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

Special Use Permit

GENERAL INFORMATION

(To be completed by the applicant)

- Street Address / General Location of Property: Section 36, Township 6 South, Range 98 West, 6th Principal Meridian (Latitude 39°32'28.8"N, Longitude 108°19'32.7"W NAD 83 / WGS 84)
- Legal Description: Portion of Tract 44 situated in SW$^1/_4$ SW$^1/_4$ of S10, T6S, R98W, 6th Principal Meridian, County of Garfield, State of Colorado - detailed description provided with plat drawing
- Existing Use & Size of Property in acres: Temporary Office Facility 2.2 of ≈54,000 acres
- Description of Special Use Requested: Revised Communication System to support natural gas production operations at Chevron North American Exploration and Production Company's Piceance Basin Natural Gas Development Program north of De Beque, Colorado
- Zone District: Resource Lands

- Name of Property Owner (Applicant): Chevron U.S.A. Inc.
- Address: C/O Chevron Texaco Property Tax, P.O. Box 285 Telephone: _____
- City: Houston State: TX Zip Code: 77001 FAX: _____

- Name of Owner's Representative, if any (Attorney, Planner, etc): Sally Cuffin, URS - Washington Division
- Address: 7800 E. Union Avenue, Suite 100 Telephone: (303) 843-2219
- City: Denver State: CO Zip Code: 80237 FAX: (303) 843-3622

STAFF USE ONLY

- Doc. No.: _____ Date Submitted: _____ TC Date: _____
- Planner: _____ Hearing Date: _____

I. APPLICATION SUBMITTAL REQUIREMENTS

As a minimum, specifically respond to all the following items below and attach any additional information to be submitted with this application:

1. Please submit, in narrative form, the nature and character of the Special Use requested. Submit plans and supporting information (i.e. letters from responsible agencies). Include specifications for the proposed use including, but not limited to, the hours of operation, the number and type of vehicles accessing the site on a daily, weekly and/or monthly basis, and the size and location of any existing and/or proposed structures that will be used in conjunction with the proposed use, and provisions for electric power service and any other proposed utility improvements. Be specific.
2. If you will be using water or will be treating wastewater in conjunction with the proposed use, please detail the amount of water that would be used and the type of wastewater treatment. If you will be utilizing well water, please attach a copy of the appropriate well permit and any other legal water supply information, including a water allotment contract or an approved water augmentation plan to demonstrate that you have legal and adequate water for the proposed use.
3. Submit a site plan /map drawn to scale that portrays the boundaries of the subject property, all existing and proposed structures on the property, and the County or State roadways within one (1) mile of your property. If you are proposing a new or expanded access onto a County or State roadway, submit a driveway or highway access permit.
4. Submit a vicinity map showing slope / topography of your property, for which a U.S.G.S.1:24,000 scale quadrangle map will suffice.
5. Submit a copy of the appropriate portion of a Garfield County Assessor's Map showing all the subject property and public and private landowners adjacent to your property (which should be delineated). In addition, submit a list of all property owners, public and private landowners and their addresses adjacent to or within 200 ft. of the site. This information can be obtained from the Assessor's Office. We will also need the names (if applicable) of all mineral right owners of the subject property. (That information can be found in your title policy under Exceptions to Title).
6. Submit a copy of the deed and a legal description of the subject property.
7. If you are acting as an agent for the property owner, you must attach an acknowledgement from the property owner that you may act in his/her behalf.
8. Submit an statement that specifically responds to each of the following criteria from Section 5.03 of the Zoning Regulations:
   (1) Utilities adequate to provide water and sanitation service based on accepted engineering standards and approved by the Board of County Commissioners shall either be in place or shall be constructed in conjunction with the proposed use.
   (2) Street improvements adequate to accommodate traffic volume generated by the proposed use and to provide safe, convenient access to the use shall either be in place or shall be constructed in conjunction with the proposed use;
   (3) Design of the proposed use is organized to minimize impact on and from adjacent uses of land through installation of screen fences or landscape materials on the periphery of the lot and by location of intensively utilized areas, access points, lighting and signs in such a manner as to protect established neighborhood character;
9. Depending on the type of Special Use Permit requested, you may need to respond to additional review standards in the Garfield County Zoning Resolution Section 5.00 [Supplementary Regulations]. This may include uses such industrial uses [section 5.03.07 & 5.03.08], Accessory Dwelling Units [section 5.03.21], Utility line/Utility Substations, etc. Specific sections of the Zoning Resolution which can be located on the Garfield County web

site at http://www.garfield-county.com/building_and_planning/index.htm, or information can be obtained from this office

10. A $400.00 Base Fee: Applicant shall sign the "Agreement for Payment" form and provide the fee with the application.
11. Submit 2 copies of this completed application form and all the required submittal materials to the Building and Planning Department. Staff will request additional copies once the Special Use Permit application has been deemed technically complete.

II. PROCEDURAL REQUIREMENTS

(The following steps outline how the Special Use Permit Application review process works in Garfield County.)

1. Submit this completed application form, base fee, and all supplemental information to the Garfield County Planning Department. It will be received and given to a Staff Planner who will review the application for technical completeness.
2. Once the application is deemed technically complete, the Staff Planner will send you a letter indicating the application is complete. In addition, Staff will also send you a "Public Notice Form(s)" indicating the time and date of your hearing before the Board of County Commissioners. Prior to the public hearing, Staff will provide you with a Staff Memorandum regarding your requested Special Use. (If Staff determines you application to be deficient, a letter will be sent to you indicating that additional information is needed to deem your application complete.)
3. It is solely the Applicant's responsibility to ensure proper noticing occurs regarding the requested Special Use and the public hearing. **If proper notice has not occurred, the public hearing will not occur**. Notice requirements are as follows:
   a. Notice by publication, including the name of the applicant, description of the subject lot, a description of the proposed special use and nature of the hearing, and the date, time and place for the hearing shall be given once in a newspaper of general circulation in that portion of the County in which the subject property is located at least thirty (30) but not more than sixty (60) days prior to the date of such hearing, and proof of publication shall be presented at hearing by the applicant.
   b. Notice by mail, containing information as described in the paragraph above, shall be mailed to all owners of record as shown in the County Assessor's Office of lots within two hundred feet (200') of the subject lot and to all owners of mineral interest in the subject property at least thirty (30) but not more than sixty (60) days prior to such hearing time by certified return receipt mail, and receipts shall be presented at the hearing by the applicant.
   c. The site shall be posted such that the notice is clearly and conspicuously visible from a public right-of-way, with notice signs provided by the Planning Department. The posting must take place at least thirty (30) but not more than sixty (60) days prior to the hearing date and is the sole responsibility of the applicant to post the notice, and ensure that it remains posted until and during the date of the hearing.
4. The Applicant is required to appear before the Board of County Commissioners at the time and date of the public hearing at which time the Board will consider the request. In addition, the Applicant shall provide proof, at the hearing, that proper notice was provided.
5. Once the Board makes a decision regarding the Special Use request, Staff will provide the Applicant with a signed resolution memorializing the action taken by the Board. Following the Board's approval, this office will issue the Special Use Permit to the applicant. If the Board's approval includes specific conditions of approval to be met, this office will not issue the Official Special Use Permit certificate until the applicant has satisfied all conditions of approval. The Special Use Permit approval is not finalized until this office has issued the

Official Special Use Permit certificate signed by the Chairman of the Board of County Commissioners.

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

(Signature of applicant/owner) Last Revised: 02/2006

Street Address / General Location of Property:

Section 10, Township 6 South, Range 98 West, 6th Principal Meridian. A general coordinate of the communication tower is 39°32'28.8"N latitude, 108°19'32.7"W longitude NAD 83 / WGS-84.

Legal Description:

That portion of Tract 44 situated in the SW1/4 SW1/4 of Section 10, Township 6 South, Range 98 West of the 6th Principal Meridian, County of Garfield, State of Colorado, being more particularly described as follows:

Beginning at a found 1924 General Land Office brass cap in place for AP No. 2, Tract 72 and AP No. 3, Tract 45; thence N00°02'00"E along the East line of Tract 44 a distance of 334.36 feet; thence leaving the east line of said Tract 44 S85°27'58"W a distance of 312.65 feet; thence S24°06'33"E a distance of 492.39 feet; thence N62°08'09"E a distance of 125.02 feet to a point on the east line of said Tract 44; thence N00°09'00"E along the East line of said Tract 44 a distance of 81.46 feet to the point of beginning, containing 2.19 acres more or less.

Existing Use & Size of Property in acres:

The footprint of the Temporary Office / Communication System area is about 2.19 acres. It is located in Tract 44 of a 4311.69 acre parcel (No. 2137-321-000-08), which is currently zoned as grazing / agricultural land (Ref: Garfield County Account Number - R290520; Parcel Number - 2137-321-000-08)

Zone District:

Resource Lands

Name of Property Owner (Applicant):

Chevron U.S.A. Inc.
Atten: Ken Jackson
11111 South Wilcrest Drive
Houston, TX 77099
Phone (281) 561-4991
FAX (281) 561-3702

Name of Owner's Representative, if any (Attorney, Planner, etc.)

Sally Cuffin, URS - Washington Division, Denver, Colorado

Garfield County Special Use Permit Application
Communication System

Chevron Piceance Basin Natural Gas Development Program
Revised Communication System – Hiner Gate

Chevron North America Exploration and Production Company
744 Horizon Court
Grand Junction, CO 81506

Revision A

Prepared by URS - Washington Division
7800 East Union Avenue
Suite 100
Denver, Colorado 80237

Table of Contents

Attachments

Introduction

In order to provide a functional communication system for their Piceance Basin Natural Gas Development Program (Program), Chevron North America Exploration and Production Company (Chevron) proposes the revision of an earlier approved communication system at the Temporary Office facility. The proposed revisions include increasing the communication tower height to 50 feet (originally 30 ft) and the installation of a supplemental communication building. The communication system is a needed to support the development of Chevron's Skinner Ridge Field.

The Program is located on a Chevron owned parcel of about 54,000 contiguous acres north of De Beque, Colorado (see Maps – Figure 1). Well pads and preliminary facilities associated with the Early Production System (EPS) phase of the Program are currently operational or under construction. The EPS includes the development of four well pads, two service pads, the Central Production Facility, and the associated support facilities (see Maps - Figure 2). Revisions to the Communication System are necessary to support the EPS and the full field development of the natural gas reserves.

1 Nature and Character of Special Use Permit

Please submit, in narrative form, the nature and character of the Special Use requested. Submit plans and supporting information (i.e. letters from responsible agencies). Include specifications for the proposed use including, but not limited to, the hours of operation, the number and type of vehicles accessing the site on a daily, weekly and/or monthly basis, and the size and location of any existing and/or proposed structures that will be used in conjunction with the proposed use, and provisions for electric power service and any other proposed utility improvements. Be specific.

In order to support continuing activities associated with the development of their Skinner Ridge Field, Chevron proposes the revision of a previously permitted communication system at the Temporary Office facility (see Approved Permits). The requested revision is to increase the height of the communication tower from 30 to 50 feet and add a second communication building. The Temporary Office is located in the SE ¼ SE ¼ of Section 9 and in the SW¼ SW¼ of Section 10, Township 6 South, Range 98 West of the 6th Principal Meridian (see Maps - Figure 2).

1.1 Location

The proposed communication system revisions will occur at the Temporary Office facility located at the end of County Road (CR) 211 (see Maps - Figure 2). The site can be accessed from Interstate 70, exit 62, by traveling north on local Road 45N. Road 45N north of De Beque, Colorado, is also known as Roan Creek Road/Drive and CR 204. The intersection of CR 211 and CR 204 is located about 12.5 miles north northwest of De Beque. Traveling north of the intersection about 4.5 miles, one reaches the end of CR 211, where a gated fence is encountered. An existing ranch road continues north onto Chevron fee land. The location is locally known as Hiner Gate and the Temporary Office facility is located just inside the gate on about 2.19 acres of land along the west side of the access road (see Maps - Figure 2).

The revised communication system will affect an additional 240 square feet of a previously identified disturbed area (Temporary Office and Hiner Gate Communication). A general coordinate of the communication tower is 39°32'28.8"N latitude, 108°19'32.7"W longitude NAD 83 / WGS-84.

1.2 Communication System Revision Purpose

Analysis of the operation of the previously permitted and installed communication towers / equipment has indicated the need for modification to the tower / system at Hiner Gate. Analysis has indicated that increasing the tower height to 50 feet (originally specified as 30 feet) and providing supplemental equipment (housed in a 10-ft x 12-ft communication building) at this location will enhance the performance of the overall communication system. A project specific communication system is needed because of the lack of existing communication infrastructure in this remote area. Information about the communication system tower, foundation, and equipment is provided in the Communications System attachment.

The overall purpose of the communication system is to provide radio, cellular, and data communications in the deep, remote canyons. It also will allow field personnel to communicate with the Chevron Grand Junction office and general offsite communications. The system is essential to ensure safe and efficient operations.

1.3 Hours of Operation

The communication system will operate 24 hours a day, seven days a week.

1.4 Vehicles / Traffic / Regulatory Requirements

A preliminary traffic assessment of the Hiner Gate location produced an estimated of between 150 and 500 vehicle trips per day to support ongoing operations. The communication system modification will not affect this estimate other than a small number of vehicles needed to deliver the additional equipment. Up to five vehicles will be needed to support this effort.

All vehicles working within Garfield County Right of Ways will be licensed and registered in the State of Colorado. Vehicles hauling equipment and materials will abide by Garfield County Road and Bridge Departments oversize / overweight regulations. All oversize / overweight vehicles will obtain the necessary permits and carry a letter showing proof that they can operate under a known bond holder on file with Garfield and Mesa County Road and Bridge Departments.

1.5 Facility / Operational Description

The communication system at the Temporary Office has the following components:

- Communication tower (50-ft) and foundation (13-ft x 13-ft x 3.5-ft);
- Previously permitted communication system building (8-ft x 9-ft) and equipment; and
- Supplemental communication system building and equipment (10-ft x 12-ft).

The communication system currently includes six permitted and proposed communication towers / equipment buildings located throughout the field. Once the system is installed a limited amount of long-term monitoring and maintenance will be required for the equipment. Additional towers may need to be installed as operations expand. The location of the tower and new communication building are shown on Drawing PBSR-69810AVF-CIV-SIT-URS-00000-00001-00 (see Drawings). Long-term operations also require shop facilities for fabrication activities, field equipment maintenance and repair, and general maintenance.

1.5.1 Communications System / Regulatory Requirements

The communication system revision will include a 50-ft tall tower, radio transmission and receiver equipment, and a 10-ft x 12-ft communication equipment building. A generalized drawing of the communication tower is provided in the Communication System attachment. Power for the system will be provided by a combination of solar recharged batteries and site power. A 13-ft x 13-ft x 3.5-ft concrete pad will serve as the tower base. The current tower design indicates that the structure will be free standing, but guying wires may be added if warranted by site specific conditions.

The Hiner Gate system interfaces with four existing and one proposed towers located in the Clear Creek valley or on the surrounding plateau. At least one of the plateau units maintains communications with the Grand Junction office using line of sight transmission / reception.

In addition to County zoning regulations, the Federal Aviation Administration (FAA) and Federal Communication Commission (FCC) have specific regulations for communication systems and towers. These regulations / requirements were reviewed for the proposed installation and the review results are summarized in Section 9.4. The system will be constructed / installed in accordance with the requirements of the International Fire Code, National Electrical Code, and 2003 International Building Code at a minimum.

1.6 Civil Specifications / Regulatory Requirements

The site was prepared in accordance with the specifications / conditions of approval of the Temporary Office and the Hiner Gate the approved special use permits (see Approved Permits). The only changes to the original permit will be the need for a 13-ft x 13-ft x 3.5-ft concrete pad instead of the previously identified 10-ft x 10-ft pad. The pad will be install on the site designated for the original submittal and will not increase the area bonded for re-vegetation.

1.7 Electrical Utilities / Regulatory Requirements

Electrical power will be provided to the site through a combination of existing service and supplemental power generation. The existing power is a 500 kVA, single phase, 12,000 volt line provided by Grand Valley Power. Supplemental power may be available from the Central Production Facility when that construction is complete (pending additional permitting). Power loads from the revised communication system are expected to be minimal.

Grand Valley Power is currently working to provide 150 KVA of service to the temporary facilities in Clear Creek valley, but initial operations will require the use of on-site power generation. Studies are currently underway to determine an optimized location for the on-site generation, which may include co-location with other production facilities (excess power may be available from the Central Production Facility – special use permit currently under review). On-site generation will be used until a new Grand Valley Power line is routed to the site. Initial plans are to upgrade power to the Clear Creek basin to 19 MVA with ultimate plans to upgrade the system to 150 MVA service. Grand Valley Power is currently scheduling the 19 MVA upgrade for some time 2008 or early 2009.

1.8 Floodplain

As previously identified in the Temporary Office special use permit submittal, the location does not fall within the local floodplain.

1.9 Noxious Weeds

A noxious weed management plan was submitted as part of the Temporary Office special use permit. That plan was implemented during the construction of the facility and on-going management techniques are in place. Installation of the revised communication system will conform to the guidelines used for the initial site development.

1.10 Safety / Security / Emergency Response

Chevron has initiated coordination activities to ensure that local fire departments, medical facilities, and emergency response providers are aware of the Program activities and hazards. Detailed Program facility maps along with the associated GPS coordinates have been provided to the Garfield County Sheriff's Office and local fire departments as part of the Program ERP. Multiple meetings have been held with the De Beque, Rifle fire departments to discuss hazards specific to a natural gas production field. Meetings with the Grand Valley (Parachute) fire department are planned. Members of the De Beque emergency response team have completed Chevrons's safety orientation for the Program. Efforts have been made to provide safety training to local landowners. Meetings also have been held with the Bureau of Land Management representatives of the Rocky Mountain Coordinating Group, an interagency fire management group that includes six federal agencies and the Colorado State Forest Service. Follow up meetings will be held with these organizations as the various facilities are constructed and become operational.

Chevron safety personnel have had extensive discussions with local emergency medical service providers including St. Mary's Hospital and Medical Center (Grand Junction), CareFlight Air Ambulance (associated with St. Mary's), and Grand River Heath and Safety Center. Meetings with Community Hospital (Grand Junction) and Grand River Hospital (Rifle) are being planned. Personnel also have met with a local physicians group, including Dr. Krueger and Dr. Papenfus, that specifically meets to address the increasing demands on emergency response.

The Chevron Emergency Response Plan and Hazard Elimination / Safety plans were provided as part of the Temporary Office special use permit. These plans will be enforced for the communication system revisions.

The communication system installation will conform to the requirements of the 2003 International Fire Code (IFC), 2003 International Building Code (IBC), and 2005 National Electrical Code (NEC). Portable fire extinguishers will be provided in both communication system buildings at a density consistent with the 2003 IFC and all personnel will be trained in their proper operation.

2 Water Supply / Wastewater Management Systems

If you will be using water or will be treating wastewater in conjunction with the proposed use, please detail the amount of water that would be used and the type of wastewater treatment. If you will be utilizing well water, please attach a copy of the appropriate well permit and any other legal water supply information, including a water allotment contract or an approved water augmentation plan to demonstrate that you have legal and adequate water for the proposed use.

Water / wastewater services are provided at the Temporary Office facility. The revisions to the communication system will require no additional services.

3 Site Plan / Property Map

Submit a site plan /map drawn to scale that portrays the boundaries of the subject property, all existing and proposed structures on the property, and the County or State roadways within one (1) mile of your property. If you are proposing a new or expanded access onto a County or State roadway, submit a driveway or highway access permit.

A site plan of the property and proposed facilities and access is provided in Drawing PBSR-69810AVF-CIV-SIT-URS-00000-00001-00, Rev. A (see Drawings). Figures 1 and 2 show County, State, and Federal roads that service the property (see Maps) – the property is adjacent to CR 211. Figure 2 shows proposed facilities / structures associated with the gas field development.

The Temporary Office facility is located about 4.5 miles north northeast of the intersection of County Road (CR) 204 and CR 211 (Clear Creek Road) at the end of CR 211. No driveway permit was required for this location.

4 Topographic Vicinity Map

Submit a vicinity map showing slope / topography of your property, for which a U.S.G.S. 1:24,000 scale quadrangle map will suffice.

Area topography in the project vicinity can be seen on Figures 2 (see Maps). The appropriate geotechnical investigations were performed as part of the original communication system submittal to evaluate soil stability for construction. Steep cliffs in many portions of the project area represent falling rock and landslide hazards, but this is not a major issue for this location.

5 Assessor's Map / Adjacent Landowners

Submit a copy of the appropriate portion of a Garfield County Assessor's Map showing all the subject property and public and private landowners adjacent to your property (which should be delineated). In addition, submit a list of all property owners, public and private landowners and their addresses adjacent to or within 200 ft. of the site. This information can be obtained from the Assessor's Office. We will also need the names (if applicable) of all mineral right owners of the subject property. (That information can be found in your title policy under Exceptions to Title).

A copy of the appropriate portion of the Garfield County Assessor's Map with the marked site location is provided in the Assessor Map attachment. The contiguous Chevron parcel is identified on a series of assessor maps provided as the Adjacent Property Owners – Assessor Maps attachment. A list of adjacent property owners is provided as the Adjacent Property Owners – List attachment.

6 Property Deed

Submit a copy of the deed and a legal description of the subject property.

The deed for the tracts associated with the Temporary Office is provided as the Deed attachment. Additional title information has been provided regarding the 54,000 Chevron parcel.

7 Authorization Letter

If you are acting as an agent for the property owner, you must attach an acknowledgement from the property owner that you may act in his/her behalf.

A letter authorizing URS - Washington Division to represent Chevron in the permitting activities is provided in the Authorization Letter attachment.

8 Water & Wastewater Management / Street Improvements / Project Visual Effects

Submit a statement that specifically responds to each of the following criteria from Section 5.03 of the Zoning Regulations:
(1) Utilities adequate to provide water and sanitation service based on accepted engineering standards and approved by the Board of County Commissioners shall either be in place or shall be constructed in conjunction with the proposed use.
(2) Street improvements adequate to accommodate traffic volume generated by the proposed use and to provide safe, convenient access to the use shall either be in place or shall be constructed in conjunction with the proposed use;
(3) Design of the proposed use is organized to minimize impact on and from adjacent uses of land through installation of screen fences or landscape materials on the periphery of the lot and by location of intensively utilized areas, access points, lighting and signs in such a manner as to protect established neighborhood character;

Water, wastewater, and sanitary services (trash collection) are currently provided at the Temporary Office location. The revised communication system will not require additional services.

8.1 Road Improvements / Issues

As previously mentioned, a driveway permit will not be necessary for this location.

Information about road maintenance for the Temporary Office location was provided with the special use permit submittal.

8.2 Visual Effects

The additional height of the communication tower will make it visible for a longer distance, but due to the remote location, this effect will be minimal. The tower is an open lattice structure constructed of non-reflective galvanized steel. Radomes mounted on the structure will make the structure more visible, but again the remote location will minimize visual effects.

8.3 Reclamation and Re-vegetation Plan

The communication system will be operational throughout the life of the project. Current plans are for the Temporary Office location will be reclaimed once the proposed Office Complex location is operational (alternative operations are being considered for the site, which will require additional permitting).

When the gas field is depleted the communication system tower / buildings / equipment and foundation will be removed. The area then will be graded to the original contours, stockpiled topsoil will be replaced, and the area will be planted with native vegetation. Reclamation and re-vegetation activities will be in accordance with requirements outlined in Garfield County Zoning Resolution 5.02.21 (11). General details of the re-vegetation activities are provided in the

IVNWM Plan and Storm Water Management Plan (SWMP) and will be included in the final re-vegetation plan.

9 Use Specific Standards

Depending on the type of Special Use Permit requested, you may need to respond to additional review standards in the Garfield County Zoning Resolution Section 5.00 [Supplementary Regulations]. This may include uses such industrial uses [section 5.03.07 & 5.03.08], Accessory Dwelling Units [section 5.03.21], Utility line/Utility Substations, etc. Specific sections of the Zoning Resolution which can be located on the Garfield County web site at http://www.garfieldcounty.com/building_and_planning/index.htm, or information can be obtained from this office.

Revisions to the communication system will have minimal impacts. Relevant sections of the Garfield County Zoning Resolutions will be address as described in the following.

9.1 Supplemental Industrial Operations Requirements (Zoning Resolution - §5.03.07)

Impacts associated with the Program were described in general terms in the Plan of Development provided to the County during the first quarter of 2007. Chevron has provided supplemental information on a continuing basis. Specific industrial operations requirements that are applicable to the Complex are as follows:

A recently completed study has identified portions of CR 204 to be a wildlife corridor for mule deer. Vehicle traffic to and from the Temporary Office / Communication System site will affect these populations, but mitigation measures are currently being studied and evaluated. Mitigation recommendations will be provided to project management, who will evaluate the alternatives and implement appropriate measures. [§5.03.07 (1)(C)]

A bond for the site reclamation after the cessation of activities was provided with the original permitting of this location. The minor changes to the tower foundation and additional communication system building will no increase that disturbance. [§5.03.07 (2)(B)]

9.2 Supplemental Industrial Performance Standards (Zoning Resolution - §5.03.08)

All operations will comply with applicable County, State, and Federal regulations for water, air and noise pollution and shall not be conducted in a manner constituting a public nuisance or hazard. The revised system will not generate noise, vibration, heat, dust, glare, etc. [§5.03.08 (1 through 4)]

Initial loading / unloading operations will include the equipment and material deliveries required for construction. No loading / unloading operations will occur on County roads. [§5.03.08 (5)(D)5.]

9.3 Supplemental Regulation for Broadcasting Studio and/or Communication Facility (Zoning Resolution - §5.03.13) and Communication Towers (Zoning Resolution - §5.06.02)

The Federal Aviation Administration's (FAA) Landing Facility Slope Calculation program, known as TOWAIR, website was used as a preliminary screening tool to determine if the tower required FAA registration. The TOWAIR results indicated that the system was not within five miles of any regional airport and would not require registration. In order to verify that finding

(per guidance provided on the TOWAIR website) the criteria established in 47 CFR 17.7 and 14 CFR 77.13 was reviewed. Review of those regulations indicated the need to provide a helicopter landing pad exclusion radius of at least 1,250 feet from the tower. This requirement will be incorporated into the selection of future helipads that are being proposed for site emergencies. [§5.03.13.1]

Vendor supplied information indicates that the communication system transmitter and associated equipment has been designed to meet the requirements of the Federal Communication Commission (FCC) as defined by part 15 of the FCC rules and regulations (see Communication System). The frequency band in which the system operates is "unlicensed" allowing this unit to operate as long as it does not produce harmful interference, but it must accept interference. [§5.03.13.1]

The communication system tower is part of the infrastructure needed for the field development. This stand alone facility is needed to establish sufficient line of sight locations. [§5.03.13.2 & §5.06.02]

The County zoning regulations currently do not list antenna height restrictions for Resource Land. The flat colors of the communication tower and associated equipment in combination with the minimal cross sectional area will have a low visual impact. The tower is located at a remote site. [§5.03.13.3 & .3(b)]

9.4 Documentation

Assuming the approval of the Special Use Permit, Garfield County will be informed when the site development begins. Verification of the installation will be documented in writing, by final site plan, and photographic record. All written documentation and site plans verifying compliance will be stamped by a certified Colorado Engineer.

Chevron North American
Exploration and Production Company
Piceance Basin Natural Gas Development Program
Early Production System

Central Production Facility
Water Treatment System
Fresh Water Pond
Water Mgmt. Pond

30 in. NG Pipeline

Hiner Gate
Temporary Office

Office Complex

Cuttings Pit

Man Camp

Early Production System Area

Project Site

N
W E
S

Chevron - Piceance Basin
Natural Gas Development Program
Figure 1

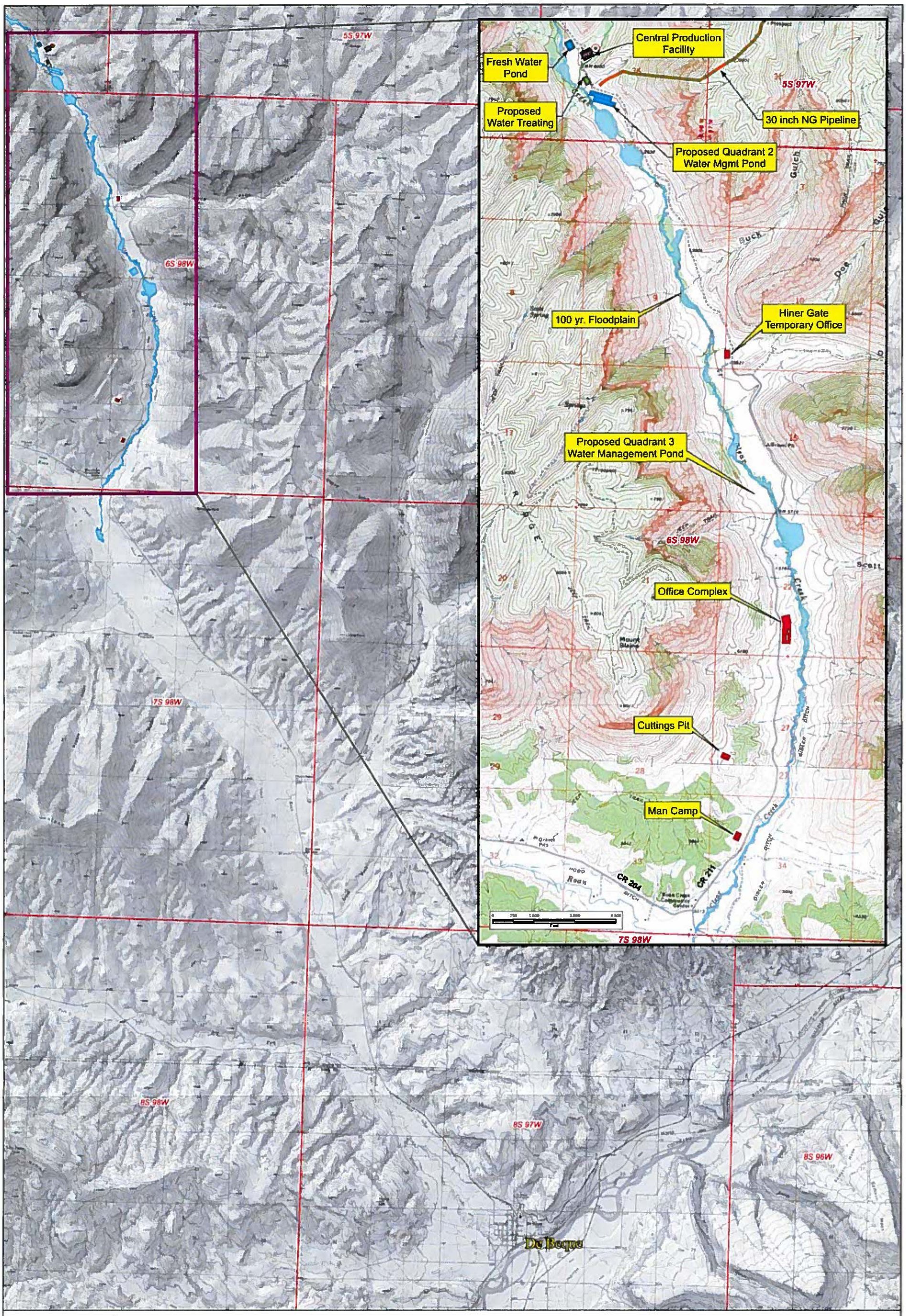
URS
Washington Division

Chevron
MidContinent/Alaska SBU
Chevron North America
Exploration and Production

REVISIONS

FILE:

AREA: WESTERN SLOPE	FIELD: SKINNER RIDGE	CO: Mesa-Garfield ST: CO			
PROPERTY UNIQUE:					
PROPERTY COMMON:					
PROJECT: PICEANCE BASIN NATURAL GAS DEVELOPMENT PROGRAM					
DRAWING: PBSR-ALL-RGL-MAP-URS-00000-00014					
WBS ELEM COST CENTER		PROJECT TYPE	PROJECT NO	REVISION NO	DATE
ENGR: TB DRFTR: GAG ChkR:					
APPRVD:					
SCALE = SHEET SIZE: 24x36			29454-002	B	13Mar08



Chevron Program Area
Figure 2

MidContinent/Alaska SBU
Chevron North America
Exploration and Production

URS
Washington Division

REVISIONS

FILE:

AREA: WESTERN SLOPE	FIELD: SKINNER RIDGE		CO: Mesa-Garfield ST: CO		
PROPERTY UNIQUE:					
PROPERTY COMMON:					
PROJECT: PICEANCE BASIN NATURAL GAS DEVELOPMENT PROGRAM					
DRAWING: PBSR-ALL-RGL-MAP-URS-00000-00015					
WBS ELEM: COST CENTER:		PROJECT TYPE	PROJECT NO	REVISION NO	DATE
ENGR: TB DRFTR: GAG CHKR			29454-002	B	13Mar08
APPRVD					
SCALE = SHEET SIZE: 24x36					

Reception#: 717667
02/21/2007 03:22:06 PM B:1896 P:0387 Jean Alberico
1 of 1 Rec Fee:$0.00 Doc Fee:0.00 GARFIELD COUNTY CO

SPECIAL USE PERMIT

for

Chevron USA, Inc.

1. SWSW/4 of Section 10 T6S, R98W
2. SWSW/4 of Section 27 T6S, R98W
3. SESW/4 of Section 2 T6S, R98W
4. SWNW/4 of Section 16 T5S, R97W

Parcel Number: 216721200008
Parcel Number: 213732100008

In accordance with and pursuant to the provisions of the Garfield County Zoning Resolution of 1978, as amended, and Resolution No. 2007 - 03 of the Board of County Commissioners of Garfield County, State of Colorado, hereby authorizes, by Special Use Permit, the following activity:

Four Communication Facilities

The Special Use Permit is issued subject to the conditions set forth in the above-mentioned resolution, and shall be valid only during compliance with such conditions and other applicable provisions of the Garfield County Zoning Resolution, Subdivision Regulations, Building Code, and other regulations of the Board of County Commissioners of Garfield County, Colorado.

ATTEST:

Jean Alberico
Clerk of the Board

GARFIELD COUNTY BOARD OF COMMISSIONERS, GARFIELD COUNTY, COLORADO

Chairman

Reception#: 732850
09/11/2007 04:04:47 PM Jean Alberico
1 of 1 Rec Fee:$0.00 Doc Fee:0.00 GARFIELD COUNTY CO

Temp Office

SPECIAL USE PERMIT

for

"Industrial Support Facilities" for a Temporary Office Facility Located at in the Clear Creek Canyon north of De Beque on Property Owned By Chevron USA, Inc, Garfield County

Parcel Number: 213732100008

In accordance with and pursuant to the provisions of the Garfield County Zoning Resolution of 1978, as amended, and Resolution No. 2007 - 84 of the Board of County Commissioners of Garfield County, State of Colorado, hereby authorizes, by Special Use Permit, the following activity:

"Industrial Support Facility" for a Temporary Office Facility

The Special Use Permit is issued subject to the conditions set forth in the above-mentioned resolution, and shall be valid only during compliance with such conditions and other applicable provisions of the Garfield County Zoning Resolution, Subdivision Regulations, Building Code, and other regulations of the Board of County Commissioners of Garfield County, Colorado.

ATTEST:

Jean M Alberico
Clerk of the Board

GARFIELD COUNTY SEAL COLORADO

GARFIELD COUNTY BOARD OF COMMISSIONERS, GARFIELD COUNTY, COLORADO

Chairman

WINDLOAD ON TOWER SECTIONS AND SUMMARY OF WEIGHTS

COLUMN 1 TOWER SECTION NUMBER		COLUMN 2 WIND ON SECTION & UNIF. APPURT. (KIPS)	COLUMN 3 WIND ON CONCENTR. EFF.PROJ AREAS (KIPS)	COLUMN 4 TOTAL WIND FOR EA. TWR. SECTION (KIPS)	COLUMN 5 WEIGHT OF HDWE. FOR EACH SECTION (KIPS)	COLUMN 6 WT. OF EA. SECTION W/ ICE/HDWE.- IF PRESENT (KIPS)	COLUMN 7 TOTAL ACCUM- ULATED SEC.WTS. (KIPS)	COLUMN 8 WT./SEC. OF TOWER STEEL ONLY (KIPS)	COLUMN 9 ACCUM. WEIGHT OF TOWER STEEL (KIPS)
6NB-1	**N	1.123	2.573	3.696	2.51	3.19	3.19	.45 (.15)	.45
6NST-1	**N	2.658	2.938	5.595	3.02	4.19	7.38	.80 (.29)	1.26

TOTAL INCREASED TOWER WEIGHT, IN ADDITION TO THE STANDARD TOWER SECTIONS = .45 KIPS

***** SECTION STATUS INDICATORS *****

FOR EXAMPLE, 6NB-1 **N
^^^...HORIZONTAL BRACE INDICATOR
||....DIAGONAL BRACE INDICATOR
|.....LEG INDICATOR

INDICATORS ARE:
. (PERIOD) ---- = MEMBER NOT BEEFED
* (ASTERISK) -- = MEMBER BEEFED
! (EXCLAMATION) = NO MEMBER LARGE ENOUGH
? (QUESTION) -- = INCORRECT DATA
N ---------- = NOT APPLICABLE

SHEARS, OVERTURNING MOMENTS AND LEG DATA

COLUMN 10 TOWER SECTION NUMBER		COLUMN 11 DISTANCE BELOW TOP (FT.)	COLUMN 12 APPROX. CENTER-CENTER OF LEGS (FT.)	COLUMN 13 TOTAL ACCUM. SHEAR ON TOWER (KIPS)	COLUMN 14 TOTAL OVER-TURNING MOMENTS (FT-KIPS)	COLUMN 15 MAXIMUM TENSION FOR ONE LEG (KIPS)	COLUMN 16 MAXIMUM COMP. FOR ONE LEG (KIPS)	COLUMN 17 MAXIMUM ALLOWABLE LEG CAPACITY (KIPS)	COLUMN 18 TOWER LEG DIMENSION (INCHES)
6NB-1	**N	10.0	4.58	3.70	29.19	6.38	8.59[.15]	56.91	PIPE2.5STD
6NST-1	**N	30.0	4.58	9.29	156.89	37.47	42.78[.75]	56.91	PIPE2.5STD

<<<<< NOTE >>>>> THE ALLOWABLE CAPACITIES ON THIS ANALYSIS INCLUDE A 33.3 PERCENT INCREASE.
<<<<< NOTE >>>>> [ ] SHOWS LOAD/CAPACITY RATIO.

REACTIONS FOR FOUNDATION DESIGN

COMPRESSION/LEG		42.78 KIPS
TENSION/LEG	39.02	~~37.47~~ KIPS
SHEAR/LEG	6.77	~~6.19~~ KIPS
TOTAL SHEAR	9.55	~~9.29~~ KIPS
OVERTURNING MOMENT	160.42	~~156.89~~ FT-KIPS

ANCHOR BOLTS REQUIRED 12- 5/8"Ø x 42" LG

FOUNDATION # F6 MAT

BRACING LOADS, SIZES AND BOLTS

COLUMN 19 TOWER SECTION NUMBER	COLUMN 20 HORIZ. COMP. OF SHEAR IN ONE FACE (KIPS)	COLUMN 21 HORIZ. COMP. OF LEG LOAD (KIPS)	COLUMN 22 REMAINING SHEAR TO BE TAKEN BY BRACES (KIPS)	COLUMN 23 MAX.AXIAL LOAD FOR TOWER BRACING (KIPS)	COLUMN 24 AXIAL LD. COLUMN CAPACITY OF BRACES (KIPS)	COLUMN 25 ANGLE/PIPE */SOLID RD. BAR/ BRACE DIMENSION (INCHES)	COLUMN 26 BRACE CONNECT. CAPACITY (KIPS)	COLUMN 27 NO.& SIZE OF BRACE BOLTS REQUIRED PER CONN.
6NB-1 **N	4.120	.000	4.120	2.746 [.40]	10.598	L1.75X3/16	<M> 6.80	1-5/8 IN. DIA. .250 IN. CLIP
6NST-1 **N	9.132	.000	9.132	6.086 [.90]	10.598	L1.75X3/16	<M> 6.80	1-5/8 IN. DIA. .250 IN. CLIP

<<<<< NOTE >>>>> THE ALLOWABLE CAPACITIES ON THIS ANALYSIS INCLUDE A 33.3 PERCENT INCREASE.
<<<<< NOTE >>>>> [ ] SHOWS MAX.LOAD/CAPACITY RATIO.

IF THE SYMBOL--(*)--APPEARS AFTER THE BOLT SIZE, IT INDICATES THAT THREADS MUST BE EXCLUDED FROM SHEAR PLANES.
IF THE SYMBOL--(H)--APPEARS AFTER THE LOADS ABOVE, IT INDICATES THAT THE LOADS ARE FOR THE MAIN HORIZONTAL.
IF THE SYMBOL--*--APPEARS AFTER THE CLIP SIZE, IT INDICATES THAT THE HORIZONTAL BRACE CONTROLLED THE CLIP AND BOLT SIZE.
IF THE SYMBOL--(+)--APPEARS AFTER THE DIAGONAL CAPACITY(COL. 24), IT INDICATES THE HORIZONTAL BRACE CAPACITY CONTROLS THE DIAGONAL BRACE CAPACITY.

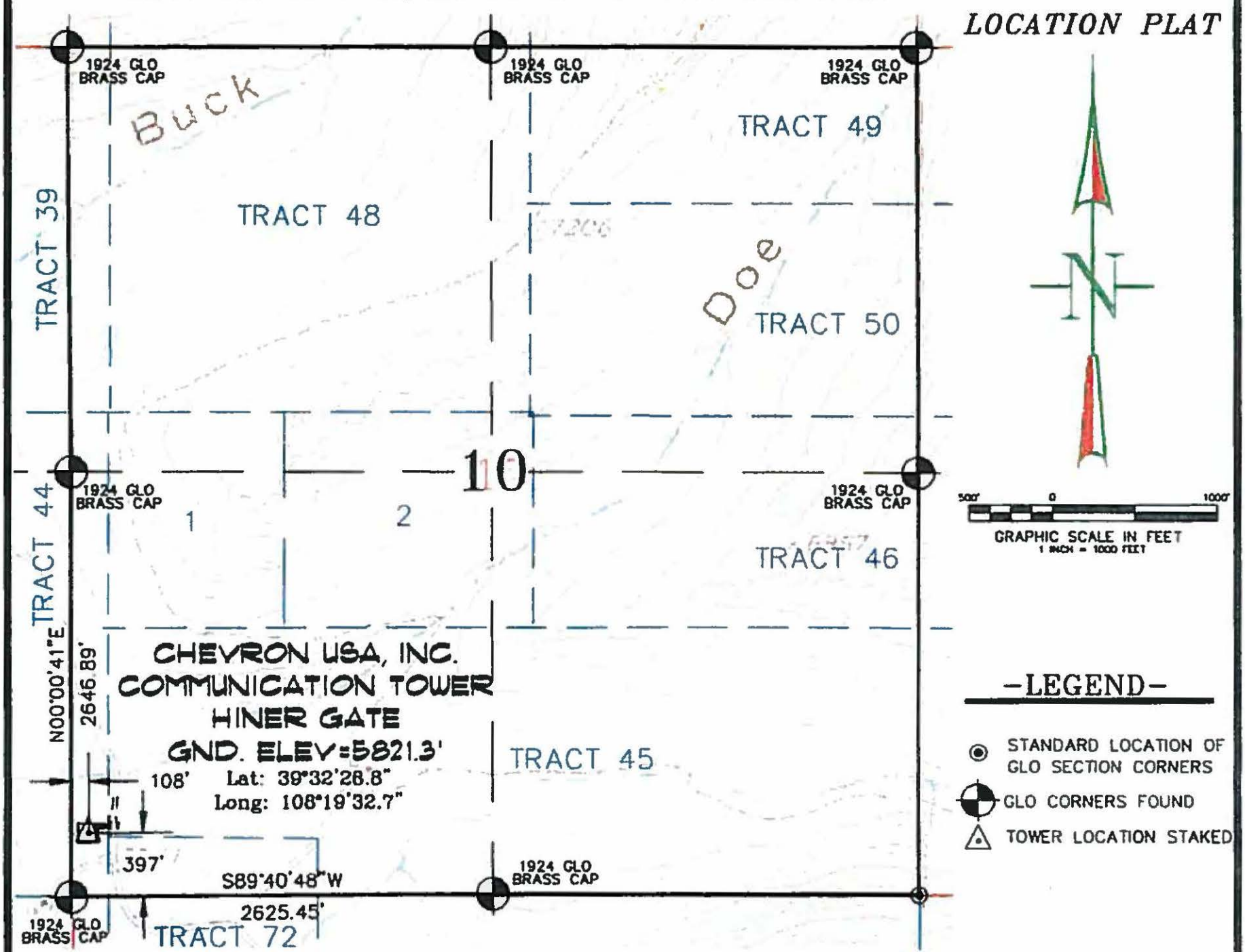
THE LETTER APPEARING BEFORE THE CONNECTION CAPACITY IN COLUMN 26 INDICATES THE CONTROLLING FACTOR.
<B> = BRACE BOLT CONTROLS CONNECTION CAPACITY; <C> = BRACE CLIP CONTROLS; <M> = BRACE CONTROLS.

TWIST AND DEFLECTION DATA

COLUMN 28 SECTION NUMBER	COLUMN 29 TWIST FOR EACH TOWER SECTION (DEGREES)	COLUMN 30 TOTAL ACCUMULATED TWIST (DEGREES)	COLUMN 31 DEFLECTION FOR EA. TOWER SECTION (DEGREES)	COLUMN 32 TOTAL ACCUMULATED DEFL. (DEGREES)
6NB-1 **N	.065	.257	.016	.222
6NST-1 **N	.192	.192	.206	.206

SEC. 10, T. 6 S., R. 98 W. OF THE 6TH P.M.

LOCATION PLAT



THIS LOCATION PLAT WAS PREPARED FOR CHEVRON USA, INC. TO LOCATE THE COMMUNICATION HINER GATE, 397 FEET FROM THE SOUTH LINE AND 108 FEET FROM THE WEST LINE IN (TRACT 44) SW1/4 SW1/4 OF SECTION 10, T. 6 S., R. 98 W. OF THE 6TH P.M., GARFIELD COUNTY, COLORADO.

REFERENCE DOCUMENTS

1) T.6S., R.98W., 6TH P.M. GLO PLAT
2) U.S.G.S. QUAD: MOUNT BLAINE,CO
3) ELEVATIONS BASED ON NAVD 1988
4) LATITUDES AND LONGITUDES ARE BASED ON NAD 83, COLORADO CENTRAL ZONE.
5) GPS OPERATOR IVAN MARTIN , WITH AN OBSERVED PDOP OF 2.4
6) ALL GPS OBSERVATIONS ARE IN COMPLIANCE WITH COGCC RULE NO.215.
5) ALL COMMUNICATION TOWER LOCATIONS ARE MEASURED AT 90° TO SECTION LINES

SURVEYOR'S CERTIFICATE

I, Steven R. Pace: a Professional Land Surveyor in the State of Colorado do hereby certify that this Survey was made under my direct supervision, and that this Plat represents said Survey.

COLORADO REGISTERED STEVEN R. PACE 22580 8-25-06 PROFESSIONAL LAND SURVEYOR

Ste R Pace

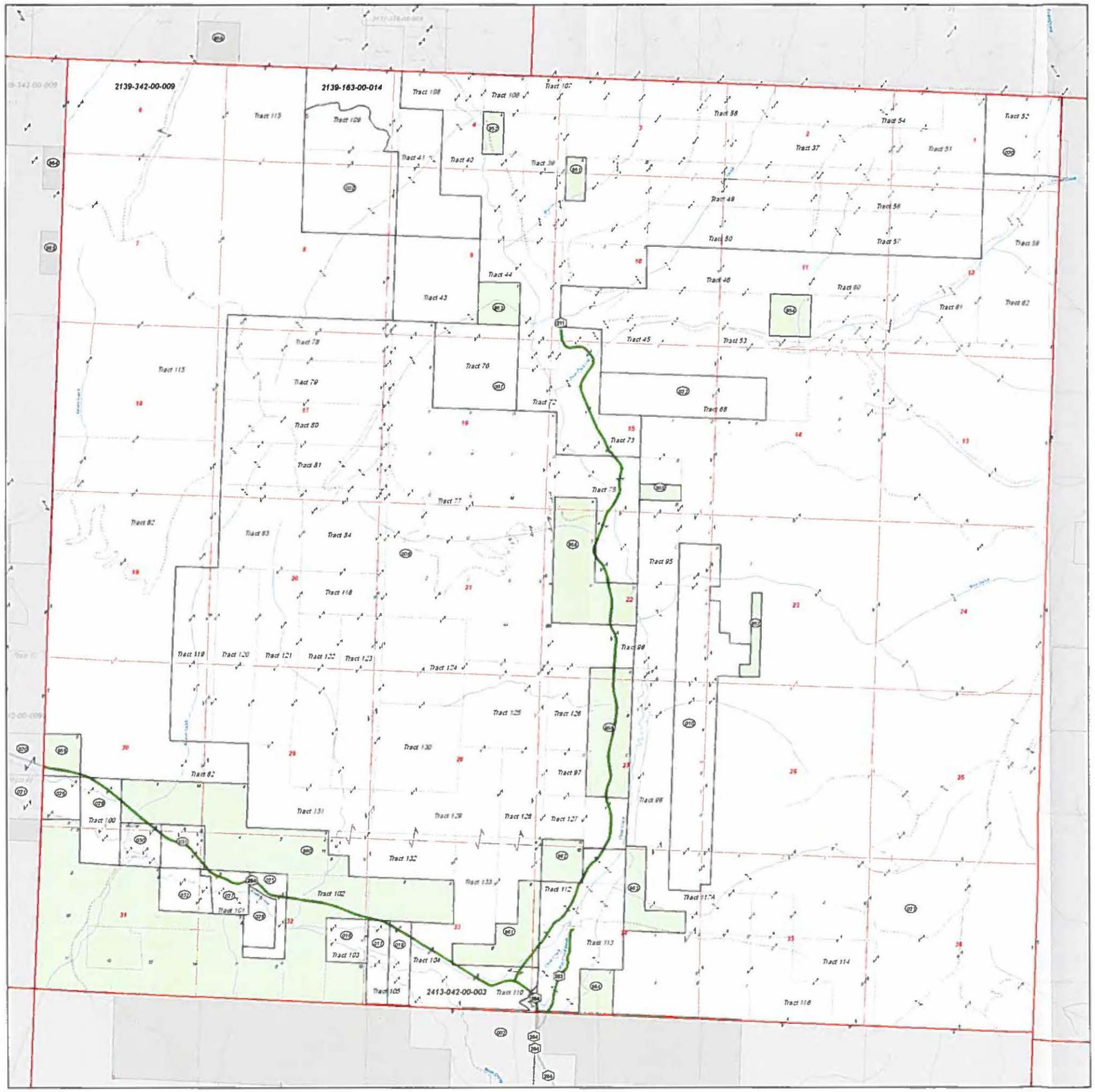
COLORADO P.L.S. 22580

CONSTRUCTION SURVEYS BILT COLO.

CONSTRUCTION SURVEYS, INC.
0012 SUNRISE BLVD.
SILT, CO 81652
970-876-5753

VIEW: HINERGATE

SURVEYED: 08/24/06	SCALE: 1" = 1000'
DRAFTED: 08/25/06	DWG: CHEVRON\CHEV-CONTROL06
CHECKED: 08/25/06	SHEET: 1 OF 1



Garfield County, Colorado

Assessor's Office

109 8th Street, Suite 207, Glenwood Springs, CO 81601
970-945-9134 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- Tax District Boundary
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Other Boundaries
- BLM GCDB Coordinates

BASE MAP SOURCE:

1. County Road centerline GPS data, Garfield County IT Department (1995, revised 2008)
2. USGS 1:5' Quadrangle Maps digitized by Garfield County IT Department (1995)
3. Colorado Department of Transportation highway centerlines, GIS data, (2004)

PARCEL MAP SOURCE:

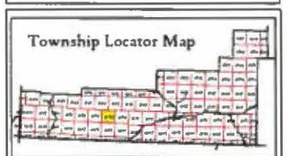
1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps, converted to GIS Geodatabase format (2007).
2. Following acceptance of this map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified engineer or shall be digitized by the IT Department from the legal description by means of coordinate geometry.

DISCLAIMER

This map was produced by Garfield County IT Department using the Arc Info Geographic Information System (GIS). The GIS and the information are intended as a source of reference for assessing, planning, and planning. The GIS is not a substitute for office of government records maintained by the Planning Department, the County Clerk and Recorder, Office the Assessor's Office, or for any legal document and cannot be in the place of title. In addition the representation of geographic features by the GIS may not be relevant for actual legal parcel, but are refer to the actual and the most current legal documentation related to the component of the map.

The information contained herein is believed to be accurate and reliable for the intended use, but is not about Garfield County makes no representation as to the accuracy or completeness of any information contained herein for any other purpose. The user shall inspect GIS and independently verify and all damages resulting consequential damages which may result from the use of information.

Township Locator Map



2167

Township 6 South Range 98 West

Projection: UTM Zone 13 NAD27

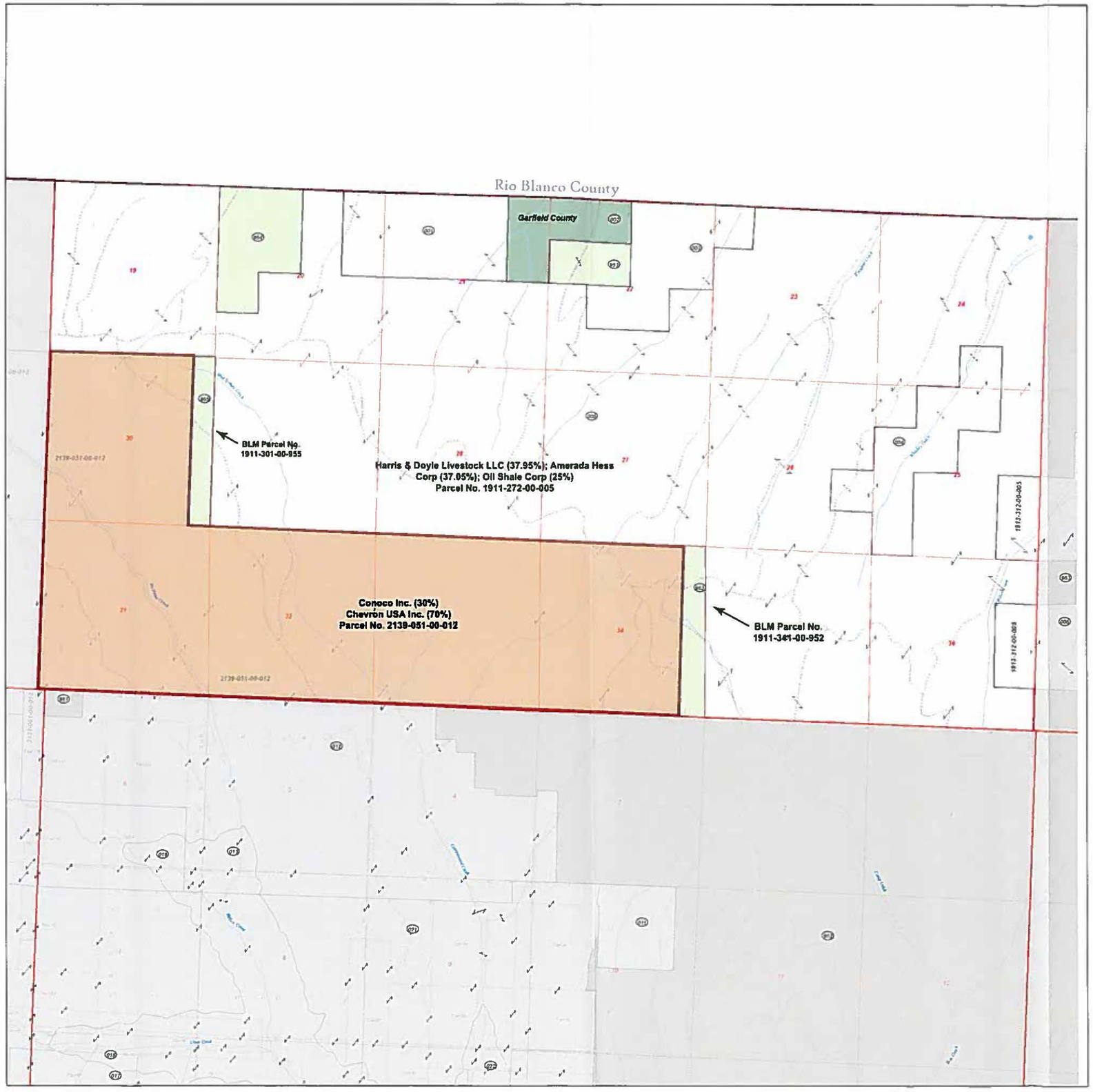
1 inch equals 1,500 feet
1:18,000

This ArcGIS 9 map was produced by

Garfield County

IT Department
108 8th Street Suite 402
Glenwood Springs, CO 81601
970.945.1371 / 1.990

I:\Assessor\Parcelmaps\2167 Revision 1 4-8-2008



Garfield County, Colorado

Office of the Assessor

109 8th Street, Suite 207 Glenwood Springs, CO 81601
970 945 9104 www.garfield-county.com

Legend

- Other Tax Exempt
- BLM
- US Forest Service
- Subdivision
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Meander-, Govt. Lot-, Former Lot Lines
- Tax District Boundary
- BLM GCDB Survey Coordinates

BASE MAP SOURCE:

1. County Road centerline GPS data, Garfield County IT Department, (Mid, revised 2005).
2. USGS 7.5' Quadrangle Maps digitized by Garfield County IT Department (1983).
3. Colorado Department of Transportation highway centerlines, GIS data, (2004).

PARCEL MAP SOURCE:

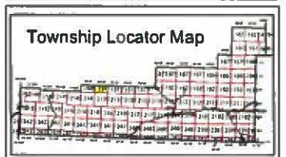
1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps, converted to GIS Geodatabase format (2005).
2. Following acceptance of this map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified engineer or shall be digitized by the IT Department from the legal descriptions by means of geometry.

DISCLAIMER

This map was produced by Garfield County IT Department utilizing the Arc/Info Geographic Information System (GIS). The GIS and its components are intended as a tool of reference for planning parcel mapping, and planning. The GIS is not a substitute for official government records maintained by the Planning Department, the County Clerk and Recorder, Office, the Assessor's Office, or for any legal description contained on the face of deed or contain the representation of geographic features by the GIS may not be substitute for actual legal surveys. Always refer to the parcel deed for the most current legal description issued at the purchase of this map.

The information contained herein is intended to be adequate and suitable for the uses set forth above. Garfield County makes no warranties as to the accuracy or suitability of any mapping or survey that may be required for any specific purpose. The user shall assume the sole responsibility for any and all damages, including consequential damages, which may be incurred from the user's misapplication of the information.

Township Locator Map



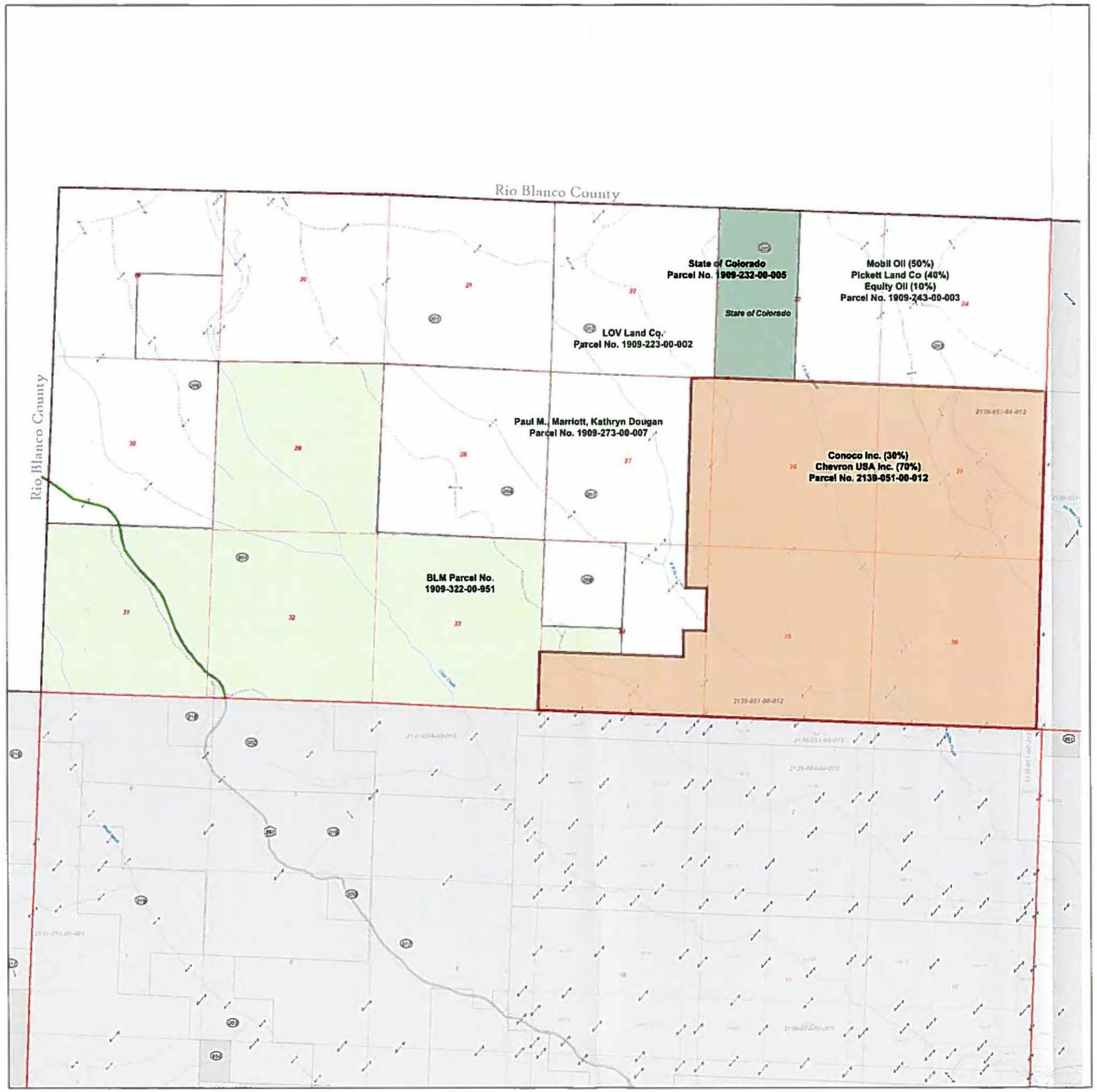
1911

Township 4 South
Range 98 West

Projection: UTM Zone 13 NAD27
0 500 1,000 2,000 3,000 4,000 Feet
1 inch equals 1,500 feet
1:18,000

This ArcGIS 9 map was produced by
Garfield County
IT Department
108 8th Street Suite 401
Glenwood Springs, CO 81601
970 945.1377 x1309

I:\Assessor\ParcelMaps\1911 Revision 1: 3-24-2006



Garfield County, Colorado

Office of the Assessor

109 8th Street, Suite 207, Glenwood Springs, CO 8160
970.945-9104 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Meander-, Govt. Lot-, Former Lot Lines
- Tax District Boundary
- BLM GCDB Survey Coordinates

BASE MAP SOURCE:

1. County Road centerline GPS data, Garfield County IT Department, (2002, revised 2008)
2. USGS 7.5' Quadrangle Maps digitized by Garfield County IT Department (1983)
3. Colorado Department of Transportation highway centerlines, GIS data, (2004)

PARCEL MAP SOURCE:

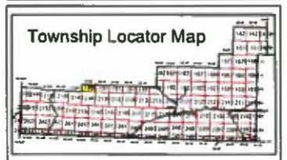
1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps, converted to GIS Geodatabase format (2008)
2. Following conversion of this map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified engineer or shall be digitized by the IT Department from the legal description by means of coordinate geometry.

DISCLAIMER

This map was produced by Garfield County IT Department utilizing the Arc/Info Geographic Information System (GIS). The GIS and its components are intended as a source of information for assessing land use, mapping and planning. The GIS is not a substitute for official government records maintained by the Planning Department, the County Clerk and Recorder's Office, the Assessor's Office, or for any legal opinion or determination in the form of title, or opinion, the representation of geographic features by the GIS may not be substitute for actual legal surveys. Always refer to the analog plat for the most current legal description of an object in the composition of this map.

The information contained herein is believed to be accurate and suitable for the intended use of Garfield County and Garfield County does not warrant or claim the accuracy or suitability of any information contained herein for any other purpose. Therefore, the user assumes all risk and responsibility for any and all damages, including consequential damages, which may emanate from the use of this information.

Township Locator Map



1909

Township 4 South
Range 99 West

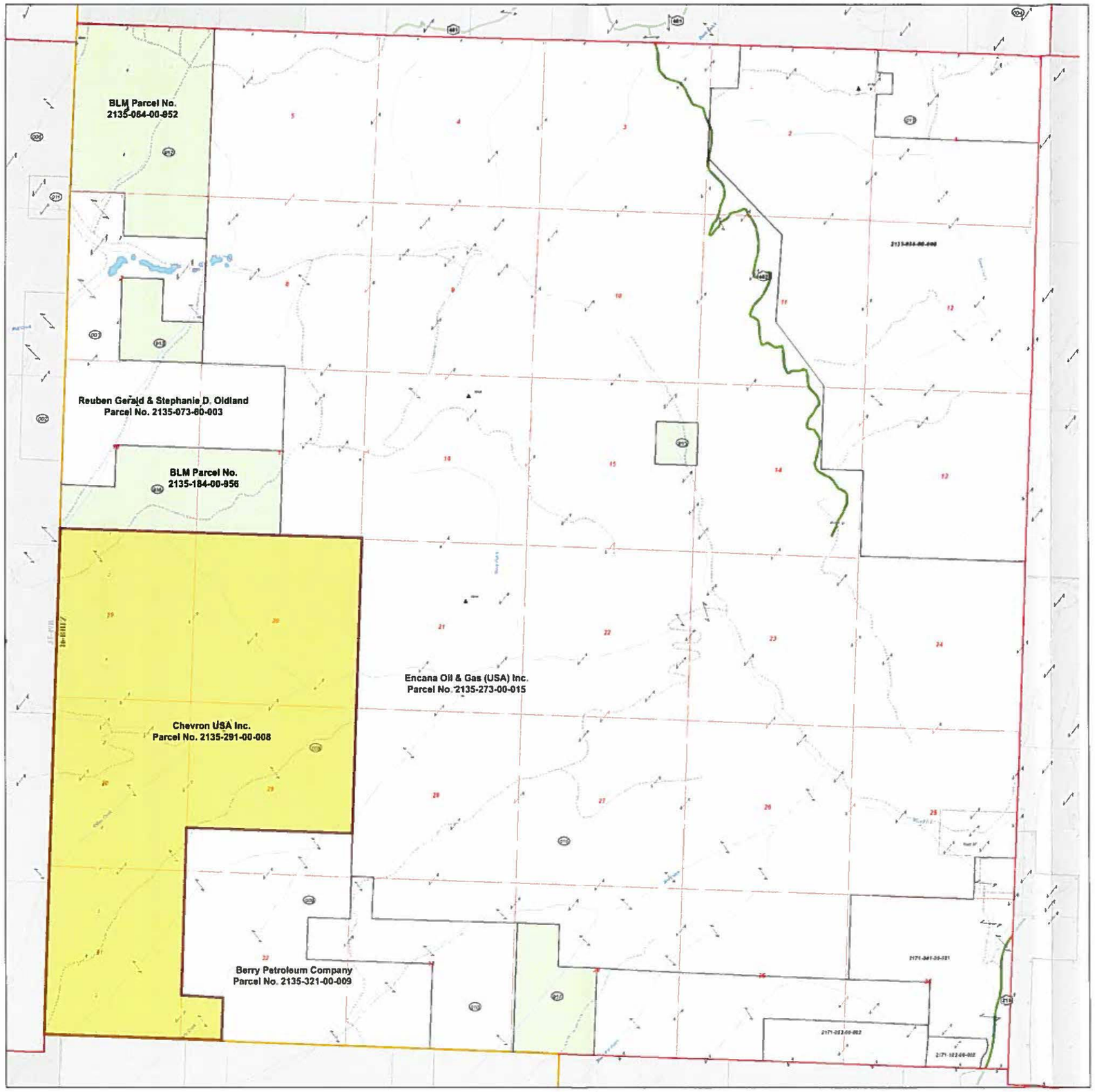
Projection: UTM Zone 13 NAD27
0 500 1,000 2,000 3,000 4,000 Feet
1 inch equals 1,500 feet
1:18,000

This ArcGIS 9 map was produced by

Garfield County

IT Department
108 8th Street Suite 401
Glenwood Springs, CO 81601
970.945.1371 x1299

I:\Assessor\Parcel\Map\1909 Revision 1: 3-24-2008



Garfield County, Colorado

Office of the Assessor

109 8th Street, Suite 207, Glenwood Springs, CO 81601
970.945.9104 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- Tax District Boundary
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Meander-, Govt. Lot-, Former Lot Lines
- BLM GCDB Survey Coordinates

BASE MAP SOURCE:

1. County Road centerline GPS data, Garfield County IT Department, (2002 revised 2008)
2. USGS 7.5' Quadrangle Maps digitized by Garfield County IT Department (1993)
3. Colorado Department of Transportation highway centerlines, GIS data (2004)

PARCEL MAP SOURCE

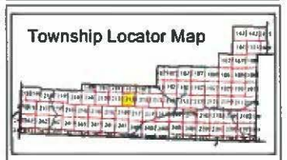
1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps, converted to GIS Geodatabase format (2005)
2. Following acceptance of this map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified engineer or shall be digitized by the IT Department from the legal description by means of distance geometry

DISCLAIMER

This map was produced by Garfield County IT Department utilizing the Arc/Info Geographic Information System (GIS). The GIS and its components are intended as a tool of information for planning purposes, modeling, and planning. The GIS is not a substitute for a field survey that is required by the Planning Department, the County Clerk and Recorder's Office, the Assessor's Office, or for any legal description information. In addition, the representation of geographic features on the GIS map may be with bias for actual legal surveys. Known ties to the survey shall be the most current legal document on file and in the possession of parties.

The information presented here is intended to be accurate and current for the limited use set forth above. Garfield County makes no warranties as to the accuracy or currently of any information contained herein for any other purpose. Neither shall returns or their representatives be liable for any and all damages regarding consequential damages which may propagate from the use of this product of this information.

Township Locator Map



2135

Township 5 South
Range 96 West

Projection: UTM Zone 13 NAD 27
0 500 1,000 2,000 3,000 4,000 Feet
1 inch equals 1,500 feet
1:18,000

This ArcGIS 9 map was produced by
Garfield County
© Department
108 8th Street Suite 207
Glenwood Springs, CO 81601
970.945.1377 x1090

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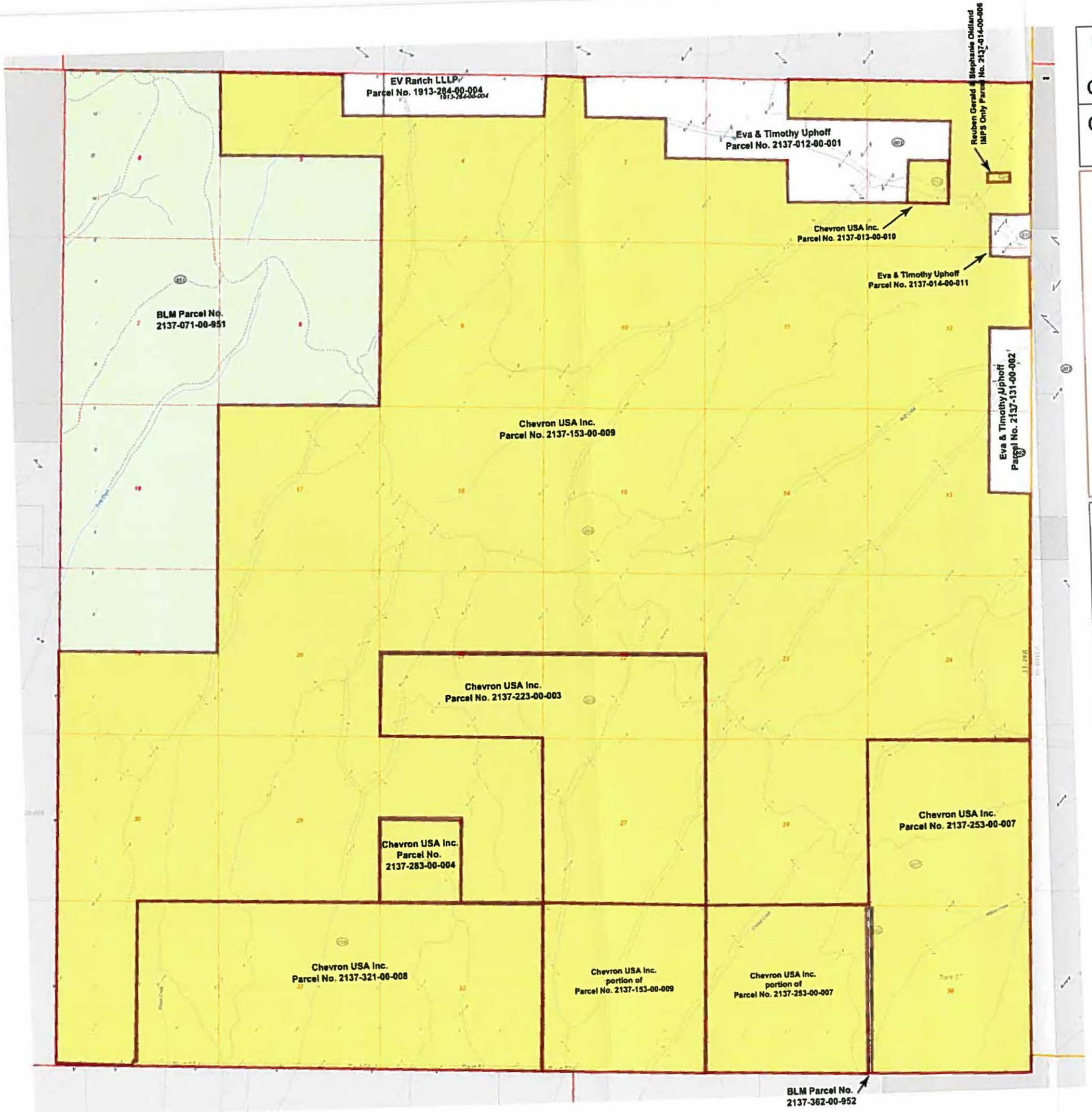


Garfield County, Colorado

Office of the Assessor

109 8th Street, Suite 207, Glenwood Springs, CO 81601
970.945-9104 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- Tax District Boundary
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- BLM GCDB Survey Coordinates

BASE MAP SOURCE

1. County Road centerline GPS data, Garfield County IT Department, (2002, revised 2006)
2. U.S.G.S 7.5' Quadrangle Maps digitized by Garfield County IT Department (1993)
3. Colorado Department of Transportation highway centerlines, GIS data, (2004)

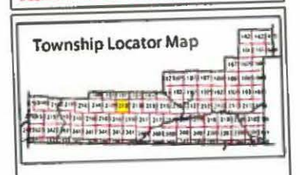
PARCEL MAP SOURCE

1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps converted to GIS Geodatabase format (2006)
2. Following acceptance of this map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified engineer or shall be digitized by the IT Department from the legal description by means of dead-reckoning

DISCLAIMER

This map was produced by Garfield County IT Department and is based on the North American Datum 1983. The GIS and its components are intended on a scale of reference for planning purposes, mapping, and planning. This GIS is not a substitute for official positions and records maintained by the Planning Department, the County Clerk and Recorder's Office, the Assessor's Office, or for any legal description information in the chain of title. In addition, the spatial and geographic data are to be GIS ready, not be suitable for actual legal surveys. Users are to be aware that the GIS map may not be suitable for any legal purpose. Users are to be aware that the map may contain legal inaccuracies, or omissions. Garfield County makes no representation to the accuracy or suitability of any information contained herein for any other purpose. Please also assume risk and responsibility for any and all damages, including consequential damages, which may arise from the user's application of this information.

Township Locator Map



2137

Township 5 South
Range 97 W est

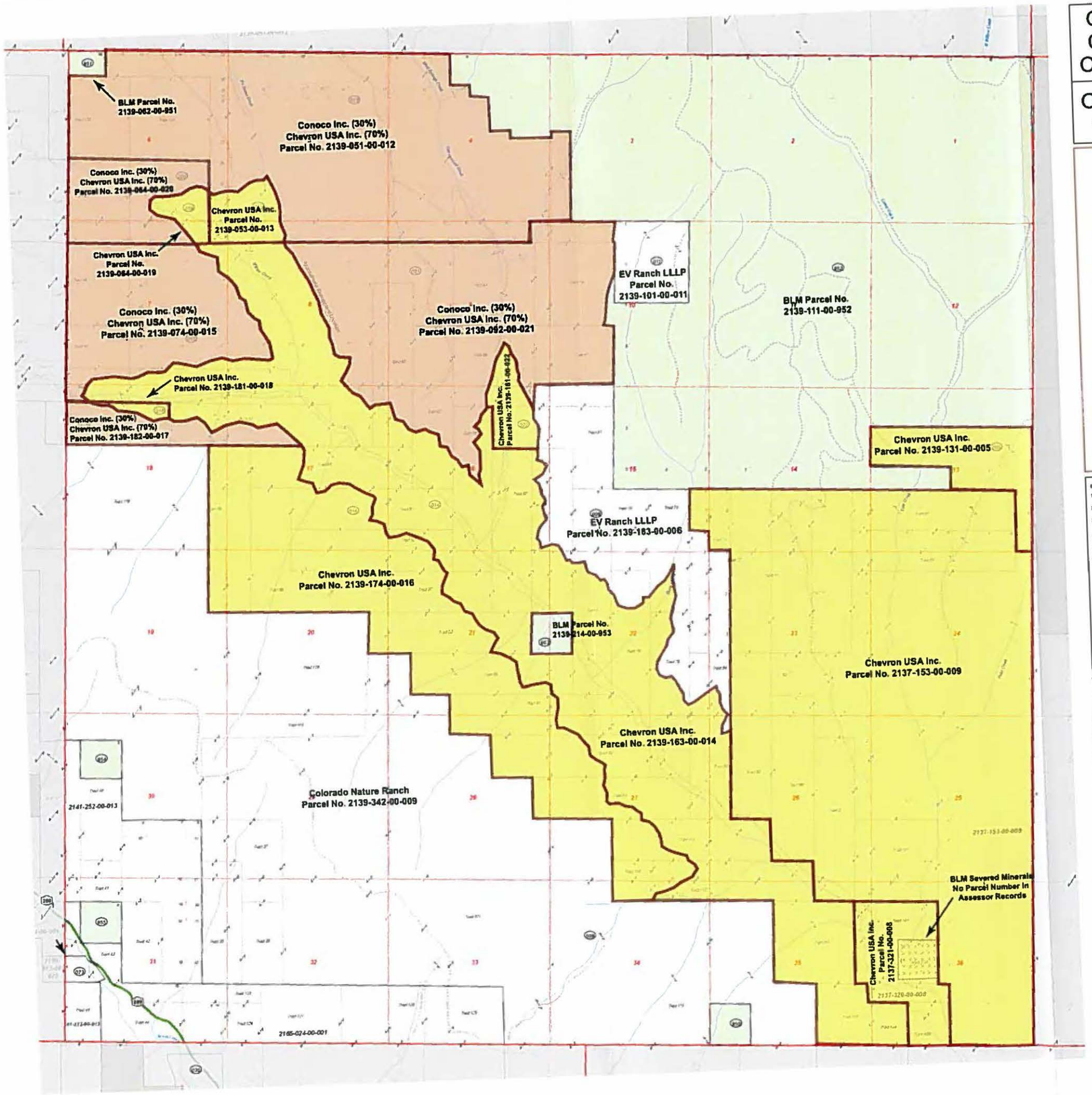
Projection: UTM Zone 13 NAD27
0 500 1,000 2,000 3,000 4,000 Feet
1 inch equals 1,500 feet
1:18,000

This ArcGIS II map was produced by

Garfield County

IT Department
108 8th Street Suite 401
Glenwood Springs, CO 81601
970.945.9137 x 1290

I:\Assessor\ParcelMaps\2137 Revision 1-6-7-2008



Garfield County, Colorado

Office of the Assessor

109 8th Street, Suite 207, Glenwood Springs, CO 81601
970.945.9134 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- Tax District Boundary
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Other Boundaries
- BLM GCDB Coordinates

BASE MAP SOURCE:

1. County Road centerline GPS data, Garfield County IT Department, (2002, rev. mid 2006).
2. USGS 7.5' Quadrangle Maps digitized by Garfield County IT Department (1983).
3. Colorado Department of Transportation highway centerlines, GIS data, (2004).

PARCEL MAP SOURCE:

1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps, converted to GIS Geodatabase format (2006).
2. Following acceptance of the map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a registered engineer or shall be digitized by the IT Department from the legal description by means of coordinate geometry.

DISCLAIMER

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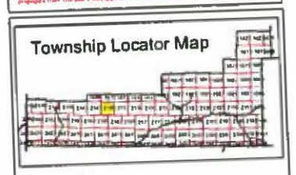
This information, whether made available to internet or otherwise, is believed and warrant for the certain use of Garfield County made no warranties as to the accuracy or completeness of the information contained herein. Garfield County shall not be liable for any direct, indirect, special, or consequential damages, including anticipated benefits, which may result from the use or misapplication of this information.

Township Locator Map



2139

Township 5 South
Range 98 West

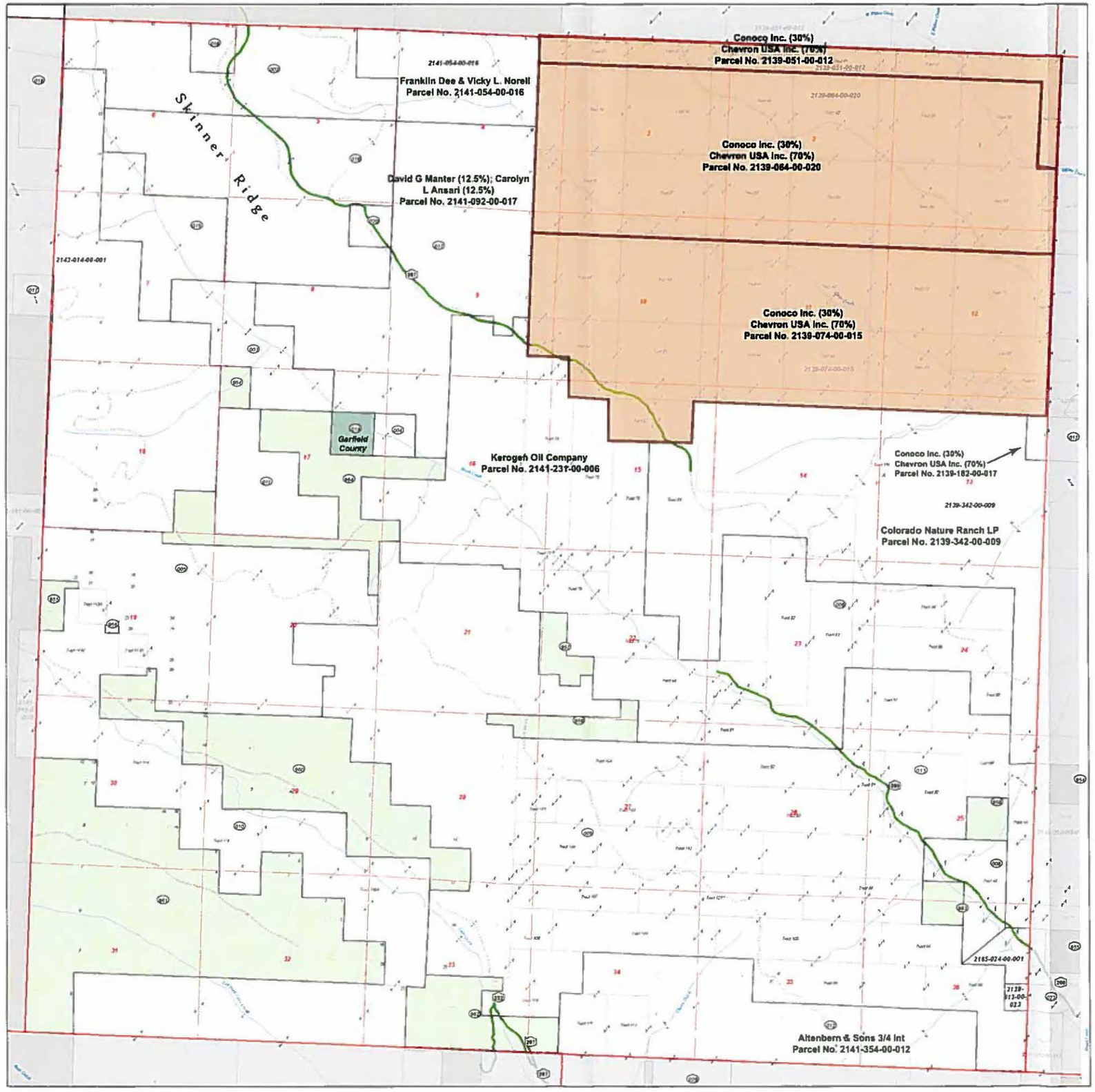
Projection: UTM Zone 13 NAD27
0 550 1,100 2,200 3,300 4,400 Feet
1 inch equals 1,500 feet
1:18,000

This ArcGIS 9 map was produced by

Garfield County

IT Department
108 8th Street Suite 400
Glenwood Springs, CO 81601
970.945.5377 x 1379

Z:\Assessor\ParcelMaps\2139 Revision 1 4-2-2008



Garfield County, Colorado

Office of the Assessor

109 8th Street, Suite 207, Glenwood Springs, CO 81601
970.945.9131 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- Tax District Boundary
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Other Boundaries
- BLM GCDB Coordinates

BASE MAP SOURCE:

1. County Road centerline GPS data, Garfield County IT Department, (2002 revised 2006).
2. USGS 7.5' Quadrangle Maps digitized by Garfield County IT Department, (1992)
3. Colorado Department of Transportation hydrography centerlines, GIS data, (2004).

PARCEL MAP SOURCE:

1. Garfield County Assessor's Office Parcel Map Series, AutoCAD M maps, converted to GIS Geodatabase format (2006)
2. Following acceptance of this map by the Assessor all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified surveyor or shall be digitized by the IT Department from the legal descriptions by means of coordinate geometry

DISCLAIMER

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This information is believed to be accurate and suitable for the purpose used with care. Garfield County makes no warranties to the accuracy or suitability of any information for any other purpose. I hereby disclaim and assume no responsibility, I, my and all damages, including consequential damages, which may propagate from the accuracy and application of this information.

Township Locator Map

2141

Township 5 South
Range 99 West

Projection: UTM Zone 13 NAD27

0 500 1,000 2,000 3,000 4,000 Feet

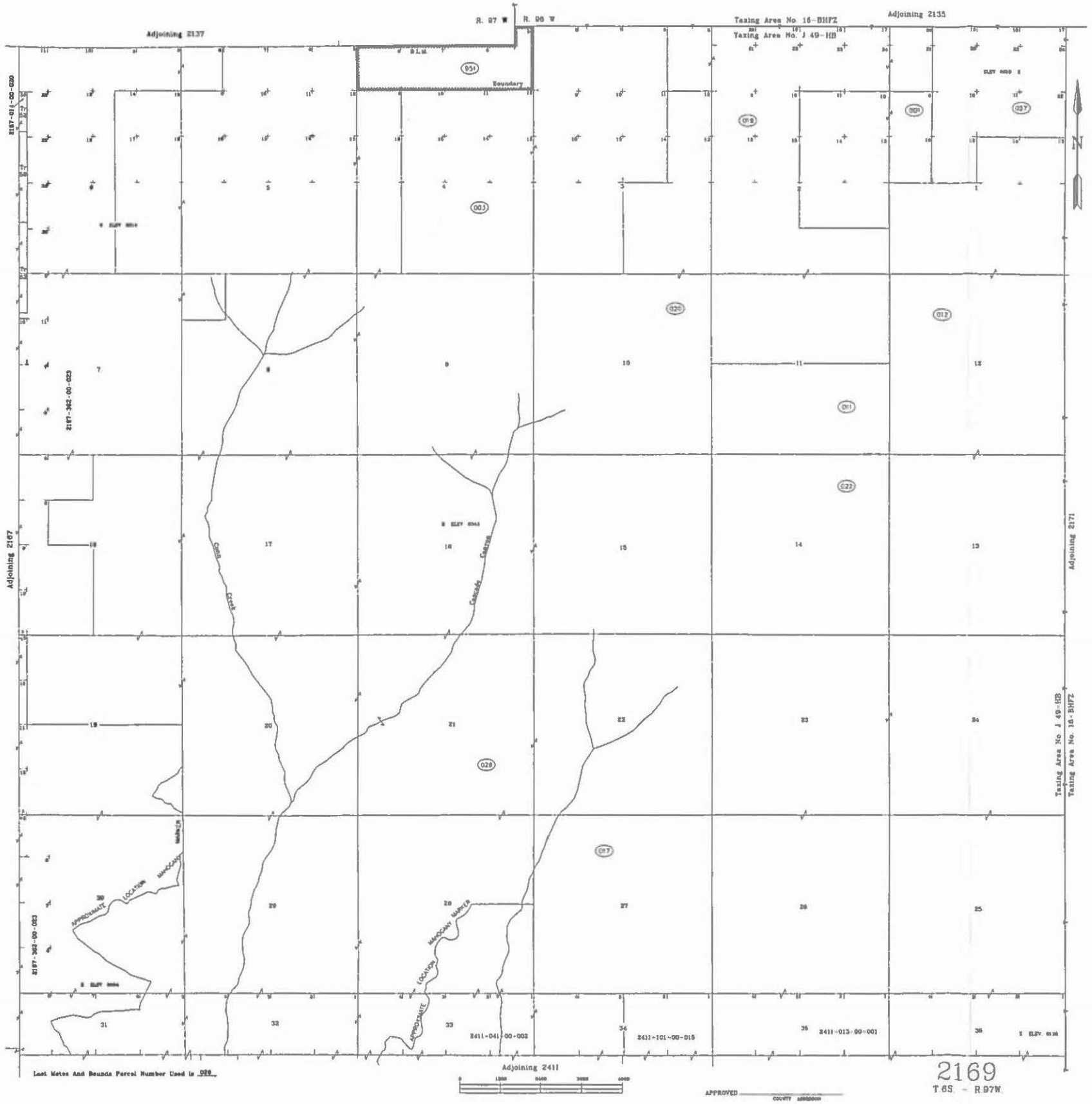
1 inch equals 1,500 feet
1:18,000

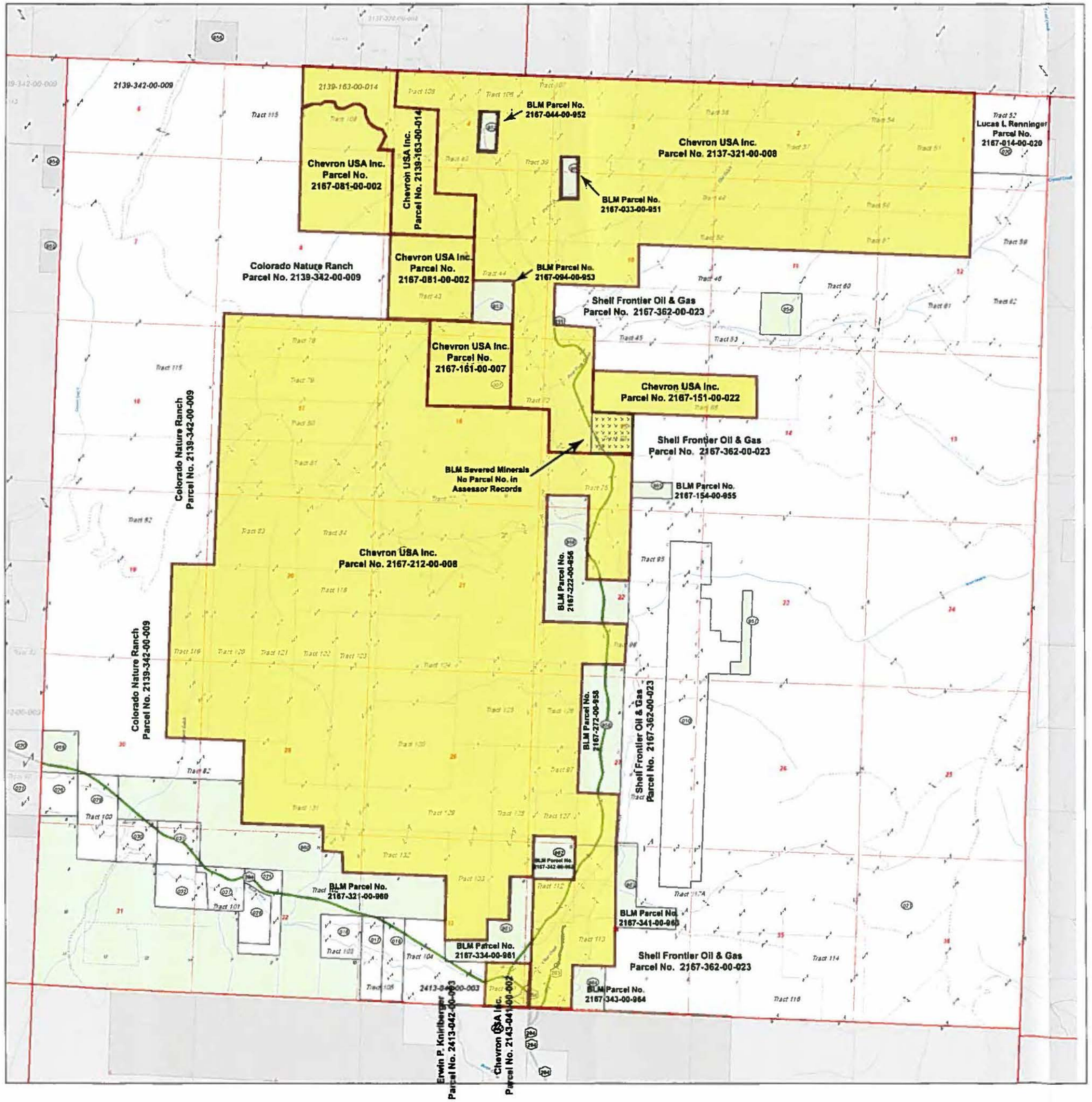
This ArcGIS Map was produced by

Garfield County

IT Department
108 8th Street Suite 401
Glenwood Springs, CO 81601
970.945.1371 x 1919

\\Assessor\ParcelMaps\2141 Revision 1 4-7-2006


Adjoining 2137
R. 97 W
R. 96 W
Taxing Area No. 16-BHFZ
Taxing Area No. J 49-HB
Adjoining 2135
Boundary
Adjoining 2167
Adjoining 2171
Taxing Area No. J 49-HB
Taxing Area No. 16-BHFZ
Creek
Cascade
APPROXIMATE LOCATION MANCOS MARKER
2411-041-00-002
2411-101-00-015
2411-013-00-001
Adjoining 2411
Last Notes And Bounds Parcel Number Used is 029
APPROVED
COUNTY ASSESSOR
2169
T.6S. - R.97W.



Garfield County, Colorado

Assessor's Office

109 8th Street, Suite 207, Glenwood Springs, CO 81601
970.945.9104 www.garfield-county.com

Legend

- Tax Exempt
- BLM
- US Forest Service
- Subdivision
- Tax District Boundary
- State, Federal Highway
- Interstate 70
- County Road
- Private Road, Trail
- Other Boundaries
- BLM GCDB Coordinates

BASE MAP SOURCE:

1. County Road centerlines GPS data, Garfield County IT Department, (1992, revised 2006);
2. USGS 7.5' Quadrangle Maps digitized by Garfield County IT Department (1993);
3. Colorado Department of Transportation highway centerlines, GIS data, (2004).

PARCEL MAP SOURCE:

1. Garfield County Assessor's Office Parcel Map Series, AutoCAD 14 maps, converted to GIS coverage format (2006)
2. Following completion of this map by the Assessor, all subsequent parcel changes shall be input from digital CAD drawings submitted by a certified engineer or shall be digitized by the IT Department from the legal descriptions by means of coordinate geometry

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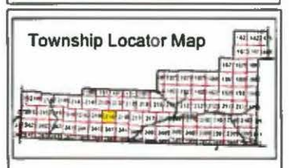
The information presented herein is believed to be accurate and up-to-date for the period of time from which Garfield County assumes no warranties as to the accuracy or suitability of any information contained herein for any other purpose. The use of this information is at your own risk and Garfield County disclaims any responsibility for any and all damages, including consequential damages, which may arise from the use or misapplication of this information.

Township Locator Map



2167

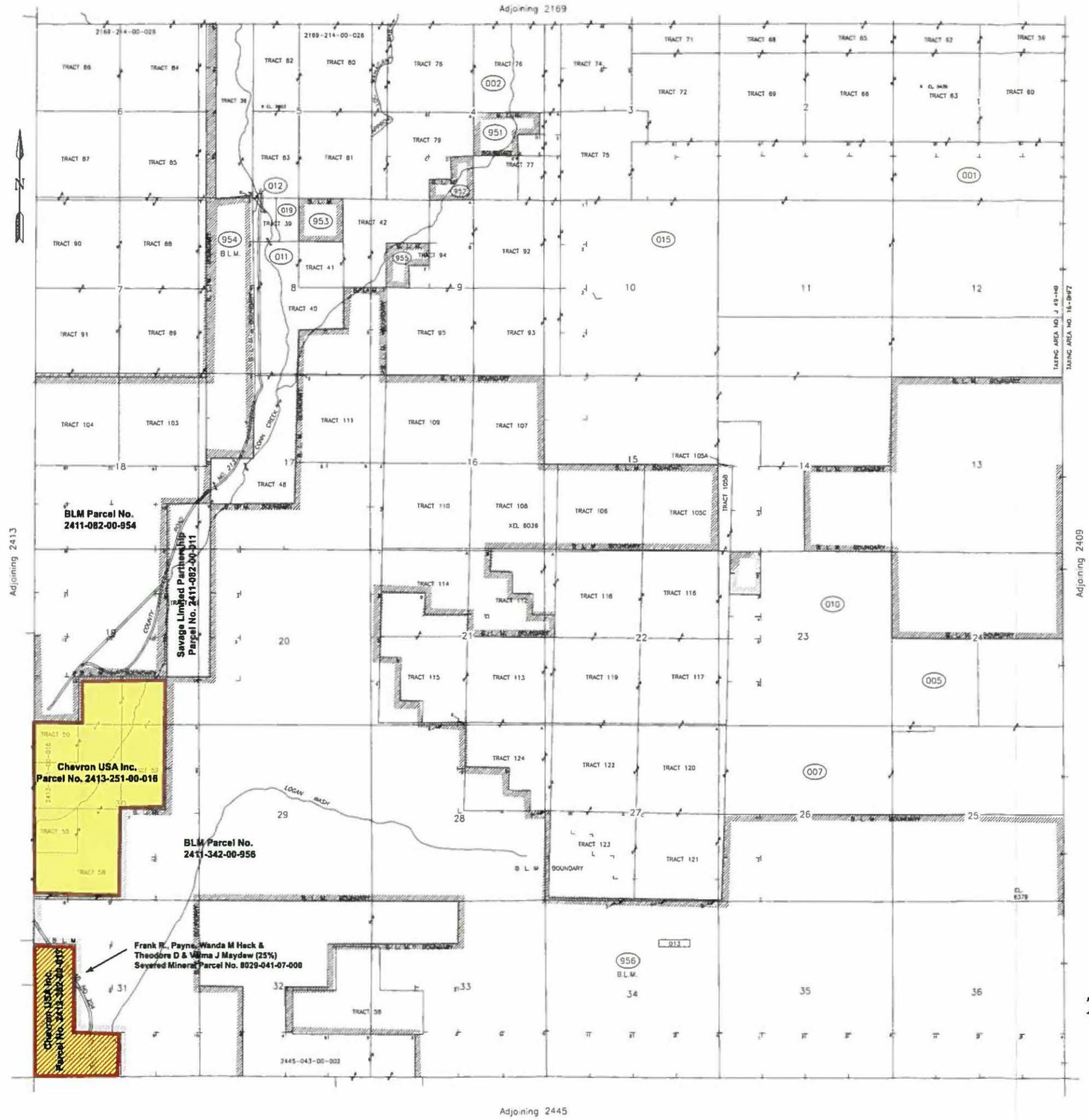
Township 6 South Range 98 West

Projection: UTM Zone 13 NAD27
0 500 1,000 2,000 3,000 4,000 feet
1 inch equals 1,500 feet
1:18,000

Garfield County
IT Department
108 8th Street Suite 401
Glenwood Springs, CO 81601
970.945.9104 x1499

The ArcGIS 9 map was produced by

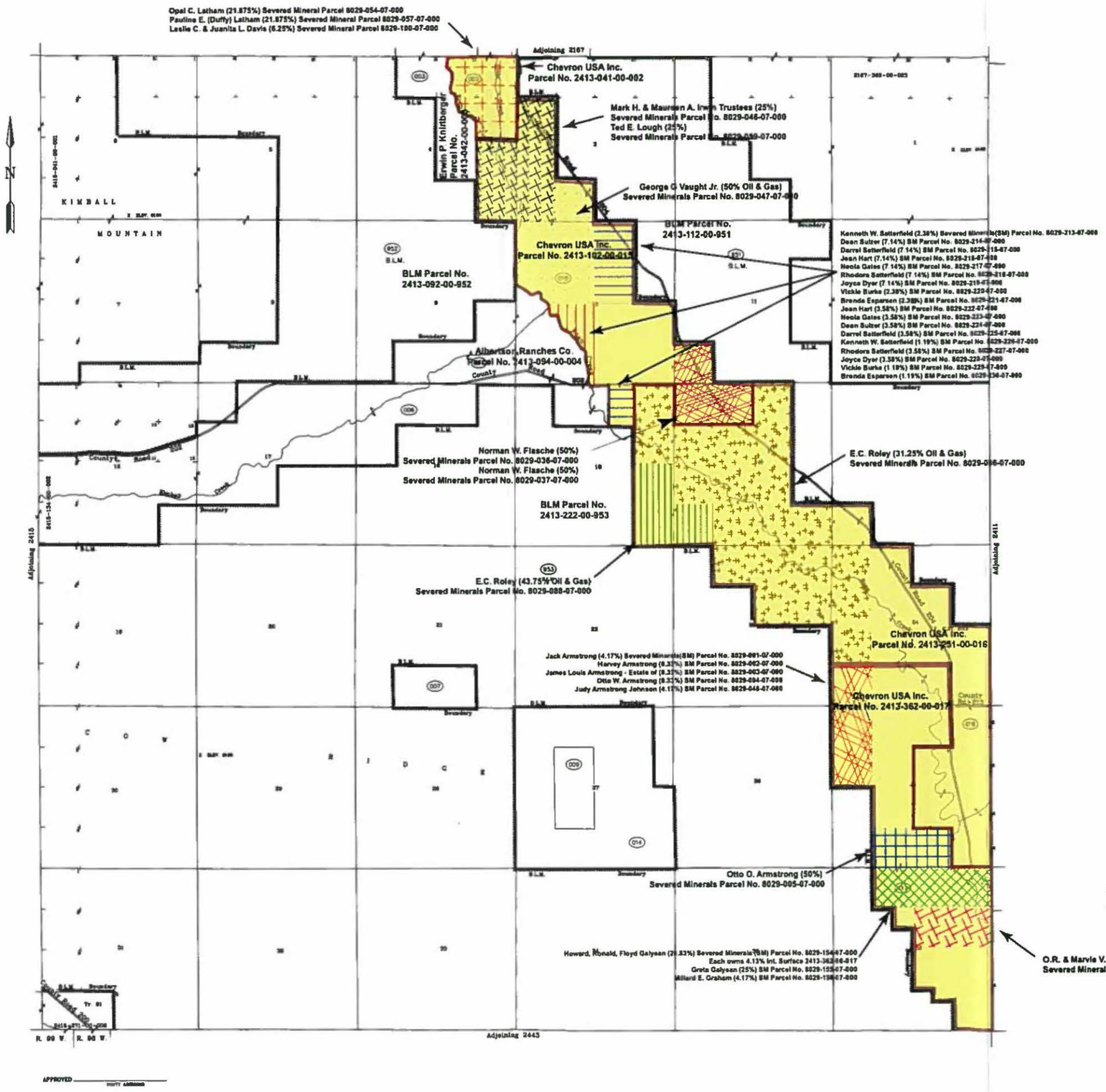
I:\Assessor\ParcelMaps\2167 Revision 1 4-8-2008



2411

Township 7 South
Range 97 West

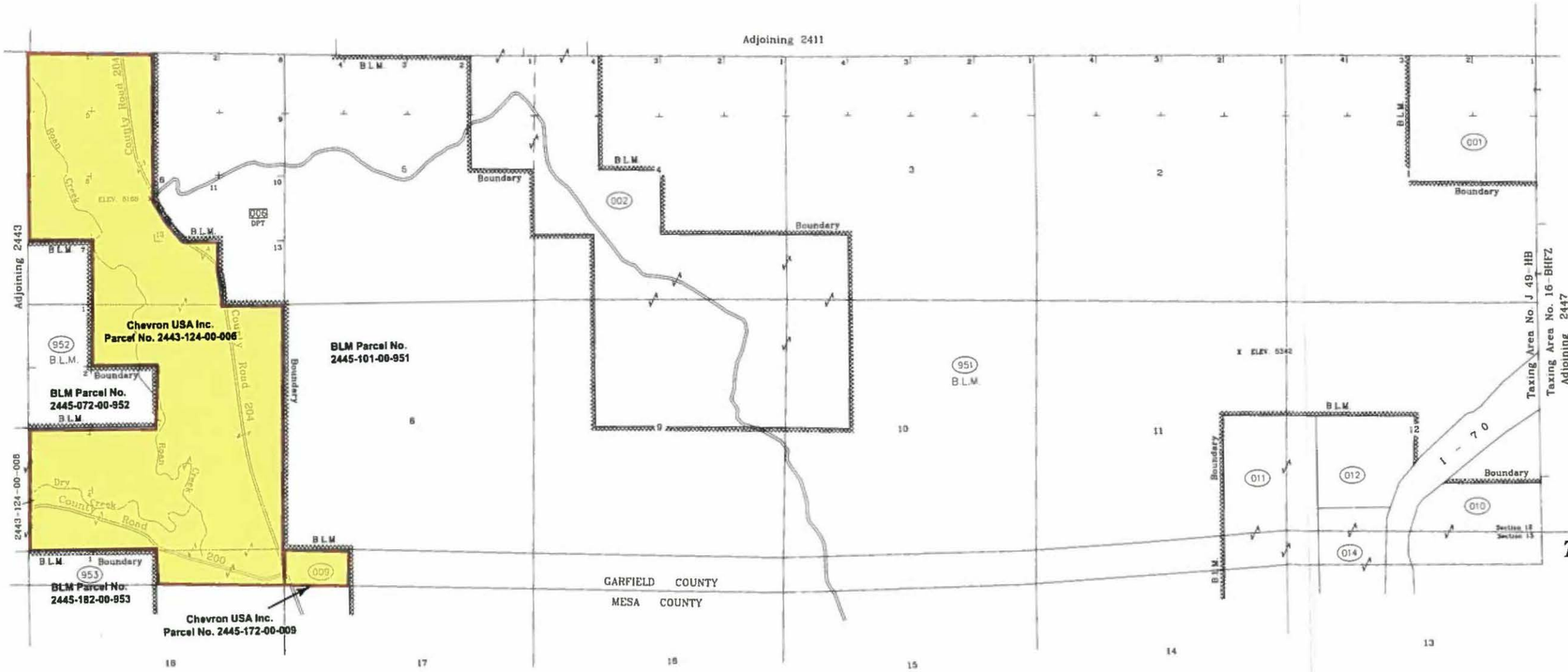
APPROVED: _____
COUNTY ASSESSOR



2413

Township 7 South

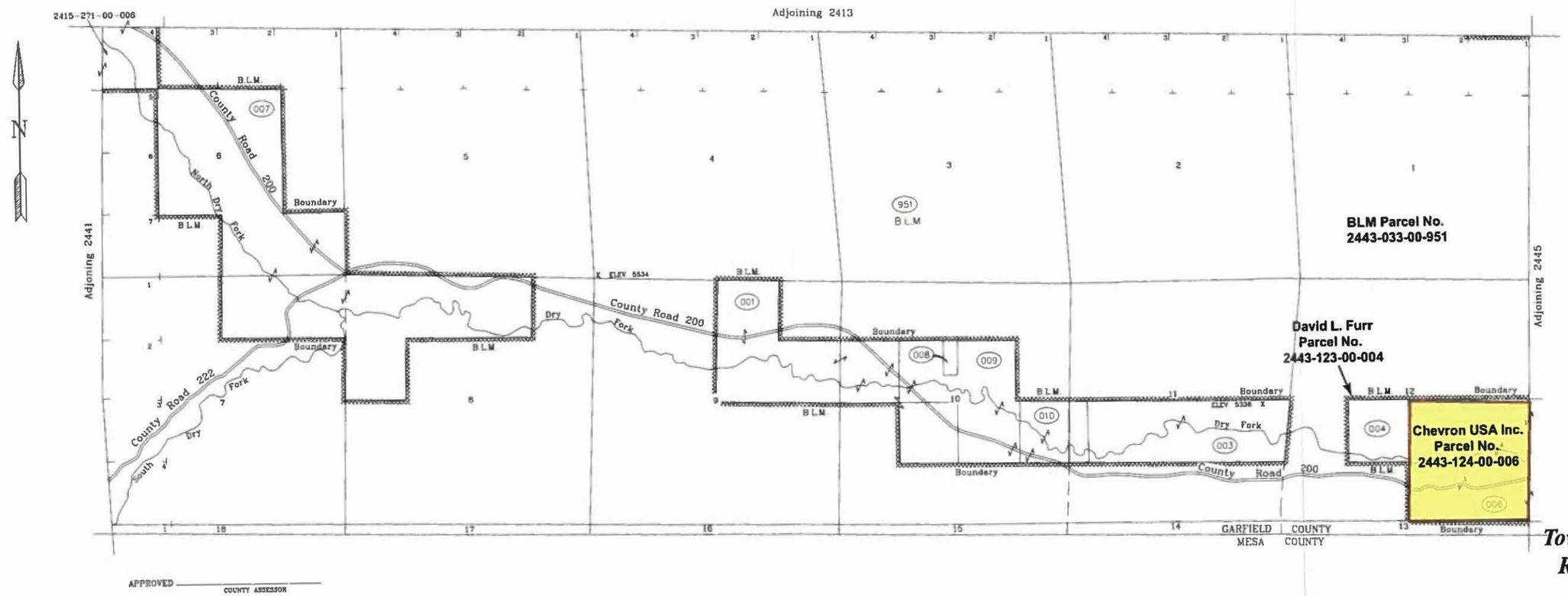
Range 98 West



APPROVED _____
COUNTY ASSESSOR

2445

Township 8 South
Range 97 West



2443

Township 8 South
Range 98 West

CHEVRON PICEANCE BASIN NATURAL GAS DEVELOPMENT PROGRAM
ADJACENT PROPERTY AND SEVERED MINERAL OWNERS

Township 4 South, Range 97 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
1913	4S, 97W	1913-284-00-004	EV Ranch LLLP	22593 RBC Road 5, Rifle, CO 81650
1913	4S, 97W	1913-292-00-952	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
1913	4S, 97W	1913-323-00-006	Exxon Mobil Corp.	Attn: Exxon Co. U.S.A., PO Box 53, Houston, TX 77001-0053
1913	4S, 97W	1913-351-00-007	Exxon Mobil Corp. (83.8%), Levy Brothers LLC (10.8%), JoAnna U. Homas Trust (1.05%), Connie Hinman Trust (0.98%), Virginia Hinman Trust (0.098%), Stuart A Umpley Trust (1.05%), Cara V. Lockett & Comerica Bank-Texas Co. Trustees of Susan G. Umpleby Peasner Royalty Trust (0.7%), Stanley Lockett & Comerica Bank-Texas Co.-Trustees of the Cara Virginia Umpleby Lockett Royalty Trust	PO Box 53, Houston, TX 77001-0053

Township 4 South, Range 98 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
1911	4S, 98W	1911-272-00-005	Harris & Doyle Livestock LLC (37.95%), Amerada Hess Corp (37.05%), Oil Shale Corp. (25%)	990 Sapphire Drive, Castle Rock, CO 80108
1911	4S, 98W	1911-301-00-955	Bureau of Land Management (not listed in Assessor's record)	50629 Highway 6 & 24, Glenwood Springs, CO 81601
1911	4S, 98W	1911-341-00-952	Bureau of Land Management (not listed in Assessor's record)	50629 Highway 6 & 24, Glenwood Springs, CO 81601

Township 4 South, Range 99 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
1909	4S, 99W	1909-223-00-002	LOV Land Co.	439 County Road 26, Rifle, CO 81650-8823
1909	4S, 99W	1909-243-00-003	Mobil Oil (50%)	Attn: Prop Tax Div, PO Box 53, Houston, TX 77001
1909	4S, 99W	1909-243-00-003	Puckett Land Co. (40%)	5460 Quebec St. Suite 250, Greenwood Village, CO 80111-1917
1909	4S, 99W	1909-243-00-003	Equity Oil (10%)	PO Box 53, Houston, TX 77001 (10%)
1909	4S, 99W	1909-232-00-005	State of Colorado	Division of Wildlife, 6060 Broadway, Denver, CO 80216-1029
1909	4S, 99W	1909-273-00-007	Paul M. Marriott, Kathryn Dougan	215 S State St Ste 1170, Salt Lake City, UT 84111-2334
1909	4S, 99W	1909-322-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601

Township 5 South, Range 96 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2135	5S, 96W	2135-064-00-952	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601

2135	5S, 96W	2135-073-00-003	Reuben Gerald & Stephanie Oldland	14667 County Road 5, Rifle, CO 81650-8812, IMPS only
2135	5S, 96W	2135-184-00-956	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2135	5S, 96W	2135-273-00-015	Encana Oil & Gas (USA) Inc.	c/o Logan & Firmine, 3615 S. Huron Street, Suite 200, Englewood, CO 80110
2135	5S, 96W	2135-321-00-009	Berry Petroleum Co.	950 17th Street Ste 2400, Denver, CO 80202

Township 5 South, Range 97 West

Map ID	Township, Range	Parcel Number	Name	Address
2137	5S, 97W	1913-284-00-004	EV Ranch LLLP	22593 RBC Road 5, Rifle, CO 81650
2137	5S, 97W	2137-012-00-001	Eva & Timothy Uphoff (50%), Eva Christine Oldland (50%)	17037 County Road 5, Rifle, CO 81650
2137	5S, 97W	2137-014-00-006	Reuben Gerald & Stephanie Oldland	14667 County Road 5, Rifle, CO 81650-8812, IMPS only
2137	5S, 97W	2137-071-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2137	5S,97W	2137-014-00-011	Eva & Timothy Uphoff	17037 Rio Blanco County Road 5, Rifle, CO 81650
2137	5S,97W	2137-131-00-002	Eva & Timothy Uphoff	17037 Rio Blanco County Road 5, Rifle, CO 81650

Township 5 South, Range 98 West

Map ID	Township, Range	Parcel Number	Name	Address
2139	5S, 98W	2139-062-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2139	5S, 98W	2139-101-00-011	EV Ranch LLLP	22593 RBC Road 5, Rifle, CO 81650
2139	5S, 98W	2139-111-00-952	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2139	5S, 98W	2139-183-00-006	EV Ranch LLLP	22593 RBC Road 5, Rifle, CO 81650
2139	5S, 98W	2139-214-00-953	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2139	5S, 98W	2139-342-00-009	Colorado Nature Ranch LP	4901 Wineland Road Ste 650, Orlando, FL 32811
2139	5S, 98W	Not listed in Assessor's Records	Bureau of Land Management – Severed Minerals in Section 36	50629 Highway 6 & 24, Glenwood Springs, CO 81601

Township 5 South, Range 99 West

Map ID	Township, Range	Parcel Number	Name	Address
2141	5S, 99W	2139-342-00-009	Colorado Nature Ranch LP	4901 Wineland Road Ste 650, Orlando, FL 32811
2141	5S, 99W	2141-054-00-016	Franklin Dee & Vicky L. Norell	PO Box 1536, Meeker, CO 81641
2141	5S, 99W	2141-092-00-017	David G. Manter (12.5%), Carolyn L. Ansari (12.5%)	353 South Oneida Way, Denver, CO 80224-1331
2141	5S, 99W	2141-231-00-006	Kerogen Oil Company	Attn: C. R. Davis, PO Box 51, Winnetka, Il 60093-0051

CHEVRON PICEANCE BASIN NATURAL GAS DEVELOPMENT PROGRAM
ADJACENT PROPERTY AND SEVERED MINERAL OWNERS

Township 6 South, Range 97 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2169	6S, 97W	2169-022-00-019	Savage Limited Partnership I	Attn: John Savage, 5953 County Road 320, Rifle, Co 81650
2169	6S, 97W	2169-041-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2169	6S, 97W	2169-044-00-003	OXY USA WTP LP	5 Greenway Plaza Ste 110, Houston, TX 77046-0506
2169	6S, 97W	2169-214-00-026	OXY USA Inc.	5 Greenway Plaza Ste 110, Houston, TX 77046-0506
2169	6S, 97W	2167-382-00-023	Shell Frontier Oil & Gas Inc.	c/o Shell Oil Company, PO Box 4854, Houston, TX 77010

Township 6 South, Range 98 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2167	6S, 98W	2139-342-00-009	Colorado Nature Ranch LP	4901 Wineland Road Ste 650, Orlando, FL 32811
2167	6S, 98W	2167-014-00-020	Lucas L. Renninger	269 Main Street, Meeker, CO 81641
2167	6S, 98W	2167-033-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-044-00-952	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-094-00-953	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-154-00-955	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-222-00-956	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-272-00-958	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-321-00-960	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-334-00-961	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-341-00-963	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-342-00-962	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-343-00-964	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2167	6S, 98W	2167-362-00-023	Shell Frontier Oil & Gas	c/o Shell Oil Company, Po Box 4854, Houston, Tx 77010
2167	6S, 98W	2413-042-00-003	Erwin P. Knirlberger	PO Box 42, De Beque, CO 81630-0042
2413	7S, 98W	8029-054-07-000	Opal C. Latham (21.875%), Severed Minerals	PO Box 127, De Beque, CO 81630-0127
2413	7S, 98W	8029-057-07-000	Pauline E. (Duffy) Latham (21.87%), Severed Minerals	3249 D3/4 Road, Clifton, CO 81520
2413	7S, 98W	8029-100-07-000	Leslie C. & Juanita L. Davis (6.25%), Severed Minerals	1714 Mineola Dr, Silt, CO 81652
2167	6S, 98W	Not listed in Assessor's Records	Bureau of Land Management – Severed Minerals in Section 15	50629 Highway 6 & 24, Glenwood Springs, CO 81601

CHEVRON PICEANCE BASIN NATURAL GAS DEVELOPMENT PROGRAM
ADJACENT PROPERTY AND SEVERED MINERAL OWNERS

Township 7 South, Range 97 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2411	7S, 97W	2411-082-00-011	Savage Limited Partnership I	Attn: John Savage, 5953 County Road 320, Rifle, Co 81650
2411	7S, 97W	2411-082-00-954	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2411	7S, 97W	2411-342-00-956	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2411	7S, 97W	8029-041-07-000	Frank R, Payne, & Wanda M. Heck & Theodore D & Velma J. Maydew (25%) Severed Minerals	6141 East Campo Bello Drive, Scottsdale, AZ 85254

Township 7 South, Range 98 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2413	7S, 98W	2413-092-00-952	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2413	7S, 98W	2413-094-00-004	Albertson Ranches Co.	Attn: Dale Albertson, PO Box 420, De Beque, CO 81630
2413	7S, 98W	2413-112-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2413	7S, 98W	2413-222-00-953	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2413	7S, 98W	8029-001-07-000	Jack Armstrong (4.17%), Severed Minerals	3474 Hawthorne Dr W, Carmel, IN 46033-9287
2413	7S, 98W	8029-002-07-000	Harvey Armstrong (8.33%), Severed Minerals	413 Ingersol Ln, Silt, CO 81652-9571
2413	7S, 98W	8029-003-07-000	James Louis Armstrong (estate of) (8.33%), Severed Minerals	c/o Mary Armstrong Brown, 472 County Road 3000, Aztec, NM 87410
2413	7S, 98W	8029-004-07-000	Otto W. Armstrong (8.33%), Severed Minerals	3195 F Rd Trailer 20, Grand Junction, CO 81504-4037
2413	7S, 98W	8029-005-07-000	Otto O. Armstrong (50%), Severed Minerals	3195 F Rd Trailer 20, Grand Junction, CO 81504-4037
2413	7S, 98W	8029-036-07-000 8029-037-07-000	Norman W. Flasche (50%), Severed Minerals Norman W. Flasche (50%), Severed Minerals	462 Tusher St, Moab, UT 84532-2820
2413	7S, 98W	8029-045-07-000	O.R. & Marvie V. Hudson, Severed Minerals	1316 Avenue F, Gothenburg, NE 69138-1736
2413	7S, 98W	8029-046-07-000	Mark H. & Maureen A. Irwin Trustees of the Irwin Family Trust (25%), Severed Minerals	955 Flagstone Dr, Santa Maria, CA 93455
2413	7S, 98W	8029-047-07-000	George G. Vaught, Jr. (50% oil &gas), Severed Minerals	P O Box 13557, Denver, CO 80201
2413	7S, 98W	8029-048-07-000	Judy Armstrong Johnson (4.17%), Severed Minerals	9307 W 117th St, Overland Park, KS 66210-2802
2413	7S, 98W	8029-054-07-000	Opal C. Latham (21.875%), Severed Minerals	PO Box 127, De Beque, CO 81630-0127
2413	7S, 98W	8029-057-07-000	Pauline E. (Duffy) Latham (21.87%), Severed Minerals	3249 D3/4 Road, Clifton, CO 81520
2413	7S, 98W	8029-059-07-000	Ted E. Lough (25%), Severed Minerals	315 4th St, Glenwood Springs, CO 81601-3036
2413	7S, 98W	8029-086-07-000 8029-088-07-000	E.C. Roley (31.25% oil & gas) , Severed Minerals E.C. Roley (43.75% oil & gas) , Severed Minerals	Attn: Stephen E. Roley, P O Box 71, Arvada, CO 80001
2413	7S, 98W	8029-100-07-000	Leslie C. & Juanita L. Davis (6.25%), Severed Minerals	1714 Mineota Dr, Silt, CO 81652
2413	7S, 98W	8029-154-07-000	Howard, Floyd, Ronald Galyean; Laura O'Brien, Betty	PO Box 667, Lukeville, AZ 85341-0667

			Rickstrew (20.83%) severed minerals; each owns 4.13% of surface 2413-362-00-017 (Chevron)	
2413	7S, 98W	8029-155-07-000	Greta Galyean (25%), Severed Minerals	Jay Rickstrew, 1423 E Spruce Ct, Rifle, CO 81650
2413	7S, 98W	8029-156-07-000	Millard E. Graham (4.17%), Severed Minerals	211 Morrison Avenue, Rangely, CO 81648-2802
2413	7S, 98W	8029-213-07-000 8029-226-07-000	Kenneth Satterfield (2.38%), Severed Minerals Kenneth Satterfield (1.19%), Severed Minerals	1253 Whitlock Ridge Dr SW, Marietta, GA 30064-5415
2413	7S, 98W	8029-214-07-000 8029-224-07-000	Dean Sulzer (7.14%), Severed Minerals Dean Sulzer (3.58%), Severed Minerals	PO Box 66, Hillsdale, WY 82060-0066
2413	7S, 98W	8029-215-07-000 8029-225-07-000	Darrel Satterfield (7.14%), Severed Minerals Darrel Satterfield (3.58%), Severed Minerals	651 S Road, Mack, CO 81525
2413	7S, 98W	8029-216-07-000 8029-222-07-000	Jean Hart (7.14%), Severed Minerals Jean Hart (3.58%), Severed Minerals	PO Box 1946, Rolla, MO 65402
2413	7S, 98W	8029-217-07-000 8029-223-07-000	Neola Gates (7.14%), Severed Minerals Neola Gates (3.58%), Severed Minerals	1933 N East Street No 14, Guymon, OK 73942
2413	7S, 98W	8029-218-07-000 8029-227-07-000	Rhodora Satterfield (7.14%), Severed Minerals Rhodora Satterfield (3.58%), Severed Minerals	2117 Broadway, Grand Junction, CO 81503
2413	7S, 98W	8029-219-07-000 8029-228-07-000	Joyce Dyer (7.14%), Severed Minerals Joyce Dyer (3.58%), Severed Minerals	431 30 1/2 Road, Grand Junction, CO 81504
2413	7S, 98W	8029-220-07-000 8029-229-07-000	Vickie Burke (2.38%), Severed Minerals Vickie Burke (1.19%), Severed Minerals	PO Box 1319, Gypsum, CO 81637
2413	7S, 98W	8029-221-07-000 8029-230-07-000	Brenda Esparsen (2.38%), Severed Minerals Brenda Esparsen (1.19%), Severed Minerals	PO Box 268, Mintum, CO 81645
Township 8 South, Range 97 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2445	8S, 97W	2445-072-00-952	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2445	8S, 97W	2445-101-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2445	8S, 97W	2445-182-00-953	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
Township 8 South, Range 98 West				
Map ID	**Township, Range**	**Parcel Number**	**Name**	**Address**
2443	8S, 98W	2443-033-00-951	Bureau of Land Management	50629 Highway 6 & 24, Glenwood Springs, CO 81601
2443	8S, 98W	2443-123-00-004	David Furr	PO Box 186, Debeque, CO 81630

Garfield County
COUNTY ATTORNEY'S OFFICE
108 8th Street, Suite 219
Glenwood Springs, CO 81601
Tele: (970) 945-9150
Fax: (970) 384-5005

February 8, 2008

James S. Talbot, Sr. Counsel
Chevron North America
Exploration and Production
11111 S. Wilcrest #N2206
Houston, TX 77099
Via Regular Mail & E-Mail: jtalbot@chevron.com

RE: Skinner Ridge 598-25-CV and On-Going Land Use Applications for Chevron and CUSA's Surface Tenants

Dear Mr. Talbot:

I have completed my initial legal review of ownership and noticing documentation for Chevron U.S.A.'s ("Chevron" or "CUSA")Skinner Ridge 598-25-CV ("25-CV")temporary housing Special Use Permit application. Chevron, as promised, provided:

1. a map, based on the Garfield County Assessor's Office Tax Parcel Map Series, showing Assessor's Parcel No. 2137-153-00-009 (in which 25-CV is to be located)and all other contiguous land held in the name of "Chevron USA", constituting one "Y" shaped,54,000+ acre"lot"under Garfield County's Zoning Resolution("Y" or "lot"). The lot is, thus, "the property that is the subject of the hearing" under Colorado's Notification of Surface Development statute, §§24-65.5-103 and 103.3 (1)(a), C.R.S. , as amended.

2. identification on the map of surface owners within 200 feet of the boundary of the Y, by owner name and Assessor Parcel Number.

3. identification of severed minerals and royalty interests "in" the lot, shown on the map by notation including owner name, per cent share (when applicable) and separate Assessor's Parcel Numbers, if available. If there is no mineral notation, we are assuming Chevron owns the minerals. (I have not located a reference to any lease rights on the map; but, I understand from the information provided at the BOCC hearing on the earlier 598-25-AV application that Williams owns lease rights in Assessor's Parcel No. 2137-153-00-009.)

4. an Affidavit of Surface Ownership regarding Section 25, T5S, R98 W, 6th PM, a portion of 2137-153-00-009, in which 25 CV is to be located.(Thus, we will need the same waiver from Williams, referred to above, or proof that Williams, as a mineral lessee, has been notified of the hearing on the Special Use Permit for 25-CV.)

5. a 5-page list of surface owners within 200 feet of the boundary of the "Y" and severed mineral and royalty interest owners in the "Y".

The 25-CV application does not contain back up deeds and/or US Patents for the entire lot. This is consistent with your letter and e-mail, dated November 13 and December 3, 2007 respectively, regarding: (1) title issues, (2) corporate mergers, (3) the difficulty of providing proof of ownership for the lot, and (4) the relative simplicity of providing proof of ownership for the multiple parcels, within the lot, upon which facilities under land use review are located.

I understand from your February 4, 2008 "follow-up" e-mail that you are not in a position to provide a sworn Declaration of "good title" to the lot. Can you, instead, formalize that e mail on Chevron letterhead and allow the letter to be a part of the current 25-CV application and future Garfield County permit application packets filed by Chevron and its surface tenants? As we have discussed, proof of ownership is usually based upon a recorded deed (or deeds), or in some instances a current Title Commitment, showing ownership of the "subject lot", no matter the size, in the applicant land owner. However, based upon the BOCC's factual findings regarding "adequate" proof of ownership and notice in recent hearings, I believe that such a letter from you, as Corporate Counsel, along with: (1) the map; (2) list of noticed surface and mineral owners, including Assessor Parcel Numbers; (3) the back-up documents for land, including US Patents for deeded un-patented mining claims, and minerals associated with the "tract" upon which the facility is located; and (3) the associated corporate merger documents, unless specifically referred to in your letter, would in most instances make an adequate ownership and noticing application packet.

Once completed, and updated in a timely manner by local Chevron representatives to show changes in mineral and surface notations, the packet could be copied for each Chevron application and the applications of Chevron's surface tenants, such as PDC and Marathon. Needless to say, the frequency with which Garfield County's real estate records are checked for changes in ownership and the method by which Chevron disseminates updated information to surface tenants are matters of internal corporate policy. However, as you know, before the hearing is opened the attorney for the BOCC asks the applicant when the County's real estate records were last checked. Title policies more than one year old at the time of hearing have been deemed inadequate to prove up ownership in the applicant land owner. Noticing information, not updated within three (3) months of a hearing, has been deemed inadequate to confer jurisdiction and allow opening of a quasi-judicial hearing before the BOCC.

This is a long letter, but I also want to respond to the "conflict of laws" issue discussed in your November 13, 2007 letter. I did not mean to infer that CUSA's mergers in Delaware and Pennsylvania were subject to Colorado law, only that CUSA is subject to the Secretary of State's filing requirements for foreign corporations, detailed in the Colorado Corporations and Associations Act (Title 7, Article 90, Part 800) and to the requirements of Colorado's conveyancing statutes in Title 38. Such statutes, as you know, deal with evidence of entity existence and authority to affect title to real property.

I referred to §38-30-144 in my letter to EnCana, dated June, 2007 and copied to Chevron in August of 07. Since writing that letter, I have been unable to discern the meaning of the §38-30-144(3)(h), statutory requirement that foreign corporations record a "Certificate of Authority" in the Clerk and Recorder's records. As it turns out, the Secretary of State does not issue such a certificate. The document showing authority to do business in Colorado, under current law, is the corporation's "application for authority" stamped by the Secretary of State as "filed" / "accepted" by the SOS. I have spoken with local corporate attorneys and title professionals who also find the statutory requirement unintelligible. The practice, despite the language of the statute, seems to be to record a "Statement of Authority" (§38-30-172) if and when needed, and, otherwise, to do what Chevron has done, i.e., file the "foreign" Certificate(s) of Merger to show Chevron as the surviving entity and thus "record" owner of the real estate.

Thank you for your continued attention to the ownership and noticing issues involved in CUSA's land use applications in Garfield County.

Sincerely,

CAROLYN M. DAHLGREN
Deputy County Attorney

cc Julie Justus, Chevron
Fred Jarman, Dir., Garfield Co. Building & Planning
David Pesnichak, Sr. Planner, Garfield Co. Building & Planning

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Chevron

James S. Talbot
Senior Counsel

Law Department
North America Exploration
and Production Company
11111 S. Wilcrest #N2006
Houston, Texas 77099-4397
Tel 281-561-3536
Fax 281-561-3515
jtalbot@chevron.com

February 11, 2008

Carolyn M. Dahlgren
Deputy County Attorney
Garfield County Attorney's Office
108 8th Street, Suite 219
Glenwood Springs, CO 81601

Re: ***Chevron's Title to the 54,000 acre "Y Lot"***

Dear Ms. Dahlgren,

Following up on our frequent discussions on the captioned topic and your letter of February 11, 2008 I will attempt in this letter to explain why I am 99% certain that Chevron has good title to the entire Y Lot, but despite that high degree of certainty can't provide you with a sworn statement to that effect.

The basis for my belief in Chevron's having good title to the entire Y Lot starts with the Garfield County Assessors Records, which records are based on the Deed Records on file in Garfield County, which show that Chevron is the owner of the entire Y Lot. While I acknowledge that the Assessors Records may not be quite as reliable as the Deed Records they are nevertheless official records and they show that Chevron, or its predecessors have owned the Y lot for many decades and that Chevron has paid taxes on the entire Y Lot over those decades. Backing up the accuracy of those records is the fact that our on site ranch manager, Mr. Craig Tysse, is unaware of any third party claims to the Y lot acreage that put a cloud on our title to any portion of the entire lot. Finally my certainty about our title is based on my personal review of abstracts and title opinions covering portions of the Y lot all of which demonstrate good title to the sections or pieces reviewed. Over the past year I have had the opportunity to do in depth reviews of portions of the Y Lot to determine if their were problems with our title and each time I have done so I have been able to confirm title to the extent that I was able, or would be able, to provide sworn testimony as to Chevron's ownership of the particular portion of the Y Lot which was the subject of my review.

While I would like to be able to provide you with a sworn declaration, either my own or outside counsels, stating that Chevron owns the entire Y Lot I cannot do so, despite my 99% certainty that such is the case, because I do not have abstracts (At least not abstracts which are up to date.) or title opinions for large portions of the Y Lot. I have discussed this with Lee Parker, Chevron's lead land Representative for the area, and he has advised me that he estimates it would take up to two years to obtain abstracts for the all the parcels for which we don't have current abstracts and to have those abstracts examined. While I

can tell you I am 99% certain of our title based on the information cited herein neither I nor our outside counsel can give a sworn statement that based on a thorough examination we have concluded that Chevron owns title to each and every acre in the entire Y Lot – we can't do so without examining current abstracts, which don't exist for the whole of the Y Lot.

Part of the problem in this case stems from the manner by which Chevron acquired title. Chevron, or its predecessors, began acquiring parcels of land in Garfield County at least as early as the 1940's. Over many decades, in over a hundred separate transactions, Chevron and its predecessors, or entities it or they later acquired by merger or acquisition, put together what is shown on the Assessor's records as the Y Lot. We have scores of Deeds granted over many decades going into companies which were acquired by or merged with Chevron or entities which Chevron merged with or acquired. As you are aware I have provided detailed explanations as to how Chevron acquired title to a particular tract which forms part of the whole Y Lot. Each title I have examined records regarding one of these individual tracts I have been able to trace title into Chevron, however these examinations are more in the nature of spot checks on title as I don't have adequate abstracts on many of the individual tracts on which to base a sworn statement.

As you are aware I, or outside counsel for Chevron, have been able to explain in great detail and under oath just how Chevron acquired title to each parcel for which we have submitted a permit application. Our applications include Deeds and an explanation of our title to the individual tract on which we are seeking to conduct operations. The tracts typically compose a half section or more on which all the operations for which the permit is sought will be conducted. These sworn statements are made only after conducting a very thorough review of our records including but not limited to abstracts. I do not conduct these reviews lightly and don't assert we have title unless I am very sure that I have looked at the abstracts and understand and can explain just why it is I assert Chevron has good title to the tract. While I can make no such absolute assertion as to the entire Y Lot I can say, based on the Assessor's Records, my discussions with Mr Tysse, the dozen or more title opinions I have examined, the numerous abstracts I have reviewed, and the corporate records I have examined that I am 99% certain that Chevron has good title to the whole of the Y Lot.

Chevron's Land Department is working diligently to secure current abstracts and title opinions for the entire Y Lot and when those are in hand, hopefully sometime in 2010, I will be able to provide swore statements as to our good title to the whole of the Y Lot. Until that time I ask that the County rely on the detailed information I am able to provide as to Chevron's title to the tract on which all of the operations covered in the permit will be performed. That detailed information, backed by swore statements as to title on the tract, and the information cited herein including the Garfield County's Assessors Records is good evidence of our title to the whole of the Y Lot and I request you accept it until such time we have completed our title review of the whole of the Y Lot.

Sincerely

James S Talbot

James S Talbot

cc: Julie Justus
Michael Deberry

Delaware

The First State

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF MERGER, WHICH MERGES:

"GETTY OIL EXPLORATION COMPANY", A DELAWARE CORPORATION,

WITH AND INTO "CHEVRON U.S.A. INC." UNDER THE NAME OF "CHEVRON U.S.A. INC.", A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF THE STATE OF PENNSYLVANIA, AS RECEIVED AND FILED IN THIS OFFICE THE THIRTIETH DAY OF APRIL, A.D. 2002, AT 9:05 O'CLOCK A.M.

AND I DO HEREBY FURTHER CERTIFY THAT THE EFFECTIVE DATE OF THE AFORESAID CERTIFICATE OF MERGER IS THE FIRST DAY OF MAY, A.D. 2002, AT 2 O'CLOCK P.M.

669006 02/22/2005 02:07P B1664 P367 M ALSDORF
1 of 3 R 16.00 D 0.00 GARFIELD COUNTY CO

0784181 8100M

050107962

Harriet Smith Windsor

Harriet Smith Windsor, Secretary of State

AUTHENTICATION: 3674757

DATE: 02-09-05

STATE OF DELAWARE
SECRETARY OF STATE
DIVISION OF CORPORATIONS
FILED 09:05 AM 04/30/2002
020274446 – 0784181

CERTIFICATE OF MERGER

OF

GETTY OIL EXPLORATION COMPANY

WITH AND INTO

CHEVRON U.S.A. INC.

It is hereby certified that:

1. The constituent business corporations participating in the merger herein certified are:

(i) Getty Oil Exploration Company, which is incorporated under the laws of the State of Delaware; and

(ii) Chevron U.S.A. Inc., which is incorporated under the laws of the State of Pennsylvania.

2. An Agreement of Merger has been approved, adopted, certified, executed and acknowledged by each of the aforesaid constituent corporations in accordance with the provisions of subsection (c) of Section 252 of the General Corporation Law of the State of Delaware, to wit, by Getty Oil Exploration Company in the same manner as is provided in Section 251 of the General Corporation Law of the State of Delaware and by Chevron U.S.A. Inc. in accordance with the laws of the State of its incorporation.

3. The name of the surviving corporation in the merger herein certified is Chevron U.S.A. Inc., which will continue its existence as said surviving corporation under the name Chevron U.S.A. Inc. upon the effective date of said merger pursuant to the provisions of the laws of the State of its incorporation.

4. The certificate of incorporation of Chevron U.S.A. Inc., as now in force and effect, shall continue to be the certificate of incorporation of said surviving corporation until amended and changed pursuant to the provisions of the laws of the State of its incorporation.

5. The executed Agreement of Merger between the aforesaid constituent corporations is on file at an office of the aforesaid surviving corporation at: 575 Market Street, San Francisco, CA 94105.

6. A copy of the aforesaid Agreement of Merger will be furnished by the aforesaid surviving corporation, on request, and without cost, to any stockholder of each of the aforesaid constituent corporations.

7. The aforesaid surviving corporation does hereby agree that it may be served with process in the State of Delaware in any proceeding for enforcement of any obligation of Getty Oil Exploration Company, as well as for enforcement of any obligation of said surviving corporation arising from the merger herein certified, including any suit or other proceeding to enforce the right, if any, of any stockholder of Getty Oil Exploration Company as determined in appraisal proceedings pursuant to the provisions of Section 262 of the General Corporation Law of the State of Delaware; does hereby irrevocably appoint the Secretary of State of the State of Delaware as its agent to accept service of process in any such suit or other proceedings; and does hereby specify the following as the address to which a copy of such process shall be mailed by the Secretary of State of the State of Delaware: Corporate Secretary Department, Chevron U.S.A. Inc., 575 Market, San Francisco, CA 94105.

8. The merger is to become effective on May 1, 2002, 2:00 P.M., Eastern Standard Time.

Dated: May 1, 2002

CHEVRON U.S.A. INC.

By: /s/Frank G. Soler
Frank G. Soler
Its: Assistant Secretary

Recorded at 12:18 o'clock P M. JAN 19 1988
Reception No. 385.38 MILDRED ALSDORF, RECORD
GARFIELD COUNTY, COLORADO

GARFIELD
State Doc. Fee
$ Ex

457

DEED

BOOK 728 PAGE 19

KNOW ALL MEN BY THESE PRESENTS:

That this deed is made effective as of the 31st day of December, 1984 by and between Getty Oil Company, a Delaware corporation, (hereinafter referred to as "Grantor") and Getty Oil Exploration Company, a Delaware corporation (hereinafter referred to as "Grantee").

W I T N E S S E T H:

WHEREAS, Grantor is the owner and/or holder of those certain shale oil properties, and lands in Mesa and Garfield Counties, Colorado, described in Exhibits "A" and "B" attached hereto and by this reference made a part hereof (hereinafter collectively referred to as the "Properties"); and

NOW THEREFORE, for and in consideration of one dollar and other good and valuable considerations, the receipt of which is hereby acknowledged, Grantor does hereby quitclaim, bargain, sell and convey unto Grantee, all of Grantor's right, title and interest in and to the Properties, together with all improvements situated thereon and all water rights, permits and applications, and reservoir and ditch rights, appertaining or belonging thereto or used in connection therewith, and other appurtenances thereunto belonging.

Grantee does hereby accept this deed subject to easements, rights of ways, exceptions and any and all reservations appearing of record affecting any of the Properties and/or rights granted.

To have and to hold the same together with all and singular the appurtenances thereunto belonging or in anywise appertaining to Grantee, and all the estate, right, title, claim and demand whatsoever, of the Grantor, either in law or equity, of, in and to the Properties, together with all improvements situated thereon and all water rights, permits and applications, and reservoir and ditch rights, appertaining or belonging thereto or used in connection therewith, and other appurtenances thereunto belonging.

This deed shall extend to, be binding upon, and inure to the benefit of the successors, and assigns of Grantee.

GRANTOR:
GETTY OIL COMPANY
By: J.E. Thomas MWR
Vice President

GRANTEE:
GETTY OIL EXPLORATION COMPANY
By: H.F. Straw
Attorney-in-Fact

STATE OF COLORADO

CITY AND COUNTY OF DENVER

The foregoing instrument was acknowledged before me this 8th day of January, 1988, by J.E. Thomas, to be known to be the person who executed the foregoing instrument as Vice President of Getty Oil Company. Witness my hand and official seal.

Notary Public: Sharon M. Morrison
My Comission Expires: AUG 19 1988
Address: 1670 BROADWAY
DENVER, CO 80202

The foregoing instrument was acknowledged before me this 8th day of January, 1987, by H.F. Straw, to be known to be the person who executed the foregoing instrument as Attorney-in-Fact of Getty Oil Exploration Company. Witness my hand and official seal.

Notary Public: Barbara K. Buckley
My Comission Expires: June 26, 1991
Address: 15088 Andrews Dr
Denver, Co. 80239

Certificate of Copy of Record

STATE OF COLORADO
County of Garfield

I, Mildred Alsdorf, County Clerk and Recorder in and for said County, in the State aforesaid, do hereby certify that the foregoing is a full, true and correct copy of a Quit Claim ~~XX~~ Deed recorded 05/11/1988 in Book 734 at Page 107 as Reception # 391922 as the same appears upon the records of my office.

Given under my hand and official seal this 8th day of November, A.D2005, 2:45 o'clock P M

Mildred Alsdorf
Mildred Alsdorf
County Clerk and Recorder

Deputy _____

Recorded at 12:18 o'clock A M. MAY 11 1988
Reception No. 391922 MILDRED ALBORS, RECORDER
GARFIELD COUNTY, COLORADO

GARFIELD
MAY 11 1988
State Doc. Fee
$ Ex

QUIT CLAIM DEED BK 734 PG 107

THIS DEED, Made effective as of the 1st day of January in the year of our Lord one thousand nine hundred and eighty five (1985) between Texaco Producing Inc., a Delaware corporation, of the City and County of Denver and State of Colorado, party of the first part, and Getty Oil Exploration Company, a Delaware corporation, of Box 5568 TA, Denver, CO 80217, party of the second part.

Witnesseth, That the said party of the first part, for and in consideration of the sum of one dollar and other good and valuable consideration to the said party of the first part in hand paid by the said party of the second part, the receipt whereof is hereby confessed and acknowledged, has remised, released, conveyed and QUIT CLAIMED, and by these presents does remise, release, convey and QUIT CLAIM unto said party of the second part, its successors and assigns forever, all the right, title, interest, claim and demand which the said party of the first part has in and to the following described lands situate, lying and being in the County of Garfield and State of Colorado, described in Exhibit "A", attached hereto and made a specific part hereof.

TO HAVE AND TO HOLD the same, together with all and singular the appurtenances and privileges thereunto belonging or in anywise thereunto appertaining, and all the estate, right, title, interest and claim whatsoever, of the said party of the first part, either in law or equity, to the only proper use and benefit of the said party of the second part, its successors and assigns forever.

IN WITNESS WHEREOF, The said party of the first part has hereunto set its hand the day and year first above written.

TEXACO PRODUCING INC.

By: _____
D. P. Loughry
Attorney-in-Fact

STATE OF COLORADO)
)SS:
CITY AND COUNTY OF DENVER)

The foregoing instrument was acknowledged before me this 2nd day of May A.D. 1988, by D. P. Loughry, Attorney-in-Fact for Texaco Producing Inc.
Witness my hand and official seal.

Notary Public: _____

My Commission Expires: Regina Wood
17802 East Floridan Place
Aurora, Colorado 80013
My Commission expires: April 9, 1992

Address: _____

Ex -A'

T6S-R98W

Garfield County, CO

Section 3: Hunter placer claim, comprising that part of Tract 39B lying in the W/2SW/4, also described in Deed recorded Book 240, page 193 of County Records of Garfield County, Colorado;

Wallace placer claim, comprising that part of Tract 48B lying in the S/2S/2SW/4, also described in Deed recorded in Book 240, page 193 of County Records of Garfield County, Colorado;

Clear Creek placer claim, comprising Lot 5, being the 47.05 acres in Tract 107, in the W/2 of the section.

Section 4: Clear Creek placer claim, comprising Lot 5, aka 31.90 acres in Tract 107, in the E/2;

Clear Creek placer No. 1 claim, comprising the Lot 6; with Lot 6 being 39.52 acres in the E/2, aka part of Tract 106 lying in the section;

That part of Tract 108 lying in the section as described in Warranty Deed recorded in Book 257 page 137 of County Records of Garfield County, Colorado;

That part of Tract 40 described under the original survey as the SE/4SW/4 in Warranty Deed recorded in Book 275 page 137 of County Records of Garfield County, Colorado, and as may include any part of the S/2NE/4SW/4, NW/4SE/4 and S/2SE/4;

Hunter placer claim, comprising that part of Tract 39B aka the SE/4SE/4, and including any part covering the S/2NE/4SE/4, SE/4NW/4SE/4 and E/2SW/4SE/4. Also described in Warranty Deed recorded Book 240, page 193 of County Records of Garfield County, Colorado.

Section 9: That part of Tract 40 lying in section and described in Warranty Deed Recorded in Book 257, page 137 of County Records of Garfield County, Colorado, and as it may include any of the NE/4NW/4, and NE/4;

Hunter placer claim, comprising that part of Tract 39B, and described in Deed recorded Book 240, page 193 of County Records of Garfield County, Colorado, and as it may include any of the E/2NE/4;

W/2NE/4; E/2SE/4 and NW/4SE/4; aka part of Tracts 40 and 44, in the section.

Section 10: Hunter placer claim, comprising that part of Tract 39B, described in Deed recorded Book 240, page 193 of County Records of Garfield County, Colorado, and lying in the W/2W/2NW/4;

Wallace placer claim, comprising that part of Tract 48B, described in Deed recorded in Book 240, page 193 of County Records of Garfield County, Colorado, and lying in NW/4 and W/2W/2NE/4;

Buck Canyon No. 5 placer claim comprising Tract 49, described in Deed Recorded in Book 240, page 193 of County Records of Garifeld County, Colorado as it may lie in the N/2NE/4;

Buck Canyon No. 6 placer claim comprising Tract 50, described in Deed Recorded in Book 240, page 193 of County Records of Garifeld County, Colorado and lying in the NE/4;

Westfield No. 1 oil shale placer mining claim, comprising Lot 4, with Lot 4 aka 40.00 acres lying in the S/2SE/4NW/4, E/2W/2NW/4SE/4, SW/4SW/4NE/4, and NE/4SW/4;

Westfield No. 2 oil shale placer mining claim, comprising Lot 1 and Lot 3, with Lot 1 aka 32.86 acres lying in the NW/4SW/4 and S/2SW/4NW/4, and Lot 3 aka 7.14 acres lying in the E/2NW/4SW/4, W/2NE/4SW/4, E/2SW/4NW/4 and W/2SE/4NW/4.

James S. Talbot
Senior Counsel

Law Department
North America Exploration
and Production Company
11111 S. Wilcrest #N2006
Houston, Texas 77099-4397
Tel 281-561-3536
Fax 281-561-3515
jtalbot@chevron.com

August 29, 2007

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

Re: Authorization to Represent Chevron -
Sally Cuffin, Washington Group International Inc.

Dear Mr. Bean:

Chevron U.S.A. Inc. (Chevron) has retained the services of Sally Cuffin of the Washington Group International Inc.. Ms. Cuffin will represent Chevron in facility permitting for our Piceance Project in Garfield County, a role in which she will prepare and submit Special Use Permit Applications, ISDS, building, grading, pipeline, road crossing and other routine construction related applications and information on behalf of Chevron. Ms. Cuffin is also authorized to participate in discussions before appointed and elected boards regarding the various applications, however at such meetings, her authority to legally bind Chevron is limited to the terms set forth in the Permit Applications or other written documents filed on our behalf.

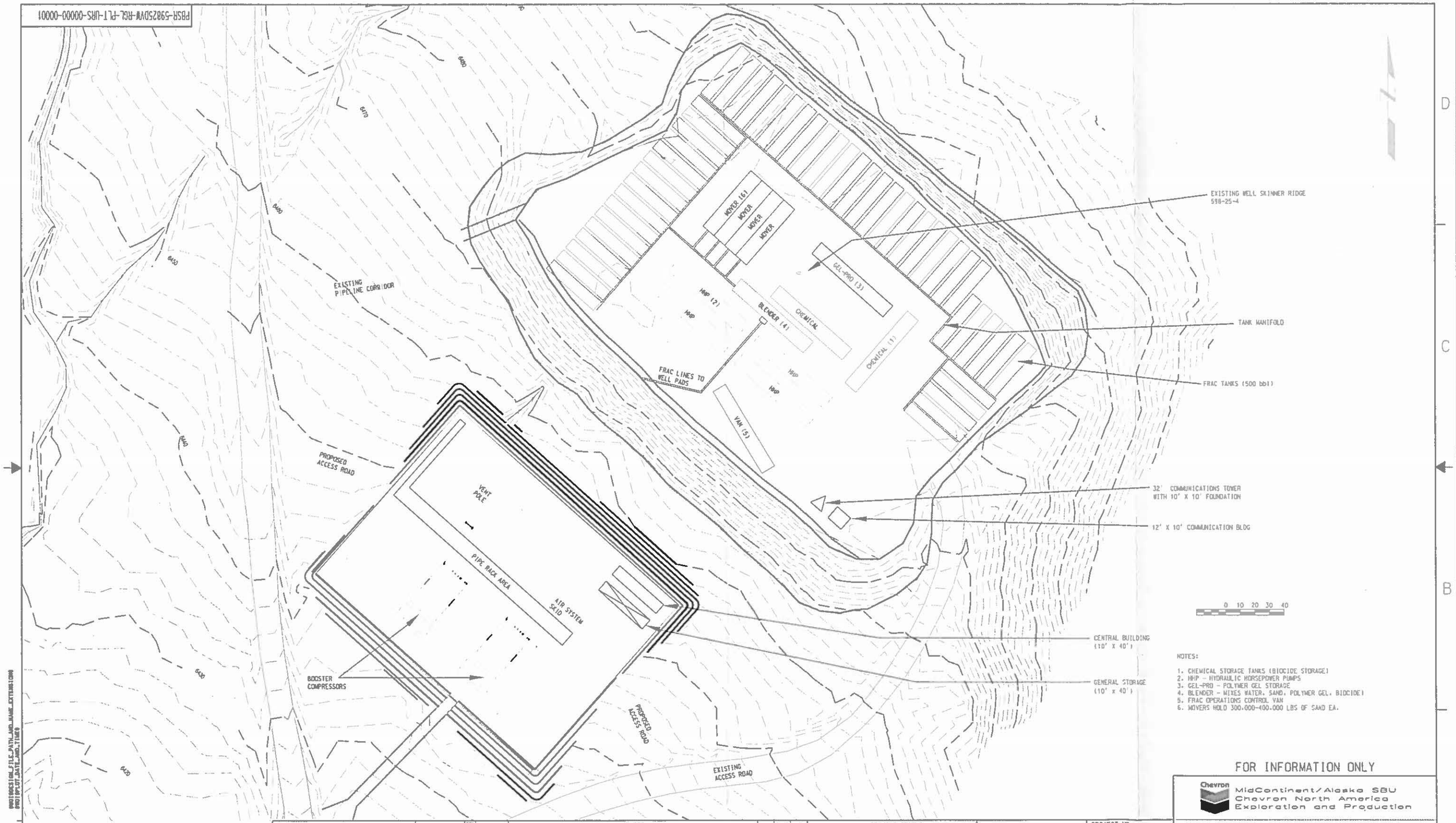
Sincerely,

J S Talbot

J S. Talbot

cc: Nicole Johnson
Timothy Barrett
Sally Cuffin

PBSR-59825DVW-RGL-PLT-URS-00000-00001



NOTES:

1. CHEMICAL STORAGE TANKS (BIOCIDE STORAGE)
2. HHP - HYDRAULIC HORSEPOWER PUMPS
3. GEL-PRO - POLYMER GEL STORAGE
4. BLENDER - MIXES WATER, SAND, POLYMER GEL, BIOCIDE)
5. FRAC OPERATIONS CONTROL VAN
6. MOVERS HOLD 300,000-400,000 LBS OF SAND EA.

FOR INFORMATION ONLY

REVISION APPROVAL RECORD				REV A		REV NO	DATE	REVISIONS	BY	CHKR	APPR
DISCIPLINE	BY	DATE	DISCIPLINE	BY	DATE						
ARCH.			MECHANICAL								
CIVIL			NUCLEAR								
ELECTRICAL			PIPING								
ENVIRON.			PROCESS								
GEN. ARRANG.			QA / QC								
HVAC			STRUCTURAL								
I & C											
						A		ISSUED FOR REVIEW			

DRAWING STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY	A			
APPROVED FOR CONSTRUCTION				

NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED & DATED. DESTROY ALL PRINTS BEARING EARLIER DATE &/OR REV.NO.

PROJECT NO.: 29454

DRAWN: DATE:

CHECKED: DATE:

SCALE: 1"=10'

Chevron MidContinent/Alaska SBU
Chevron North America Exploration and Production

URS Washington Division
10550 Richmond Ave. - Houston, TX 77042 - (281) 529-3100

PICEANCE BASIN DEVELOPMENT - EPS
SERVICE PAD/ BOOSTER COMPRESSOR 25-4
EQUIPMENT PLOT PLAN

DWG. NO. PBSR-59825DVW-RGL-PLT-URS-00000-00001 REV A

$$DESIGN_FILE_PATH_AND_NAME_EXTENSION$$
$$PLOT_DATE_AND_TIME$$

29454-

Applicable FAA Information

TOWAIR Determination Results

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates	
Latitude	39-35-19.5 north
Longitude	108-20-25.7 west
Measurements (Meters)	
Overall Structure Height (AGL)	9.8
Support Structure Height (AGL)	9.8
Site Elevation (AMSL)	1977
Structure Type	

TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification
Notify Tribes and Historic Preservation Officers of your plans to build a tower.
Note: Notification does NOT replace Section 106 Consultation.

CLOSE WINDOW

Applicable FCC Information

MOTOROLA CANOPY RADIOS
FCC STATEMENT

15 Legal and Regulatory Notices

15.1 IMPORTANT NOTE ON MODIFICATIONS

Intentional or unintentional changes or modifications to the equipment must not be made unless under the express consent of the party responsible for compliance. Any such modifications could void the user's authority to operate the equipment and will void the manufacturer's warranty.

15.2 NATIONAL AND REGIONAL REGULATORY NOTICES

U.S. Federal Communication Commission (FCC) and Industry Canada (IC) Notification

This system has achieved Type Approval in various countries around the world. This means that the system has been tested against various local technical regulations and found to comply. The frequency band in which the system operates is 'unlicensed' and the system is allowed to be used provided it does not cause interference. Further, it is not guaranteed protection against interference from other products and installations.

This device complies with part 15 of the US FCC Rules and Regulations and with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. In Canada, users should be cautioned to take note that high power radars are allocated as primary users (meaning they have priority) of 5250 – 5350 MHz and 5650 – 5850 MHz and these radars could cause interference and/or damage to license-exempt local area networks (LELAN).

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the US FCC Rules and with RSS-210 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to correct the interference by one or more of the following measures:

- Increase the separation between the affected equipment and the unit;
- Connect the affected equipment to a power outlet on a different circuit from that which the receiver is connected to;
- Consult the dealer and/or experienced radio/TV technician for help.

FCC IDs and Industry Canada Certification Numbers are listed in Table 15.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:
1 This device may not cause harmful interference, and
2 This device must accept any interference received, including interference that may cause undesired operation.

FCC ID: QWP58XX-S

IC:4815A-58XXS

0107892597985562

Table 18: US FCC IDs and Industry Canada certification numbers

Where necessary, the end user is responsible for obtaining any National licenses required to operate this product and these must be obtained before using the product in any particular country. Contact the

Equipment Specifications

Specifications Sheet

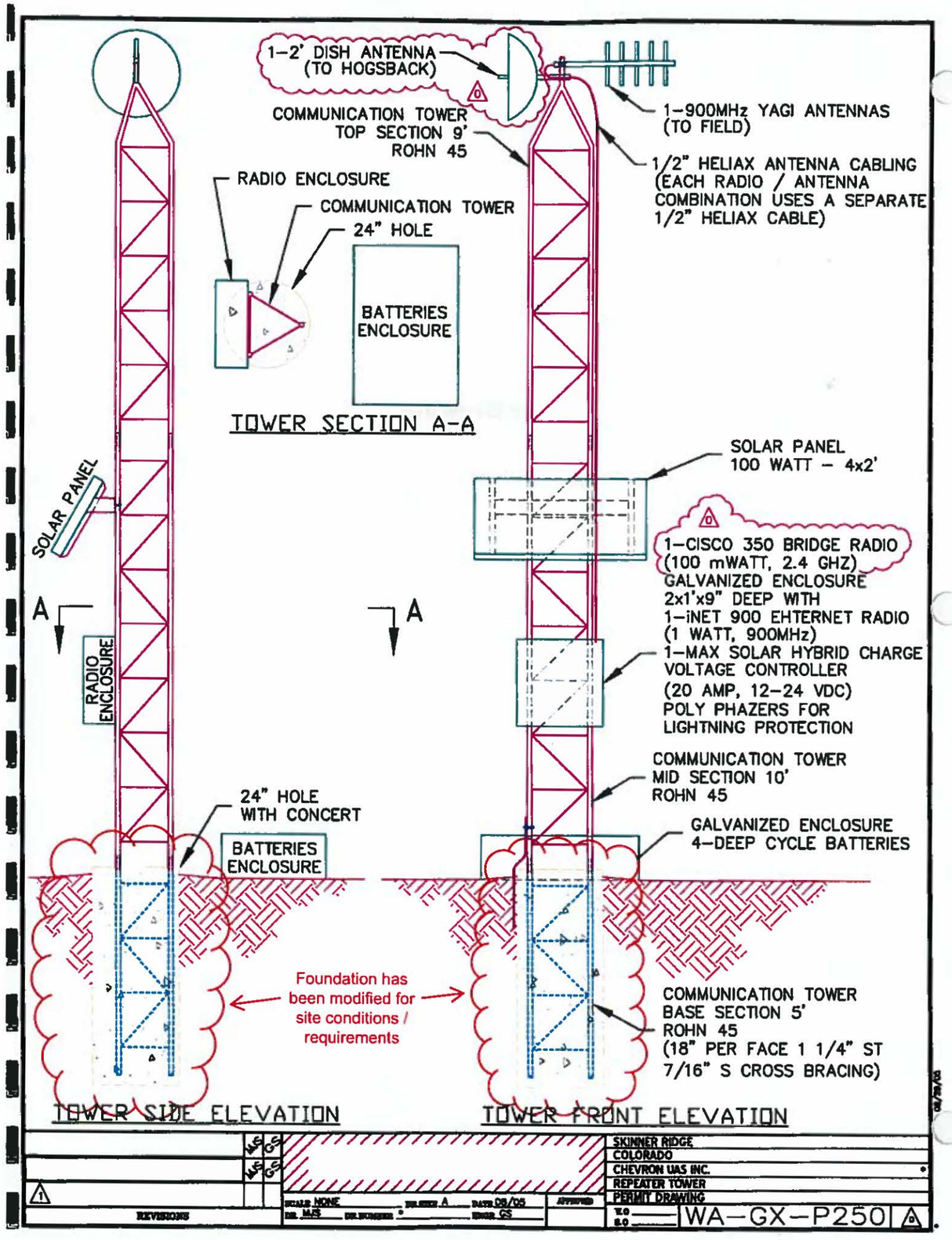
Motorola Canopy
30 Mbps 5.7 GHz BH Pair - Connectorized

MOTOROLA

Canopy Part Number	5730BHC20
Description	30 Mbps 5.7 GHz BH Pair - Connectorized
Market Availability	North America, Europe, South America, Asia
Signaling Rate	30 Mbps
Typical LOS Range	non-LoS Up to 6 Miles (10Km),near-LoS up to 25 Miles (40Km),LoS Up to 124 Miles (200Km)
Typical Aggregate Useful Throughput	Dynamically variable modulation ranges from 1.5 Mbps to 21 Mbps. (Upgradeable to 60 Mbps via Software License Key)
Frequency range of band	5.725 GHz–5.850 GHz
Channel Width	12 Mhz
Modulation Type	Adapting between BPSK and 64QAM – (8 Modes). Signal is transmitted and received with multiple beams on separate routes – recorrelates signals and brings multi-path signals into phase. Generates a new set of Adaptive Modulation margins which reduces the probability of codeword errors (and hence packet loss). TDM mode.
Encryption	Proprietary scrambling, optional AES 128 Bit Encryption
Latency	7ms
Nominal Receiver Sensitivity (dbm typical)	Adaptive, varying between -96.5 dBm and -72 dBm according to modulation selected
Antenna Gain (dB)	Approved to operate with flat plate up to 28 dBi, dish up to 37.7 dBi
DC Power (typical)	90-240 AC / 36-60V DC, 55W max
Temperature	-40° C to +60° C (-40° F to +140° F) including solar radiation.
Wind Survival	242 km/hr (150 miles/hr)
Dimensions	Outdoor Unit: 12W x 12H x 4.1D inches (305 x 305 x 105 mm). Indoor Unit: 9.85W x 1.6H x 3.1D inches (250 x 40 x 80 mm)
Weight	Outdoor Unit: 9.1 lbs (4.1 kg) including bracket
Interface	10BASE-T / 100BASE-T (RJ-45) – auto MDI/MDIX switching
Protocols Used	IEEE 802.3 compatible
Network Management	Web Server and SNMP

Specifications subject to change without notice.

Tower Drawing


1-2' DISH ANTENNA (TO HOGSBACK)
COMMUNICATION TOWER TOP SECTION 9' ROHN 45
1-900MHz YAGI ANTENNAS (TO FIELD)
1/2" HELIAX ANTENNA CABLING (EACH RADIO / ANTENNA COMBINATION USES A SEPARATE 1/2" HELIAX CABLE)
RADIO ENCLOSURE
COMMUNICATION TOWER 24" HOLE
BATTERIES ENCLOSURE
TOWER SECTION A-A
SOLAR PANEL 100 WATT - 4x2'
SOLAR PANEL
1-CISCO 350 BRIDGE RADIO (100 mWATT, 2.4 GHZ) GALVANIZED ENCLOSURE 2x1'x9" DEEP WITH 1-iNET 900 EHTERNET RADIO (1 WATT, 900MHz)
A
A
RADIO ENCLOSURE
1-MAX SOLAR HYBRID CHARGE VOLTAGE CONTROLLER (20 AMP, 12-24 VDC) POLY PHAZERS FOR LIGHTNING PROTECTION
COMMUNICATION TOWER MID SECTION 10' ROHN 45
24" HOLE WITH CONCERT
BATTERIES ENCLOSURE
GALVANIZED ENCLOSURE 4-DEEP CYCLE BATTERIES
Foundation has been modified for site conditions / requirements
COMMUNICATION TOWER BASE SECTION 5' ROHN 45 (18" PER FACE 1 1/4" ST 7/16" S CROSS BRACING)
TOWER SIDE ELEVATION
TOWER FRONT ELEVATION
REVISIONS
SCALE NONE
DR. MJS
SHEET A
DATE 08/05
SKINNER RIDGE
COLORADO
CHEVRON UAS INC.
REPEATER TOWER
PERMIT DRAWING
WA-GX-P250

Tower Specifications

Radian
Communication
Services

6718 West Plank Road
Peoria, IL 61604
Telephone + 1 309 697 4400
Facsimile + 1 309 697 5612
www.radiancorp.com

May 17, 2007

Chevron USA
Attention: Don Northrup
57 Patriot Court
Evanston, WY. 82930

Reference: Chevron, Garfield County, CO.

File Number: 060-3828, 58053EH

Radian Number: 0603828

Enclosed, please find the following for your use:

Copies	Drawing Number	Description
4	A070264	Design Drawing Sealed for the State of Colorado

307 783 9388

Email Also: dnbu@chevron.com

Sincerely,

Scott Burdette

crp

RADIAN

ROHN Products

Radian
Communication
Services

6718 West Plank Road
Peoria, IL 61604
Telephone + 1 309 697 4400
Facsimile + 1 309 697 5612
www.radiancorp.com

PURCHASER:	CHEVRON USA
NAME OF PRODUCT:	CHEVRON, GARFIELD COUNTY, COLORADO 32 FT. MODEL SSV TOWER
FILE NUMBER:	060-3828, 58053EH
DRAWING NUMBER:	A070264

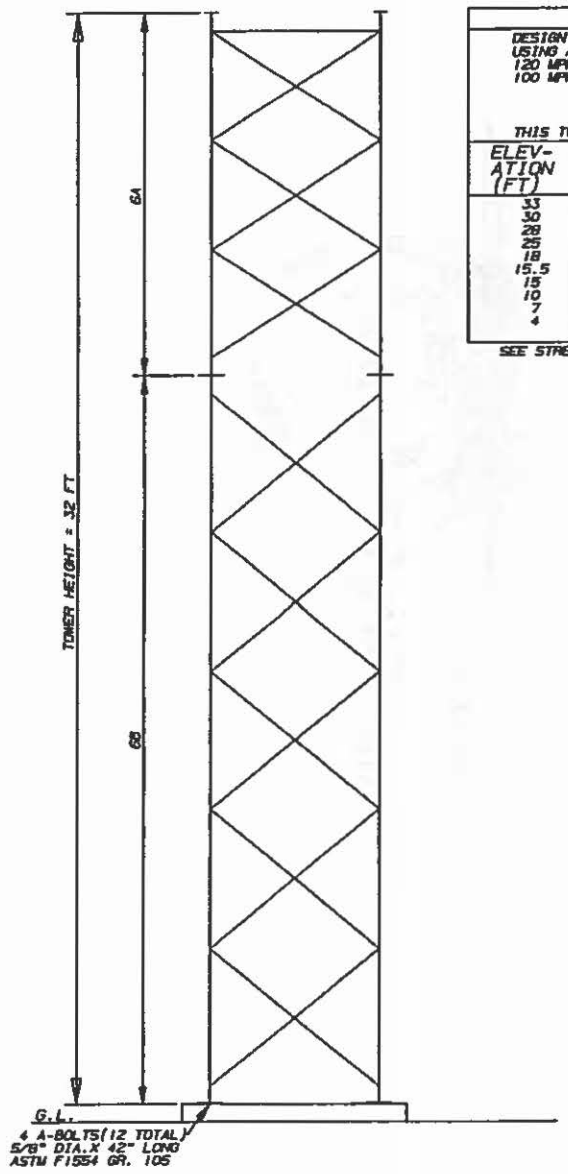
I CERTIFY THAT THE DESIGN OF THE REFERENCED STRUCTURE WAS PREPARED UNDER MY SUPERVISION IN ACCORDANCE WITH THE LOADING AND SOIL CRITERIA SPECIFIED BY THE PURCHASER AND THAT I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF COLORADO.

THE REFERENCED FOUNDATIONS ARE STANDARD FOUNDATIONS DESIGNED IN ACCORDANCE WITH ANSI/EIA-222-F NORMAL SOIL PARAMETERS. STANDARD FOUNDATIONS SHOULD NOT BE RELIED UPON FOR THE REFERENCED SITE WITHOUT COMPETENT PROFESSIONAL EXAMINATION AND VERIFICATION OF THEIR SUITABILITY BASED ON THE SUBSURFACE CONDITIONS EXISTING AT THE SITE.

CERTIFIED BY: _____

DATE: 5/17/07

COLORADO REGISTERED
HABIB JIRJI AZOUR
32775
PROFESSIONAL ENGINEER



TOWER DESIGN LOADING

DESIGN WIND LOAD PER 2003 INTERNATIONAL BUILDING CODE (IBC) USING ANSI/TIA/EIA-222-F-1996 IN ACCORDANCE WITH SECTION 3108.4. 120 MPH 3-SECOND GUST WIND SPEED (0.5" RADIAL ICE LOAD) AND 100 MPH BASIC WIND SPEED (FASTEST MILE) (0.5" RADIAL ICE LOAD).

THIS TOWER IS DESIGNED TO SUPPORT THE FOLLOWING LOADS:

ELEV-ATION (FT)	ANTENNA TYPE	LINE SIZE (NOM)
33	W.STATION + STUB MT + L.ROD	1-1/2
30	6' DISH W/ RAD + 2- 4 SQ.FT. TWO-WAY ANT.	1-EW52
28	3- OMNI ON 3' S.A. + 4 YAGI ANT LEG MTD	7-7/8
25	2' DISH W/ RADOME	1-7/8
18	2' DISH W/ RADOME	1-7/8
15.5	2' DISH W/ RADOME	1-7/8
15	3- TWO WAY ANT. LEG MTD.	3-7/8
10	6' DISH W/ RAD	1-EW52
7	4- 2'X4' SOLAR PANELS	1-1/2
4	2- BATTERY / EQUIP BOXES	2-1/2

SEE STRESS ANALYSIS FOR A COMPLETE LISTING OF ALL LOADS ON TOWER

SECTION MEMBER SCHEDULE

SECTION	LEG	BRACE
6A	PIPE2.5STD	L1.75X3/16
6B	PIPE2.5STD	L1.75X3/16

NOTE: SECTION NUMBERS ARE FOR REFERENCE ONLY FOR NOMINAL FACE WIDTH DIMENSIONS, REFER TO STRESS ANALYSIS.

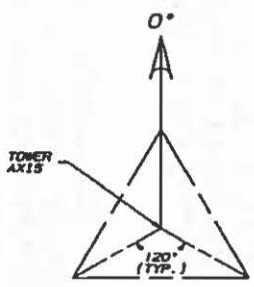
NOTE: DISH AZIMUTHS AS FOLLOWS:
180 DEG- 6' DISHES AT 30' & 10'
2' DISH AT 25'
0 DEG- 2' DISHES AT 19' & 17'

TUBULAR MEMBER PROPERTIES

MEMBER	SIZE	
	O.D. (IN)	THICK. (IN)
PIPE2.5STD	2.875	0.203

GENERAL NOTES

1. RADIAN COMMUNICATION TOWER DESIGNS CONFORM TO ANSI/TIA/EIA-222-F UNLESS OTHERWISE SPECIFIED UNDER TOWER DESIGN LOADING.
2. THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO RADIAN AND HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA/EIA-222-F AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. ANTENNAS AND LINES LISTED IN TOWER DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
4. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
5. WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA/EIA-222-F, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
6. THE MINIMUM YIELD STRENGTH OF STRUCTURAL STEEL MEMBERS SHALL BE 50 KSI, EXCEPT AS NOTED BELOW.
   ANGLE BRACES L1.75X3/16 SHALL BE 36 KSI.
   STRUCTURAL PLATES SHALL BE 36 KSI.
7. FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
8. STRUCTURAL BOLTS SHALL CONFORM TO ASTM A-325, EXCEPT WHERE NOTED.
9. PAL NUTS SHALL BE PROVIDED FOR ALL TOWER BOLTS.
10. STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION, IN ACCORDANCE WITH ANSI/TIA/EIA-222-F.
11. ALL HIGH STRENGTH BOLTS ARE TO BE TIGHTENED TO A "SNUGTIGHT CONDITION AS DEFINED IN THE NOVEMBER 13, 1985, AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
12. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
13. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
14. DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA/EIA-222-F.
15. DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
16. NOMINAL FACE WIDTHS ARE TABULATED IN COLUMN 12 OF THE SELF-SUPPORTING TOWER ANALYSIS. THESE WIDTHS ARE NOMINAL, FINAL FACE WIDTHS WILL VARY.
17. FOR FOUNDATION DETAILS, SEE DWG. NO D870532R2 (F6 MAT). PURCHASER SHALL VERIFY THAT ACTUAL SITE SOIL PARAMETERS MEET OR EXCEED E.I.A. "NORMAL" SOIL.



TOWER CONFIGURATION
N.T.S.

TOWER REACTIONS

COMPRESSION = 42.8 KIPS
TENSION = 39.0 KIPS
TOTAL SHEAR = 9.6 KIPS
O.T.M. = 160.4 FT-KIPS

TOWER SITE: CHEVRON/ GARFIELD COUNTY
COUNTY: GARFIELD, CO

No.	Revision Description	Date	Rev. By	Chd By	Appd By

RADIAN

Scale: NONE	By	Date
Drawn:	EEH	05/15/07
Checked:	HA	5/14/07
App. Eng.:	HA	5/14/07
Parent File:		

32' SSV TOWER DESIGN
FOR
CHEVRON USA

ENG. FILE: 0603828

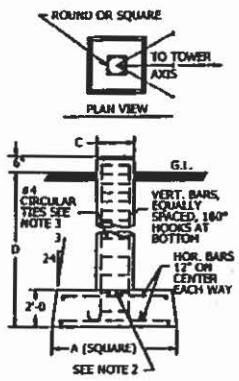
DWG. NO.: A070264

SHEET 1 OF 1

REV.

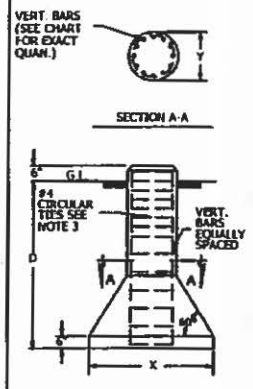
FDN. I.D. NO.	MAX ANCHOR BOLT SIZE, ALL FND TYPES	LOADS FOR TYPES 1,2 & 3			PIER AND PAD (TYPE 1)								DRILL AND BELL (TYPE 2)						DRILLED PIER (TYPE 3)					MAT (TYPE 4)			
		ALLOW. LEG LOAD (KIPS)	ALLOW. SHEAR (KIPS PER LEG)	MIN ANCHOR BOLT SIZE (NOTE 6)	MIN FACE SPREAD	D	A	C	VERT. BARS	HOR. BARS	REQ'D CONC. (CU. YDS. 3 FDNS) ROUND	REQ'D CONC. (CU. YDS. 3 FDNS) SQUARE	MIN FACE SPREAD	D	X	Y	VERT. BARS	REQ'D CONC. (CU. YDS. 3 FDNS)	MIN FACE SPREAD	D	Y	VERT. BARS	REQ'D. CONC. (CU. YDS. 3 PIERS)	MAX FACE SPREAD	MAX O.T.M. FOOT KIPS	W	REQ'D CONC. (CU.YDS.) (NOTE 7)
F1	(4) 5/8	4.5		N/A																				1' 6	12.8	4' 0	2.4
F2	(4) 5/8	11.2		N/A																				2' 10	33.2	5' 6	4.5
F3	(4) 5/8	19.6		N/A																				3' 11	61.5	6' 9	6.8
F4	(4) 5/8	28.0		N/A																				5' 0	102	8' 0	9.5
F5	(4) 5/8	36.0		N/A																				5' 8	133	8' 9	11.3
F6	(4) 7/8	33.7	4.0	5/8X42	6' 6	8' 0	4' 6	2' 0	8 #6	#6	6.3	6.9												7' 7	304	11' 6	19.6
F7	(4) 7/8	43.6	6.0	5/8X42	8' 6	8' 9	5' 6	2' 0	8 #7	#6	8.7	9.4	7' 6	11' 0	4' 6	2' 6	10 #6	7.8	7' 6	16' 0	2' 6	10 #6	9.0	10' 0	578	14' 3	30.1
F8	(4) 7/8	52.5	6.0	5/8X42	8' 6	8' 9	5' 6	2' 0	8 #7	#6	8.7	9.4	7' 6	11' 0	4' 6	2' 6	10 #6	7.8	7' 6	18' 6	2' 6	10 #6	10.4	11' 1	819	16' 0	37.9
F9	(4) 7/8	56.0	8.0	5/8X42	8' 6	9' 0	5' 6	2' 0	8 #7	#6	8.8	9.5	7' 6	11' 0	5' 0	2' 6	10 #6	8.7	7' 6	19' 6	2' 6	10 #6	10.9	13' 0	1210	18' 3	49.3
F10	(4) 1	64.9	10.0	3/4X48	8' 6	10' 0	5' 6	2' 6	8 #8	#6	10.8	12.0	7' 6	12' 0	5' 0	2' 6	10 #6	9.2	7' 6	21' 9	2' 6	10 #6	12.2	14' 11	1780	20' 9	63.8
F11	(4) 1	85.6	10.0	3/4X48	8' 6	11' 0	5' 6	2' 6	10 #8	#6	11.3	12.7	8' 0	12' 6	6' 0	2' 6	10 #6	11.8	9' 0	22' 9	3' 0	12 #6	18.3	16' 10	2430	23' 0	78.4
F12	(6) 1	114.0	15.0	7/8X60	9' 6	12' 0	6' 3	3' 0	12 #8	#6	16.3	18.5	9' 0	14' 0	6' 6	3' 0	10 #7	16.7	10' 6	25' 0	3' 6	12 #7	27.3	18' 11	3610	26' 3	102
F13	(6) 1	129.0	15.0	7/8X60	10' 0	12' 6	6' 6	3' 0	12 #8	#6	17.3	19.7	9' 0	14' 0	7' 0	3' 0	12 #7	18.4	10' 6	27' 6	3' 6	12 #7	30.0				
F14	(6) 1	152.0	15.0	7/8X60	11' 0	13' 0	7' 3	3' 0	12 #8	#6	19.9	22.4	9' 3	15' 0	7' 3	3' 0	12 #8	20.1	12' 0	30' 0	4' 0	12 #8	42.6				
F15	(8) 1	184.0	20.0	7/8X60	12' 6	13' 9	7' 9	3' 6	16 #8	#6	25.6	29.2	10' 6	16' 0	8' 0	3' 6	12 #8	27.6	12' 0	38' 0	4' 0	12 #8	53.8				
F16	(8) 1	215.0	25.0	1X70	14' 0	14' 0	8' 9	3' 6	16 #8	#6	29.4	33.1	10' 9	16' 0	8' 9	3' 6	16 #8	31.4	13' 6	38' 0	4' 6	16 #8	68.0				
F17	(8) 1	242.0	25.0	1X70	15' 3	14' 0	9' 9	3' 6	16 #9	#7	33.4	37.1	11' 3	17' 0	9' 3	3' 6	16 #8	35.4	13' 6	44' 0	4' 6	16 #8	78.6				
F18	(8) 1	268.0	35.0	1X70	16' 6	14' 0	10' 9	4' 0	21 #9	#7	42.0	46.7	12' 0	17' 0	9' 9	4' 0	16 #9	42.7	13' 6	49' 0	4' 6	16 #8	87.5				

NOTE: MAX O.T.M. IS ABOUT MAT CENTERLINE AT BOTTOM OF MAT.



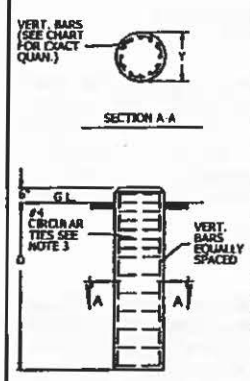
ELEVATION VIEW

PIER AND PAD



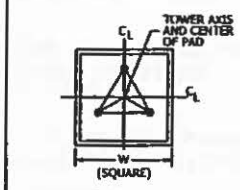
ELEVATION VIEW

DRILL AND BELL

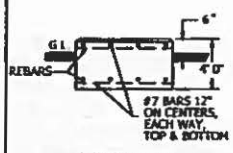


ELEVATION VIEW

DRILLED PIER

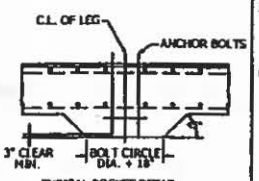


PLAN VIEW



ELEVATION VIEW

MAT



TYPICAL POCKET DETAIL (SEE NOTE 6)

GENERAL NOTES

1. FOR REQUIRED MATERIAL SPECIFICATIONS, INSTALLATION NOTES AND TOLERANCES SEE DRAWING NUMBER B841300.
2. ROUGHEN CONSTRUCTION JOINT TO A FULL AMPLITUDE OF 1/4 INCH.
3. CIRCULAR TIES TO BE PLACED ON 3 INCH CENTERS FOR TOP 4 FEET AND 12 INCH CENTERS FROM 4 FEET TO BOTTOM, WITH 22 INCH LAPS.
4. FOR ANCHOR BOLT SIZE AND QUANTITY SEE ANCHOR BOLT LAYOUT DRAWING FOR TOWER.
5. MINIMUM ANCHOR BOLT SIZE SHOWN IS REQUIRED FOR DEVELOPMENT WITH VERTICAL REINFORCING BARS. LARGER ANCHOR BOLTS MAY BE REQUIRED BASED ON TOWER REACTIONS.
6. ANCHOR BOLTS OVER 48 INCH LONG REQUIRE POCKETS UNDERNEATH EACH LEG FOR MAT FOUNDATIONS. CONCRETE VOLUME INDICATED IN TABLE DOES NOT INCLUDE VOLUME OF POCKETS. SEE TYPICAL POCKET DETAILS FOR MAT FOUNDATION.

FILE NO.
Standard-SSV

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP
3	UPDATED TO STANDARD ANCHORS DATE: Feb/03/2006	H.F	KTL	H.A
4	REVISED ANCHOR BOLT LENGTH FOR F6A, F6T & F6B FROM 30X6 TO 1X36 DATE: Feb/28/2007	BMS	JBM	H.A

DWG REFERENCE

RADIAN

www.radiancorp.com

PEORIA, IL, USA +1 800 727 ROHN

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FOUNDATION FOR SELF SUPPORTING TOWERS

DWN: WDU	CHK'D: RAH	DATE: Dec/10/1987
ENG'R: XK	ENG'R APP'D:	
DRAWING NO: D870532		REV: 4

FOUNDATION AND ANCHOR TOLERANCES
ALL FOUNDATIONS

1. CONCRETE DIMENSIONS - PLUS OR MINUS 1" (25mm).
2. DEPTH OF FOUNDATION - PLUS 3" (76mm) OR MINUS 0".
3. DRILLED FOUNDATIONS OUT OF PLUMB - 1.0 DEGREE.
4. REINFORCING STEEL PLACEMENT - PER A.C.I. 301.
5. PROJECTION OF EMBEDMENTS - PLUS OR MINUS 1/8" (3mm).
6. VERTICAL EMBEDMENTS OUT OF PLUMB - 0.5 DEGREE.

ANCHOR BOLTS

7. MAXIMUM DISTANCE FROM CENTERLINE OF ANCHOR BOLTS TO CENTERLINE OF FOUNDATION - 1/24 OF PIER DIAMETER UP TO A MAXIMUM OF 2" (51mm).
8. ANCHOR BOLT SPACING - 1/16" (2mm).
9. ANCHOR BOLT CIRCLE ORIENTATION - 0.25 DEGREE.
10. ANCHOR BOLT CIRCLE DIAMETER - PLUS OR MINUS 1/16" (2mm).

SELF-SUPPORTING TOWERS

11. FACE SPREAD DIMENSION CENTER TO CENTER OF ANCHOR BOLT CIRCLES - PLUS OR MINUS 1/16" (2mm) OR 1/16" (2mm) PER 20 FT. (6m) OF FACE SPREAD.
12. MAXIMUM DIFFERENCE BETWEEN ANY TWO FOUNDATION ELEVATIONS - 1/2" (13mm).

GUYED TOWERS

13. GUY RADIUS - PLUS OR MINUS 5% OF DISTANCE SPECIFIED.
14. ANCHOR ELEVATION - PLUS OR MINUS 5% OF GUY RADIUS.
15. ANCHOR ALIGNMENT (PERPENDICULAR TO GUY RADIUS) - 1.0 DEGREE.
16. ANCHOR ROD SLOPE - PLUS OR MINUS 1.0 DEGREE.
17. ANCHOR ROD ALIGNMENT WITH GUY RADIUS PLUS OR MINUS 1.0 DEGREE.
18. ANCHOR HEAD OUT OF PLUMB - 1.0 DEGREE.
19. GUY INITIAL TENSION - PLUS OR MINUS 10% OF TENSION SPECIFIED.

NOTE: TOLERANCES IN NOTES 13 AND 14 CAN NOT OCCUR SIMULTANEOUSLY

WARNING!!!

AFTER ANCHOR BOLTS ARE INSTALLED IN CONCRETE HAS TAKEN ITS INITIAL SET, ANCHOR BOLTS MUST NOT BE MOVED, BENT OR REALIGNED IN ANY MANNER. A NUT LOCKING DEVICE MUST BE INSTALLED ON ALL ANCHOR BOLTS.

FILE NO.
Standard-SSV

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP
8	REMARK TO AUTOCAD DATE: [illegible]	JDA	JDH	KLA

DWG REFERENCE

RADIAN

www.radianerp.com
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FOUNDATION
AND ANCHOR TOLERANCES

DWN:	CHKD:	DATE:
CSR	KTL	Sep/25/1987

ENGR:	ENGR APPD:
XX	XX

DRAWING NO:	REV:
A810214	8

STANDARD FOUNDATION NOTES

1. FOUNDATION DESIGNS ARE IN ACCORDANCE WITH ANSI/TIA/EIA/-222-F, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES", SECTION 7, FOR "NORMAL" SOIL CONDITIONS. "NORMAL" SOIL IS DEFINED AS DRY, COHESIVE SOIL WITH AN ALLOWABLE NET VERTICAL BEARING CAPACITY OF 4000 PSF (192 kPa) AND AN ALLOWABLE NET HORIZONTAL PRESSURE OF 400 PSF PER LINEAL FOOT OF DEPTH (62.8 kPa PER LINEAL METER OF DEPTH) TO A MAXIMUM OF 4000 PSF (192 kPa).

2. THE PURCHASER MUST VERIFY THAT ACTUAL SITE SOIL PARAMETERS MEET OR EXCEED E.I.A. "NORMAL" SOIL PARAMETERS AND THAT THE DEPTH OF STANDARD FOUNDATIONS ARE ADEQUATE BASED ON THE FROST PENETRATION AND/OR ZONE OF SEASONAL MOISTURE VARIATION AT THE SITE. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT "NORMAL" SOIL PARAMETERS ARE NOT APPLICABLE FOR THE ACTUAL SUBSURFACE CONDITIONS ENCOUNTERED.

3. FOUNDATION DESIGNS ASSUME FIELD INSPECTIONS WILL BE PERFORMED BY THE PURCHASER'S REPRESENTATIVE TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON THE CONDITIONS EXISTING AT THE SITE.

4. WORK SHALL BY IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.

5. ANCHOR BOLTS SHALL MEET OF EXCEED THE REQUIREMENTS OF ASTM F1554-S2, S5 GRADE 105 AND SHALL BE TIGHTENED TO A SNUG TIGHT CONDITION (FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH).

6. NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL ANCHOR BOLTS.

7. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.

8. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENT OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI (20.7 MPa) IN 28 DAYS.

9. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 1/3 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. MAXIMUM SIZE MAY BE INCREASED TO 2/3 CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS OR VOIDS.

10. REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.

11. REINFORCING CAGES SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE.

12. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.

13. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES (76 mm) UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH (76 mm) MINIMUM COVER ON REINFORCEMENT.

14. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES (76 mm) NOR BE LESS THAN 2 INCHES (51 mm).

15. SPACERS SHALL BE ATTACHED INTERMITTENTLY THROUGHOUT THE ENTIRE LENGTH OF VERTICAL REINFORCING CAGES TO INSURE CONCENTRIC PLACEMENT OF CAGES IN EXCAVATIONS.

16. FOUNDATION DESIGNS ASSUME STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH (200 mm) MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D698. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 100 POUNDS PER CUBIC FOOT (16 kN/m3).

17. FOUNDATION DESIGNS ASSUME LEVEL GRADE AT THE SITE.

18. FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.

19. FOR FOUNDATION AND ANCHOR TOLERANCES SEE STRUCTURE ASSEMBLY DRAWING.

20. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.

21. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.

22. FREE FALL CONCRETE MAY BE USED PROVIDED FALL IS VERTICAL DOWN WITHOUT HITTING SIDES OF EXCAVATION, FORMWORK, REINFORCING BARS, FORM TIES, CAGE BRACING OR OTHER OBSTRUCTIONS. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH WATER.

23. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL EXCEPT FOR PIERS OF PIER AND PAD FOUNDATIONS. FORMS FOR PIERS SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.

24. CONSTRUCTION JOINTS, IF REQUIRED IN PIER MUST BE AT LEAST 12 INCHES (305 mm) BELOW BOTTOM OF EMBEDMENTS AND MUST BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH (6 mm). FOUNDATION DESIGN ASSUMES TO OTHER CONSTRUCTION JOINTS.

25. TOP OF FOUNDATION OUTSIDE LIMITS OF ANCHOR BOLTS SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISHED. AREA INSIDE LIMITS OF ANCHOR BOLTS SHALL BE LEVEL WITH A SCRATCHED FINISH.

26. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" (19 mm X 19 mm) MINIMUM.

27. FOR ANCHOR BLOCK TYPE FOUNDATIONS, THE PORTION OF ALL STEEL ANCHORS, FROM TOP OF ANCHOR BLOCK TO GROUND LEVEL, SHALL BE COATED WITH BITUMEN. DESIGN ASSUMES PERIODIC INSPECTIONS WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE TO DETERMINE IF ADDITIONAL ANCHOR CORROSION PROTECTION MEASURES MUST BE IMPLEMENTED BASED ON OBSERVED SITE-SPECIFIC CONDITIONS.

FILE NO.
Standard-SSV

REVISIONS

REV	DESCRIPTION	DWN	CHK	APP
11	REMARK IN AUTOCAD DATE: Apr/04/2006	H.P	JKH	H.A

DWG REFERENCE

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FOUNDATION
MATERIAL INSTALLATION NOTES

DWN:	CHK'D:	DATE:
CSR	H.A	Jun/17/1984

ENG'R:	ENG'R APP'D:
XX	

DRAWING NO:	REV:
B841300	11

NOTE-TOWER DESIGN, WIND PRESSURES, AND SHAPE FACTORS CONFORM TO STANDARDS SET BY TIA/EIA-222-F-1996. HA

A BRIEF DESCRIPTION OF THE DESIGN REQUIREMENTS FOLLOWS-

1. 30', (32' ACTUAL HT), SSV STRESS ANALYSIS
2. DESIGN WIND LOAD PER 2003 INTERNATIONAL BUILDING CODE (IBC)
3. USING ANSI/TIA/EIA-222-F-1996 IN ACCORDANCE WITH SECTION 3108.4,
4. 120 MPH 3-SECOND GUST WIND SPEED (0.5" RADIAL ICE LOAD) AND
5. 100 MPH BASIC WIND SPEED (FASTEST MILE) (0.5" RADIAL ICE LOAD)
6. CUSTOMER: CHEVRON USA
7. TOWER SITE: GARFIELD, CO
8. This data is located@ W:\Engr\W\eeh\58053EH.ssv

INPUT PARAMETERS
****

32' ACTUAL HT.

SAFETY CABLE ONLY

TOWER HEIGHT = 30.0 FEET
BASE ELEVATION = .0 FEET
WIND VELOCITY = 100.00 MPH

EXPOSURE = C
IMPORTANCE FACTOR = 1.000
RADIAL ICE = .00 IN.
Gh = 1.250

PROJ. AREA OF ~~LADDER~~, ROUND = .031 SQ.FT/FT FACE = N
PROJ. AREA OF LADDER, FLAT = .000 SQ.FT/FT FACE = N
UNIFORM WEIGHT OF LADDER = .001 KIPS/FT

ESCALATED WINDLOADS ARE CALCULATED AT EACH SECTION MID-HEIGHT,
WINDLOADS ARE LISTED FROM TOP TO BOTTOM :

FROM 30.0 FEET TO 20.0 FEET USE .0320 KSF
FROM 20.0 FEET TO .0 FEET USE .0320 KSF

DESCRIPTION OF LOADS	ANTENNA ELEVATION (FEET)	WIND PRESSURE (K/SQ-FT)	EFF. ANT. PROJ.AREA (SQ.FT.)	DEAD LOAD OF ANT. (KIPS)	PROJ. AREA OF APPURTENANCES (SQ.FT./FT.) ROUNDS	FACE	FLATS	FACE	DEAD LOAD OF APPUR. (KIPS/FT)	EFF.PROJ. AREA*M.A. (SQ.FT-FT)	ASSUMED TORQUE (FT-K)
W.STATION + STUB MT + L.R	33.0	.0320	9.00	.25	.000	0	.000	0	.000	24.30	.78
6' DISH W/ RAD ----------	30.0	.0320	37.40	.60	.427	1	.326	1	.006	150.00	4.80
2- 4 SQ FT TWO-WAY ANT --	30.0	.0320	.00	.00	.000	0	.000	0	.000	.00	.00
3- OMNI ON 3' S.A. ------	28.0	.0320	35.40	.65	.651	1	.000	0	.007	.00	.00
+ 4 YAGI LEG MOUNTED ----	28.0	.0320	.00	.00	.000	0	.000	0	.000	50.00	1.60
2' DISH W/ RAD ----------	25.0	.0320	2.80	.03	.093	1	.000	0	.001	-3.30	-.11
WVG LADDER ----------	20.0	.0320	.00	.00	.000	0	.326	2	.004	.00	.00
2' DISH W/ RAD ----------	18.0	.0320	2.00	.03	.093	1	.000	0	.001	-5.00	-.16
2' DISH W/ RAD ----------	15.5	.0320	2.00	.03	.093	2	.000	0	.001	-5.00	-.16
3- TWO WAY ANT. LEG MTD.	15.0	.0320	20.00	.27	.279	2	.000	0	.002	35.00	1.12
6' DISH W/ RAD ----------	10.0	.0320	25.40	.30	.188	2	.000	0	.001	100.00	3.20
4- 2'x4' SOLAR PANELS ---	7.0	.0320	44.80	.40	.053	2	.000	0	.001	45.00	1.44
2- BATTERY / EQUIP BOXES	4.0	.0320	10.00	.40	.106	2	.000	0	.001	20.00	.64

WINDLOAD ON TOWER SECTIONS AND SUMMARY OF WEIGHTS

COLUMN 1 TOWER SECTION NUMBER		COLUMN 2 WIND ON & UNIF. APPURT. (KIPS)	COLUMN 3 WIND ON SECTION CONCENTR. EFF.PROJ AREAS (KIPS)	COLUMN 4 TOTAL WIND FOR EA. TWR. SECTION (KIPS)	COLUMN 5 WEIGHT OF HDWE. FOR EACH SECTION (KIPS)	COLUMN 6 WT. OF EA. SECTION W/ ICE/HDWE. IF PRESENT (KIPS)	COLUMN 7 TOTAL ACCUMULATED SEC.WTS. (KIPS)	COLUMN 8 WT./SEC. OF TOWER STEEL ONLY (KIPS)	COLUMN 9 ACCUM. WEIGHT OF TOWER STEEL (KIPS)
6NB	**N	1.031	2.707	3.739	1.66	2.12	2.12	.45 (.15)	.45
6NST	**N	2.476	3.334	5.811	1.89	2.70	4.81	.80 (.29)	1.26

TOTAL INCREASED TOWER WEIGHT, IN ADDITION TO THE STANDARD TOWER SECTIONS = .45 KIPS

***** SECTION STATUS INDICATORS *****

FOR EXAMPLE, 6NB **N
^^^...HORIZONTAL BRACE INDICATOR
||....DIAGONAL BRACE INDICATOR
|.....LEG INDICATOR

INDICATORS ARE:
. (PERIOD) ---- = MEMBER NOT BEEFED
* (ASTERISK) -- = MEMBER BEEFED
! (EXCLAMATION) = NO MEMBER LARGE ENOUGH
? (QUESTION) -- = INCORRECT DATA
N ---------- = NOT APPLICABLE

SHEARS, OVERTURNING MOMENTS AND LEG DATA

COLUMN 10 TOWER SECTION NUMBER		COLUMN 11 DISTANCE BELOW TOP (FT.)	COLUMN 12 APPROX. CENTER-CENTER OF LEGS (FT.)	COLUMN 13 TOTAL ACCUM. SHEAR ON TOWER (KIPS)	COLUMN 14 TOTAL OVER-TURNING MOMENTS (FT-KIPS)	COLUMN 15 MAXIMUM TENSION FOR ONE LEG (KIPS)	COLUMN 16 MAXIMUM COMP. FOR ONE LEG (KIPS)	COLUMN 17 MAXIMUM ALLOWABLE CAPACITY (KIPS)	COLUMN 18 TOWER LEG DIMENSION (INCHES)
6NB	**N	10.0	4.58	3.74	30.26	6.96	8.42[.15]	56.91	PIPE2.5STD
6NST	**N	30.0	4.58	9.55	160.42	39.02	42.43[.75]	56.91	PIPE2.5STD

<<<<< NOTE >>>>> THE ALLOWABLE CAPACITIES ON THIS ANALYSIS INCLUDE A 33.3 PERCENT INCREASE.
<<<<< NOTE >>>>> [ ] SHOWS LOAD/CAPACITY RATIO.

REACTIONS FOR FOUNDATION DESIGN

COMPRESSION/LEG	42.78 ~~42.43~~ KIPS
TENSION/LEG	39.02 KIPS
SHEAR/LEG	6.37 KIPS
TOTAL SHEAR	9.55 KIPS
OVERTURNING MOMENT	160.42 FT-KIPS

ANCHOR BOLTS REQUIRED 12 - 5/8" ø x 42" LG

FOUNDATION # F6 MAT

BRACING LOADS, SIZES AND BOLTS

COLUMN 19 TOWER SECTION NUMBER	COLUMN 20 HORIZ. COMP. OF SHEAR IN ONE FACE (KIPS)	COLUMN 21 HORIZ. COMP. OF LEG LOAD (KIPS)	COLUMN 22 REMAINING SHEAR TO BE TAKEN BY BRACES (KIPS)	COLUMN 23 MAX.AXIAL LOAD FOR TOWER BRACING (KIPS)	COLUMN 24 AXIAL LD. COLUMN CAPACITY OF BRACES (KIPS)	COLUMN 25 ANGLE/PIPE */SOLID RD. BAR/ BRACE DIMENSION (INCHES)	COLUMN 26 BRACE CONNECT. CAPACITY (KIPS)	COLUMN 27 NO.& SIZE OF BRACE BOLTS REQUIRED PER CONN.
6NB **N	4.275	.000	4.275	2.849 [.42]	10.598	L1.75X3/16	<M> 6.80	1-5/8 IN. DIA. .250 IN. CLIP
6NST **N	9.681	.000	9.681	6.452 [.95]	10.598	L1.75X3/16	<M> 6.80	1-5/8 IN. DIA. .250 IN. CLIP

<<<<< NOTE >>>>> THE ALLOWABLE CAPACITIES ON THIS ANALYSIS INCLUDE A 33.3 PERCENT INCREASE.
<<<<< NOTE >>>>> [ ] SHOWS MAX.LOAD/CAPACITY RATIO.

IF THE SYMBOL--(*)--APPEARS AFTER THE BOLT SIZE, IT INDICATES THAT THREADS MUST BE EXCLUDED FROM SHEAR PLANES.
IF THE SYMBOL--(H)--APPEARS AFTER THE LOADS ABOVE, IT INDICATES THAT THE LOADS ARE FOR THE MAIN HORIZONTAL.
IF THE SYMBOL--*--APPEARS AFTER THE CLIP SIZE, IT INDICATES THAT THE HORIZONTAL BRACE CONTROLLED THE CLIP AND BOLT SIZE.
IF THE SYMBOL--(+)--APPEARS AFTER THE DIAGONAL CAPACITY(COL. 24), IT INDICATES THE HORIZONTAL BRACE CAPACITY CONTROLS THE DIAGONAL BRACE CAPACITY.

THE LETTER APPEARING BEFORE THE CONNECTION CAPACITY IN COLUMN 26 INDICATES THE CONTROLLING FACTOR.
<B> = BRACE BOLT CONTROLS CONNECTION CAPACITY; <C> = BRACE CLIP CONTROLS; <M> = BRACE CONTROLS.

TWIST AND DEFLECTION DATA

COLUMN 28 TOWER SECTION NUMBER		COLUMN 29 TWIST FOR EACH TOWER SECTION (DEGREES)	COLUMN 30 TOTAL ACCUMULATED TWIST (DEGREES)	COLUMN 31 DEFLECTION FOR EA. TOWER SECTION (DEGREES)	COLUMN 32 TOTAL ACCUMULATED DEFL. (DEGREES)
6NB	**N	.070	.286	.017	.227
6NST	**N	.216	.216	.211	.211

NOTE-TOWER DESIGN, WIND PRESSURES, AND SHAPE FACTORS CONFORM TO STANDARDS SET BY TIA/EIA-222-F-1996. HA

A BRIEF DESCRIPTION OF THE DESIGN REQUIREMENTS FOLLOWS-

1. 30', (32' ACTUAL HT), SSV STRESS ANALYSIS
2. DESIGN WIND LOAD PER 2003 INTERNATIONAL BUILDING CODE (IBC) USING ANSI/TIA/EIA-2
3. 120 MPH 3-SECOND GUST WIND SPEED (0.5" RADIAL ICE LOAD) AND
4. 100 MPH BASIC WIND SPEED (FASTEST MILE) (0.5" RADIAL ICE LOAD)
5. CUSTOMER: CHEVRON USA
6. TOWER SITE: GARFIELD, CO
7. This data is located@ W:\Engr\W\eeh\58053EHIC.s

INPUT PARAMETERS
****

32' ACTUAL HT.

SAFETY CABLE ONLY

TOWER HEIGHT = 30.0 FEET
BASE ELEVATION = .0 FEET
WIND VELOCITY = 100.00 MPH

EXPOSURE = C
IMPORTANCE FACTOR = 1.000
RADIAL ICE = .50 IN.
Gh = 1.250

PROJ. AREA OF ~~LADDER~~, ROUND = .122 SQ.FT/FT FACE = N
PROJ. AREA OF LADDER, FLAT = .000 SQ.FT/FT FACE = N
UNIFORM WEIGHT OF LADDER = .002 KIPS/FT

ESCALATED WINDLOADS ARE CALCULATED AT EACH SECTION MID-HEIGHT,
WINDLOADS ARE LISTED FROM TOP TO BOTTOM :

FROM 30.0 FEET TO 20.0 FEET USE .0240 KSF
FROM 20.0 FEET TO .0 FEET USE .0240 KSF

>>>>>> >>> NOTE : ALL WIND PRESSURES HAVE BEEN REDUCED TO 75% OF ORIGINAL PRESSURES <<< <<<<<<

DESCRIPTION OF LOADS	ANTENNA ELEVATION (FEET)	WIND PRESSURE (K/SQ-FT)	EFF. ANT. PROJ.AREA (SQ.FT.)	DEAD LOAD OF ANT. (KIPS)	PROJ. AREA OF APPURTENANCES (SQ.FT./FT.) ROUNDS	FACE	FLATS	FACE	DEAD LOAD OF APPUR. (KIPS/FT)	EFF.PROJ. AREA*M.A. (SQ.FT-FT)	ASSUMED TORQUE (FT-K)
W.STATION + STUB MT + L.R	33.0	.0240	10.50	.35	.000	0	.000	0	.000	27.00	.65
6' DISH W/ RAD ----------	30.0	.0240	44.00	.85	.624	1	.445	1	.014	175.00	4.20
+ 2- 4 SQ FT TWO-WAY ANT.	30.0	.0240	.00	.00	.000	0	.000	0	.000	.00	.00
3- OMNI ON 3' S.A. ------	28.0	.0240	49.80	1.00	1.237	1	.000	0	.011	75.00	1.80
+ 4 YAGI LEG MOUNTED ----	28.0	.0240	.00	.00	.000	0	.000	0	.000	.00	.00
2' DISH W/ RAD ----------	25.0	.0240	2.90	.05	.177	1	.000	0	.002	-3.30	-.08
WVG LADDER ----------	20.0	.0240	.00	.00	.000	0	.445	2	.008	.00	.00
2' DISH W/ RAD ----------	18.0	.0240	2.10	.05	.137	1	.000	0	.002	-5.00	-.12
2' DISH W/ RAD ----------	15.5	.0240	2.10	.05	.177	2	.000	0	.002	-5.00	-.12
3- TWO WAY ANT. LEG MTD.	15.0	.0240	29.60	.45	.531	2	.000	0	.005	35.00	.84
6' DISH W/ RAD ----------	10.0	.0240	26.00	.45	.271	2	.000	0	.002	110.00	2.64
4- 2'x4' SOLAR PANELS ---	7.0	.0240	47.60	.60	.137	2	.000	0	.001	47.00	1.13
2- BATTERY / EQUIP BOXES	4.0	.0240	15.00	.50	.274	2	.000	0	.002	30.00	.72

WINDLOAD ON TOWER SECTIONS AND SUMMARY OF WEIGHTS

COLUMN 1 TOWER SECTION NUMBER	COLUMN 2 WIND ON SECTION & UNIF. APPURT. (KIPS)	COLUMN 3 WIND ON CONCENTR. EFF.PROJ AREAS (KIPS)	COLUMN 4 TOTAL WIND FOR EA. TWR. SECTION (KIPS)	COLUMN 5 WEIGHT OF HDWE. FOR EACH SECTION (KIPS)	COLUMN 6 WT. OF EA. SECTION W/ ICE/HDWE.- IF PRESENT (KIPS)	COLUMN 7 TOTAL ACCUM- ULATED SEC.WTS. (KIPS)	COLUMN 8 WT./SEC. OF TOWER STEEL ONLY (KIPS)	COLUMN 9 ACCUM. WEIGHT OF TOWER STEEL (KIPS)
6NB-1 **N	1.123	2.573	3.696	2.51	3.19	3.19	.45 (.15)	.45
6NST-1 **N	2.658	2.938	5.595	3.02	4.19	7.38	.80 (.29)	1.26

TOTAL INCREASED TOWER WEIGHT, IN ADDITION TO THE STANDARD TOWER SECTIONS = .45 KIPS

***** SECTION STATUS INDICATORS *****

FOR EXAMPLE, 6NB-1 **N
^^^...HORIZONTAL BRACE INDICATOR
||....DIAGONAL BRACE INDICATOR
|.....LEG INDICATOR

INDICATORS ARE:
. (PERIOD) ---- = MEMBER NOT BEEFED
* (ASTERISK) -- = MEMBER BEEFED
! (EXCLAMATION) = NO MEMBER LARGE ENOUGH
? (QUESTION) -- = INCORRECT DATA
N ---------- = NOT APPLICABLE

SHEARS, OVERTURNING MOMENTS AND LEG DATA

COLUMN 10 TOWER SECTION NUMBER	COLUMN 11 DISTANCE BELOW TOP (FT.)	COLUMN 12 APPROX. CENTER-CENTER OF LEGS (FT.)	COLUMN 13 TOTAL ACCUM. SHEAR ON TOWER (KIPS)	COLUMN 14 TOTAL OVER-TURNING MOMENTS (FT-KIPS)	COLUMN 15 MAXIMUM TENSION FOR ONE LEG (KIPS)	COLUMN 16 MAXIMUM COMP. FOR ONE LEG (KIPS)	COLUMN 17 MAXIMUM ALLOWABLE LEG CAPACITY (KIPS)	COLUMN 18 TOWER LEG DIMENSION (INCHES)
6NB-1 **N	10.0	4.58	3.70	29.19	6.38	8.59[.15]	56.91	PIPE2.5STD
6NST-1 **N	30.0	4.58	9.29	156.89	37.47	42.78[.75]	56.91	PIPE2.5STD

<<<<< NOTE >>>>> THE ALLOWABLE CAPACITIES ON THIS ANALYSIS INCLUDE A 33.3 PERCENT INCREASE.
<<<<< NOTE >>>>> [ ] SHOWS LOAD/CAPACITY RATIO.

REACTIONS FOR FOUNDATION DESIGN

COMPRESSION/LEG		42.78 KIPS
TENSION/LEG	34.02	~~37.47~~ KIPS
SHEAR/LEG	6.77	~~6.19~~ KIPS
TOTAL SHEAR	9.55	~~9.29~~ KIPS
OVERTURNING MOMENT	169.48	~~156.89~~ FT-KIPS

ANCHOR BOLTS REQUIRED 12- 5/8"Ø x 42" LG

FOUNDATION # F6 MAT

BRACING LOADS, SIZES AND BOLTS

COLUMN 19 TOWER SECTION NUMBER	COLUMN 20 HORIZ. COMP. OF SHEAR IN ONE FACE (KIPS)	COLUMN 21 HORIZ. COMP. OF LEG LOAD (KIPS)	COLUMN 22 REMAINING SHEAR TO BE TAKEN BY BRACES (KIPS)	COLUMN 23 MAX.AXIAL LOAD FOR TOWER BRACING (KIPS)	COLUMN 24 AXIAL LD. COLUMN CAPACITY OF BRACES (KIPS)	COLUMN 25 ANGLE/PIPE/SOLID RD./BAR/ BRACE DIMENSION (INCHES)	COLUMN 26 BRACE CONNECT. CAPACITY (KIPS)	COLUMN 27 NO.& SIZE OF BRACE BOLTS REQUIRED PER CONN.
6NB-1 **N	4.120	.000	4.120	2.746 [.40]	10.598	L1.75X3/16	<M> 6.80	1-5/8 IN. DIA. .250 IN. CLIP
6NST-1 **N	9.132	.000	9.132	6.086 [.90]	10.598	L1.75X3/16	<M> 6.80	1-5/8 IN. DIA. .250 IN. CLIP

<<<<< NOTE >>>>> THE ALLOWABLE CAPACITIES ON THIS ANALYSIS INCLUDE A 33.3 PERCENT INCREASE.
<<<<< NOTE >>>>> [ ] SHOWS MAX.LOAD/CAPACITY RATIO.

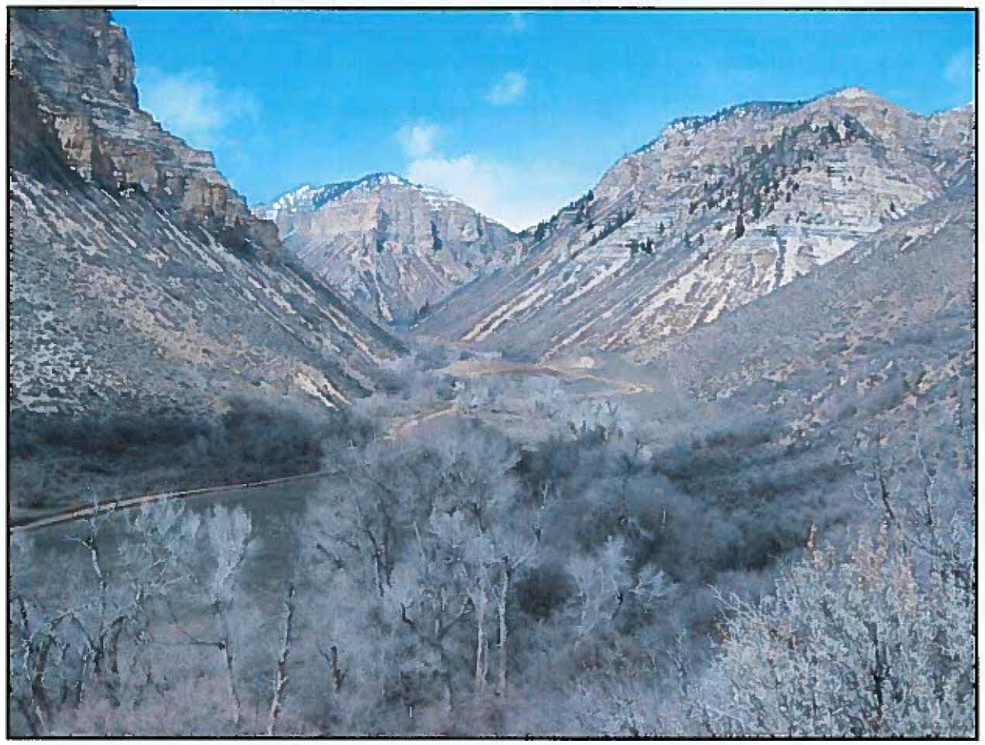
IF THE SYMBOL--(*)--APPEARS AFTER THE BOLT SIZE, IT INDICATES THAT THREADS MUST BE EXCLUDED FROM SHEAR PLANES.
IF THE SYMBOL--(H)--APPEARS AFTER THE LOADS ABOVE, IT INDICATES THAT THE LOADS ARE FOR THE MAIN HORIZONTAL.
IF THE SYMBOL--*--APPEARS AFTER THE CLIP SIZE, IT INDICATES THAT THE HORIZONTAL BRACE CONTROLLED THE CLIP AND BOLT SIZE.
IF THE SYMBOL--(+)--APPEARS AFTER THE DIAGONAL CAPACITY(COL. 24), IT INDICATES THE HORIZONTAL BRACE CAPACITY CONTROLS THE DIAGONAL BRACE CAPACITY.

THE LETTER APPEARING BEFORE THE CONNECTION CAPACITY IN COLUMN 26 INDICATES THE CONTROLLING FACTOR.
<B> = BRACE BOLT CONTROLS CONNECTION CAPACITY; <C> = BRACE CLIP CONTROLS; <M> = BRACE CONTROLS.

TWIST AND DEFLECTION DATA

COLUMN 28 TOWER SECTION NUMBER		COLUMN 29 TWIST FOR EACH TOWER SECTION (DEGREES)	COLUMN 30 TOTAL ACCUMULATED TWIST (DEGREES)	COLUMN 31 DEFLECTION FOR EA. TOWER SECTION (DEGREES)	COLUMN 32 TOTAL ACCUMULATED DEFL. (DEGREES)
6NB-1	**N	.065	.257	.016	.222
6NST-1	**N	.192	.192	.206	.206

Chevron – Tom Creek
Integrated Vegetation and Noxious Weed Management Plan
Garfield County, Colorado



Looking north along Tom Creek drainage

Prepared for:
Chevron North America Exploration and Production Company

Prepared by:
WestWater Engineering
2516 Foresight Circle #1
Grand Junction, CO 81505

April 2008

1.0 INTRODUCTION

1.1 Project Description

Chevron North America Exploration and Production Company (Chevron) is planning a series of projects in the Clear Creek / Tom Creek drainages in Garfield County, approximately 17 miles northwest of Parachute, Colorado. These projects include existing and proposed well pads, a central production facility site, fresh water and produced water ponds, and pipeline alignments. The project area referred to in this report is approximately 400 acres in size (Figure 1).

2.0 LANDSCAPE SETTING

2.1 Terrain and Vegetation Communities

The terrain ranges from very steep mountain side-slopes to gently sloping valley bottoms (Appendix C. Photos 2 and 3). Elevations in the project area range from 6,850 feet in the Tom Creek drainage to 5,950 feet in the Clear Creek bottom land.

The predominant vegetation community in the northern Tom Creek drainage bottom is mountain boxelder (*Acer negundo*), scattered Douglas-fir (*Pseudotsuga menziesii*), redosier dogwood (*Cornus sericea*), mountain big sagebrush (*Artemisia tridentata* Nutt. ssp. *vaseyana*), and oakbrush (*Quercus gambelii*). The mountain side-slope vegetation includes mountain big sage, Wyoming big sagebrush (*Artemisia tridentata* Nutt. ssp. *wyomingensis*), Utah serviceberry (*Amelanchier utahensis*), oakbrush, and Indian ricegrass (*Achnatherum hymenoides*). The mountain side-slopes also contain barren areas of steep shale talus, which supports small populations of sun-loving meadowrue (*Thalictrum heliophilum*).

Vegetation in the Potts Creek drainage and the Tom Creek drainage south of the Potts Creek confluence are similar. Mountain boxelder and narrowleaf cottonwood (*Populus angustifolia*) are common trees. Shrubs are dominated by basin big sagebrush (*Artemisia tridentata* Nutt. ssp. *tridentata*) and Wyoming big sagebrush, although some mountain big sagebrush is also found. Vegetation on the steep side-slopes is mountain big sagebrush, oakbrush, Utah serviceberry, and often thick Indian ricegrass. The mountain side-slopes also contain barren areas of steep shale talus, which support small populations of sun-loving meadowrue and Roan Cliffs blazingstar (*Mentzelia rhizomata*).

Along Clear Creek the dominant trees are boxelder, New Mexico locust (*Robinia neomexicana*) and narrow leaf cottonwood. Basin big sagebrush is the predominant shrub along with various (often weedy) forbs and grasses. The vegetation on the east-facing side-slope of Clear Creek drainage consists of very thick Utah serviceberry, scattered oakbrush, and abundant creeping barberry (*Mahonia repens*). Vegetation on the drier west-facing slope includes Utah juniper (*Juniperus osteosperma*), shadscale saltbush (*Atriplex confertifolia*), Osterhout's penstemon (*Penstemon osterhoutii*), rubber rabbitbrush (*Ericameria nauseosa*), basin big sagebrush and Indian ricegrass.

2.2 Soil Types

The Chevron Clear Creek / Tom Creek Weed Survey project area includes just three main types of soil. The northerly portion of the project area includes part of the Tom Creek drainage and the

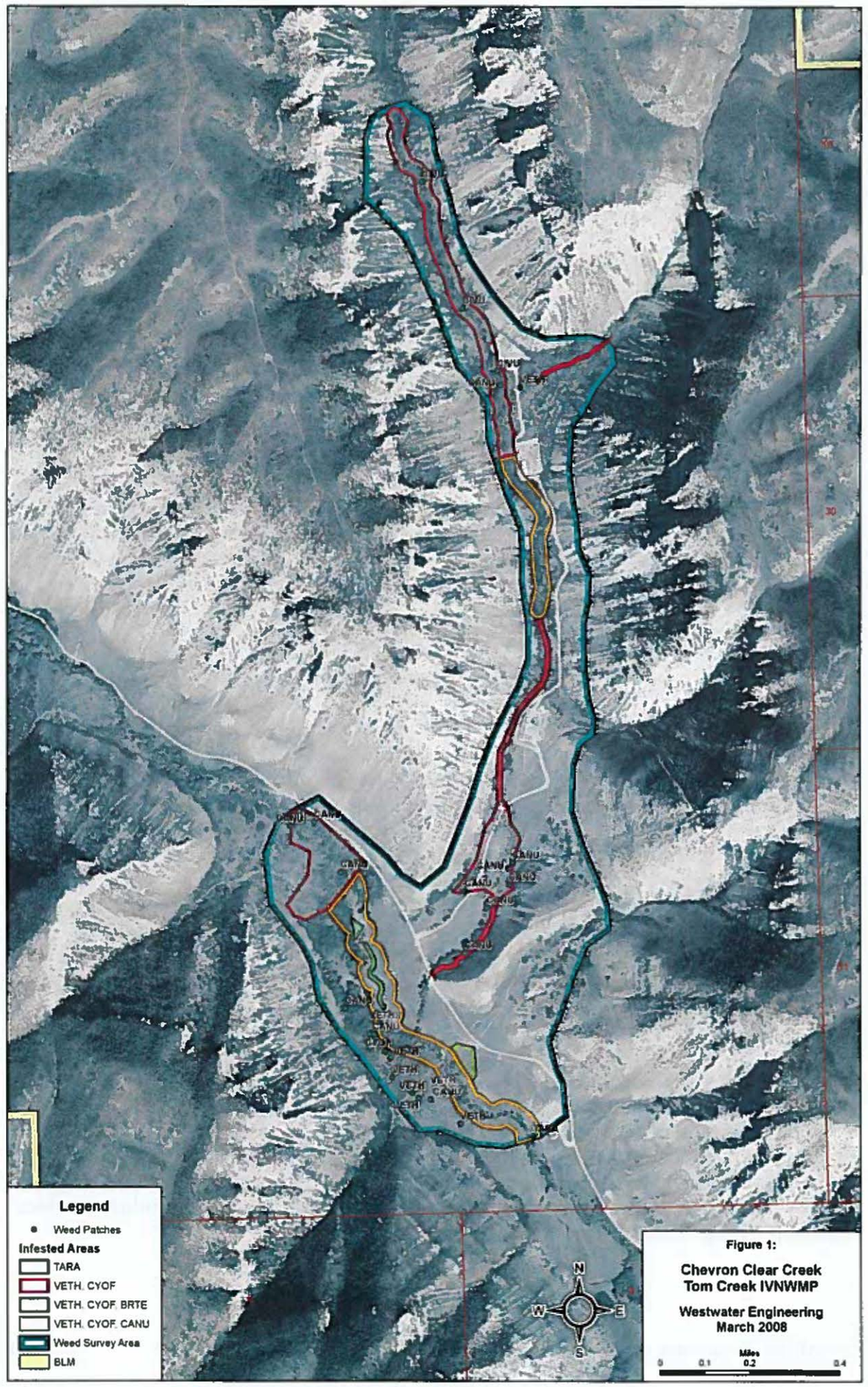


Figure 1:

Chevron Clear Creek
Tom Creek IVNWMP

Westwater Engineering
March 2008

lower end of the Potts Creek drainage in Sections 24 and 25, T.5 S., R.98 W. This portion of the survey area lies entirely on Grobutte very channery loam, 30-60% slopes. The Grobutte soil formed on mountain sides and hills from mixed colluvium parent material. Characteristic native vegetation is Wyoming big sagebrush, bluebunch wheatgrass (*Pseudoroegneria spicata*), needle and thread grass (*Hesperostipa comata*), and Indian ricegrass.

South of Section 25, the Tom Creek drainage broadens and the terrain becomes less steep along the creek. The soil here consists of Happle very channery sandy loam, 12-25% slopes. The Happle soil formed on toeslopes and alluvial fans from Green River formation alluvium or colluvium. Characteristic native vegetation on the Happle soil is Wyoming big sagebrush, bluebunch wheatgrass, needle and thread grass, and Indian ricegrass. The steeper areas on either side of Tom Creek are on Grobutte soil as described above.

The southern portion of the project area includes short stretches of Clear Creek drainage both above and below the confluence with Tom Creek. The very steep areas lie on Grobutte soil. Gentler slopes near Clear Creek consist of the Happle soil. The almost level flood plain of Clear Creek lies on Cumulic Haploboroll, 1-3% slopes. The Cumulic Haploboroll formed from Wasatch shale or Green River shale alluvium and has a thickened surface horizon from material added during seasonal flooding. Vegetation observed on the Cumulic Haploboroll soil is primarily mountain boxelder and introduced and naturalized New Mexico locust. The New Mexico locust has crowded out most native shrubs one would expect such as skunkbush sumac (*Rhus trilobata*) and willows (*Salix* spp.), see Appendix C, Photo 4.

3.0 NOXIOUS WEEDS

Noxious weeds are plants that are not native to an area. Most have come from Europe or Asia, either accidentally or as ornamentals that have escaped. Once established in a new environment they tend to spread quickly since insects, diseases and animals that normally control them are absent. Noxious weeds are spread by man, animals, water, and wind. Prime locations for the establishment of noxious weeds include roadsides, sites cleared for construction, areas that are overused by animals or humans, wetlands, and riparian corridors. Subsequent to soil disturbances, vegetation communities can be susceptible to infestations of invasive or exotic weed species. Vegetation removal and soil disturbance during construction can create optimal conditions for the establishment of invasive, non-native species. Construction equipment traveling from weed-infested areas into weed-free areas could disperse noxious or invasive weed seeds and propagates, resulting in the establishment of these weeds in previously weed-free areas (Photo 1).

The Colorado Noxious Weed Act (State of Colorado 2005) requires local governing bodies to develop noxious weed management plans. Both the State of Colorado and Garfield County (Garfield County Vegetation Management and Garfield County Weed Advisory Board 2002)maintain a list of plants that are considered to be noxious weeds. The State of Colorado noxious weed list includes three categories. List A species must be eradicated whenever detected (none were found). List B species include weeds whose spread should be halted (4 species found). List C species are widespread, but the State will assist local jurisdictions which choose to manage those weeds (2 species found).

Photo 1. Potential weed vector – accumulated soil on equipment

The Garfield County Weed Advisory Board has compiled a list of 21 plants from the State list considered to be noxious weeds within the county (see Appendix A). Three of those weed species were found in, or near, the project area. The Garfield County Weed Advisory Board has duties to:

1) develop a noxious weed list;
2) develop a weed management plan for designated noxious weeds; and
3) recommend to the Board of County Commissioners (BOCC) that identified landowners submit an integrated weed management plan for their properties.

3.1 Survey Methods

Mapped soil types, as published by the Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture (USDA), were reviewed to determine the soil types and vegetation characteristics of the plant site and surrounding property (NRCS 2008).

A field inspection of the project area was conducted by WestWater Engineering (WWE) biologists on April 1, 3, 11, and 15, 2008. WWE biologists surveyed the area to identify vegetation communities and to search for, identify, and map noxious weed species. Vegetation types were determined through field identification of plants, aerial photography, and on-the-ground assessments of plant abundance visible during the survey. Identification of plant species was aided by using pertinent published field guides (Whitson et al. 2001, CWMA 2007, Kershaw et al. 1998, Weber 2001). Photographs were taken of the general project location, vegetation, terrain, and other specific biological findings and can be found in Appendix C. Locations of weeds and other features included in this report were recorded with the aid of a handheld global positioning system instrument (GPS) using NAD83/WGS84 map datum, with all coordinate locations based on the Universal Transverse Mercator (UTM) coordinate system in Zone 12S.

3.2 Observations

The most prevalent listed weeds were common mullein, musk thistle, houndstongue, and downy brome. A problematic (but not listed) weed found in the project area was purple mustard (*Chorispora tenella*). It was found primarily in disturbed areas and abandoned fields. See Table 1 for the general location of listed weeds. Specific UTM coordinates of weeds can be found in Appendix B.

Table 1. Observed Noxious Weed Locations in the Project Area

Common Name* Scientific Name USDA Symbol	General Location and Comments
Bull Thistle[B] *Cirsium vulgare* CIVU	Very thinly scattered in the Tom Creek drainage bottom.
Common Mullein[C] *Verbascum thapsus* VETH	Very common from dry hillsides to valley bottoms. Scattered thinly on dry mountainsides and occasionally found in thick infestations, especially along riparian areas. See Appendix C, Photo 5.
Downy Brome[C] *Bromus tectorum* BRTE	Also known as cheatgrass. Can be found throughout much of the project area. Scattered very thinly on steeper mountain side-slopes. Some bottomland in Clear Creek and near the mouth of Tom Creek has denser infestations.
Houndstongue[B] ***Cynoglossum officinale*** **CYOF**	Thinly scattered on dry hillsides but can be found in consistently higher concentrations in drainage bottoms. See Appendix C, Photo 6.
Musk Thistle[B] ***Carduus nutans*** **CANU**	Scattered among common mullein in lower Tom Creek and in Clear Creek drainages. A few isolated small clusters were found in drier sites.
Tamarisk[B] ***Tamarix* sp.** **TARA**	Also called Salt Cedar. Common along Clear Creek.

* Government weed listing: **Bold** - Garfield County, Colorado. Superscript - Colorado State B or C list.

3.3 Treatment and Control of Noxious Weed Infestations

Invasive and noxious weeds commonly occur along ditches, creek corridors and adjacent drainages, especially along riparian areas, pipeline routes, disturbed areas such as well pads, and roadsides, and abandoned fields. Areas near Clear Creek and Tom Creek were frequently noted to have infestations of common mullein and houndstongue.

Three weed species from the Garfield County list were found in the project area and are indicated by bold type in Table 2. Included in Table 2 are weed life cycle type, state listing category, and recommended control methods for each weed species. Those in regular type were also observed during the survey and are listed by the State of Colorado as noted (CWMA 2007). The locations of these weeds were plotted on the project map (Figure 1). Except for a dense infestation on the east side of Clear Creek, south of the confluence of Tom Creek, downy brome was not plotted as it is very widespread throughout the area.

Table 2. Weed Control Methods

Common Name* Scientific Name USDA Symbol	Type**	Control Methods
Bull Thistle[B] *Cirsium vulgare* CIVU	B/A	Tilling or, because of the small number of plants, hand grubbing in the rosette stage. Mow at bolting or early flowering; Cut and bag mature seed heads. Herbicides in rosette stage.
Common Mullein[C] *Verbascum thapsus* VETH	B	Cut and dig rosettes and bolting plants prior to seed set; re-seed with aggressive grasses. Herbicides may be necessary on dense infestations.
Downy Brome[C] *Bromus tectorum* BRTE	A	Eliminate seed source; re-vegetate with native grasses; herbicide treatment in early spring and fall. Avoid overgrazing.
Houndstongue[B] ***Cynoglossum officinale*** **CYOF**	B	Re-seed with aggressive grasses, remove at flowering or early seed; dig or grub at pre-bud or rosette stage or apply herbicides prior to bud stage.
Musk Thistle[B] ***Carduus nutans*** **CANU**	B	Tillage or hand grubbing in the rosette stage, mowing at bolting or early flowering; seed head & rosette weevils, leaf feeding beetles, herbicides in rosette stage.
Tamarisk[B] ***Tamarix* sp.** **TARA**	P	Repeated flooding prevents seedling establishment. Herbicide treatment on basal portion of young plants; cut larger plants and treat with herbicide plus adjuvant within 30 minutes. Plant area with native species to shade out tamarisk. Biological with *Diorhabda elongata deserticola*, the tamarisk leaf beetle, if available (Tamarisk Coalition 2007).

* Government weed listing: **Bold** – Garfield County, Colorado. Superscript - Colorado State B or C list.
** Type: A-annual, B-Biennial, P-Perennial

3.4 Recommended Treatment Strategies

It is important to know whether the target is annual, biennial, or perennial to select strategies that effectively control and eliminate the target. Treatment strategies are different depending on plant type, which are summarized in Tables 3 and 4. Herbicides should not always be the first treatment of choice when other methods can be effectively employed.

Table 3. Treatment Strategies for Annual and Biennial Noxious Weeds
Target: Prevent Seed Production

1. Hand grub (pull), hoe, till, cultivate in rosette stage and before flowering or seed maturity. If seeds develop, cut and bag seed heads.
2. Cut roots with a spade just below soil level.
3. Treat with herbicide in rosette or bolting stage, before flowering.
4. Mow biennials after bolting stage, before seed set. Mowing annuals will not prevent flowering but can reduce total seed production.

(Sirota 2004)

Table 4. Treatment Strategies for Perennials

Target: Deplete nutrient reserves in root system, prevent seed production

1. Allow plants to expend as much energy from root system as possible, do not treat when first emerging in spring, but allow growth to bud/bloom stage. If seeds develop, cut and bag if possible.
2. Herbicide treatment at bud to bloom stage or in the fall (recommended, after August 15 when natural precipitation is present). In the fall, plants draw nutrients into the roots for winter storage. Herbicides will be drawn down to the roots more efficiently at this time due to translocation of nutrients to roots rather than leaves. If the weed patch has been present for a long period of time, another season of seed production is not as important as getting the herbicide into the root system. Spraying in fall (after middle August) will kill the following year's shoots, which are being formed on the roots at this time.
3. Mowing usually is not recommended because the plants will flower anyway; seed production should be reduced. Many studies have shown that mowing perennials and spraying the re-growth is not as effective as spraying without mowing. Effect of mowing is species dependent; therefore, it is imperative to know the species and its basic biology. Timing of application must be done when biologically appropriate, which is not necessarily convenient.
4. Tillage may or may not be effective. Most perennial roots can sprout from pieces only ½" – 1" long. Clean machinery thoroughly before leaving the weed patch.
5. Hand pulling is generally not recommended for perennial species unless you know the plants are seedlings and not established plants. Hand pulling can be effective on small patches but is very labor intensive because it must be done repeatedly.

(Sirota 2004)

Herbicide treatment with two or more herbicide modes of action in fall (after approximately August 15 when natural precipitation is present) is the best method to control difficult species. Some weeds, particularly annuals and biennials, can develop resistance to herbicides. The ability to quickly develop immunity to herbicides, especially they are used incorrectly, makes it imperative to use the proper chemicals at the correct time in the specified concentration. Most misuse seems centered around excessive use either in frequency or concentration. This results in mostly top kill and an immune phenotype.

3.5 Life Cycle and Management Calendars

Best results in the control of tamarisk, houndstongue, bull and milk thistles can be achieved by following the recommended timetable presented in Table 5.

Table 5. Noxious Weed Biology

Species	Type[1]	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Houndstongue	B	rosettes	→	prebud	flowering, seed set			germination			→	→	→
Thistle, Bull - 1st year	B			germination		rosettes	→	→	→	→	→	→	→
Thistle, Bull - 2nd year	B	→	→	→	→	bolting	flowering	seed set	→	→	rosettes		
Thistle, Musk - 1st year	B				germination	rosettes	→	→	→	→	→	→	
Thistle, Musk - 2 year	B	rosettes	→	→	→	bolting	flowering	Seed set	→				
Tamarisk*	P	Semi-dormancy	→		leaves emerge	flowering, seed set	growth		flowering, seed set		Semi-dormancy		

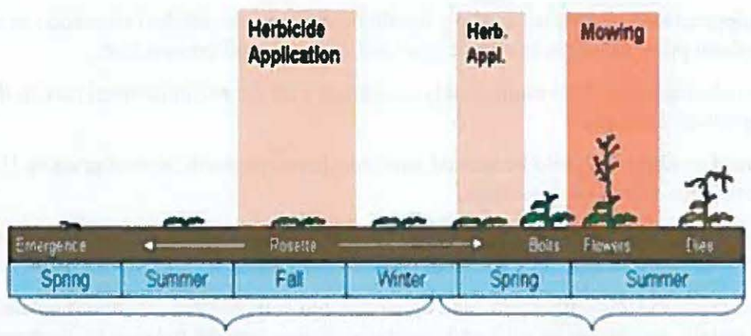
1: **A** = annual; **B** = biennial; **P** = perennial **Shaded areas indicate best control timing.**

* Tamarisk control can be done any time of the year, but is easier when leaves are absent and weather is cooler.

(Sirota 2004)

Figure 2 is an alternative schedule for life cycle and control of biennial thistles such as bull thistle and musk thistle. It is also appropriate to control common mullein. One column that should be added is cutting of rosettes, which can be done any time during growing.

Figure 2. Life Cycle and Management strategies for biennial thistles



(Hartzler 2006)

3.6 Commercial Applicator Recommendations

A certified commercial applicator is a good choice for herbicide control efforts. Regulations may require a Colorado licensed applicator. An applicator has the full range of knowledge, skills, equipment and experience desired when dealing with tough noxious weeds.

Reclamation farming services using multiple seed bin range drills and specialized related equipment is available and should be used for reclamation seeding projects.

> Common chemical and trade names may be used in this report. The use of trade names is for clarity by the reader. Inclusion of a trade name does not imply endorsement of that particular brand of herbicide and exclusion does not imply non-approval. Certified commercial applicators will decide which herbicide to use and at what concentration according to label directions. Landowners using unrestricted products must obey all label warnings, cautions, and application concentrations. The author of this report is not responsible for inappropriate herbicide use by readers.

3.7 Best Management Practices – Noxious Weeds

The following practices should be adopted for any construction project to reduce the costs of noxious weed control. The practices include:

- top soil, where present, should be segregated from deeper soils and replaced as top soil on the final grade, a process known as live topsoil handling;
- wetland vegetation, if encountered, should be live handled like sod, temporarily watered if necessary, and placed over excavated sub-soil relative to the position from which the wetland sod was removed;
- cut-off collars should be placed on all wetland and stream crossings to prevent back washing or draining of important aquatic resources;
- in all cases, temporary disturbance should be kept to an absolute minimum;
- equipment and materials handling should be done on established sites such as the northern point of origin to reduce area and extent of soil compaction;
- disturbances should be immediately re-seeded with the recommended mix in the re-vegetation section;
- topsoil stockpiles should be seeded with non-invasive sterile hybrid grasses, if stored longer than one growing season;
- prior to delivery to the site, equipment should be cleaned of soils remaining from previous construction sites which may be contaminated with noxious weeds; and
- if working in sites with weed-seed contaminated soil, equipment should be cleaned of potentially seed-bearing soils and vegetative debris prior to moving to uncontaminated terrain.

In areas with slope greater than 3%, imprinting of the seed bed is recommended. Imprinting can be in the form of dozer tracks or furrows perpendicular to the direction of slope. When utilizing hydro-seeding followed by mulching, imprinting should be done prior to seeding unless the mulch is to be crimped into the soil surface. If broadcast seeding and harrowing, imprinting should be done as part of the harrowing. Furrowing can be done by several methods, the most simple of which is to drill seed perpendicular to the direction of slope in a prepared bed. Other simple imprinting methods include deep hand raking and harrowing, always perpendicular to the direction of slope.

Herbicides: Difficult species respond better to an application of a combination of two or more chemical modes of action (biological reason for plant death) rather than one (Boerboom 1999). It has also been found that use of two different groups of chemicals in the same mode of action can increase effectiveness on difficult species, e.g., phenoxys and benzoic acids or carboxylic acids and benzoic acids in a mix. Some come commercially pre-mixed, e.g., Crossbow and Super Weed-be-Gone Max, which are available over the counter. However, some of the most effective herbicides are restricted use and available only for licensed applicators.

Professionals or landowners using herbicides must use the concentration specified on the label of the container in hand. Herbicides generally do not work better at higher concentrations. Most herbicide failures observed by WWE are related to incomplete control caused by high concentrations killing top growth before the active ingredient can be transported to the roots through the nutrient translocation process. Most herbicide applications should use a surfactant if directed on the herbicide label or other adjuvants as called for on the herbicide label.

Grazing: Grazing should be deferred, in reclaimed areas, until the desired grass species are established.

Mechanical: Bull thistle was found in low density and is an example where control could be accomplished mechanically. Effectiveness can be increased by severing the root just below the crown of noxious weeds instead of at greater depths.

Alternative Methods: An alternative method, particularly for downy brome infestations and poor or destroyed topsoil, is the application of vesicular-arbuscular mycorrhizal fungi typically referred to as AMF. These fungi, mostly of the genus *Glomus* are symbiotic with about 80% of all vegetation. Endo-mycorrhizal fungi are associated mostly with grasses and forbs and could be helpful when reclaiming this project. In symbiosis, the fungi increase water and nutrient transfer capacity of the host root system by as much as several orders of magnitude (Barrow and McCaslin 1995).

Over-the-counter commercial products, which are better adapted to coating seeds when re-seeding and treating roots of live seedling trees and shrubs at time of planting, come in powder form and are available from many different sources. Some also come in granular form to be spread with seed from a broadcast spreader. The best AMF products should contain more than one species.

All Colorado State Forest Salida District tree and shrub plantings include the application of AMF. According to District Forester Crystal Tischler, "AMF is worth it" (Tischler 2006). Most, if not all, Colorado Department of Transportation re-vegetation/re-seeding projects now require use of AMF and BioSol, a certified by-product of the penicillin manufacturing process composed primarily of mycelium. Compacted soils respond well to fossilized humic substances and by-products called humates. These humates, including humic and fulvic acids and humin were formed from pre-historic plant and animal deposits and work especially well on compacted soils when applied as directed.

Biological control of widespread infestations, in the project area, using natural insect agents are available for tamarisk (see Table 2) and musk thistle. This later weed may be controlled by the musk and plumeless thistle rosette weevil, *Trichosirocalus horridus,* and the thistle defoliating beetle, *Cassida rubiginosa*, which feeds on the foliage of Canada, musk, and plumeless thistles (Sullivan 2004).

4.0 REVEGETATION – RECLAMATION

4.1 Project Area

The project area includes a variety of terrain including steep mountain side-slopes, rolling hillsides, and gently sloping bottomland. Successful reclamation of the project area is dependent upon soil type and texture, aspect, slope, proper weed control and re-vegetation with suitable plant species.

Based on the soil types, terrain, and the presence of noxious weeds in the project area, successful reclamation is most likely if a seed mix of grasses is used (Tables 6 and 7). This will allow control of noxious weeds while establishing vegetation in the disturbed areas. Two seed mixes

Table 6. Seed Mix for Pinyon-Juniper Woodland and/or Mountain/Wyoming Big Sagebrush Shrubland. Project area mountain toeslopes, alluvial fans, and drainage bottoms

Common Name	Scientific Names	Variety	Season	Form	PLS lbs/acre*
Plant the Following (10% Total)					
Indian Ricegrass	*Achnatherum [Oryzopsis] hymenoides*	Nezpar, Paloma, Rimrock	Cool	Bunch	1.9
and Both of the Following (15% Each, 30% Total)					
Galleta	*Pleuraphis [Hilaria] jamesii*	Viva florets	Warm	Bunch	2.5
Bluebunch Wheatgrass	*Pseudoroegneria spicata, Agropyron spicatum*	Secar, P-7, Anatone	Cool	Bunch	2.8
and One of the Following (20% Total)					
Thickspike Wheatgrass	*Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum*	Critana, Schwendimar	Cool	Sod-forming	3.4
Slender Wheatgrass	*Elymus trachycaulus, Agropyron trachycaulum*	San Luis	Cool	Bunch	3.3
and Two of the Following (40% Total)					
Muttongrass	*Poa fendleriana*		Cool	Bunch	0.6
Sandberg Bluegrass	*Poa sandbergii, Poa secunda*		Cool	Bunch	0.6
Bottlebrush Squirreltail	*Elymus elymoides, Sitanion hystrix*		Cool	Bunch	2.7

Based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded

Table 7. Seed Mix for Mountain Shrubland, including Oakbrush (Project area mountain side-slopes)

Common Name	Scientific Names	Variety	Season	Form	PLS lbs/acre*
Plant Both of the Following (20% Each, 40% Total)					
Thickspike Wheatgrass	*Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum*	Critana, Schwendimar	Cool	Sod-forming	3.4
Bluebunch Wheatgrass	*Pseudoroegneria spicata, Agropyron spicatum*	Secar, P-7, Anatone	Cool	Bunch	3.7
and One of the Following (20% Total)					
Bottlebrush Squirreltail	*Elymus elymoides, Sitanion hystrix*		Cool	Bunch	2.7
Slender Wheatgrass	*Elymus trachycaulus, Agropyron trachycaulum*	San Luis	Cool	Bunch	3.3
and One of the Following (20% Total)					
Canby Bluegrass	*Poa canbyi, P. secunda*	Canbar	Cool	Bunch	0.6
Mutton Bluegrass	*Poa fendleriana*		Cool	Bunch	0.6
and One of the Following (10% Total)					
Letterman Needlegrass	*Achnatherum [Stipa] lettermanii*		Cool	Bunch	1.7
Columbia Needlegrass	*Achnatherum [Stipa] nelsonii, Stipa columbiana*		Cool	Bunch	1.7
and One of the Following (10% Total)					
Indian Ricegrass	*Achnatherum [Oryzopsis] hymenoides*	Nezpar, Paloma, Rimrock	Cool	Bunch	1.9
Junegrass	*Koeleria macrantha, K. cristata*		Cool	Bunch	0.1

*Based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

are presented based on soil type and available moisture; one for the gentler, often drier, lower slopes and one for the higher altitude steeper sites. Note: Re-vegetation on very steep or west facing mountain side-slopes may be difficult due to thin soil and harsh climatic conditions. Surface disturbance should be minimized in those areas.

For best results and success, the recommended grass mixture reseeding should be done in late autumn. The reseeding rate should be doubled for broadcast application (CNHP 1998). Preferred seeding method is multiple seed bin rangeland drill with no soil preparation other than simple grading to slope and imprinting and waterbars, where applicable.

Alternative seeding methods include, but are not limited to:

- harrow with just enough soil moisture to create a rough surface, broadcast seed and re-harrow, preferably at a 90 degree angle to the first harrow;
- hydro-seeding (most economical in terms of seed cost); and
- hand raking and broadcast followed by re-raking at a 90 degree angle to the first raking.
- These are not the only means of replanting the site. However, these methods have been observed to be effective in similar landscapes.

After desired grasses are established and control of target weed species is successful, then shrubs, forbs and trees can be planted without concern for herbicide damage. Few native forb seeds are available commercially as cultivars. Most are collected from natural populations. Native shrubs and forbs often do not establish well from seed, particularly when mixed with grasses. Past experience has shown that stabilizing the soil with grasses, accomplishing weed control, and then coming back to plant live, containerized woody species in copses has been the most cost effective method for establishing the woody species component of the plant community.

For sites where soil disturbance will be temporary, grasses should be drilled after construction activities cease and the equipment removed from the site. After two years of controlling weeds (with herbicides) and allowing the grasses to become established, forbs and woody species should be inter-seeded or hand-planted to increase the diversity and value of the reclamation plantings.

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APPENDIX A
Garfield County Noxious Weed List

Species	Common name	Species Code	Growth Form[1]	Life History[2]	State "A" List	State "B" List	State "C" List	Garfield List
Acroptilon repens	Russian knapweed	ACRE 3	F	P		X		X
Aegilops cylindrica	Jointed goatgrass	AECY	G	A			X	X
Arctium minus	Common (Lesser) burdock	ARMI 2	F	B			X	X
Cardaria draba	Hoary cress, Whitetop	CADR	F	P		X		X
Carduus acanthoides	Spiny plumeless thistle	CAAC	F	B, WA		X		X
Carduus nutans	Musk (Nodding plumeless) thistle	CANU 4	F	B		X		X
Centaurea diffusa	Diffuse knapweed	CEDI 3	F	P		X		X
Centaurea maculosa	Spotted knapweed	CEMA 4	F	P		X		X
Centaurea solstitialis	Yellow starthistle	CESO 3	F	A	X			X
Chrysanthemum leucanthemum	Oxeye daisy	CHLE 80	F	P		X		X
Cichorium intybus	Chicory	CIIN	F	P			X	X
Cirsium arvense	Canada thistle	CIAR 4	F	P		X		X
Cynoglossum officinale	Houndstongue, Gypsyflower	CYOF	F	B		X		X
Elaeagnus angustifolia	Russian olive	ELAN	T	P		X		X
Euphorbia esula	Leafy spurge	EUES	F	P		X		X
Linaria dalmatica	Dalmatian toadflax, broad-leaved	LIDA	F	P		X		X
Linaria vulgaris	Yellow toadflax	LIVU 2	F	P		X		X
Lythrum salicaria	Purple loosestrife	LYSA 2	F	P	X			X
Onopordum acanthium	Scotch thistle	ONAC	F	B		X		X
Tamarix parviflora	Smallflower tamarisk	TAPA 4	T	P		X		X
Tamarix ramosissima	Salt cedar, Tamarisk	TARA	T	P		X		X

1 – Growth form: **T** = tree/shrub; **F** = forb/vine; **G** = graminoid 2 – Life history: **A** = annual; **B** = biennial; **P** = perennial; **WA** = winter annual

APPENDIX B
Noxious Weed Location UTM's
(Garfield County listed weeds in bold)

Weed	UTM Easting	UTM Northing	Comments
Bull Thistle	12S 0727952	4386277	4 plants
	12S 0728221	4385607	1 plant
	12S 0728098	4385829	2 plants
Common Mullein	12S 0728303	4385550	100 ft long row along road.
	12S 0727845	4383099	Few
	12S 0727916	4383043	50 ft circle
	12S 0727939	4383025	Moderate amount along old road bed. See Appendix D, Photo 7.
	12S 0728088	4382934	Few
	12S 0727933	4386123	Few
	12S 0727954	4386138	Few
	12S 0727977	4386089	30 plants.
	12S 0728034	4385972	Few
	12S 0728158	4385668	20 plants
	12S 0728310	4385571	Dense; 100 plants.
	12S 0728369	4385571	Dense; 100 plants.
	12S 0728602	4385710	5 plants.
	12S 0728623	4385739	Dense; 300 plants.
Common Mullein / **Houndstongue**	12S 0727482	4383991	Polygon Start. These are west boundary points. Polygon goes east to Clear Creek
	12S 0727479	4383930	
	12S 0727548	4383898	Cont.
	12S 0727541	4383816	Cont.
	12S 0727466	4383711	Cont.
	12S 0727493	4383669	Polygon Stop
	12S 0727705	4383795	Polygon Start. North of access road to new pad
	12S 0727490	4384050	Cont.
	12S 0727580	4384025	Cont.
	12S 0727750	4383865	Polygon Stop.
	12S 0728145	4383105	Polygon Start.
	12S 0728138	4383205	Very dense infestation.
	12S 0728075	4383220	Cont.
	12S 0728035	4383185	Polygon Stop

Weed	UTM Easting	UTM Northing	Comments
Common Mullein / **Houndstongue**	12S 0727985	4383505	Polygon Start.
	12S 0728181	4383740	Low density but continuous
	12S 0728200	4384020	coverage.
	12S 0728060	4383755	Polygon Stop.
	12S 0728200	4384205	75 ft row on talus slope
	12S 0727840	4383168	50 ft. circle
Common Mullein / **Musk Thistle**	12S 0727764	4383251	Moderately thick musk thistle.
	12S 0727981	4383020	Few musk thistle
Common Mullein / **Houndstongue / Musk Thistle**	12S 0728266	4383771	Start row.
	12S 0728260	4383794	End row.
Downy Brome	Scattered almost everywhere there is vegetation. Most dense in disturbed areas and in sagebrush. Little to none on talus slopes		
Houndstongue	12S 0727820	4383194	Few
Musk Thistle	12S 0727663	4383827	4 plants
	12S 0727679	4383344	Few plants.
	12S 0727482	4383991	20 plants
	12S 0727568	4384005	7 plants
	12S 0728183	4383701	5 plants
	12S 0728261	4383841	24 plants
	12S 0728275	4383860	50 plants
	12S 0728105	4383760	34 plants
	12S 0728105	4383540	4 plants
	12S 0728232	4385557	2 plants
Tamarisk	12S 0727700	4383665	Polygon Start.
	12S 0727745	4383635	Cont.
	12S 0727710	4383590	Cont.
	12S 0727708	4383625	Polygon Stop.
	12S 0727695	4383845	10 ft. diameter clump.
	12S 0727750	4383570	Linear feature Start.
	12S 0727765	4383475	Cont.

Weed	UTM Easting	UTM Northing	Comments
Tamarisk	12S 727805	4383425	Cont.
	12S 727800	4383385	Cont.
	12S 727815	4383350	Linear feature Stop.
	12S 728340	4382895	Start row.
	12S 728355	4382885	Stop row.

APPENDIX C
Additional Photos

Photo 2. Clear Creek drainage near the Tom Creek confluence, looking north

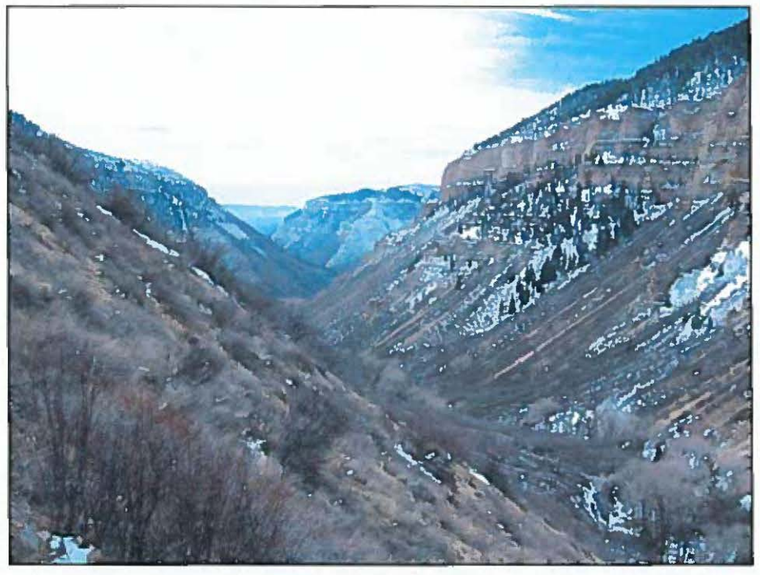

Photo 3. Steep side-slopes of Tom Creek drainage, looking south

APPENDIX C
Additional Photos

Photo 4. New Mexico locust near Clear Creek; Common mullein in foreground

Photo 5. Common mullein infestation near Clear Creek

APPENDIX C
Additional Photos

Photo 6. First year houndstongue rosette

Photo 7. Weeds, such as common mullein, often frequent disturbed areas such as this old roadbed