

**H2S - 58**

**H<sub>2</sub>S**  
**CONTINGENCY**  
**PLAN**

**2/1/2013**

# AGAVE ENERGY COMPANY

105 South Fourth Street

Artesia, New Mexico 88210

(575) 748-4555

Fax (575) 748-4275

February 7, 2013

Oil Conservation Division  
Environmental Bureau  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Re: Agave Energy Company  
H2S Contingency Plan Revisions

To Carl Chavez:

Attached are the hard copies of the H2S Contingency Plans and checklists that were emailed to you on February 7, 2013.

If you have any questions about this document, please do not hesitate to call me at 575-748-4471 or email me at [jknowlton@yatespetroleum.com](mailto:jknowlton@yatespetroleum.com).

Sincerely,

*Jennifer Knowlton*  
Jennifer Knowlton

**OIL CONSERVATION DIVISION**  
**H2S CONTINGENCY PLAN REQUIRED BY OCD RULE 19.15.11 NMAC**

Operator Name: Agave Energy Company  
Facility Name: Penasco Compressor Station (CP-058)  
Date: 2/7/2013

<b>Contingency Plan Requirements Checklist</b>			
<b>19.15.11.9.B NMAC Requirement</b>	<b>Requirement</b>	<b>Section/Page Number</b>	<b>Notes</b>
<b>Emergency Procedures</b>			
Responsibilities & duties of personnel during emergency	19.15.11.9.B.2.a and RP-55 7.4 a	IV.A Page 6	
Immediate action plan	19.15.11.9.B.2.a and RP-55 7.4 a	IV.B Page 7	
Evacuation and shelter in place plans	19.15.11.9.B.2.a and RP-55 7.4 a	IV.B.3.b Page 7	
Telephone numbers of emergency responders	19.15.11.9.B.2.a and RP-55 7.4 a	IV.C.1 Page 8	Agave is not trained in firefighting beyond insipient fire fighting nor are Agave personnel required to be trained. Personnel are trained to call local fire departments. Thus the emergency numbers are provided in the plan.
Telephone numbers of public agencies	19.15.11.9.B.2.a and RP-55 7.4 a	IV.C.2 Page 8	
Telephone numbers of local government	19.15.11.9.B.2.a and RP-55 7.4 a	IV.C.2 Page 8	

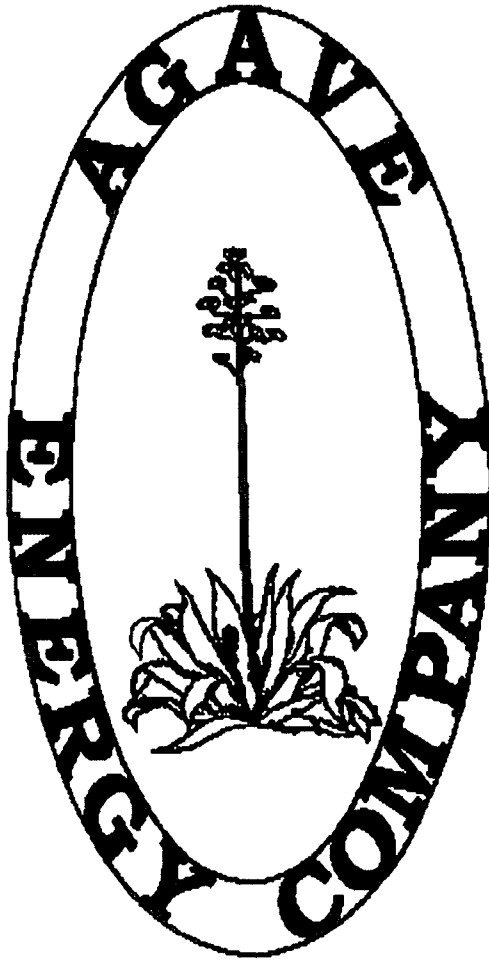
<b>Contingency Plan Requirements Checklist</b>			
<b>19.15.11.9.B NMAC Requirement</b>	<b>Requirement</b>	<b>Section/Page Number</b>	<b>Notes</b>
Telephone numbers of appropriate public authorities	19.15.11.9.B.2.a and RP-55 7.4 a	IV.C.2 Page 8	
Location of potentially affected public areas Also see 19.15.11.12.B & D	19.15.11.9.B.2.a and RP-55 7.4 a	IV.C.4 Map C-1 Page 9, 26	Note that there are no public areas or public roads within the ROE
Location of potentially affected public roads	19.15.11.9.B.2.a and RP-55 7.4 a	Map C-1 Page 9, 26	Note that there are no public entities within the ROE.
Proposed evacuation routes, with locations of road blocks	19.15.11.9.B.2.a and RP-55 7.4 a	IV.E Map A-2 Page 10,22	Potential road block are indicated even though they are unnecessary. This is because Agave has the road blocks in place for the Dagger Draw Gas Plant.
Procedures for notifying the public	19.15.11.9.B.2.a and RP-55 7.4 a	IV.B.3.a Page 7	Note that there are no public entities within the ROE.
Availability and location of safety equipment and supplies Also see 19.15.11.12.C	19.15.11.9.B.2.a and RP-55 7.4 a	IV.E and IV.F.2 and IV.F.8 IV. Map 1 Page 9, 10,16	Map A-1 indicates wind sock and fire extinguisher location. Neither the rule nor AP55 state that THIS particular map needs to be to scale.
<b>Characteristics of hydrogen sulfide and sulfur dioxide</b>			
Discussion of characteristics	19.15.11.9.B(2)(b) and RP-55 7.4b	V.A Page 11	
<b>Maps and Drawings</b>			
Area of exposure	19.15.11.9.B.2.c and RP-55 7.4 c	V.C Appendix C Page 12,13,26	Note that map has been reformatted and the scale made more prominent.
Public areas within area of exposure	19.15.11.9.B.2.c and RP-55 7.4 c	V.C Appendix C Page 12,13,26	Note that there are no public areas within ROE

<b>Contingency Plan Requirements Checklist</b>			
<b>19.15.11.9.B NMAC Requirement</b>	<b>Requirement</b>	<b>Section/Page Number</b>	<b>Notes</b>
Public roads within area of exposure	19.15.11.9.B.2.c and RP-55 7.4 c	V.C Appendix C Page 12,13,26	Note that there are no public roads within ROE
<b>Training and Drills</b>			
Training of personnel to include responsibilities, duties, hazards, detection, personal protection and contingency procedure	19.15.11.9.B.2.d and RP-55 7.4d	VII.A. Page 14	19.15.11.9.B.2.d "include training in the responsibilities and duties of essential personnel. . ." The rule does not specify that the type and details of training be included in the plan, just that training be included. This is also reflected in RP-55. Agave takes the H2S education of its personnel very seriously and will train and educate its personnel per Agave's internal matrix.
Periodic drills or exercises that simulate a release	19.15.11.9.B.2.d and RP-55 7.4d	VII.B Page 14	19.15.11.9.B.2.d " periodic on-site or classroom drills OR exercises that stimulate a release". The regulation does not require both tabletop and a simulation. This is also reflected in AP-55
Documentation of training, drills, & attendance	19.15.11.9.B.2.d and RP-55 7.4d	VII.D Page 14	
Training of residents on protective measures	19.15.11.9.B.2.d and RP-55 7.4d	VII.C Page 14	
Briefing of public officials on evacuation or shelter-in-place plans	19.15.11.9.B.2.d and RP-55 7.4d	VII.E Page 15	
<b>Coordination with state emergency plans</b>			
How emergency response actions will coordinate with OCD and the state police response plans	19.15.9.B.2.e	VIII Page 14	

Contingency Plan Requirements Checklist			
19.15.11.9.B NMAC Requirement	Requirement	Section/Page Number	Notes
<b>Activation Levels</b>			
Activation Levels and description of events which may lead to a release in excess of activation level	19.15.11.9.B.2.f	IX.A and IX.B Page 15	Plan will be activated at 10ppm. Agave recognizes that this is less than the 100ppm required by OCD, but there is nothing in the regulation or the RP-55 which prohibits Agave from activating the plan at an H2S level which protects its employees as well.
<b>Plan Activation</b>			
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm in a public area or 500 ppm at a public road	19.15.11.9.C and RP-55 7.4d	IX.A and IX.B Page 15	
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm 3000 feet from the site of release	19.15.11.9.C and RP-55 7.4d	IX.A and IX.B Page 15	

# **H<sub>2</sub>S Contingency Plan**

## **Penasco Compressor Station**



## **Agave Energy Company**

105 South 4th Street  
Artesia, NM 88210  
(575-748-4555)  
February 1, 2013

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**MAPS AND FIGURES**

**Map 1: Penasco Compressor Station Location**

**Map 2: General Diagram of Penasco Compressor Station**

**Figure 1: Station Photos**

**APPENDICES**

**Appendix A – Facility Maps and Drawings**

**Map A-1: Facility Map**

**Map A-2: Evacuation Route**

**Map A-3: Monitors and Alarms**

**Appendix B – Response Flow Diagram**

**Appendix C – ROE Calculations**

**Map C-1: Facility ROE**

**Appendix D – Muster Area and Evacuation Route**

**Map D-1: Muster Area and Evacuation Route**

**Map D-2: Potential Road Block Locations**

**Appendix E – Distribution List**

**OPERATOR QUICK REFERENCE GUIDE**  
**Penasco Compressor Station**  
**Response**

**Personal H<sub>2</sub>S Monitor Detected  
Greater than 10 ppm H<sub>2</sub>S  
Intermittent Audible Alarm and  
flashing  
Red light**



- Evacuate to Emergency Assembly Area
- Evacuate visitors from station to designated Muster Area
- Notify Agave Management
- Notify qualified operators to shut in station without entering ROE
- Notify all entities in the 500 ppm ROE
- After shut in - attempt to locate and repair leak
- All other entities (including private residents) within the 100 ppm radius of impact (ROE)



**CALL 911 for  
death or Injury  
for emergency  
assistance**

## **Location of Facilities**

### **Penasco Compressor Station Location**

Section 26, Township 18S, Range 25E, Eddy County- Go south of Artesia, NM on Highway 285 approximately 9.2 miles to Kincaid Road (County Road 38) then turn right (west) on Pipeline Road about 3.0 miles to the Agave Dagger Draw Plant. The compressor station is west of the plant.

### **Emergency Trailer – Atoka Facility Location**

From Artesia, drive south on Highway 285 to County Road 39. Turn east and drive approximately 2 miles. The facility is on the south side of the road in NW/NE Sec 14 18S 26 E. The trailer can serve as a Mobile Resource Center or Incident Command Center.

## **I. Introduction**

### **[API RP-55 7.1]**

The Penasco Compressor Station is a natural gas compressor station which handles sour field gas that contains hydrogen sulfide (H<sub>2</sub>S). This H<sub>2</sub>S contingency Plan was created to outline procedures that are to be followed in the event of an H<sub>2</sub>S Release that could occur at the station, or on the sour gas pipeline. The response plan is the same regardless of where the release takes place. This plan complies with the *New Mexico Oil Conservation Division (OCD) Rule 11*. The plan and operation of the Penasco Compressor Station also conforms to standards set forth in *API RP-55 "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide"* as well as *API RP-49 "Recommended Practice for Drilling and Well Servicing Operations Involving Hydrogen Sulfide."* The Penasco Compressor Station does have storage tanks in which sour condensate is stored, and thus, API regulations and OCD regulations (specifically 19.15.11.12.E NMAC) relative to those types of storage are applicable for this station. While there are no known residences or businesses within the 100 ppm radius of exposure (ROE) other than the Penasco Compressor Station, Agave has committed to provide notice to nearby property owners outside of the ROE if necessary as detailed in Section IV.B in the case of an unintended release.

## **II. Scope**

### **[API RP-55 7.2]**

This contingency plan is specific to the Penasco Compressor Station. This plan contains procedures to provide an organized response to an unplanned release from the station and the connected pipeline. It outlines procedures that would be followed to alert and protect any members of the public, residents in surrounding areas and/or contractors working on or around the Station in the event of an unplanned release. All operations shall be performed with safety as the primary goal. Any part of the operation that might compromise the safety of personnel will cease until the operation can be re-evaluated and the proper engineering controls implemented.

## **III. Plan Availability**

### **[API RP-55 7.3]**

This contingency plan shall be available to all personnel responsible for implementing any portion of the plan. Copies of the plan will be distributed to the following agencies: New Mexico Oil Conservation Division (OCD), New Mexico Department of Public Safety, Local Emergency Planning Committee (LEPC), Artesia Fire Department and Eddy County Sheriff's Department. The Plan will be available at the following Agave Energy Company locations: Artesia Field Office, Emergency Response Trailer at Atoka (Map 1) and the Agave Main Office in Artesia.

## **IV. Emergency Procedures**

### **[NMAC 19.15.11.9.B(2)(a)] [API RP-55 7.4 a] [29 CFR 1910.1200]**

#### **A. Responsibilities and Duties of Personnel during an Emergency**

1. Area Foreman or designee will serve as the Incident Commander (IC); is responsible for training operators assigned to the station, contractors and visitors on the implementation of this plan; and will maintain communication with Agave management and residents within the radius of exposure (ROE).
2. Area Foreman or designee will serve as the Incident Commander (IC) in the absence of the Area Foreman; is responsible for training and supervising station operators on the implementation of this plan, will maintain accountability of all contractors and visitors; and will maintain communication with the Area Foreman and Agave management.

3. Field personal will perform operations in accordance with this safety plan; assist in the accountability and evacuation of visitors and contractors to designated muster areas; and keep the Area Foreman and manager informed on the repair progress.
4. Essential Agave Personnel will be familiar with the procedures in this plan and assist station operators in assisting with the implementation of this plan in a safe manner.
5. Visitors and contractors on site will be familiar with safety alarms; and adhere to instructions of Area Foreman and other Agave personnel in evacuation of the facilities.

### **B. Immediate Action Plan**

The following outlines the immediate action plan that is illustrated by the response Flow diagram in Appendix B. This is to be used when responding to an H<sub>2</sub>S release. The Response level is the same for a release at any point or concentration. Additional or long term response actions will be determined on a case-by-case basis, if needed, once the Incident Command Center (ICC) and System (ICS) are established following the immediate response.

1. If H<sub>2</sub>S is at 10 ppm or greater, worst case scenario, and/or catastrophic release have occurred, then the following response will be implemented.
2. Road blocks will be set up near the Muster Area on the intersection of the lease road and Pipeline (see Appendix D).
3. All personnel shall have evacuated to a designated Muster Areas. Evacuation of all entities within the 500 ppm radius of impact (ROE) will have been confirmed. Implement full H<sub>2</sub>S Plan does not require public comment. Notifications to all entities within the 100 ppm radius of impact (ROE) will include the nature of the release and status of containment. Notifications will include but are not limited to the following:
  - a) All businesses within the 100 ppm radius of impact (ROE) will be instructed to immediately alert all company personnel, third party contractors and/or services companies working in the area, and those imminently scheduled to work in the area, of the release and evacuation status of the Station. They will be instructed to immediately leave and/or not enter/reenter the area within the roadblocks until further instruction.
  - b) All other entities (including private residents) within the 100 ppm radius of impact (ROE) will be instructed to immediately shelter in place, if appropriate based on the source of the release and the wind direction. Those entities will be instructed to close any windows and shut off any air conditioning/heating until further notice. In addition, they will be instructed to contact other employees/residents not currently present to not enter/reenter the area until further instruction.
  - c) The Incident Commander (IC) will make the decision based on, but not limited to, H<sub>2</sub>S concentration and wind direction, whether a safe evacuation can be implemented, and recommend an evacuation route.

**It should be noted that at the time of submission of this plan there are no known occupants, businesses or residences within the 100 ppm ROE; however, Agave personnel will make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Muster Area, described above.**

4. If escaping vapors have ignited, the vapors should be allowed to continue to burn unless the fire endangers personnel, other property, or other equipment.
5. When applicable, maintain communication with the Area Foreman, or his designee, to keep him up-to-date of the situation and the action taken prior to his arrival at the location.
6. Initiate and maintain a Chronological Record of Events log.

7. Within one hour after the activation of the H2S Plan, begin agency notifications by calling Oil Conservation Division (OCD) and National Response Center (NRC) if necessary.
8. Establish media staging area adjacent to Muster Area and direct all media to it if necessary.
9. Once resolved and monitored levels in the Plant and at Muster Area are less than 10 ppm, roadblocks will be removed, and all entities within the 100 ppm radius of impact (ROE) will be allowed to return. All entities previously notified will be informed that the release has been resolved and advised of the current monitored H2S levels.
10. Monitoring will continue after problems are abated, at the direction of the Area Foreman.
11. Agency reports to be submitted as required.

### C. Telephone Numbers and Communication Methods

#### 1. Emergency Services

AGENCY	TELEPHONE #
Artesia Fire Department	(575) 946-5050
Eddy County Sheriff	(575) 887-7551
State Police (HMER)	
District 3 Roswell	(575) 827-9312
Sub District 3 Carlsbad	(575) 885-3138
Sub District 3 Hobbs	(575) 827-9320
Ambulance Services	
Artesia	(575) 746-5050
Carlsbad	(575) 885-2111
Hospitals	
Artesia General	(575) 748-3333
Carlsbad Medical Center	(575) 887-4100
Veterinarians	
Artesia Animal Clinic	(575) 748-2042
Livingston Animal Clinic	(575) 746-6167
Helicopter Services	
Lifeguard (Albuquerque)	1-800-633-5438
Southwest Medivac (Hobbs)	1-800-242-6199
AeroCare (Lubbock)	1-800-627-2376
Air Med (El Paso)	(915) 772-1449

#### 2. Government Agencies

AGENCY	TELEPHONE #
Oil Conservation Division (OCD)	(505) 476-3440
US BLM	(575) 887-6544
Local Emergency Planning Committee (LEPC)	(575) 887-9511
National Response Center (NRC)	1-800-424-8802

### 3. Operators and Contractors

COMPANY	TELEPHONE #
CVE	(575) 746-3571
PVT	(575) 748-1241
DCP Midstream	(800) 435-1679
Chevron/West Texas Pipeline Company	(800) 762-3404
Transwestern Pipeline	(281) 714-2265
Yates Petroleum Corporation	(575) 748-1471

### 4. Public (None)

### 5. Agave Internal Call List

NAME	TITLE	Office #	Cell #
J.B. Smith	President	(575) 748-4414	(575) 365-8517
Rusty Nasta	Operations Manager	(575) 748-4523	(575) 626-7971
Ivan Villa	Engineering Manager	(575) 748-4528	(575) 365-4888
Jennifer Knowlton	Environmental Manager	(575) 748-4528	(505) 238-3588
Robert Moorhead	South Mechanical Supervisor	(575) 748-6815	(575) 365-4840
Gary Greenwood	Plant Manager	(575) 748-8414	(575) 365-6794
Mark Smith	PSM Coordinator/Plant Operator	(575) 748-8410	(575) 365-5053
Rubin Molina	Safety Engineer	(575) 748-4447	(575) 513-9448
Bill Johnson	South Measurement Supervisor	(575) 748-6816	(575) 365-4615
Jason Fuentes	South Pipeline Supervisor	(575) 748-4518	(575) 365-8939

6. Agave Energy Company will use 2-way radios and telephones to communicate internally. Telephone will be used for external communication. Land lines and high speed internet access are available at the plant office.

### D. Location of Nearby Residences, Roads, and Medical Facilities

- The following residences are located within the ROE of the:
  - Station -- None
- The following roads are located within the ROE:
  - None
- There are no medical facilities located within the ROE.
- It should be noted that at the time of submission of this plan there are no known occupants, businesses or residences within the 100 ppm ROE; however, Agave personnel will make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Muster Area, described above.

### E. Evacuation Routes, Emergency Assembly Area, Muster Areas, and Road Block Locations

- Evacuation Routes, Emergency Assembly Area, and Muster Areas are depicted on Appendix D.
- Pre-planned road block location is designated near the muster area on the lease road just off Pipeline Road depicted on Map D-2 in Appendix D. The location will have pre-positioned, portable road barriers with lights. The location will have flashing lights and warning signs. If the release is

sufficient to require evacuation to muster areas, then roadblocks near the muster areas on the lease road of the facility, respectively, will be established. The Incident Commander (IC) will designate a representative to staff the roadblock. If deemed necessary by the Incident Commander (IC), the State or Local Police will be asked to assist with maintaining the roadblocks.

3. Emergency lights on the Muster Area signs will be activated by any perimeter alarm of 10 ppm or greater H<sub>2</sub>S or Level III activation.

#### **F. Monitoring Equipment, Alarm Systems, Safety Equipment, and Supplies Available**

1. GAS DETECTION EQUIPMENT: Each individual is assigned a personal H<sub>2</sub>S monitor. The handheld gas detection devices are Industrial Scientific ITX 3-gas detectors. The personal monitors are set to alarm (beep) at 10 ppm with the beeps becoming closer together as the H<sub>2</sub>S concentration increases to 20 ppm.

2. FIRE FIGHTING EQUIPMENT: Agave personnel are trained only for insipient stage firefighting. Fire extinguishers are located in the compressor buildings and company vehicles and are typically a 20# ABC dry chemical fire extinguisher. See Appendix A, Map A-1. The Station does not have a fire water system.

3. EMERGENCY RESPONSE TRAILER AND EQUIPMENT: Agave Energy Company has an Emergency Response Trailer located at the Atoka Facility (Map 1). This is located outside all radii of exposure (ROE) from the facility. The trailer can serve as a mobile resource center or Incident Command Center.

#### **4. EMERGENCY RESPONSE TRAILER CONTENTS**

- 2 wind socks / wind direction indicators w/poles & spares
- 1 – 110 volt generator, portable w/wheels
- 4 5-gas sensor ambient monitors (O<sub>2</sub>, SO<sub>2</sub>, LEL, CO, H<sub>2</sub>S) with automatic air pumps (15 sec per foot) and data logging capability
- 1 calibration unit for monitors
- 5 intrinsically safe communication radios & chargers, 32 channel with capability to be programmed to fire service and police channels
- 4 20# stored pressure, ABC class Fire Extinguishers
- 4 4500 Grade D breathing air cylinders, regulator, low pressure alarm, and hose reel w/ 300 ft hose (total) and correct quick disconnects.
- 1 stretcher
- 1 20-person First Aid Kit with burn gel packets
- 4 30-minute SCBA's
- 4 work unit SCBA's
- 2 lights, mounted on each rear of trailer for night operations
- 2 hand cleaner for decontamination of petroleum products.
- 3 traffic Control Kits
- 1 emergency flare gun for lighting uncontrollable hazardous gases
- 2 full body harness and 150' X 2 lifelines
- 2 "Hazardous Area" "Do Not Enter" signs / barricades
- 2 burn gel blankets
- 1 set of maps and Emergency Response Plans
- 4 temporary use Nomex Fire retardant clothing (2-LG & 2-XLG)

**5. TRAFFIC CONTROL KIT CONTENTS**

- 3 electronic road flares
- 1 28" stop sign paddle
- 4 reflective traffic control vests
- 2 emergency signal wands
- 1 emergency Response Guidebook

**6. FIRST AID EQUIPMENT LOCATIONS:**

All Field Offices are equipped with first aid kits and fire extinguishers.

All company vehicles are equipped with a first aid kit and fire extinguisher.

**7. PERSONAL H<sub>2</sub>S MONITORS:**

All Agave field and associated personnel are issued personal H<sub>2</sub>S monitors.

**8. SIGNS and MARKERS:**

The Station has warning signs indicating the presence of "H<sub>2</sub>S/Poisonous Gas" and high pressure gas at the entrance. Emergency response phone numbers are also posted.

**V. Characteristics of Hydrogen Sulfide (H<sub>2</sub>S) and Sulfur Dioxide (SO<sub>2</sub>)**  
**[NMAC 19.15.11.9.B(2)(b)] [API RP-55 7.4 b.]**

**A. Hydrogen Sulfide (H<sub>2</sub>S):** Hydrogen Sulfide (H<sub>2</sub>S): The proposed inlet gas streams into the Station will contain a maximum of 9,530 ppm (or 0.95 mole percent) of hydrogen sulfide based on data generated from the sampling of the inlet gas at least daily. Hydrogen sulfide is a colorless, toxic and flammable gas, and has the odor of rotten eggs. Hydrogen sulfide gas is heavier than air. Hydrogen sulfide presents a significant health hazard by paralyzing the respiratory system resulting in serious injury or death.

Appearance and state:	Colorless gas
Odor: Rotten Egg Odor.	The sense of smell is paralyzed at approximately 100ppm.
Odor Threshold:	0.05 ppm
Flash Point:	Flammable Gas
Auto Ignition:	260°C
Lower Explosive Limit (%):	4.3%
Upper Explosive Limit (%):	45.0%
Boiling Point:	-60.4°C
Melting Point:	-85.5°C
Vapor Pressure:	1875 kPa @ 20 °C
Vapor Density (Air = 1):	1.19
Specific Gravity:	Not available
Solubility (H <sub>2</sub> O):	Soluble in water
Percent Volatiles:	Not available
pH	Not available
Evaporation Rate:	Variable
Octanol/Water Coefficient:	Not available

**POTENTIAL HEALTH EFFECTS**

**Acute effects:** At high concentrations (500 - 1000 ppm), hydrogen sulfide acts as a systemic poison, causing unconsciousness and death. In lower concentrations (50 – 500 ppm), hydrogen sulfide acts as a respiratory irritant, and may cause fluid in the lungs or bronchial pneumonia. The rotten egg odor of hydrogen sulfide is not a reliable indicator for warning of exposure, since olfactory fatigue (loss of smell) readily occurs, especially at concentrations above 50 ppm. If rapidly escaping gas comes in contact with skin this product may result in frostbite and dermatitis.

**Chronic effects:** Chronic exposure to hydrogen sulfide of 50 ppm or greater may include bronchitis and inflammation of the mucous membrane of the respiratory system. At 250 ppm hydrogen sulfide, chronic effects may include bronchial pneumonia and pulmonary edema.

**Sensitization:** Not available.

**Mutagenicity:** Not mutagenic.

**Reproductive effects:** Not known to cause reproductive effects.

**Carcinogenicity:** Ingredients are not identified as carcinogens by IARC, NTP or ACGIH.

**Target organs:** Eyes, respiratory system, central nervous system (CNS).

**B. Sulfur Dioxide (SO<sub>2</sub>):** Sulfur dioxide is produced as a by-product of H<sub>2</sub>S combustion at the flare. The flare unit receives the residual hydrogen sulfide and carbon dioxide stream that is routed from the amine unit. It is colorless, transparent, and is non-flammable, with a pungent odor associated with burning sulfur. Sulfur dioxide is heavier than air, but will be picked up by a breeze and carried downwind at elevated temperatures. Sulfur dioxide can be extremely irritating to the eyes and mucous membranes of the upper respiratory tract

<b>Appearance and state:</b>	<b>Colorless Gas</b>
<b>Odor:</b>	<b>Faint Sweetish Odor.</b>
<b>Odor Threshold:</b>	<b>0.35-5 ppm</b>
<b>Flash Point:</b>	<b>Non-Flammable Gas</b>
<b>Auto Ignition:</b>	<b>Non-Flammable</b>
<b>Lower Explosive Limit (%):</b>	<b>Not Available</b>
<b>Upper Explosive Limit (%):</b>	<b>Not Available</b>
<b>Boiling Point:</b>	<b>14 ° F at 760 mm Hg</b>
<b>Melting Point:</b>	<b>-98.9 ° F</b>
<b>Vapor Pressure:</b>	<b>2432 mm Hg at 68.0 ° F</b>
<b>Vapor Density(Air=1):</b>	<b>2.26</b>
<b>Specific Gravity:</b>	<b>1.434</b>
<b>Solubility (H<sub>2</sub>O):</b>	<b>10 %</b>
<b>Percent Volatiles:</b>	<b>Not Available</b>
<b>pH:</b>	<b>Not Available</b>
<b>Evaporation Rate:</b>	<b>Variable</b>
<b>Ocatanol/Water Coefficient:</b>	<b>Not Available</b>

**C. Radii of Exposure (ROE)**

[NMAC 19.15.11.7.K]

The basis for worst case scenario calculations is as follows:

- The hydrogen sulfide content of the inlet natural gas stream into the Penasco Compressor Station is variable, ranging upwards to 9530 parts per million (ppm) or 0.95 mole percent. In reality, the actual H<sub>2</sub>S concentration that the plant processes will be much less than this.

- The inlet gas H<sub>2</sub>S concentration of 0.95 mole percent was determined using a mass-balance approach.
- The Station has a maximum daily (24 hour) processing volume of 2.0 MMSCF.
- The worst case scenario radius of exposure (ROE) also assumes an uncontrolled instantaneous release from the area around any point along the pipeline connecting the compressors or referenced volume and concentration. Because the Station is a compressor facility, it is impossible that the entire 24 hour-throughput volume of the station could be released instantaneously as is assumed in the worst case scenario calculations of the ROE. However, to comply with NMAC 19.15.11, that assumption is the worst case scenario in the formulas/calculations provided here.

The formulas for calculating the two radius of exposure (ROE) are as follows:

100 ppm Radius of Exposure Calculation (as per 19 NMAC 15.11.7.K.1):

$$X = [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$$

500 ppm Radius of Exposure Calculation (as per 19 NMAC 15.11.7.K.2):

$$X = [(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$$

Where:

X = radius of exposure in feet

"hydrogen sulfide concentration" = the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture

Q = Escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees Fahrenheit)

### Penasco Compressor Station

<b>500 ppm ROE</b>	<b>285 feet</b>
<b>100 ppm ROE</b>	<b>625 feet</b>

The ROE for the facility are shown on Map C-1 of Appendix C. This ROE pattern is designed to include the 100 and 500 ppm radii for a potential worst case failure at any point in the system from the facility.

## VI. Facility Description, Maps, and Drawings

[NMAC 19.15.11.9.B(2)(c)] [API RP-55 7.4 c.]

### Penasco Compressor Station Description of Operations

The primary function of this facility is to enable the transportation process of natural gas from one location to another. The facility is also involved in some primary treatment of natural gas via a scrubber located at the inlet feed.

**VII. Training and Drills****[NMAC 19.15.11.9.B(2)(d)] [API RP-55 7.4 d]****A. Responsibilities and Duties of Essential Personnel**

Personnel responsible for implementing this plan shall be trained on their duties and responsibilities related to this plan annually

**B. On-site or Classroom Drills**

Agave Energy Company may use table top exercises as well as hands on emergency response training methods. Agave Energy Company shall conduct a table top exercise annually at a minimum.

**C. Notification and Training of Others on Protective Measures in Emergency Situations**

While at the time of submission of this plan there are no residences or businesses within the 100 ppm ROE, nearby residents who live outside of the ROE will be invited to participate in and/or observe annual drills, where they will be briefed on notification, evacuation, and shelter in place options such as closing windows and shutting off any air conditioning/heating until they are notified that it is safe.

**D. Training and Attendance Documentation**

All training and drills will be documented. Documentation shall include sign in sheets, synopsis of the training conducted, and an after action review of the training.

**E. Briefing of Public Officials on Evacuation and Shelter in Place Plans**

Local law enforcement, first responders, and fire personnel will also be invited to participate and/or observe annual drills, as well as being briefed on notification, evacuation, and shelter in place plans.

**VIII. Coordination with State Emergency Plans****[NMAC 19.15.11.9.B(2)(e)]****A. Oil Conservation Division (OCD)**

Oil Conservation Division (OCD) will be notified with an automatic email to the District II office advising of the activation of the H<sub>2</sub>S Contingency Plan if any of the alarms are activated at 10 ppm H<sub>2</sub>S or greater. In the event of a power failure, a phone call will be made within four hours. All subsequent paperwork will be filed in a timely fashion.

**B. New Mexico State Police/ New Mexico Hazardous Materials Emergency Response Plan**

The New Mexico State Police are responsible for overall scene management and coordination of all resources. A designated Emergency Response Officer (ERO) will establish the National Interagency Incident Management System (NIIMS) Incident Command System (ICS) as the Incident Commander (IC) and be responsible for management of all response resources on scene. Off-scene coordination of response resources will be handled through designated Headquarters Emergency Response Officers. Law enforcement-related activities will be coordinated by State Police.

**IX. Plan Activation****[NMAC 19.15.11.9.C] [API RP-55 7.4 d]****A. Activation Level**

The activation level per Section IV.B will be an H<sub>2</sub>S detection of 10ppm or greater.

This H<sub>2</sub>S contingency plan will be activated by any catastrophic release; fire; explosion; a continuous release of maximum volume for 24 hours; or NMAC 19.15.11: mandatory activation of indication of 100 ppm in any defined public area; 500 ppm at any public road; 100 ppm 3000 feet from the site or the release.

**B. Events that Could Lead to a Release of H<sub>2</sub>S**

- Inlet and Station piping failure
- Flange/gasket leaks on inlet and station piping
- Flange/gasket leaks on the gas compressor
- Failure gas pipeline
- Valve packing
- Seal failure on gas compressor
- Failure of flare to ignite

**X. Submission of H<sub>2</sub>S Contingency Plans****[NMAC 19.15.11.9.D]****A. Submission**

Agave Energy Company will submit the H<sub>2</sub>S Contingency Plan to the Oil Conservation Division (OCD).

**B. Retention**

Agave Energy Company shall maintain a copy of the contingency plan in the Main Office at 105 South 4<sup>th</sup> Street in Artesia, NM. The plan shall be readily accessible for review by the Oil Conservation Division (OCD) upon request.

**C. Inventory**

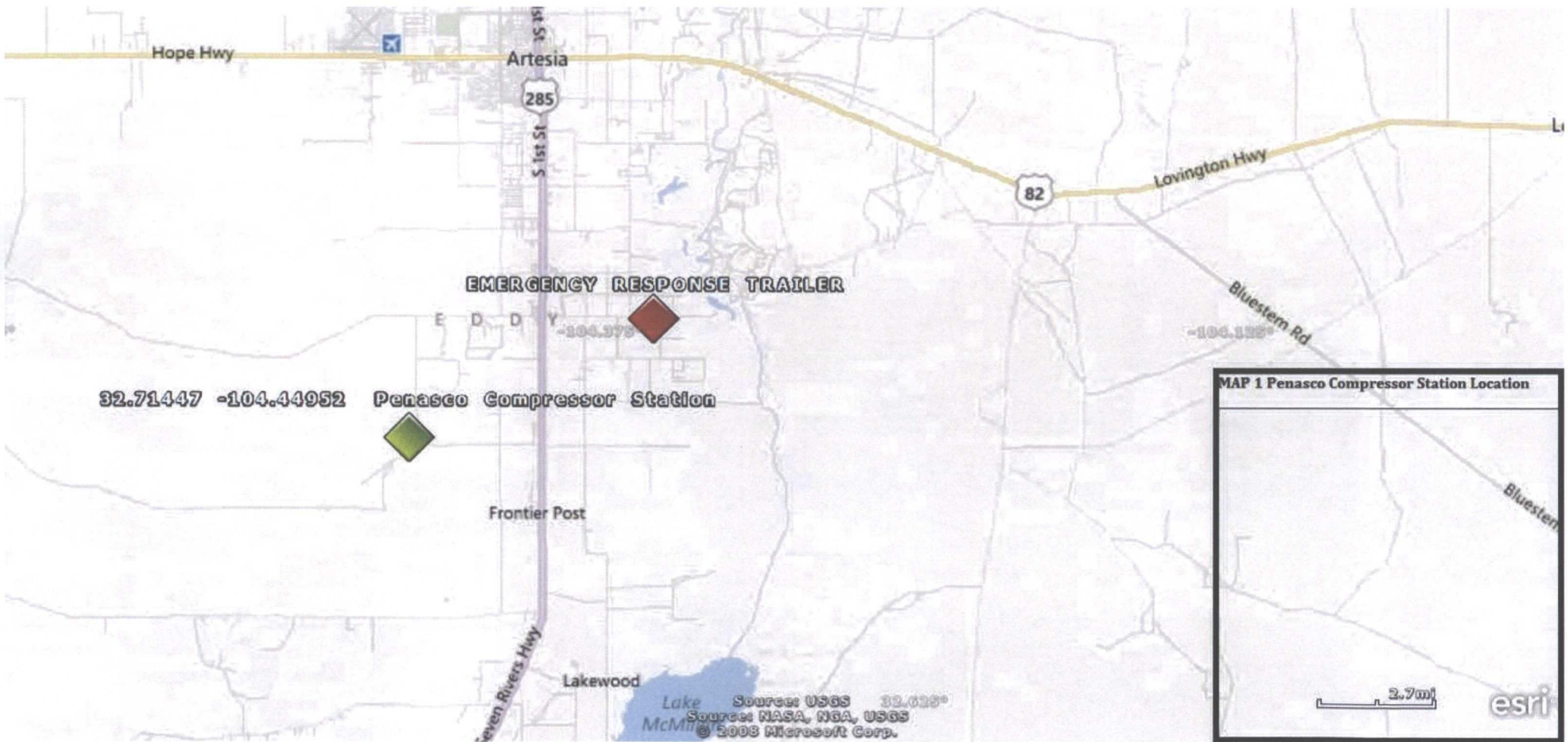
1. Agave Energy Company will file an annual inventory of wells, facilities and operations for which plans are on file with the Oil Conservation Division (OCD), to the Local Emergency Planning Committee (LEPC) and the State Emergency Response Commission as per NMAC 19.15.11.
2. The inventory shall include the name, address, telephone number, and point of contact for all operations in which plans are on file.

# **MAPS AND FIGURES**

**MAP 1: Penasco Compressor Station and emergency trailer locations**

**MAP 2: General Diagram of Penasco Compressor Station**

**FIGURE 1: Photos of Station**



32.71447 -104.44952 Penasco Compressor Station

EMERGENCY RESPONSE TRAILER

Frontier Post

Lakewood

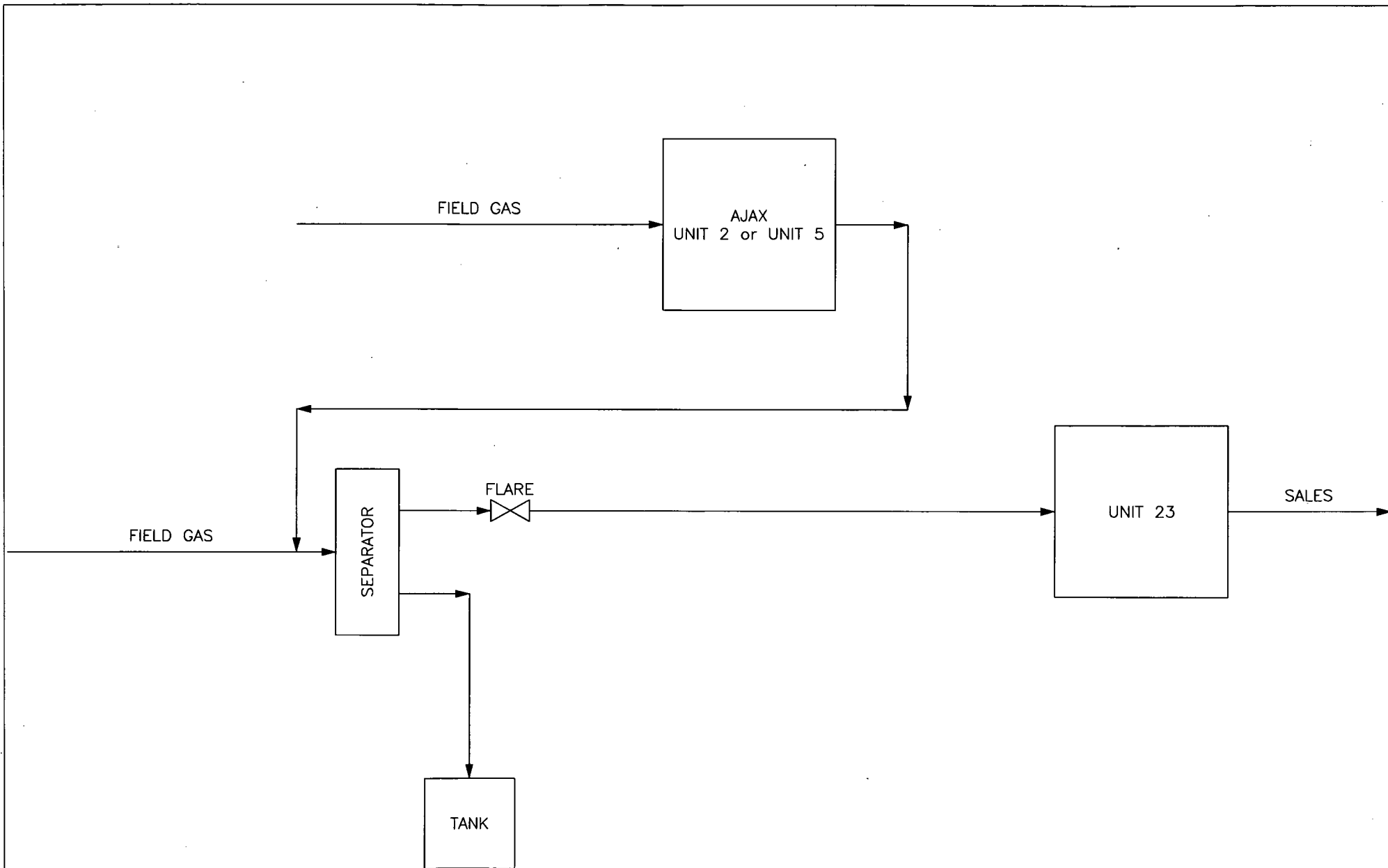
Lake McMillan

Source: USGS  
Source: NASA, NGA, USGS  
© 2008 Microsoft Corp.

MAP 1 Penasco Compressor Station Location

2.7mi

esri

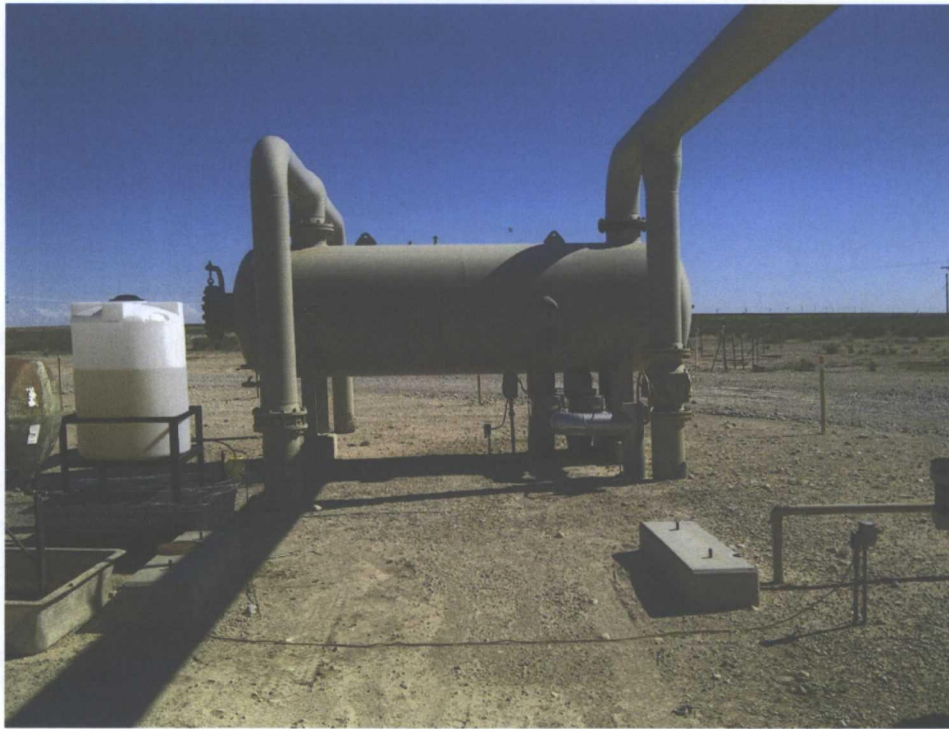


AGAVE ENERGY COMPANY  
105 South Fourth Street, Artesia, New Mexico 88210

### PENASCO FLOW DIAGRAM

STATE: NEW MEXICO	CHK: JK	DATE: 7/17/08	REV 0
COUNTY: EDDY	DRAFTING: TWH	DATE: 7/17/08	
SECTION: 26	APPROVED: JK	DATE: 7/17/08	
TOWNSHIP: 18S	SIZE: ANSI A	SCALE: NA	
RANGE: 25E	PRINTED: 7/17/08	SHEET 1 OF 1	

**FIGURE 1**



South end of the Station



Tank Battery West end of the Station

## **APPENDIX A- Facility Maps and Drawings**

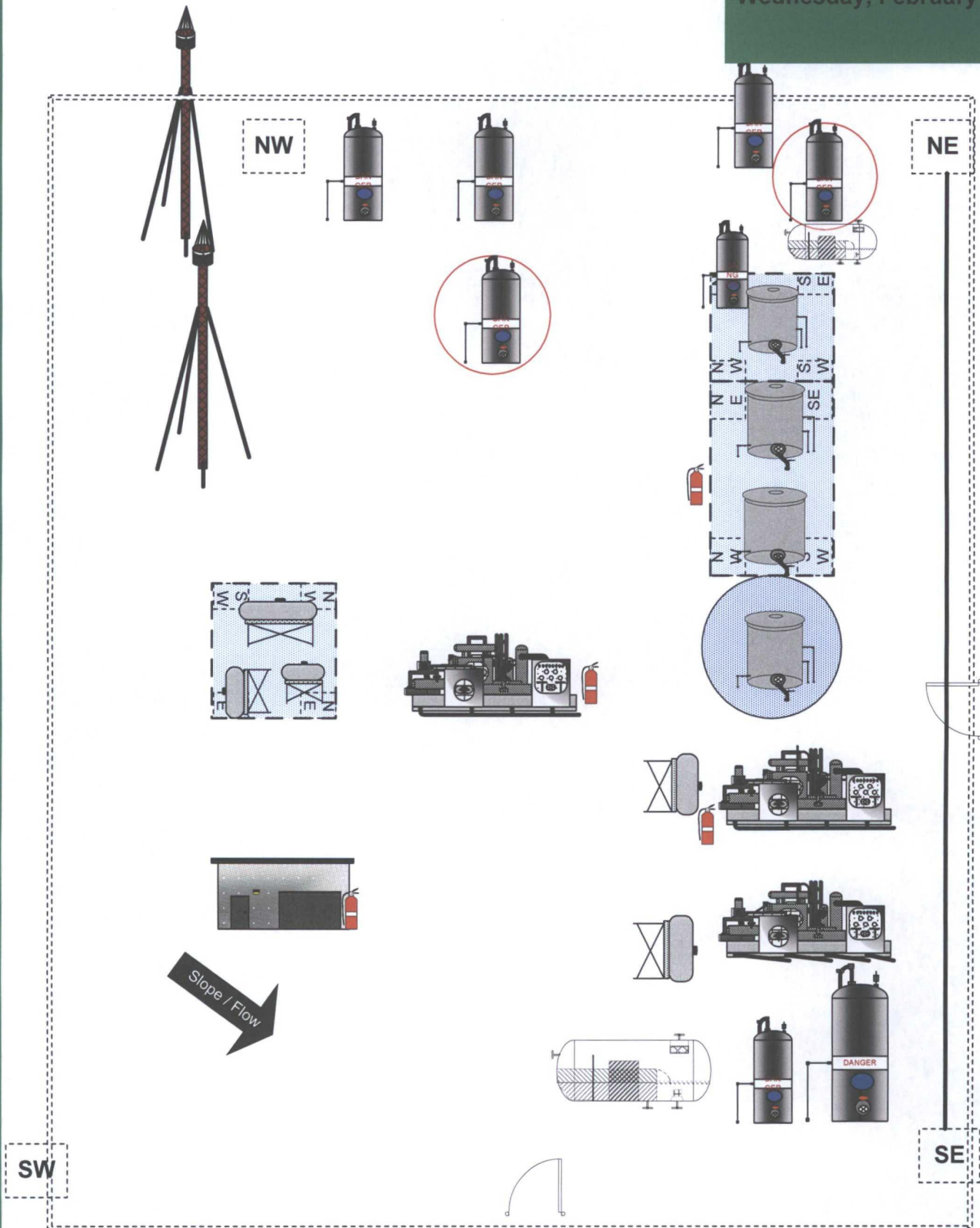
### **MAP A-1: Facility Map**

### **MAP A-2: Evacuation Route**



# AGAVE ENERGY COMPANY

Wednesday, February 06, 2013





MAP A-2 Evacuation Route



## **Appendix B – Response Flow Diagrams**

# **OPERATOR QUICK REFERENCE GUIDE**

## **Penasco Compressor Station Response**

**Personal H<sub>2</sub>S Monitor Detected  
Greater than 10 ppm H<sub>2</sub>S  
Intermittent Audible Alarm and  
flashing  
Red light**



- Evacuate to Emergency Assembly Area
- Evacuate visitors from station to designated Muster Area
- Notify Agave Management
- Notify qualified operators to shut in station without entering ROE
- Notify all entities in the 500 ppm ROE
- After shut in - attempt to locate and repair leak
- All other entities (including private residents) within the 100 ppm radius of impact (ROE)



**CALL 911 for  
death or Injury  
for emergency  
assistance**

## Appendix C - Radius of Exposure Calculations

### ROE Calculations

#### Map C-1: Radius of Exposure

#### APPENDIX C-RADIUS OF EXPOSURE CALCULATIONS

The basis for worst case scenario calculations is as follows:

- The escape rate (Q) is the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For releases inside the Penasco Compressor Station, the Company is using for contingency planning purposes an "escape rate" equal to the maximum inlet gas volume of 2000 MCFD. The (actual) inlet gas volume at the Station will be somewhat variable and is metered. The assumed 2000 MCFD inlet gas volume has been selected as the "escape rate" because it is the highest anticipated inlet volume that the Station would handle under its proposed operations and is considered worst case interpretation of the volume of gas.
- It should be noted that the plan will remain effective as long as the processed volume and H<sub>2</sub>S content equate to the same or smaller ROE.
- Previous monitoring data indicated variable inlet concentrations of hydrogen sulfide, but concentration will not exceed 9,530 ppm or .95 mole percent.

Using:

Q = 2,000,000 scfd

H<sub>2</sub>S conc = 9530 ppm or .92 mole%

#### 500-ppm RADIUS OF EXPOSURE CALCULATION

$$X = [(0.4546) * (\text{H}_2\text{S concentration}) * (\text{gas volume (Q)})]^{0.6258}$$

$$X = [(0.4546) * (9,530 * .000001) * (2,000,000)]^{0.6258}$$

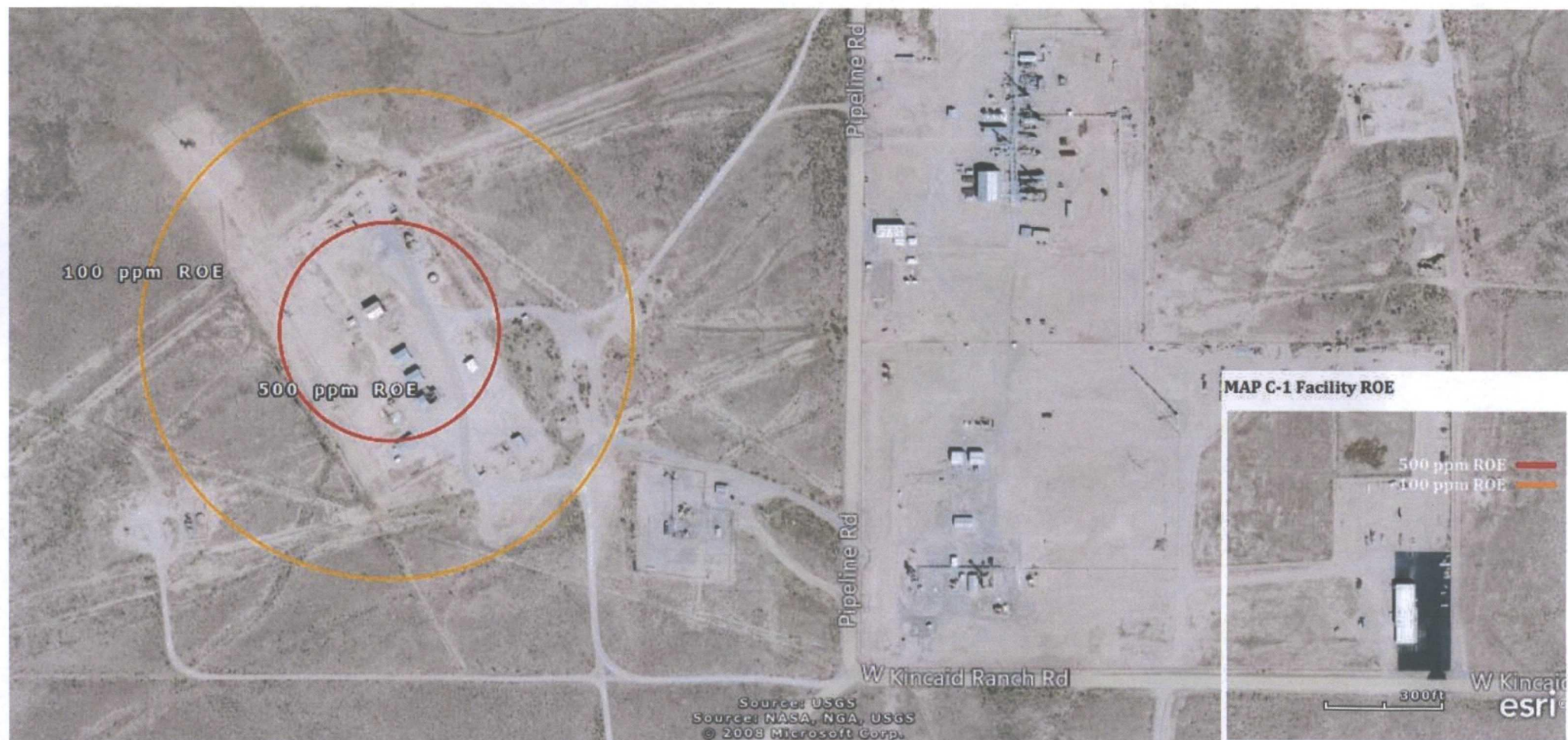
$$X = 285 \text{ feet} = 500\text{-ppm ROE}$$

#### 100-ppm RADIUS OF EXPOSURE CALCULATION

$$X = [(1.589) * (\text{H}_2\text{S concentration}) * (\text{gas volume})]^{0.6258}$$

$$X = [(1.589) * (9,530 * .000001) * (2,000,000)]^{0.6258}$$

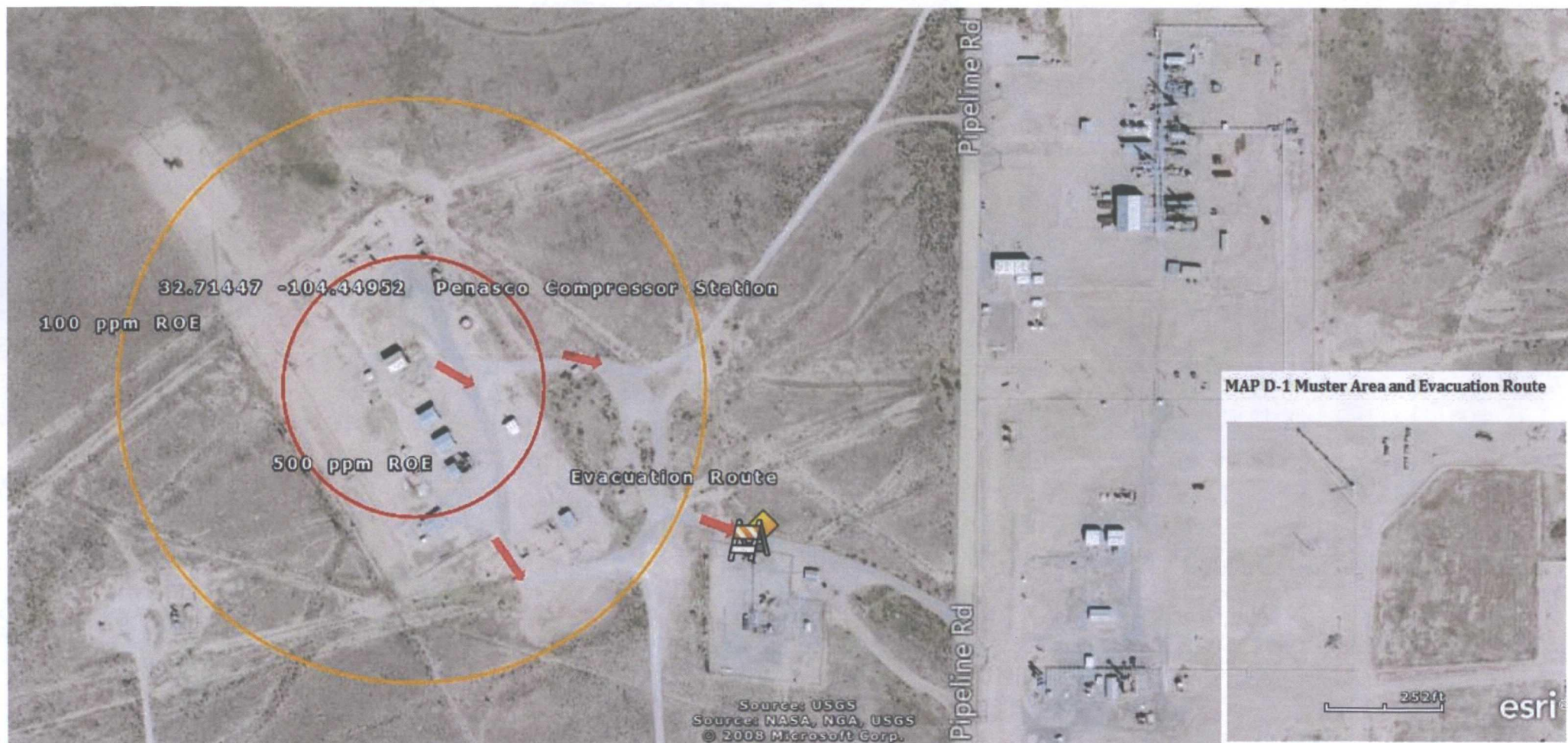
$$X = 625 \text{ feet} = 100\text{-ppm ROE}$$

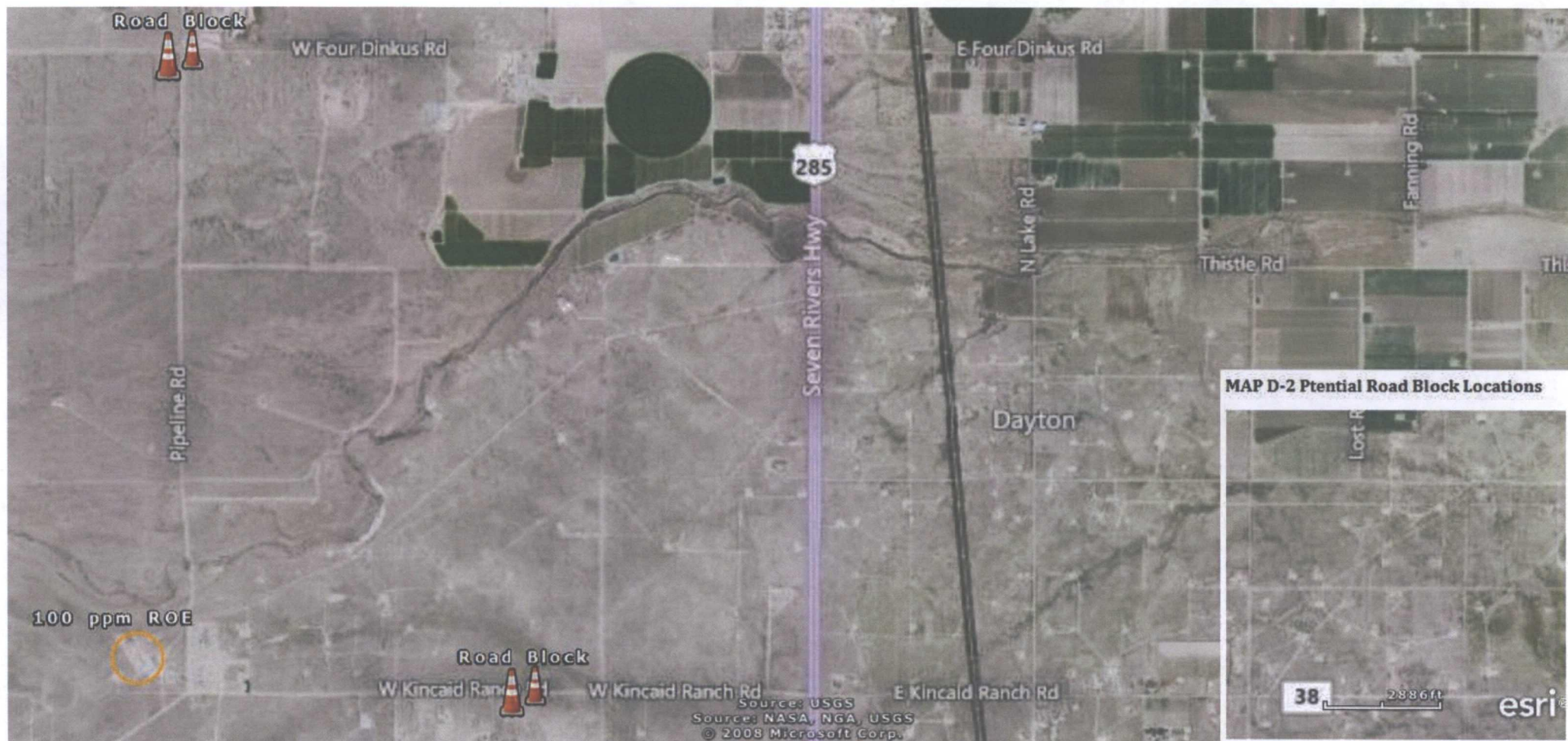


## **APPENDIX D- Muster Area and Evacuation Route**

### **MAP D-1: Muster Area and Evacuation Route**

### **MAP D-2: Potentail Road Block Locations**





## **APPENDIX E – H2S Contingency Plan Distribution List**

### **New Mexico Oil Conservation Division**

1301 West Grand Avenue  
Artesia, NM 88210-1729

### **New Mexico Department of Public Safety**

4207 W 2nd Street  
Roswell, NM 88201-8857

### **Local Emergency Planning Committee**

324 S Canyon Street, Suite B  
Carlsbad, NM 88210

### **Artesia Fire Department**

309 North 7th Street  
Artesia, NM 88210-1913

### **Atoka Fire Department**

2611 South 13th Street  
Artesia, NM 88210-9333

### **Eddy County Sheriff's Department**

Eddy County Courthouse  
102 N. Canal  
Carlsbad, NM 88220

### **Agave Field Office**

288 Kincaid Ranch  
Artesia, NM 88210

### **Agave Main Office**

105 South 4th Street  
Artesia, NM 88210