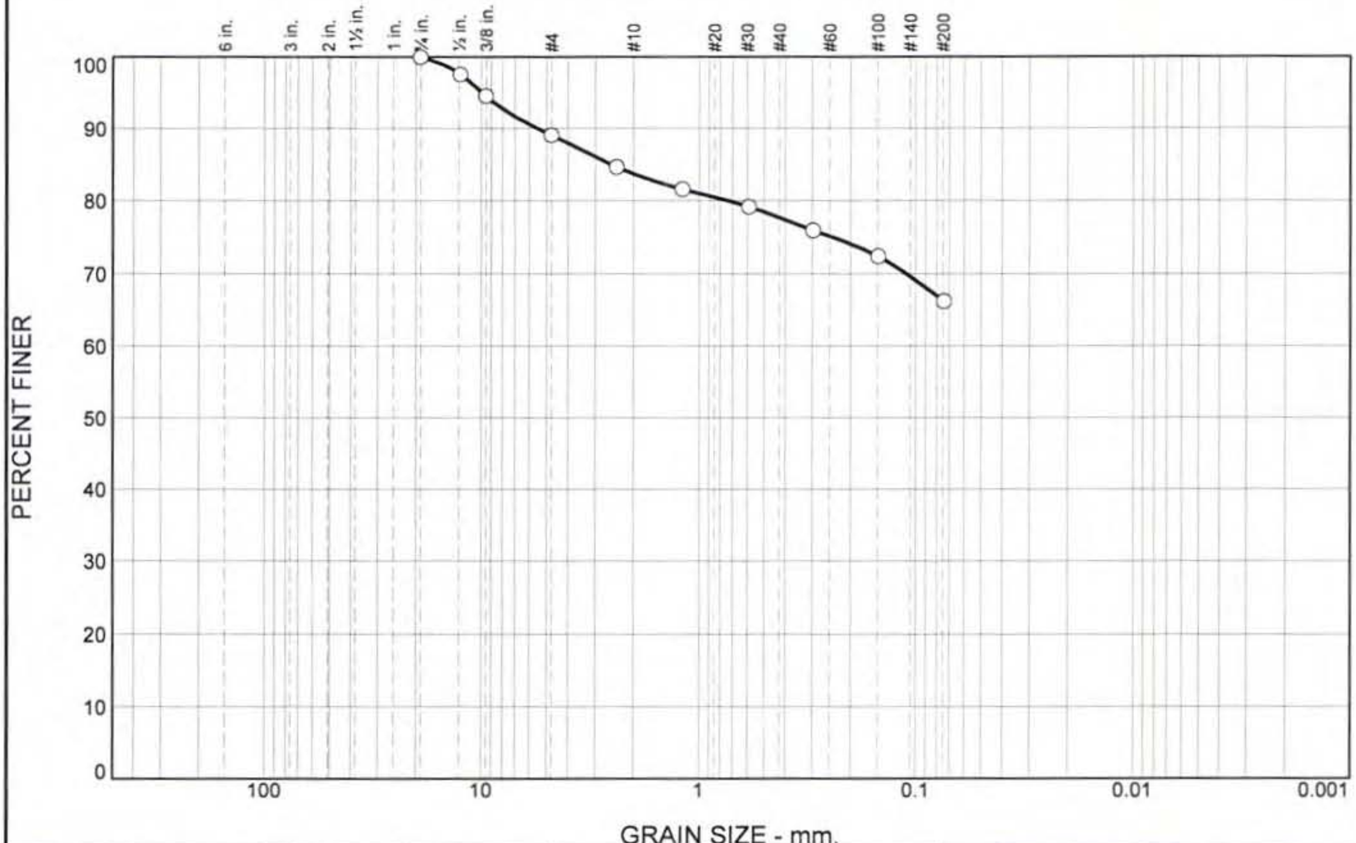
**Remarks**

**Sample No.:** **Source of Sample:** TH-2 **Date Sampled:** 10/03/08
**Location:** **Elev./Depth:** 0-5
**Checked By:** LM **Title:**

Geotechnical Engineering Group, Inc.

**Client:**
**Project:** UNA Compressor Station Garfield County
**Project No:** 3,071 **Figure** 13

# Gradation Test Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 11 | 5 | 6 | 12 | 66 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 3/4" | 100 | | |
| 1/2" | 98 | | |
| 3/8" | 95 | | |
| #4 | 89 | | |
| #8 | 85 | | |
| #16 | 82 | | |
| #30 | 79 | | |
| #50 | 76 | | |
| #100 | 72 | | |
| #200 | 66 | | |

* (no specification provided)

**Material Description**

Clay, slightly gravelly, medium dense, slightly moist, brown (CG)d

**Atterberg Limits (ASTM D 4318)**

PL= 14 LL= 30 PI= 16

**Classification**

USCS= CL AASHTO= A-6(8)

**Coefficients**

$D_{85}$= 2.5354 $D_{60}$= $D_{50}$=
$D_{30}$= $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Date Tested:** 10/08/08 **Tested By:** SP

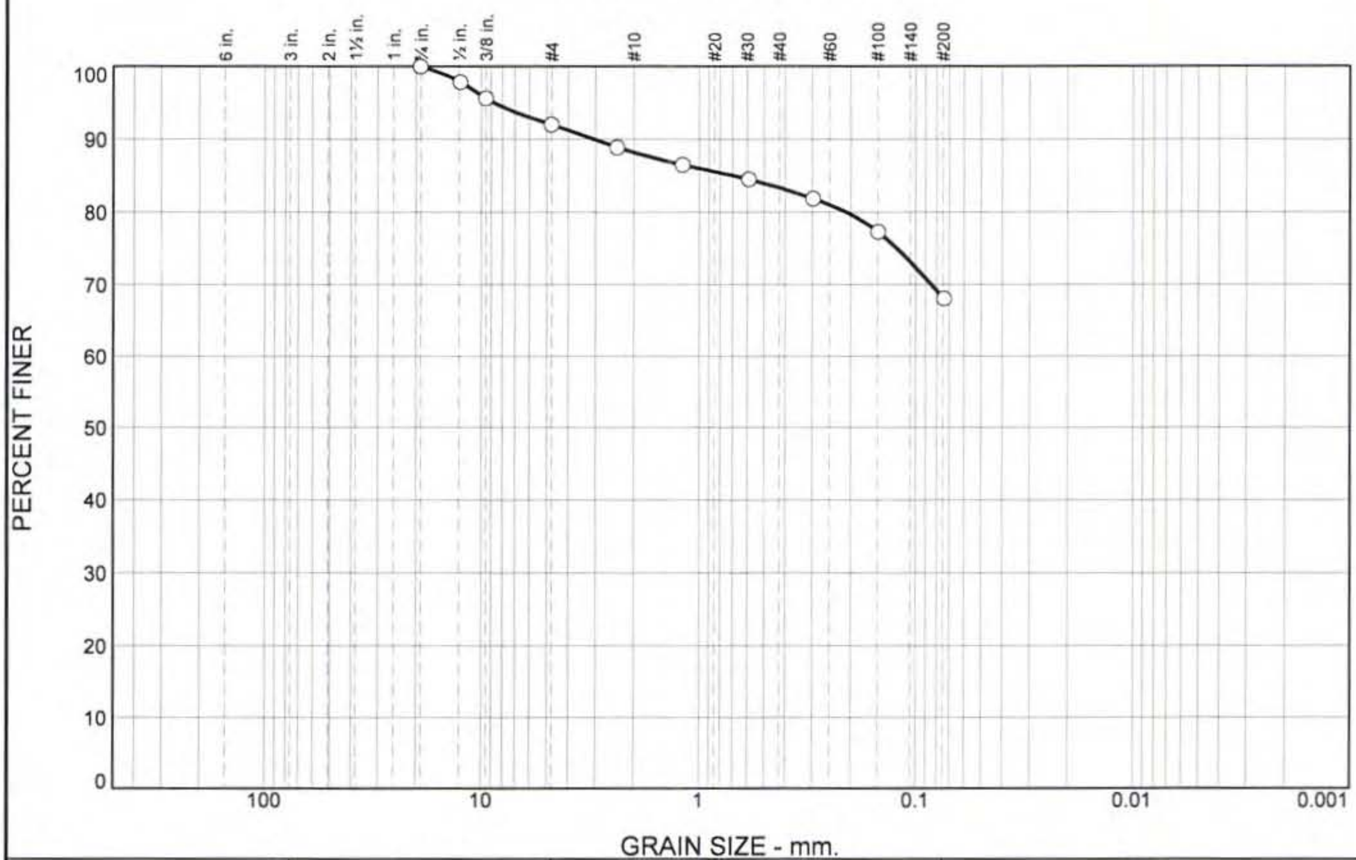
**Remarks**

**Sample No.:** **Source of Sample:** TH-3 **Date Sampled:** 10/03/08
**Location:** **Elev./Depth:** 0-5
**Checked By:** LM **Title:**

Geotechnical Engineering Group, Inc.

**Client:**
**Project:** UNA Compressor Station Garfield County
**Project No:** 3,071 **Figure** 14

# Gradation Test Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 8 | 4 | 5 | 15 | 68 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 3/4" | 100 | | |
| 1/2" | 98 | | |
| 3/8" | 96 | | |
| #4 | 92 | | |
| #8 | 89 | | |
| #16 | 87 | | |
| #30 | 85 | | |
| #50 | 82 | | |
| #100 | 77 | | |
| #200 | 68 | | |

* (no specification provided)

**Material Description**

TH-1, 2, 3 Blended

**Atterberg Limits (ASTM D 4318)**

PL= 17 LL= 27 PI= 9

**Classification**

USCS= CL AASHTO= A-4(4)

**Coefficients**

$D_{85}$= 0.6897 $D_{60}$= $D_{50}$=
$D_{30}$= $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Date Tested:** 10/15/08 **Tested By:** SP

**Remarks**

**Sample No.:** **Source of Sample:** 1-3Blend **Date Sampled:** 10/03/08
**Location:** **Elev./Depth:** 0-5
**Checked By:** LM **Title:**

Geotechnical Engineering Group, Inc.

**Client:**
**Project:** UNA Compressor Station Garfield County
**Project No:** 3,071 **Figure** 15

# Moisture-Density Relationship Curve ( Proctor )

Geotechnical Engineering Group, Inc.

**Curve No.: 1**

**Project No.:** 3,071 **Date:**

**Project:** UNA Compressor Station Garfield County

**Source:** 1-3Blend **Elev./Depth:** 0-5 **Sample No.**

**Remarks:**

**MATERIAL DESCRIPTION**

**Description:** TH-1, 2, 3 Blended

**Classifications -** **USCS:** CL **AASHTO:** A-4(4)

**Nat. Moist. =** 6.6 % **Sp.G. =**

**Liquid Limit =** 27 **Plasticity Index =** 9

**% > 3/8 in. =** 4.0 % **% < No.200 =** 68 %

| TEST RESULTS |
|---|
| Maximum dry density = 114.5 pcf |
| Optimum moisture = 13.0 % |

**Test specification:**
ASTM D 698-00a Method B Standard

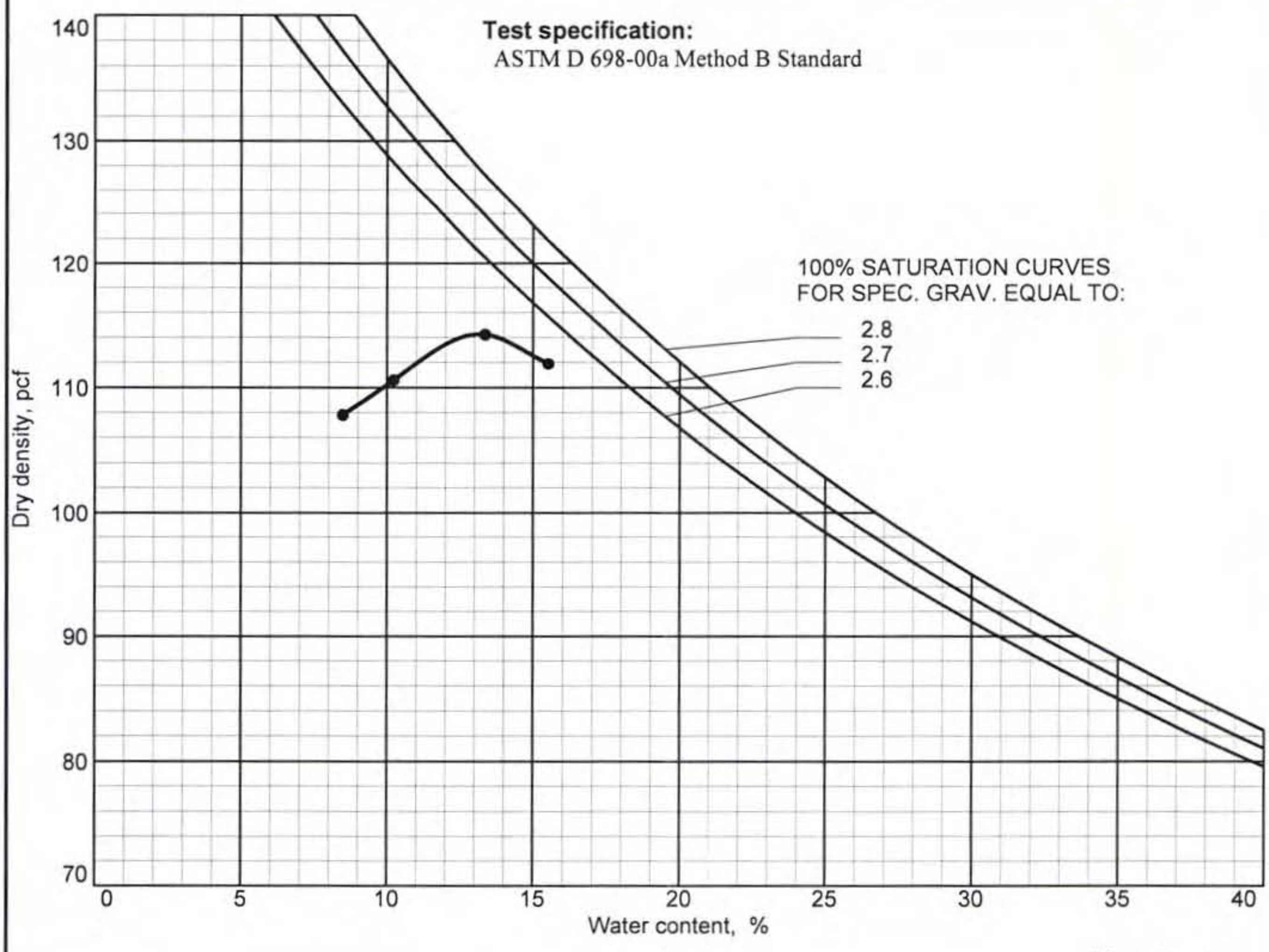
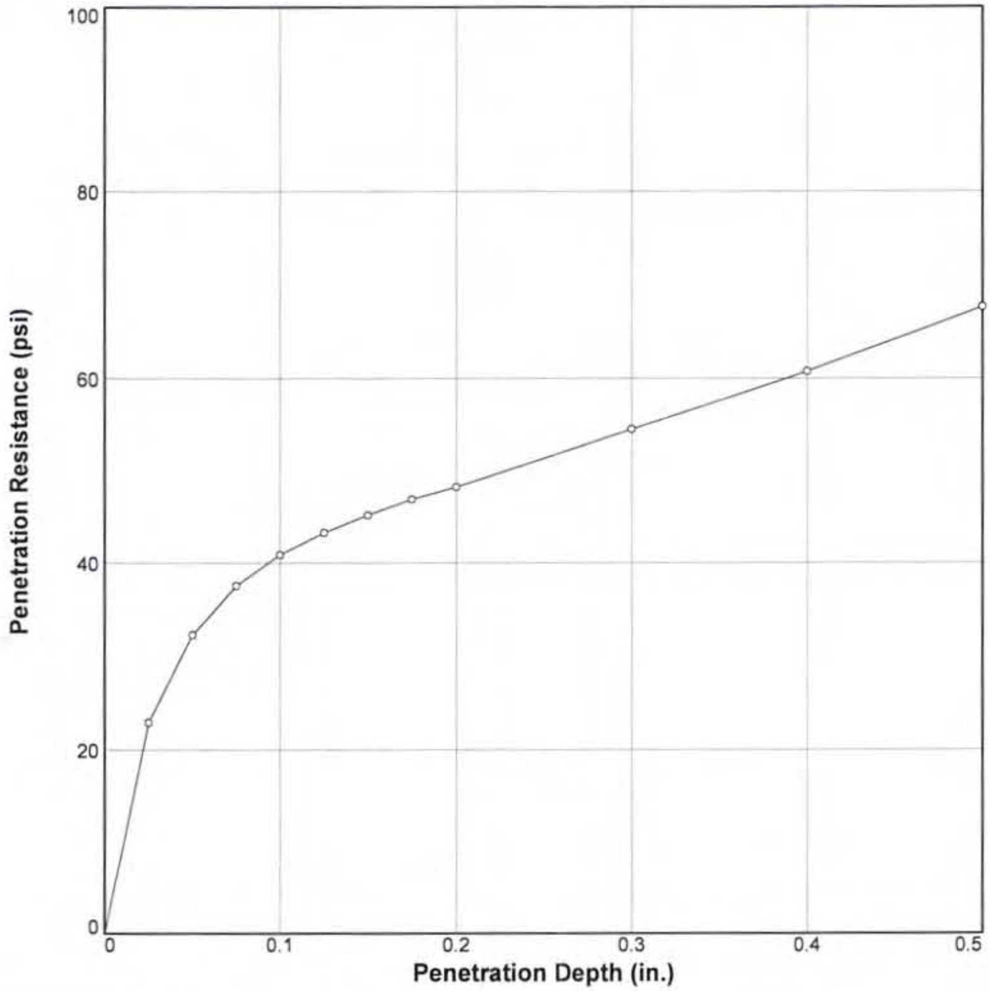



**Figure** 16

# BEARING RATIO TEST REPORT
## ASTM D 1883-99




| | Molded | | | Soaked | | | CBR (%) | | Linearity Correction (in.) | Surcharge (lbs.) | Max. Swell (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Density (pcf) | Percent of Max. Dens. | Moisture (%) | Density (pcf) | Percent of Max. Dens. | Moisture (%) | 0.10 in. | 0.20 in. | | | |
| 1 ○ | 99.0 | 86.5 | 12.4 | 99.0 | 86.6 | 19.4 | 4.1 | 3.2 | 0.000 | 17.6490 | 0 |
| 2 △ | | | | | | | | | | | |
| 3 □ | | | | | | | | | | | |

| Material Description | USCS | Max. Dens. (pcf) | Optimum Moisture (%) | LL | PI |
|---|---|---|---|---|---|
| TH-1, 2, 3 Blended | CL | 114.5 | 13.0 | 27 | 9 |

**Project No:** 3,071

**Project:** UNA Compressor Station Garfield County

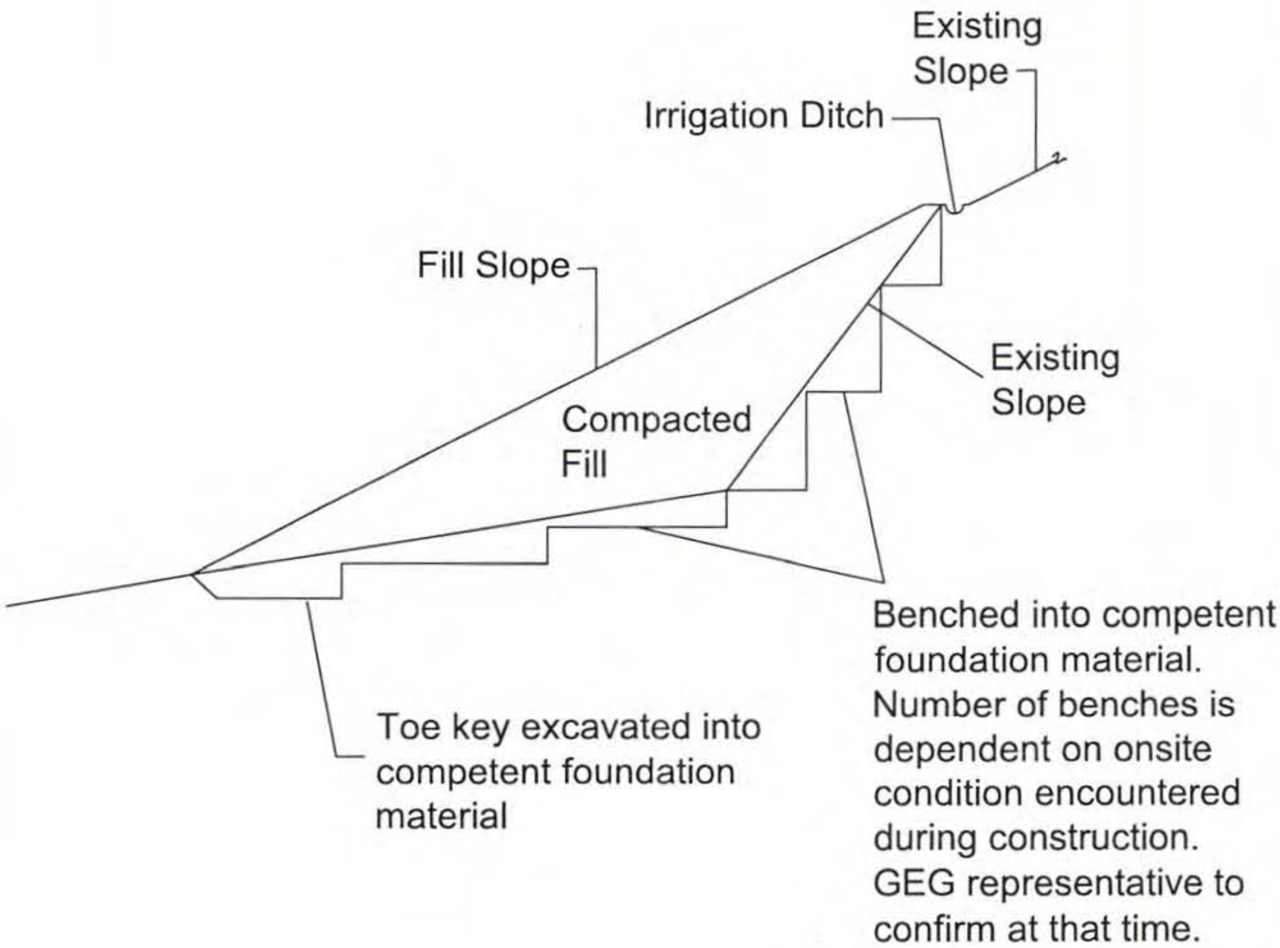
**Source of Sample:** 1-3Blend **Depth:** 0-5

**Date:** 10/03/08

Geotechnical Engineering Group, Inc.

**Test Description/Remarks:**

**Figure** 17



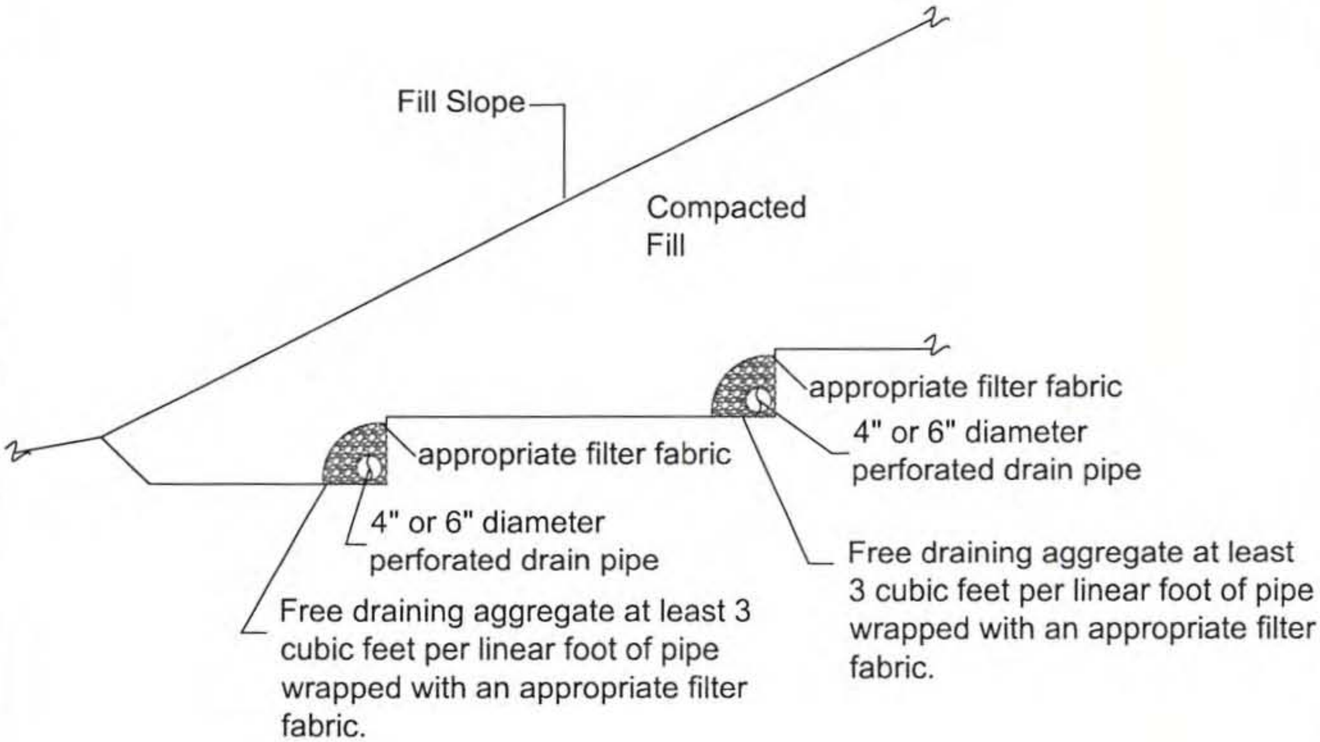

Geotechnical Engineering Group, Inc.

Recommended Key and Bench Into Existing Slopes Concept

DATE: 10/29/2008

GEG JOB NO. 3.071

Fig. 18




| | | |
|---|---|---|
| Geotechnical Engineering Group, Inc. | *Toe Key and Bench Drain Details* | *DATE:* 10/29/2008 |
| *GEG JOB NO.* 3.071 | | *Fig.* 19 |

Geotechnical Engineering Group, Inc.

Job No. 3071

# TABLE I

## SUMMARY OF LABORATORY TEST RESULTS

| Hole | Depth (feet) | Natural Moisture (%) | Dry Density (pcf) | Atterberg Limits | | Swell / Consolidation | | | Direct Shear | | Passing No. 200 Sieve (%) | Water Soluble Sulfates (ppm) | Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Liquid Limit (%) | Plasticity Index (%) | Swell (%) | Confining Pressure (psf) | Estimated Swell Pressure (psf) | Internal Angle of Friction (Degrees) | Cohesion (psf) | | | |
| TH-1 | 0 to 5 | 4.1 | -- | 28 | 14 | -- | -- | -- | -- | -- | 56 | 5,000 | Clay, slightly gravelly (CL) |
| TH-1 | 4 | 10.8 | 94 | -- | -- | -0.2 | 250 | -- | -- | -- | -- | -- | Clay, slightly gravelly (CL) |
| TH-2 | 0 to 5 | 3.2 | -- | 27 | 13 | -- | -- | -- | -- | -- | 50 | 1,300 | Clay, slightly gravelly (CL) |
| TH-3 | 0 to 5 | 11.0 | -- | 30 | 16 | -- | -- | -- | -- | -- | 65 | 3,800 | Clay, slightly gravelly (CL) |
| TH-3 | 9 | 13.0 | 115 | -- | -- | -3.2 | 500 | -- | -- | -- | -- | -- | Clay, slightly gravelly (CL) |
| TH-4 | 9 | 9.8 | 105 | -- | -- | -- | -- | 23 | 300 | -- | -- | -- | Clay, slightly gravelly (CL) |
| TH-4 | 19 | 12.8 | 98 | -- | -- | -6.8 | 1000 | -- | -- | -- | -- | -- | Clay, slightly gravelly (CL) |

**Geotechnical Engineering Group, Inc.**

## TABLE II

Job No. 3071

## SUMMARY OF LABORATORY TEST RESULTS

| Hole | Depth (Feet) | Natural Moisture | Atterberg Limits | | Standard Proctor (ASTM D698) | | CBR Value | Passing No. 200 Sieve (%) | Water Soluble Sulfates (ppm) | Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Liquid Limit (%) | Plasticity Index (%) | Maximum Dry Density (pcf) | Optimum Moisture Content (%) | | | | |
| TH-1, TH-2 and TH-3 | 0 to 5 | 6.6 | 27 | 9 | 114.5 | 13.0 | 3.2 | 68 | -- | Clay, gravelly (CL) |

# APPENDIX A

# SAMPLE SITE GRADING SPECIFICATIONS

**SAMPLE SITE GRADING SPECIFICATIONS**
**UNA Compressor Station**
**Garfield County, Colorado**

Note: Appendix A presents sample specifications. These sample specifications are not project specific. The sample specifications should be modified by the Architect, Civil engineer or Structural engineer as needed to reflect project specific requirements.)

## 1. DESCRIPTION

This item shall consist of the excavation, transportation, placement and compaction of materials from locations indicated on the plans, or staked by the Engineer, as necessary to achieve preliminary street and overlot elevations. These specifications shall also apply to compaction of excess cut materials that may be placed outside of the subdivision and/or filing boundaries.

## 2. GENERAL

The Soils Engineer shall be the Owner's representative. The Soils Engineer shall approve fill materials, method of placement, moisture contents and percent compaction, and shall give written approval of the completed fill.

## 3. CLEARING JOB SITE

The Contractor shall remove all trees, brush, and rubbish before excavation or fill placement is begun. The Contractor shall dispose of the cleared material to provide the Owner with a clean, neat appearing job site. Cleared material shall not be placed in areas to receive fill or where the material will support structures of any kind.

## 4. SCARIFYING AREA TO BE FILLED

All topsoil and vegetable matter shall be removed from the ground surface upon which fill is to be placed. The surface shall then be plowed or scarified until the surface is free from ruts, hummocks or other uneven features, which would prevent uniform compaction by the equipment to be used.

## 5. COMPACTING AREA TO BE FILLED

After the foundation for the fill has been cleared and scarified, it shall be disked or bladed until it is free from large clods, brought to the proper moisture content (within 2 percent above or below optimum) and compacted to not less than 95 percent of maximum density as determined in accordance with ASTM D 698. If soft/ yielding subgrade conditions are encountered, stabilization may be required.

## 6. FILL MATERIALS

Fill soils shall be free from vegetable matter or other deleterious substances, and shall not contain rocks or lumps having a diameter greater than six (6) inches. Fill materials shall be obtained from cut areas shown on the plans or staked in the field by the Engineer.

On-site materials classifying as CL, SC, SM, SW, SP, GP, GC and GM are acceptable. Concrete, asphalt, organic matter and other deleterious materials or debris shall not be used as fill.

## 7. MOISTURE CONTENT

Fill materials shall be moisture treated to within 2 ± percent of optimum moisture content as determined from Proctor compaction tests. Sufficient laboratory compaction tests shall be made to determine the optimum moisture content for thee various soils encountered in borrow areas.

The Contractor may be required to add moisture to the excavation materials in the borrow area if, in the opinion of the Soils Engineer, it is not possible to obtain uniform moisture content by adding water on the fill surface. The Contractor may be required to rake or disk the fill soils to provide uniform moisture content through the soils.

The application of water to embankment materials shall be made with any type of watering equipment approved by the Soils Engineer, which will give the desired results. Water jets from the spreader shall not be directed at the embankment with such force that fill materials are washed out.

Should too much water be added to any part of the fill, such that the material is too wet to permit the desired compaction from being obtained, rolling and all work on that section of the fill shall be delayed until the material has been allowed to dry to the required moisture content. The Contractor will be permitted to rework wet material in an approved manner to hasten its drying.

## 8. COMPACTION OF FILL AREAS

Selected fill material shall be placed and mixed in evenly spread layers. After each fill layer has been placed, it shall be uniformly compacted to not less than the specified percentage of maximum density. Expansive soils classifying as CL or SC shall be compacted to at least 95 percent of the maximum dry density as determined in accordance with ASTM D 698 (100 percent for fill deeper than 15 feet below final grade). At the option of the Soils Engineer, soils classifying as SW, SP, GP, GC or GM may be compacted to 90 percent of the maximum density as determined in accordance with ASTM D 1557 (95 percent for fill deeper than 15 feet below final grade). Fill materials shall be placed such that the thickness of loose material does not exceed 10 inches and the compacted lift thickness does not exceed 6 inches.

Compaction, as specified above, shall be obtained by the use of sheepsfoot rollers, multiple-wheel pneumatic-tired rollers, or other equipment approved by the Engineer for soils classifying as CL or SC. Granular fill shall be compacted using vibratory equipment or other equipment approved by the Soils Engineer. Compaction shall be accomplished while the fill material is at the specified moisture content. Compaction of each layer shall be continuous over the entire area. Compaction equipment shall make sufficient trips to insure that the required density is obtained.

## 9. COMPACTION OF SLOPES

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compaction operations shall be continued until slopes are stable, but not too dense for planting, and there is no appreciable amount of loose soil on the slopes. Compaction of slopes may be done progressively in increments of three to five feet (3' to 5') in height or after the fill is brought to its total height. Permanent fill slopes shall not exceed 3:1 (horizontal to vertical).

## 10. DENSITY TESTS

Field density tests shall be made by the Soils Engineer at locations and depths of his choosing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests shall be taken in compacted material below the disturbed surface. When density tests indicate that the density or moisture content of any layer of fill or portion thereof is below that required, the particular layer or portion shall be reworked until the required density or moisture content has been achieved.

## 11. COMPLETED PRELIMINARY GRADES

All areas, both cut and fill, shall be finished to a level surface and shall meet the following limits of construction:

A. Overlot cut or fill areas shall be within plus or minus 2/10 of one foot.

B. Street grading shall be within plus or minus 1/10 of one foot.

The civil engineer, or duly authorized representative, shall check all cut and fill areas to observe that the work is in accordance with the above limits.

## 12. SUPERVISION AND CONSTRUCTION STAKING

Observation by the Soils Engineer shall be continuous during the placement of fill and compaction operations so that he can declare that the fill was placed in general conformance with specifications. All inspections necessary to test the placement of fill and observe compaction operations will be at the expense of the Owner. All construction staking will be provided by the Civil Engineer or his duly authorized representative. Initial and final grading staking shall be at the expense of the owner. The replacement of grade stakes through construction shall be at the expense of the contractor.

## 13. SEASONAL LIMITS

No fill material shall be placed, spread or rolled while it is frozen, thawing, or during unfavorable weather conditions. When work is interrupted by heavy precipitation, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed materials are as specified.

## 14. NOTICE REGARDING START OF GRADING

The contractor shall submit notification to the Soils Engineer and Owner advising them of the start of grading operations at least three (3) days in advance of the starting date. Notification shall also be submitted at least 3 days in advance of any resumption dates when grading operations have been stopped for any reason other than adverse weather conditions.

## 15. REPORTING OF FIELD DENSITY TESTS

Density tests made by the Soils Engineer, as specified under "Density Tests" above, shall be submitted progressively to the Owner. Dry density, moisture content, of each test taken and percentage compaction shall be reported for each test taken.

## 16. DECLARATION REGARDING COMPLETED FILL

The Soils Engineer shall provide a written declaration stating that the site was filled with acceptable materials, or was placed in general accordance with the specifications.

## 17. DECLARATION REGARDING COMPLETED GRADE ELEVATIONS

A registered Civil Engineer or licensed Land Surveyor shall provide a declaration stating that the site grading has been completed and resulting elevations are in general conformance with the accepted detailed development plan.

# APPENDIX B
# PAVEMENT DESIGN CALCULATIONS

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

### Flexible Pavement Design/Evaluation

| | | | | |
|---|---|---|---|---|
| **Structural Number** | 2.49 | | **Soil Resilient Modulus** | 4,300.00 **psi** |
| **Design ESALs** | 62,400.00 | | **Initial Serviceability** | 4.50 |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 |
| **Overall Deviation** | 0.45 | | | |

### Layer Pavement Design/Evaluation

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 6.22 | 2.49 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.49 |

# WinPAS

Pavement Thickness Design According to

## 1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

### Flexible Pavement Design/Evaluation

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.49 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 62,400.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

### Layer Pavement Design/Evaluation

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 3.00 | 1.20 |
| Crushed Stone Base | 0.12 | 1.00 | 10.72 | 1.29 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.49 |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

### Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Flexible Pavement Design/Evaluation**

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.49 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 62,400.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

**Layer Pavement Design/Evaluation**

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 3.00 | 1.20 |
| Crushed Stone Base | 0.12 | 1.00 | 5.00 | 0.60 |
| Granular Subbase | 0.09 | 1.00 | 7.63 | 0.69 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.49 |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

### Flexible Pavement Design/Evaluation

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.88 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 156,200.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

### Layer Pavement Design/Evaluation

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 7.19 | 2.88 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Σ SN | 2.88 |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Flexible Pavement Design/Evaluation**

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.88 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 156,200.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

**Layer Pavement Design/Evaluation**

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 4.00 | 1.60 |
| Crushed Stone Base | 0.12 | 1.00 | 10.64 | 1.28 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.88 |

# WinPAS

**Pavement Thickness Design According to**

**1993 AASHTO Guide for Design of Pavements Structures**

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

### Flexible Pavement Design/Evaluation

| | | | | |
|---|---|---|---|---|
| **Structural Number** | 2.88 | | **Soil Resilient Modulus** | 4,300.00 **psi** |
| **Design ESALs** | 156,200.00 | | **Initial Serviceability** | 4.50 |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 |
| **Overall Deviation** | 0.45 | | | |

### Layer Pavement Design/Evaluation

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 4.00 | 1.60 |
| Crushed Stone Base | 0.12 | 1.00 | 5.00 | 0.60 |
| Granular Subbase | 0.09 | 1.00 | 7.52 | 0.68 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.88 |

# WinPAS

**Pavement Thickness Design According to**

**1993 AASHTO Guide for Design of Pavements Structures**

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Flexible Pavement Design/Evaluation**

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.96 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 187,200.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

**Layer Pavement Design/Evaluation**

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 7.40 | 2.96 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.96 |

# WinPAS

Pavement Thickness Design According to

## 1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

### Flexible Pavement Design/Evaluation

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.96 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 187,200.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

### Layer Pavement Design/Evaluation

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 4.00 | 1.60 |
| Crushed Stone Base | 0.12 | 1.00 | 11.33 | 1.36 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$ SN | 2.96 |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Flexible Pavement Design/Evaluation**

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.96 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 187,200.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

**Layer Pavement Design/Evaluation**

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 4.00 | 1.60 |
| Crushed Stone Base | 0.12 | 1.00 | 6.00 | 0.72 |
| Granular Subbase | 0.09 | 1.00 | 7.11 | 0.64 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.96 |

# WinPAS

**Pavement Thickness Design According to**

**1993 AASHTO Guide for Design of Pavements Structures**

**American Concrete Pavement Association**

## Flexible Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

### Flexible Pavement Design/Evaluation

| | | | | | |
|---|---|---|---|---|---|
| **Structural Number** | 2.96 | | **Soil Resilient Modulus** | 4,300.00 | **psi** |
| **Design ESALs** | 187,200.00 | | **Initial Serviceability** | 4.50 | |
| **Reliability** | 80.00 | **percent** | **Terminal Serviceability** | 2.50 | |
| **Overall Deviation** | 0.45 | | | | |

### Layer Pavement Design/Evaluation

| Layer Material | Layer Coefficient | Drainage Coefficient | Layer Thickness | Layer SN |
|---|---|---|---|---|
| Asphalt Cement Concrete | 0.40 | 1.00 | 4.00 | 1.60 |
| Crushed Stone Base | 0.12 | 1.00 | 5.00 | 0.60 |
| Granular Subbase | 0.09 | 1.00 | 8.44 | 0.76 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | $\Sigma$SN | 2.96 |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Rigid Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Rigid Pavement Design/Evaluation**

| | | | | |
|---|---|---|---|---|
| **PCC Thickness** | 4.08 **inches** | | **Load Transfer, J** | 3.20 |
| **Design ESALs** | 62,400.00 | | **Mod. Subgrade Reaction, k** | 220 **psi/in** |
| **Reliability** | 80.00 **percent** | | **Drainage Coefficient, Cd** | 1.00 |
| **Overall Deviation** | 0.45 | | **Initial Serviceability** | 4.50 |
| **Modulus of Rupture** | 500 **psi** | | **Terminal Serviceability** | 2.50 |
| **Modulus of Elasticity** | 3,375,000 **psi** | | | |

**Modulus of Subgrade Reaction (k-value) Determination**

| | |
|---|---|
| **Resilient Modulus of the Subgrade** | 4,300.00 **psi** |
| **Resilient Modulus of the Subbase** | 0.00 **psi** |
| **Subbase Thickness** | 0.00 **inches** |
| **Depth to Rigid Foundation** | 0.00 **feet** |
| **Loss of Support Value (0,1,2,3)** | 0.00 |

| | |
|---|---|
| **Modulus of Subgrade Reaction** | 220.00 **psi/in** |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Rigid Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Rigid Pavement Design/Evaluation**

| | | | | | |
|---|---|---|---|---|---|
| **PCC Thickness** | 5.06 | **inches** | **Load Transfer, J** | 3.20 | |
| **Design ESALs** | 156,200.00 | | **Mod. Subgrade Reaction, k** | 220 | **psi/in** |
| **Reliability** | 80.00 | **percent** | **Drainage Coefficient, Cd** | 1.00 | |
| **Overall Deviation** | 0.45 | | **Initial Serviceability** | 4.50 | |
| **Modulus of Rupture** | 500 | **psi** | **Terminal Serviceability** | 2.50 | |
| **Modulus of Elasticity** | 3,375,000 | **psi** | | | |

**Modulus of Subgrade Reaction (k-value) Determination**

| | | |
|---|---|---|
| **Resilient Modulus of the Subgrade** | 4,300.00 | **psi** |
| **Resilient Modulus of the Subbase** | 0.00 | **psi** |
| **Subbase Thickness** | 0.00 | **inches** |
| **Depth to Rigid Foundation** | 0.00 | **feet** |
| **Loss of Support Value (0,1,2,3)** | 0.00 | |
| **Modulus of Subgrade Reaction** | 220.00 | **psi/in** |

# WinPAS

**Pavement Thickness Design According to**

## 1993 AASHTO Guide for Design of Pavements Structures

**American Concrete Pavement Association**

## Rigid Design Inputs

Agency: Star Valley Enterprises
Company:
Contractor:
Project Description: GEG Job No 3071 UNA Compressor Station
Location: Parachutte, Colorado

**Rigid Pavement Design/Evaluation**

| | | | |
|---|---|---|---|
| **PCC Thickness** | 5.27 **inches** | **Load Transfer, J** | 3.20 |
| **Design ESALs** | 187,200.00 | **Mod. Subgrade Reaction, k** | 220 **psi/in** |
| **Reliability** | 80.00 **percent** | **Drainage Coefficient, Cd** | 1.00 |
| **Overall Deviation** | 0.45 | **Initial Serviceability** | 4.50 |
| **Modulus of Rupture** | 500 **psi** | **Terminal Serviceability** | 2.50 |
| **Modulus of Elasticity** | 3,375,000 **psi** | | |

**Modulus of Subgrade Reaction (k-value) Determination**

| | |
|---|---|
| **Resilient Modulus of the Subgrade** | 4,300.00 **psi** |
| **Resilient Modulus of the Subbase** | 0.00 **psi** |
| **Subbase Thickness** | 0.00 **inches** |
| **Depth to Rigid Foundation** | 0.00 **feet** |
| **Loss of Support Value (0,1,2,3)** | 0.00 |

| | |
|---|---|
| **Modulus of Subgrade Reaction** | 220.00 **psi/in** |

# APPENDIX C
# CONSTRUCTION RECOMMENDATIONS FOR FLEXIBLE AND RIGID PAVEMENT

## FLEXIBLE PAVEMENT CONSTRUCTION RECOMMENDATIONS

Experience has shown that construction methods can have a significant effect on the life and serviceability of a pavement system. We recommend the proposed pavement be constructed in the following manner:

1. The subgrade should be stripped of organic matter, existing fill and deleterious materials, scarified, moisture treated, and compacted. Existing structures should also be removed completely. Soils should be moisture treated to within 2 percent of optimum moisture content and compacted to at least 95 percent of maximum standard Proctor dry density (ASTM D 698).

2. After final subgrade elevation has been reached and the subgrade compacted, the area should be proof-rolled with a heavy pneumatic-tired vehicle (i.e., a loaded 10-wheel dump truck). Subgrade that is pumping or deforming excessively should be stabilized.

3. If areas of soft or wet subgrade soils are encountered, the material should be subexcavated and replaced with properly compacted structural backfill. Where extensively soft, yielding subgrade is encountered, we recommend the excavation be inspected by a representative of our office.

4. Aggregate base course and aggregate subbase course should be laid in thin, loose lifts, moisture treated to within 2 percent of optimum moisture content and compacted to at least 95 percent of maximum modified Proctor dry density (ASTM D 1557, AASHTO T 180).

5. Asphaltic concrete should be hot plant-mixed material compacted to between 92 and 96 percent of maximum theoretical density. The temperature at laydown time should be at least 235 degrees F. The maximum compacted lift should be 3.0 inches and joints should be staggered.

6. The subgrade preparation and the placement and compaction of all pavement material should be observed and tested. Compaction criteria should be met prior to the placement of the next paving lift. The additional requirements of the Colorado Department of Transportation and Garfield County Specifications should apply.

## RIGID PAVEMENT CONSTRUCTION RECOMMENDATIONS

Rigid pavement sections are not as sensitive to subgrade support characteristics as flexible pavement. Due to the strength of the concrete, wheel loads from traffic are distributed over a large area and the resulting subgrade stresses are relatively low. The critical factors affecting the performance of a rigid pavement are the strength and quality of the concrete, and the uniformity of the subgrade. We recommend subgrade preparation and construction of the rigid pavement section be completed in accordance with the following recommendations:

1. Subgrade areas should be stripped of organics, existing fill and deleterious materials. Existing structures should also be completely removed. The pavement subgrade shall be compacted within 2% of optimum moisture content to at least 95% of maximum standard Proctor dry density (ASTM D 698). Moisture treatment and compaction recommendations also apply where additional fill is necessary.

2. The resulting subgrade shall be checked for uniformity and all soft or yielding materials should be replaced prior to paving. Concrete should not be placed on soft, spongy, frozen, or otherwise unsuitable subgrade.

3. The subgrade shall be kept moist prior to paving.

4. Concrete should not be placed in cold weather or on frozen subgrade.

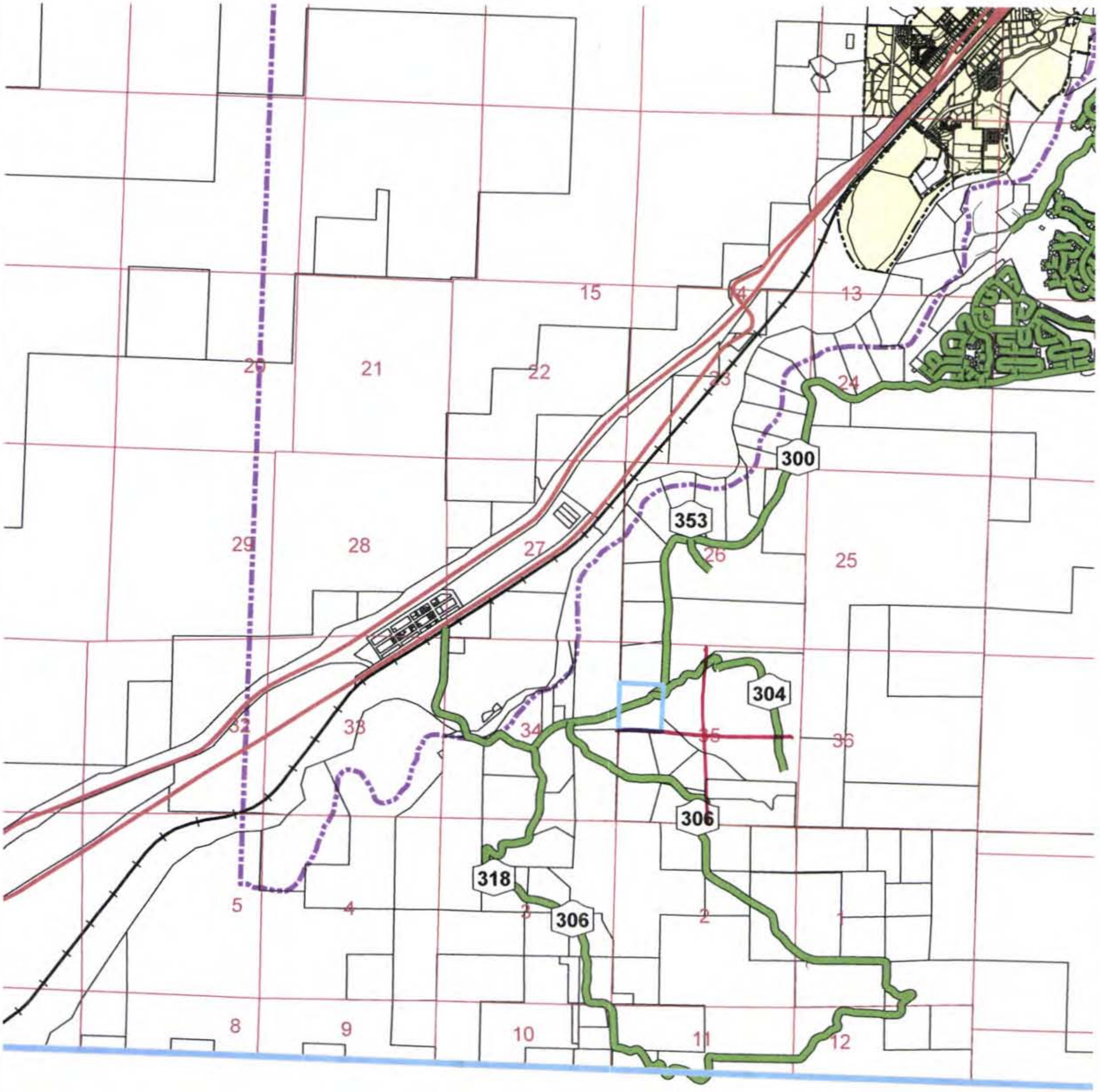
5. Curing procedures should protect the concrete against moisture loss, rapid temperature change, freezing, and mechanical injury for at least 3 days after placement. Traffic should not be allowed on the pavement for at least one week.

6. A white, liquid membrane curing compound, applied at the rate of 1 gallon per 150 square feet, should be used.

7. Construction joints, including longitudinal joints and transverse joints, should be formed during construction or should be sawed shortly after the concrete has begun to set, but prior to uncontrolled cracking. All joints should be sealed.

8. Construction control and inspection shall be carried out during the subgrade preparation and paving procedures. Concrete shall be carefully monitored for quality control. The additional requirements of Garfield County and The Colorado Department of Transportation Specifications should apply.

9. Deicing salts should not be used for the first year after placement.



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107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

August 20, 2008

Mr. Fred Jarman
Director
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, CO 81601

Dear Mr. Jarman,

Please consider this packet our application for a Special Use Permit for the Bargath Inc. Una Compressor Station located at 1620 County Road 300, Parachute, Colorado 81635. Bargath Inc. is a wholly owned subsidiary of Williams Production RMT Co.

**1. Project Description**: The proposed compressor station would be located contiguous to a well site on approximately 2.755 acres within a 40 acre parcel owned by Williams Production RMT Co. The proposed compressor station and well site would be placed within this property to reduce impacts on adjacent properties. Refer to Exhibit 6 – Vicinity Map for details.

The Una Compressor Station would gather gas from area natural gas production wells and compress it for transportation to Williams' Parachute Creek Gas Plant. The compressor station would initially consist of four engine/compressor units gathering gas from Williams and other natural gas production wells. The station layout is being configured such that a maximum of eight engine/compressor units could be constructed on the station site. Gas volumes to be compressed would range from 20 to 100 standard cubic feet of natural gas per day (MMSCFD), depending on suction and discharge conditions. This compression is required in order to keep pace with current and projected natural gas production in the area south of the Colorado River.

The station would operate 24 hours a day, 7 days a week, and 265 days a year. One employee would visit the station daily for routine tasks, with maintenance on a planned and emergency basis as required. Bargath estimates that liquid tankers would be required at the station approximately every other day. A traffic analysis appears in section 11.1.D.1.

Initially, seven new Caterpillar 3516 gathering gas compressors would be installed at the station. An additional one identical unit, for a total build-out of eight units, are being allowed for in the station layout and design. Each unit would be equipped with residential grade exhaust silencers, cooler inlet and outlet sound attenuators, and a noise attenuating enclosure or building in order to meet COGCC regulations for sound in the area. These buildings would be installed on each unit and are approximately 30 feet long by 21 feet wide by 20 feet high (at the ridge).

Bargath has applied for an Air Pollution Control Division permit for the seven units proposed for installation this year. Future units would require similar permits prior to installation and operation.

Bargath plans on installing utility electrical power to the compressor station.

Construction Schedule:

A. Site grading: July/August, 2008.
B. Foundation and Underground utility piping and electrical: September/October 2008.
C. Equipment Installation: September/October/November 2008.
D. Piping/Electrical installation: October/November/December 2008.
E. Station startup is scheduled for December 2008.

A grading permit will be applied for and received from Garfield County prior to the site grading of the proposed site of the compressor station.

Refer to attached photographs of the proposed compressor station/well site area and the surrounding area.

**2. Existing Zoning**: The proposed compressor station area is Agricultural Residential Rural Density. The Garfield County Zoning Resolution Section 3.2.03 notes "A/R/RD – AGRICULTURAL/RESIDENTIAL/RURAL DENSITY Uses, special: allowed by permit only "...storage of oil and gas drilling equipment; Site for extraction, processing, storage or material handling of natural resources; utility lines, utility substations...

Therefore the proposed Una Compressor Station meets the Garfield County Agricultural/Residential/Rural Density special use permit designations.

**3. Surrounding Zoning:** Agricultural/Residential/Rural Density and the existing used are Agricultural, Residential, and natural resource production.

**4. Garfield County Comprehensive Plan of 2000**: The Garfield County Comprehensive Plan of 2000 notes that this project is located in Study Area 3. Natural resource extraction is detailed on Section 9 of the "Goals, Objectives, Policies and Programs" located on page 17:

"Garfield County recognizes that under Colorado law, the surface and mineral interests have certain legal rights and privileges, including the right to extract and develop these interests. Furthermore, private property owners also have certain legal rights and privileges, including the right to have the mineral estate developed in a reasonable manner and to have adverse land use impacts mitigated."

Policies Section 9.1 notes:

"Garfield County, to the extent legally possible, will require adequate mitigation to address the impacts of mineral extraction on adjacent landowners. These measures may include the following:

A. Landscaping and screening;
B. Modification of phasing or area to be mined;
C. Roadway improvements and signage;
D. Safe and efficient access routes;
E. Drainage improvements to protect surface and groundwater.

The proposed Una Compressor Station meets the Garfield County comprehensive plan goals, objectives, policies, and programs. We have addressed each of the policies stated in 9.1

**5. Referral Agencies:**

We have had one pre-application meeting with Mr. Fred Jarman of the Garfield County Building and Planning Department. The meeting was held on June 4, 2008 at Mr. Jarman's office.

We have met with many of the referral agencies to review the proposed station construction and to review agency concerns and issues.

Please find below the status of meetings with referral agencies to date.

A. **Garfield County Road & Bridge Department** – May 13, 2008 Jake Mall meeting at the Una CS site. Jake and I review the signage requirement for the entry to the station. We agreed that "Trucks Entering Highway" signs should be installed 250 feet east and west of the driveway on CR 300, and a "Stop" sign at the drive entry point to CR 300. A driveway permit would be required (see driveway permit in Section 5 of this application).

B. **Steve Anthony – Garfield County Vegetative Management** – A meeting was held on August 19, 2008 at the Una CS site. Mr. Anthony's comment on viewing the newly graded site is that he would like the tamarisk on the south boundary of the site removed. Bargath will implement the tamarisk removal protocols shown in the Site Rehabilitation Plan found in submittal 11.2.A.

**6. Impact Statement:**

Refer to Submittal Number 11 in this application for the impact statement.

**7. Performance Standards as detailed in the Garfield County Supplementary Regulations 5.03.08(5)**

Refer to Submittal Number 12 "Performance Standards" in this application.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S. Bucans, P.E.
Project Manager

FELSBURG
HOLT &
ULLEVIG

*engineering paths to transportation solutions*

## MEMORANDUM

*To:* Mr. Charles Bucans, Project Manager, Star Valley Engineering

*From:* Jeff Ream, P.E., PTOE, Felsburg, Holt & Ullevig

*Date:* September 26, 2008

*Subject:* Williams Well Site Response to Garfield County Comment
FHU Reference No. 08-154

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FHU has reviewed Garfield County's comments on the above-reference project and offers the following response:

*The intro letter talks about a compressor station and well site, however the traffic study is for a well site. Does this study include traffic associated with a compressor station?*

The traffic study did not include compressor station traffic. Construction of the compressor site would take a crew of 30 people approximately 6 months to complete. Once operational, traffic from that part of the site would be similar to that generated by the well site, namely 1-2 vehicles (2-4 trips) per day, all of which would occur outside the peak hour. Table 1 summarizes compressor site construction traffic and Table 2 updates the trip generation for the operational phase to include both well site and compressor traffic. As the attached level of service sheets indicate, all site driveway movements would operate at LOS A during both the construction and operation phases, so no turn lanes are recommended.

**Table 1. Compressor Site Trip Generation – Construction Phase**

| Trip Type | | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Crew | 30 people | 60 | 30 | 0 | 30 | 0 | 30 | 30 |
| Deliveries | 2 per day | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | **64** | **30** | **0** | **30** | **0** | **30** | **30** |

**Table 2. Compressor and Well Site Trip Generation – Operational Phase**

| Activity | Round-Trip Frequency | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Compressor Monitoring | 2 per day | 4.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Well Monitoring | 1 per day | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Truck (pick up well condensate) | 1 per week | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | **6** | **0** | **0** | **0** | **0** | **0** | **0** |

I trust this information is sufficient for your submittal needs for the project. If you have any questions or comments, please give me a call at (303) 721-1440.

6300 South Syracuse Way, Suite 600 Centennial, CO 80111 tel 303.721.1440 fax 303.721.0832
www.fhueng.com info@fhueng.com

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 15 | 15 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 16 | 16 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 51 | | 99 | 43 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 51 | | 99 | 43 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 100 | 100 |
| cM capacity (veh/h) | | | 1555 | | 890 | 1027 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 51 | 40 | 2 |
| Volume Left | 0 | 16 | 1 |
| Volume Right | 16 | 0 | 1 |
| cSH | 1700 | 1555 | 954 |
| Volume to Capacity | 0.03 | 0.01 | 0.00 |
| Queue Length 95th (ft) | 0 | 1 | 0 |
| Control Delay (s) | 0.0 | 3.0 | 8.8 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 3.0 | 8.8 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.5 | | |
| Intersection Capacity Utilization | 18.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 15 | 15 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 16 | 16 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 98 | 98 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 33 |
| Volume Left | 0 | 1 | 16 |
| Volume Right | 1 | 0 | 16 |
| cSH | 1700 | 1564 | 965 |
| Volume to Capacity | 0.03 | 0.00 | 0.03 |
| Queue Length 95th (ft) | 0 | 0 | 3 |
| Control Delay (s) | 0.0 | 0.2 | 8.9 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.9 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.5 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 32 | 1 | 1 | 22 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 35 | 1 | 1 | 24 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 36 | | 61 | 35 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 36 | | 61 | 35 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1575 | | 944 | 1037 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 36 | 25 | 2 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1575 | 989 |
| Volume to Capacity | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.3 | 8.6 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.3 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.4 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 40 | 1 | 1 | 39 | 1 | 1 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 43 | 1 | 1 | 42 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 45 | | 89 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 45 | | 89 | 44 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1564 | | 912 | 1026 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 45 | 43 | 2 |
| Volume Left | 0 | 1 | 1 |
| Volume Right | 1 | 0 | 1 |
| cSH | 1700 | 1564 | 965 |
| Volume to Capacity | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.2 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.2 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.3 | | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

EXPLORATION & PRODUCTION
Tower 3, Suite 1000
1515 Arapahoe Street
Denver, CO 80202
303/572-3900
303/629-8282 fax

August 1, 2008

Mr. Fred Jarman
Director
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, Colorado 81601

Dear Mr. Jarman:

By this letter, Williams Production RMT Co. and Bargath, Inc. authorize Star Valley Engineering, Inc. (SVE) to represent us in any and all matters related to the special use permit application known as Bargath, Inc. Una Compressor Station.

This includes the preparation and submission of documents associated with the land use application and representation of this application before the applicable appointed and elected boards.

Sincerely,

Mr. Alan Harrison
VP Denver Region/
E&P Piceance Assets
Williams Production RMT Co.

STAR VALLEY ENGINEERING

107675 N. US Highway 89
Etna, Wyoming 83118
Phone (307) 883-3906
Fax (307) 883-2906
Cellular (307) 890-8013
e-mail to: sve@silverstar.com

October 6, 2008

Ms. Kathy Eastley
Senior Planner
Garfield County Building and Planning Department
108 8th Street, Suite 401
Glenwood Springs, CO 81601

Reference: Williams/Bargath Compressor Station
SUP Application Comment Letter of September 24, 2008

Dear Ms. Eastley,

Thank you for your prompt response to our SUP application. This correspondence and attached support documentation are the Williams/Bargath response to those comments.

1. *Comment: The authorization letter in tab 10 does not state what authority Tom Fiore has to speak for Williams or Bargath. There needs to be a Statement of authority or some comparable document to how his authority. Williams is the property owner therefore they are the applicants:*

   Response: Attached is the authorization letter signed by Alan Harrison, VP Denver Region/E&P Piceance Assets for Star Valley Engineering, Inc. to represent Williams Production RMT Co. or Bargath Inc. in the Una CS SUP application process.

2. *Comment: The intro letter says that a permit application is pending with the state air pollution control division for 7 of the 8 compressor units. However, Tab 11.1.B.1 includes an application to the state for 5 portable units, no location, but with a stated home base at a site different from the location in the application. Please explain.*

   Response: Bargath Inc. is providing this response to resolve the above conflicting information provided in the SUP application for the Una Compressor Station. Bargath Inc. has been granted under the Colorado Air Pollution Prevention and Control Act C.R.S. (25-7-101 et seq) to utilize portable air permits for up to 2 years for each portable unit or until a final air construction permit is issued for the full buildout of the permanent compressor units and ancillary equipment at the facility. Because the portable engines are allowed to be moved to different facilities depending upon the need, the permits are not issued under a specific facility location, but rather a generic location which is typically the main (or home) office where they may be held in storage until they are needed for operation. In this case, Bargath Inc. provided a copy of the portable air permit application for 5 separate portable permits because it is expected that the Una compressor station may operate 1 or more of these portable engines for temporary use until the CDPHE issues a final air permit for the permanent compressor station that is currently expected to be 8 compressor engines once it is fully built out.

   Bargath Inc. is also revising its statement that a permit application is pending with the air pollution control division of the CDPHE for seven of the compressor engines. The application for these compressor engines has not yet been submitted to the CDPHE because Bargath Inc. wants to avoid having to submit multiple applications if additional compression will be needed in the future. Based on past experience working with the CDPHE, they prefer the submittal of a single application for the full future buildout of the facility to minimize the chances of having to modify the air permit later which can require a significant amount of additional time and cost. During its construction and operation, Bargath Inc. will comply with all the applicable state and federal air quality control requirements (including the smoke and vapor regulations) under the portable air permits and the future air permit for the permanent compressor station.

3. *Comment: The application is seeking a maximum of 8 units at this site, however it appears that the supporting information does not necessarily include the impacts and mitigation for the 8 units. Please explain.*

   Response: Per our verbal discussion October 1, 2008, the commenter was specifically interested in the supporting information for air emissions, and this issue is addressed in point 2 above.

4. *Comment: The intro letter talks about a "compressor station and well site", however the <u>traffic study</u>, tab 11.1.D, is for a <u>well site</u>, pad SG12-35, does this study include the traffic associated with the compressor station?*

   Response: Please see attached memorandum from FHU to Star Valley Engineering dated 9/28/08 for this response.

5. *Comment: Similar to above item, the wildlife assessment that was provided states that it complies with 9.07.04(10) which are pipeline regulations. Are you, or have you applied for a pipeline through Garfield County?*

   Response: Our wildlife consultant, Westwater Engineering, states that this is a cut and paste error. The reason that this citation is included in Westwater's wildlife reports is that the pipeline regulations are the only place in Garfield County regulations where the content of a wildlife report is detailed. Bargath is not applying for a pipeline through Garfield County via this SUP application.

6. *Comment: Section 3 – information provided regarding provision of water and porta-potties. For the provision of water, please (provide) information regarding the amount of water to be provided, you could provide an affidavit from Mountain Clear with the pertinent information. Down Valley Septic should (provide) information regarding the number of units, and maintenance of the units. We also need the location of where the water will be kept and where the porta-potties will be placed on the site.*

   Response: Williams/Bargath anticipates locating one porta-jon near the control building for the operation phase of the project. In addition, a 5-gallon drinking water fountain would be located inside the control building (refer to site plan for location of the control building). An affidavit from Down Valley Septic for porta-jon and drinking water supply is attached. Williams/Bargath has decided to have Down Valley Septic provide drinking water to the station rather than the originally proposed Mountain Clear.

7. *Comment: I just want to reiterate that the public notice requirement and provison of adjacent properties are those within 200' of the subject parcel, not necessarily abutting as stated in Section 11.1.E of the submittal.*

   Response: We appreciate the reviewers pointing out the distinction reflected in the comment, and respond that the additional 200' from the subject parcel does not change the property owners list in 8.0 or 11.1.E.

8. *Comment: How will trash be stored? Will the receptacles be placed within a structure? Are bear-proof receptacles needed at this location?*

   Response: Williams/Bargath will use a bear-proof steel cage for the storing of trash at the compressor station.

9. *Comment: Per our discussion the introduction specifies that Williams will proceed "at their own risk" in construction this facility prior to approvals and (this statement) should be removed from the application.*

   Response: The statement has been removed from the introduction. A revised introduction is attached.

Please contact me with any questions.

Sincerely,
**Star Valley Engineering, Inc.**

Charles S Bucans

Charles S. Bucans, P.E.
Project Manager

**Down Valley Septic, LLC**
P.O. Box 1929 • Rifle, CO 81650
970-625-5556
www.dvseptic.com

September 25, 2008

To Whom It May Concern:

Re: Bargath Inc.
Una Compressor
Bargath/Williams on the Una Compressor Station Site

Please accept this letter as certification that Down Valley Septic will provide Porta Jon service and bottled water.

I certify that Down Valley Septic will provide above services for Star Valley Engineering, Inc for the Wallace Creek Compressor. Service will be provided on a weekly basis unless needed more frequently. Down Valley Septic is available 24 hours a day, 7 days a week, 365 days a year. Collected sewage will be disposed of in the Garfield County Landfill or other certified disposal facilities.

Scott Moyer 9/25/08
(Signature) (Date)

Please contact me if you need any additional information at 970-625-5556.

Thank You
Scott Moyer
COO
Down Valley Septic