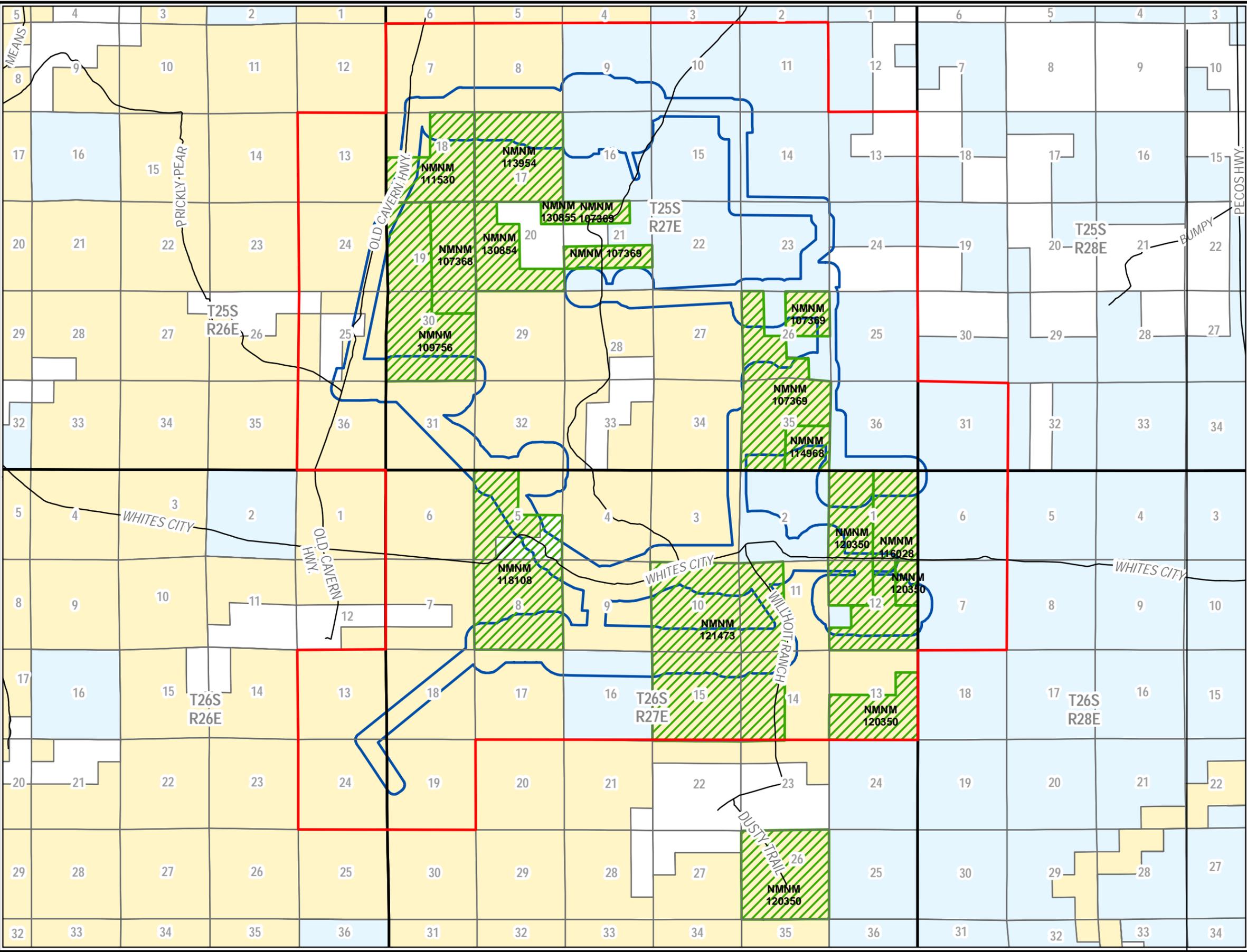


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PROJECT: PATH:Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figure2.1-1_SurfaceOwners.mxd DATE: 6/2/2016 1:45:07 PM



LEGEND:

- EA Area of Analysis
- MDP Project Area
- Federal Oil and Gas Leases

Land Ownership

- BLM
- State
- Private
- County Roads
- Townships
- Sections

Notes:
-Impact analysis for some resources utilizes a different Area of Analysis as illustrated on resource-specific figures

Projection:
WGS 1984

NORTH

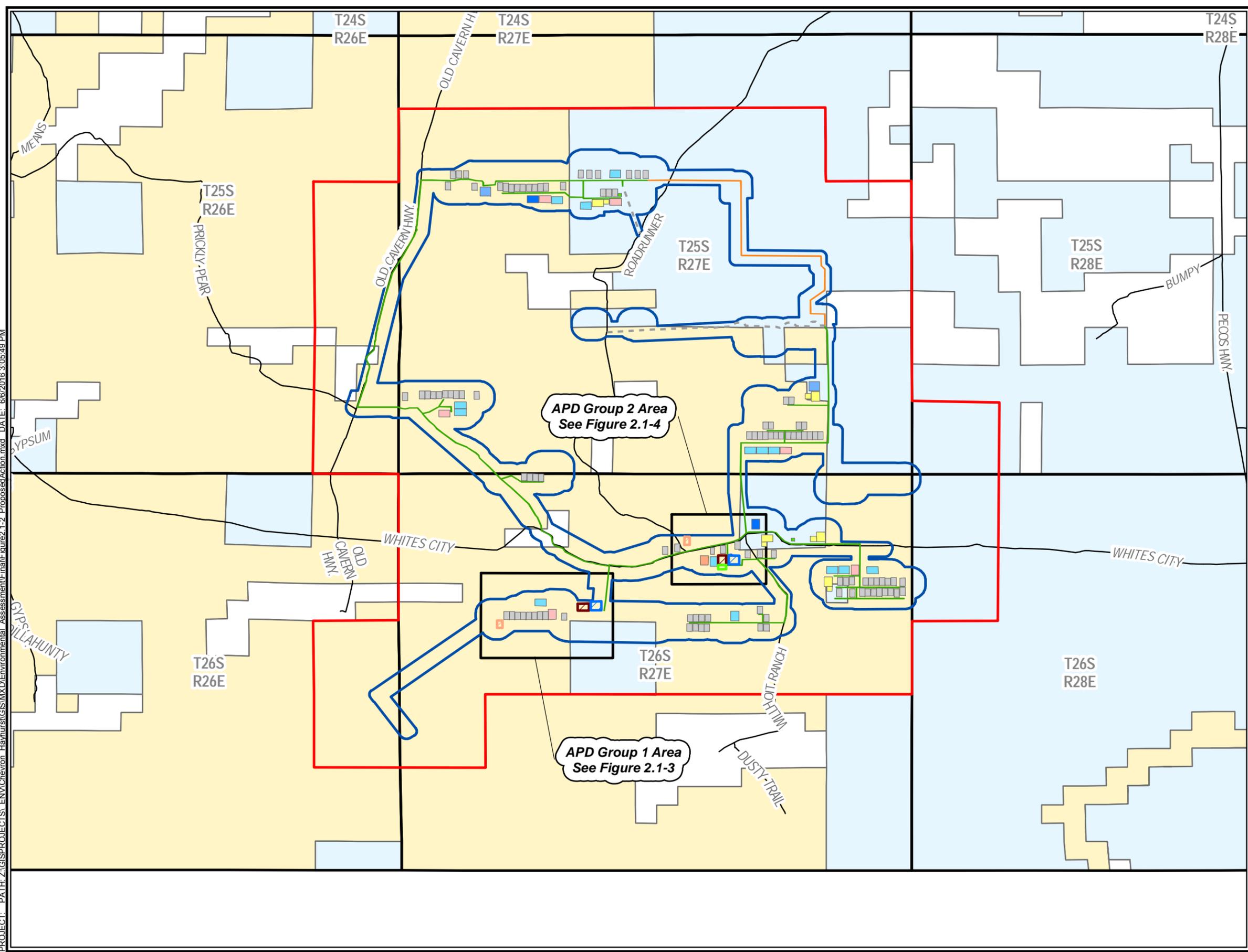
0 6,800 13,600 Feet

CHEVRON HAYHURST MDP EA

FIGURE 2.1-1
Proposed Action Project Area
and Surface Ownership

ANALYSIS AREA: Eddy County, New Mexico
Date: 6/6/2016 Prepared By: BW

DIV:GROUP: ENV\INDV DB:webb LD: PIC: PM: TM: PROJECT: PATH:Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figure2.1-2_ProposedAction.mxd DATE: 6/6/2016 3:05:49 PM



LEGEND:

- EA Area of Analysis
- MDP Project Area
- Land Ownership**
- BLM
- State
- Private
- County Roads
- Major Lease Roads
- Townships
- Major Access Road and Pipeline/Flowline Corridors
- Pipeline and Maintenance Road (Two-Track) Corridor
- MDP Features**
- Central Tank Batteries
- Compression Station
- Frac Ponds
- Man Camp
- Salt Water Disposal Wells and Facilities
- Sub Station
- Water Tank Farm
- Well Pad
- APD Features**
- Well Pad
- Tank Battery
- Frac Pond
- Compression Station

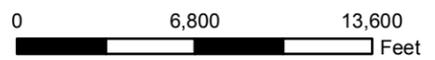
Notes:

- Impact analysis for some resources utilizes a different Area of Analysis as illustrated on resource-specific figures
- ROWs included in APDs are not depicted. See Figures 2.1-3 and 2.1-4 for more details

Projection:
WGS 1984



NORTH



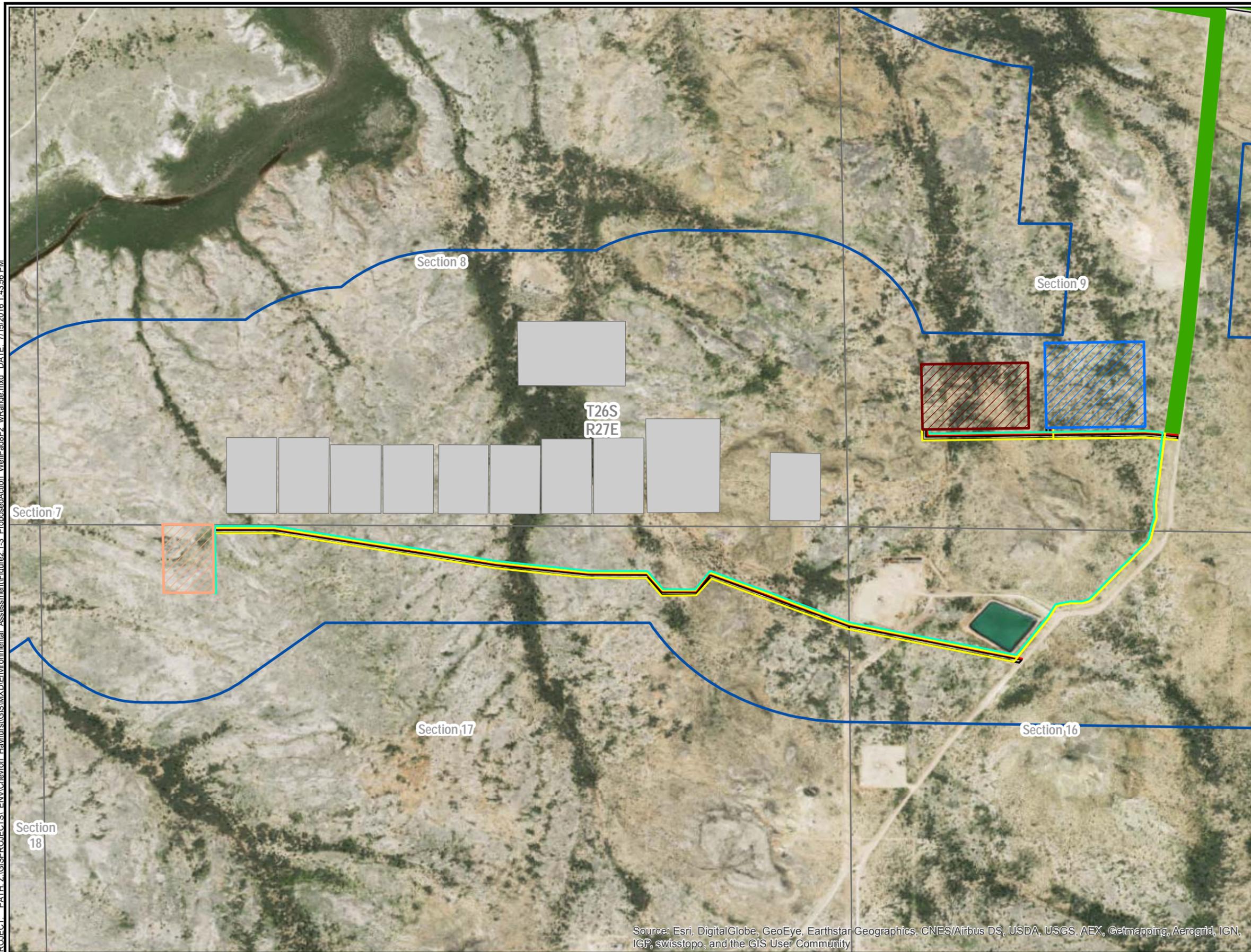
0 6,800 13,600 Feet

CHEVRON HAYHURST MDP EA

FIGURE 2.1-2
Proposed Action Overview

ANALYSIS AREA: Eddy County, New Mexico	
Date: 6/6/2016	Prepared By: BW

DIV\GROUP: ENV\MDIV DB: webb LD: PIC: PM: TM:
PROJECT: PATH.Z\GISPROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Figure2.1-3_ProposedAction_WellPad8P2_wRange.mxd DATE: 7/15/2016 1:43:56 PM

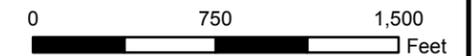


LEGEND:

- MDP Project Area
- MDP Features - See Figure 2.1-2
- County Roads
- Sections
- Major Access Road and Pipeline/Flowline Corridors
- APD Features**
- Frac Pond
- Tank Battery
- Well Pad
- Flowline
- Pipeline
- Powerline
- Road

Notes:
- MDP Features final locations pending APD submittal to BLM.
- Facility sizes shown are for working area only and do not include extra space for cut and fill, or topsoil/spoil storage.

Projection:
WGS 1984



CHEVRON HAYHURST

*FIGURE 2.1-3
Proposed Action
Well Pad HH SO 8 P2 Overview*

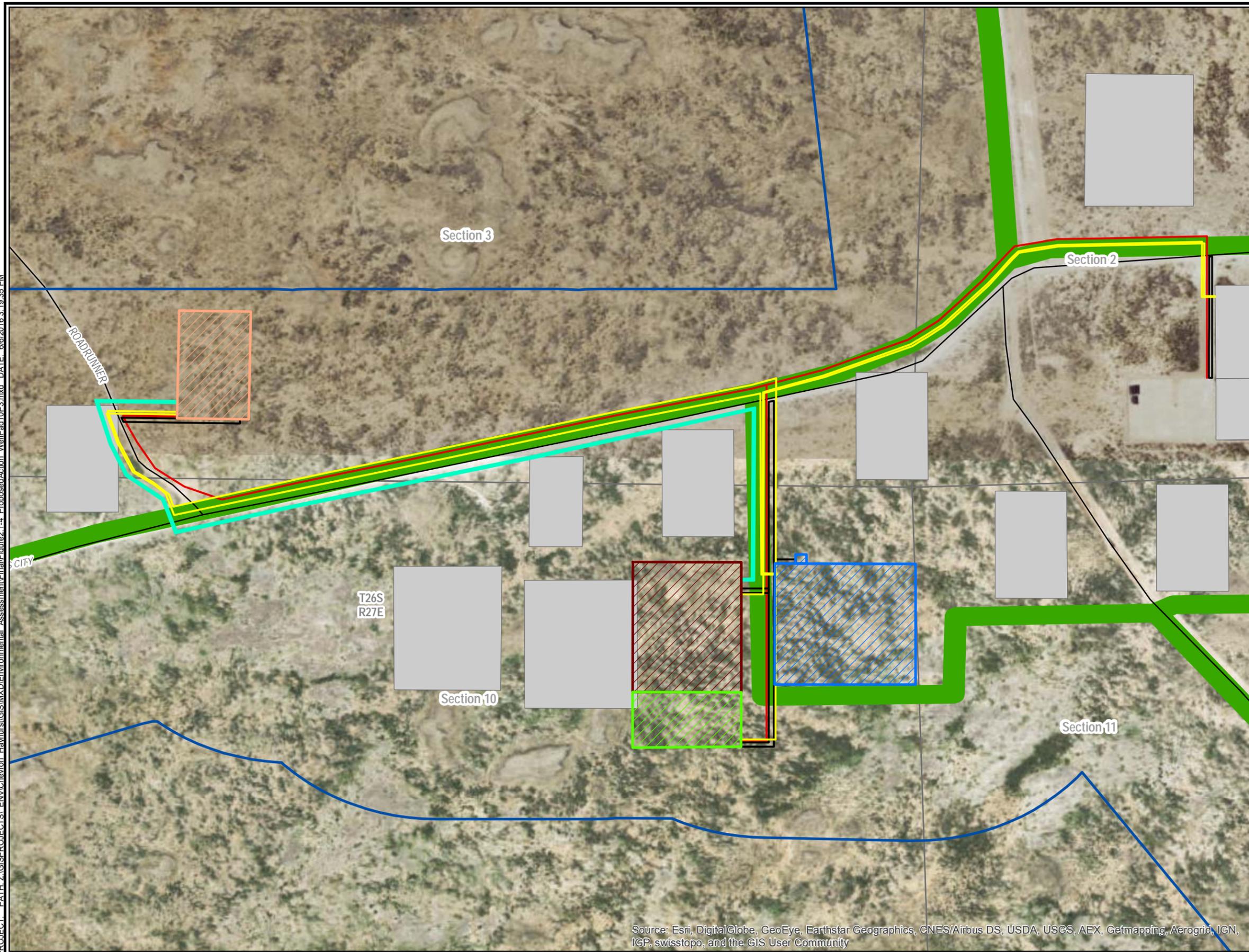
ANALYSIS AREA: Eddy County, New Mexico

Date: 7/20/2016

Prepared By: BW

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

DIV\GROUP: ENV\INDV DB: webb LD: PIC: PM: TM:
PROJECT: PATH: Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figure2.1-4_ProposedAction_WellPad10P3.mxd DATE: 6/6/2016 3:19:35 PM



LEGEND:

- MDP Project Area
- MDP Features - See Figure 2.1-2
- County Roads
- Sections
- Major Access Road and Pipeline/Flowline Corridors

APD Features

- Well Pad
- Tank Battery
- Frac Pond
- Compression Station
- Flowline
- Pipeline
- Powerline
- Road

Notes:

- MDP Features final locations pending APD submittal to BLM.
- Facility sizes shown are for working area only and do not include extra space for cut and fill, or topsoil/spoil storage.

Projection:
WGS 1984

NORTH

0 525 1,050
Feet

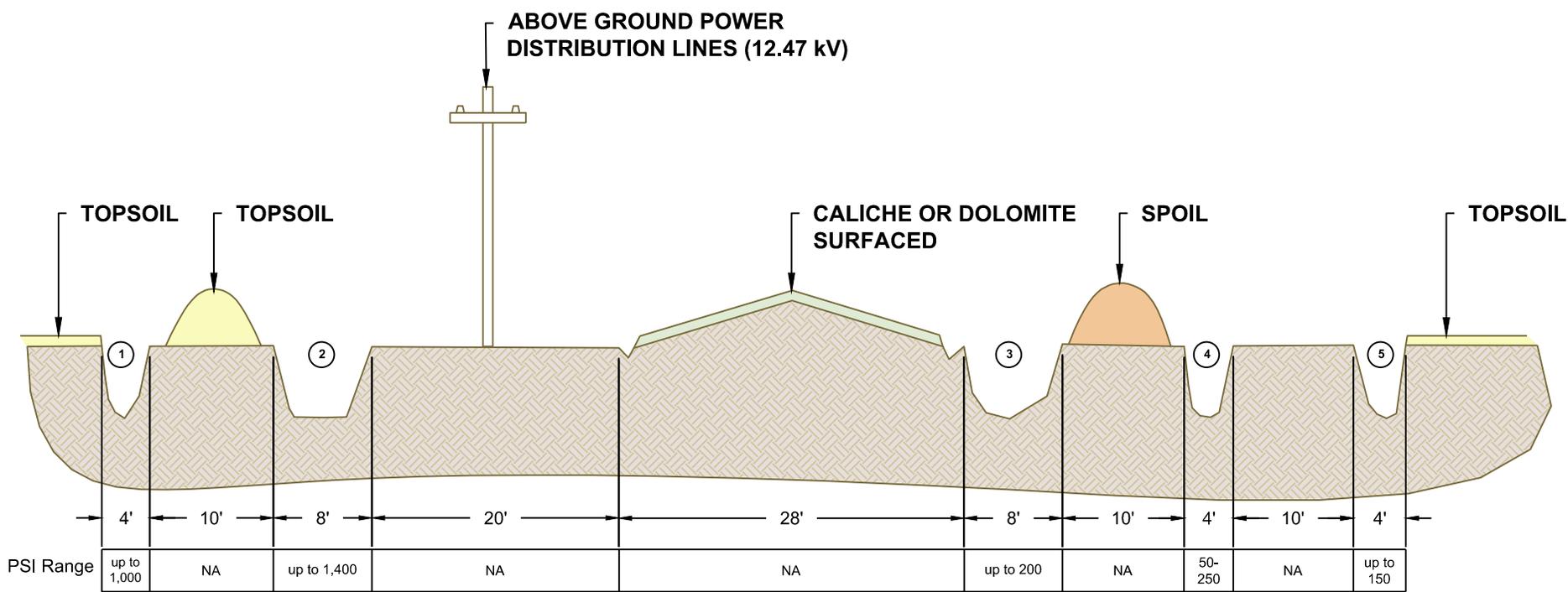
CHEVRON HAYHURST

FIGURE 2.1-4
Proposed Action
Well Pad HH SO 10 P3 Overview

ANALYSIS AREA: Eddy County, New Mexico
Date: 6/6/2016 Prepared By: BW

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

CITY:ROSEVILLE DIV:GROUP:ENVCAD DB:ENVCAD_PMI(Recd)
 G:\ENVCAD\Roseville-C\ACT\180048783\00000004\B0048783.0000 ROW Trench.dwg LAYOUT: 2.1-X
 SAVED: 5/25/2016 10:19 AM ACADVER: 19.1S (LMS TECH) PAGES: 19 LTR LAND PLOTSTYLE: ARCADIS.CTB
 PLOTTED: 6/22/2016 9:18 AM BY: ROBITALLE, BEVERLY



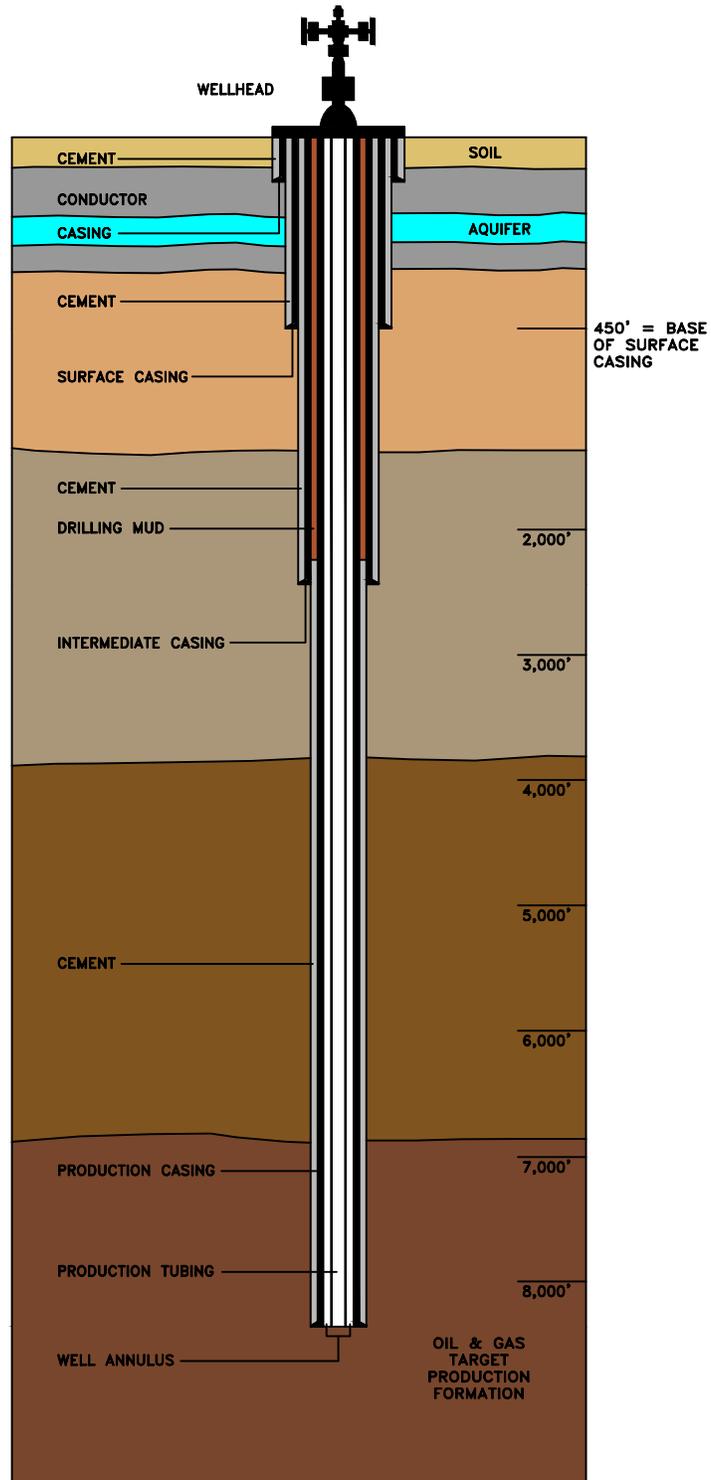
- Notes:**
1. Topsoil and Spoil pile locations would vary according to timing of component construction.
 2. Working space location and width would vary according to timing and component being constructed.
 3. Dolomite to be used in areas of gypsum soils.

Trench ID	ROW Component	Service Description	ROW Width (feet)
1	Gas Lift Pipeline	Lift-gas distribution	4
Safety Offset			10
2	High-Pressure Gas Pipeline	Gas gathering at up to 1,400 psig, dual lines in some cases	8
Aboveground distribution powerlines (12.47 kV)			20
Two-lane access road, including drainage ditches			28
3	Water Pipelines	Distribution pipelines for hydraulic fracturing water and gathering pipelines for produced water	8
Safety Offset			10
4	Low-Pressure Gas Pipeline	Gas gathering at 50-250 psig	4
Safety Offset			10
5	Oil Pipeline	Third party oil gathering pipeline	4
Total Width			106

CHEVRON HAYHURST MDP EA

*FIGURE 2.1-5
Example ROW Trench Configuration*

ANALYSIS AREA: Eddy County, New Mexico
 Date: 5/18/2016 Prepared By: BAR



NOT TO SCALE

NOTES:

1. Not to scale.
2. Actual depth of casing will depend on well geologic characteristics.
3. Deeper wells may have additional production casing segments of other sizes.
4. Wellhead type shown is for illustration purposes only.
5. Figure modified from ProPublica (<https://www.propublica.org/artical/anatomy-of-a-gas-well-426>).

CHEVRON HAYHURST

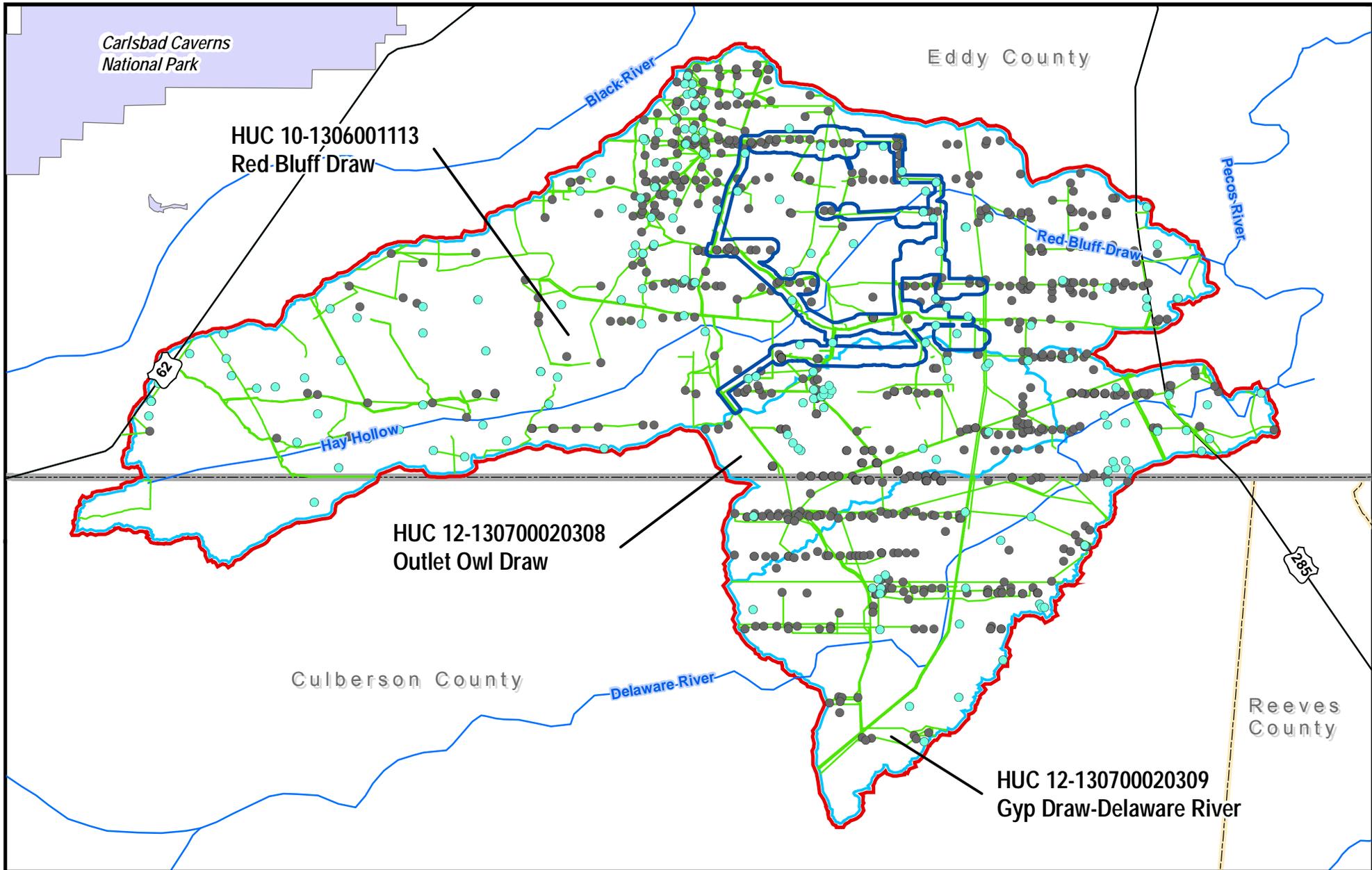
FIGURE 2.1-6
WELL CASING AND CEMENT SCHEMATIC

ANALYSIS AREA: Eddy County, New Mexico

Date: 7/8/2016

Prepared By: RTS

G:\ENVCAD\COLUMBUS-OH\ACT\B0048783 - CHEVRON HAYHURST\0000\0004\WELLHEAD DETAIL.DWG



LEGEND:

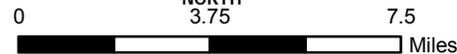
- | | |
|-------------------------------|---|
| MDP Project Area | County Boundary |
| National Hydrographic Dataset | Past or Currently Permitted Oil and Gas Well Locations |
| Cumulative Impacts Area | Past or Currently Permitted Well Locations (plugged/abandoned/cancelled/dry hole) |
| Rivers | Past or Currently Permitted Pipelines and ROWs |
| Major Roads | Carlsbad Caverns National Park |
| State Boundary | |

Notes:
 -The Cumulative Impact Area for some resources may differ as described in the EA text.

Projection:
 WGS 1984



NORTH
 3.75



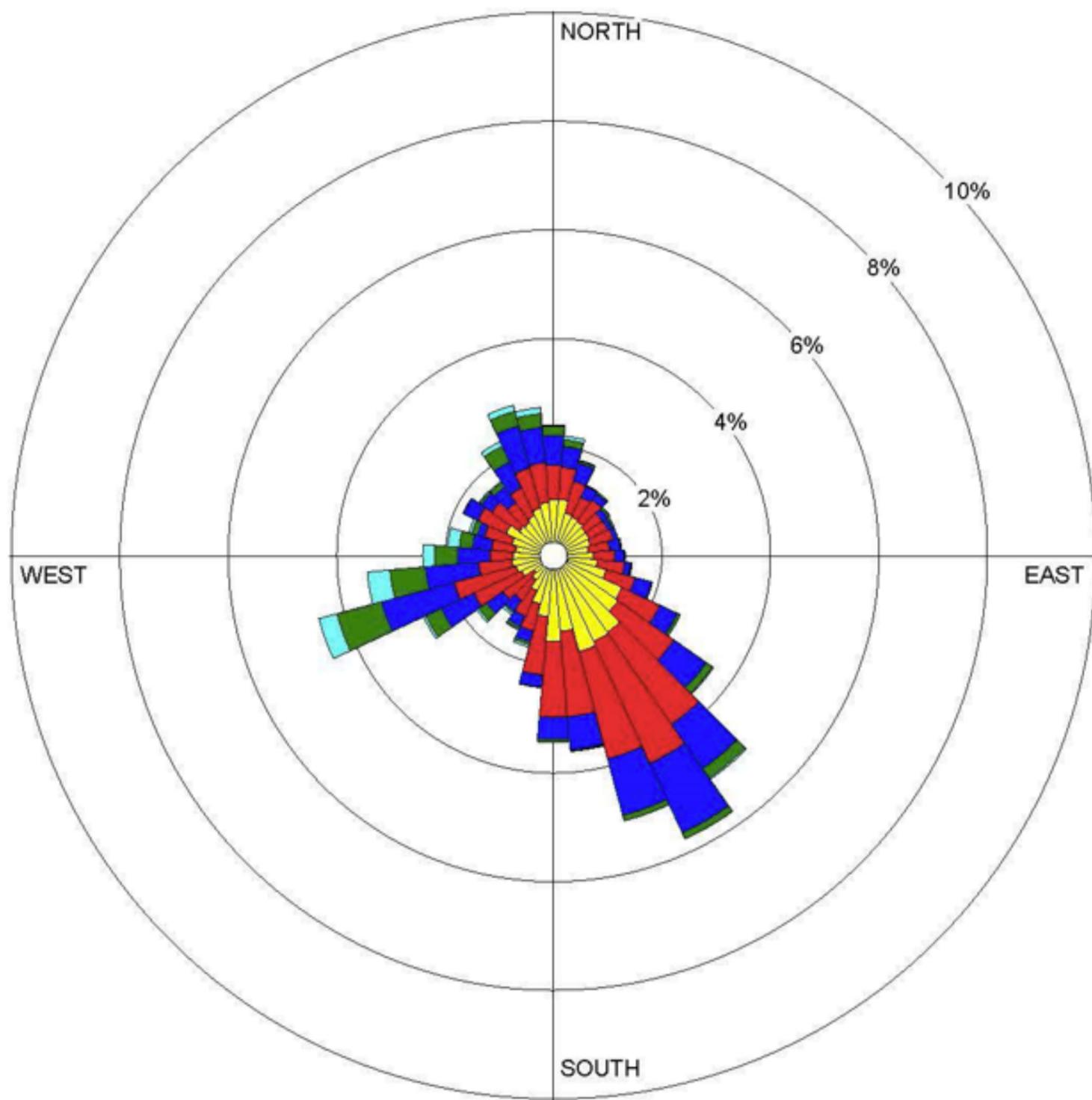
CHEVRON HAYHURST MDP EA

FIGURE 3.1-1
 Cumulative Impacts Area

ANALYSIS AREA: Eddy County, New Mexico

Date: 7/5/2016

Prepared By: BW



LEGEND

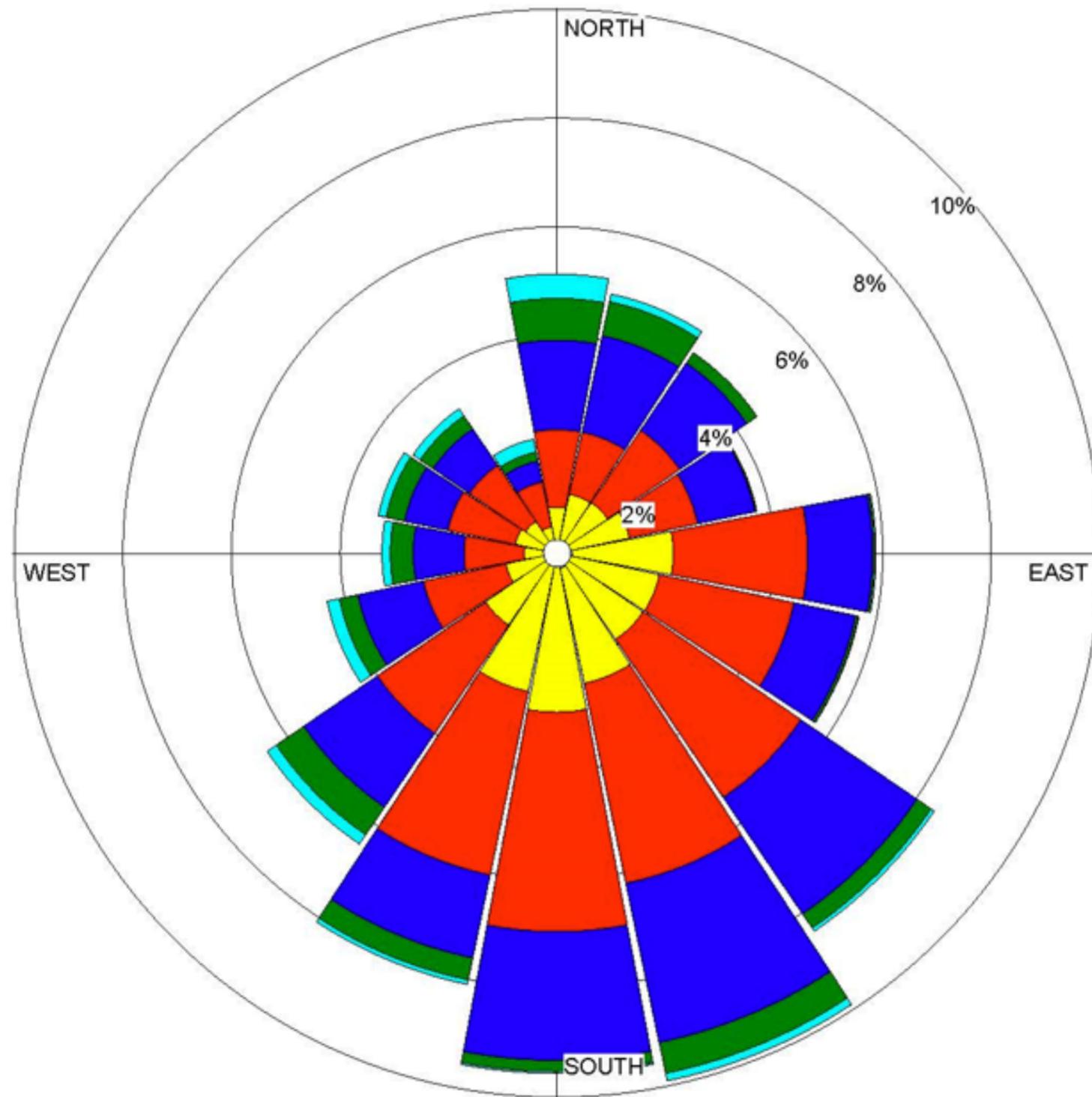
WIND SPEED (m/s)

- >= 11.10**
- 8.80 - 11.10**
- 5.70 - 8.80**
- 3.60 - 5.70**
- 2.10 - 3.60**
- 0.50 - 2.10**

Calms: 13.73%

Notes:
 Windrose Plot = Cavern City Air Terminal
 Display = Wind speed direction (blowing from)
 Start Date = 1/1/2014 - 00:00
 End Date = 12/31/2014 - 23:00
 Calm Winds = 13.73%
 Avg. Wind Speed = 3.89 m/s
 Modeler = Jalbert
 Total Count = 8748 hrs.

CHEVRON HAYHURST	
<p><i>FIGURE 3.2-1</i> Carlsbad, NM Windrose, 2014</p>	
ANALYSIS AREA: Eddy County, New Mexico	
Date: 3/14/2016	Prepared By: BW
Z:\GISPROJECTS_ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Figures\3.1-1_Carlsbad_Windrose.mxd	



LEGEND

WIND SPEED (m/s)

- >= 11.1
 - 8.8 - 11.1
 - 5.7 - 8.8
 - 3.6 - 5.7
 - 2.1 - 3.6
 - 0.5 - 2.1
- Calms: 11.66%

Notes:
 Windrose Plot = Lea County Regional Airport (Hobbs, NM)
 Display = Wind speed direction (blowing from)
 Start Date = 1/1/2014 - 02:00
 End Date = 12/31/2014 - 23:00
 Calm Winds = 11.66%
 Avg. Wind Speed = 4.43 m/s
 Modeler = Jalbert
 Total Count = 8345 hrs.

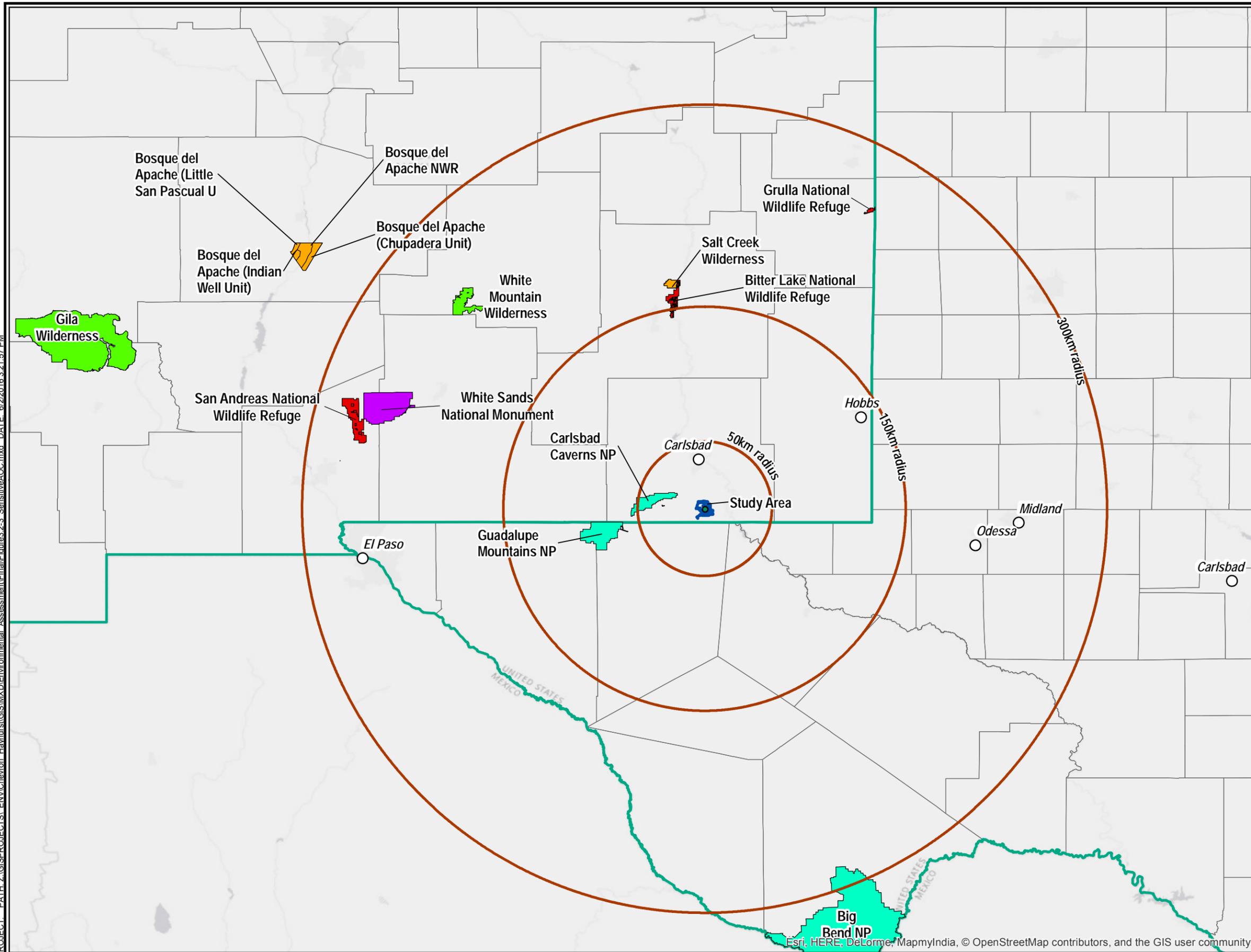
CHEVRON HAYHURST

*FIGURE 3.2-2
 Hobbs, NM Windrose, 2014*

ANALYSIS AREA: Eddy County, New Mexico
 Date: 3/14/2016 Prepared By: BW

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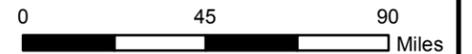


LEGEND:

- MDP Project Area
- State Boundary
- County Boundary
- City
- Clean Air Act Class I**
- U.S. Fish and Wildlife Service
- U.S. National Park Service
- U.S. Forest Service
- Sensitive Class II Areas**
- U.S. Fish and Wildlife Service
- U.S. National Park Service

Notes:
 -Impact analysis for some resources utilizes a different Area of Analysis as illustrated on resource-specific figures

Projection:
 WGS 1984

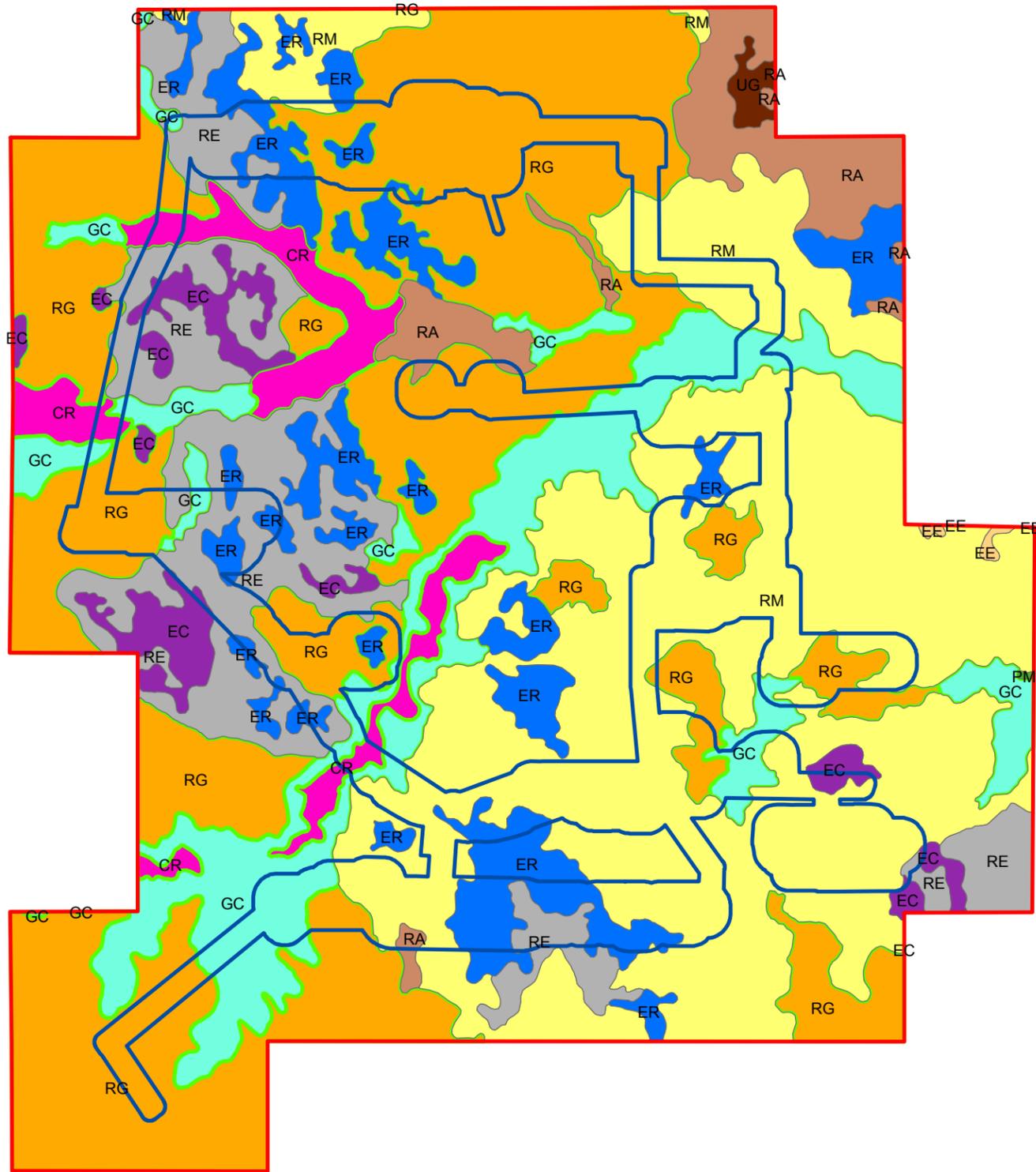


CHEVRON HAYHURST MDP EA

FIGURE 3.2-3
 Class I and Sensitive Class II Areas of Concern Map

ANALYSIS AREA: Eddy County, New Mexico
 Date: 6/2/2016 Prepared By: BW

DIV\GROUP: ENV\INDV DB: webb LD: PIC: PM: TM:
PROJECT: PATH: Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figure3.3-1_SoilResources.mxd DATE: 6/8/2016 10:02:11 PM



LEGEND:

-  EA Area of Analysis
-  MDP Project Area
- NRCS Soils**
-  Ector stony loam (EC)
-  Ector extremely rocky loam (EE)
-  Ector-Reagan association (ER)
-  Pima silt loam (PM)
-  Reagan loam (RA)
-  Reagan-Upton association (RE)
-  Reeves-Reagan loams (RM)
-  Upton (UG)
- Nominated Gypsum Soils Area of Critical Environmental Concern**
-  Cottonwood-Reeves loams, overflow (CR)
-  Gypsum land-Cottonwood complex (GC)
-  Reeves-Gypsum land association (RG)

Notes:
-USDA Natural Resources Conservation Service Soil layer for Eddy County, NM obtained from BLM
-CR, GC, and RG soil map units are part of nominated Gypsum Soils Area of Critical Environmental Concern

Projection:
WGS 1984



0 6,800 13,600
Feet

CHEVRON HAYHURST MDP EA

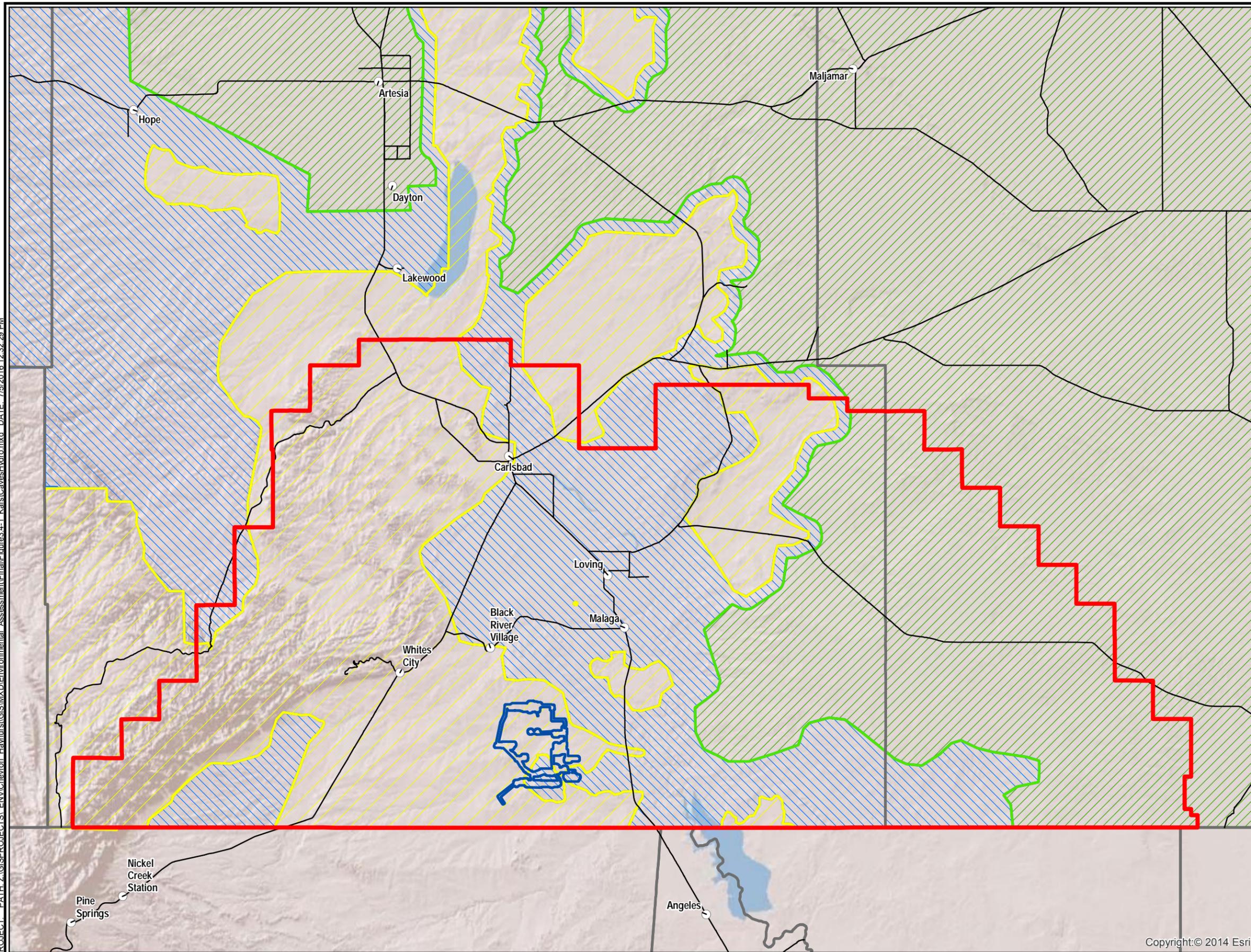
FIGURE 3.3-1
Soil Resources

ANALYSIS AREA: Eddy County, New Mexico

Date: 7/5/2016

Prepared By: BW

DIV\GROUP: ENV\MDV DB: webb LD: PIC: PM: TM:
PROJECT: PATH: Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figures\4-1_KarstCavesHydro.mxd DATE: 7/5/2016 12:32:28 PM



LEGEND:

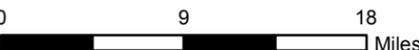
-  MDP Project
-  Area of Analysis for Caves, Karst, and Subsurface Hydrology
-  Cities
-  Major Highways
-  County Boundary
- Karst Occurrence Potential**
-  High Potential Karst
-  Medium Potential Karst
-  Low Potential Karst

Notes:
-Impact analysis for some resources utilizes a different Area of Analysis as illustrated on resource-specific figures
-Data sources: Karst occurrence potential (BLM 2014a); Carlsbad Underground Water Basin (Office of the State Engineer, 2007).
-The cave and karst area of analysis is the Carlsbad Underground Water Basin, as designated by the NM Office of the State Engineer.

Projection:
WGS 1984



NORTH



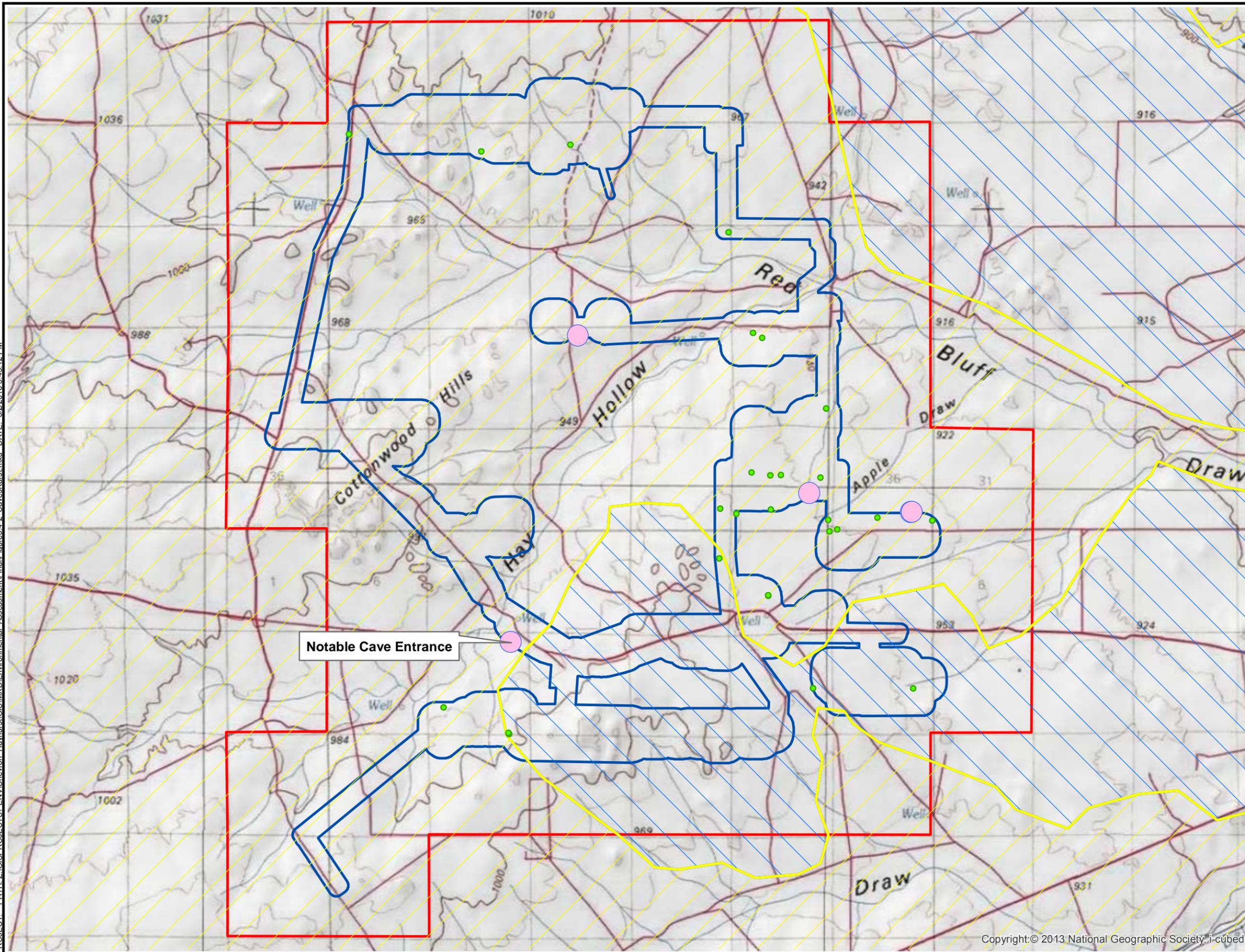
0 9 18 Miles

CHEVRON HAYHURST MDP EA

*FIGURE 3.4-1
Caves, Karst, and
Subsurface Hydrology*

ANALYSIS AREA: Eddy County, New Mexico
Date: 7/5/2016 Prepared By: BW

DIV:GROUP: ENV/MDV DB: webb LD: PIC: PM: TM: PROJECT: PATH: Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figures\4-2_CavesKarst.mxd DATE: 6/2/2016 3:43:12 PM



LEGEND:

- MDP Project Area
- Area of Analysis
- Features without Surface Openings (50 meter buffer)
- Features with Surface Openings (200 meter buffer)

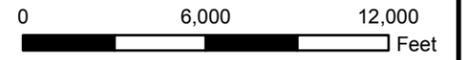
Karst Occurrence Potential

- High Potential Karst
- Medium Potential Karst

Projection: WGS 1984



NORTH



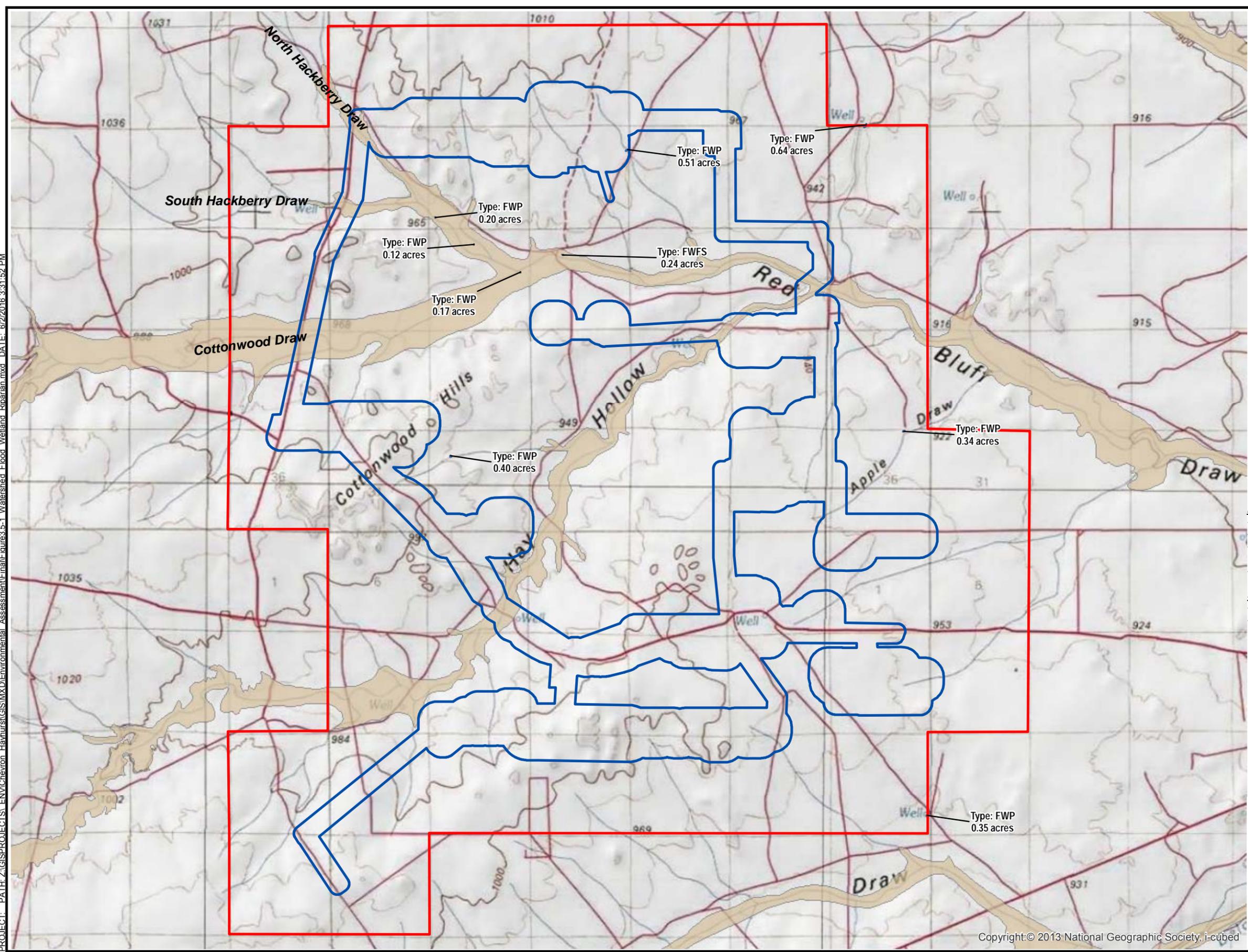
CHEVRON HAYHURST

FIGURE 3.4-2
CAVE AND KARST FEATURES

ANALYSIS AREA: Eddy County, New Mexico
Date: 6/6/2016 Prepared By: BW

Copyright:© 2013 National Geographic Society, i-cubed

DIV\GROUP: ENV\INDV DB: webb LD: PIC: PM: TM:
PROJECT: PATH: Z:\GIS\PROJECTS\ ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figures\5-1_Watershed_Flood_Wetland_Riparian.mxd DATE: 6/2/2016 3:31:52 PM



LEGEND:

- MDP Project
- Area of Analysis for Watershed, Floodplains, Wetlands, and Riparian Areas
- National Wetland Inventory Wetlands
- FEMA 100-Year Floodplain

Notes:
-FWP = Freshwater Pond wetland
-FWFS = Freshwater Forested/Shrub wetland
-Area of analysis for these resources is the same as the Project Area
-No riparian areas identified within area of analysis

Source data:
-Wetlands - USFWS 2016
-Floodplains - FEMA 2010

Projection:
WGS 1984

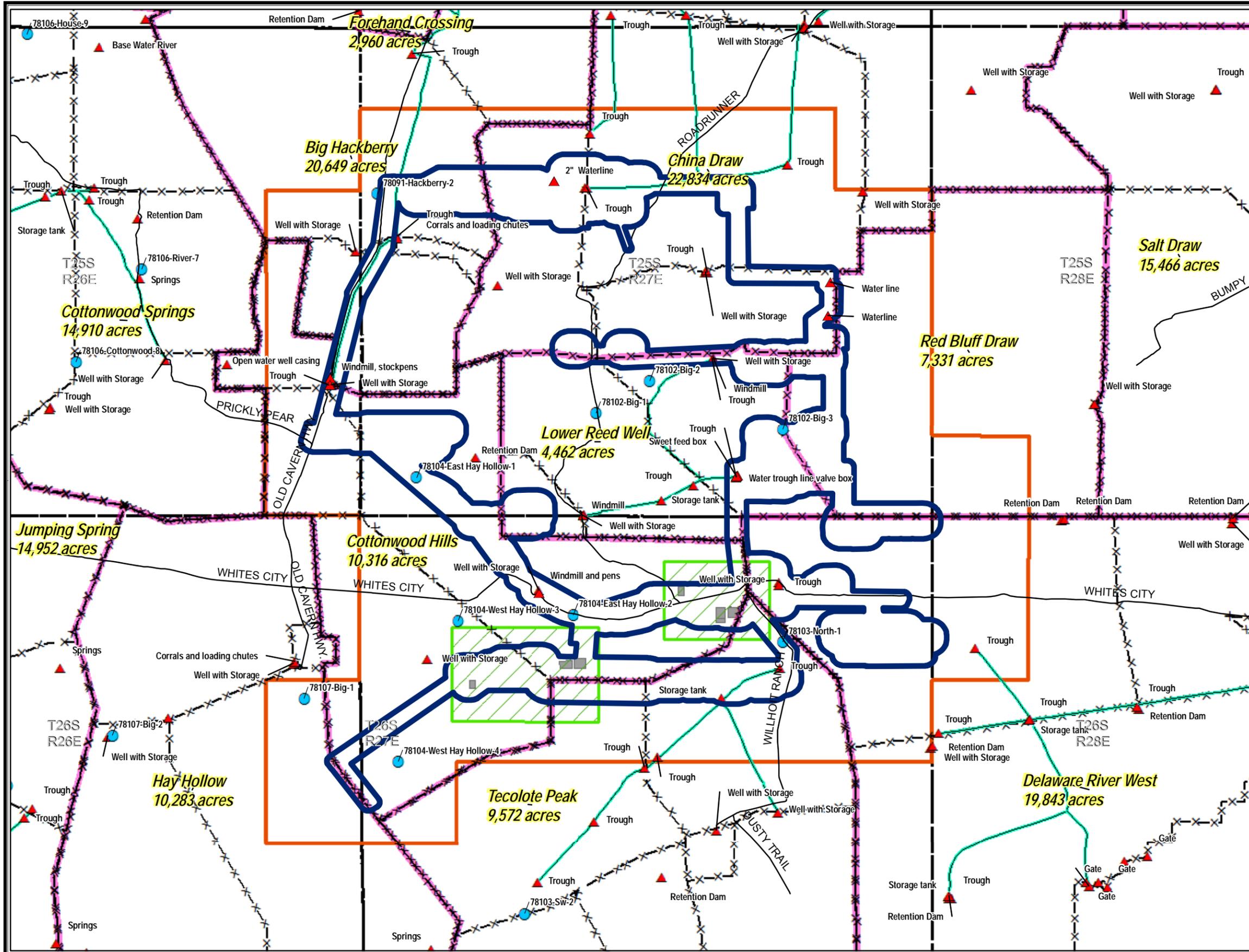
NORTH

0 6,000 12,000 Feet

CHEVRON HAYHURST

FIGURE 3.5-1
WATERSHED, FLOODPLAINS, WETLANDS,
AND RIPARIAN AREAS

ANALYSIS AREA: Eddy County, New Mexico
Date: 6/2/2016 Prepared By: BW



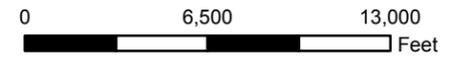
LEGEND

- MDP Project Area
- Range Study Site
- Range Improvement Points
- Range Improvement Lines
- Barbed Wire Fence
- Water Pipeline
- BLM Range Allotment Boundary
- Project Area
- Eddy County Roads
- Townships
- APD Areas
- APD Features (See Figures 2.1-3 and 2.1-4)

Base Layers Source:
Provided by the Bureau of Land Management

Notes:
- Acreage shown is for entire allotment.
- Proposed Action facilities only located within the MDP project boundary.

Projection:
WGS 1984 Web Mercator

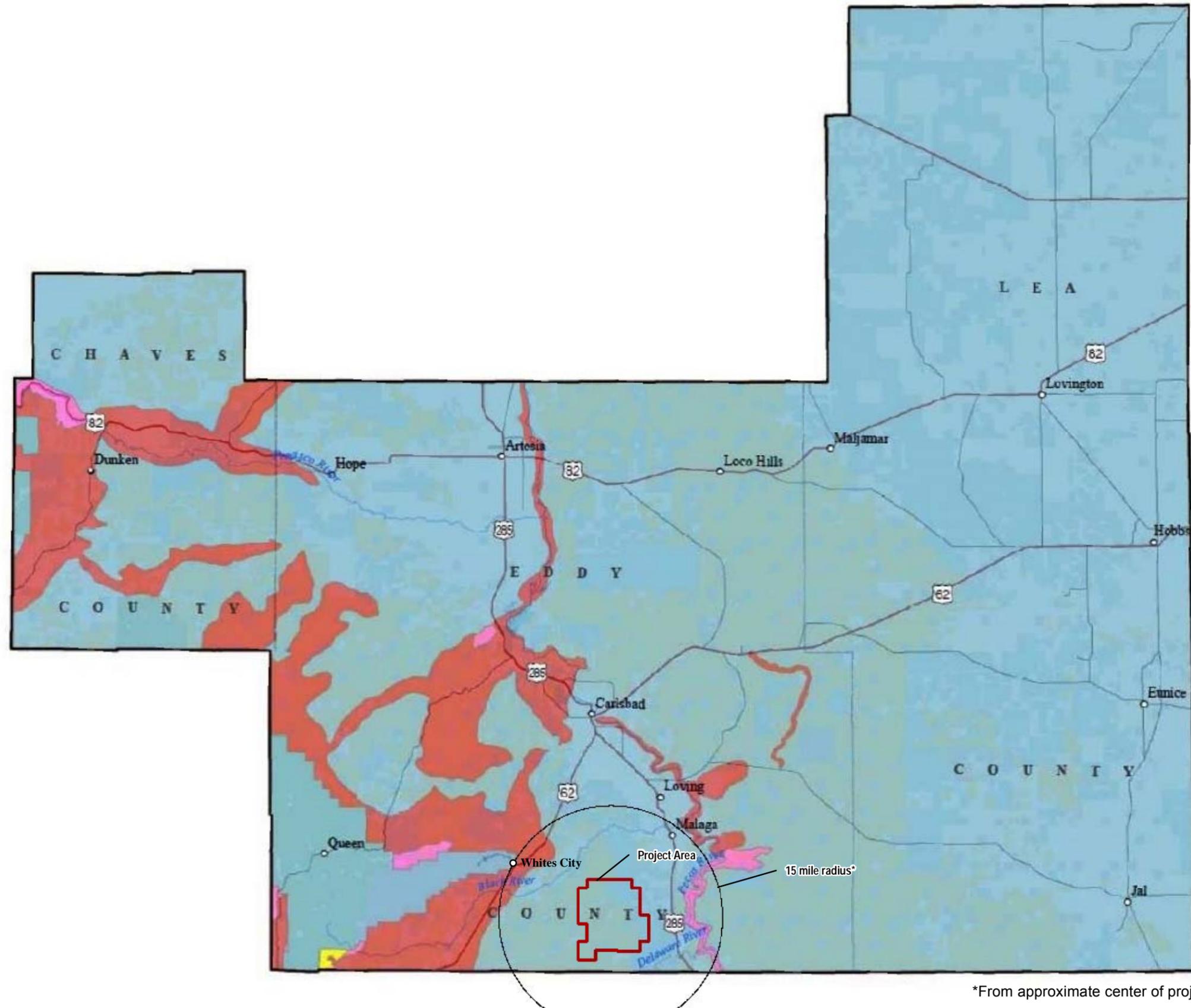


CHEVRON HAYHURST MDP EA

FIGURE 3.11-1
Range Resources

ANALYSIS AREA: Eddy County, New Mexico
Date: 7/15/2016 Prepared By: BW

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LEGEND

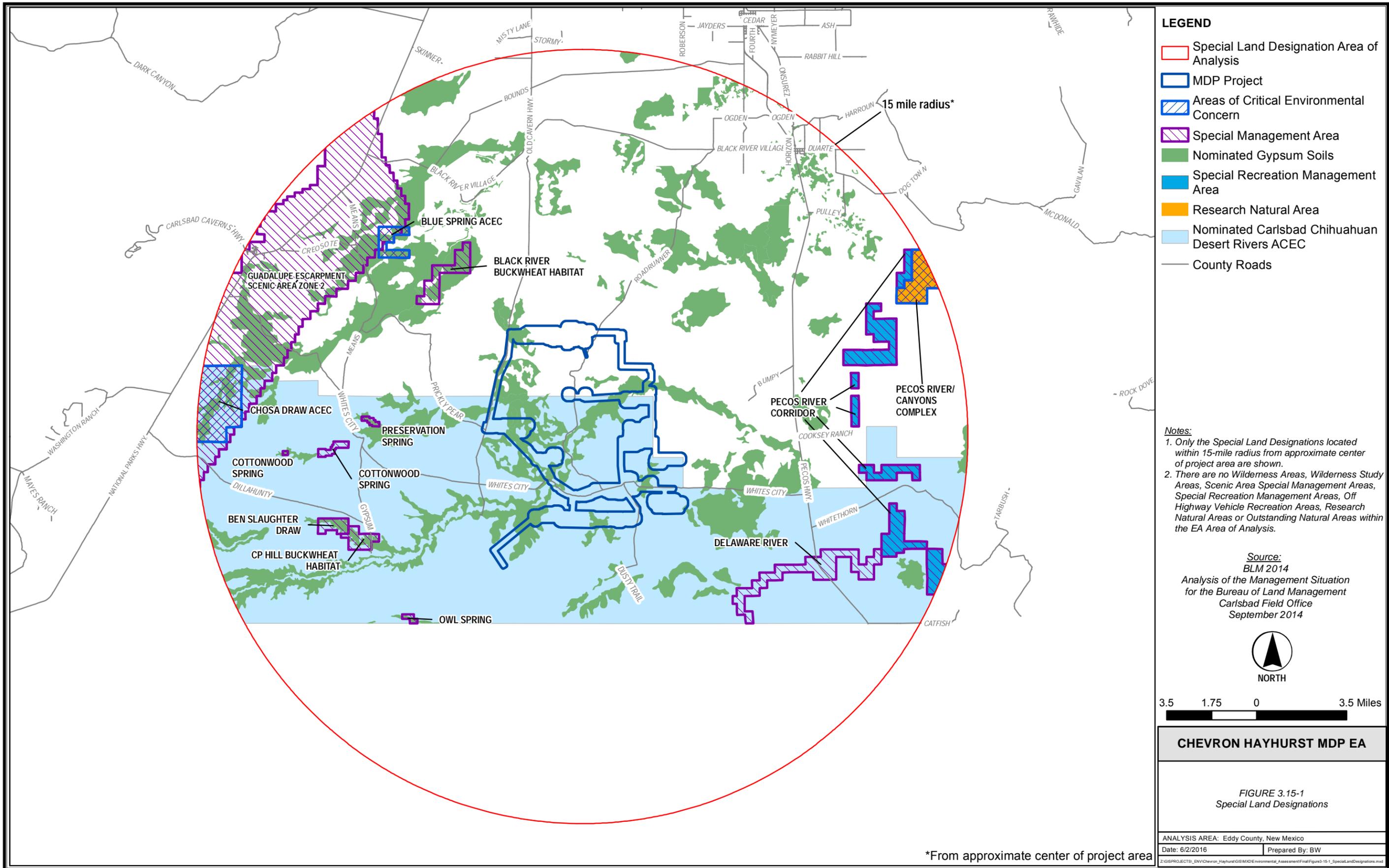
- Project Area
- Planning Area Boundary
- Federal Highway
- State Highway
- VRM Classification**
- I
- II
- III
- IV

Source:
BLM 2014
Analysis of the Management Situation
for the Bureau of Land Management
Carlsbad Field Office
September 2014



CHEVRON HAYHURST MDP EA	
<p><i>FIGURE 3.14-1</i> Visual Resource Management Classes</p>	
ANALYSIS AREA: Eddy County, New Mexico Date: 6/2/2016 Prepared By: BW Z:\GIS\PROJECTS_ENV\Chevron_Hayhurst\GIS\MXD\Environmental_Assessment\Final\Figure3-14-1_VRM.mxd	

*From approximate center of project area



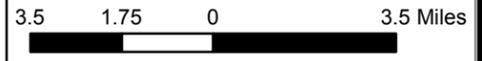
LEGEND

- Special Land Designation Area of Analysis
- MDP Project
- Areas of Critical Environmental Concern
- Special Management Area
- Nominated Gypsum Soils
- Special Recreation Management Area
- Research Natural Area
- Nominated Carlsbad Chihuahuan Desert Rivers ACEC
- County Roads

Notes:

1. Only the Special Land Designations located within 15-mile radius from approximate center of project area are shown.
2. There are no Wilderness Areas, Wilderness Study Areas, Scenic Area Special Management Areas, Special Recreation Management Areas, Off Highway Vehicle Recreation Areas, Research Natural Areas or Outstanding Natural Areas within the EA Area of Analysis.

Source:
BLM 2014
Analysis of the Management Situation
for the Bureau of Land Management
Carlsbad Field Office
September 2014



CHEVRON HAYHURST MDP EA

FIGURE 3.15-1
Special Land Designations

ANALYSIS AREA: Eddy County, New Mexico
Date: 6/2/2016 Prepared By: BW

*From approximate center of project area