

C0150015 # 5847

Bronco Utah Operations LLC
PO Box 527
Emery Utah, 84522
435-286-2447

January 24, 2019

Mr. Steve Christensen
Utah Division of Oil, Gas and Mining
Coal Program
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, UT 84114-5801

**RE: Bronco Utah Operations LLC
Emery Mine
DOG M Permit No. C/015/0015
Emery 2 Second Left Panel Full Extraction Revision Clean Copy task 5847**

Mr. Christensen:

Per your conditional approval memo January 24, 2019, attached please find two clean copies regarding the above mentioned task. Executed C1 form, C2 form, revised pages, and Plates are included.

If you have any questions concerning this request, please contact Kit Pappas at 435-286-2027.

Sincerely,



Kit Pappas
Environmental Manager

Attachments Application for Coal Permit Processing

RECEIVED

JAN 24 2019

DIV OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Bronco Utah Operations LLC (BUOLLC)

Mine: Emery Mine

Permit Number: 015/015

Title: Emery 2 2nd left panet Full Extraction

Description, Include reason for application and timing required to implement:

Emery 2 2nd left panel Full Extraction

Clean copy tsk # 5847

01/19

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

- | | |
|---|---|
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ <input type="checkbox"/> increase <input type="checkbox"/> decrease. |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 2. Is the application submitted as a result of a Division Order? DO# _____ |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4. Does the application include operations in hydrologic basins other than as currently approved? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 6. Does the application require or include public notice publication? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 7. Does the application require or include ownership, control, right-of-entry, or compliance information? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 9. Is the application submitted as a result of a Violation? NOV # _____ |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 10. Is the application submitted as a result of other laws or regulations or policies?
<i>Explain:</i> _____ |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 11. Does the application affect the surface landowner or change the post mining land use? |
| <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2) |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 13. Does the application require or include collection and reporting of any baseline information? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 15. Does the application require or include soil removal, storage or placement? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 16. Does the application require or include vegetation monitoring, removal or revegetation activities? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 17. Does the application require or include construction, modification, or removal of surface facilities? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 18. Does the application require or include water monitoring, sediment or drainage control measures? |
| <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 19. Does the application require or include certified designs, maps or calculation? |
| <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 20. Does the application require or include subsidence control or monitoring? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 21. Have reclamation costs for bonding been provided? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream? |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 23. Does the application affect permits issued by other agencies or permits issued to other entities? |

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

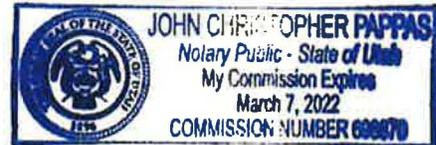
BART J. HYITA
Print Name

[Signature] PRES/CEO 1/24/19
Sign Name, Position, Date

Subscribed and sworn to before me this 24 day of JANUARY, 2019

[Signature]
Notary Public

My commission Expires: 3-7, 2022
Attest: State of UTAH } ss:
County of CARBON



For Office Use Only: 	Assigned Tracking Number: 	Received by Oil, Gas & Mining
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APPLICATION FOR COAL PERMIT PROCESSING

Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Bronco Utah Operations LLC (BUOLLC)

Mine: Emery Mine

Permit 015/015

Number:

Title: Emery 2 2nd left panel Full Extraction

Clean copy

Tsk #5847

1/24/19

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED

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<p>Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.</p>	<p>Received by Oil, Gas & Mining</p>
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CHAPTER V

GEOLOGY AND SUBSIDENCE

PARTS

V.A GEOLOGY

- V.A.1 GENERAL AREA GEOLOGY
- V.A.2 MINE PLAN AREA GEOLOGY
- V.A.3 GEOLOGY OF COAL BEDS AND ADJACENT UNITS
- V.A.4 I-ZONE ROOF & FLOOR CHARACTERISTICS (1ST North IBC)
- V.A.4 I-ZONE ROOF AND FLOOR CHARACTERISTICS
- V.A.5 ACID, ALKALINE, OR TOXIC POTENTIAL
- V.A.6 PYRITE, MARCASITE, AND SULFUR CONTENT
- V.A.7 COAL RESERVE INFORMATION
- V.A.8 BIBLIOGRAPHY

V.B SUBSIDENCE

- V.B.1 SUBSIDENCE CONTROL, MONITORING AND MITIGATION
- V.B.2 BIBLIOGRAPHY

APPENDICES

- V-1 RESOURCE RECOVERY AND PROTECTION PLAN INFORMATION
- V-2 DRILL HOLE LOGS FOR CROSS SECTIONS
- V-3 1980 PRE-SUBSIDENCE SURVEY
- V-4 2007 PRE-SUBSIDENCE SURVEY OF THE 14TH AND 15TH WEST PANELS
- V-5 2007 PRE-SUBSIDENCE SURVEY OF THE 4th E, 6th W, Zero North, ZZ North Panels
- V-6 SUBSIDENCE MITIGATION AGREEMENTS
 - Emery County Road subsidence mitigation agreement
 - PacifiCorp powerline subsidence mitigation agreement
- V-7 2008 PRE-SUBSIDENCE SURVEY Life of Mine panels
- V-8 2017 PRE-SUBSIDENCE SURVEY South of Buffer Zone

PLATES

- V-1 STRUCTURES AND UTILITIES Vol. 2 Map Pocket
- V-2 ROADWAYS. Vol. 2 Map Pocket
- V-3 HYDROLOGY. Vol. 2 Map Pocket
- V-4 VEGETATION Vol. 2 Map Pocket
- V-5 SUBSIDENCE MONITORING POINTS
AND BUFFER ZONES Vol. 2 Map Pocket
- V-5H HISTORICAL SUBSIDENCE MONITORING POINTS Vol. 2 Map Pocket
- V-6 AREA DRILL HOLE, CROSS SECTION AND
GEOCHEMICAL TEST HOLE LOCATIONS Vol. 2 Map Pocket
- V-7 CROSS SECTION A-A' Vol. 2 Map Pocket
- V-8 CROSS SECTION C-C' Vol. 2 Map Pocket
- V-9 CROSS SECTION D-D' Vol. 2 Map Pocket

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Revised 5/2007, 3/2008, 1/2009, 5/2009, 1/2018
Revised 1/2019

**Pre-Subsidence Survey
Prior to Full Extraction,
Emery 2 Portal,
South of Quitchupah Creek**

Bronco Utah Operations, LLC
Emery County, Utah

December 2017

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EarthFax EarthFax Engineering Group, LLC.

Engineers / Scientists
www.earthfax.com

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
CHAPTER 1 – INTRODUCTION	1
CHAPTER 2 – SURVEY AREA OBSERVATIONS	3
2.1 GENERAL AREA DESCRIPTION	3
2.2 INDIVIDUAL FEATURE DESCRIPTIONS.....	4
CHAPTER 3 – CONCLUSIONS	16
CHAPTER 4 – REFERENCES	17

FIGURES

Figure 1 – Pre-Subsidence Survey Prior to Full Extraction, Emery 2, South of Quitchupah Creek

ATTACHMENTS

Attachment A – Site Photographs

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**PRE-SUBSIDENCE SURVEY
PRIOR TO FULL EXTRACTION,
EMERY 2 PORTAL,
SOUTH OF QUITCHUPAH CREEK**

CHAPTER 1

INTRODUCTION

The purpose of this report is to present baseline surface conditions prior to full extraction operations from the Emery 2 portal of the Bronco Utah Operations, LLC. (Bronco) Emery Mine, Emery County, Utah. The areas covered in this report include the following:

- Boxcut
- Mains
- Sub-Panel-01
- Panel-01 through Panel-03
- Panel-04-Rt through Panel-07-Rt
- The southern $\frac{3}{4}$ of Panel-13-Rt
- The area south of the Emery 2 Mains south to the Adjacent Area Boundary, excluding the southern portion of the Sitla Lease ML 51745-0BA (refer to Plate V-5).

In 1980, CONSOL commissioned a pre-subsidence survey covering the entire mine permit area. Three subsequent pre-subsidence surveys were commissioned; two in 2007 and one in 2008 to update the condition of surface features identified in 1980 prior to proposed full extraction of underlying panels. This pre-subsidence survey covers the southern portion of the mine plan, south of Quitchupah Creek, accessed through the Emery 2 portals (refer to Plate V-5).
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This document is intended to be part of a Subsidence Control Plan as required in Section 66-2-1, Div. of Oil, Gas & Mining R645-301-525.100 of the Utah Administrative Code. Recording initial surface conditions will

facilitate locating and mitigating areas determined to be adversely affected by future subsidence. As part of the pre-subsidence survey, the locations and conditions of the following features were recorded:

- Structures (e.g. buildings, corrals, and roads)
- Fences
- Utilities (e.g. power, water lines, irrigation pivots, and water wells)
- Surface drainages (e.g. natural channels, irrigation ditches, and ponds)

This report references the original Pre-subsidence Survey performed prior to mining operations in 1980 (Valley Engineering, 1980). The feature numbers given in this document correspond to those described in the 1980 report. These features were surveyed in the field in November 2017, and any differences and/or changes from the conditions noted during the 1980 survey are noted both in the text and figures of this document. This report supersedes the Valley Engineering survey where conflicts exist.

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CHAPTER 2 SURVEY AREA OBSERVATIONS

2.1 GENERAL AREA DESCRIPTION

This pre-subsidence survey covers approximately 1,265 acres of primarily undeveloped land, of which approximately 360 acres are irrigated fields or grazing pastures. The ground surface is generally flat with some small, steep hills formed by eroded washes and resistant bedrock outcrops. A perennial stream named Quitchupah Creek is generally outside of, but parallel to the eastern border of the survey area and drains in a general southeasterly direction. This stream receives irrigation return flow from surrounding agricultural land via a complex network of irrigation ditches, piping, and storage ponds.

Structures within the survey area include a ranch house, outbuildings, and corrals located near the southern farm lands, all of which are in dilapidated condition and appear to be decades old. A double wide manufactured home, in good condition, sits near the western edge of the northern farm lands and serves as the primary residence of the landowner controlling most of the property in the survey area. A large metal shed and fuel tanks, all in fair condition, sit nearby. A wooden shed, ranch house, and outhouse, all in dilapidated condition, are also present. A large corral and silo, both in good condition, are situated on the northern edge of the northern farm lands. On the southern edge of these same farm lands are two abandoned cabins. With the exception of the manufactured home, metal shed, and the corrals and silo located north of the northern farm lands, nearly all other structures are constructed of unfinished or rough cut timbers, cinder block, or adobe, are in dilapidated condition, and appear to have been present for decades. There are several fences in the area in various states of repair. Most of the fences are constructed with barbed wire strung between posts made from natural rough cut tree limbs. Some fences use finished lumber fence posts or metal tee-stakes and tubing. There is one gravel surfaced road, one semi-improved dirt road, and numerous unimproved dirt roads in the survey

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area. The gravel-surfaced road is in good condition, and the dirt roads range from good to poor condition.

Utilities within the survey area include overhead power lines; a pressurized irrigation system that has been partially constructed and will be expanded during the spring and summer of 2018 that consists of buried water lines, buried power lines, and pivots; a city waterline feeding the manufactured home; and two water wells, both of which are believed to be abandoned. Bronco has entered into, or will enter into prior to full extraction, a Power Line Repair Agreement with Rocky Mountain Power to mitigate subsidence damage to power lines within the full extraction area.

All of the features (structures, fences, roads, drainages, utilities, etc.) located during the pre-subsidence survey are shown on Figure 1. Photographs of each feature evaluated during this survey are provided in Attachment A. Latitude and Longitude data provided on these photographs are georeferenced by the field camera and are considered to be generally approximate.

2.2 INDIVIDUAL FEATURE DESCRIPTIONS

Each numbered feature on Figure 1, within the current survey area, is described below. The numbers for each feature are identical to those used in the 1980 Pre-Subsidence Survey. Site Photographs are found in the back of this report.

Feature 1. Ranch House, Buildings, and Corrals. The description of this feature has been updated from the Valley Engineering (1980) report. The ranch house, buildings, and corrals all appear to be several decades old and are in dilapidated condition. The rough cut wood walls of the ranch house are intact, however, the adobe walls are beginning to crumble. The walls in a framed wood extension, built onto the eastern side of ranch house, have failed and the roof in

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that section of the house has collapsed. One corner of the cinder block building has collapsed. The remaining buildings and corrals are constructed of rough wood logs and rough cut boards. The wood roofs on these building are failing. The corrals are unusable and have mostly fallen to the ground. There are several types of fences in the area; the most common was barbed wire or wire mesh on the bottom with barbed wire above the mesh. Fence posts were mainly steel or rough cut tree limbs.

Feature 2. Irrigation Ditch and Bridge. The description of this feature has been updated from the Valley Engineering (1980) report. The bridge is approximately 120 yards west of the ranch buildings (Feature 1). The earthen ditch, which flows from north to south, is approximately 2½ to 3 feet wide and 1-1½ feet deep and did not contain any water. The ditch widens to 3 to 4 feet where it crosses underneath the road leading to the ranch and then narrows to its normal width. The northern portion of the 15 foot wide bridge is constructed of 7 feet of railroad ties placed perpendicular to the ditch. The southern 8 foot portion of the bridge consists of two parallel 12” diameter CMP pipes covered in soil. The bridge, though usable, is in poor condition.

Feature 3. Ranch Fence Line. The description of this feature has been updated from the Valley Engineering (1980) report. This fence line is located west of the ditch in Feature 2. The fence posts are natural rough cut tree limbs. The fencing fabric consists of wire mesh and two strands of barbed wire above the mesh. It is approximately 4 feet from the ground to the upper barbed wire strand. The fence is in fair condition. A metal gate in the fence line controls access to the ranch house (Feature 1). South of this location, the fence line becomes a 4-strand barb wire fence, constructed of natural wood posts with intermittent steel t-posts. This section of fence is also in fair condition.

Feature 4. Ranch Access Road. The description of this feature has been updated from the Valley Engineering (1980) report. Most of this single lane road is surfaced with natural clay

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material; however in some areas, gravel has been placed to improve the road's condition. Mounds of soil on either side of the road indicate it has been bladed numerous times to remove rutting formed from vehicle travel when the surface of the road was saturated from precipitation.

Feature 5. Utility Power Lines. This feature is essentially unchanged from how it is described in the Valley Engineering (1980) report, which states the following: "These power lines are located approximately 200 yards to the west of the ranch buildings (Feature 1). The poles run north and south and are approximately 40 feet high." It appears that several of the poles have been replaced since the 1980 survey. The poles are in good condition.

Feature 6. Pond. The description of this feature has been updated from the Valley Engineering (1980) report. The pond, cut into a small hill on its northwestern corner and diked on the surrounding edges, is roughly square in shape and measures approximately 75 feet x 75 feet x 5 feet deep. A black plastic liner is exposed at numerous locations around the dike. Exposure to the elements has severely degraded the liner and it is no longer functional. An erosion channel has formed on the slope at the northwest corner of the pond. The pond is dry and it appears that it has been quite some time since it has held water. A fence, constructed of natural rough cut tree limbs, surrounds the pond. The fencing material consists of wire mesh with one strand of barb wire at the top. The fence is in dilapidated condition.

Feature 8. Well. The description of this feature has been updated from the Valley Engineering (1980) report. This well is located approximately 20 yards north of the stock pond (Feature 6). A 6 foot by 8 foot wide wood shed set on a concrete slab surrounds the well casing. The well appears to be abandoned. Piping extending from the well head has been disconnected. The overhead power line from the nearby power pole has been cut. A portion of this line dangles from the power pole.

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Feature 9. Farm Lands. The description of this feature has been updated from the Valley Engineering (1980) report. These lands are part of the ranch (Feature 1) and are located to the south and east of the ranch buildings. The area is fenced on all four sides with a center fence dividing the upper third from the lower two thirds. Although the field was historically planted with hay and grasses, it appears that the area has not been actively farmed for numerous years. A 12 foot by 16 foot by 10 inch thick concrete pad for a new irrigation pivot is installed on the southwestern corner of the farm lands.

Feature 10. Irrigation Ditch. The description of this feature has been updated from the Valley Engineering (1980) report. This earthen ditch is located approximately 50 to 75 yards north of the stock pond (Feature 6). The ditch, at the photo location, is cut through a small rise in the terrain and its banks are approximately 6 to 7 feet tall. Both upstream and downstream from the photograph, the ditch shallows to about 1.5 feet in depth. The irrigation ditch is dry. Underground irrigation piping and pivots are being installed in the farm land that this ditch feeds with water. After completion of the pressurized irrigation system, this ditch will likely be abandoned.

Feature 11. Unimproved Dirt Road. The description of this feature remains unchanged from that described in the Valley Engineering (1980) report, which states the following: “This two-track, single lane dirt road is a typical example of the many dirt roads that are in the survey area. Most of the roads, including this one, have natural clay surfaces, while a few have some shale as part of the surface material.”

Feature 15. Pond. The description of this feature has been updated from the Valley Engineering (1980) report. The pond, constructed of earthen berms, is roughly circular in shape with a diameter of approximately 100 feet. The floor of the pond slopes from northwest to southeast. The deepest part of the pond is approximately 3 feet in depth. The east bank has been breached. Sagebrush and native plants are growing in the pond at the approximate plant density

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as the surrounding area outside the pond. The pond is dry and its current condition indicates that it has been quite some time since it has been used.

Feature 17. Barbed Wire Fence. The description of this feature has been updated from the Valley Engineering (1980) report. This feature no longer exists. It was removed for expansion of the farm land (Feature 32). Many additional barbed wire fences exist throughout the survey area and are described in other features listed in this report.

Feature 22. Dry Wash. The description of this feature has been updated from the Valley Engineering (1980) report. This wash is typical of the many larger washes in the area. The average depth of the wash is approximately 20 feet deep and its width is approximately 20 to 30 feet in width.

Feature 23. Grassy Area. The description of this feature has been updated from the Valley Engineering (1980) report. This area is in a surface depression that is approximately 3 to 4 feet below the surrounding terrain. It is bordered by sagebrush on all sides. During rainy periods, this low lying area collects enough water to support grasses. Water exits the east end of this area, draining into several dry washes.

Feature 24. Irrigation Ditch Junction. The description of this feature remains essentially unchanged from that described in the Valley Engineering (1980) report, which states the following: "In this area, a small earthen ditch divides to become two smaller ditches each about 1½ feet to 2 feet wide and 6 inches to 12 inches deep." This irrigation ditch junction is dry. Underground irrigation piping and pivots are being installed in the farm land that these irrigation ditches feed with water. After completion of the pressurized irrigation system, these ditches will likely be abandoned.

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Feature 25. Grassy Area. The title and description of this feature have been updated from the Valley Engineering (1980) report. Although the Valley Engineering report identified this area as “wetlands” and listed three possible water sources, “from a small natural creek, from irrigation ditches, and possibly some natural springs”, no active water sources were identified. This grassy area has been heavily grazed over the summer. Alkaline salt deposits in a low lying area immediately east of the grassy area provides evidence that drainage flows from west to east.

Feature 26. PVC Pipe Water Depth Gauge. The title of and description of this feature have been updated from the Valley Engineering (1980) report. There are two PVC pipe water depth gauges located in the large wash just to the southwestern corner of the settlement pond. Each PVC pipe water depth gauge consists of a 5 foot long by 2 inch diameter PVC pipe with thread caps installed on both ends and attached vertically to a sawed 4 inch square wood post buried in the earth. The lower end of the pipe is mounted approximately 6 inches above soil level. The caps have drilled holes to allow entry of water into the pipe. As water enters the holes in the PVC pipe, a square wood board located inside the PVC pipe, marked with feet and inches, becomes saturated below the top of water. Peak water levels are then read by removing the wood board from the PVC pipe and taking a direct reading. A roof bolt installed in the soil near the north gauge likely serves as a reference elevation.

Feature 27. Area Roads. The description of this feature has been updated from the Valley Engineering (1980) report. The first photo shows where the road crosses Quitcupah Creek. Erosion and lack of maintenance have led to steep muddy banks in this area, making the road essentially impassable at this location. The second photo looks north along another portion of the same road located approximately 2,800 feet south of the Quitcupah Creek crossing. A deep wash, just south of this location, cuts across the road. There are many cattle hoof print marks covering the road in this photo, indicating its lack of recent vehicular use. This single lane double track road, at one time, was passable across the southern half of the permit area, but the

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the Lewis Well, formerly provided water for a ranch house and buildings (Feature 35) located to the north. Water is currently provided to this ranch house by Emery Town municipal water. The concrete slab poured around the well casing and which supports the small well house covering the well casing has experienced differential settlement of several inches. The slab slopes from north to south. The worst settlement has occurred at the well casing. The concrete slab surrounding the casing has cracked, separated, and dropped in elevation approximately 4 inches.

Feature 35. Ranch House and Buildings. The description of this feature has been updated from the Valley Engineering (1980) report. This feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The ranch house and buildings consists of five structures:

- A double wide manufactured home installed after the 1980 report. This home is installed on a concrete foundation that is intact with only two small cracks that are typical of cracks found in most residential home foundations. Overall, the home appears to be in good condition.
- Metal shed on a concrete slab. The metal shed is in good condition. The concrete slab is in fair condition with some cracking observed. Four elevated fuel tanks are located on the east side of the shed.
- Wood outhouse constructed of natural rough cut logs. This structure appears to be in fair condition.
- Ranch house constructed of rough sawn logs and adobe brick. The adobe walls have fallen down, exposing the north end of the house to outside elements. It is dilapidated and unlivable. A concrete structure located near the ranch house appears to be an old septic tank.
- Wood building constructed of natural rough cut logs. Intermittently placed sandstone rocks serve as a foundation for the structure. The structure is in dilapidated condition.

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Feature 36. Utility Power Line. The description of this feature has been updated from the Valley Engineering (1980) report. A portion of this feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The electrical power line is a single line that supplies electricity to the ranch house and buildings (Feature 35). The poles are typical power line poles, approximately 35 feet tall and in good condition. The eastern most pole in this line, which also forms a part of the north/south power line (Feature 5) that this line ties into, leans to the south and west.

Feature 37. Feed Pens and Fence Line. The description of this feature has been updated from the Valley Engineering (1980) report. The feed pens are constructed of painted steel, are semi-portable, and are in good condition. The fence in the background of the photograph is a barbed wire fence with natural cut log posts. A portion of the fence is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The fence is fairly new and in excellent condition.

Feature 39. Log Cabins. The title and description of this feature have been updated from the Valley Engineering (1980) report. The corrals mentioned in the 1980 report have been removed. There are two log cabins at this location. The cabins are made of rough cut wood logs and are founded on wood or stacked rocks. Both cabins are in dilapidated condition.

Feature 40. Section Corner Marker. This feature description remains essentially the same as described in the Valley Engineering (1980) report, which states the following: “The marker is a metal cap attached to a short steel pipe. It marks the corners of Sections 29, 30, 31, and 32 of Range 6 East, Township 22 South. The marker was established in 1978.” In addition to the 1980 description, there is a vertical rough cut square wood post installed approximately 1 inch south of the marker. The letters “WC” are stamped into the metal cap just beneath the “UNLAWFUL TO DISTURB” marking. The “WC”, an abbreviation for Witness Corner, indicates that this marker is not installed at the exact location of the Section Corner, but is rather

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an offset to the section corner. The east/west line separating Sections 30 & 29 from Sections 31 & 32 has an arrow at its west end, indicating that the actual corner is located west of this location. A check of the Public Land Survey System reveals that the actual section corner is located approximately 132 feet west. This Witness Corner was likely set because the actual Section Corner would rest in the bottom of the pond, described as Feature 41.

Feature 41. Pond. The description of this feature has been updated from the Valley Engineering (1980) report. The pond was constructed by installing an approximately 8 foot tall berm between two small hills. The berm is approximately 250 feet long and approximately 6 feet wide at its crest. The berm is located approximately 100 yards north of the section corner marker (Feature 40). A 25 foot long by 3 foot deep path has been worn through the western end of the berm. Water flows out of the pond via a 16" PVC riser. The pond was dry at the time of the survey.

Feature 43. Corrals and Grain Silo. The description of this feature has been updated from the Valley Engineering (1980) report. This feature is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. The corrals and feeding areas are constructed of rough cut lumber, timber posts, and railroad ties and are in good condition. The gates to the corrals are made of steel pipes and are in good condition. The galvanized steel grain silo, located approximately 180 yards west of the southwestern corner of the corrals, rests on a concrete pad and is in good condition.

Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. The title and description of this feature have been updated from the Valley Engineering (1980) report. The small pond observed in the area is still intact. However, the two corrals identified in the Valley Engineering report have been removed. The circular pond has a diameter of approximately 100 feet and is currently dry. A stock watering device (MiraFount 3465) installed on a 16 foot square unformed concrete pad is located roughly a 100 yards southwest of the pond. A 15" diameter corrugated

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metal pipe valve box is located approximately 4 feet west of the concrete pad. A nearby water line air vent (Wade Rain PRVC 300) is installed on the underground water line feeding the farm land (Feature 32) irrigation pivot.

Feature 119. Quarter Section Corner Marker. This feature description remains the same as described in the Valley Engineering (1980) report, which states the following: “This marker is located in Range 6 East Township 22 South. It is a typical marker with a metal cap on top of a short steel pipe. This quarter section corner marker indicates the dividing point between Section 32 and 5.”

Feature 120. Steel Pipes. This feature description remains essentially the same as described in the Valley Engineering (1980) report, which states the following: “These pipes are approximately 6 inches in diameter with steel caps. The pipes extend about 2½ feet to 3 feet out of the ground. There were three pipes found in this area. The purpose of these pipes is unknown.” Two additions to the above description are added in this document: the steel caps are threaded and only two of the three pipes were found.

Feature 121. Section Corner Marker. This feature description remains essentially the same as described in the Valley Engineering (1980) report, which states the following: “This corner marker is located in Range 6 East Township 22 South/Township 23 South. The marker is a short steel pipe with a metal cap. It marks the intersection of Sections 32 and 33 of Township 22 S and Sections 4 and 5 of Township 23 S.”. One addition to the above description is added in this document: Four pieces of rebar are installed in the ground at the north, south, east, and west quadrants. Each is approximately 15 feet away from the section corner. The rebar pieces were likely installed to anchor enhanced survey markings over the section corner for reference during an aerial survey.

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Feature 126. Sinkhole. This feature was not identified in the Valley Engineering (1980) report. The sinkhole measures approximately 10 foot long by 2 foot wide by 8 feet deep. The length of the opening trends northeast/southwest. No obvious water sources feed this feature.

Feature 127. Sprinkler Pivot Foundation. This feature was constructed after the Valley Engineering (1980) report was written. The current landowner is in the process of converting from an open ditch irrigation system to a more efficient pressurized irrigation system consisting of underground buried pipe and irrigation pivots. Newly constructed pivots, pivots under construction, miscellaneous piping and piping supplies, and evidence of recent trenching were encountered in numerous farm land locations within the pre-subsidence survey area.

Feature 128. Water Line Air Vent. This feature was constructed after the Valley Engineering (1980) report was written. A water line air vent (Wade Rain PRVC 300) is installed on an underground water line. It is protected from livestock damage by metal tee posts and heavy gauge galvanized wire mesh. The current landowner is in the process of converting from an open ditch irrigation system to a more efficient pressurized irrigation system consisting of underground buried pipe and irrigation pivots. Newly constructed pivots, pivots under construction, miscellaneous piping and piping supplies, and evidence of recent trenching were encountered in numerous locations near this feature.

Feature 129. Underground Electrical Feed. This feature was constructed after the Valley Engineering (1980) report was written. Power in the utility power line (Feature 5) was tapped by installing a transformer and branch power lines on the existing pole to feed a new power pole to the east. Power routed to the eastern pole runs down the pole, through a meter, and then enters an underground electrical conduit. A scar in the vegetation that extends west toward a new irrigation pivot suggests that power is feed to the pivot from this location.

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Feature 130. Irrigation Ditch Sinkhole. This feature was discovered by the current land owner, William Boyd Stansfield Jr., after the Valley Engineering (1980) report was written. The closest underground mining activity to this location, 2 West Submains, is located 2,665 feet away. At that distance, it is not possible that historic mining activity caused this feature to form. In addition, future mining activity is very unlikely to affect this feature, because it is located within a buffer zone, depicted on Figure 1 and Plate V-5, where subsidence is not anticipated. Per Mr. Stansfield, a sinkhole opened up across the ditch line in 2015 while the ditch contained flowing irrigation water. The hole measured approximately 5 feet in diameter with an unknown depth. The entire ditch (trapezoidal in shape, measuring roughly 4 feet wide at the top, 1.5 feet wide at the bed, and 2 feet tall) of flowing irrigation water disappeared into this hole and did not surface, he attempted to plug off the hole by installing up to 15 cubic yards of soil into the opening. It became saturated and disappeared into the hole. After turning water out of this ditch, he placed enough soil in the hole to fill it to the surface and installed a 16 inch diameter by 15 feet long length of HDPE piping to cross over the sinkhole. Since that time water has flowed through the 16 inch HDPE pipe, however, he has not exceeded approximately one half of the quantity of water in the ditch that was flowing on the day the sinkhole opened up.

Feature 131. Mine Discharge Pond No. 1. This feature was constructed after the Valley Engineering (1980) report was written. The rectangular pond measures approximately 800 feet x 130 feet x 11 feet deep. This pond is described on Plate VI-14 of the mine reclamation plan.

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CHAPTER 3 CONCLUSIONS

This report summarizes pre-subsidence surface conditions for the following areas at Bronco's Emery Mine, Emery County, Utah, that will be accessed through the Emery 2 portal:

- Boxcut
- Mains
- Sub-Panel-01
- Panel-01 through Panel-03
- Panel-04-Rt through Panel-07-Rt
- The southern $\frac{3}{4}$ of Panel-13-Rt
- The area south of the Mains up to the Permit Boundary, excluding the southern portion of the Sitla Lease ML 51745-0BA

Surface features were inspected and surveyed in November 2017 prior to full extraction. Although the damage due to subsidence is generally expected to be limited, the greatest potential for adverse effects would likely be disturbances to surface drainages, ponds, roads, and utilities. A planned barrier with minimal coal extraction rates underlying the ranch house and buildings (Feature 35) will minimize potential subsidence impacts for this feature. By detailing pre-subsidence conditions in this report, it will be easier to both identify and mitigate negative impacts caused by future subsidence.

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CHAPTER 4
REFERENCES

Consolidation Coal Company, 1990. Emery Mine Permit Act 015/015 Renewal. Chapter VI Volume 1 Section VI.A.3. Submitted to Division of Oil, Gas, and Mining September 9, 1990.

Valley Engineering, Inc., 1980. Consolidation Coal Company, Emery Mine, Presubsidence Survey, Structure and Renewable Resources Descriptions. Division of Oil, Gas, and Mining, Emery Permit 015/015. Chapter V, Vol. 2 of 3.

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FIGURE 1

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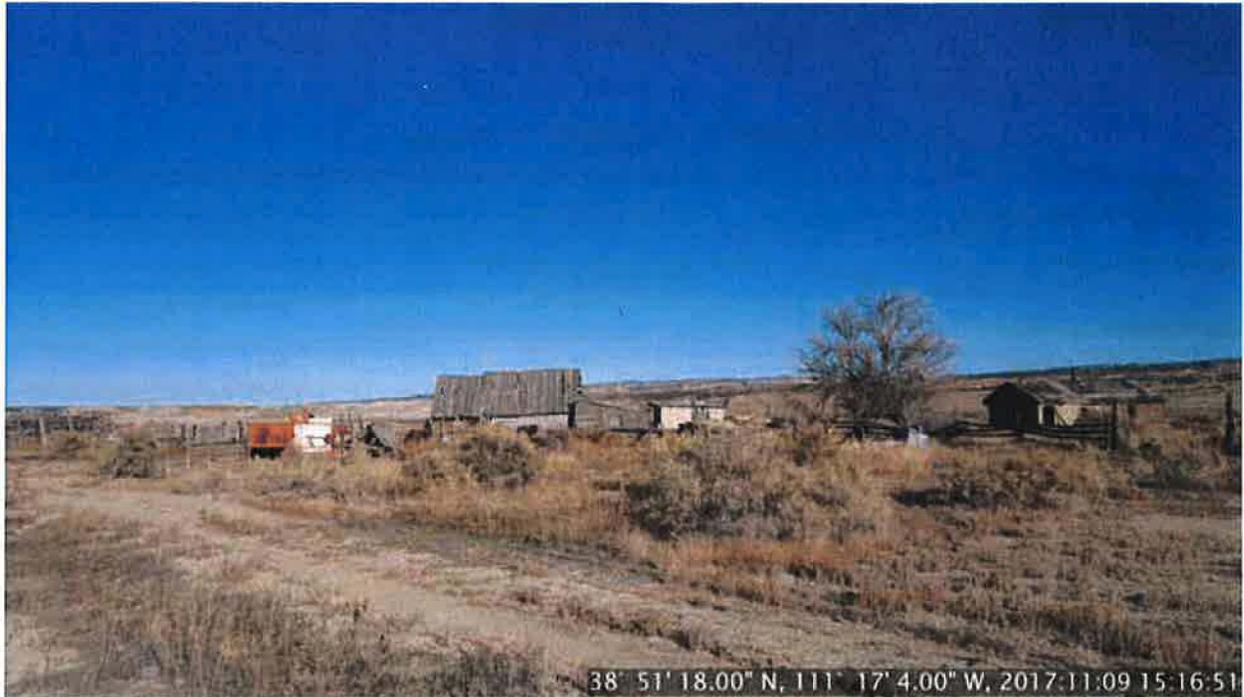
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ATTACHMENT A
Site Photographs

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Feature 1. Ranch House, Buildings, and Corrals. Feature overview, looking east.



Feature 1. Ranch House, Buildings, and Corrals. Corrals.

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Feature 1. Ranch House, Buildings, and Corrals. Corrals.



Feature 1. Ranch House, Buildings, and Corrals. Corrals.

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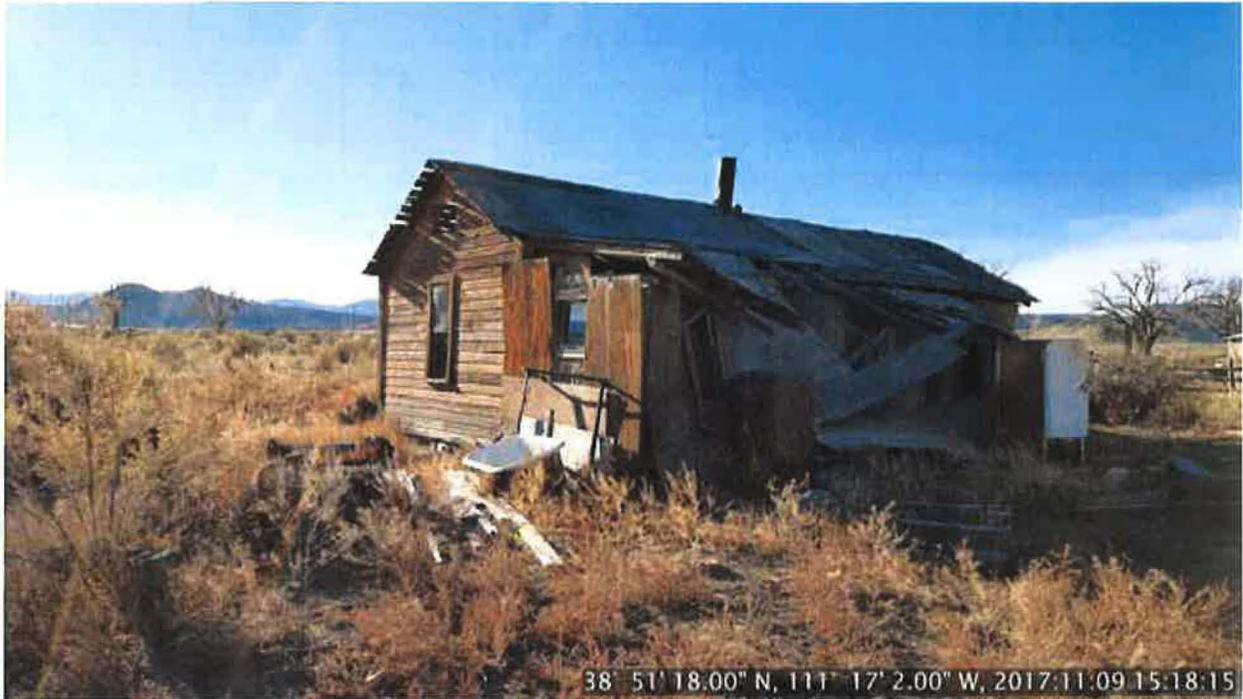
Feature 1. Ranch House, Buildings, and Corrals. Ranch House.



Feature 1. Ranch House, Buildings, and Corrals. Ranch House.

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Feature 1. Ranch House, Buildings, and Corrals. Ranch House.



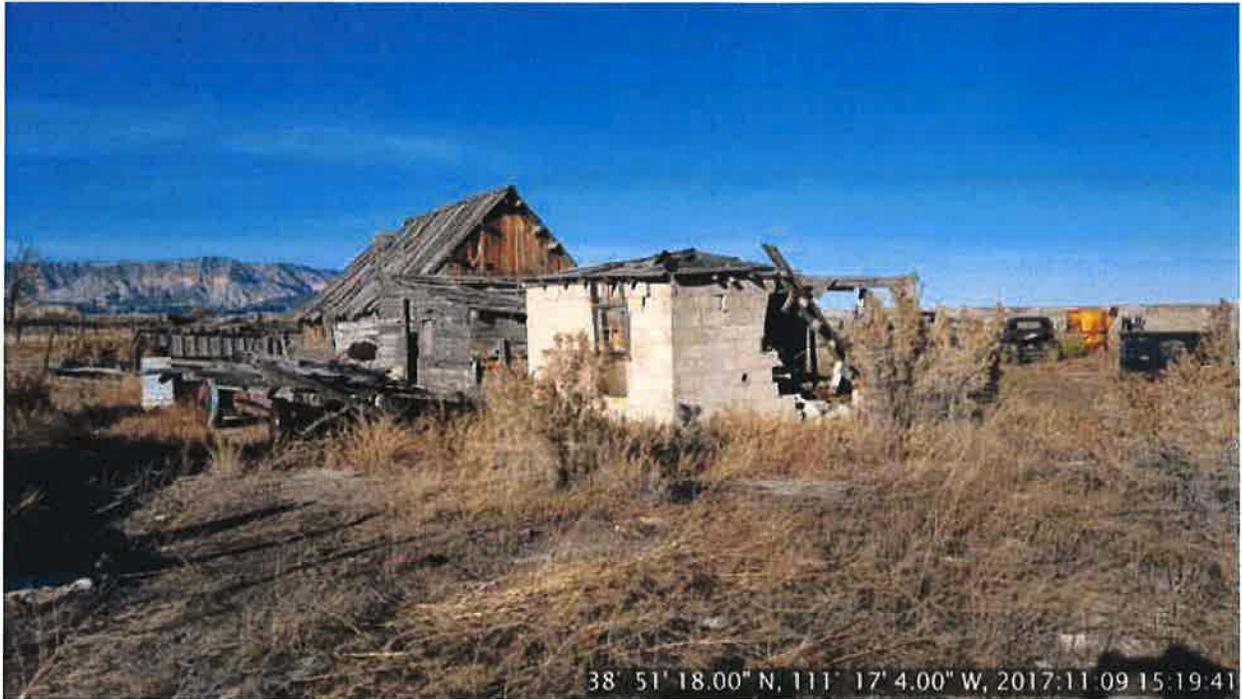
Feature 1. Ranch House, Buildings, and Corrals. Buildings.

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EarthFax Engineering Group, LLC



Feature 1. Ranch House, Buildings, and Corrals. Buildings. Cinder block building in foreground.



Feature 1. Ranch House, Buildings, and Corrals. Buildings.

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Feature 2. Irrigation Ditch and Bridge. Looking east.



Feature 3. Ranch Fence Line. Looking north along gated entrance to Feature 1.

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Feature 3. Ranch Fence Line. Looking north.



Feature 4. Ranch Access Road. Looking east.

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Feature 4. Ranch Access Road. Photo is taken farther east at split to Feature 11.



Feature 5. Utility Power Lines. Looking north.

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Feature 5. Utility Power Lines. Looking south.



Feature 6. Pond. A well (Feature 8.) is in the background.

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Feature 6. Pond. Bank erosion at far corner of pond.



Feature 6. Pond. Disintegrated pond liner.

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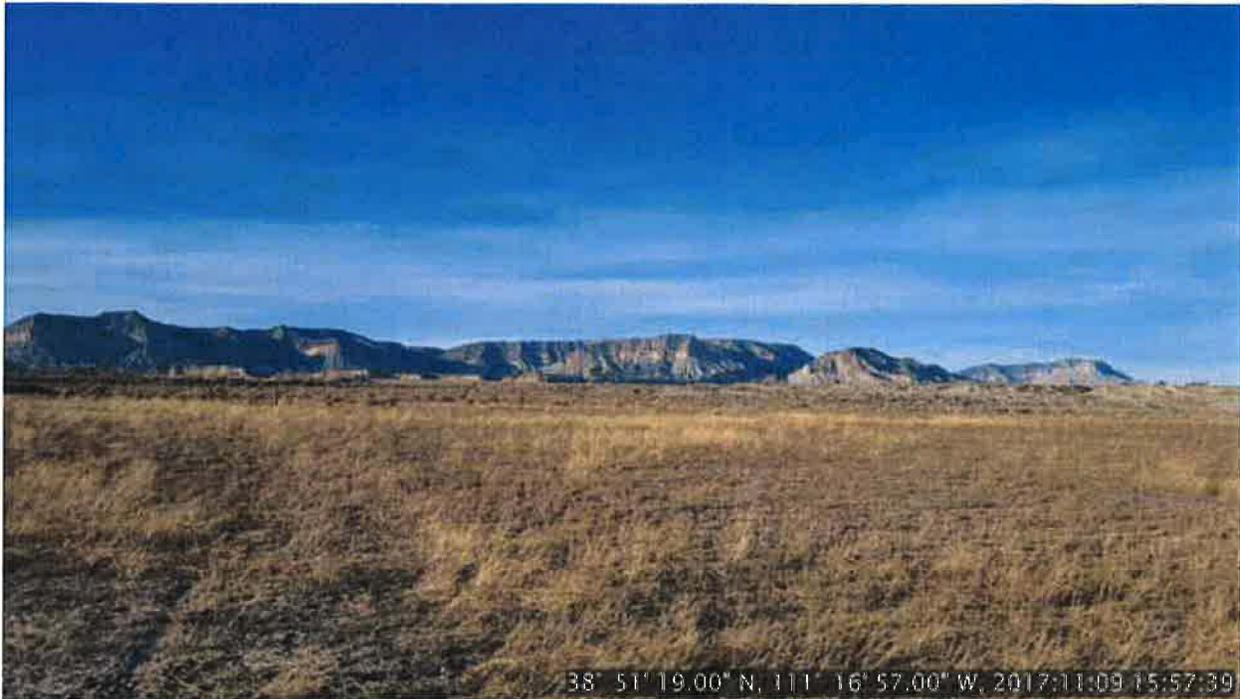
Feature 8. Well. Power line from pole to pump-house is disconnected.



Feature 8. Well. Piping is disconnected from wellhead.

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Feature 9. Farm Lands.



Feature 9. Farm Lands.

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Feature 9. Farm Lands. Piping supplies for future sprinkler pivot lying on ground.



Feature 10. Irrigation Ditch. Looking west.

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Feature 11. Unimproved Dirt Road. Looking east. This road leads to the ranch house, buildings, and corrals identified as Feature 1.



Feature 15. Pond. Breached berm in foreground.

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38° 51' 24.00" N, 111° 16' 17.00" W, 2017:11:09 17:12:54

Feature 22. Dry Wash. Looking east.



38° 51' 13.00" N, 111° 16' 46.00" W, 2017:11:09 16:33:07

Feature 23. Grassy Area. Looking east.

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38° 51' 17.00" N, 111° 16' 36.00" W, 2017:11:09 16:55:42

Feature 23. Grassy Area. Looking west.



38° 51' 10.00" N, 111° 17' 1.00" W, 2017:11:09 16:17:06

Feature 24. Irrigation Ditch Junction.

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Feature 25. Grassy Area. Looking east.



Feature 25. Grassy Area. Looking west.

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Feature 26. PVC Pipe Water Depth Gauge.



Feature 26. PVC Pipe Water Depth Gauge. *Rotate photo clockwise.*

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Feature 26. PVC Pipe Water Depth Gauge. *Rotate photo clockwise.* Graduated scale located in PVC tube.



Feature 26. PVC Pipe Water Depth Gauge. *Rotate photo clockwise.* Close up photo of graduated scale. JAN 24 2019

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Feature 27. Area Roads. Looking south. Road is impassable and bisected by Quitcupah Creek.



Feature 27. Area Roads. Looking north. Road disappears south of this location. JAN 24 2019

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Feature 32. Irrigation Ditch and Farm Land. Ditch replaced with pivot sprinklers.



Feature 32. Irrigation Ditch and Farm Land. Foundation for pivot sprinklers.

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Feature 32. Irrigation Ditch and Farm Land. Southern edge of farmland. Return irrigation ditch in foreground. Field has been regraded, eliminating need for irrigation ditch, background.



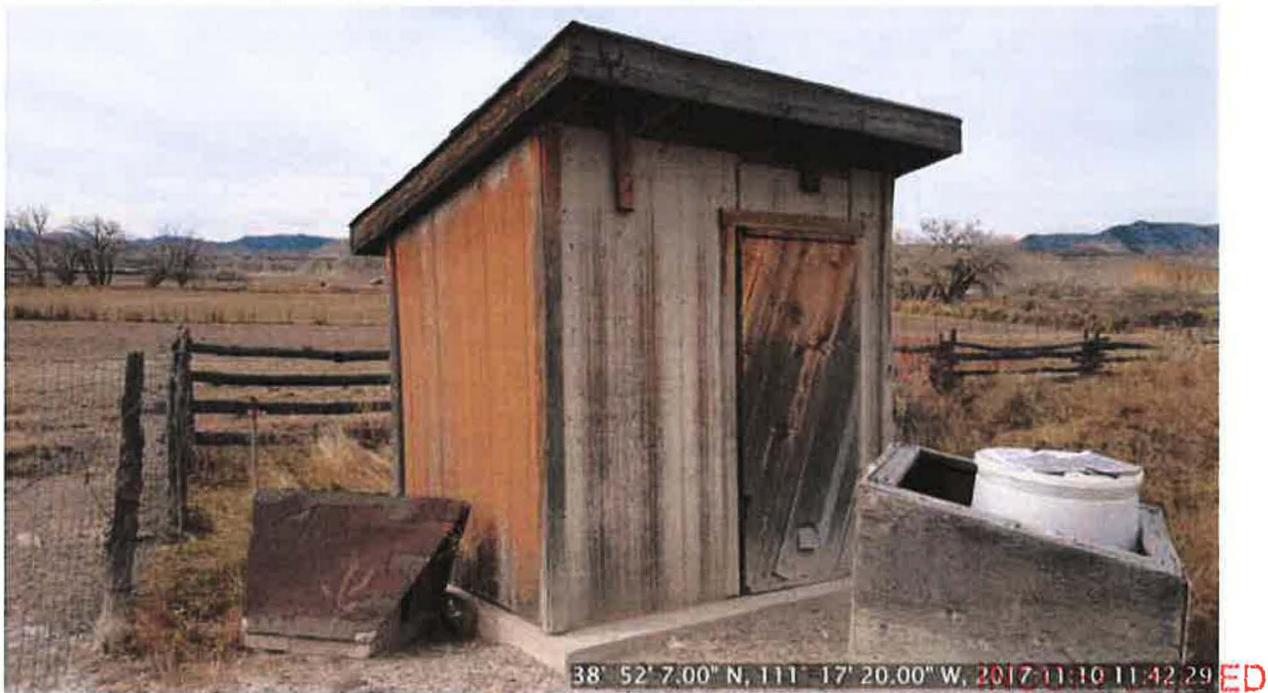
Feature 32. Irrigation Ditch and Farm Land. Underground water line feeding pivot sprinklers.

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Feature 33. Irrigation Ditch. Photo taken at north end of farm land (Feature 32.). The farm land was expanded and regraded, eliminating need for irrigation ditch.



Feature 34. Culinary Well.

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Feature 34. Culinary Well. Concrete pad surrounding wellhead is cracked and separated from rest of pad.



Feature 34. Culinary Well.

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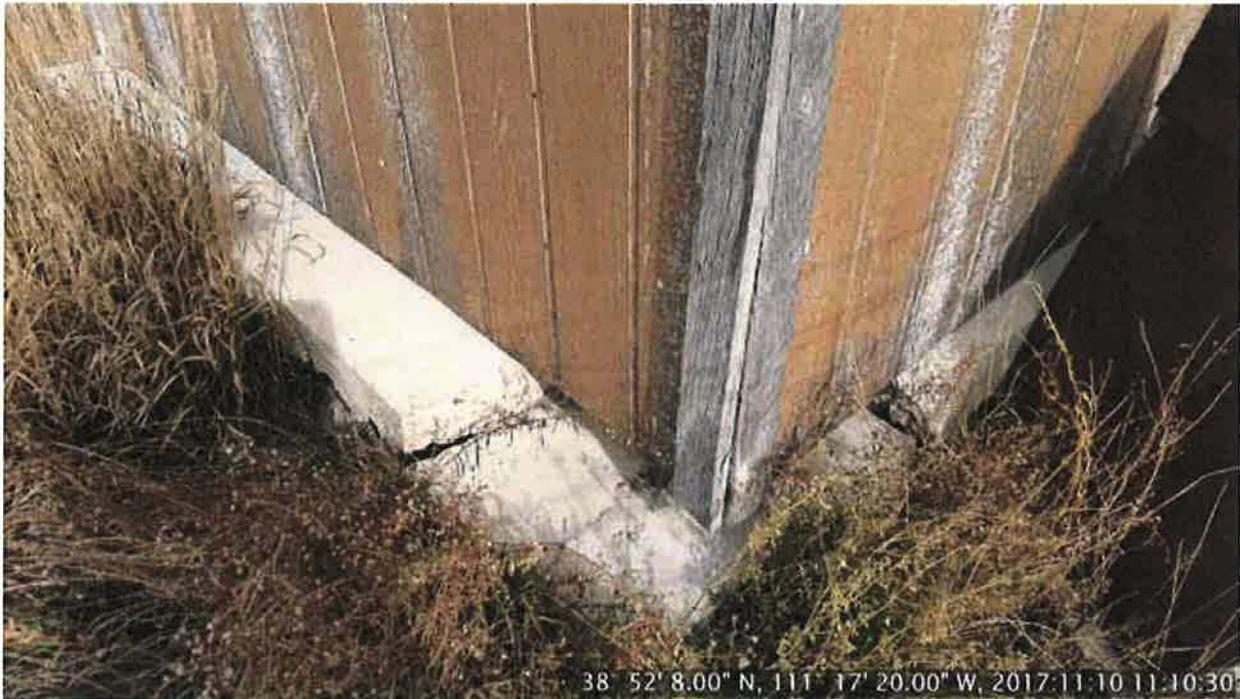
Feature 34. Culinary Well. Concrete pad near conduit is cracked and offset.



Feature 34. Culinary Well. Looking north. Concrete pad is cracked and offset.

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Feature 34. Culinary Well. The corner of the cracked concrete pad surrounds the wellhead located in the well house.



Feature 35. Ranch House and Buildings. Overview looking east.

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Feature 35. Ranch House and Buildings. Overview looking northeast.



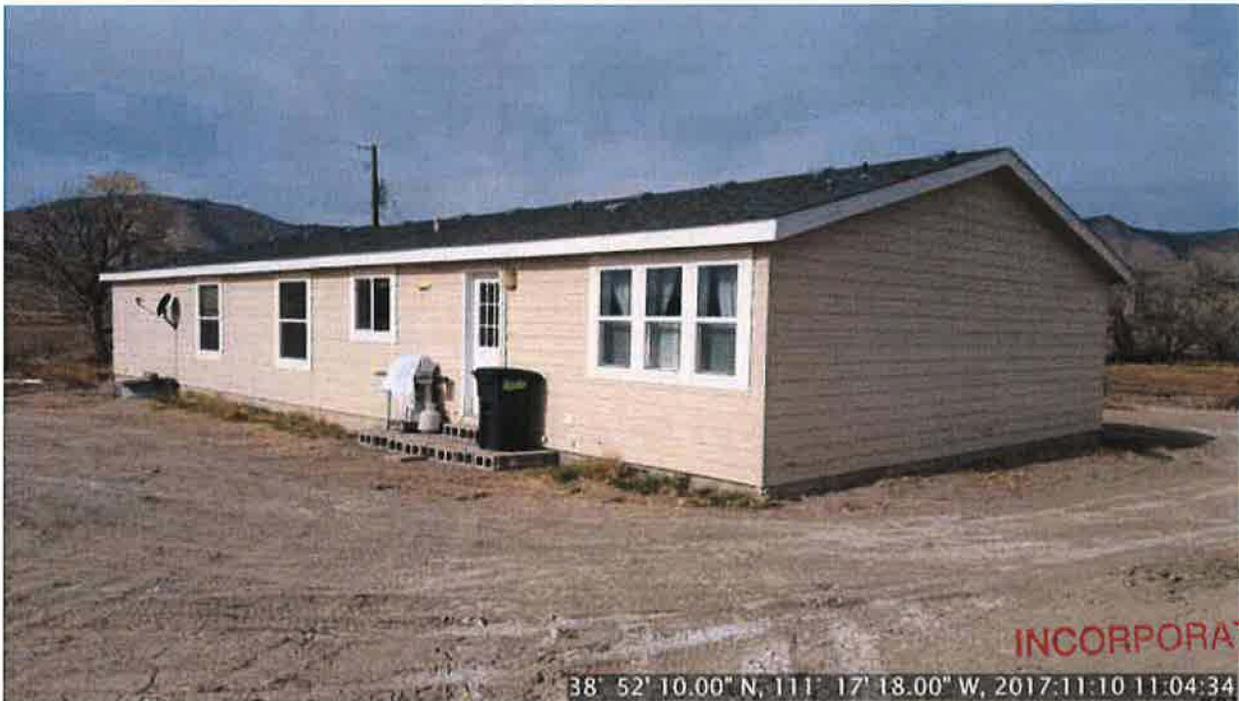
Feature 35. Ranch House and Buildings. Overview looking north.

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Feature 35. Ranch House and Buildings. Manufactured home looking east.



Feature 35. Ranch House and Buildings. Manufactured home looking west.

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Feature 35. Ranch House and Buildings. Manufactured home. Small cracks in foundation.



Feature 35. Ranch House and Buildings. Manufactured home. Small foundation cracks, close up. JAN 24 2019

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Feature 35. Ranch House and Buildings. Manufactured home. Looking north.



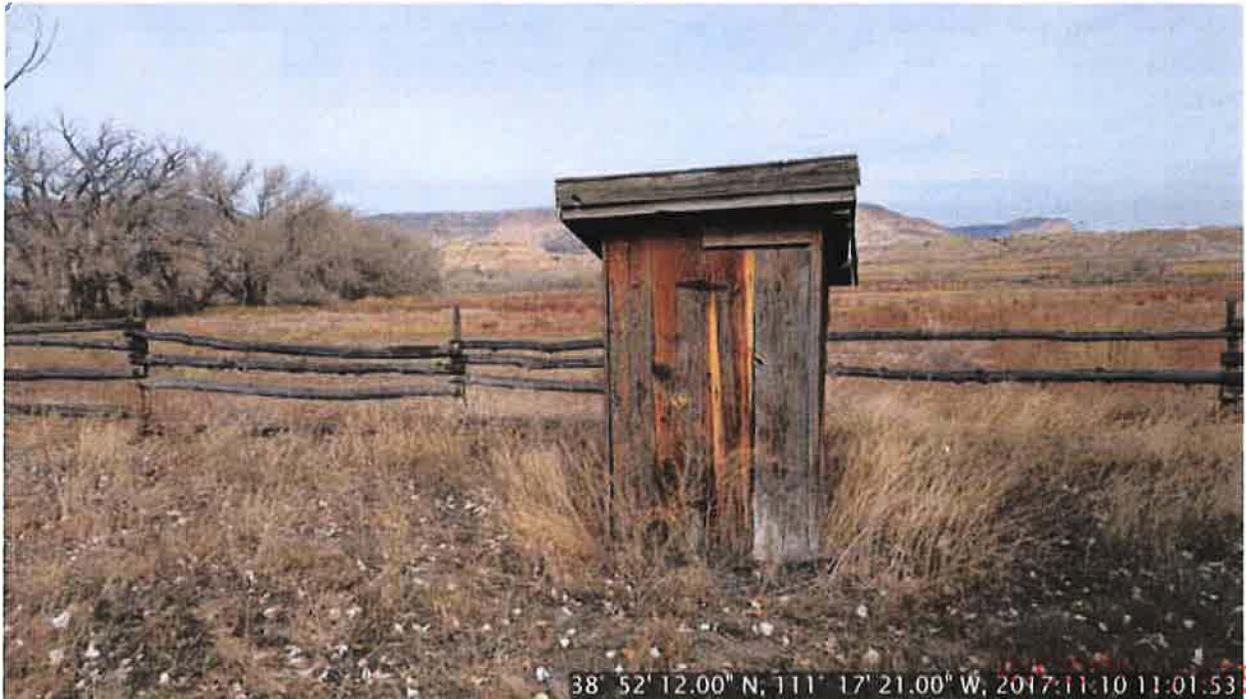
Feature 35. Ranch House and Buildings. Metal shed. Looking northeast.

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Feature 35. Ranch House and Buildings. Metal shed. Looking outside through overhead door. Cracks in concrete floor.



Feature 35. Ranch House and Buildings. Outhouse.

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Feature 35. Ranch House and Buildings. Metal shed (right) and ranch house (left).



Feature 35. Ranch House and Buildings. Front view of ranch house.

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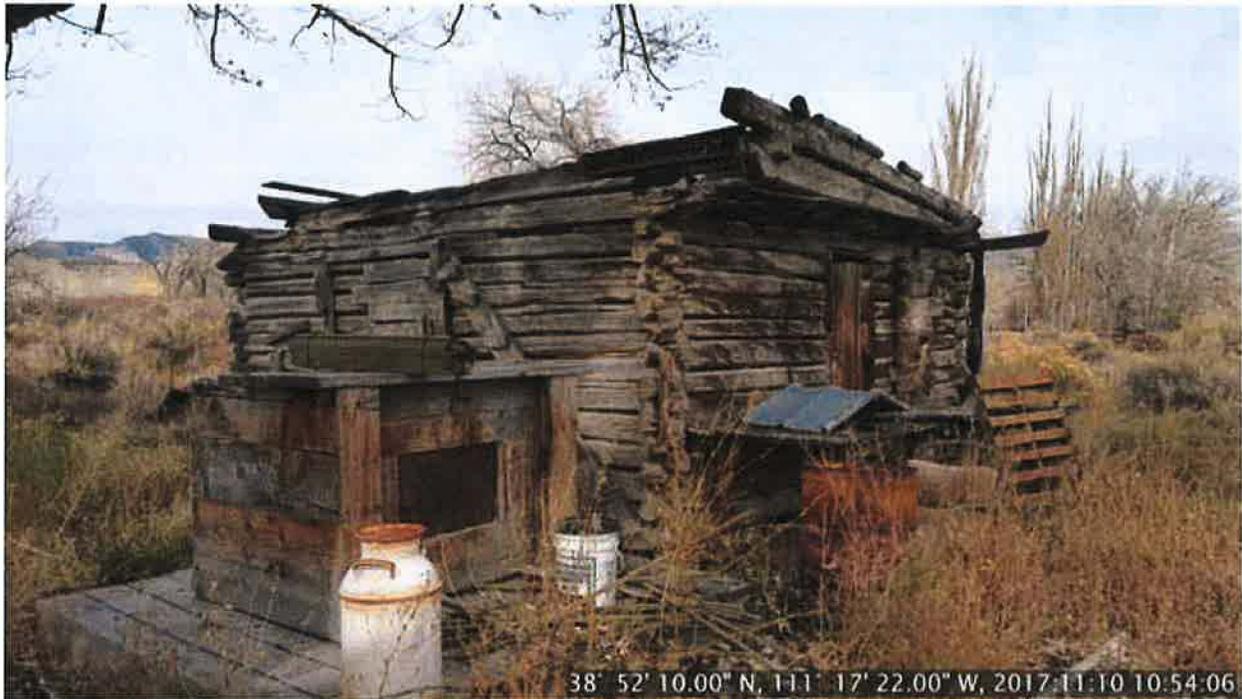
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Feature 35. Ranch House and Buildings. Side view of ranch house. Adobe wall crumbled. Sagging roof.



Feature 35. Ranch House and Buildings. Rear view of ranch house. Adobe walls have crumbled. JAN 24 2019



Feature 35. Ranch House and Buildings. Wood building.



Feature 35. Ranch House and Buildings. Wood building. View of foundation.

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Feature 35. Ranch House and Buildings. Wood building.



Feature 35. Ranch House and Buildings. Inside view of wood building.

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Feature 35. Ranch House and Buildings. Concrete structure. This may be an old septic tank.



Feature 35. Ranch House and Buildings. Elevated fuel tanks located on east side of metal structure.

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Feature 36. Utility Power Line. Looking southeast.



Feature 36. Utility Power Line. Looking northwest. Top of pole in foreground leans slightly left.

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Feature 37. Feed Pens and Fence Line. Looking north.



Feature 39. Log Cabins. Overview looking south. Cabin 1 in foreground. JAN 24 2019

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Feature 39. Log Cabins. Looking east along power line. Top of pole in foreground leans to left.



Feature 39. Log Cabins. Cabin 1 looking south.

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Feature 39. Log Cabins. Inside view of cabin 1.



Feature 39. Log Cabins. Concrete structure outside cabin 1. Likely a septic tank.

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Feature 39. Log Cabins. Cabin 2 founded on rock pieces.



Feature 40. Section Corner Marker. Top view of maker. Top of photo to north. JAN 24 2019

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Feature 40. Section Corner Marker. Looking east.



Feature 41. Pond. Looking southwest at face of earthen dam. This dam situated between two small hills forms the north side of the pond.

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Feature 41. Pond. Water exits this pond through a 16" PVC riser near the dam.



Feature 43. Corrals and Grain Silo. Looking north from center of corral.

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Feature 43. Corrals and Grain Silo. Looking east from center of corral.



Feature 43. Corrals and Grain Silo. Looking west from center of corral.

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Feature 43. Corrals and Grain Silo. Looking south at grain silo.



Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. Pond.

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Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. Livestock waterer on concrete slab.



Feature 44. Pond, Livestock Waterer, and Water Line Air Vent. Water line air vent.

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Feature 119. Quarter Section Corner Marker. Top view of maker. Top of photo to north.



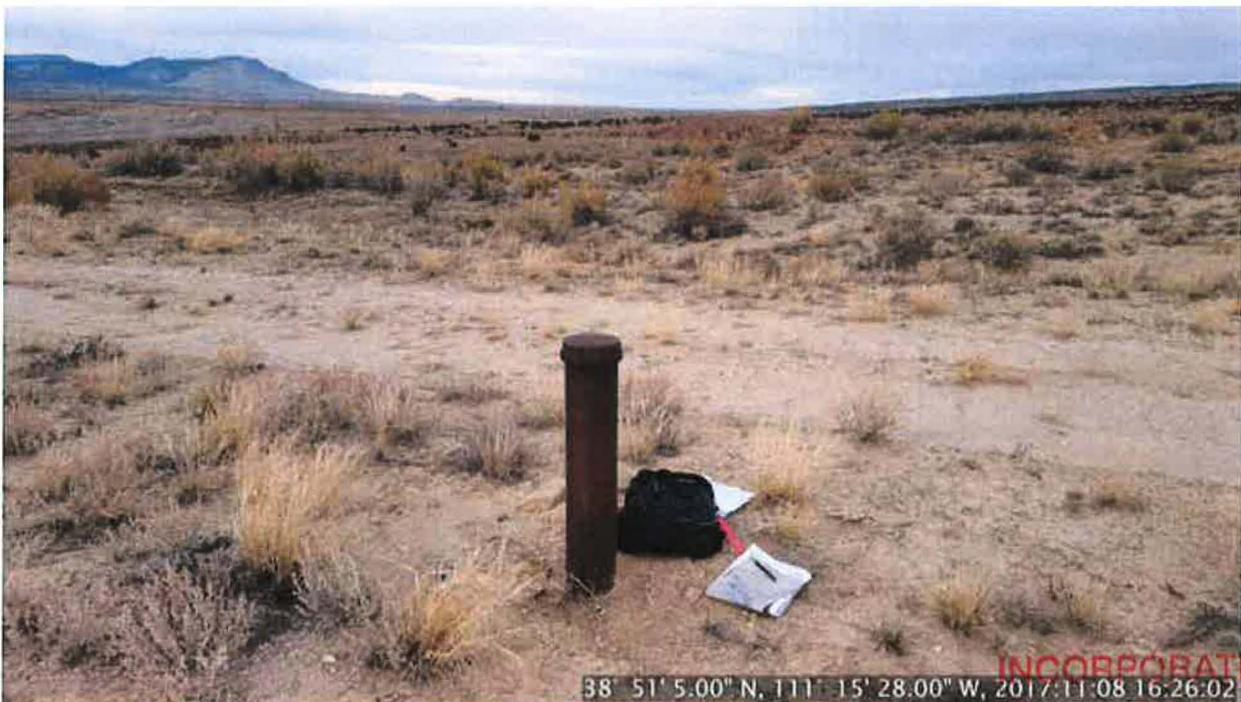
Feature 119. Quarter Section Corner Marker. Looking east.

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Feature 120. Steel Pipes. Top view of 1st pipe.



Feature 120. Steel Pipes. Side view of 1st pipe.

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Feature 120. Steel Pipes. Side view of 2nd pipe.



Feature 121. Section Corner Marker. Top view of maker. Top of photo to north.

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Feature 121. Section Corner Marker. Looking east.



Feature 126. Sinkhole. Looking east.

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Feature 126. Sinkhole. Top view. Minimum depth is 8 foot.



Feature 127. Sprinkler Pivot Foundation. 1st location.

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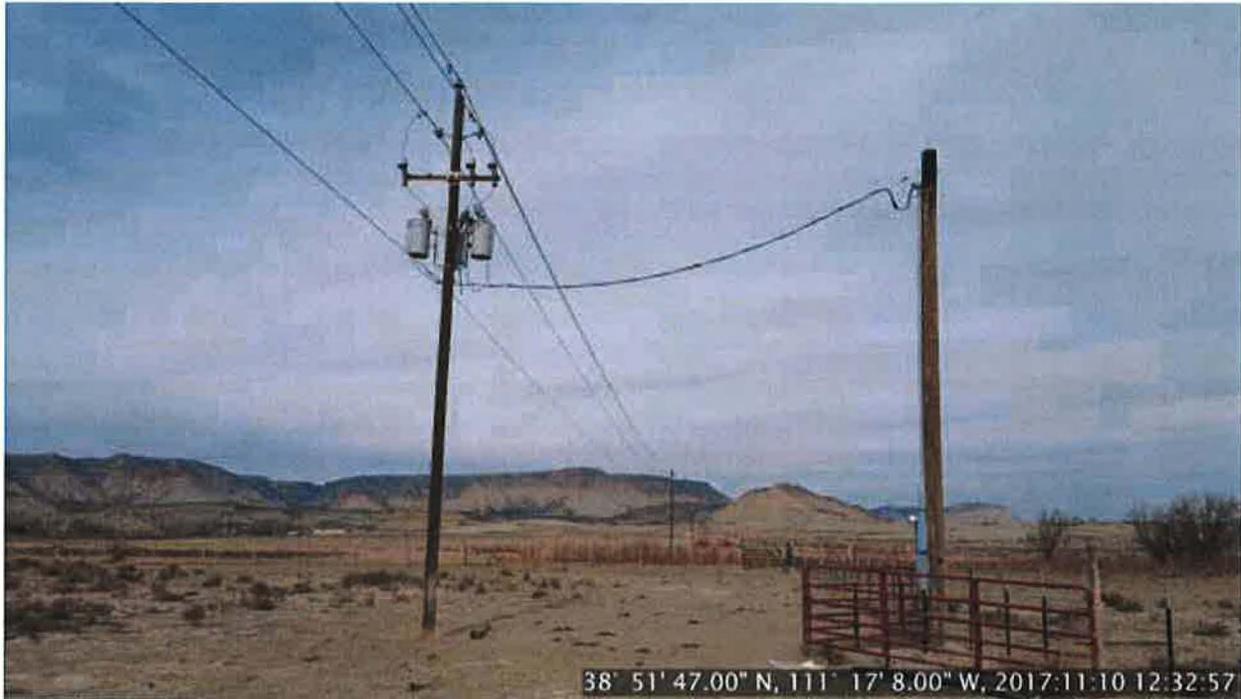
Feature 127. Sprinkler Pivot Foundation. 2nd location.



Feature 128. Water Line Air Vent.

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Feature 129. Underground Electrical Feed. Looking north. Underground electrical conduit stub-up is attached to pole at right.



Feature 129. Underground Electrical Feed. Looking west. Disturbed soil where underground electrical line was recently installed to feed a future sprinkler pivot.

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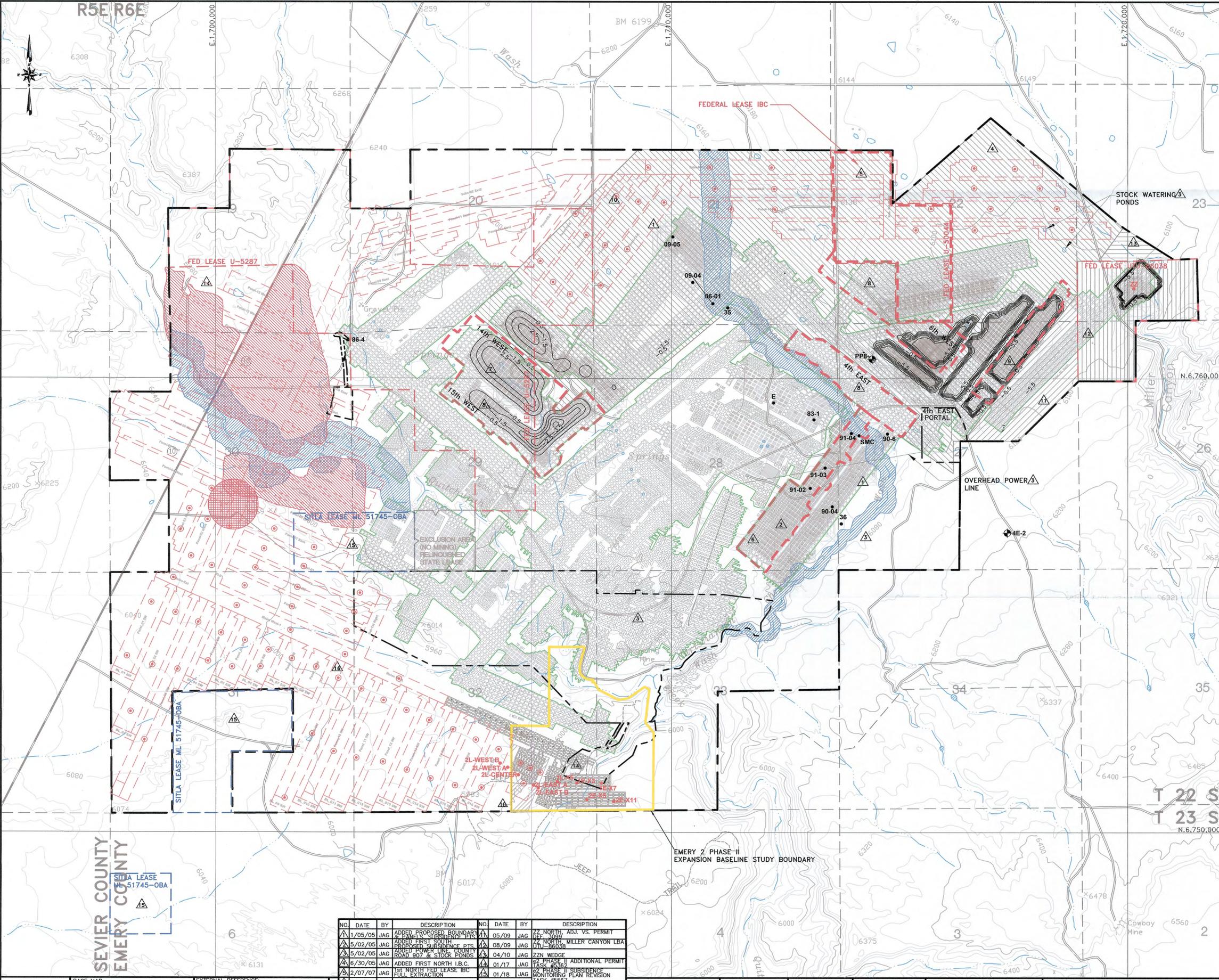


Feature 130. Irrigation Ditch Sinkhole. Looking southeast at HDPE pipe installed over sinkhole.



Feature 131. Mine Discharge Pond No. 1. Looking northeast at empty pond. JAN 24 2019

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LEGEND

- PERMIT AREA BOUNDARY
- ADJACENT AREA FOR NON-WATER RESOURCES. FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI-4
- AVF BUFFER ZONES (NO FULL EXTRACTION)
- STREAM BUFFER ZONES (NO FULL EXTRACTION)
- STRUCTURAL BUFFER ZONES (NO FULL EXTRACTION)
- 85-2 SUBSIDENCE MONITORING POINT (CURRENTLY BEING MONITORED)
- SUBSIDENCE MONITORING POINT (PROPOSED)
- SURVEYED CONTROL POINT
- PREVIOUSLY APPROVED FULL EXTRACTION
- SEALED EMERY MINE OLD WORKS
- PREVIOUSLY APPROVED AREA TO BE FULLY EXTRACTED
- PREDICTED DEPTH OF SUBSIDENCE ISOPACHS (FT.)
- PROJECTED MINE WORKINGS
- SUBSIDENCE MONITORING POINTS (INSTALLED 2017, 2018)

SEVIER COUNTY
EMERY COUNTY

BASE MAP:
USGS 7.5 MINUTE QUADRANGLE'S EMERY WEST 1968
EMERY EAST 1968, PHOTO REVISED 1976
MESA BUTTE 1968, PHOTO REVISED 1976
WALKER FLATE 1968, PHOTO REVISED 1976

COORDINATE SYSTEM:
STATE PLANE COORDINATES
NAD 83 CONIC
ZONE 12N
CENTRAL - US FEET
VERTICAL DATUM - NAVD 88-US FEET

EXTERNAL REFERENCE:
G:\UC1665\REF-CURRENT\REF-USOSMAP.DWG
G:\UC1665\REF-CURRENT\REF-WORKS-EM2.DWG
G:\UC1665\REF-CURRENT\REF-SECTION.DWG
G:\UC1665\REF-CURRENT\REF-HATCH-ZZNW.DWG
G:\UC1665\REF-CURRENT\REF-LOW.DWG
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G:\UC1665\REF-CURRENT\REF-FINAL PERMIT-0217-17.DWG
G:\UC1665\REF-CURRENT\REF-MINE WORKINGS\REPLACEMENTS-19-16.DWG

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
1	05/05	JAG	ADDED PROPOSED BOUNDARY	1	05/09	JAG	ZZ NORTH, ADJ. VS. PERMIT
2	05/02/05	JAG	ADDED FIRST SOUTH SUBSIDENCE PTS.	2	08/09	JAG	DEP NORTH MILLER CANYON LBA
3	05/02/05	JAG	PROPOSED SUBSIDENCE PTS.	3	04/10	JAG	ZZN WEDGE
4	06/30/05	JAG	ADDED FIRST NORTH I.B.C.	4	01/17	JAG	TASK #567 ADDITIONAL PERMIT
5	02/07/07	JAG	1ST NORTH FULL EXTRACTION	5	01/18	JAG	PHASE II SUBSIDENCE MONITORING FLUIDVISION TASK #567
6	09/05	JAG	1st SOUTH FULL EXTRACTION	6	01/19	JAG	2ND LEFT FULL EXTRACTION
7	04/07	JAG	14th WEST FULL EXTRACTION				
8	07/07	JAG	15th WEST, 6th WEST AND 14th WEST FULL EXTRACTION				
9	03/08	JAG	ADDITIONAL FULL EXTRACTION				
10	09/08	JAG	LIFE OF MINE FULL EXTRACTION				

EMERY 2 PHASE II EXPANSION BASELINE STUDY BOUNDARY

SCALE: 1" = 1000'
CONTOUR INTERVAL = 40'

DRAWN BY: KDS
CHECKED BY: JAG
APPROVED BY: JAG

ORIGINAL DATE: 1/03
RE-DRAWN DATE: 12/05

DWG DATA: G:\UC1665\05\PHASE II DWG

EMERY MINE
EMERY COUNTY, UTAH

BRONCO UTAH OPERATIONS, LLC

P.O. BOX 1
PRICE, UT 84501

PERMIT NO.
ACT015/015

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REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
STATE OF UTAH

PLATE V-5
SUBSIDENCE MONITORING POINTS AND BUFFER ZONES