DRAPER
&
DRAPER LLC

OFFICE OF STATE ENGINEER
SANTA FE, NEW MEXICO

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John B. Draper
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505-570-4591 DIRECT
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December 23, 2014

Hand Delivered to OSE Santa Fe Office

Jeffrey L. Peterson
Water Resource Specialist Senior
Office of the State Engineer, District 1
5550 San Antonio NE
Albuquerque, NM 87109

Re: Augustin Plains Ranch Application

Dear Mr. Peterson,

Thank you for your letter of November 25, 2014, concerning the Augustin Plains Ranch LLC (APR) Application, originally filed with the Office of the State Engineer (OSE) on July 14, 2014. Your letter stated that certain changes were required before the State Engineer would accept the Application for filing. We have made the requested changes, and I am submitting herewith three originals of the corrected Application.

Please let me know if anything further is needed.

Sincerely yours,

John B. Draper

JBD:dlo

File No.

NEW MEXICO OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE

(CORRECTED)

For fees, see State Engineer website: http://www.ose.state.nm.us/

___ Application to Appropriate Surface Water (72-5-1)
_X_ Application to Appropriate Groundwater (72-12-3)
__Temporary Request – Requested Start Date: Requested End Date:

1. APPLICANT(S)

Name: Augustin Plains Ranch LLC	
Contact or Agent: Michel Jichlinski c/o Draper & Draper LLC	**-or-** Michel Jichlinski c/o Montgomery & Andrews, P.A.
Mailing Address: 325 Paseo de Peralta	**Mailing Address:** 325 Paseo de Peralta
City: Santa Fe	**City:** Santa Fe
State: NM **Zip Code:** 87501	**State:** NM **Zip Code:** 87501
Phone: (505) 570-4590 (Draper & Draper) **__Home ___Cell** **Phone (Work):**	**Phone:** (505) 986-2637 (M&A) **___Home ___Cell** **Phone (Work):**
E-mail (optional): john.draper@draperllc.com	**E-mail (optional):** jwechsler@montand.com

2. PURPOSE OF USE AND AMOUNT OF WATER

__Domestic __Livestock __Irrigation **X_Municipal _Industrial __Commercial** **X_Other Use (specify):** Commercial water sales **Describe a specific use if applicable (i.e. sand & gravel washing, dairy etc):**_____	**Amount of Water (acre-feet per annum):** If more details are needed, type "See Comments" in "Other" field below, and explain in Additional Statements Section. **Diversion:** 54,000 **Consumptive Use:** 54,000 **Other (include units):** Please see Attachment 2 for additional details

FOR OSE INTERNAL USE Application for Permit, Form wr-05, Rev 4/12/12

File Number:	Trn Number:
Trans Description (optional):	
Sub-Basin:	
PCW/LOG Due Date:	PBU Due Date:

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3. COUNTY WHERE WATER RIGHT WILL BE USED

Parts of Catron, Sierra, Socorro, Valencia, Bernalillo, Sandoval, and Santa Fe Counties. Please see Attachment 2 for additional detail.

4. POINT(S) OF DIVERSION (POD)

___Surface POD **OR __X__Ground Water POD (Well)**

Name of ditch, acequia, or spring:

Stream or water course: **Tributary of:**

If application proposes a new point of diversion involving a diversion dam, storage dam, main canal, and/or pipeline, complete Attachment 2. ____Check here if Attachment 2 is included in this application packet.

POD Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long – WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

___ NM State Plane (NAD83) (FEET)
___NM West Zone
___NM East Zone
___NM Central Zone

___ UTM (NAD83) (METERS)
___Zone 12N
___Zone 13N

___Lat/Long (WGS84)(to the nearest 1/10th of second)

POD Number:	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) *(Quarters or Halves, Section, Township, Range)* OR -Hydrographic Survey Map & Tract; OR -Lot, Block & Subdivision; OR -Land Grant Name
1	107 43 13.037	34 13 29.779	T1S R9W S13 SW NE NE
2	107 43 12.778	34 12 58.958	T1S R9W S13 NW SE SE
3	107 43 47.907	34 12 58.177	T1S R9W S13 NE SW SW
4	107 43 13.644	34 12 35.848	T1S R9W S24 SW NE NE
5	107 43 47.142	34 12 36.275	T1S R9W S24 SE NW NW

NOTE: If more PODS need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)

Additional POD descriptions are attached: __X__ Yes ___ No If yes, how many __32__?

Point of Diversion is on Land Owned by: Applicant

Other description relating point of diversion to common landmarks, streets, or other: The wells will be located on Augustin Plains Ranch, north and south of U.S. Highway 60, East of Datil, New Mexico. Please see Exhibit C to Attachment 2 for a map illustrating the locations of the wells.

Note: The following information is for wells only. If more than one (1) well needs to be described, provide attachment.

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Approximate depth of well (feet): 2000	Outside diameter of well casing (inches): 20
Driller Name: Licensed New Mexico Drilling Contractor	**Driller License Number:** N/A

5. PLACE(S) OF USE: Please see Attachment

List each individually **(not applicable ___)**

a. _____Acres of Irrigated Land Described as Follows (if applicable):

b. Legally Described By: ___Public Land Survey System (PLSS) ___Hydrographic Survey Report or Map ___Irrigation or Conservation District Map ___Subdivision _____ PLSS Quarters or Halves, **and/or** Name of Hydrographic Survey or District, **and/or** Name and County of Subdivision	**c.** PLSS Section **and/or** Map No. **and/or** Lot No.	**d.** PLSS Township **and/or** Tract No. (Please list each tract individually) **and/or** Block No.	**e.** PLSS Range	**f.** Acres
Please see Attachment 2				

g. Other description relating place of use to common landmarks, streets, or other: Please see Attachment 2 for additional details. The water will be put to use by municipal, industrial and other users along the pipeline route shown on Exhibit D to Attachment 2. The water used for municipal purposes will be put to use within the authorized service areas of the municipalities listed in Attachment 2. The water used for bulk sales will be put to use by limited municipal and investor-owned utilities, commercial enterprises, and government agencies in parts of Catron, Sierra, Socorro, Valencia, Bernalillo, Sandoval and Santa Fe Counties as shown on Attachment 1 of Exhibit G.

h. Place of use is on land owned by (required): Please see Attachment 2

i. Are there other sources of water for these lands? No__ Yes__ describe by OSE file number Please see Attachment 2

Note: If on Federal or State Land, please provide copy of lease.

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FOR OSE INTERNAL USE Application for Permit, Form wr-05

File Number:	Trn Number:

6. ADDITIONAL STATEMENTS OR EXPLANATIONS

This Application has been corrected and is being re-submitted in response to the guidance provided in the letter from the Office of the State Engineer to Augustin Plains Ranch dated November 25, 2014. The original Application was first filed on July 14, 2014. This Corrected Application is being filed to obtain a permit to appropriate 54,000 acre-feet per year from 37 wells. The water will be transported by pipeline from the points of diversion to users along the pipeline route shown on Exhibit D to Attachment 2. Applicant also intends to construct enhanced recharge facilities which will collect runoff that would otherwise evaporate in the Plains of Augustin. This water will augment the groundwater in the aquifer and offset the amount that is pumped from Applicant's wells. Applicant requests that offset be recognized for these enhanced recharge projects in an amount to be determined at the hearing. As part of this Application, Applicant Augustin Plains Ranch is requesting a two stage hearing process. That process is described in more detail in Attachment 2. Any impairment of existing rights, in the Gila-San Francisco Basin, the Rio Grande Basin, or any other basin, that would be caused by the applied-for pumping, will be offset or replaced. Please see Attachment 2 for additional statements and explanations.

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ACKNOWLEDGEMENT

I, Rich Radice
Print Name(s)

Affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

President
Augustin Plains Ranch, LLC

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

____approved _____partially approved ____denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this _____ day of _____ 20_____, for the State Engineer,

_____, State Engineer

By: _____ _____
Signature Print

Title: _____
Print

FOR OSE INTERNAL USE Application for Permit, Form wr-05

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File Number:	Trn Number:

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ATTACHMENT 1
POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: ☐ Move-From Point of Diversion(s) ☐ Move-To Point of Diversion(s)	**b. Information on Attachment(s):** Number of points of diversion involved in the application: **37** Total number of pages attached to the application: _____

☐ **Surface Point of Diversion** **OR** ☐ **Well**

Name of ditch, acequia, or spring:	
Stream or water course:	
Tributary of:	

c. Location (Required):
Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), **or** Lat/Long (WGS84)

NM State Plane (NAD83) (feet) ☐ NM West Zone ☐ NM Central Zone ☐ NM East Zone	UTM (NAD83) (meters) Zone 13N ☐ Zone 12N ☐	☐ Lat/Long– (WGS84) 1/10th of second	OTHER (allowable only for move-from descriptions - see application form for format) ☐ PLSS (quarters, section, township, range) ☐ Hydrographic Survey, Map & Tract ☐ Lot, Block & Subdivision ☐ Grant
POD Number: **6**	X or Longitude **107 43 48.654** Y or Latitude **34 12 6.665**		Other Location Description: **T1S R9W S24 NE SW SW**
POD Number: **7**	X or Longitude **107 43 13.036** Y or Latitude **34 12 5.993**		Other Location Description: **T1S R9W S24 NW SE SE**
POD Number: **8**	X or Longitude **107 44 16.442** Y or Latitude **34 10 1.772**		Other Location Description: **T2S R9W S2 SW NE NE**
POD Number: **9**	X or Longitude **107 44 51.761** Y or Latitude **34 10 0.982**		Other Location Description: **T2S R9W S2 SE NW NW**
POD Number: **10**	X or Longitude **107 44 48.998** Y or Latitude **34 9 31.664**		Other Location Description: **T2S R9W S2 NE SW SW**
POD Number: **11**	X or Longitude **107 44 18.662** Y or Latitude **34 9 32.342**		Other Location Description: **T2S R9W S2 SE NW SE**
POD Number: **12**	X or Longitude **107 45 18.499** Y or Latitude **34 9 7.181**		Other Location Description: **T2S R9W S10 SW NE NE**

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POD Number: 13	X or Longitude **107 45 51.100** Y or Latitude **34 9 7.200**	Other Location Description: T2S R9W S10 SW NE NW
POD Number: 14	X or Longitude **107 45 50.229** Y or Latitude **34 8 40.493**	Other Location Description: T2S R9W S10 SW NE SW

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☐ **Surface Point of Diversion** **OR** ☐ **Well**	
Name of ditch, acequia, or spring:	
Stream or water course:	
Tributary of:	

c. Location (Required):
Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), **or** Lat/Long (WGS84)

NM State Plane (NAD83) (feet) NM West Zone ☐ NM Central Zone ☐ NM East Zone ☐	UTM (NAD83) (meters) Zone 13N ☐ Zone 12N ☐	☐ Lat/Long–(WGS84) 1/10th of second	OTHER (allowable only for move-from descriptions - see application form for format) ☐ PLSS (quarters, section, township, range) ☐ Hydrographic Survey, Map & Tract ☐ Lot, Block & Subdivision ☐ Grant
POD Number: **15**	X or Longitude **107 45 17.644** Y or Latitude **34 8 40.850**		Other Location Description: **T2S R9W S10 SW NE SE**
POD Number: **16**	X or Longitude **107 44 15.850** Y or Latitude **34 8 17.728**		Other Location Description: **T2S R9W S14 SW NE NE**
POD Number: **17**	X or Longitude **107 44 49.916** Y or Latitude **34 8 17.186**		Other Location Description: **T2S R9W S14 SE NW NW**
POD Number: **18**	X or Longitude **107 44 51.204** Y or Latitude **34 7 43.544**		Other Location Description: **T2S R9W S14 NE SW SW**
POD Number: **19**	X or Longitude **107 44 16.864** Y or Latitude **34 7 43.653**		Other Location Description: **T2S R9W S14 NW SE SE**
POD Number: **20**	X or Longitude **107 45 17.752** Y or Latitude **34 8 15.697**		Other Location Description: **T2S R9W S15 SW NE NE**
POD Number: **21**	X or Longitude **107 45 50.787** Y or Latitude**34 8 15.832**		Other Location Description: **T2S R9W S15 SW NE NW**

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POD Number: 22	X or Longitude **107 45 52.419** Y or Latitude**34 7 44.814**	Other Location Description: T2S R9W S15 NE SW SW
POD Number: 23	X or Longitude **107 45 18.309** Y or Latitude**34 7 44.043**	Other Location Description: T2S R9W S15 NW SE SE

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☐ **Surface Point of Diversion** **OR** ☐ **Well**

Name of ditch, acequia, or spring:	
Stream or water course:	
Tributary of:	

c. Location (Required):
Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), **or** Lat/Long (WGS84)

NM State Plane (NAD83) (feet) NM West Zone ☐ NM Central Zone ☐ NM East Zone ☐	UTM (NAD83) (meters) Zone 13N ☐ Zone 12N ☐	☐ Lat/Long–(WGS84) 1/10th of second	OTHER (allowable only for move-from descriptions - see application form for format) ☐ PLSS (quarters, section, township, range) ☐ Hydrographic Survey, Map & Tract ☐ Lot, Block & Subdivision ☐ Grant
POD Number: **24**	X or Longitude **107 45 18.892** Y or Latitude**34 7 21.076**		Other Location Description: **T2S R9W S22 SW NE NE**
POD Number: **25**	X or Longitude **107 45 53.118** Y or Latitude **34 7 20.532**		Other Location Description: **T2S R9W S22 NE SW NW**
POD Number: **26**	X or Longitude **107 46 19.041** Y or Latitude **34 7 21.630**		Other Location Description: **T2S R9W S21 SW NE NE**
POD Number: **27**	X or Longitude **107 45 20.948** Y or Latitude **34 6 52.325**		Other Location Description: **T2S R9W S22 NW SE SE**
POD Number: **28**	X or Longitude **107 44 15.086** Y or Latitude **34 7 22.957**		Other Location Description: **T2S R9W S23 SW NE NE**
POD Number: **29**	X or Longitude **107 44 49.269** Y or Latitude **34 7 21.062**		Other Location Description: **T2S R9W S23 NW SE NW**
POD Number: **30**	X or Longitude **107 44 47.283** Y or Latitude**34 6 53.305**		Other Location Description: **T2S R9W S23 NE SW SW**

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POD Number: 31	X or Longitude **107 44 16.047** Y or Latitude**34 6 53.777**	Other Location Description: T2S R9W S23 NW SE SE
POD Number: 32	X or Longitude **107 44 14.548** Y or Latitude **34 6 32.564**	Other Location Description: T2S R9W S26 SW NE NE

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☐ **Surface Point of Diversion** **OR** ☐ **Well**

Name of ditch, acequia, or spring:	
Stream or water course:	
Tributary of:	

c. Location (Required):
Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), **or** Lat/Long (WGS84)

NM State Plane (NAD83) (feet) NM West Zone ☐ NM Central Zone ☐ NM East Zone ☐	UTM (NAD83) (meters) Zone 13N ☐ Zone 12N ☐	☐ Lat/Long– (WGS84) 1/10th of second	OTHER (allowable only for move-from descriptions - see application form for format) ☐ PLSS (quarters, section, township, range) ☐ Hydrographic Survey, Map & Tract ☐ Lot, Block & Subdivision ☐ Grant
POD Number: **33**	X or Longitude **107 44 48.784** Y or Latitude**34 6 32.477**		Other Location Description: **T2S R9W S26 SW NE NW**
POD Number: **34**	X or Longitude **107 46 20.103** Y or Latitude **34 7 45.577**		Other Location Description: **T2S R9W S16 NW SE SE**
POD Number: **35**	X or Longitude **107 46 17.697** Y or Latitude **34 8 14.721**		Other Location Description: **T2S R9W S16 SW NE NE**
POD Number: **36**	X or Longitude **107 45 15.118** Y or Latitude **34 10 1.553**		Other Location Description: **T2S R9W S3 SW NE NE**
POD Number: **37**	X or Longitude **107 45 15.791** Y or Latitude **34 9 30.586**		Other Location Description: **T2S R9W S3 NW SE SE**
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:

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POD Number:	X or Longitude Y or Latitude	Other Location Description:

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ATTACHMENT 2

TO AUGUSTIN PLAINS RANCH LLC CORRECTED APPLICATION FOR PERMIT TO APPROPRIATE GROUNDWATER

I. OVERVIEW OF THE PROJECT

Augustin Plains Ranch LLC ("APR" or "Applicant") is a New Mexico company which owns a ranch located in the San Augustin Plains near Datil, NM ("Ranch"). The overall purpose of this Corrected Application is to obtain approvals from the State Engineer for a permit to appropriate 54,000 acre-feet per year (AFY) from 37 wells to be drilled on the Ranch. Applicant proposes to convey the water through a pipeline from the Ranch near Datil in Catron County to the Albuquerque metropolitan area. The water will be used for municipal purposes and commercial sales for uses at locations along the length of the pipeline. The project will provide a new water resource in the State's most populated area, supplying economic and environmental benefits to the population. In addition, Applicant intends to construct enhanced water recharge facilities which will collect runoff that would otherwise evaporate in the Plains of Augustin. This water will augment the groundwater in the aquifer and partially offset the effects of pumping from Applicant's wells. Applicant requests credit for the enhanced recharge facilities in an amount to be determined at the hearing.

A description of the project is contained in Exhibit A to this Attachment ("Project Description").

Applicant has already invested over $3 million in the development of the project. Activities have included investment and investigation in the following areas:

Hydrologic:

- Acquired land necessary for the project layout
- Drilled two test wells to a maximum depth of 1,500 ft and conducted pump tests in each well
- Tested water quality from two test wells
- Drilled one borehole to a depth of 3,000 ft
- Contracted with nationally recognized hydrologists who conducted an initial analysis of the aquifer and developed a preliminary groundwater model

Engineering:

- Contracted with nationally recognized engineering firms as well as a pipe manufacturer to develop and evaluate the project's preliminary engineering and cost estimates
- Contracted with a nationally recognized environmental firm to evaluate the project's impacts and benefits, identify permitting requirements, and propose an optimal routing for the pipeline

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Stakeholder Involvement:

- Held discussions with all major water users in the Middle Rio Grande
- Identified end-users of project water
- Public presentations on the project, including town hall meetings designed to inform local residents of the project's objectives and preliminary design, to the New Mexico Association of Counties, the Interstate Stream Commission, the New Mexico Legislature Water and Natural Resources Committee, the Association of Commerce and Industry, and other stakeholders

Financial:

- Contracted with senior economic and financial analysts with knowledge of the Middle Rio Grande water resources and infrastructure finance requirements to evaluate the project's economic and financial feasibility and develop a financial model
- Worked with several infrastructure investors, including publicly traded investment banks and private equity, to assess the financial model and evaluate the project's feasibility

Applicant recognizes that additional investigation and analysis is necessary, which Applicant is ready, willing and able to undertake as part of the hearing. In addition, Applicant is in position to obtain all financing necessary to put the water to beneficial use within a reasonable time. For example, Exhibit B presents a letter from current investors attesting to their willingness to support the financing of the project through all phases of development, a letter from a leading investment bank attesting to the bankability of the project, and a certificate attesting to the inclusion of the project in the list of the 100 top global infrastructure projects at the 6th Annual Global Infrastructure Leadership Forum.

II. PROPOSED HEARING PROCEDURE

Pursuant to the statutory and regulatory authority of the State Engineer, and consistent with prior practice, the Applicant requests a two-stage process for consideration of this Corrected Application by the State Engineer.

Stage 1:

The first stage ("Stage 1") consist of an evaluation of the hydrological issues related to the Corrected Application, including the amount of water available for appropriation without impairing other water rights, and the amount of enhanced recharge. It would include advertisement of the Corrected Application and the opportunity for protests. The hearing during Stage 1 will allow for the presentation of exhibits and expert testimony on the hydrologic issues. Conservation of water and public welfare will also be addressed in Stage 1 to the extent they relate to the hydrologic issues. Stage 1 would result in an initial order on the hydrologic issues.

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Stage 2:

Once the order on the hydrologic issues is entered, Applicant requests that it be given up to twelve (12) months to adjust and finalize the individual purposes of use, places of use and amounts for each use. Stage 2 would begin when Applicant submits an Amended Application with additional detail regarding the types and places of use for the water based on the order on the hydrologic issues. The information contained in the Amended Application will be included in a second advertisement to the public and a second opportunity to protest. Stage 2 consists of consideration of whether the detailed purposes and places of use can be approved without impairment of other rights, detriment to the public welfare, or being contrary to conservation of water within the State.

Applicant intends to put the full amount of applied-for water to beneficial use within a reasonable amount of time pursuant to the prior appropriation doctrine and applicable statutes and regulations. Bifurcating the hearing on the Corrected Application into two stages will allow the State Engineer to make a determination on hydrologic issues, and enable Applicant to use the initial order to finalize plans for the ultimate disposition of the water. The revised information on the places of and purposes of use will be included in the Amended Application and will be re-advertised to ensure that all interested parties in both the move-from and move-to locations have a full opportunity to evaluate the Corrected Application and participate if they choose. Applicant recognizes that it will not be entitled to apply water to beneficial use until the successful conclusion of both Stage 1 and Stage 2, and final action on this Application is not requested from the State Engineer until the conclusion of Stage 2.

III. ADDITIONAL INFORMATION FOR SECTIONS OF THE APPLICATION

2. Purpose of Use and Amount of Water

The purposes of use for the water identified in the Corrected Application are municipal and commercial sale. The individual detailed purposes and amounts of use will be finalized in Stage 2 of the application process, in conjunction with the amended and additional information to be included in the Amended Application. Amounts pumped and the amounts recharged will be metered and reported in a manner acceptable to the State Engineer.

3. County Where Water Right Will Be Used

The counties in which the applied for water will be used are Catron, Sierra, Socorro, Valencia, Bernalillo, Sandoval, and Santa Fe. Extant statutes define each of the seven counties, with a description of each county by legal subdivision. *See* NMSA 1978, §§ 4-1-1 to -2 & Compiler's notes (Bernalillo County), § 4-23-1 (Sandoval County), § 4-26-1 (Santa Fe County), § 4-2-1 (Catron County), § 4-27-1 (Sierra County), § 4-28-1 (Socorro County), § 4-32-1 (Valencia County). The place of use of the water within these counties is limited to those portions of these counties that are situated within the geographic boundaries of the Rio Grande Basin. *See* 19.27.49 NMAC.

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4. Points of Diversion ("PODs")

The groundwater points of diversion are 37 wells located on Augustin Plains Ranch, as more particularly shown on Exhibit C to this Attachment.

5. Places of Use

The water will be provided to users who will connect to the pipeline and use water along the route presented in Exhibit D. Exhibit E contains a letter of support from one such municipal entity. The preliminary engineering of the pipeline is discussed in the Project Description. The places of use will be finalized in Stage 2 of the application process, in conjunction with the amended and additional information to be included in the Amended Application. The terms of delivery and use of the water for the end-users will be provided as part of Stage 2. Water will be accounted for in a manner acceptable to the State Engineer.

A. Place of Use for Water for Municipal Purposes

Applicant intends to provide water for municipal purposes in one or more of the following municipalities:

Municipal Entity	Service Area
Magdalena	Within the service area of the Village of Magdalena municipal water system
Socorro	Within the corporate limits of the City of Socorro[1]
Belen	Within the service area of the City of Belen municipal water system in Valencia County, New Mexico[2]
Los Lunas	Village of Los Lunas municipal water system service area[3]
Albuquerque Bernalillo County Water Utility Authority	Service area of the Albuquerque Bernalillo County Water Utility Authority municipal water system[4]
Rio Rancho	Town of Alameda Grant West of the Rio Grande and surrounding areas in Sandoval County[5]

The terms of delivery and use for municipal entities that elect to participate in the Project will be included in Stage 2 of the application process. A sample grant of authority to appropriate describing the type of agreement Applicant intends to enter into with willing municipal entities is

[1] Source: OSE File No. RG-3501
[2] Source: OSE File No. RG-537
[3] Source: OSE File No. RG-17065
[4] Source: OSE File No. RG-960 (modified)
[5] Source: OSE File No. RG-6745

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provided in Exhibit F. Provisional delivery points to municipal systems are illustrated in Exhibit G, subject to final municipal specification.

B. Legal Description of Areas of Commercial Water Sales

Applicant plans to conduct commercial water sales in the parts of Catron, Sierra, Socorro, Valencia, Bernalillo, Sandoval and Santa Fe counties that are situated within the geographic boundaries of the Rio Grande Basin, as more fully set forth in Section III.3 of this Attachment 2. All water sales will be wholesale or bulk sales. Bulk customers will connect to the pipeline and use water along the route presented in Exhibit D. The place of use for bulk sales is illustrated on Attachment 1 to Exhibit G.

6. Additional Statements or Explanations

A. Description of the Distribution System, Delivery Points, and Methods of Delivery to End Users

A detailed route of the pipeline is provided in Exhibit D (Appendix B to Exhibit D). In addition, Exhibit G provides a conceptual design and description of the distribution system, delivery points, and methods of delivery to end users. As summarized in Exhibit G, the conceptual design includes 37 wells on the Ranch, two project water tanks, approximately 140 miles of pipeline, and a hydroelectric facility. End users will connect to the pipeline through several lateral connections (see Attachments), and water will be delivered directly or into tanks. In addition, water will be delivered into the Rio Grande near Socorro (Attachment 4 to Exhibit G) and Albuquerque (Attachment 9 to Exhibit G) for bulk sales.

B. Types of Entities to Which Applicant Intends to Sell Water

Applicant intends to sell bulk or wholesale water to the following types of entities: municipal and investor-owned utilities, commercial enterprises, and state and federal government agencies.[6]

C. Description of the Type of Business Arrangements by Which Applicant Intends to Deliver Water

Applicant currently intends to deliver water to end users pursuant to Short Term Sales Agreements, Long Term Sales Agreements, and Infrastructure Participation Agreements. Sample forms of those types of agreements are included in Exhibit F to this Attachment 2. However, to the extent possible, Applicant intends to accommodate the needs of its commercial water customers. Accordingly, as final terms of agreements are negotiated, they may differ substantially from the examples contained in Exhibit F. More detailed terms of commercial sales may be included in Stage 2 of the application process. In general, the Applicant will be responsible for building the infrastructure and delivering bulk water. Sample terms of water delivery pricing are provided in Exhibit F.

[6] Applicant intends to provide wholesale water for resale to a limited set of commercial customers. Applicant has no intention of making its water generally available to the public, and has no intention of becoming a public utility as that term is defined in the Public Utility Act.

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LIST OF EXHIBITS

Exhibit A: Project Description

Exhibit B: Investors Letters

Exhibit C: POD Map

Exhibit D: Routing Analysis

Exhibit E: Rio Rancho Letters

Exhibit F: Sample Agreements

Exhibit G: Technical Memorandum: Summary of Updated Conceptual Design

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Augustin Plains
RANCH, LLC

The Augustin Plains Ranch
Water Production and Distribution Project

Project Description

July 2014

Exhibit A to Groundwater Application Attachment 2

EXHIBIT A TO ATTACHMENT 2

Augustin Plains
RANCH, LLC

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Augustin Plains
RANCH, LLC

1. EXECUTIVE SUMMARY

The demand for water in the Middle Rio Grande ("MRG") already surpasses its availability, and the the inadequacy of present supplies continues to increase every year. The Augustin Plains Ranch ("APR") project will develop a new source of water for the Middle Rio Grande Valley. This will be accomplished by supportable use of the aquifer located under the San Augustin Plains in western New Mexico. The project will provide water to New Mexicans where it is needed most, while improving river habitat and water quality in the Rio Grande, using renewable energy such as hydropower and solar energy.

The supply of APR water

APR owns land on the Augustin Plains in Western New Mexico with access to an aquifer that initial studies indicate can produce 54,000 acre-ft. of water per year without impairment of prior water rights, subject to appropriate conditions of approval.

The project, as developed in hydrological and engineering studies, will supply new water to the state in an environmentally sustainable way. It will include:

- a well field
- hydroelectric and solar power generation facilities
- a pipeline over 140 miles in length, along existing highway rights-of-way
- a system of structures to enhance the recharge of the aquifer

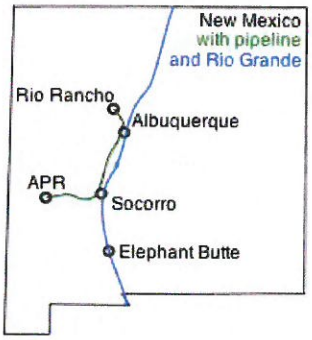


Figure 1: Project Sketch

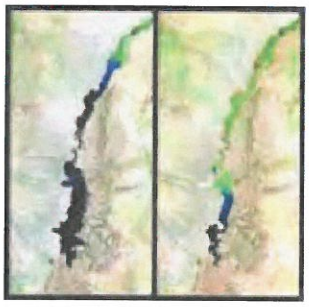


Figure 2: Elephant Butte Reservoir 1991 and 2011

The need for APR water

New Mexico is suffering from a lack of water. The future requirements of local, state, and federal parties are well documented while the sources for the water have generally not been identified. The importance of developing new water resources and precipitation capture and aquifer storage was recently endorsed by the overwhelming majority of participants in a recent New Mexico First Town Hall Meeting[1]. APR plans to meet this need by conveying water via pipeline for use in the Middle Rio Grande.

[1] New Mexico First, "A Town Hall on Water Planning Development and Use", Recommendation #10, April 15-16 2014

Augustin Plains
RANCH, LLC

The Property

Augustin Plains Ranch owns over 17,000 acres in the Plains of San Augustin. A large aquifer is accessible from the property which is suitable for development as a new water resource.

The project's location in the Augustin Plains has several advantages for a water project. The aquifer is large, and of good water quality. The area has relatively high rainfall for New Mexico, from which clean rainwater can be harvested to enhance the natural recharge of the basin.

Available Water

According to the Southwest New Mexico Regional Water Plan, the Augustin Plains Subbasin (APSB) has a total volume of approximately 50 Million acre-feet (AF) of groundwater in storage. The same report estimates the annual natural recharge of the basin at approximately 18,000 acre-feet per year (AFY). Water bearing units within the APR area are composed of Quaternary age alluvial sediments (approx. 2 million yrs. old) and range in thickness from several hundred feet in the western portion to over 4,500 ft. in the eastern portion of the Plains of San Agustin.

Average annual precipitation in the tributary drainage area west of APR is approximately 15 in. /yr. Historic total precipitation in the entire Augustin Plains basin has been of 1.6 Million AFY. The Ranch abuts the Datil mountain range and is strategically located as it intercepts the principal canyon exiting the range and neighboring drainages. The project will include the construction of artificial recharge structures to increase recharge in the basin.

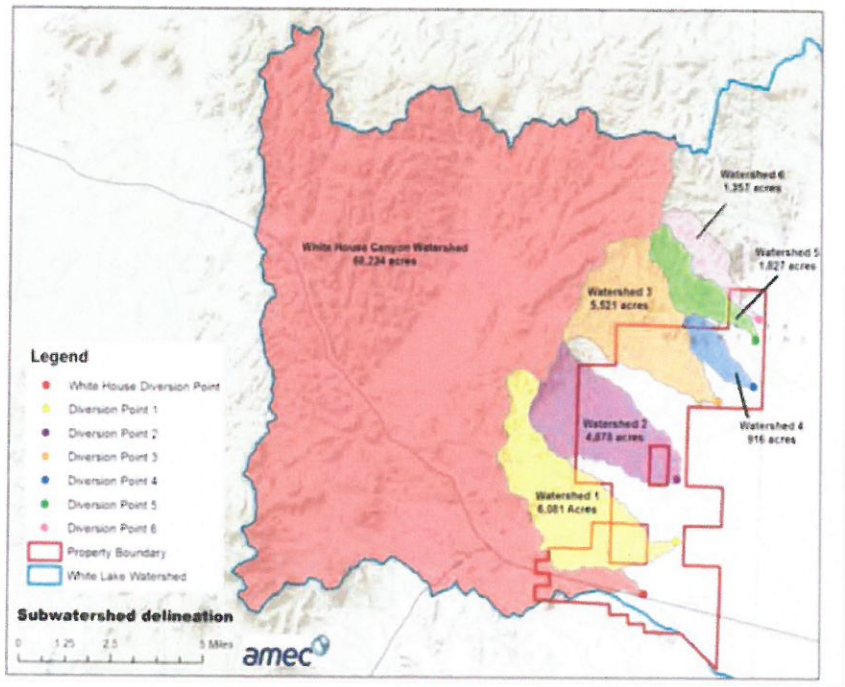


Figure 3: Watersheds of Augustin Plains Ranch

Preliminary Hydrologic Testing

APR has drilled two wells to depths of 840 ft. and 1500 ft. on the Ranch, and conducted pump tests on each. A stratigraphic borehole was also drilled to a depth of 3500 ft. The Well Records for all three are on file with the Office of the State Engineer (OSE). Preliminary analysis indicates that the quantity of water applied for is available.

Water produced from two test wells has been analyzed by an independent laboratory and has proved to be of excellent quality.

Energy Resources

The project will be powered by renewable, clean energy.

Hydropower: The project property is at an elevation of 7,125 ft., while the Albuquerque metropolitan area lies at 5200 ft. The elevation drop is sufficient to allow for gravity flow of the water to Albuquerque and the production of hydropower. This will account for most of the project's energy needs.

Solar power: New Mexico generally enjoys good conditions for the production of solar power and the project property is situated in one of the State's best locations. The remainder of the project's energy needs will be produced by solar energy.

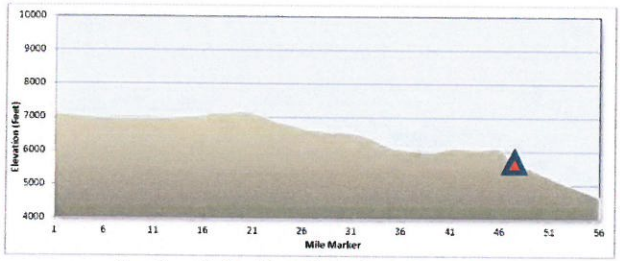


Figure 2. Preferred Route A Datil to Socorro elevation profile

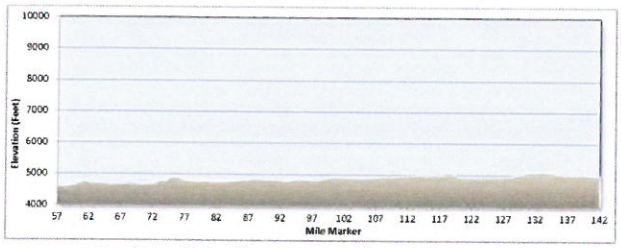


Figure 3. Preferred Route A Socorro to Albuquerque elevation profile

Figure 4: Pipeline Route Profile

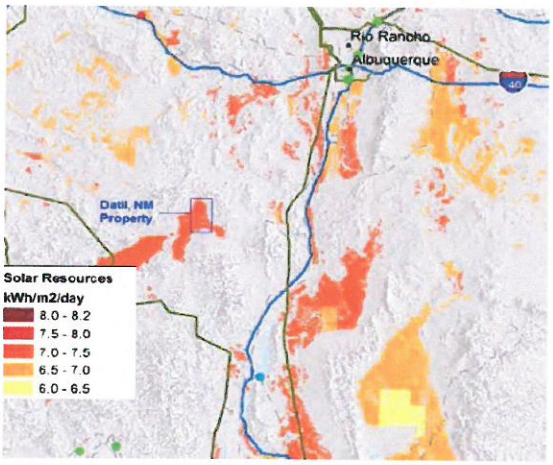


Figure 5: Area Solar Potential

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Pipeline

APR will deliver water at various points along a pipeline which will extend from the Ranch to Rio Rancho, first eastward along Route 60, and then northward along Interstate 25. The route is shown below. The water will be delivered to users the pipeline route. .

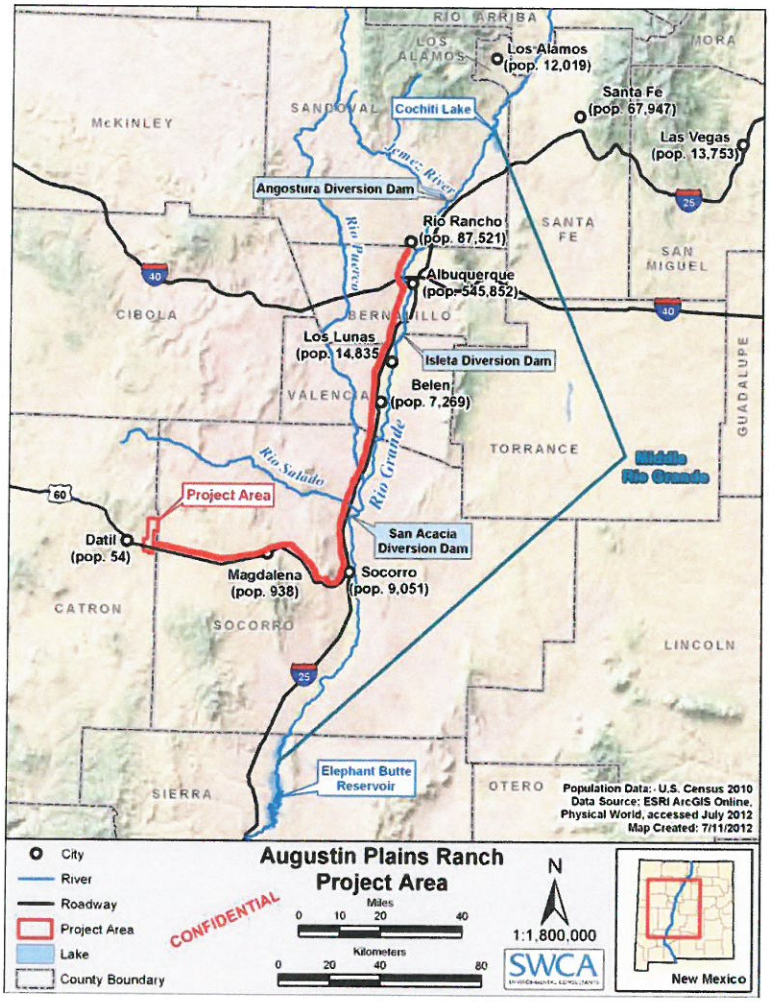


Figure 6: Pipeline Route

2. WATER USES

Project Benefits

This project has broad potential benefits for the State of New Mexico, for its citizens and for several of its institutions. The construction and operation of the project will directly create jobs and economic activity, participating users will benefit from increased, more consistent and cheaper water supply, and the augmentation of the Rio Grande, either through return flows or direct supply, will benefit the population throughout the valley and the State as a whole.

Project	Effects	Benefits
Augustin Plains Ranch	Construction, Operation and Maintenance	Jobs
		Development of new technologies
		Regional Development
	New Water Supply to Users	Facilitate compliance with OSE permit conditions
		Lower operating costs
		Lower prices for water rights in the MRG
		Lower water rates
		Lower Water Hook-up Fees
	Water Augmentation in the Rio Grande	Water for ESA compliance
		Value for recreation
		Value for tourism
		Value to farmers
		Value to municipalities
		Value to tribes
		Economic development
		Higher property values

Figure 7: Project Benefits

Augustin Plains
RANCH, LLC

Water Availability in the Middle Rio Grande

It is widely recognized that New Mexico's water supplies are over-utilized and, in the case of groundwater, dwindling. A regional drought has plagued the Southwest for the past decade, exacerbating water shortages, impacting the local and regional economies, and stressing the rivers and riparian habitats.

Stakeholders have litigated on the management of the limited water. Even after the current drought ends, New Mexico's water supply will continue to present a serious challenge to the state.

More than half of New Mexico's population lives in the MRG, mostly concentrated in the greater Albuquerque metropolitan area. In this region, state and federal agencies must manage supplies for endangered species, other wildlife, and human consumptive needs.

According to the Middle Rio Grande Regional Water Plan, the region overspent its water budget by unsustainably mining its aquifers by an average of 55,000 AFY during a period (before 2000) when average rainfall exceeded the long term average by 15 to 18%. Projections to 2050 in the Water Plan indicate that water withdrawals will increase by nearly 120,000 AFY in spite of a 65,000 AFY projected decrease in the use of water by irrigated agriculture.

Endangered Species in the Middle Rio Grande

Two endangered species in the middle Rio Grande have a large impact on water operations: the Rio Grande silvery minnow and the southwestern willow flycatcher.

The silvery minnow was listed as an endangered species by the Fish and Wildlife Service in 1994. By then, the fish, which was once abundant and widespread in the Rio Grande and its tributaries from Brownsville Texas to near Espanola New Mexico, was only found between Cochiti Dam and the Elephant Butte Reservoir delta. Likewise, the Fish & Wildlife Service listed the willow flycatcher as an endangered species under the ESA in 1995. As established in litigation and recognized in biological opinions issued by USFWS, these endangered species require water.

Availability of Water Rights

Transferring water rights in the Middle Rio Grande has become increasingly difficult.

The stock of water rights available for transfer in the Rio Grande Basin is very limited: In a 2007 Memorandum the OSE estimates that there were less than 100,000 AFY of pre-1907 consumptive use surface rights in the entire Middle Rio Grande basin in 1919. The OSE further estimates that roundly 21,000 AFY of these rights have been transferred out of irrigation already and that another 38,000 AFY of rights will have to be transferred in coming years as a result of groundwater pumping under permits that have already been issued by the OSE. The sum of these two categories of pre-1907 rights—already transferred and projected to be transferred—comprises approximately sixty per cent of the total stock of valid irrigation rights estimated above. Moreover there is no guarantee that the 38,000 AFY of irrigation rights needed to satisfy existing permit conditions is available for efficient and economically viable transfer.

There are also additional legal impediments which will further restrict the water rights market in New Mexico. For example, until recently, county subdivisions in New Mexico could be based on water

obtained from domestic wells. In practice, some developers were selling the water rights associated with their lands, and relying on smaller domestic wells for county approval of their subdivisions. The New Mexico Legislature recently eliminated this practice. Subdivisions are now required to obtain a new State Engineer permit or a commitment from an existing water utility with sufficient water rights. By eliminating the ability of subdivision developers to rely on domestic wells, the new legislation puts further pressure on the water rights market.

APR's plan to build a pipeline to the Albuquerque metropolitan area contributes to solving this problem by bringing new water to the place where it is needed.

Water Users in the MRG

Overview

APR has analyzed the demand for water in the MRG. Even under conservative growth assumptions, future requirements for new water sources in Catron, Sierra, Socorro, Valencia, Bernalillo, Sandoval and Santa Fe counties largely exceed 54,000 AFY and could be several times this amount under drought conditions.

The following paragraphs present a summary of public information on the demand for water in selected areas.

Rio Rancho

Rio Rancho's 2013 capital plan summarizes the city's water situation as follows:[2]

> The city's acquisition liability is approximately 16,000 acre feet within the next 50 years under two OSE permits authorizing diversion (pumping) of up to 24,000 acre feet per year. The 2003 OSE permit requires acquisition of 728 acre feet of water rights every five years period through 2063....The 1979 permit requires an estimated rights acquisition of 56.7 acre feet per year.

In other words, the city is authorized to pump now, even though the volumes that it pumps are not presently offset by water rights which it owns. As discussed above, such water rights are not readily available in the Middle Rio Grande and the San Augustin Plains project would provide significant relief to the community. In addition to these legal requirements, Rio Rancho will likely need to purchase water rights in order to grow. The table below presents conservative growth numbers, although city officials have presented a requirement of up to 50,000 AFY for a population of 300,000[3].

[2] Rio Rancho, "2013-2018 Infrastructure and Capital Improvement Plan", July 25, 2012, p. 137. Accessed from http://ci.rio-rancho.nm.us/documents/24/313/Tab%208%20Water%20FY13%20ICIP.PDF
[3] Presentation by Larry Webb, 57th Annual New Mexico Water Conference, Las Cruces September 2012

Year	Population	Yearly acre-feet use
2012	90,000	15,000
2025	144,000	24,000
2035	210,000	35,000

Figure 8: Actual and Projected Rio Rancho Water Use

In short:

- In 2012, Rio Rancho's population was close to 90,000, and the city pumped 15,000 AF.
- By 2025, the city may count 144,000 people and may need to pump all the 24,000 AF that it currently has legal rights to pump. This uses the growth projections from the 2010 Comprehensive Plan,[4] and the current 15,000 AFY usage.[5]
- By 2035, under the same assumptions, the city may hit 210,000 people, and the extra people will require pumping an additional 11,000 AFY.

Albuquerque

The Albuquerque/Bernalillo County Water Utility Authority (ABCWUA) provides water and sewer services to the City of Albuquerque, and several surrounding areas. As the successor to the Water Department of the City of Albuquerque, ABCWUA has rights to 48,000 AFY of water from the San Juan-Chama Project. However, this resource is subject to the availability of water in the Upper Colorado Basin.

The San Juan-Chama Project can be imperiled by drought either in the Upper Colorado Basin or in New Mexico. If there is drought in the Upper Colorado Basin, which supplies the San Juan-Chama project with water, then less water may flow through that project. The Bureau of Reclamation has warned that this is a real possibility.[6] Also native Rio Grande water is necessary to enable full use of the imported Project water.

The graphic below, from ABCWUA's asset management plan,[7] shows that ABCWUA will need to increase its groundwater supplies. According to the same plan, Albuquerque proposes to increase recharge of the aquifer by 22,000 AFY.

[4] Rio Rancho, "Comprehensive Plan", November 2010, p. PH-1 Accessed from http://ci.rio-rancho.nm.us/documents/20/39/232/6-Pop-Housing%20Element-(schbl).PDF
[5] City of Rio Rancho, Official Statement for Water and Wastewater System Refunding Revenue Bonds, Series 2013, April 24, 2013, p. 28. Accessed from http://emma.msrb.org/ER663539-ER515225-ER917834.pdf
[6] John Fleck, "Drought May Cut Chama Water Deliveries", Albuquerque Journal, December 5, 2012. Accessed from http://www.abqjournal.com/main/2012/12/05/news/drought-may-cut-chama-water-deliveries.html
[7] Albuquerque Bernalillo County Water Utility Authority, "Asset Management Plan", 2011, p. 52. Accessed from http://www.abcwua.org/pdfs/amp2011.pdf

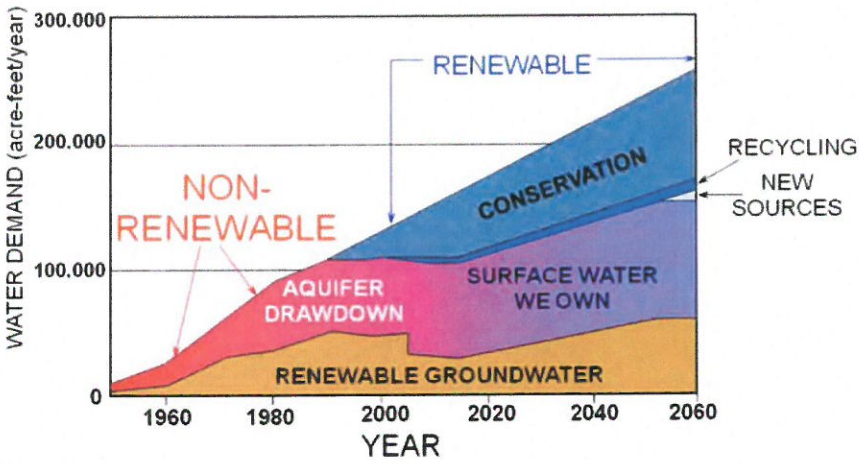


Figure 9: ABCWUA Water Budget

Other Municipalities

Municipalities along the pipeline

Other municipalities along the pipeline route have additional water needs. For example, last year, the well in Magdalena ran dry.[8] As this emergency situation demonstrates, these communities could greatly benefit from a safe and plentiful source of water.

Santa Fe

Santa Fe is active in the water rights market because of its growth and real estate policies Because Santa Fe ordinances require developers to bring water rights to the City in order to obtain building permits, the developers themselves purchase the water rights in the market and transfer them to the City. The combination of relative affluence and City requirements has led developers in Santa Fe to pay premium prices for water rights to ensure prompt fulfillment of their needs.

The city's website states:[9]

[8] Susan Montoya Brian, "Magdalena runs out of water due to drought", Las Cruces Sun-News from the Associated Press, June 5, 2013. Accessed from http://www.lcsun-news.com/las_cruces-news/ci_23395674/magdalena-runs-out-water-due-drought

[9] Santa Fe, "Water Right Purchasing Program". Accessed from http://www.santafenm.gov/index.aspx?NID=2311.

"The City of Santa Fe is interested in purchasing Middle Rio Grande Valley pre-1907 priority date surface water rights. If you have water rights to sell, please contact Dale Lyons at 955-4204. The City's current offer is $12,000 per acre foot (consumptive use)."

In its 2008 Long Range Water Supply Plan, Santa Fe forecasts a 5,500 AFY "water gap" by the year 2045[10].

Agriculture and Livestock

Farmers and ranchers are affected by drought. Their water allotment is decreased or entirely eliminated at times, and they have had to switch to expensive groundwater pumping, switch crops or stop producing entirely. The combination of decreased municipal diversions and return flows would benefit agricultural users. In addition, water management and distribution entities such as the Middle Rio Grande Conservancy District could elect to use some of the project water for the benefit of its users.

Instream Uses

The Bureau of Reclamation and other federal agencies are currently spending tens of millions of dollars purchasing water, pumping water into the Rio Grande, augmenting flows through other activities, managing endangered species, and participating in various lawsuits.

The Bureau supplements and conserves water in the Rio Grande from two principal sources: the San Juan-Chama Project (SJCP) and the Low-Flow Conveyance Channel (LFCC).

In the case of the SJCP, the Bureau of Reclamation leases water from SJCP participants who may be receiving more than they need in that year. For instance, in May of 2013, the Bureau of Reclamation leased 40,000 acre-ft. of SJCP water.[11] However, water like this is only available in years when the SJCP has supplementary water, or when SJCP participants have stored that water from previous years, and the USBR has warned that there may be less than the allocated amounts of water in the SJCP in some years.

---

[10] City of Santa Fe, "Long-Range Water Supply Plan", September 2008, p. 3-4. Accessed from http://www.santafenm.gov/DocumentView.asp?DID=3056

[11] Dennis Domrzalski, "ABCWUA will lease water to feds to keep Rio Grande flowing", Albuquerque Business First, May 31, 2013. Accessed from http://www.bizjournals.com/albuquerque/news/2013/05/31/abcwua-will-lease-water-to-feds.html. Also Albuquerque Bernalillo County Water Authority, File C-13-12, passed 5/22/2013. Accessed from http://abcwua.legistar.com/LegislationDetail.aspx?ID=1429016&GUID=79686C7A-814E-41B9-BC35-DB2005F3DAE4

Exhibit B to Groundwater Application Attachment 2

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ADVANCE INVESTMENTS LIMITED

(Registered Number: 53821)

Administration Address:
PO Box 119
Martello Court
Admiral Park
St Peter Port
Guernsey GY1 3HB
Channel Islands

Tel: (01481) 211000
Fax: (01481) 211001

Michel Jichlinski
Augustin Plains Ranch, LLC
8070 Georgia Avenue Suite 113
Silver Spring
MD 20910
USA

20 June 2014

Dear Michel,

Augustin Plains Ranch

Advance Investments Limited ("Advance"), has been an investor in the Augustin Plains Ranch project since 2011 and considers it a core investment in its private equity portfolio.

We have analysed the plans by Augustin Plains Ranch LLC for a project to develop a water resource in the property owned by the company in the Augustin Plains, for the benefit of the people of New Mexico, and believe that the project will be economically viable.

In the event that the application by Augustin Plains Ranch LLC to the Office of the State Engineer proceeds to the hearing phase, Advance will continue participating in the financing of the development costs of the project under mutually acceptable terms.

Advance is part of a private investment group with interests in clean tech, environmental technologies, property and consumer businesses. The group is an experienced investor with a track record of over twenty years of providing long term financial backing to a range of corporations.

If the relevant authorities in New Mexico would like to discuss this further please contact Julian Levy on +44 7768 877 787.

Yours sincerely
For Advance Investments Limited

Director

EXHIBIT B TO ATTACHMENT 2

EWING BEMISS & CO.
INVESTMENT BANKERS

June 20, 2014

To Whom It May Concern:

This firm is experienced in arranging financings for a wide range of energy and natural resources related projects. We are, in particular, one of the leading financial advisory firms in the U.S. renewable energy, "cleantech" and sustainable environment sector and are in regular contact with most of the institutional investors in that sector. For more background on our firm, and its transactional experience, please see www.ewingbemiss.com.

We have been in close communication with the owners of Augustin Plains Ranch ("APR") for over a year, in anticipation of a formal engagement to advise on the financing of APR's project (the "Project") to tap an aquifer on its property near Datil, NM and to transport the water to the Albuquerque metropolitan area. In that connection, we have familiarized ourselves with the Project and have initiated preliminary conversations between APR and institutional investors with experience of investing in similar water resource projects. These conversations have substantiated preliminary investment interest in the Project from some of the most experienced and highly qualified equity investors in large scale water infrastructure projects in the U.S. On that basis, and on the basis of our firm's experience in such matters, we believe that, once the necessary permits have been secured, the Project is capable of attracting the necessary equity investments. Such investments will, in turn, enable the Project to arrange the requisite project finance (debt).

Sincerely,

Richard W. Petree, Jr.
Managing Director

420 LEXINGTON AVENUE • SUITE 1718 • NEW YORK • NY 10170
PHONE: (212) 588-0501 • WEB SITE: www.EwingBemiss.com • E-MAIL: info@EwingBemiss.com

2013 STRATEGIC 100
TOP GLOBAL INFRASTRUCTURE PROJECTS

This certifies that

AUGUSTIN PLAINS RANCH PROJECTS

Was Nominated for Inclusion in the 2013 Strategic 100, and Participated in the

6TH ANNUAL GLOBAL INFRASTRUCTURE LEADERSHIP FORUM

At the Alexander Hamilton U.S. Custom House, New York, NY on February 27 - March 1, 2013

February 28, 2013

DATE

NORMAN F. ANDERSON
CG/LA INFRASTRUCTURE INC.

OFFICE OF STATE ENGINEER
SANTA FE, NEW MEXICO

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Exhibit C to Groundwater Application Attachment 2

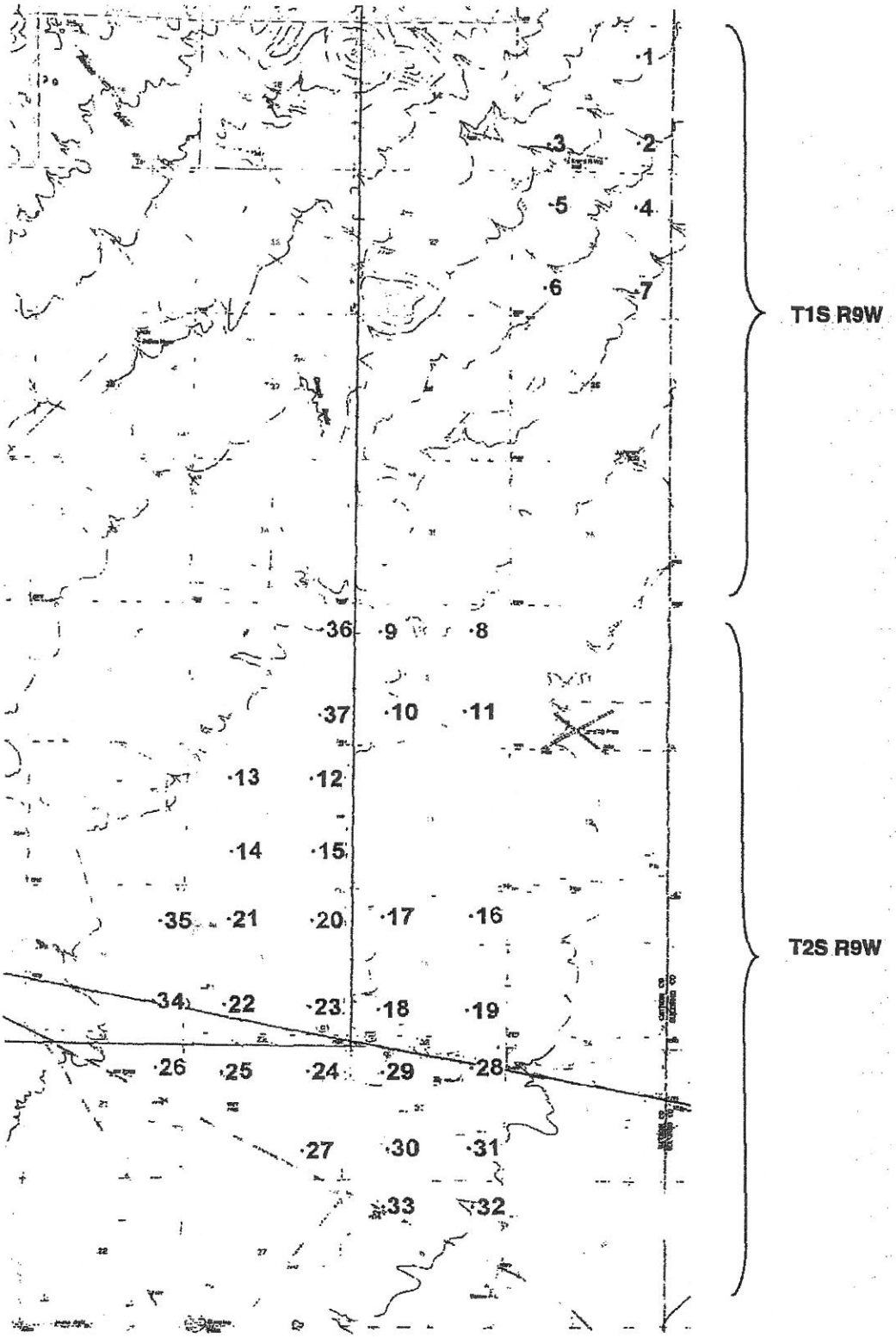


EXHIBIT C TO ATTACHMENT 2

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Exhibit D to Groundwater Application Attachment 2

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AUGUSTIN PLAINS RANCH WATER RESOURCE DEVELOPMENT PROJECT

Routing Constraints Analysis

Prepared for:

AUGUSTIN PLAINS RANCH

Prepared by:

SWCA ENVIRONMENTAL CONSULTANTS
5647 Jefferson Street NE
Albuquerque, New Mexico 87109

SWCA Project No. 17644

August 2012

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1 INTRODUCTION

For several years it has been widely recognized that New Mexico's water supply is an over utilized and dwindling resource. The regional drought that has plagued the Southwest for the past decade has seriously exacerbated water shortages and resulted in significant impact to the local and regional economy and those environmental elements that depend on flowing streams, shallow groundwater, and riparian habitats. Litigation over management of the limited water supplies has been initiated by environmental advocates, as well as local farmers, tribes, municipalities and adjacent states (Pease 2010). Solutions to these water problems, even once the current drought is over, will continue to be a serious challenge for the foreseeable future. Nowhere in New Mexico are the problems of drought and insufficient water more poignantly characterized than in the management of endangered species and other wildlife and human consumptive needs than in the Middle Rio Grande (MRG) valley.

The year 1996 was the first year of significant drought in the MRG in several decades. While the current drought and its associated problems are well known throughout the state, local water shortages and dwindling river flows during 2011 and 2012 exemplify conditions of the past 16 years and represent a harbinger of what is likely to occur in the future. During the 2011 water year, farmers along the Rio Grande were forced to pump groundwater to irrigate their crops, and due to poor range conditions and a lack of snowpack and rain, ranchers were forced to sell off livestock. In mid-summer, river flows were characterized by several weeks when the river ceased flowing for over 40 miles of the lower MRG before it enters Elephant Butte Reservoir. Adding to the environmental crisis, wildfires burned up hundreds of thousands of acres of forest and range vegetation in both upland and riparian wildlife habitats.

Augustin Plains Ranch (Ranch) has developed a proposal to develop a substantial, largely untapped groundwater source and deliver it to the banks of the MRG. The water supply comes from a deep aquifer beneath the Ranch on the Plains of San Augustin within the Rio Grande Basin, approximately 50 miles west of Socorro (Figure 1). It has been estimated that this project has the potential to sustain pumping of 54,000 acre-feet per year for 300 years (Augustin Plains Ranch LLC 2011). By comparison, metropolitan Albuquerque uses about 107,000 acre-feet per year. The Ranch has applied to the State of New Mexico for a permit to divert this water and deliver it to the Rio Grande in the vicinity of Socorro. The stated uses of the permit would be to develop the water resource to meet wildlife management and/or human consumptive purposes. The Ranch anticipates that all uses of the delivered water would be determined in collaboration with state and local elected officials, water managers, and end-users, including water planners, municipalities, industry, and representatives of irrigators and environmental groups. According to the water development plan, the Ranch is committed to public priorities for water use and intends to bring the water to market in a manner that upholds the public welfare, incorporates best practices in water conservation, does not impair existing water rights, protects the environment, and upholds New Mexico's cultural heritage and agricultural traditions.

This document identifies potential environmental and land use constraints associated with the Ranch's proposed pipeline route and optimal route alternatives for the Augustin Plains Ranch Water Resource Development Project. The development of the proposal focuses on how implementation of the project could provide supplemental water that will benefit the Rio Grande silvery minnow (*Hybognathus amarus*; silvery minnow) and the southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher) and their critical habitats while simultaneously providing other environmental benefits to the MRG state above.

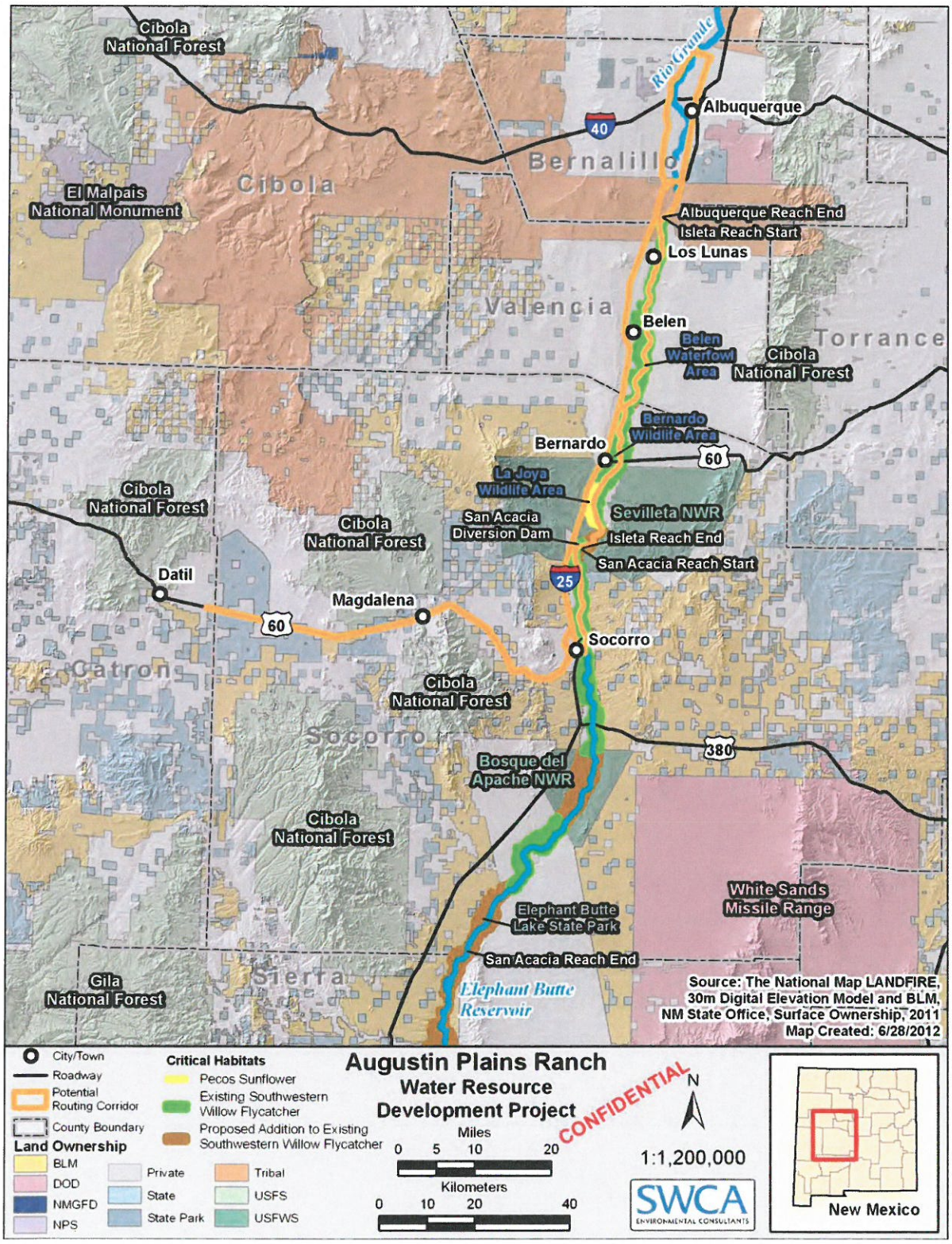


Figure 1. **Augustin Plains Ranch Water Resource Development Project routing corridor showing existing and proposed listed species critical habitat along the Middle Rio Grande.**

2 OVERVIEW OF THE ROUTING PROCESS

2.1 Route Selection Process

The goal of the routing study was to identify viable route options, evaluate potential environmental and land use constraints associated with those routes, and identify the optimal route alternatives for the project. The specific criteria used for the routing study are identified in Section 2.4, Routing Criteria. The overarching goals were to minimize potential impacts and conflicts between the project and other existing infrastructure, environmentally and culturally sensitive areas, and human activities by routing along existing linear facilities to the extent practical, avoiding unreasonable circuitous routes, avoiding extreme costs, and minimizing nonstandard design requirements. The routing objectives were accomplished through the identification of the proposed segments that minimized potential impacts to environmental, social, and cultural resources while meeting the purpose and need for the project. The specific routes considered and either discarded or carried forward for analysis are discussed in Sections 2.2, through 2.5.

2.2 Summary of Routing Process

An evaluation process was conducted for the routing study to identify the optimal route for the project. To accomplish this objective, the routing process focused on identifying and evaluating, based on available data, existing linear facilities that could present opportunities for locating the project. Once candidate routes were identified, they were vetted by the team using the routing criteria. The team cast a wide net initially and then winnowed the list down to best-fit options, which were evaluated again by the team to determine the proposed route and alternatives.

The major steps undertaken as part of the study's routing process were:

- Step 1: Selection of the study area for the project that defined the extent of the geographical area within which feasible routes for the project were identified;
- Step 2: Development of the study's routing criteria (opportunities and constraints) that were used in evaluating potential routes;
- Step 3: Development of geographic system information (GIS)-based maps to identify and analyze routing opportunities and constraints;
- Step 4: Identification of route options that minimized adverse impacts while maximizing use of the highest-value route opportunities, informed by public and agency feedback; and
- Step 5: Analysis of the routing opportunities and constraints.

2.3 Study Area Definition

The routing corridor is approximately 600 feet wide and runs along U.S. Highway 60 (U.S. 60) east of Datil until it reaches Socorro where the route then follows Interstate 25 (I-25) north to the southern aspect of Albuquerque (see Figure 1). The routing corridor along I-25 is approximately 11,000 feet wide and extends from the west bank of the Rio Grande to 300 feet west of I-25. Once to the City of Albuquerque, a corridor along Coors Road is also described.

2.4 Routing Criteria

The study employed two general types of routing criteria for this portion of the project: routing opportunities and routing constraints (see Table 1).

Opportunities – Routing opportunities, consisting of existing linear facilities such as transmission and distribution lines, roads, railroads, and pipelines were used as the basis for identifying potential optional

route segments. . The use of existing linear features/corridors for routing purposes makes it unnecessary to introduce a new linear feature into the land use patterns of an area, which helps minimize associated impacts. This approach to linear facility siting is generally consistent with land use planning by federal, state, and local land management agencies and siting authorities. As part of the routing study, all reasonable efforts were made to identify and analyze viable routing opportunities within the study area.

Constraints – Routing constraints are resources and land use features that have differing levels of negative compatibility with new pipeline construction. Two general categories of constraints were identified:

- Avoidance Areas – These are areas where siting the pipeline would be extremely difficult or nearly impossible for one or more reasons (economics, statutory prohibition, permitting time frames, construction difficulty, etc.). These areas were excluded from consideration.
- Sensitive Areas – These are areas where siting the pipeline would be possible but specific issues or conditions exist that could make developing the project more difficult, more time consuming, or more costly. The impact of these segments on the identified areas of routing constraints was then analyzed to identify potential routes with the least possible adverse impacts to environmental and human activities.

Table 1. Summary of Opportunities and Constraints Evaluated in Routing Study Corridor

Criteria	Feature
Opportunities	Right-of–way along existing linear features such as roads, pipelines, transmission and distribution lines, and/or railroads.
Constraints	Cultural and historic resources.
	Biological and environmental resources including threatened and endangered species, wetlands and water resources.
	Infrastructure limitations.
	Land ownership and landuse patterns.

2.5 Data Used for the Routing Study

A key component of the project routing study was the development of a comprehensive set of maps and associated data that made it possible to efficiently identify, measure, label, and track constraints and opportunities within the corridor. The data were obtained in electronic format from various federal, state, and local agencies, as well as commercial and other sources. The ESRI ArcGIS 9.3.1 platform was used to manage the electronic data and analyze the various routing options under evaluation. This data included a broad range of physical, ecological, cultural, and land use information from a number of sources which are identified in the appropriate sections.

3 DEVELOPMENT OF THE POTENTIAL ROUTES

3.1 Identification of Route Options

SWCA evaluated a route along U.S. 60 using a 300-foot buffer on each side of the highway. The sporadic land ownership pattern in this corridor requires the project to cross state and federal land managed by two agencies, the Bureau of Land Management (BLM) and U.S. Forest Service (USFS). Staying within the highway right-of-way may avoid crossing the jurisdiction of one or more of these public agencies, including NMDOT. The route along I-25 was expanded to provide additional flexibility in siting locations due to the anticipation of encountering sensitive state, federal, and tribal lands. This corridor, running parallel to the Rio Grande, averages 11,000 feet wide extending from the west bank of the river to a 300-foot buffer west of I-25. In addition to sensitive land ownership, and as previously discussed in the

Augustin Plains Ranch Water Recourse Development Project Final Report (SWCA 2012), two federally listed species (silvery minnow and flycatcher) are present in the Rio Grande or adjacent riparian area, creating a further constraint to locating the pipeline too far to the east. A third federally protected species, the Pecos sunflower (*Helianthus paradoxus*), presents an additional constraint if the pipeline is located closer to the river. Based on these criteria and on the subcorridors described below, the north-south route was evaluated and an alternative corridor route was identified in southwest Albuquerque to reduce potential conflicts. Corridors Considered

East-west route options were evaluated along the south and north sides of U.S. 60 both of which may require crossing state and/or federal land ownership. The preferred Route Option A follows the south side of U.S. 60 and descends quickly from the foothills of the Datil Mountains until reaching the City of Soccorro at milepost 56 (Figure 2). As the route approaches Socorro, the route will veer from U.S. 60 and follow the railroad line to I-25. An alternative corridor (A1) was identified to avoid extensive infrastructure (Appendix B, Figure B.25). This option will depart in a northeast direction from U.S. 60 near Michigan Avenue and travel just west of the New Mexico Tech golf course before turning on East Raod to tie into I-25.

Three north-south route options were considered: A) the west I-25 subcorridor, B) the central subcorridor following the railroad line above the river valley, and C) the east subcorridor along the river valley. All three of these options encountered a variety of sensitive private, state, federal, and tribal lands. Option C was eliminated due to the large number of regulatory constraints. From Socorro, the remaining north-south route (option A) stays within the west I-25 right-of-way corridor to Coors Road and up to Alameda to tie into the Albuquerque Bernalillo County Water Utlity Authority (ABCWUA) facility. The alternative option (B) will follow the railroad line north to the ABCWUA facility. Option A is relatively level with a slight increase approaching Albuquerque (Figure 3).

The corridor section A with the option A1 is considered the preferred route. No elevation profile is currently available for option A1. Elevation and GPS coordinates for each of the milepost markers are included in Appendix A and on maps in Appendix B (Figure B.10-Figure B.17).

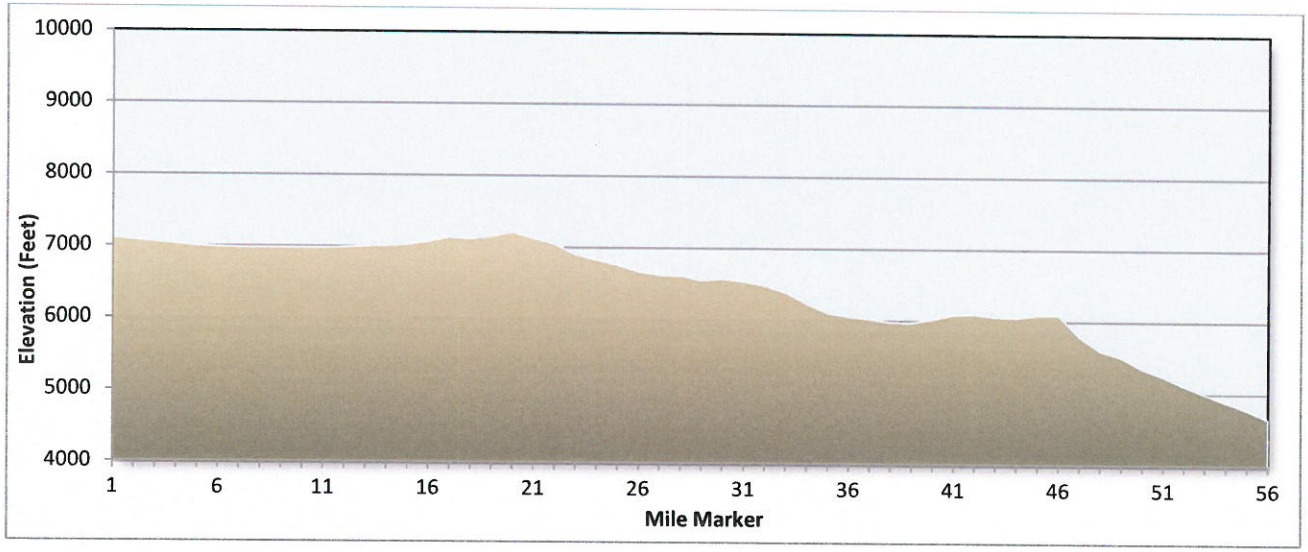


Figure 2. Preferred Route A Datil to Socorro elevation profile

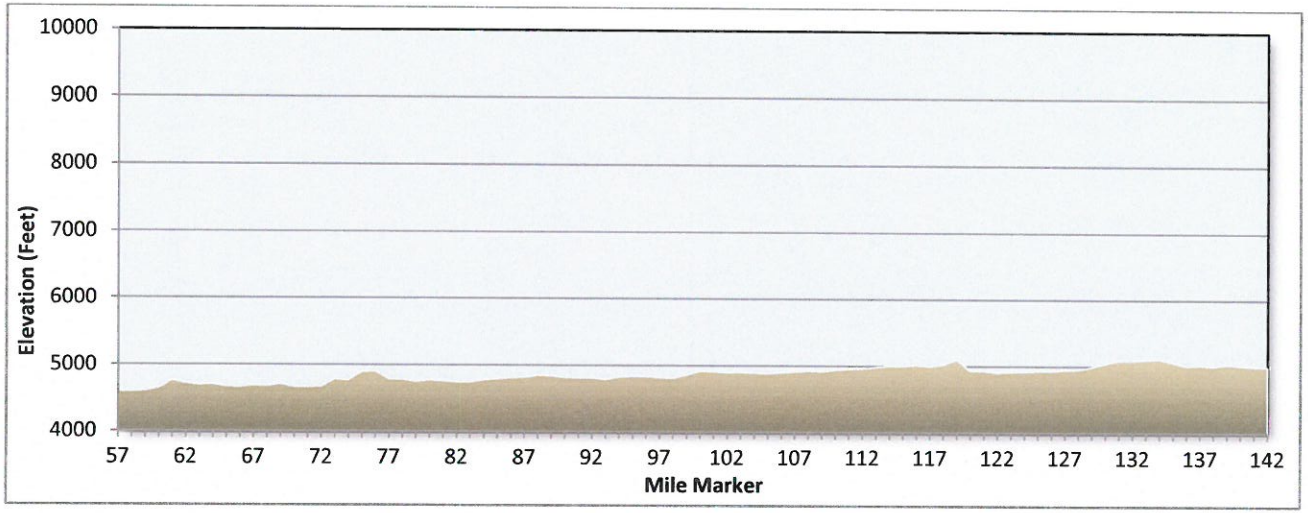


Figure 3. Preferred Route A Socorro to Albuquerque elevation profile

4 INITIAL ROUTING CONSTRAINTS

4.1 Cultural and Historic Resources

The project could have potential impacts to cultural resources and traditional cultural properties within the project's corridor. Data from the New Mexico Historic Preservation Division were obtained for the routing study area to determine the number of previous surveys and previously recorded sites present. To best understand the potential for impacting cultural resources, the study area was divided into physiographic zones. These zones correspond to areas of differing access to resources for the prehistoric and historic inhabitants, which may indicate a greater or lesser number of cultural resources. The first zone is along U.S. 60 in the higher terrain areas (over 6,000 feet), the second is the transition zone between the highlands and the river valley (5,999–5,100 feet), and third is the river valley (below 5,100 feet). There are different resources that were available to the prehistoric and historic occupants in these three areas. As expected, the most abundant and varied resources are in the transitional area because the inhabitants would be able to take advantage of all three physiographic environmental zones.

The next step was to determine the acres surveyed in each area, the number of sites recorded, and the number of sites eligible for the National Register of Historic Places (NRHP). These data indicated the known sites (constraints) in the project area and form the basis foran estimate of additional sites (constraints) that could be present.

Table 2 summarizes the known data and Figure 4 generally indicates the constraints as low, moderate, or high risk of sites eligible for the NRHP. The areas of low risk are in the higher terrain areas, have few known sites, have few or no natural water sources, and are not near any towns or cities. The moderate risk areas have a moderate number of known sites, are in transitional or river valley areas that are near natural water sources, and are near small towns. The high risk areas have a high number of known sites, are in the river valley area, are also near secondary water sources, and are in or near small towns or cities. In general prehistoric archaeological sites will be on the first or second terrace above the river valley or near natural water sources. Historic resources are in or near towns and cities and are more often found in the river valley. For routing in the river valley, staying on the terrace above the floodplain, but not next to its edge, would likely impact the fewest sites. Prehistoric sites may be in this zone but they are often smaller, easier to avoid, or easier to mitigate than the historic resources in the river valley.

Table 2. Summary of Previous Cultural Resource Surveys and Sites in Routing Study Corridor

CR Analysis Area	Acres Surveyed	% of Area Surveyed	# Known Sites	% Eligible Sites	Sites per Acre Surveyed
Higher terrain (>6,000 feet)	2,108	7.6%	43	18.6%	1 per 49 acres
Transitional (5,999–5,100 feet)	982	10.8%	43	51.2%	1 per 23 acres
River valley (<5,100 feet)	10,881	9.5%	213	38.0%	1 per 51 acres

Below is a summary list of potential cultural constraints:

- The higher terrain area has the fewest known sites and the least potential for new sites;
- A moderate amount of archaeological or historic resources are in transitional areas near natural water sources; and
- High numbers of archaeological or historic resources are in the river valley, near natural water sources, and near towns and cities.

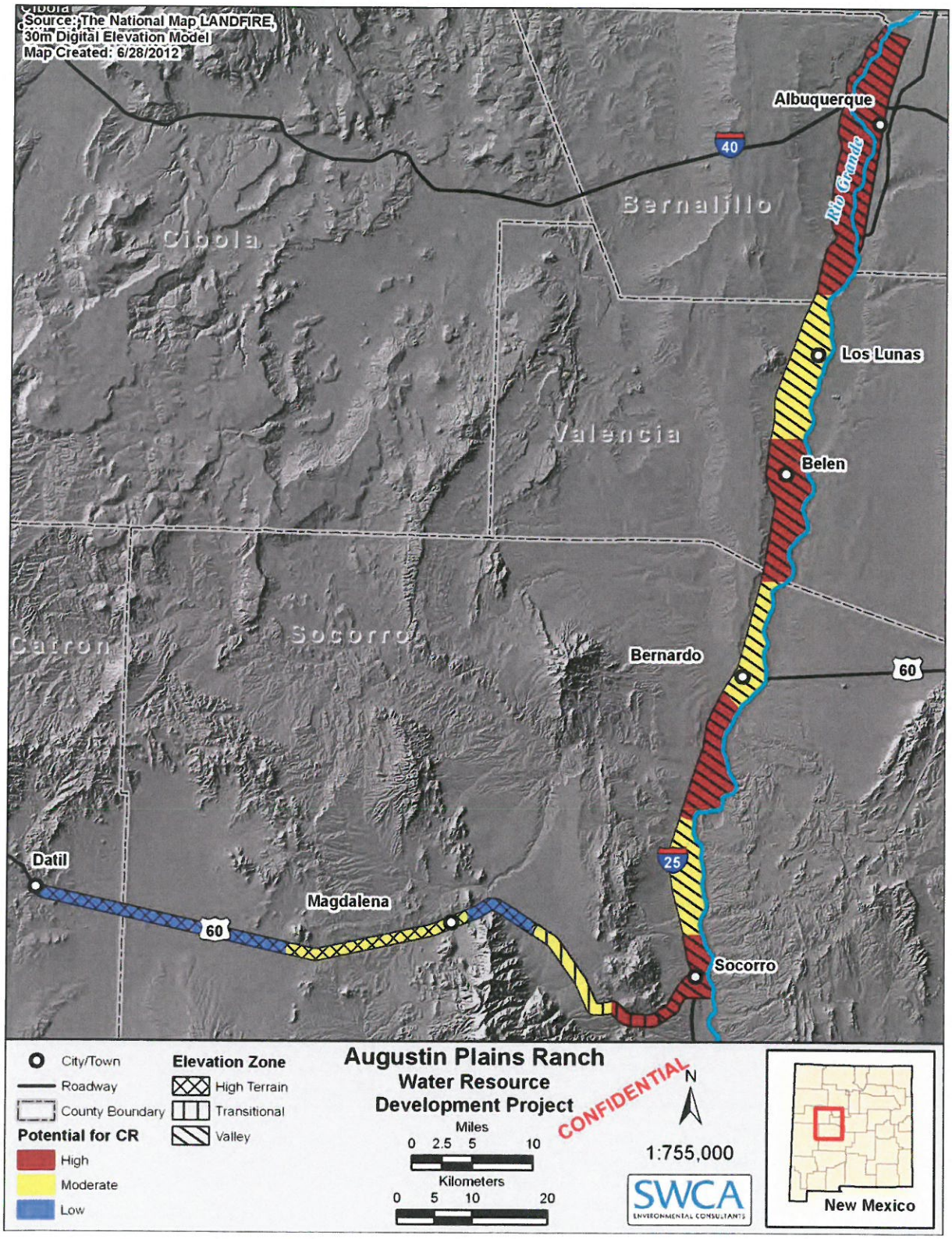


Figure 4. **Low, moderate, or high risk cultural resource areas along Augustin Plains Ranch Water Resource Development Project Corridor.**

4.2 Biological and Environmental Resources

SWCA Environmental Consultants (SWCA) developed a list of all federally threatened, endangered, candidate, or species of concern, and all species designated by the State of New Mexico as threatened or endangered, known or thought to occur in Catron, Socorro, Valencia, and Bernalillo counties (Appendix C). Due to the large amount of BLM ownership within the project corridor, additional sensitive species designated by this agency were also included. Information used to develop this list was obtained from the websites of the U.S. Fish and Wildlife Service (USFWS 2012), the New Mexico Department of Game and Fish (NMDGF 2012), and the New Mexico Rare Plant Technical Council (2012).

Using preliminary and very course habitat maps developed from the Southwest Regional Gap Analysis Project (SWReGAP) and their knowledge of species habitat requirements, SWCA biologists completed an assessment to determine the potential for sensitive species to be present in the project corridor (see Appendix B). Numerous species were considered not present in the project corridor based on absence of suitable habitat and/or known range limitations. The remaining species with the potential to be present were assigned an occurrence designation of unlikely, possible, or probable. Many of those species listed for possible occurrence are rare or have very limited habitat within the project corridor. Other species characterized as possible or unlikely may exhibit unpredictable distribution, or information regarding their distribution may not be available. To accurately determine the status of these species in the project area, additional analysis, not covered as part of this routing report, may be necessary.

Based on accurate and readily available distribution data, two threatened or endangered species were identified as having a high probability of occurrence in the project corridor. The flycatcher is listed as endangered by the USFWS and the NMDGF. This species breeds in the riparian forests of the Rio Grande. Critical habitat was designated in 2005 with further revisions proposed in 2011 (USFWS 2011). A final rule regarding these revisions is due by July 31, 2012. A map of critical habitat relative to the project corridor is in shown Figure 4 above.

Little is known about the historic distribution of the Pecos sunflower, which inhabits saline soils in desert wetlands usually associated with springs. One large population has been documented in Socorro County near the confluence of the Rio Grande and Rio Puerco. The species is designated as threatened by the USFWS and endangered by the NMDGF. The La Joya State Wildlife Area, which extends into the project corridor, is considered essential habitat for the conservation of this species (USFWS 2005) and has been designated as critical habitat (see Figure 1).

Other environmental constraints might include the presence of drainages or wetlands, and the regulatory compliance issues pertaining to these resources have been discussed previously in the Augustin Plains Ranch Water Recourse Development Project Final Report (SWCA 2012). There are three springs in the vicinity of the project corridor (see Appendix B, Figure B.4 and Figure B.5). These aquatic systems are unique environments, and many contain rare endemic populations of invertebrates, such as the Socorro isopod (*Thermosphaeroma thermophilum*), that receive legal state and/or federal protection. The current orientation of the proposed pipeline appears to avoid these wetland springs; however, their locations need to be carefully considered should any modification to the project route be necessary.

4.3 Infrastructure

There is minimal infrastructure along the U.S. 60 corridor, with the exception of New Mexico Highway (NM) 52 and NM 168, which terminate on the south side of U.S 60 (see AppendixB, Figure B.18 and Figure B.19). However, NM 107 does cross U.S. 60 just west of Magdalena. The number of state roads to be traversed increases along the I-25 corridor. Major highway intersections are associated with the cities of Belen (NM 548) and Los Lunas (NM 6). Larger populated areas in the corridor including Belen, Los Lunas, Magdelena, Socorro, and Albuquerque contain numerous secondary paved and in some cases

unpaved roads that will be crossed by the project corridor. Some of the state highways, such as U.S. 60 at Bernardo and NM 408 do not cross to the west side of I-25 (see Appendix B, Figure B.21). State highway crossings and use of 10xisting right-of-ways may require consultation with the New Mexico Department of Transportation.

Each populated area also has considerable commercial and industrial infrastructure that might be impacted by the project route. The route could potentially be deviated around smaller developed areas such as Magdelena, but the route through the larger populated areas and especially the southern part of Albuquerque will encounter considerable development and will be difficult to avoid. In general, the area west of I-25 has fewer road crossings and infrastructure, except for where the corridor crosses to the east of the river just south of Albuquerque (see Appendix B, Figure B.24). Here the corridor will either be in conflict with the riparian area or encounter increased infrastructure outside the Rio Grande floodplain, and it may require a crossing of the Rio Grande. This could be avoided by routing the pipeline to the west of Coors Road (see Appendix B,Figure B.24) and then adding a lateral pipeline along an east-west roadway to where the water will be distributed to the river.

A natural gas pipeline owned by El Paso Natural Gas will intersect with the current project corridor just south of Belen (see Appendix B, Figure B.23). The Burlington Northern Santa Fe railroad extends through the entire north-south corridor (see Appendix B, Figure B.21 through Figure B.25). The railroad line generally runs parallel to and between the river and I-25. If the pipeline stays west of the railroad, it will need to cross two branch lines, one south and one north of Los Lunas (see Appendix B, Figure B.24).

4.4 Land Ownership and Use

The current project corridor crosses privately owned land or public land managed by the BLM, USFS, and State of New Mexico. In addition, the route enters tribal land on the Pueblo of Isleta. Less than 0.5 acre of USFS land extends into the corridor and could be avoided by shifting the route to the south onto BLM land (Figure B.19). The New Mexico State Land Office (SLO) frequently leases land for development, but has minimal regulatory compliance requirements. However, the presence of several state wildlife areas in the project corridor will require consultation with the NMDGF (see Appendix B, Figure B.21 through Figure B.23). The extensive coverage of BLM land will trigger the requirement to complete a National Environmental Policy Act (NEPA) evaluation of the project's environmental impacts (see permitting needs and environmental constraints report). The project route also crosses the Sevilleta National Wildlife Refuge requiring further consultation with the USFWS. And finally, consultation will also be necessary with the Pueblo of Isleta since the project corridor extends across tribal land.

Each Tribe must provide environmental clearance for development projects that cross tribal lands, even in state or federal highway right-of-ways. The same rule applies for acquiring clearance from the appropriate agencies for all right-of-ways crossing state and federal lands. Therefore, depending on the routing corridor selected, clearance may also be required from the SLO, BLM, and USFS. Environmental clearance must also be coordinated through a NMDOT District Permit Agent and Traffic Engineer. The corridor route passes through NMDOT Districts 1, 6 and 3.

Land use within the project corridor consists primarily of agricultural land confined mainly to the section just west of the Rio Grande. This land use includes crop and pasture, with minimal groves and vineyards. Some agriculturally productive land may be impacted if the corridor deviates from the highway right-of-way, requiring negotiations and likely compensation for private landowners. West of Socorro, the land use impacted by the project route is mostly rangeland. Other land uses in the corridor include urban and other developed land, forest land, water, barren land, and forested riparian.

5 CONCLUSIONS AND RECOMMENDATIONS

The route along U.S. 60 consists primarily of rangeland, but will extend across three different public land jurisdictions. However, only 0.5 acre of USFS land extends into the corridor and can be avoided by routing the line on the south side of the road or close to the highway right-of-way on the north side. . We suggest routing the pipeline on the south side of US 60. It appears the biggest constraint for the U.S. 60 segment will be crossing through the commercial and industrial infrastructure in urban areas. With the exception of springs, arroyos, and potential wetlands, there would be few environmental constraints in this section, although additional literature review, consultation with species experts, and field surveys may be needed as confirmation of the absence of sensitive species or habitats. Route A is recommended since it has the fewest environmental and cultural resource constraints, and it reduces by one the number of federal agencies requiring compliance. Route A1 is also recommended to avoid the extensive infrastructure development in the Socorro area.

The I-25 corridor appears to be more problematic with the presence of tribal land; federal and state wildlife areas; and prime agricultural lands. In addition, three endangered/protected species occur in this corridor. Impacts to cultural resources and traditional cultural properties will also be more likely to occur within the riparian area, but diminish with increasing elevation and distance away from the river. Locating the route in the west corridor (west of I-25) and using the alternative route in southwest Albuququerque (west of Coors Road) would be most advantageous in avoiding cultural resource impacts, endangered species critical habitat, sensitive public land, and infrastructure. Avoiding any federal or state land designations would preclude the need to obtain additional environmental clearance from multiple agencies. This route would also require fewer highway crossings and avoid potentially crossing the Rio Grande. Therefore, route A is the recommended since it has the fewest environmental and cultural resource constraints.

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APPENDIX A.
ELEVATION AND GPS COORDINATES (NAD 83) FOR MILEPOSTS ALONG ALTERNATIVE ROUTE A

Mile	Elev_feet	Elev_meter	X_NAD83	Y_NAD83
1	7116	2169	247525.10	3779209.14
2	7083	2159	249094.80	3778854.61
3	7057	2151	250663.72	3778496.64
4	7028	2142	252233.70	3778143.31
5	7001	2134	253802.31	3777783.92
6	6988	2130	255370.53	3777422.78
7	6982	2128	256940.39	3777069.18
8	6982	2128	258510.13	3776715.02
9	6982	2128	260079.15	3776357.80
10	6982	2128	261648.08	3776001.01
11	6982	2128	263216.28	3775644.98
12	6991	2131	264785.09	3775286.73
13	7001	2134	266354.04	3774928.71
14	7018	2139	267923.26	3774571.99
15	7028	2142	269492.69	3774216.34
16	7073	2156	271062.58	3773862.58
17	7139	2176	272632.53	3773509.09
18	7113	2168	274201.10	3773149.98
19	7149	2179	275784.25	3773150.03
20	7211	2198	277357.52	3773488.67
21	7123	2171	278930.91	3773826.50
22	7051	2149	280504.12	3774165.26
23	6903	2104	282077.31	3774503.96
24	6827	2081	283651.33	3774838.96
25	6762	2061	285224.28	3775178.92
26	6667	2032	286798.42	3775513.24
27	6621	2018	288371.35	3775852.85
28	6614	2016	289944.80	3776190.40
29	6552	1997	291460.45	3776720.13
30	6575	2004	292950.58	3777327.70
31	6539	1993	294440.55	3777935.46
32	6483	1976	295929.36	3778546.29
33	6388	1947	297335.88	3779310.62
34	6234	1900	298819.86	3779729.58
35	6106	1861	300215.47	3778958.60
36	6056	1846	301569.20	3778088.59
37	6027	1837	302918.54	3777211.79
38	5981	1823	304269.69	3776337.78
39	5978	1822	305621.19	3775464.28
40	6027	1837	306823.92	3774431.20
41	6086	1855	307745.89	3773112.44
42	6096	1858	308665.06	3771791.83
43	6060	1847	309588.39	3770474.01
44	6053	1845	310425.01	3769106.56
45	6086	1855	311079.34	3767636.46
46	6093	1857	311731.93	3766165.64
47	5801	1768	313214.82	3765925.99
48	5594	1705	314750.55	3766037.68

Mile	Elev_feet	Elev_meter	X_NAD83	Y_NAD83
49	5512	1680	315878.47	3764892.82
50	5354	1632	317389.72	3764414.45
51	5246	1599	318997.73	3764362.09
52	5112	1558	320506.96	3764780.04
53	4997	1523	321847.89	3765669.59
54	4888	1490	322802.81	3766901.56
55	4780	1457	323624.70	3768284.95
56	4656	1419	324768.02	3769275.84
57	4593	1400	325781.24	3770095.52
58	4596	1401	325518.47	3771672.88
59	4606	1404	325027.92	3773195.26
60	4646	1416	324722.62	3774771.79
61	4764	1452	324409.67	3776349.45
62	4721	1439	324053.39	3777918.48
63	4695	1431	323651.60	3779476.14
64	4705	1434	323239.23	3781030.81
65	4672	1424	322945.33	3782610.61
66	4669	1423	322704.54	3784201.32
67	4685	1428	322607.74	3785802.06
68	4682	1427	322733.68	3787402.21
69	4711	1436	323230.95	3788932.49
70	4669	1423	323730.70	3790461.98
71	4669	1423	324229.37	3791991.25
72	4672	1424	324726.66	3793521.28
73	4780	1457	325226.69	3795050.58
74	4767	1453	325727.61	3796579.42
75	4898	1493	326229.27	3798107.99
76	4902	1494	326776.25	3799620.79
77	4783	1458	327171.04	3801174.30
78	4783	1458	327406.98	3802764.49
79	4747	1447	327838.62	3804304.21
80	4770	1454	328546.38	3805749.22
81	4757	1450	329253.29	3807194.71
82	4744	1446	330016.54	3808608.77
83	4744	1446	330894.02	3809957.48
84	4777	1456	331645.56	3811367.11
85	4790	1460	332061.63	3812921.43
86	4810	1466	332476.19	3814476.07
87	4816	1468	332891.53	3816030.57
88	4846	1477	333306.13	3817585.26
89	4839	1475	333720.78	3819139.94
90	4816	1468	334143.10	3820692.34
91	4810	1466	334550.85	3822248.93
92	4810	1466	334962.46	3823804.07
93	4787	1459	335229.99	3825390.98
94	4823	1470	335495.43	3826978.19
95	4833	1473	335762.65	3828564.97

Mile	Elev_feet	Elev_meter	X_NAD83	Y_NAD83
96	4836	1474	336029.02	3830151.92
97	4816	1468	336295.75	3831738.85
98	4810	1466	336549.33	3833327.63
99	4859	1481	335997.40	3834802.84
100	4915	1498	335415.94	3836290.48
101	4911	1497	335395.44	3837886.00
102	4898	1493	335567.82	3839486.01
103	4902	1494	335744.12	3841085.45
104	4892	1491	336041.74	3842666.28
105	4882	1488	336288.89	3844254.30
106	4898	1493	336331.91	3845862.86
107	4911	1497	336494.88	3847458.26
108	4925	1501	337049.16	3848968.65
109	4918	1499	337608.85	3850477.48
110	4941	1506	338173.14	3851984.39
111	4961	1512	338733.12	3853492.77
112	4964	1513	339297.15	3855000.01
113	4984	1519	339844.33	3856513.07
114	5003	1525	340422.75	3858011.97
115	5000	1524	341114.78	3859464.77
116	5016	1529	341808.45	3860916.69
117	4997	1523	342165.88	3862476.91
118	5026	1532	342499.28	3864049.76
119	5105	1556	342884.80	3865612.12
120	4928	1502	343443.60	3867101.80
121	4931	1503	343916.81	3868348.32
122	4908	1496	343318.48	3869841.99
123	4918	1499	343070.28	3871403.52
124	4921	1500	343101.79	3873012.13
125	4931	1503	343275.22	3874611.16
126	4928	1502	343491.87	3876205.17
127	4944	1507	343705.80	3877799.83
128	4954	1510	344076.24	3879363.32
129	4993	1522	344364.11	3880887.09
130	5046	1538	343850.02	3882408.15
131	5092	1552	344062.04	3883898.54
132	5095	1553	344410.59	3885453.95
133	5102	1555	344927.87	3886973.92
134	5115	1559	344971.15	3888581.43
135	5066	1544	345358.28	3890082.10
136	5010	1527	346564.48	3891134.76
137	5020	1530	347293.83	3892566.25
138	5007	1526	347845.41	3894059.43
139	5036	1535	348914.00	3895261.64
140	5016	1529	349876.64	3896546.74
141	5000	1524	350886.72	3895917.47
142	4997	1523	350647.99	3895469.49

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APPENDIX B.
ROUTING CORRIDOR MAP TILES FOR DRAINAGE, ELEVATION, AND LAND OWNERSHIP

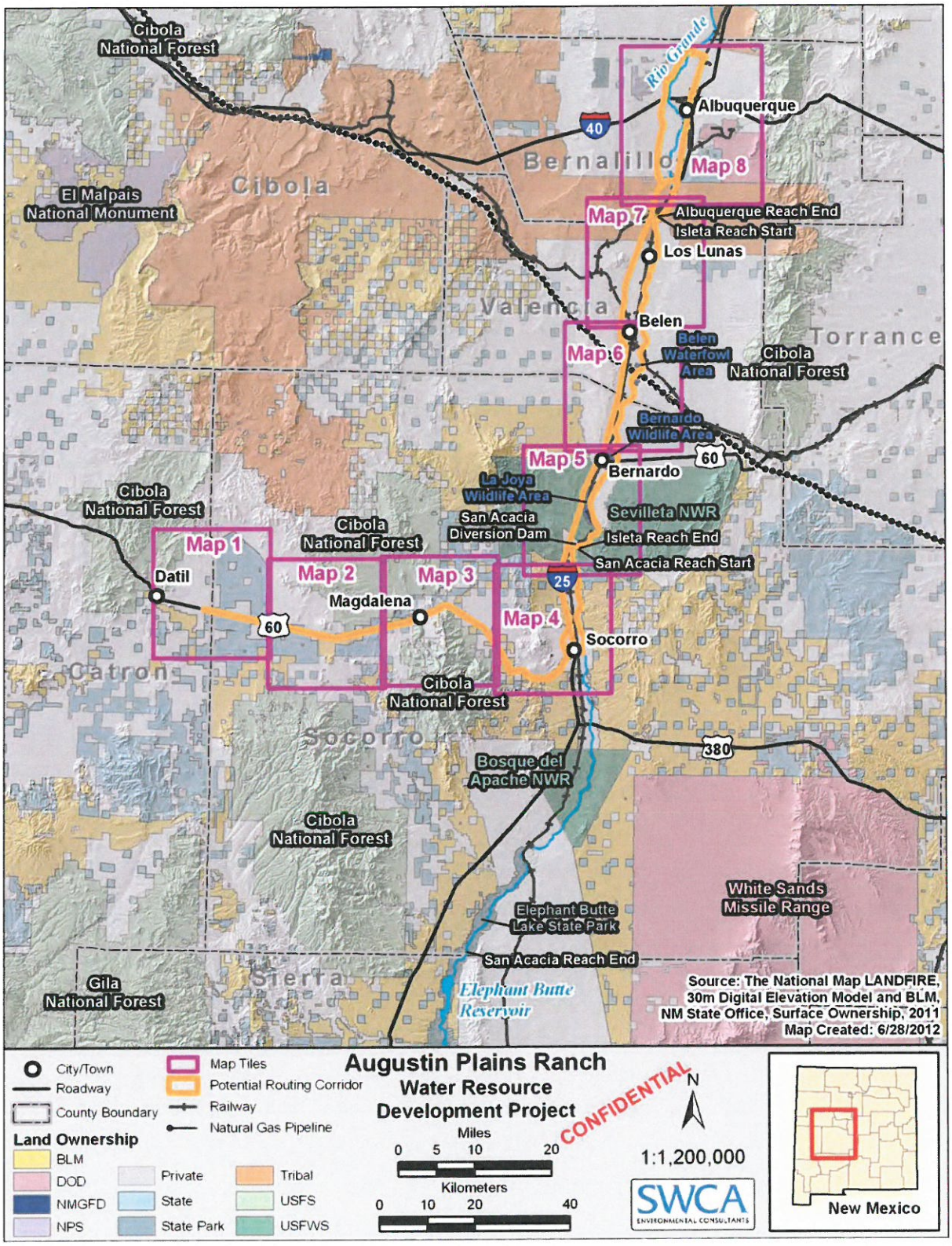


Figure B.1. Map tile overview of the project area.



Figure B.2. Drainages in the project area, map 1 of 8.



Figure B.3. Drainages in the project area, map 2 of 8.

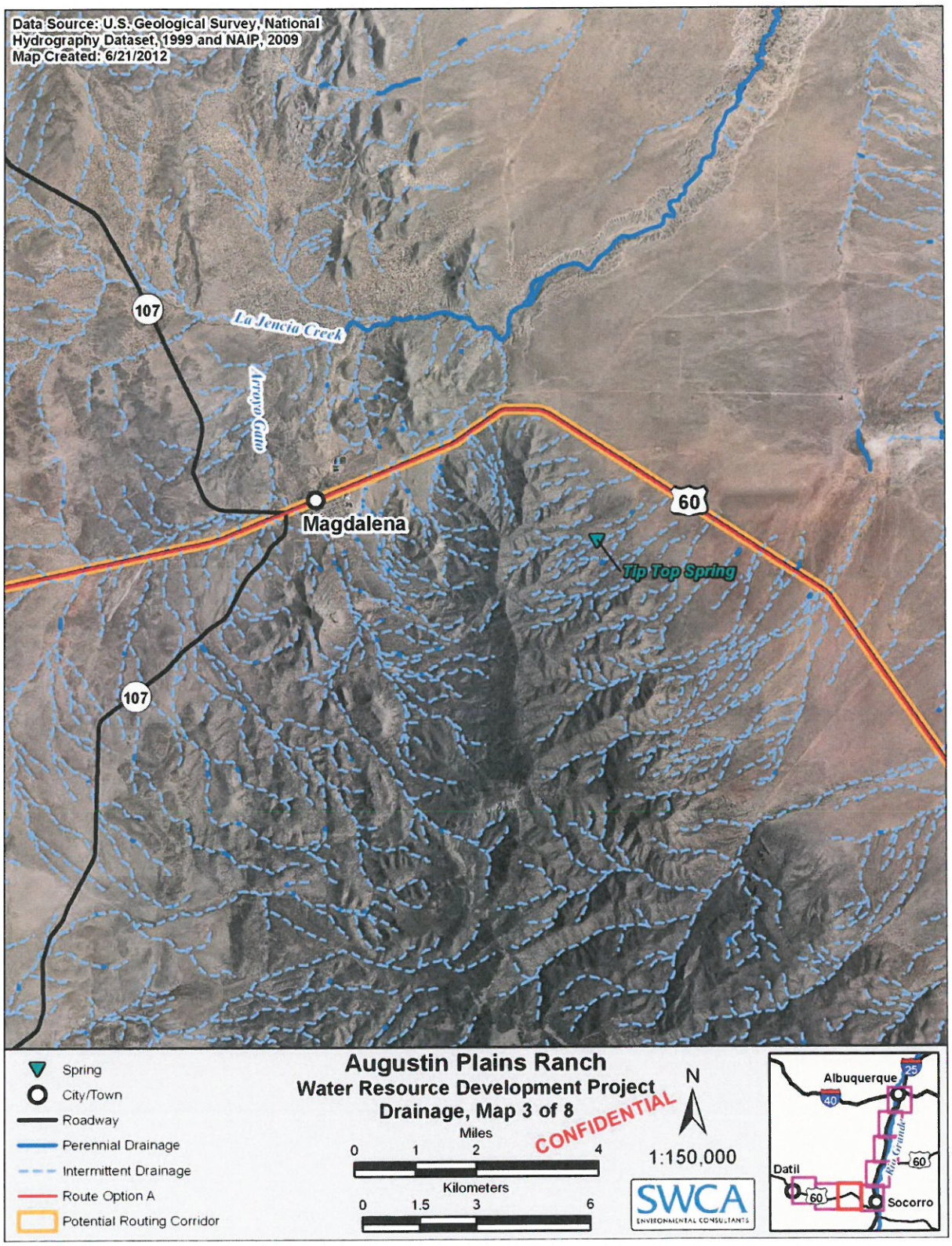


Figure B.4. Drainages in the project area, map 3 of 8.

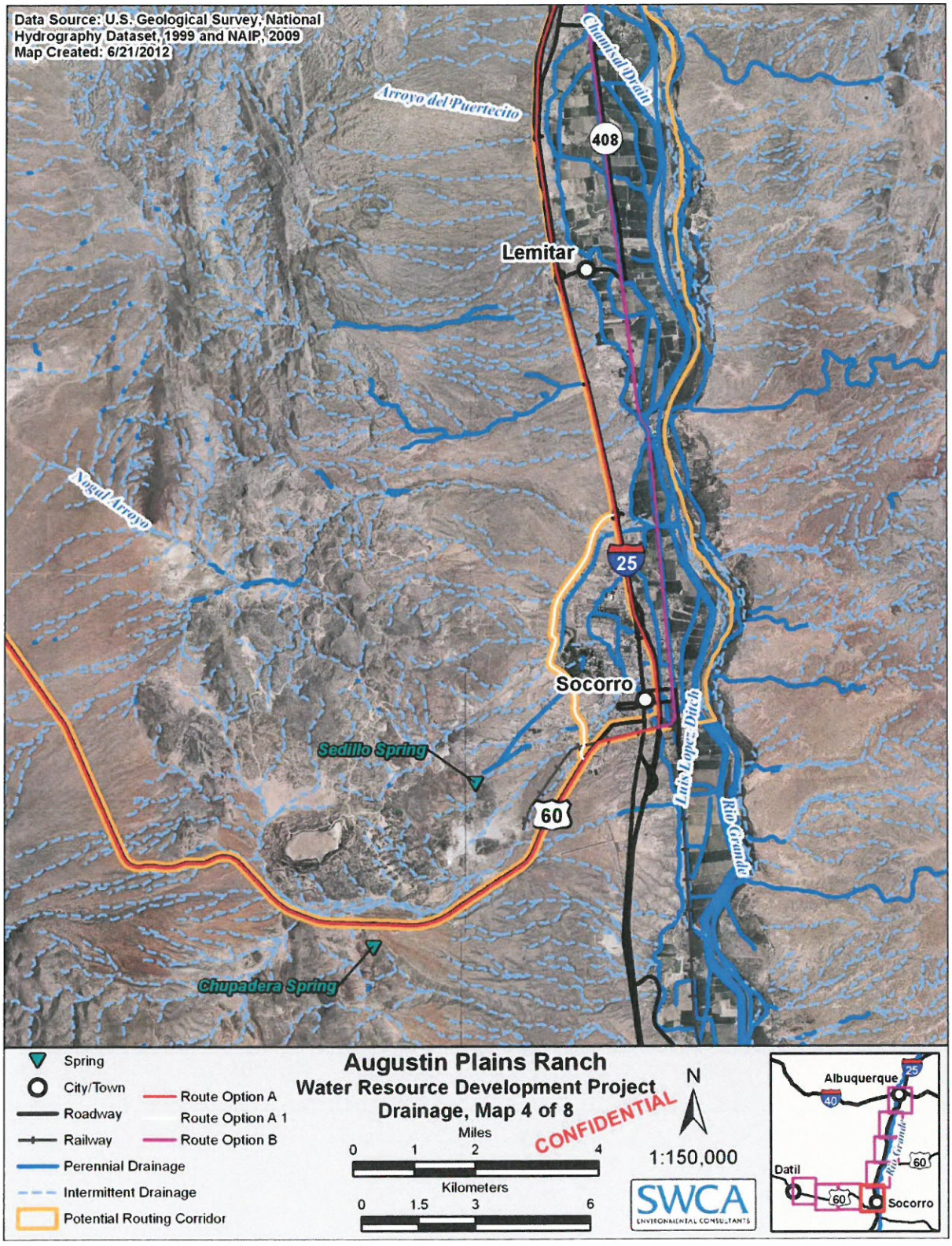


Figure B.5. Drainages in the project area, map 4 of 8.

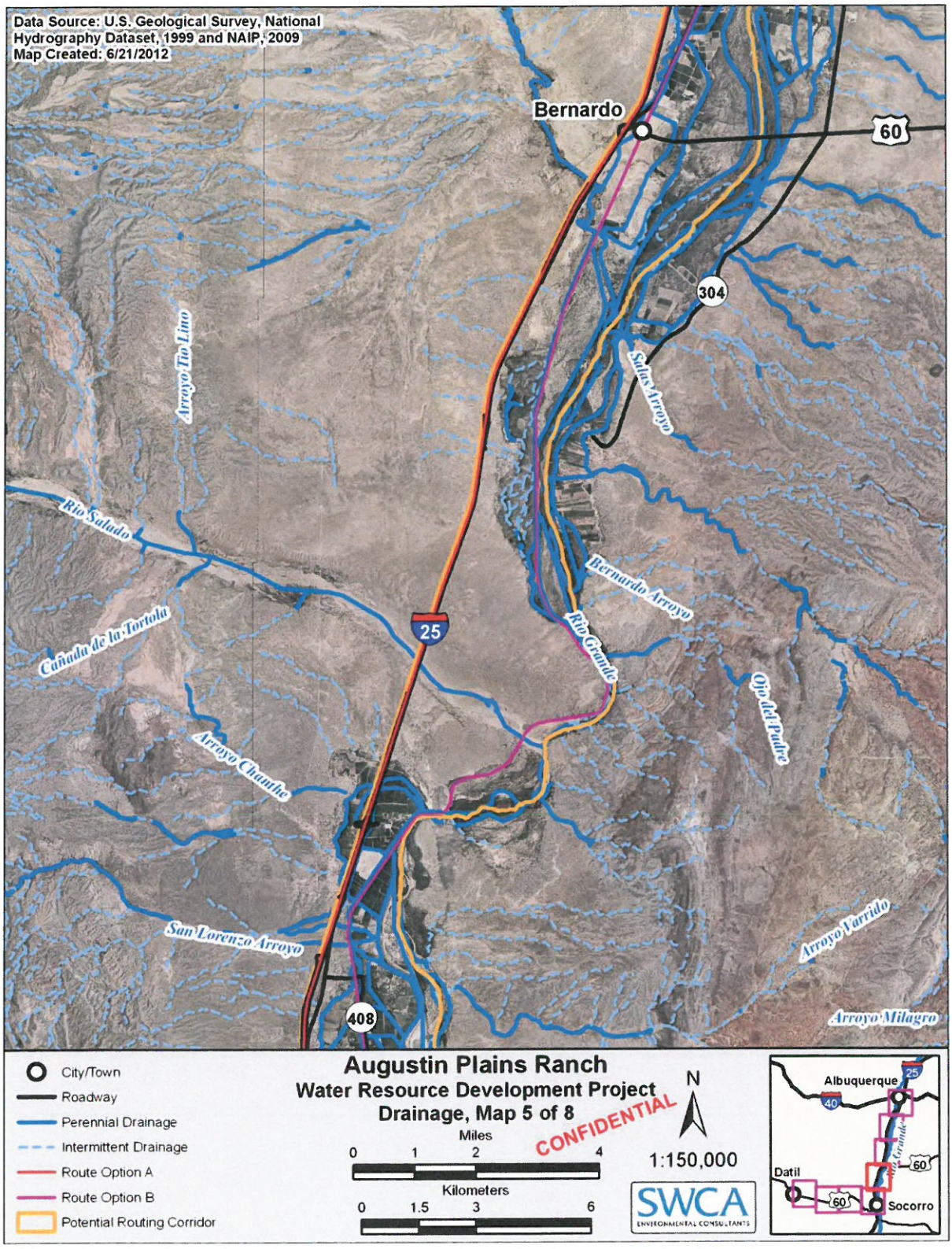


Figure B.6. Drainages in the project area, map 5 of 8.

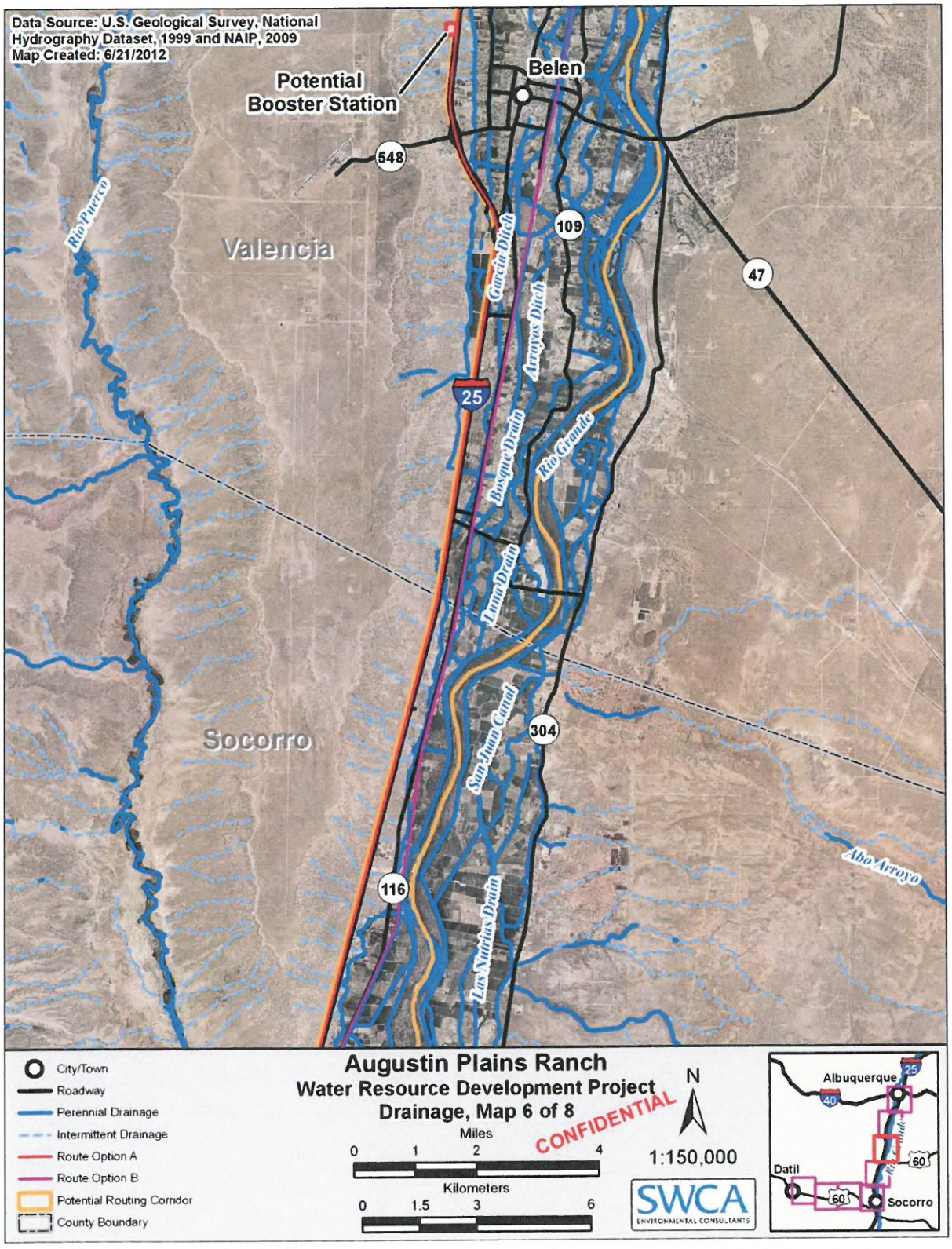


Figure B.7. Drainages in the project area, map 6 of 8.

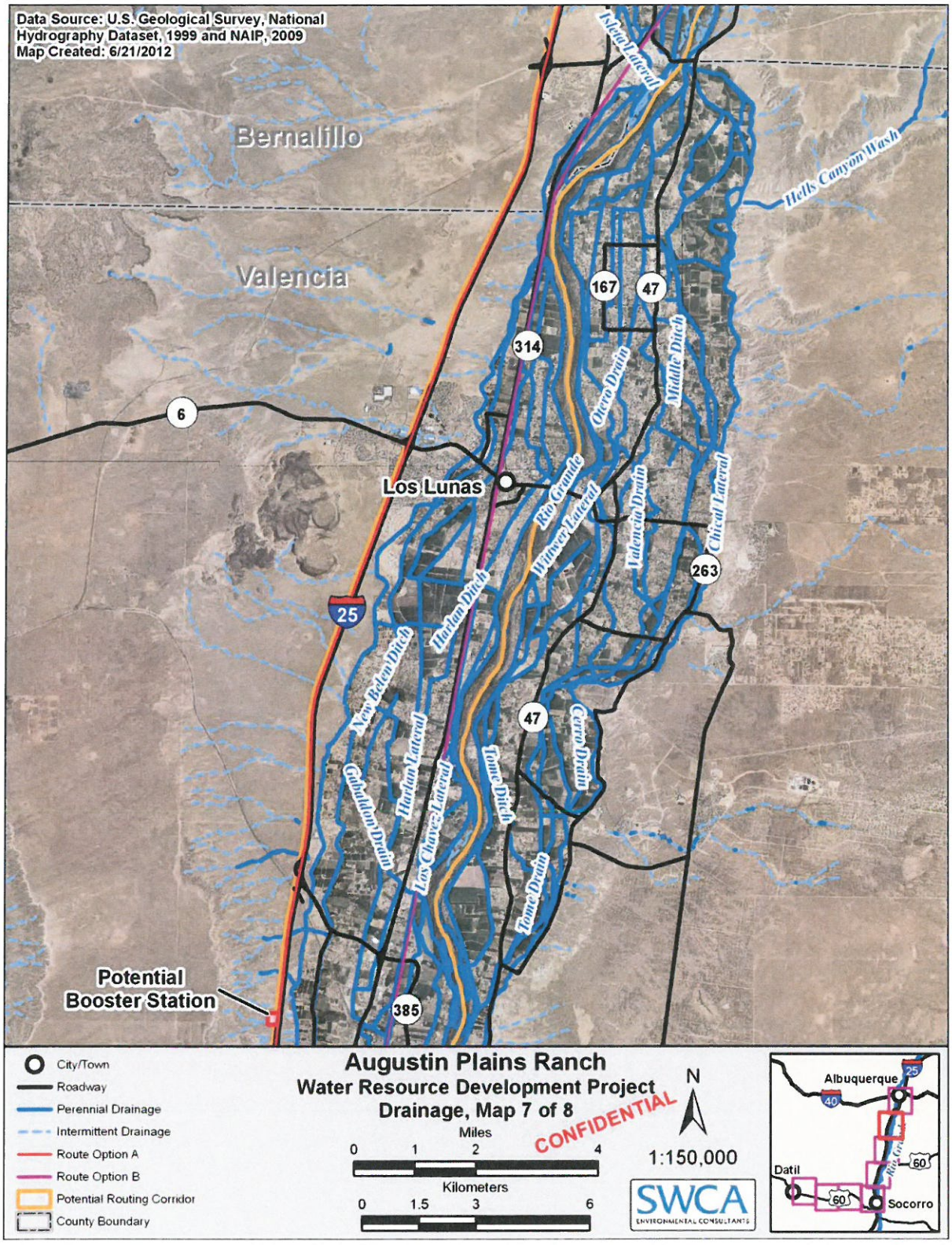


Figure B.8. Drainages in the project area, map 7 of 8.

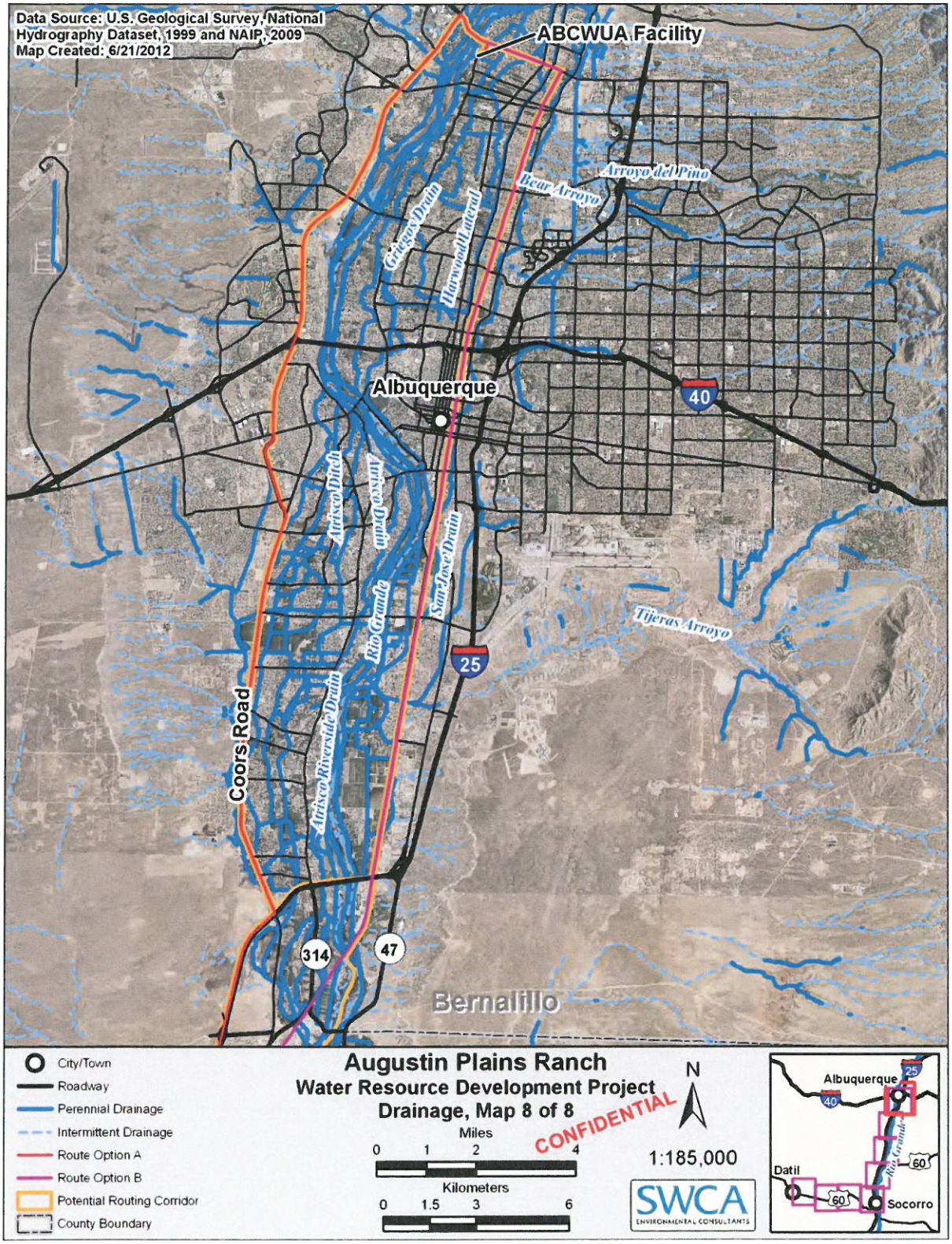


Figure B.9. Drainages in the project area, map 8 of 8.

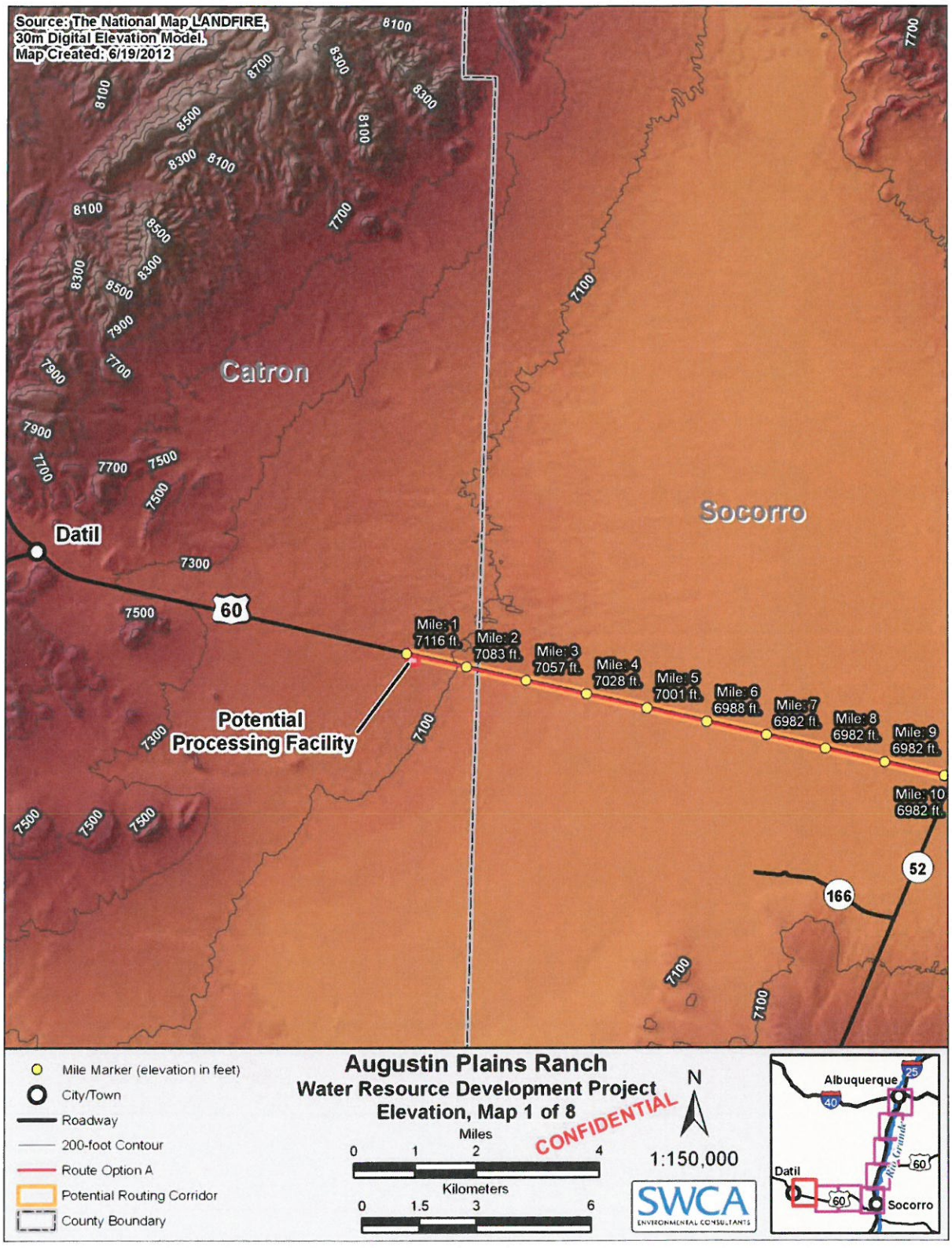


Figure B.10. Elevation in the project area, map 1 of 8.

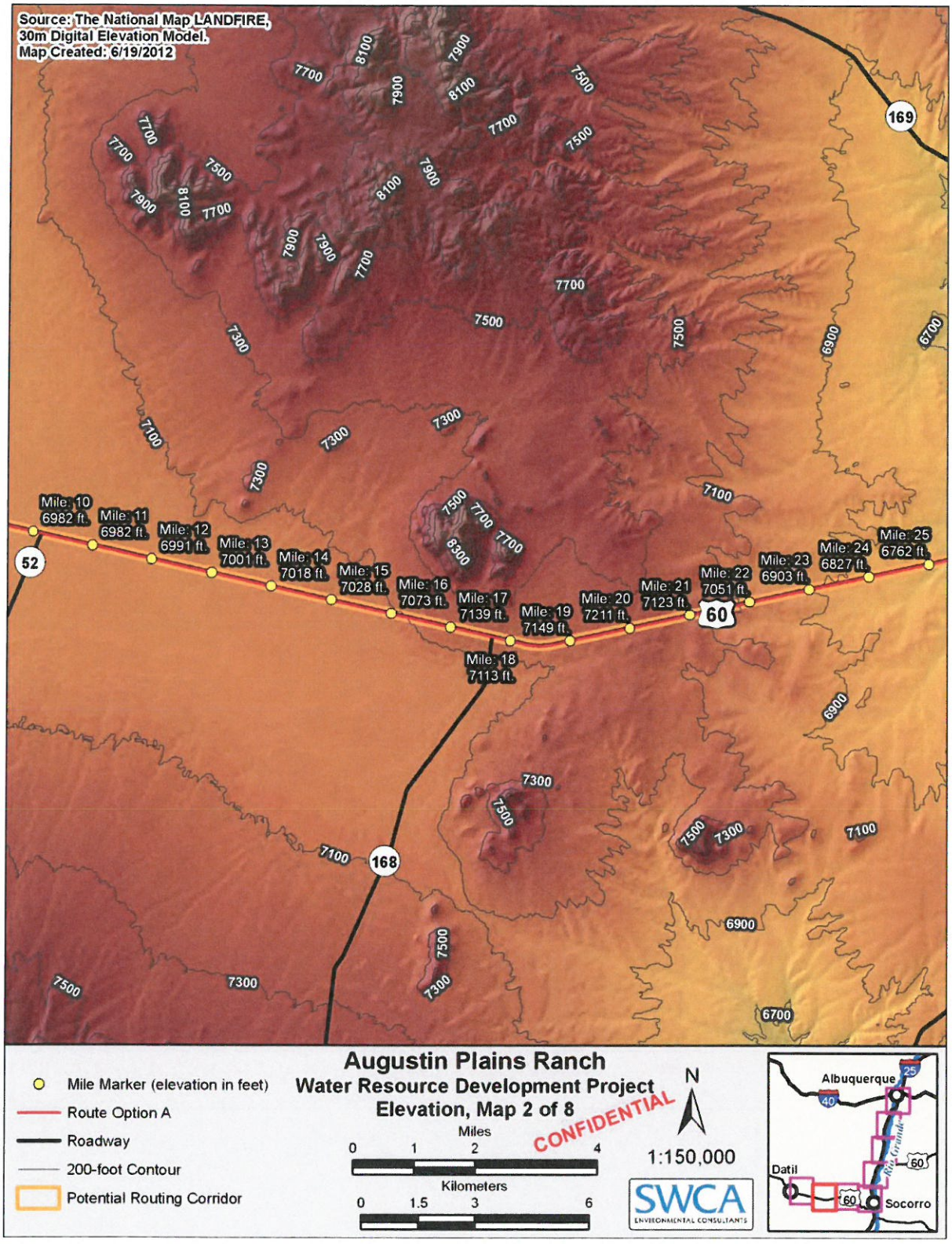


Figure B.11. Elevation in the project area, map 2 of 8.

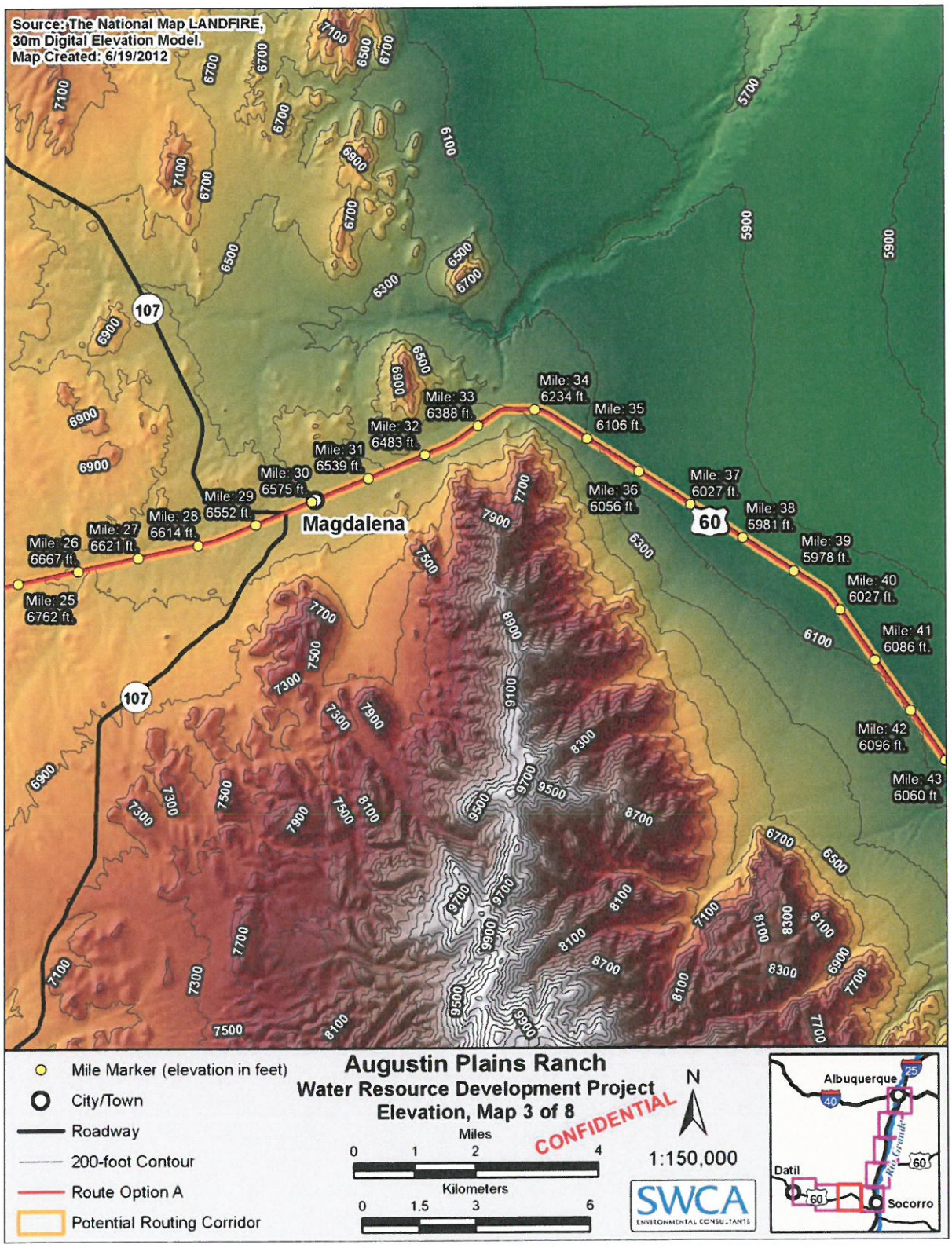


Figure B.12. Elevation in the project area, map 3 of 8.

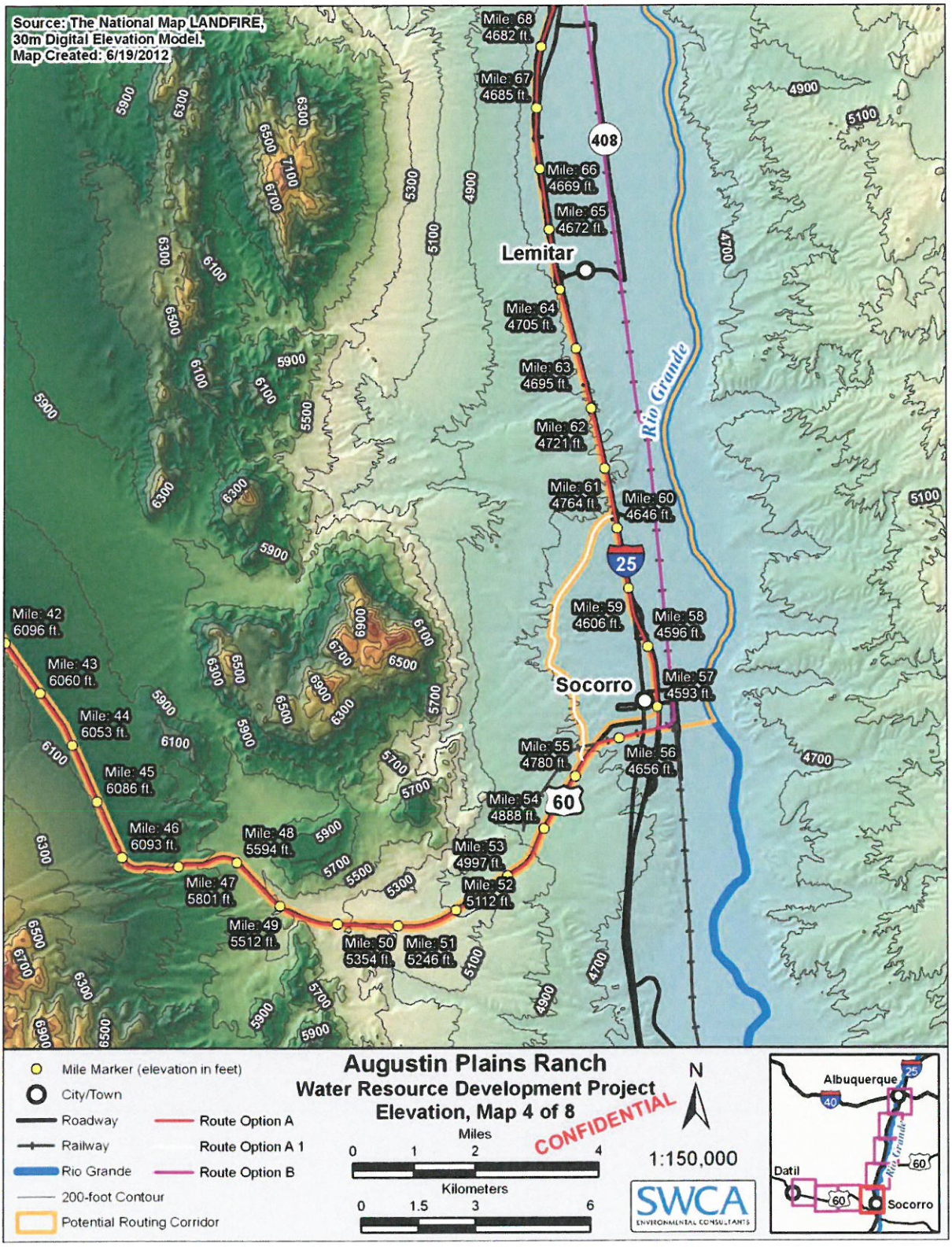


Figure B.13. Elevation in the project area, map 4 of 8.

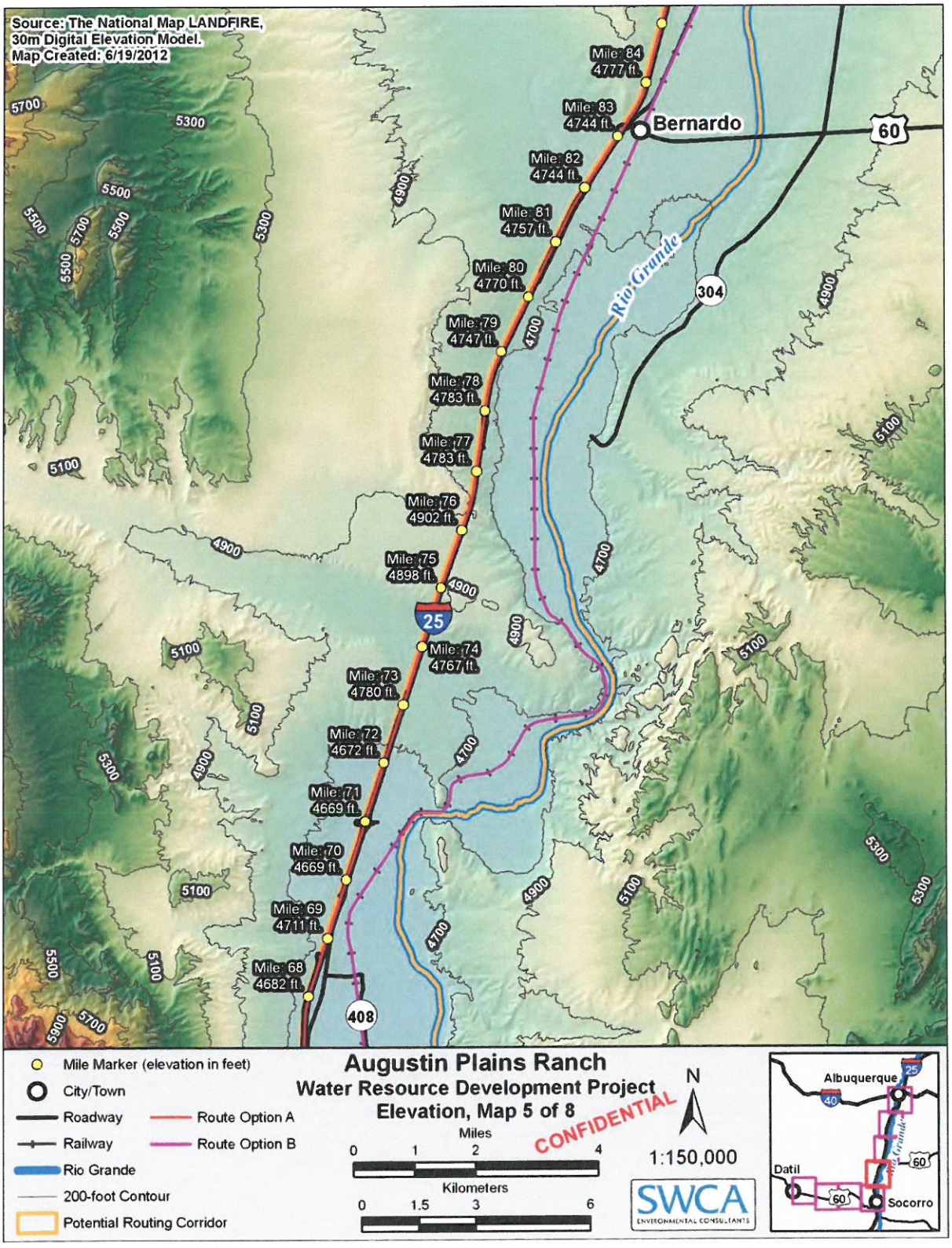


Figure B.14. Elevation in the project area, map 5 of 8.

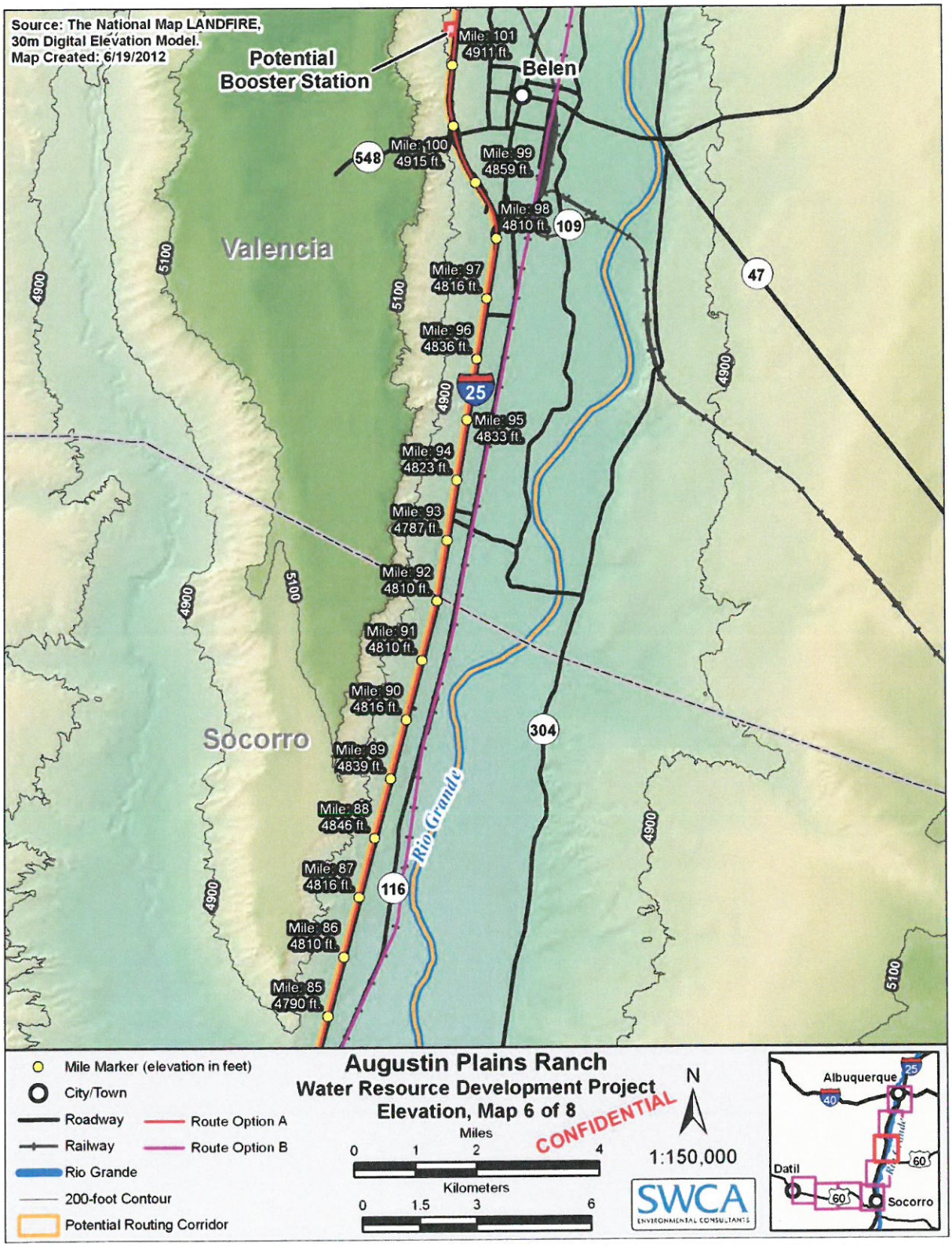


Figure B.15. Elevation in the project area, map 6 of 8.

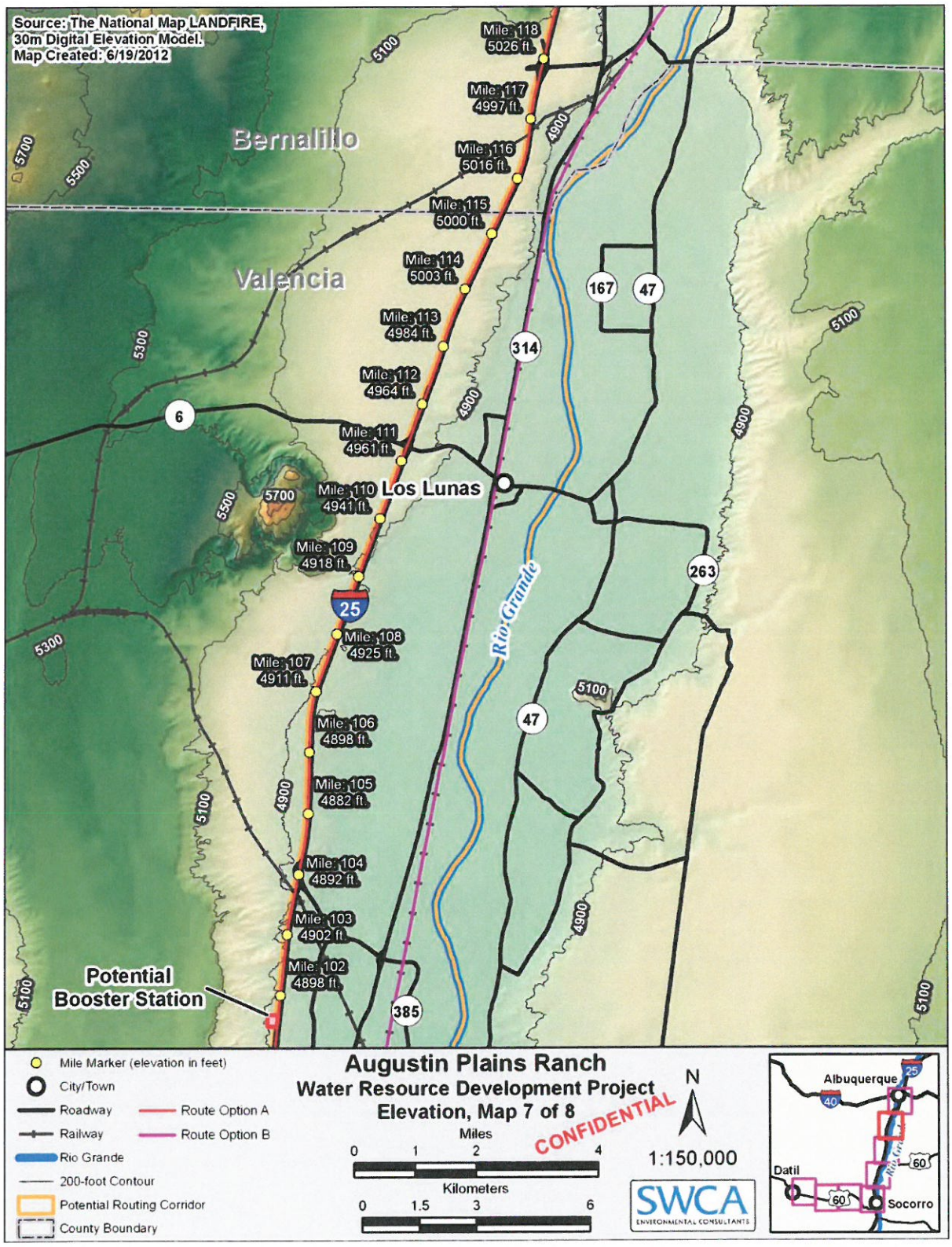


Figure B.16. Elevation in the project area, map 7 of 8.

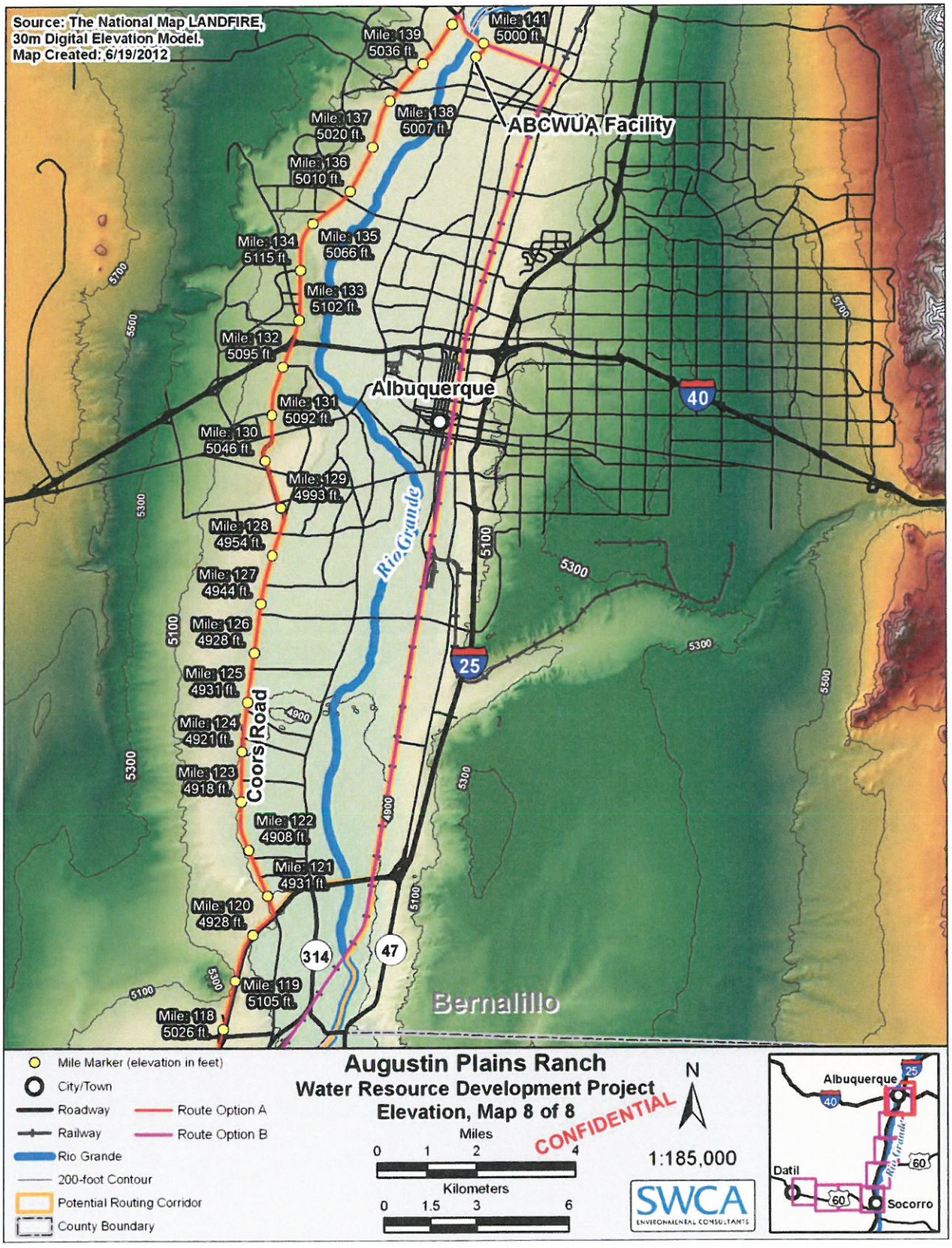


Figure B.17. Elevation in the project area, map 8 of 8.

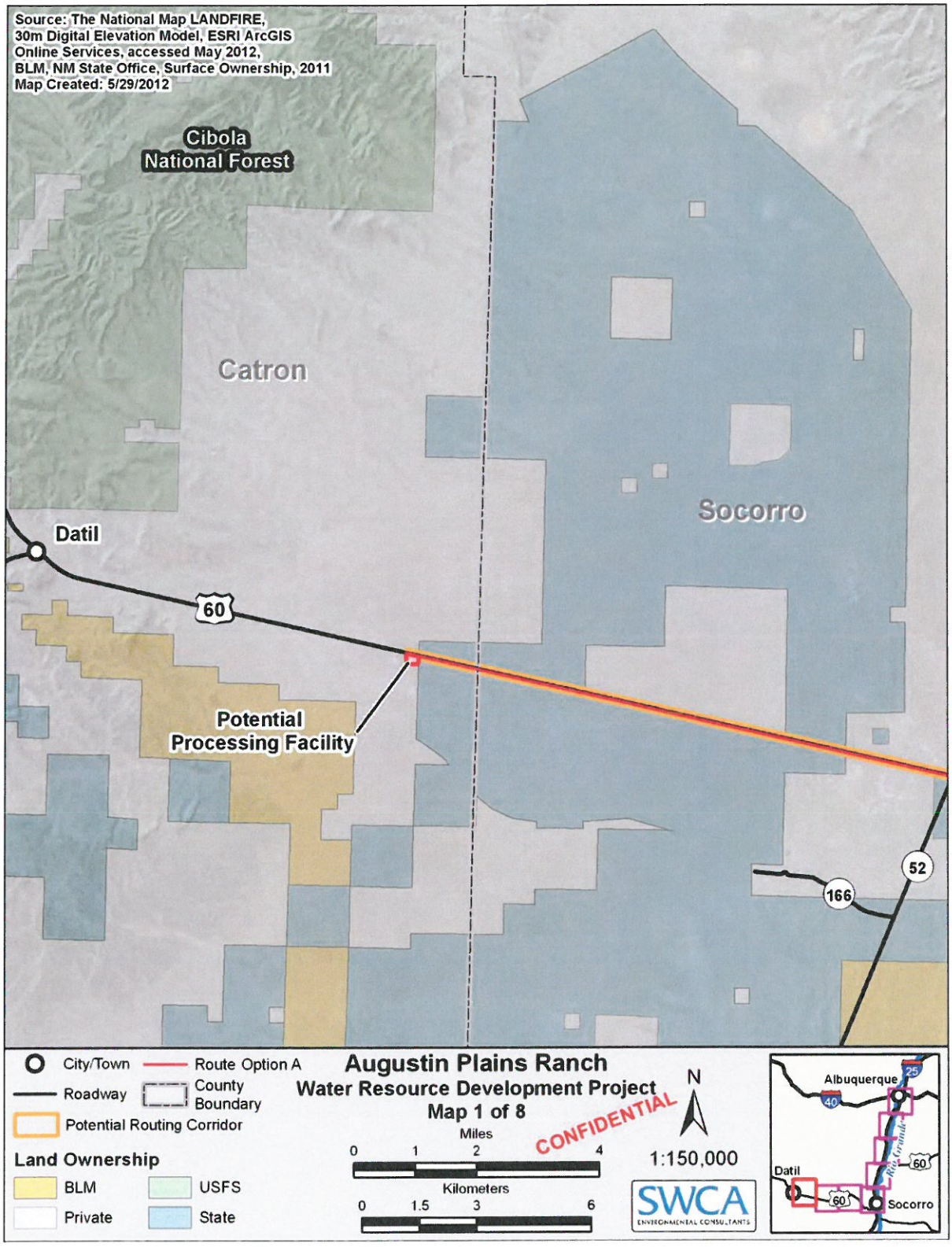


Figure B.18. Land ownership in the project area, map 1 of 8.

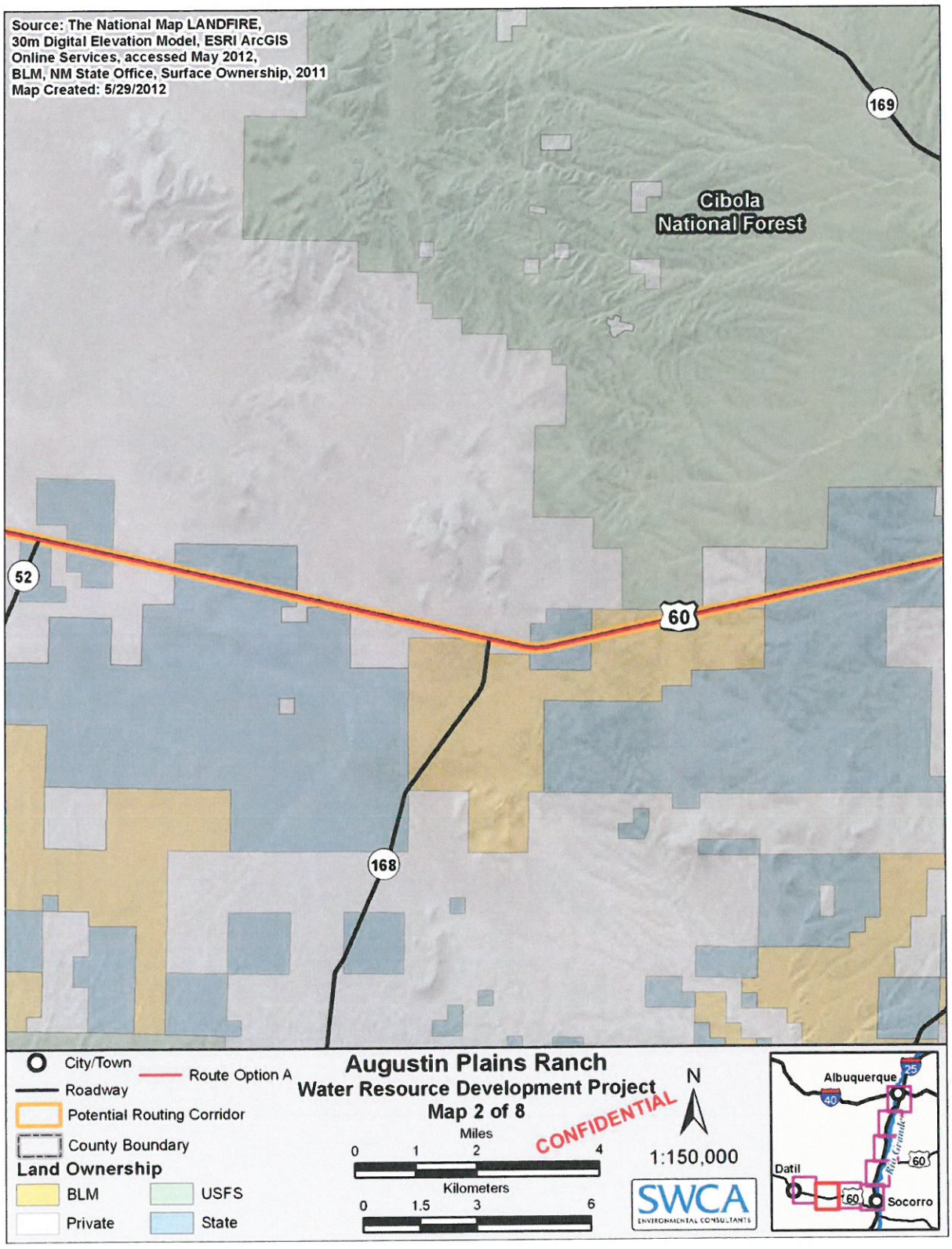


Figure B.19. Land ownership in the project area, map 2 of 8.

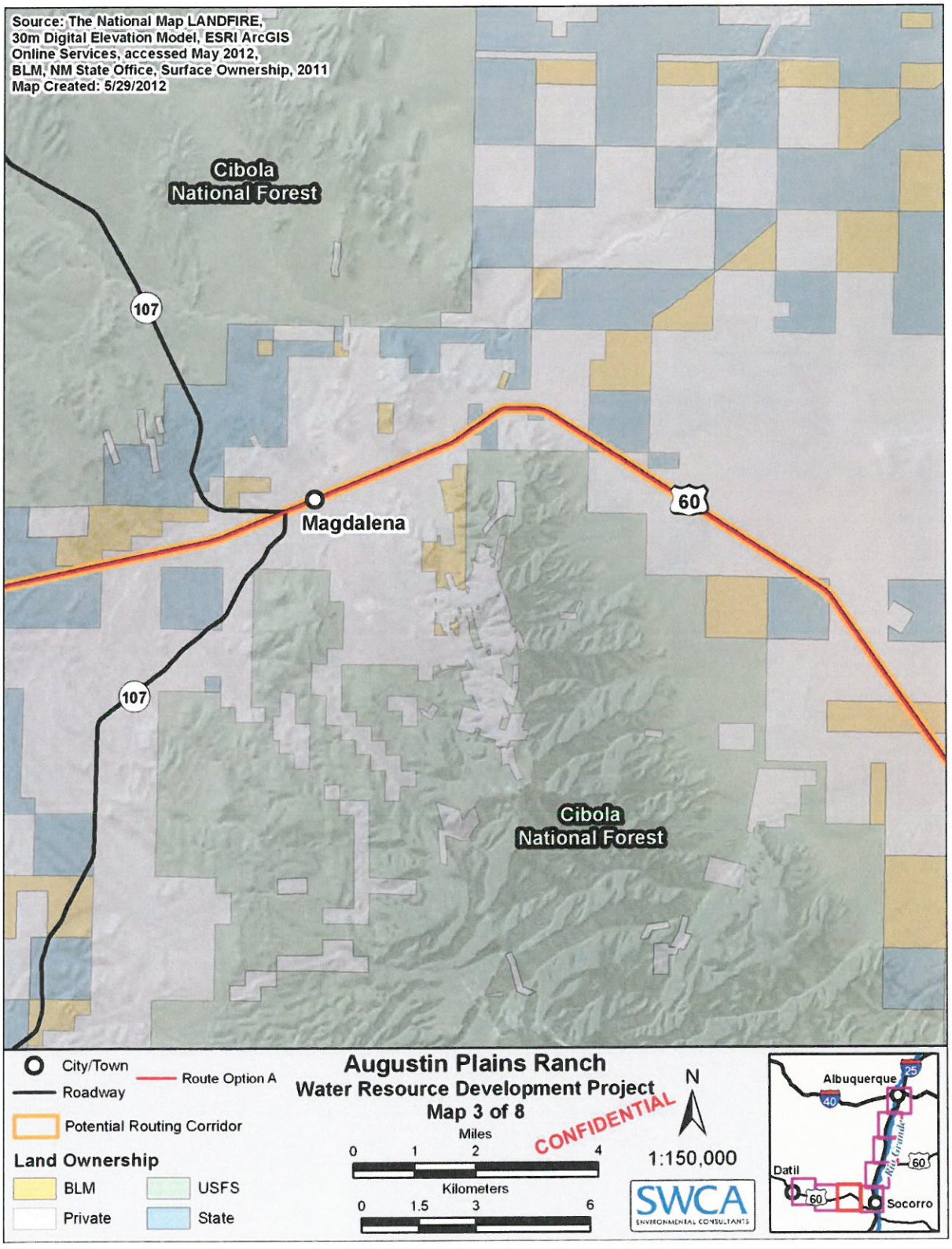


Figure B.20. Land ownership in the project area, map 3 of 8.

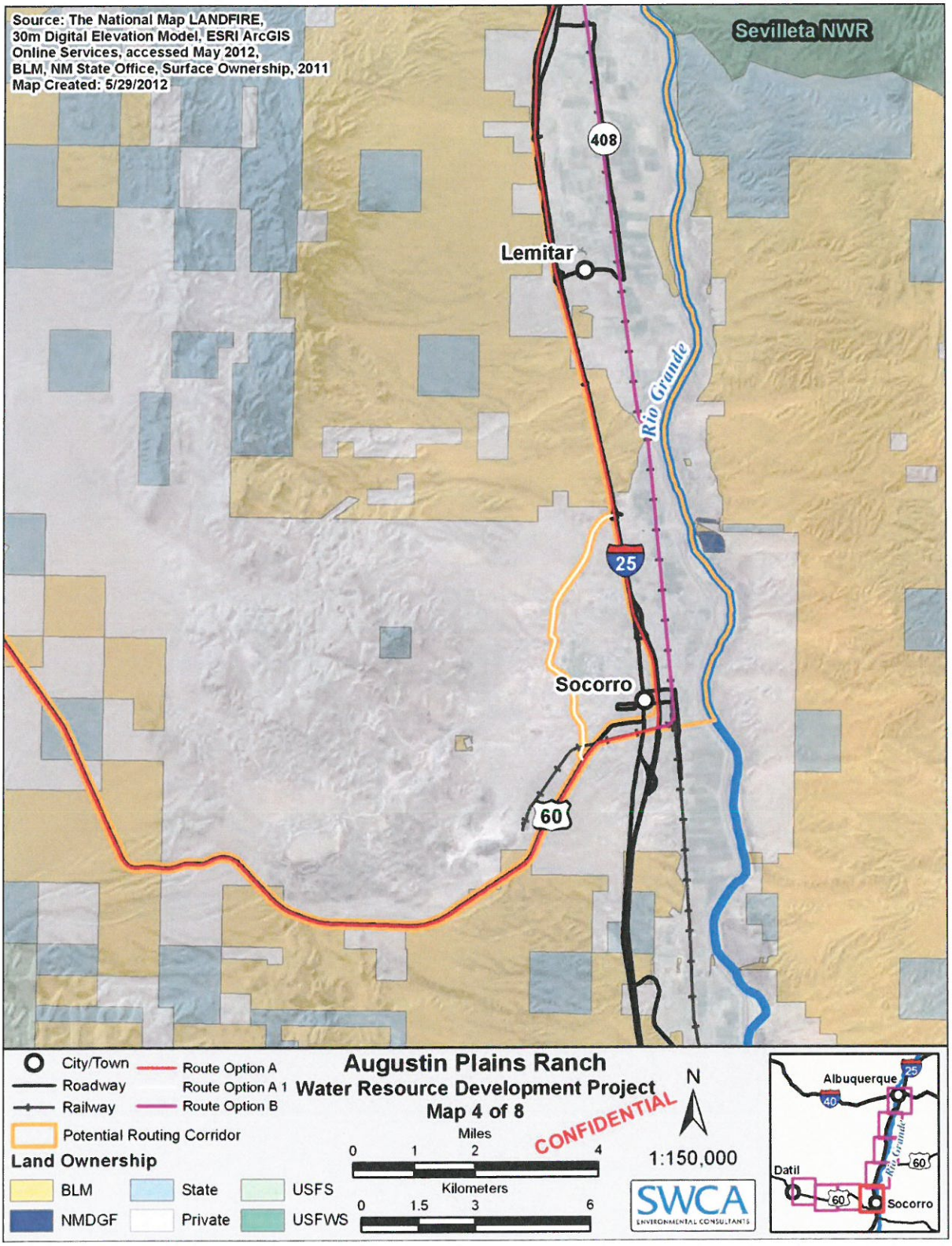


Figure B.21. Land ownership in the project area, map 4 of 8.

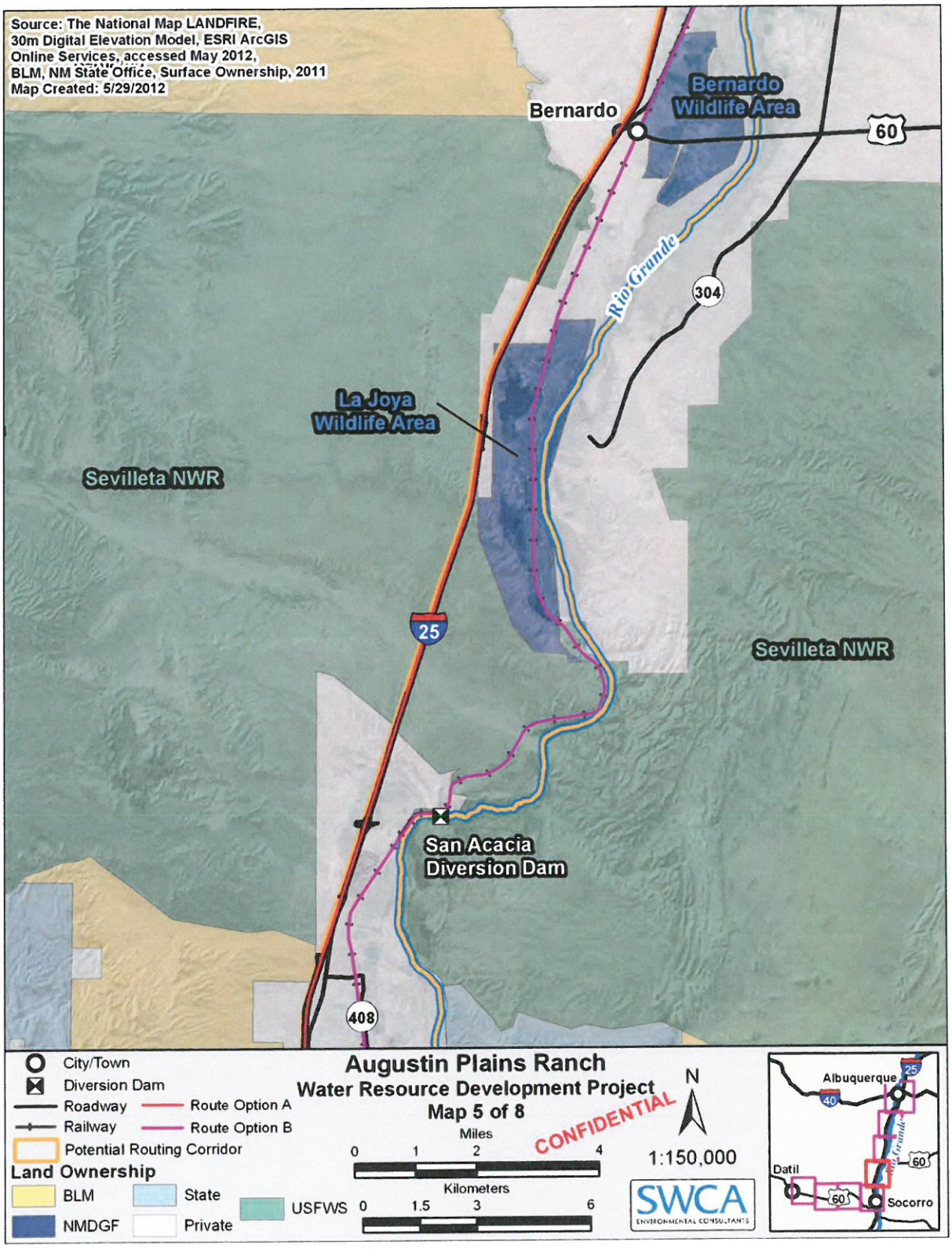


Figure B.22. Land ownership in the project area, map 5 of 8.

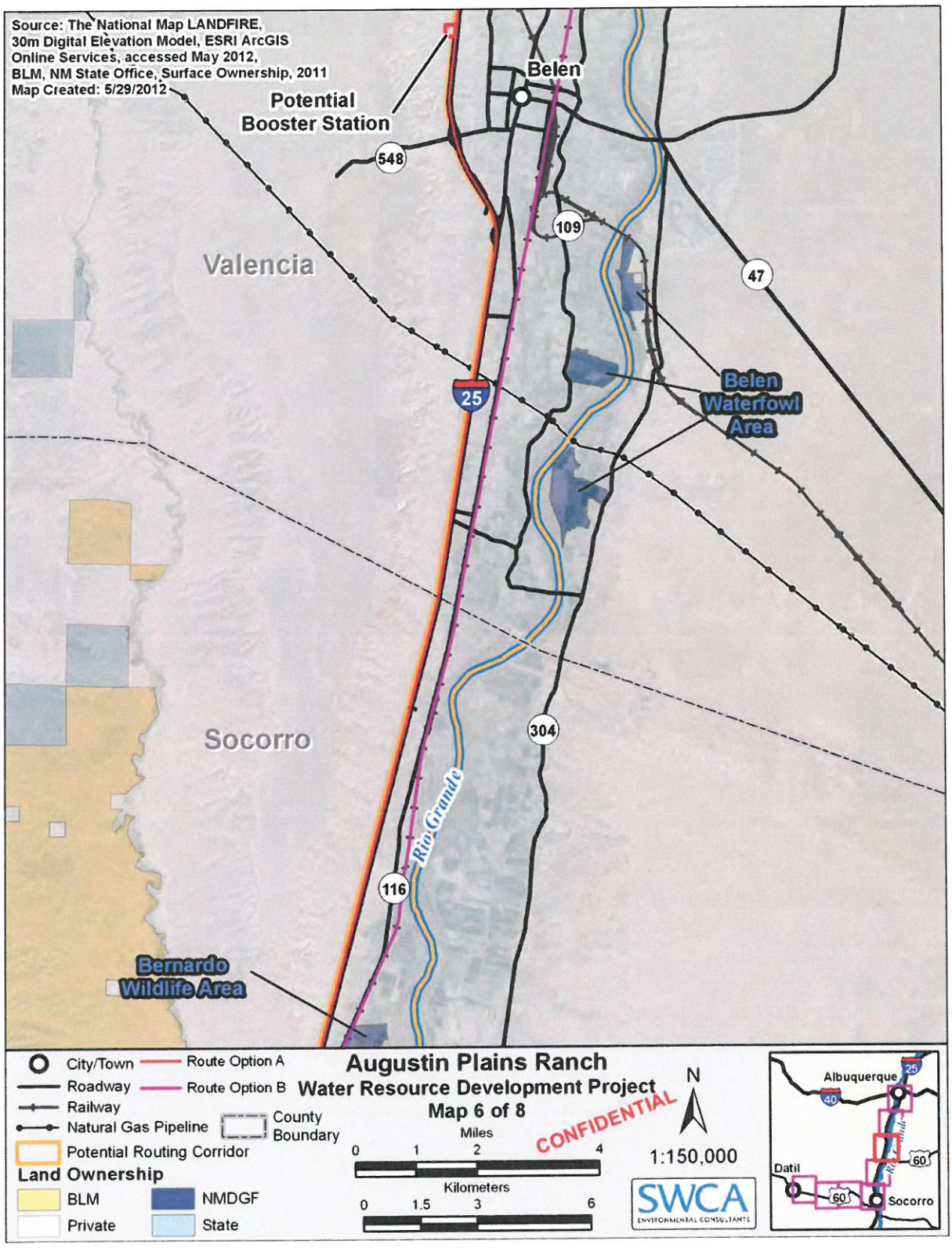


Figure B.23. Land ownership in the project area, map 6 of 8.

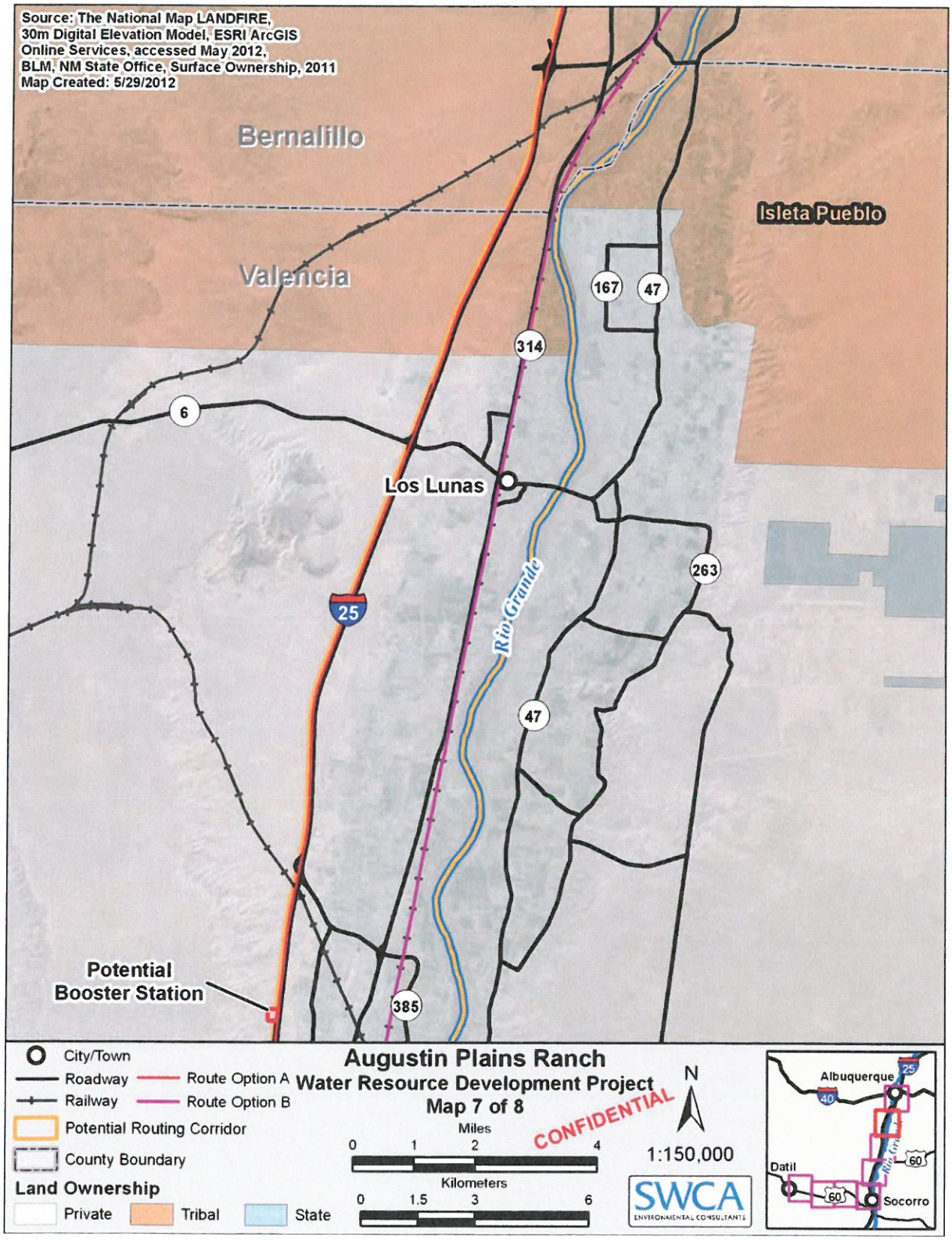


Figure B.24. Land ownership in the project area, map 7 of 8.

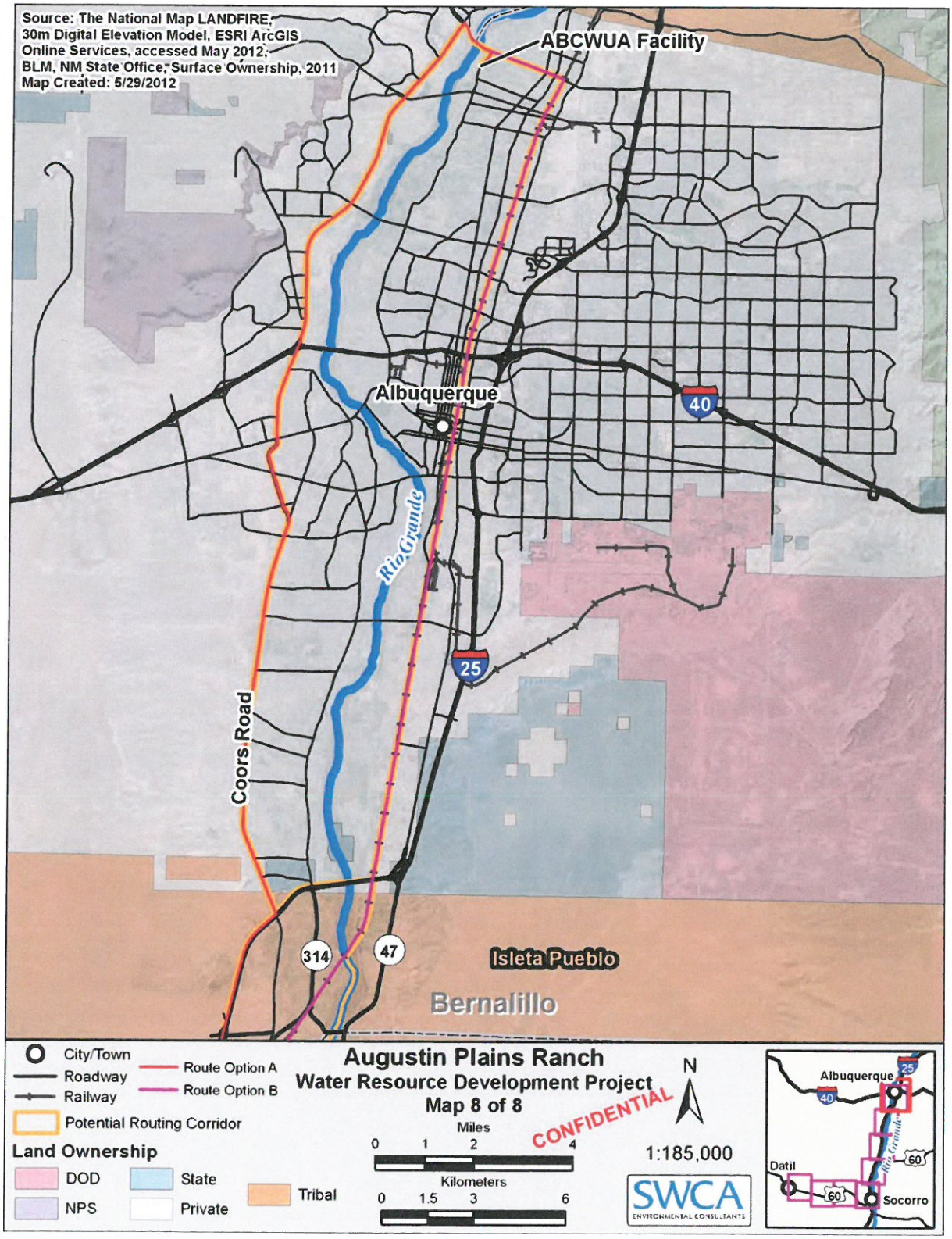


Figure B.25. Land ownership in the project area, map 8 of 8.

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APPENDIX C.
USFWS, BLM, AND STATE LISTED AND SENSITIVE SPECIES IN NEW MEXICO BY COUNTY

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Fish					
Longfin dace	*Agosia chrysogaster*	Catron	BLM: Sensitive	Native to the Gila Basin (including the San Francisco) where it is stable. Habitat ranges from clear, cool mountain brooks to small, intermittent desert streams with a sand or gravel substrate	No
Desert sucker	*Catostomus clarki*	Catron	USFWS: SOC BLM: Sensitive	Native in the Gila Basin and the San Francisco drainage except in extreme headwater situations. Found in rapids and flowing pools of streams, primarily over bottoms of gravel-rubble with sandy silt in the interstices.	No
Sonora sucker	*Catostomus insignis*	Catron	USFWS: SOC BLM: Sensitive	Native to the Gila and San Francisco drainages (except in extreme headwaters). Inhabits lentic and pool habitats.	No
Rio Grande sucker	*Catostomus plebeius*	Catron Socorro	USFWS: SOC	Found in the northern Rio Grande, the tributary streams of the Rio Grande, and the Mimbres River. It has been introduced into the Rio Hondo (of the Pecos drainage) along with its headwater tributary streams and into the San Francisco drainage. It also occurs in Sapello Creek (tributary of the Gila River). Usually found over gravel and/or cobble, but also in backwaters and in pools below riffles. It is rarely found in waters with heavy loads of silt and organic detritus.	No
Gila chub	*Gila intermedia*	Catron	BLM: Sensitive State NM: Endangered	This species historically occurred in the San Francisco, Gila, and San Simon drainages. Now known only from Turkey Creek in New Mexico. Relict populations may exist in Mule Creek. Occurs in pool habitats of small streams or springs in Arizona, but it may have formerly occupied larger, more complex habitats as well.	No
Headwater chub	*Gila nigra*	Catron Socorro	USFWS: Candidate State NM: Endangered	Headwater chub is restricted to the Gila River Basin in Arizona and New Mexico, in mid- to headwater reaches of mid-sized streams.	No
Roundtail chub	*Gila robusta*	Catron	USFWS: Candidate	The species occurs in the San Juan and Gila basins, and it was formerly also present in the Zuni and San Francisco drainages. It is now extirpated from the Zuni and San Francisco.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Rio Grande silvery minnow	*Hybognathus amarus*	Bernalillo Socorro Valencia	USFWS: Endangered State NM: Endangered	The species currently occupies about 5% of its historical range. It was extirpated from the Pecos River and from the Rio Grande upstream of Cochiti Dam and downstream from the upper extent of Elephant Butte Reservoir. Its current range is the Rio Grande between Algodones and Elephant Butte Reservoir.	Unlikely, unless the pipeline construction impacts river habitat
Chihuahua catfish	*Ictalurus* sp.	Catron	USFWS: SOC	Found in the East fork of the Gila River (upper end); it was probably introduced into this region.	No
Spikedace	*Meda fulgida*	Catron	USFWS: Endangered State NM: Endangered	Formerly widespread in the Gila River system of southwestern New Mexico, Arizona, and Sonora but has been eliminated from over 85% of its historic range. Currently, it persists only in the Verde River and Aravaipa Creek in Arizona and the Cliff-Gila Valley reach of the Gila River in New Mexico.	No
Rio Grande shiner	*Notropis jemezanus*	Socorro	BLM: Sensitive	Uncommon in the Rio Grande downstream of the confluence of the Rio Conchos. It is extirpated from the Rio Grande in New Mexico. In the Pecos River in New Mexico, and it currently persists from Old Fort State Park (near Fort Sumner) downstream to about Brantley Reservoir.	No
Gila trout	*Oncorhynchus gilae*	Catron	USFWS: Threatened State NM: Threatened	Formerly occurred in the Gila River from its confluence with Mogollon Creek upstream through its headwaters and in tributaries of the San Francisco River. Now occurs mainly in small headwater streams in such streams availability of pool habitat appears to be critical to abundance.	No
Flathead chub	*Platygobio gracilis*	Bernalillo Socorro Valencia	BLM: Sensitive	Native to the Rio Grande, Pecos, and Canadian drainages including the Dry Cimarron drainage. Inhabits turbid alkaline waters with shifting sand or gravel substrates.	Unlikely, unless the pipeline construction impacts river habitat
Speckled dace	*Rhinichthys osculus* (Gila population)	Catron	BLM: Sensitive	Native to the Gila, San Francisco, Zuni, and San Juan drainages. It was introduced to the Mimbres River during the 1970s. A bottom dwelling species which inhabits shallow, rocky, headwater streams with relatively swift flow, sometimes in areas with considerable aquatic vegetation.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Loach minnow	*Tiaroga cobitis*	Catron	USFWS: Endangered State NM: Endangered	In New Mexico, the minnow was historically found throughout warmwater reaches of the San Francisco and Gila rivers, and major tributaries of each. Found almost exclusively among cobble in riffle habitats where water velocity is rapid.	No
Amphibians and Reptiles					
Arizona toad	*Bufo microscaphus microscaphus*	Catron Socorro	BLM: Sensitive	Occurs between 6,234 and 8,858 feet in elevation in New Mexico. Habitat requirements include small streams and rivers, and temporary woodland pools.	Unlikely, but habitat for this species could be present
Texas horned lizard	*Phrynosoma cornutum*	Socorro	BLM: Sensitive	Found in the southwest corner of and eastern edge of New Mexico. Found in open deserts and grasslands up to 6,004 feet in elevation (Degenhardt et. al. 1996).	No
Chiricahua leopard frog	*Rana chiricahuensis*	Catron Socorro	USFWS: Threatened	In New Mexico, the species is known from the southwestern portion of the state and is most abundant in the Gila and San Francisco river drainages. The Rio Grande drainage is occupied by these frogs only in Alamosa Creek in Socorro County and Cuchillo Negro Creek in Sierra County. Other localities include the Mimbres River drainage of Grant and Luna counties and the numerous stock tanks and intermittent creeks of southwestern Hidalgo County, including those in the Animas and Peloncillo mountains. Occurs or occurred in the Horse Springs/Patterson Lake area, Catron County (on the Continental Divide) and thus may be marginal in the Plains of San Agustin hydrologic unit.	Unlikely, but habitat for this species, such as stock tanks could be present on private land
Northern leopard frog	*Rana pipiens*	Bernalillo Catron Socorro Valencia	USFS Sensitive: Region 3	Historically, the northern leopard frog was documented from a large area in the northern and western part of New Mexico and along the entire length of the Rio Grande valley, except southern Elephant Butte and northern Caballo reservoirs. Recent survey efforts indicate that northern leopard frogs are persisting in northern New Mexico, but most occupied sites contained small numbers of frogs with very few robust populations.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Lowland leopard frog	*Rana yavapaiensis*	Catron	USFWS: SOC BLM: Sensitive State NM: Endangered	Known from 3,700 to 5,575 feet in western Catron, Hidalgo, and Grant counties. Found in permanent to semi-permanent streams and ponds; most populations occupy small streams and rivers, springs, and associated pools at low elevations in desert scrub localities.	No
Mexican garter snake	*Thamnophis eques*	Catron	USFWS: Candidate State NM: Endangered BLM: Sensitive	In New Mexico, this species likely occurred at scattered sites throughout the Gila and San Francisco watersheds from 3,690 to 5,420 feet in western Grant and Hidalgo counties. Riparian obligate and occurs chiefly in source-area wetlands, large river riparian woodlands and forests, and streamside gallery forests.	No
Narrowhead garter snake	*Thamnophis rufipunctatus rufipunctatus*	Catron	USFWS: SOC BLM: Sensitive State NM: Threatened	Confined to Catron, Grant, and Hidalgo counties where it reaches the eastern edge of its distribution. It is a habitat specialist, occurring only in shallow, swift-flowing, rocky rivers and streams of the San Francisco and Gila River drainages.	No
Birds					
Northern goshawk	*Accipiter gentilis*	Bernalillo Catron Socorro Valencia	USFWS: SOC BLM: Sensitive	Occurs irregularly statewide with year round distribution occurring in various mountain ranges throughout the state. Breeds in most montane and sub-alpine forest cover types especially ponderosa (*Pinus ponderosa*) but has been found in riparian, piñon-juniper and mixed conifer forests.	Unlikely, only marginal habitat for this species is present
Violet-crowned hummingbird	*Amazilia violiceps ellioti*	Socorro	State NM: Threatened	Their breeding populations cross into the United States only in the Mexican Highlands and the lower Rio Grande Valley. Vagrant elsewhere.	No
Baird's sparrow	*Ammodramus bairdii*	Bernalillo Catron Socorro Valencia	USFWS: SOC BLM: Sensitive State NM: Threatened	In New Mexico is reported as primarily migrants moving through the eastern plains and southern lowlands, although wintering birds do occur locally in southern grasslands, particularly Otero, Luna, and Hidalgo counties. They are also reported generally to breed in the northern Great Plains.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Burrowing owl	*Athene cunicularia hypugaea*	Bernalillo Catron Socorro Valencia	USFWS: SOC BLM: Sensitive	Grasslands, pastures, coastal dunes, desert scrub, edges of agricultural fields, and other human areas where there is sufficient friable soil for a nesting burrow from 650 to 6,140 feet in elevation.	Possible, habitat for this species may be present
Ferruginous hawk	*Buteo regalis*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	This species may generally be found in arid habitats throughout the western United States. Nests in riparian communities, sometimes in isolated or roadside trees, occasionally near urban areas. Forages only in open plains and grasslands. May also use some agricultural lands (e.g., alfalfa and dry or fallow pasture).	Possible, trees along the roadside may be used for nesting
Common black-hawk	*Buteogallus anthracinus anthracinus*	Bernalillo Catron Socorro Valencia	USFWS: SOC State NM: Threatened	Common black-hawks migrate and summer in the southwest portion of New Mexico. They occasionally occur in the Middle Rio Grande valley and regularly occur in the lower San Francisco, Gila, and Mimbres valleys. Breeding common black-hawks require mature, well-developed riparian forest stands that are located near permanent streams where prey is located.	No
Piping plover	*Charadrius melodus circumcinctus*	Socorro	USFWS: Threatened State NM: Threatened	In New Mexico, this bird is a rare migrant that occurs on sandflats or along bare shorelines of rivers, lakes, or coasts.	No
Black tern	*Chlidonias niger surinamensis*	Bernalillo Socorro	USFWS: SOC BLM: Sensitive	Found near water at lower (2,800–5500 feet) and middle (5,000–7,500 feet) elevations. Migrates statewide and is considered rare to locally fairly common. They are most frequent in summer in the San Juan Valley, Jicarilla Apache Indian Reservation, the MRG valley, and at Bitter Lake National Wildlife Refuge.	Unlikely, unless the pipeline construction impacts suitable emergent wetland habitat
Yellow-billed cuckoo	*Coccyzus americanus occidentalis* (western population)	Bernalillo Catron Socorro Valencia	USFWS: Candidate	Typically found in riparian woodland vegetation (cottonwood [Populus sp.], willow [Salix sp.], or saltcedar) at elevations below 6,600 feet. Dense understory foliage appears to be an important factor in nest site selection.	Possible, if pipeline impacts riparian habitat along the Rio Grande

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Common ground-dove	*Columbina passerina pallescens*	Socorro Valencia	State NM: Endangered	The common ground-dove was formerly resident in southern New Mexico, but is now apparently only a rare visitor here. Common ground-doves prefer native shrublands and weedy areas, including such habitats in riparian areas.	No.
Broad-billed hummingbird	*Cynanthus latirostris magicus*	Bernalillo Valencia	State NM: Threatened	Accidentally transient in residential/developed areas near the Rio Grande, Pecos Basins, the Rio Grande in Albuquerque, and the Sandia Mountains. In New Mexico, the species is a regular summer resident only in the Guadalupe Canyon	No
Southwestern willow flycatcher	*Empidonax traillii extimus*	Bernalillo Catron Socorro Valencia	USFWS: Endangered State NM: Endangered	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolia*), buttonbush (*Cephalanthus occidentalis*), and arrowweed (*Pluchea sericea*) are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet.	Probable, if pipeline impacts riparian habitat along the Rio Grande
Aplomado falcon	*Falco femoralis septentrionalis*	Bernalillo Socorro	USFWS: Endangered State NM: Endangered	Open country, especially savanna and open woodland, and sometimes in very barren areas; preferred habitat in New Mexico consists of grassy plains and valleys with scattered mesquite (*Prosopis* sp.), yucca (*Yucca* sp.), and cactus; nests in old stick nests of other bird species.	Unlikely, species is rare but suitable nesting habitat could be present
Peregrine falcon	*Falco peregrinus anatum*	Bernalillo Catron Socorro Valencia	USFWS: SOC State NM: Threatened USFS Sensitive: Region 3	In New Mexico, the breeding territories of peregrine falcons center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby where they can forage. Prefers elevations of 6,500 to 8,600 feet but may be found in 3,500 to 9,000 feet.	No
Arctic peregrine falcon	*Falco peregrinus tundrius*	Bernalillo Catron Socorro Valencia	USFWS: SOC State NM: Threatened	In New Mexico, this tundra subspecies is a very rare migrant through the state and would be found in habitats similar to *F.p. anatum*.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Whooping crane*	*Grus americana*	Bernalillo Catron Socorro Valencia	USFWS: ENP*	Found in marshes and prairie potholes in the summer. In winter, found in coastal marshes and prairies.	No
Bald eagle	*Haliaeetus leucocephalus alascanus*	Bernalillo Catron Socorro Valencia	State NM: Threatened	The species is primarily water oriented, and the majority of the populations occurring in New Mexico are found near rivers and lakes. Nests in cliffs, conifer forests, hardwood forests, mixed woodlands, conifer woodlands, and hardwood woodlands with standing snags and hollow trees.	Possible, species occurs in the Rio Grande corridor during winter months
White-eared hummingbird	*Hylocharis leucotis borealis*	Bernalillo Catron	State NM: Threatened	This hummingbird is said to be accidentally transient in areas of desert scrub/rocky slopes, juniper Savannah, piñon/juniper woodland, and Ponderosa/oak forests near Montane regions. Bernalillo County locations are in the Manzano Mountains.	No
Loggerhead shrike	*Lanius ludovicianus*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	Ranges altitudinally from agricultural lands on the prairies to montane meadows, nesting in sagebrush areas, desert scrub, piñon-juniper woodlands, and woodland edges.	Unlikely, some nesting habitat may be present
Gila woodpecker	*Melanerpes uropygialis uropygialis*	Catron	State NM: Threatened	This woodpecker is resident in the Gila Valley (northeast to Mogollon Creek in Grant County) and in Guadalupe Canyon (Hidalgo County), which are key habitat areas for it in the state). Vagrants have been reported near Glenwood (Catron County), at Silver City, and in Hidalgo County (Animas Creek and Cloverdale).	No
Varied bunting	*Passerina versicolor versicolor*	Catron Socorro	State NM: Threatened	Varied buntings summer in Guadalupe Canyon and in Carlsbad Canyon National Park and are considered rare to uncommon and local. They are casual farther north in the southwest and are considered rare and very local. In New Mexico the species seems to prefer dense stands of mesquite and associated growth in canyon bottoms.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Brown pelican	*Pelecanus occidentalis carolinensis*	Bernalillo Catron Socorro	State NM: Endangered	This species is a vagrant to New Mexico. Most found in New Mexico occur primarily as immature-aged wanderers during the summer-fall seasons near large lakes or permanent streams.	No.
Neotropic cormorant	*Phalacrocorax brasilianus*	Bernalillo Catron Socorro Valencia	State NM: Threatened USFS Sensitive: Region 3	Within New Mexico, the neotropic cormorant is known to breed only in the MRG valley. Non-breeders occasionally occur north to Bernalillo, west to the Gila Valley and Hidalgo County, and east to the Tularosa and lower Pecos valleys. Cormorants are generally found on larger bodies of water such as reservoirs, where they prey on fish.	No
White-faced ibis	*Plegadis chihi*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	Found in shoreline and marsh habitats that border open water with cattails and rushes. Other plant species including woody shrub and trees may be used for breeding.	Unlikely, unless the pipeline construction impacts emergent wetland habitat
Least tern	*Sterna antillarum athalassos*	Catron Socorro	USFWS: Endangered State NM: Endangered	Species is found near water and in New Mexico uses bare ground, islands, and sandbars for breeding. These terns (presumably of the subspecies *S. a. athalassos*) breed in the vicinity of Roswell, including regularly at Bitter Lake National Wildlife Refuge. and perhaps rarely at Bottomless Lake State Park and Wade's Bog. The species occurs in migration in Eddy County and as a vagrant elsewhere.	No
Mexican spotted owl	*Strix occidentalis lucida*	Bernalillo Catron Socorro Valencia	USFWS: Threatened	Mexican spotted owls are dependent on the presence of large trees, snags, down logs, dense canopy cover, and multi-storied conditions within predominantly mixed-conifer and pine-oak habitats.	No
Elegant trogon	*Trogon elegans canescens*	Catron	State NM: Endangered	The elegant trogon occurs rarely and irregularly in riparian habitats in montane canyons in the southwestern most part of the state.	No
Thick-billed kingbird	*Tyrannus crassirostris*	Catron	State NM: Endangered	Thick-billed kingbirds inhabit lowland riparian woodlands in the extreme southwestern part of the state.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Bell's vireo	*Vireo bellii*	Bernalillo Catron Socorro Valencia	USFWS: SOC State NM: Threatened	Within New Mexico, it occurs in the southernmost portion of the state, where small numbers summer primarily in the Gila Valley, Guadalupe Canyon, and the lower Rio Grande and Pecos valleys and associated drainages. The species prefers dense, typically low, shrubby vegetation (e.g., hackberry [*Celtis* sp.], mesquite, saltcedar) in riparian areas.	Unlikely, north of known breeding range
Gray vireo	*Vireo vicinior*	Bernalillo Catron Socorro	State NM: Threatened	In New Mexico, most often found in arid juniper woodlands on foothills and mesas, these often associated with oaks (*Quercus* sp.) and usually in habitat with a well-developed grass component.	Unlikely, limited nesting habitat in the project area
Mammals					
Desert bighorn sheep	*Ovis canadensis mexicana* (listed populations)	Socorro	State NM: Threatened	The desert subspecies of the bighorn occurs in arid, rocky mountains, mainly in open habitats. Currently, free-ranging desert bighorn sheep are found in the following mountain ranges in New Mexico: Big Hatchet, Little Hatchet Mountains, Peloncillo, San Andres, Fra Cristobal, Caballo, and Ladron.	No
Spotted bat	*Euderma maculatum*	Bernalillo Catron Socorro Valencia	BLM: Sensitive State NM: Threatened	Frequently reported near cliffs over perennial water, but individuals range from low deserts to evergreen forests.	No.
Oscura Mountains Colorado chipmunk	*Neotamias quadrivittatus oscuraensis*	Socorro	BLM: Sensitive State NM: Threatened	This subspecies is only found in the Oscura mountains. Chipmunks in the Oscura Mountains have been most frequently observed along northwest-facing limestone cliff edges in the piñon-juniper-oak woodlands.	No.
Black-footed ferret*	*Mustela nigripes*	Bernalillo Catron Socorro Valencia	USFWS: Endangered	The distribution of the black-footed ferret is closely sympatric with that of prairie dogs. Occurs in mixed shrub habitats.	No; extirpated from the state

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Townsend's big-eared bat	*Corynorhinus townsendii*	Bernalillo Catron Socorro	USFWS: SOC	Occupies semi-desert shrublands, piñon-juniper woodlands, and open montane forests. Frequently associated with caves and abandoned mines for day roosts and hibernacula but will also use abandoned buildings and crevices on rock cliffs for refuge.	Unlikely, limited habitat in the project area
Big free-tailed bat	*Nyctinomops macrotis*	Bernalillo Catron Valencia	BLM: Sensitive	Prefers coniferous, mixed woodland or riparian habitats for foraging and depend on rocky cliffs for roosting.	Unlikely, limited habitat in the project area
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	Bernalillo Socorro Valencia	USFWS: Candidate BLM: Sensitive State NM: Endangered	Preferred habitat includes permanent streams, moderate to high soil moisture, and dense and diverse streamside vegetation consisting of grasses, sedges (*Carex* sp.), and forbs. Also wet meadows and the edges of permanent ditches and cattail (*Typha* sp.) stands.	Possible, known to occur in the Isleta reach of the Rio Grande and on the Bosque del Apache National Wildlife Refuge
Long-eared myotis bat	*Myotis evotis evotis*	Catron Socorro Valencia	BLM: Sensitive	Occurs in coniferous forests at moderate elevations. It is most common in ponderosa pine woodlands and is also found in piñon-juniper woodlands and subalpine forests. Uses day roosts in tree cavities, under loose bark, and in buildings. These sites as well as caves and mines are used for night roosts. Feeds over water and along the margins of vegetation.	Unlikely, limited habitat in the project area
Western small-footed myotis bat	*Myotis ciliolabrum melanorhinus*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	Occurs primarily in wooded, montane areas, but a few specimens have been taken in grassland and desert scrub habitats. Seeks daytime roosts primarily in rock crevices, caves, and mines. Maternity colonies often are in abandoned houses, barns, or similar structures.	Unlikely, limited habitat in the project area
Fringed myotis bat	*Myotis thysanodes thysanodes*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	Varied habitats from desert scrub to fir-pine. Known to roost in caves, mines and buildings.	Unlikely, limited habitat in the project area

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Long-legged myotis bat	*Myotis volans interior*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	Relatively common in ponderosa pine forests and piñon-juniper woodlands. Also known from some lowland sites. This bat roosts in a variety of sites including trees, buildings, crevices in rock faces, and even fissures in the ground in evenly eroded areas. Caves and mines do not appear to be important as day roosts, but are used as night roosts if available.	Unlikely, limited habitat in the project area
Yuma myotis bat	*Myotis yumanensis yumanensis*	Bernalillo Catron Socorro Valencia	BLM: Sensitive	More closely associated with water than most other North American bats. Found in a wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands and forests, but usually found near open water. Flies low. Nursery colonies usually are in buildings, caves and mines, and under bridges.	Unlikely, limited habitat in the project area
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	Bernalillo Catron Socorro	BLM: Sensitive	Occupies semi-desert shrublands, piñon-juniper woodlands, and open montane forests. Frequently associated with caves and abandoned mines for day roosts and hibernacula but will also use abandoned buildings and crevices on rock cliffs for refuge.	Unlikely, limited habitat in the project area
Gunnison's prairie dog	*Cynomys gunnisoni*	Bernalillo	USFWS: Candidate	This species inhabits grasslands from low valleys to montane meadows.	Possible, suitable habitat may be present
Mexican gray wolf	*Canis lupus baileyi*	Catron	USFWS: ENP State NM: Endangered	Reintroduced wolves from Arizona are now present in western Catron, Grant, and Hidalgo counties.	No
Black-tailed prairie dog	*Cynomys ludovicianus*	Socorro	USFWS: SOC	Black-tailed prairie dogs are inhabitants of shortgrass plains. Formerly they were widespread and abundant east of the Rio Grande and in the grasslands of southwestern New Mexico. Colonies were often reported in marginal habitat, such as open woodland, and in the southwestern part of the state they occupied semi-desert conditions.	No
Organ Mountains Colorado chipmunk	*Eutamias quadrivittatus australis*	Socorro	USFWS: SOC	The distribution of this subspecies is in the Organ Mountains in Doña Ana County and the Oscura Mountains in Socorro County; however, the Oscura Mountain population may be a different subspecies	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Desert pocket gopher	*Geomys arenarius arenarius*	Socorro	USFWS: SOC BLM: Sensitive	This subspecies is restricted to a narrow strip of bottom land along the upper Rio Grande valley from Porvenir, Chihuahua, north to Las Cruces, New Mexico.	No
Allen's big-eared bat	*Idionycteris phyllotis*	Catron Socorro	USFWS: SOC BLM: Sensitive	This big-eared bat seems to be largely a dweller in forested zones, from the yellow pine zone down to the riparian forest of sycamores (*Platanus* sp.), cottonwoods, and walnuts (*Juglans regia*).	Unlikely, limited habitat in the project area
Western red bat	*Lasiurus blossevillii*	Catron	USFWS: SOC	Riparian and other wooded areas. Roosts by day in trees. Summer roosts usually in tree foliage, sometimes in leafy shrubs or herbs.	Possible, if pipeline impacts riparian habitat along the Rio Grande
Southwestern otter	*Lutar canadensis sonorae*	Catron	USFWS: SOC	Historically, the river otter occurred in the upper Rio Grande, the Canadian and the Gila river drainages of the state; the only recent verified record is from the latter area in 1953. Considered likely extirpated from New Mexico.	No
Arizona montane vole	*Microtus montanus arizonensis*	Catron	State NM: Endangered	Confined to central-eastern Arizona and adjacent New Mexico in damp to wet places, live in thick grass, and usually make runways through the grass.	No
Occult little brown myotis bat	*Myotis lucifugus occultus*	Bernalillo Catron Socorro	BLM: Sensitive	Extreme southeastern California through central and eastern Arizona into New Mexico, southward through extreme West Texas into Chihuahua. In New Mexico it is considered to be resident around large permanent bodies of water and transient elsewhere.	No
Cave myotis bat	*Myotis velifer*	Catron	BLM: Sensitive	Southwestern half of Arizona and immediately adjacent parts of California, Nevada, New Mexico and northern third of Sonora, Mexico. Desert scrub of creosotebush (*Larrea tridentata*), brittlebush (*Encelia farinose*), palo verde, and cacti. Roost in caves, tunnels, and mineshafts and under bridges and sometimes in buildings within a few miles of water.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Pecos River muskrat	*Ondatra zibethicus ripensis*	Bernalillo Socorro Valencia	USFWS: SOC BLM: Sensitive	Confined to the Pecos River and its tributaries.	No
Invertebrates					
Slate millipede	*Comanchelus chihuanus*	Bernalillo Valencia	USFWS: SOC BLM: Sensitive	Albuquerque and Tomé Hill inhabit volcanic escarpment on south-facing slopes.	No
Obsolete (desert) viceroy butterfly	*Limenitis archippus obsoleta*	Socorro	USFWS: SOC	Moist open or shrubby areas such as lake and swamp edges, willow thickets, valley bottoms, wet meadows, and roadsides.	No
Alamosa springsnail	*Pseudotryonia alamosae*	Socorro	USFWS: Endangered State NM: Endangered	The species is known only from Ojo Caliente and Warm Spring, near the former Fort Harmony, at the head of the Alamosa River.	No
Chupadera springsnail	*Pyrgulopsis chupaderae*	Socorro	USFWS: Proposed State NM: Endangered	The species occurs only in Willow Spring, at the south end of the Chupadera Mountains.	No
Gila springsnail	*Pyrgulopsis gilae*	Catron	State NM: Threatened	The species is limited to a series of thermal springs along the East Fork Gila River and on the mainstem below the confluence of the East and West forks.	No
Socorro springsnail	*Pyrgulopsis neomexicana*	Socorro	USFWS: Endangered State NM: Endangered	The species is limited to Torreon Springs (Socorro County), which is the key habitat for the species in the state and overall. This snail formerly occurred in the immediate vicinity of Socorro.	No
New Mexico hot springsnail	*Pyrgulopsis thermalis*	Catron	State NM: Threatened	The species is limited to a series of thermal springs along the East Fork Gila River and on the mainstem below the confluence of the East and West forks.	No
Sacramento Mountains silverspot butterfly	*Speyeria atlantis capitanensis*	Catron	USFWS: SOC	Forest openings, upland pastures, bogs, meadows, and moist canyons. Endemic to the Sacramento Mountains.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Mountain silverspot butterfly	*Speyeria nokomis nitocris*	Catron	USFWS: SOC	Permanent spring-fed meadows, seeps, marshes, and boggy streamside meadows associated with flowing water in arid country. Habitat requirements include: spring fed and/or subirrigated wetlands at low (7,500 feet or less) elevation, larval foodplant (*Viola nephrophylla*), wet meadows interspersed with willows and other woody wetland species and adult nectar sources (mostly composites).	Possible, habitat for this species may be present
Socorro isopod	*Thermosphaeroma thermophilum*	Socorro	USFWS: Endangered State NM: Endangered	The species is confined to Sedillo Spring, about 5 miles west of Socorro (Socorro County) and 1.3 miles from the project area.	Unlikely, if project area avoids the spring
Ovate vertigo snail	*Vertigo ovata*	Socorro	State NM: Threatened	The only known living population occurs at Blue Spring near Carlsbad in Eddy County. Historically found in Socorro County.	No
Plants					
Goodding's onion	*Allium gooddingii*	Catron	USFWS: SOC State NM: Endangered	Various mountain ranges in southeast Arizona and southwest New Mexico. Mixed conifer and spruce-fir zones from 7,500 to 11,250 feet.	No
Fugate's blue-star	*Amsonia fugatei*	Socorro	USFWS: SOC BLM: Sensitive	Limy conglomerate ridges and associated outwash slopes in Chihuahuan desert scrub; 5,000 to 5,900 feet.	Possible, habitat for this species may be present
Sandhill goosefoot	*Chenopodium cycloides*	Socorro	USFWS: SOC BLM: Sensitive	Grows in open sandy regions of eastern Colorado, eastern New Mexico, southwestern Kansas, southwestern Nebraska, and western Texas. Found frequently but not exclusively around the vegetated edges of blowouts on sand dunes.	Possible, habitat for this species may be present
Wright's marsh thistle	*Cirsium wrightii*	Socorro	USFWS: Candidate State NM: Endangered	Alamosa Springs of Socorro County. Wet, alkaline soils in spring seeps and marshy edges of streams and ponds; 3,450 to 8,500 feet.	Possible, habitat for this species may be present
Hess' fleabane	*Erigeron hessii*	Catron	USFWS: SOC State NM: Endangered	Mogollon Mountains. Andesitic dikes in otherwise rhyolitic rock; growing from bedrock cracks in open areas in upper montane to subalpine conifer forest; 9,500 to 10,200 feet.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint
Zuni fleabane	*Erigeron rhizomatus*	Catron	USFWS: Threatened State NM: Endangered BLM: Sensitive	Generally associated with the distribution of Uranium deposits in west central New Mexico. Nearly barren detrital clay hillsides with soils derived from shales of the Chinle or Baca formations (often seleniferous); most often on north- or east-facing slopes in open piñon-juniper woodlands at 7,300 to 8,000 feet.	Unlikely, occurs in the Datil Mountains, limited habitat may be present in the project corridor
Pecos sunflower	*Helianthus paradoxus*	Socorro Valencia	USFWS: Threatened State NM: Endangered	Saturated saline soils of desert wetlands. Usually associated with desert springs (cienegas) or the wetlands created from modifying desert springs; 3,300 to 6,600 feet. Pecos sunflower is a true wetland species that requires saturated soils; adult plants still grow well when inundated.	Probable, species may be present in the project corridor
Dune pricklypear	*Opuntia arenaria*	Socorro	State NM: Endangered BLM: Sensitive	Socorro County occurrences of this species are suspect, no collected specimens. Occurs in southern Doña Ana and Luna counties into northern Mexico and southern Texas. Sandy areas, particularly semi-stabilized sand dunes among open Chihuahuan desert scrub, often with honey mesquite and a sparse cover of grasses; 3,800 to 4,300 feet.	No
Parish's alkaligrass	*Puccinellia parishii*	Catron	USFWS: SOC State NM: Endangered BLM: Sensitive	Western New Mexico. Alkaline springs, seeps, and seasonally wet areas that occur at the heads of drainages or on gentle slopes at 2,600 to 7,200 feet range-wide. The species requires continuously damp soils during its late winter to spring growing period.	No
Gila groundsel	*Senecio quaerens*	Catron	USFWS: SOC	White Mountains. High elevation riparian spruce-fir and ponderosa pine forests; usually among shrubby or grassy hummocks in partial shade of forest over-story half to full shade); also known from logged areas, 2,285 to 2,800 feet in elevation.	No
Mogollon clover	*Trifolium longipes* var. *neuophyllum*	Catron	USFWS: SOC	Catron County and adjacent Arizona. Wet meadows, springs and along riparian corridors in montane coniferous forest; 6,500 to 9,000 feet.	No

Common Name	Scientific Name	County	Status	Range and Habitat	Possible Constraint

Note:

Endangered: Any species that is in danger of extinction throughout all or a significant portion of its range.

Threatened: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Candidate: Taxa for which the USFWS have sufficient information to propose that they be added to list of endangered and threatened species, but the listing action has been precluded by other higher priority listing activities.

Proposed: Any species of fish, wildlife or plant that is proposed in the *Federal Register* to be listed under Section 4 of the Endangered Species Act. This could be either proposed for endangered or threatened status.

Experimental, Non-essential Population (ENP): A reintroduced population established outside the species' current range, but within its historical range. For purposes of Section 7 consultation, this population is treated as a proposed species, except when it is located within a National Wildlife Refuge and National Park, when the population is considered threatened.

Under Review: Determining whether the status of the species meets the definition of threatened or endangered.

Species of Concern (SOC): Taxa for which further biological research and field study are needed to resolve their conservation status OR are considered sensitive, rare, or declining on lists maintained by natural heritage programs, state wildlife agencies, other federal agencies, or professional/academic scientific societies. Species of concern are included for planning purposes only.

Sensitive: When a particular animal species becomes in danger of rapidly dwindling to extinction, national policy directs the BLM to add that animal on a BLM sensitive species list.

OFFICE OF STATE ENGINEER
SANTA FE, NEW MEXICO
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Exhibit E to Groundwater Application Attachment 2

Rio Rancho
City of Vision

Greggory D. Hull
Mayor

June 18, 2014

Michel Jichlinski, Principal
Augustine Plains Ranch, LLC
8070 Goergia Avenue, Suite 113
Silver Spring, MD 20910

RE: Augustine Plains Ranch, LLC

Dear Mr. Jichlinski,

Rio Rancho has a priority of developing/identifying a long term solution/plan to our current and future water needs. Securing a long term supply of water to our community is of great importance.

Should Augustin Plains Ranch, LLC succeed in the application process and successfully put in place a delivery system to deliver water to Rio Rancho, Rio Rancho would most certainly consider engaging Augustin Plains Ranch, LLC as a customer for this water.

Sincerely,

Greggory D. Hull
Mayor

EXHIBIT E TO ATTACHMENT 2

Rio Rancho
City of Vision

April 18, 2014

Michel Jichlinski, Principal
Augustin Plains Ranch, LLC
8070 Georgia Avenue, Suite 113
Silver Spring, MD 20910

RE: Augustin Plains Ranch, LLC

Dear Mr. Jichlinski,

As you know, Rio Rancho currently has a need for several thousand acre feet of water, therefore the City of Rio Rancho supports the applications for changes of place and purpose of use of Augustin Plains Ranch.

If Augustin Plains Ranch is successful in its application, we are interested in discussing with Augustin Plains Ranch moving water into Rio Rancho's water utility system to serve Rio Rancho's municipal, industrial and commercial uses.

Sincerely,

Keith Riesberg
City Manager

3200 Civic Center Circle NE • Rio Rancho, New Mexico 87144
Office (505) 896-8715 • Fax (505) 891-5201

Exhibit F to Groundwater Application Attachment 2

SAMPLE GRANT OF AUTHORITY TO APPROPRIATE

This Grant of Authority to Appropriate ("Grant") is entered into by and between the City of _____ ("City") and AUGUSTIN PLAINS RANCH LLC ("APR"), the City and APR may be hereinafter referred to individually as a "Party," and collectively as the "Parties."

RECITALS:

A. The City of _____is a municipal corporation of the State of New Mexico that *inter alia* provides water and wastewater services to the inhabitants of the City and others. The City has or will complete a 40 Year Water Plan. The City currently does not possess water supplies that exceed its 40 Year water demands. The City desires to acquire a portion of the Water Rights developed by APR in order to meet all or part of its 40 Year water demands.

B. APR owns a 17,780 acre ranch in Catron County, New Mexico. Large quantities of unappropriated groundwater underlie the ranch. APR desires to develop all or portions of the groundwater on behalf of municipal entities and other defined water users and deliver the water by pipeline to municipal entities. In furtherance of this intent, APR filed an application with the OSE, file number _____("Application") that seeks approval from the State Engineer for 37 well permits to appropriate 54,000 acre-feet per year (AFY) ("Water Rights").

C. The City understands that the Application may involve lengthy hearings and the expenditure of substantial sums of money for legal and engineering services with no guaranty that the expenditure will result in a permit to divert groundwater. The City does not want to risk public funds to participate in the uncertain Application process.

D. APR is willing to undertake the risk of prosecuting the Application to obtain the Water Rights for use by the City, subject to a permit term that any permits granted pursuant to authority granted by the City may be terminated or transferred to another qualifying municipal or governmental water user if the City does not execute a purchase agreement with APR as defined in this Grant.

E. The Parties understand that the Office of the State Engineer requires applicants for water rights to define the nature, scope and location of proposed municipal uses sought in applications for groundwater rights. The purpose of this Grant is to describe the terms of how the City will allow APR to apply for water rights on its behalf in order to fulfill the State Engineer's requirement for appropriating municipal water rights.

NOW THEREFORE, in consideration of the mutual covenants and promises between the Parties, which the Parties acknowledge and agree constitute adequate consideration, with such consideration having been received, the Parties agree as follows:

1 **Limited Authority Granted.** The City grants APR the limited authority to appropriate _____AFY on its behalf and to define the nature, scope and location of proposed municipal uses based in order to meet all or part of the City's 40 Year water demands.

EXHIBIT F TO ATTACHMENT 2

2 **Reasonable Assistance.** The parties acknowledge and agree to cooperate in completion of the permitting and development of the Water Rights. APR will prosecute all proceedings, as determined by APR in its sole discretion, to obtain permitting as may be required for municipal and other uses, including use by the City and others of Water Rights. APR will be solely responsible for all costs of proceedings to obtain such permitting, unless otherwise agreed to by the parties. The City agrees to assist APR in any hearing or meeting before the State Engineer and including all appeals, regarding the Water Rights, including, but not limited to, affidavits and testimony about the City's (1) intended use of the Water Rights; (2) 40 year Plan including information about the City's existing water supply area and its demand projections for the next 40 years; (3) the City's current and future service areas, both within and without its municipal boundaries; (4) the nature, scope and effectiveness of the City's water conservation plan.

3 **Right to Purchase.** The City has the first and exclusive right to purchase _____AFY of Water Rights from APR.

4 **The Purchase Date.** The Purchase Date is defined as the later of one year after the date upon which the State Engineer issues a final non-appealable permits to APR; or one year after the date the last Federal, State or Local permit necessary to construct the Water Rights delivery pipeline is granted; or one year after the Water Delivery Rate is determined pursuant to Schedule A.

5 **Miscellaneous.**

5.1 **Amendment.** This Agreement may be modified, amended, changed or terminated in whole or in any part only by an agreement in writing duly authorized and executed by the Parties with the same formality as this Agreement.

5.2 **Authority of the City Manager.** The City Manager of the City, without further Council action, has the authority to: (i) enter into such amendments or other modifications of this Agreement as City Manager may deem necessary for the purpose of extending deadlines provided for in this Agreement or making administrative modifications to this Agreement; and (ii) execute such other documents as are necessary to effectuate the terms of this Agreement; provided, however, that City Manager may not make any such amendment or modification which is reasonably expected to increase the sums payable by _____ to APR hereunder.

5.3 **Waiver.** The waiver of any breach of any provision of this Agreement by any Party hereto shall not constitute a continuing waiver of any subsequent breach of said Party, for either breach of the same or any other provision of this Agreement.

5.4 **Entire Agreement.** This Agreement represents the entire agreement of the Parties, and neither Party has relied upon any fact or representation not expressly set forth herein. This Agreement supersedes all other prior agreements and understandings of any type, both written and oral, among the Parties with respect to the subject matter hereof; provided, however, that nothing in this Agreement amends or modifies any aspect of the Existing Lease, which remains in full force and effect.

5.5 **Headings for Convenience Only.** Paragraph headings and titles contained herein are intended for convenience and reference only and are not intended to define, limit or describe the scope or intent of any provision of this Agreement.

5.6 **Binding Effect.** This Agreement and the rights and obligations created hereby shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns, if any, subject to Paragraph 14 above.

5.7 **Governing Law and Venue**. This Agreement and its application shall be construed in accordance with the laws of the State of New Mexico. The Parties agree that venue for any litigated disputes regarding this Agreement shall be the _____County District Court.

5.8 **Multiple Originals**. This Agreement may be simultaneously executed in any number of counterparts, each of which shall be deemed original but all of which constitute one and the same Agreement.

5.9 **Joint Draft**. The Parties agree they drafted this Agreement jointly with each having the advice of legal counsel and an equal opportunity to contribute to its content.

5.10 **No Third-Party Beneficiaries**. This Agreement is intended to describe the rights and responsibilities of and between the Parties and is not intended to, and shall not be deemed to, confer rights upon any persons or entities not signatories hereto, nor to limit, impair, or enlarge in any way the powers, regulatory authority and responsibilities of either Party or any other governmental entity not a Party hereto.

5.11 **Notices.** Any notice required or permitted to be given hereunder shall be in writing or by e-mail addressed as follows, or as the Parties may subsequently designate by written notice to the other. All notices shall be delivered by facsimile, recognized overnight delivery service, or hand-delivery and shall be deemed effective upon: (i) the successful transmission of a facsimile; (ii) deposit with a recognized overnight delivery service; or (iii) upon receipt by hand delivery. All notices sent by e-mail shall be deemed delivered upon successful receipt of the e-mail message.

If to APR:

with a copy to:

If to _____:

with a copy to:

5.12 **Brokerage.** The Parties warrant and represent to each other that no real estate agent or other broker or finder is involved in this transaction.

5.13 **Non-Severability and Effect of Invalidity**. Each paragraph in this Agreement is intertwined with the others and are not severable unless by mutual consent of APR and _____ or as provided for below. If any provision or portion of this Agreement or the application thereof to any person or circumstance shall, at any time or to any extent, be invalid or unenforceable for any reason by a Court of competent jurisdiction, and the basis of the bargain between the parties hereto is not destroyed or rendered ineffective thereby, the remainder of this Agreement, or the application of such provisions to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby.

5.14 **Recitals and Exhibits**. The recitals to this Agreement and the exhibits attached to this Agreement are incorporated herein by this reference.

5.15 **Non-business Days**. If the date for any action under this Agreement falls on a Saturday, Sunday or a day that is a "holiday" as such term is defined in N.M.R.A. 6, then the relevant date shall be extended automatically until the next day that is not a Saturday, Sunday or a "holiday."

Signature pages

SAMPLE LONG TERM WATER SUPPLY AGREEMENT

THIS LONG TERM WATER SUPPLY AGREEMENT ("Agreement") is entered into this ___ day of _____, 201_ (the "Effective Date"), by and among AUGUSTIN PLAINS RANCH LLC ("APR") and _____who may be hereinafter referred to individually as a "Party," and collectively as the "Parties."

RECITALS:

A. APR owns a 17,780 acre ranch in Catron County, New Mexico. Large quantities of unappropriated groundwater underlie the ranch. APR desires to develop all or portions of the groundwater on behalf of municipal entities and other defined water users and deliver the water by pipeline to municipal entities. In furtherance of this intent, APR filed an application with the OSE file number _____("Application") that seeks approval from the State Engineer for 37 well permits to appropriate 54,000 acre-feet per year (AFY) ("Water Rights").

B. _____is a municipal corporation of the State of New Mexico that *inter alia* provides water and wastewater services to the inhabitants of the City of _____ (the "City") and others. _____ has or will complete a 40 Year Water Plan. The City currently does not possess water supplies that exceed its 40 Year water demands and seeks to acquire a portion of the raw water supplies and infrastructure developed by APR in order to meet all or part of its 40 Year water demands.

C. APR owns or controls, and is actively acquiring further ownership or control, of groundwater rights and delivery infrastructure which can be utilized to provide a legal and physical water supply to _____.

D. APR and _____ desire to enter into an agreement whereby _____ shall supply water to _____ from and after the Water Delivery Date (as defined below).

NOW, THEREFORE, for and in consideration of the mutual covenants and agreements contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the Parties, the Parties agree as follows.

AGREEMENT

1. Term of Agreement. Subject to the terms and conditions of this Agreement, APR shall supply water to _____ to be used for municipal purposes from _____ (the "Water Delivery Date") to and until December 31, 20__.

2. Amount of Water to be Supplied. Beginning on the Water Delivery Date, APR shall deliver to _____ at the Delivery Location, as defined in Paragraph 5 below, _____ acre feet of fully consumable water each Contract Year in accordance with the Delivery Schedule, as defined in Paragraph 6 below. "Contract Year" shall mean, with respect to the first Contract Year the period between the Water Delivery Date and December 31, 20__; and, with respect to all other

Contract Years, the twelve-month period beginning on January 1st of each year during the term of this Agreement.

3. Initial Fee. _____ shall pay to APR, in addition to the Annual Water Payment Amount or any other sums due hereunder, the sum of _____ (the "Initial Fee"). The Initial Fee is non-refundable and shall not be applicable to the Annual Water Payment Amount payable under this Agreement. _____ shall pay the Initial Fee in ten annual payments of _____each, on or before January 1, 2016 through January 1, 2025.

4. Yearly Payment.

(a) Consideration. From and after the Water Delivery Date, _____ shall pay APR for the water scheduled to be delivered during each Contract Year (the "Annual Water Payment Amount"). The Annual Water Payment Amount for the first Contract Year shall be [_____]. The Annual Water Payment Amount thereafter shall initially be the sum of _____. The Annual Water Payment Amount shall be increased or decreased on each five-year anniversary of the Water Delivery Date based upon any change over the preceding five-year period in the Core Consumer Price Index (CPI-All Urban Consumers All Items Less Food and Energy), published by the United States Department of Labor, Bureau of Labor Statistic ("Core CPI"), or successor index should publication of the Core CPI cease.

(b) Payment. _____ shall pay to APR the Annual Payment Amount on or before the first day of each Contract Year during the term of this Agreement. Starting with the second Contract Year, APR shall send an invoice to _____ on or before the date which is 15 days before commencement of such Contract Year which invoice shall state the applicable Annual Payment Amount for the upcoming Contract Year and shall, to the extent applicable, include (i) any amounts owed by APR as a refund pursuant to Paragraph15, and (ii) an adjustment of the Annual Payment Amount reflecting the Core CPI, if applicable. If _____ fails to pay the required Annual Payment Amount on or before the commencement of the Contract Year, APR may give _____ a notice of default. If _____ does not cure by making full payment of all amounts then due within 30 days of receipt of any notice of default, then APR, in addition to pursuing any other remedies available to it, may declare this Agreement terminated and APR will be free to make other uses of the water that is the subject hereof. APR 's failure to provide an invoice for any given Contract Year in the time provided for above shall NOT excuse _____'s obligation to pay any and all amounts due and payable under this Agreement.

5. Location for delivery. APR shall deliver the water to be supplied under this Agreement to (i) the municipal water plant ("Plant")as generally shown on Exhibit 1, (ii) any other location requested by _____ that is within the scope of the APR permited or licensed water rights or (iii) at APR's discretion as provided for below, any other location mutually agreed to in writing by the Parties (the "Delivery Location"). The water shall initially be delivered to the location described in Subparagraph (i) above. _____ may request a change in the Delivery Location in writing at least 180 days prior to the beginning of the first month for which the change is sought; provided that APR may, in its sole discretion, grant or deny its consent to any request for a change in the Delivery Location to a location other than as provided for in Subparagraph 5(i) above.

6. Delivery Schedule. APR will make deliveries of the water at the Delivery Location according to the schedule set forth in Exhibit 2 attached hereto and incorporated herein by this reference (the "Delivery Schedule"). In no event shall the total amount of water delivered during any Contract Year exceed the maximum amount of _____acre feet as set forth in Paragraph 2 above. As long as APR delivers the water to the Delivery Location according to the Delivery Schedule, _____ will be obligated to pay the Annual Water Payment Amount as set forth in Paragraph 4 above, regardless of whether _____ requests or uses the water, subject to any reduction in the Annual Water Payment Amount for subsequent Contract Years as provided for under Paragraphs 4 and 12 and any amounts owed by APR as a refund pursuant to Paragraph 15. _____ may request modification of the Delivery Schedule concerning the rates of delivery pursuant to the terms of Paragraph 13 but not the total annual amount of water to be delivered. _____ in its sole discretion may grant or deny any requested modification.

7. Sources. APR may supply water to _____ under this Agreement from any of the water rights APR owns, controls, or has a right to use pursuant to approvals of the State Engineer, State Engineer, which may legally be used to full extinction for municipal purposes at _____'s Plant. APR may supply water to _____ from any water right _APR does not currently own, control or have the right to use, but that APR may acquire rights to in the future (the "Future Sources"); provided, however, that APR is solely responsible for obtaining any approvals of the State Engineer that may be necessary for use of Future Sources to provide water to be used to full extinction for municipal purposes at _____'s Plant.

8. Water Quality. APR does not make any representation as to the quality of the water to be delivered to _____ at the Delivery Location. APR does not represent that the water delivered to _____ will be acceptable for _____'s use without treatment. APR assumes the risk that the water delivered at the Delivery Location by APR will not be of sufficient quality to satisfy, without treatment, the water quality provisions of any applicable statute or permit governing _____'s use of the water.

9. No Opposition to APR Water Applications. From and after the Effective Date until the end of the term of this Agreement, _____ shall not oppose any application to the State Engineer filed by APR for any purpose.

10. Prohibition Against Acquiring Other Water Supplies. _____ shall not lease, buy or otherwise acquire the use of water for the same supply contemplated by this Agreement from any person or entity other than APR for municipal purposes from and after the Effective Date, except to the extent that APR is unable to perform under this agreement pursuant to Paragraph 15 below, in which case _____ may pursue all other sources of water supply for municipal use at _____'s Plant.

11. Accounting Responsibilities. APR is solely responsible for any and all reporting and accounting of water after delivery at the Delivery Location that may be required by the State Engineer or any other lawful authority.

12. APR's Right to Request Unused Yield. The Parties acknowledge that due to hydrologic and other conditions that occur in a given year, _____ may not need all or a portion of the water available to it under this Agreement ("Unused Yield"). From time to time, APR may contact

_____ to determine if any of the water required to be provided to _____ herein will not be needed by _____. If _____ confirms in writing that any portion of the water to be provided by APR will not be needed by _____, APR, at its option, may use the Unused Yield for any purpose. If APR uses any such Unused Yield water, it will determine the amount thereof, and it will notify _____ in writing and credit _____ on the next invoice issued to _____.

13. Variation of Delivery Rate. _____ may request a change in the weekly water delivery rate in order to accommodate _____ needs but not the total annual amount of water to be delivered. APR may grant or deny the request in its sole discretion.

(a) _____ must request any change in a monthly water delivery schedule in writing at least 10 days prior to the beginning of the relevant week.

(b) _____ may request daily changes by telephone with a written confirmation mailed within 5 business days of the request.

(c) APR shall document all water delivery rate changes in writing in a reasonable time after the request is granted and _____ shall be provided with a copy in the manner provided in Paragraph 17(l).

14. Assignment.

(a) General. APR may not assign its rights or delegate its duties hereunder without the prior written consent of _____ which consent shall not be unreasonably withheld, conditioned or delayed. _____ may not assign or sub lease its rights or delegate its duties hereunder without the prior written consent of _____, which consent shall not be unreasonably withheld, conditioned or delayed; provided, that, (i) _____ shall deliver prior notice of any such assignment to APR, and, (ii) any assignee, subtenant or other transferee shall expressly assume _____'s obligations hereunder, unless otherwise agreed to by APR, and no assignment, sublease or delegation, whether or not consented to, shall relieve _____ of its obligations hereunder in the event the assignee fails to perform, unless APR agrees in writing in advance to waive _____'s continuing obligations under this Agreement.

15. Force Majeure.

(a) General. Subject to the terms and conditions in this paragraph, no party to this Agreement shall be liable for any delay or failure to perform under this Agreement due solely to conditions or events of Force Majeure, as that term is specifically defined with regard to each party below; provided that: (i) the non performing party gives the other party prompt written notice describing the particular of the occurrence of the Force Majeure; (ii) the suspension of performance is of no greater scope and of no longer duration than is required by the Force Majeure event or condition; and (iii) the non-performing party proceeds with reasonable diligence to remedy its inability to perform and provides weekly progress reports to the other party describing the actions taken to remedy the consequences of the Force Majeure event or condition. In the event of a change in municipal (or other local governmental entity), state or federal law or practice that prohibits or delays performance, the obligation to seek a remedy shall extend to making all reasonable efforts to reform the Agreement in a manner consistent with the

change that provides the parties substantially the same benefits as this Agreement, provided, however, that no such reformation shall increase the obligations of either party.

(b) Limitations on Effect of Force Majeure. In no event will any delay or failure of performance caused by any conditions or events of Force Majeure extend this Agreement beyond its stated Term. In the event any delay or failure of performance on the part of the party claiming Force Majeure continues for an uninterrupted period of more than 365 days from its occurrence or inception as noticed pursuant to Paragraph 17(l) of this Agreement, the party not claiming Force Majeure may, at any time following the end of such one year period, terminate this Agreement upon written notice to the party claiming Force Majeure, without further obligation except as to costs and balances incurred prior to the effective date of such termination.

16. Condition Precedent. This Agreement shall binding between APR and _____upon the occurrence of the following conditions precedent listed below (the "Conditions Precedent") which Conditions Precedent shall be deemed satisfied as evidenced in writing: (a) completion of the infrastructure necessary to delivery water to the Delivery Location; and (b) issuance of one or more of the well permits applied for by APR in amounts sufficient to allow well diversions necessary to deliver water subject of this Agreement.

17. Miscellaneous.

(a) Amendment. This Agreement may be modified, amended, changed or terminated in whole or in any part only by an agreement in writing duly authorized and executed by the Parties with the same formality as this Agreement.

(b) Authority of the City Manager. The City Manager of the City, without further Council action, has the authority to: (i) enter into such amendments or other modifications of this Agreement as City Manager may deem necessary for the purpose of extending deadlines provided for in this Agreement or making administrative modifications to this Agreement; and (ii) execute such other documents as are necessary to effectuate the terms of this Agreement; provided, however, that City Manager may not make any such amendment or modification which is reasonably expected to increase the sums payable by _____ to APR hereunder.

(c) Waiver. The waiver of any breach of any provision of this Agreement by any Party hereto shall not constitute a continuing waiver of any subsequent breach of said Party, for either breach of the same or any other provision of this Agreement.

(d) Entire Agreement. This Agreement represents the entire agreement of the Parties, and neither Party has relied upon any fact or representation not expressly set forth herein. This Agreement supersedes all other prior agreements and understandings of any type, both written and oral, among the Parties with respect to the subject matter hereof; provided, however, that nothing in this Agreement amends or modifies any aspect of the Existing Lease, which remains in full force and effect.

(e) Headings for Convenience Only. Paragraph headings and titles contained herein are intended for convenience and reference only and are not intended to define, limit or describe the scope or intent of any provision of this Agreement.

(f) Binding Effect. This Agreement and the rights and obligations created hereby shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns, if any, subject to Paragraph 14 above.

(g) Governing Law and Venue. This Agreement and its application shall be construed in accordance with the laws of the State of New Mexico. The Parties agree that venue for any litigated disputes regarding this Agreement shall be the _____County District Court.

(h) Multiple Originals. This Agreement may be simultaneously executed in any number of counterparts, each of which shall be deemed original but all of which constitute one and the same Agreement.

(i) No Fees and Expenses and Apportionment. Except as otherwise expressly set forth in this Agreement, each Party will bear its own expenses in connection with the transactions and activities contemplated by this Agreement.

(j) Joint Draft. The Parties agree they drafted this Agreement jointly with each having the advice of legal counsel and an equal opportunity to contribute to its content.

(k) No Third-Party Beneficiaries. This Agreement is intended to describe the rights and responsibilities of and between the Parties and is not intended to, and shall not be deemed to, confer rights upon any persons or entities not signatories hereto, nor to limit, impair, or enlarge in any way the powers, regulatory authority and responsibilities of either Party or any other governmental entity not a Party hereto.

(l) Notices. Any notice required or permitted to be given hereunder shall be in writing or by e-mail addressed as follows, or as the Parties may subsequently designate by written notice to the other. All notices shall be delivered by facsimile, recognized overnight delivery service, or hand-delivery and shall be deemed effective upon: (i) the successful transmission of a facsimile; (ii) deposit with a recognized overnight delivery service; or (iii) upon receipt by hand delivery. All notices sent by e-mail shall be deemed delivered upon successful receipt of the e-mail message.

If to APR:

with a copy to:

If to _____:

with a copy to:

(m) Brokerage. The Parties warrant and represent to each other that no real estate agent or other broker or finder is involved in this transaction.

(n) Non-Severability and Effect of Invalidity. Each paragraph in this Agreement is intertwined with the others and are not severable unless by mutual consent of APR and _____

or as provided for below. If any provision or portion of this Agreement or the application thereof to any person or circumstance shall, at any time or to any extent, be invalid or unenforceable for any reason by a Court of competent jurisdiction, and the basis of the bargain between the parties hereto is not destroyed or rendered ineffective thereby, the remainder of this Agreement, or the application of such provisions to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby.

(o) Recitals and Exhibits. The recitals to this Agreement and the exhibits attached to this Agreement are incorporated herein by this reference.

(p) Non-business Days. If the date for any action under this Agreement falls on a Saturday, Sunday or a day that is a "holiday" as such term is defined in N.M.R.A. 6, then the relevant date shall be extended automatically until the next day that is not a Saturday, Sunday or a "holiday."

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Signature Blocks

Exhibit 1

Initial Delivery Location

Exhibit 2

Delivery Schedule

Exhibit 3

Form of Consent Agreement

AUGUSTIN PLAINS RANCH WATER
SAMPLE INFRASTRUCTURE
PARTICIPATION AGREEMENT

This Infrastructure Participation Agreement ("Agreement") is entered into by AUGUSTIN PLAINS RANCH LLC ("APR") and _____ ("Participant") (individually, a "Party" and collectively, the "Parties").

Recitals

A. APR owns a 17,780 acre ranch in Catron County, New Mexico. Large quantities of unappropriated groundwater underlie the ranch. APR desires to develop all or portions of the groundwater on behalf of municipal entities and other defined water users and deliver the water by pipeline to such entities. In furtherance of this intent, APR filed an application with the OSE file number _____("Application") that seeks approval from the State Engineer for 37 well permits to appropriate 54,000 acre-feet per year (AFY) ("Water Rights").

B. To fully develop and deliver the groundwater, APR will design and build infrastructure including a well field with interconnecting pipelines, holding tanks, recharge ponds, hydroelectric generation, a 140+ mile delivery pipeline and solar energy panels. ("APR Infrastructure Project or APRIP")

C. Participant desires to reserve capacity in the APRIP prior to completion of the permitting process.

D. APR establishes the participation interests set forth in this agreement to allow Participants to delay payment of the ultimate purchase price until the permitting, financing and engineering phases of the project achieves defined milestones.

NOW, THEREFORE, for and in consideration of the mutual covenants and agreements contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the Parties, the Parties agree as follows.

1. **Reservation of Capacity**. Subject to receiving the payments required in section 2 below, APR agrees to reserve ____AFY of the capacity in the APRIP for Participant.

2. **Payment Milestones**. Participant shall pay APR the following nonrefundable payments to continue their capacity reservation:

2.1 **Initial Subscription.** Participant shall pay _____ to APR at the time of the execution of this agreement.

2.2 **Permitting.** At the time the State Engineer issues a final non-appealable Water Rights permit to APR, Participant shall pay _____ to APR.

2.3 **Water Rights Purchase**. Participant shall execute a definitive agreement with APR to acquire Water Rights and a Carriage agreement in the APR delivery pipeline no later than 12 months after the State Engineer issues a final non-appealable Water Rights permits to APR.

2.4 **Failure to make Milestone Payment**. Failure to make the payments specified in this section when due shall forfeit the Participant's reservation of capacity in the APRIP.

3. **Miscellaneous.**

3.1 Amendment. This Agreement may be modified, amended, changed or terminated in whole or in any part only by an agreement in writing duly authorized and executed by the Parties with the same formality as this Agreement.

3.2 Authority of the City Manager. The City Manager of the City, without further Council action, has the authority to: (i) enter into such amendments or other modifications of this Agreement as City Manager may deem necessary for the purpose of extending deadlines provided for in this Agreement or making administrative modifications to this Agreement; and (ii) execute such other documents as are necessary to effectuate the terms of this Agreement; provided, however, that City Manager may not make any such amendment or modification which is reasonably expected to increase the sums payable by _____ to APR hereunder.

3.3 **Waiver.** The waiver of any breach of any provision of this Agreement by any Party hereto shall not constitute a continuing waiver of any subsequent breach of said Party, for either breach of the same or any other provision of this Agreement.

3.4 Entire Agreement. This Agreement represents the entire agreement of the Parties, and neither Party has relied upon any fact or representation not expressly set forth herein. This Agreement supersedes all other prior agreements and understandings of any type, both written and oral, among the Parties with respect to the subject matter hereof; provided, however, that nothing in this Agreement amends or modifies any aspect of the Existing Lease, which remains in full force and effect.

3.5 Headings for Convenience Only. Paragraph headings and titles contained herein are intended for convenience and reference only and are not intended to define, limit or describe the scope or intent of any provision of this Agreement.

3.6 Binding Effect. This Agreement and the rights and obligations created hereby shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns, if any, subject to Paragraph 14 above.

3.7 Governing Law and Venue. This Agreement and its application shall be construed in accordance with the laws of the State of New Mexico. The Parties agree that venue for any litigated disputes regarding this Agreement shall be the _____County District Court.

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3.9 Joint Draft. The Parties agree they drafted this Agreement jointly with each having the advice of legal counsel and an equal opportunity to contribute to its content.

3.10 No Third-Party Beneficiaries. This Agreement is intended to describe the rights and responsibilities of and between the Parties and is not intended to, and shall not be deemed to, confer rights upon any persons or entities not signatories hereto, nor to limit,

impair, or enlarge in any way the powers, regulatory authority and responsibilities of either Party or any other governmental entity not a Party hereto.

3.11 Notices. Any notice required or permitted to be given hereunder shall be in writing or by e-mail addressed as follows, or as the Parties may subsequently designate by written notice to the other. All notices shall be delivered by facsimile, recognized overnight delivery service, or hand-delivery and shall be deemed effective upon: (i) the successful transmission of a facsimile; (ii) deposit with a recognized overnight delivery service; or (iii) upon receipt by hand delivery. All notices sent by e-mail shall be deemed delivered upon successful receipt of the e-mail message.

If to APR:

with a copy to:

If to _____:

with a copy to:

3.12 Brokerage. The Parties warrant and represent to each other that no real estate agent or other broker or finder is involved in this transaction.

3.13 Non-Severability and Effect of Invalidity. Each paragraph in this Agreement is intertwined with the others and are not severable unless by mutual consent of APR and _____ or as provided for below. If any provision or portion of this Agreement or the application thereof to any person or circumstance shall, at any time or to any extent, be invalid or unenforceable for any reason by a Court of competent jurisdiction, and the basis of the bargain between the parties hereto is not destroyed or rendered ineffective thereby, the remainder of this Agreement, or the application of such provisions to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby.

3.14 Recitals and Exhibits. The recitals to this Agreement and the exhibits attached to this Agreement are incorporated herein by this reference.

3.15 Non-business Days. If the date for any action under this Agreement falls on a Saturday, Sunday or a day that is a "holiday" as such term is defined in N.M.R.A. 6, then the relevant date shall be extended automatically until the next day that is not a Saturday, Sunday or a "holiday."

Signature pages

SAMPLE WATER DELIVERY PRICING SCHEDULE

1. **General.** APR intends to provide wholesale water for resale to a limited set of commercial customers. APR has no intention of making its water generally available to the public, and has no intention of becoming a public utility as that term is defined in the Public Utility Act. Nonetheless, pricing for water deliveries from the APR well field and pipeline (the "Delivery Rate") is intended to be based on the principles of cost-of-service utility rate setting. However, it is understood by the Parties that specific circumstances defined under this Agreement require advanced understanding and application of those principles and that the Parties have adapted in some cases an application of rate setting principles that are particular to this Agreement, the characteristics of the services provided, and the purpose and intent of the Parties themselves. In cases where generally accepted principles of utility rate setting may appear to differ from the pricing of water deliveries under this Agreement, the terms defined in this Attachment A of the Agreement will prevail. If a term or condition necessary for the pricing of water deliveries under this Agreement is missing from this Attachment, that term and condition will be established by mutual agreement of the Parties.

2. **Overall Principles.** The Delivery Rate incorporates the following overarching principles:

   2.1. **Appropriate Return on Investment.** The Delivery Rate will allow those who own Facilities ("Owner") to receive an appropriate return on historical and new investments in the Facilities as defined in this Attachment.

   2.2. **Consistent with Owners' Internal Ratemaking and Financial Practices.** The Delivery Rate will be consistent with the financial requirements and internal ratemaking practices of the Owner.

   2.3. **Equitable and Transparent Allocation of Costs.** The costs incurred to provide deliveries under this Agreement include the operating and maintenance costs in addition to various capital components. Equitable pricing means that these costs will be allocated to those receiving water deliveries from the project each in accordance with their particular demand characteristics and their contractually defined delivery requirements. Transparency exists when the process for such an allocation can occur within a framework that is visible, understood by all the Parties, and repeatable over time with consistent and predictable results.

3. **Facilities.** The APR Facilities include all tangible assets, and intangible real property rights (e.g. water rights), that are used and useful in providing the water deliveries under this Agreement. A listing of the current Facilities is included in Table 1.The listing of Facilities may change from time to time. No changes to the Facilities listed in Table 1 will be made without the consent of the Parties which consent shall not be unreasonably withheld or denied. All Facilities, current and future, include the following overall characteristics:

   3.1. **Facilities are Used.** To be considered a Facility, the asset must be physically used for delivery of water under this Agreement with measurable flows of water occurring on a regular and recurring basis. Any Facility included in the Delivery Rate is either: a)

currently used with measurable flows, or b) will be used in the year immediately following Owner's budget year as part of the normal operations of the Facilities.

3.2. **Facilities are Useful.** A Facility must provide a specific function that enables the delivery of water as described in this Agreement. Facilities, or parts of Facilities, that do not enable the deliveries under this Agreement are not included in the Delivery Rate. Facilities that are only used by the Facilities' Owner are not included in the Delivery Rate.

3.3. **Exceptions.** Additional Facilities will be required in the future to maintain current deliveries and provide increased deliveries to _____ in excess 54,000 acre feet per year. In some cases, those Facilities may need to be constructed ahead of the Owners' planned schedules. Exceptions to Paragraphs 3.1 and 3.2 may be required to address the additional costs, if any, incurred in accelerating construction of planned Facilities. Facilities may be added to the Delivery Rate in anticipation of future construction under the following conditions:

3.3.1. **Conditions for Exception**:

3.3.1.1. **Acceleration of planned Facilities.** The Owners need to accelerate planned infrastructure to maintain the current delivery commitment.

3.3.1.2. **Increased Delivery Requested.** The _____ has requested increased delivery from a previous commitment level, and the Owners are willing and able to meet the requested deliveries.

3.3.1.3. **Additional Facilities Required.** The Owners cannot meet the requested increased delivery without additional Facilities. The Facilities required are either newly identified and were not part of the Owners' prior plans, or must be constructed ahead of the Owners' plans.

3.3.1.4. **Owner Investment Required.** The Owners pay for the additional Facilities and incur an Owner Investment consistent with Paragraph 5.2.1 below.

3.3.2. **Allowances in Pricing**. If the conditions in Paragraphs 3.3 and 3.3.1 are met, then the pricing for the next determination of the Delivery Rate will include the reasonably estimated costs for the identified Facilities.

3.3.2.1. **Capital Costs**. The capital costs calculated under this provision will include a return to the Owners as described in Paragraph 5.2 based on the reasonably estimated construction cost of the Facilities in question. The pricing will not include any depreciation expense as described in Paragraph 5.1 or working capital as described in Paragraph 5.2.1.3, however, until the Facilities are constructed and placed into service and used and useful for delivery of water under this Agreement. All other provisions of Section 5.2 will apply.

3.3.2.2. **Operating Costs.** Operating and maintenance expenses as described in Paragraph 6, below, will not be included in the pricing analysis until such time as the Facility is placed into service for the delivery of water under this Agreement.

4. **Ownership.** Each of the Facilities has at least one Owner. The Owner(s) will be identified for each of the Facilities by name and by percentage of ownership.

5. **Capital Costs.** Capital costs include the depreciation expense on the Facilities, plus a return to the Owner of the Facilities.

5.1. **Depreciation Expense.** Depreciation expense has the same meaning as is normally applied by the Government Accounting Standards Board. All depreciation is to be determined using the Straight-Line method based on the initial term of the Facility's life. Determination of salvage value, if any, is at the discretion of the Facility Owner.

5.2. **Return.** Owner(s) will be compensated for their investment in the Facilities in an amount equal to the Owner(s) weighted average cost of capital (WACC) times the Owner(s) investment in the Facilities.

5.2.1. **Measuring Owner Investment.** Owner investment is also referred to as "Rate Base." The Rate Base is meant to accurately measure the Owner(s) actual investments in the Facilities. It includes the following components:

5.2.1.1. **Net Book Value of Facilities.** This is equal to the actual original cost of the Facility less accumulated depreciation. The book value may be increased by additions or improvements to the Facilities; it decreases with asset deletions, retirements, and accumulated depreciation.

5.2.1.2. **Construction Work in Process.** Future Facility investments may be included in the Rate Base if the Facility meets the definitions in Paragraph 3 above.

5.2.1.3. **Working Capital.** Owners are allowed to include an allowance for working capital equal to 90 days of their operating & maintenance expenses incurred at the Facilities. The working capital allowance for each Facility shall be calculated as the annual operating and maintenance expense, divided by 365 days, times 90 days.

5.2.1.4. **(Less) Contributions Received.** Any capital payments or assets in kind paid by _____ to the Owner(s) to defray the Owner(s) Investment shall be accounted for as capital contributions and credited to _____ as a reduction in the Owner(s) Investment. Contributions reduce both the Return

and depreciation expenses related to the Facilities. All contributions will be amortized at a rate equal to the rate of depreciation for the Facility in question.

5.2.2. Measuring the Weighted Average Cost of Capital. The weighted average cost of capital is the sum of the weighted debt cost and weighted equity cost; it will be used as the rate of return described in section **Error! Reference source not found.**.

5.2.2.1. **Total Cost of Capital.** The cost of capital will include an allowance for the Owner(s) actual cost of debt financing, as well as a return for the Owner(s) equity.

5.2.2.1.1. **Cost of Debt** – The cost of debt is the average annual interest rate paid on the Owner(s) portfolio of outstanding long-term debt. For the purposes of this Agreement, the cost of debt shall be calculated as follows:

5.2.2.1.1.1. Determine the total amount of long-term debt issued and outstanding as measured from the Owner(s) most recently audited and publicly available financial statements. Total long-term debt outstanding shall include all portions of long-term debt due and payable within one year, also called the "current portion", together with those amounts payable at any time after one year, also called the "long-term portion."

5.2.2.1.1.2. Determine the net interest payment due on each component of the long-term debt during the 12-month period in which the Delivery Rate will be determined. Interest payments due shall reflect the total of scheduled interest payments, net of any discounts, premiums, grants, state/federal subsidization, or other reductions.

5.2.2.1.1.3. Divide the total amount of interest due by the total amount of long-term debt outstanding to derive the annual effective interest rate.

5.2.2.1.2. **Cost of Equity** – the cost of equity is the interest rate to be paid on the use of the Owner(s) equity capital. For the purposes of this Agreement, the cost of the Owner(s) equity shall be calculated as follows:

5.2.2.1.2.1. Determine the cost of equity using the Build-Up Method (BUM) expressed as the following formula: Cost of Equity (Ke) = Risk Free Rate (Rf) + Market Risk Premium (MRP) + Industry Risk Premium (IRP) + Size Premium (SP).

5.2.2.2.1. **Total Invested Capital.** An Owner's total invested capital is equal to the sum of: (a) total long-term debt as described in **Error! Reference source not found.**; and (b) his total equity as measured from the most recently published, publicly available, audited financial statements as the Owner(s) total assets less total liabilities.

5.2.2.2.2. **Determine the Weight of Debt as a Portion of Invested Capital.** The total long-term debt divided by Total Invested Capital is the debt weighting.

5.2.2.2.3. **Determine the Weight of Equity as a Portion of Invested Capital.** The equity weighting shall be determined as 100% minus the debt weighting described in **Error! Reference source not found.**.

5.2.2.3. **Calculate the WACC.** The WACC for the Owner(s) shall be calculated using the formula: WACC = Wd(Kd) + We(Ke). Where Wd = weight of debt as described in **Error! Reference source not found.**; Kd = cost of debt as described in **Error! Reference source not found.**; We = weight of equity as described in **Error! Reference source not found.**; and Ke = cost of equity as described in **Error! Reference source not found.**

6. **Operating & Maintenance Costs.** The costs of operating and maintaining the Facilities will be properly budgeted and accounted for on a regular basis. Whether or not operating and maintenance costs are incurred, and the level, if any, of those costs is determined at the sole discretion of the Owner(s) of the Facilities. Only the operating and maintenance costs incurred in the operation of the Facilities are included in the basis for the Delivery Rate.

   6.1. **Direct Operating and Maintenance Costs.** The direct expenses in operating and maintaining the Facilities are to be included in the Delivery Rate determined under this Agreement. Direct operating and maintenance costs include the fixed and variable costs of operating the Facilities. Capital repairs and replacements are not to be included as operating and maintenance costs. Any expenditure meeting the Owner(s) then existing capitalization policy should be recorded as an asset and included in the determination of Rate Base as described above.

7. **APR Raw Water Rate.** The "APR Raw Water Rate" shall be determined as the then published rate established by _____ for non-reusable nonpotable water service charged to its Outside Combined Service Area customers times 1.625 for all reusable water supplied under this Agreement.

8. **Direct Overhead and Administration.** Administrative costs directly incurred in the management of this Agreement are to be included in the Delivery Rate. Owners are responsible for accounting for any direct overhead and administrative costs, both fixed and variable.

9. **Indirect Overhead and Administration.** Costs that are not directly attributable to the performance of this Agreement are not included in the Delivery Rate.

10. **Ratemaking Process.** Except as noted in Paragraph 10.1, the Owners will at their expense, prior to proposing to increase the Delivery Rate for any year, prepare a cost-of-service allocation for the Facilities' costs in accordance with this Attachment C. The cost-of-service allocation will be based on the Owners' budgeted expenditures for the forthcoming year, and the capital costs will be based on the expected Rate Base for the same forthcoming year. The APR Pricing Summary results of the Rate Model for 2013 are attached hereto as Exhibit 1. A full model print-out has been provided to the Parties for 2013. The Owners will provide reasonable back-up documentation with similar detail when proposing future Delivery Rate increases.

10.1. **Water Supply Rate Adjustments.** The rate may be increased annually to reflect changes to the APR Raw Water Rate as determined in accordance with paragraph 7. If the Owner is increasing the Delivery Rate solely as a result of an increase in the APR Raw Water Rate, then the Owner is not required to prepare a new cost-of-service allocation but can incorporate the updated APR Raw Water Rate into the Delivery Rate.

10.2. **Annual Period.** Except for Delivery Rate changes pursuant to 10.1, the Delivery Rate will be prepared for the forthcoming year in which a new Delivery Rate is to take effect. For the purposes of rate administration, all changes to the Delivery Rate charged under this Agreement will be prepared and placed into effect on January 1 of each year.

10.3. **Information Requirements**. Using the annual delivery amount to _____ of 54,000 AF to be adjusted in the future if additional commitments are agreed to, the Owner will then take the following steps:

10.3.1. **Determine the Operating and Maintenance Costs for Each Facility**. The Owners will prepare, at their expense, a detailed budget of operating and maintenance expenses anticipated for each Facility for the Delivery Year. Operating and maintenance expenses shall not include any provision for capital expenditures of any kind. All capitalized asset purchases should be reported as additions to the fixed assets as described in Paragraph 10.3.3, below.

10.3.2. **Update Fixed Asset Register.** The Owner will provide, at their expense, a detailed listing of fixed assets for each Facility that will be updated, current, and audited as of the end of the Owner's financial reporting year immediately preceding the Delivery Year. The fixed asset register will detail the following information for each Facility and will be reported in accordance with generally accepted accounting principles of the Government Accounting Standards Board, except in no case will the fixed assets be reported for the purposes of this Agreement using the so-called "Modified Approach" as described under GASB Rule No. 34: (i) Name and description of the asset, (ii) the original acquisition cost of the asset, (iii) the month and year the asset was acquired and physically placed into service, (iv) the estimated useful life of the asset as estimated for accounting purposes using straight line depreciation methods, and (v) the accumulated depreciation for the asset.

10.3.3. **Determine the Owners' Rates of Return.** The Owners' rates of return shall be determined each year based on the provisions of Paragraph 5.

10.3.4. **Determine the APR Raw Water Rate.** The APR Raw Water Rate shall be determined in accordance with Paragraph 7.

10.3.5. **Allocate the Costs of Service.** The cost-of-service Delivery Rate will be determined as follows:

10.3.5.1. Standard Method. The Delivery Rate will be determined by allocating the total costs of the Facilities to the Parties based on the water demands as described in Section 10.3.1; provided, however, that the following adjustment for water deliveries characterized as less-than-firm or interruptible under this Agreement shall be made: the total costs of the Facilities will be limited to the total costs of providing the average daily demand (ADD) and will exclude any costs associated with the capacity in the Facilities above and beyond that necessary to provide for the ADD (*i.e.*, Parties with interruptible deliveries will be allocated 0% of the "Share of Facility Capacity" as that term is used in the Rate Model Report).

10.3.5.2. Exceptions. Changes in delivery characteristics, addition of new Facilities, and the ownership structure of new and/or existing Facilities dictate a change in cost allocation methods. APR reserves the right to modify the cost allocation methods under such circumstances to reflect the actual delivery characteristics. No changes to the cost allocation methods shall be made without the consent of the _____ which consent shall not be unreasonably withheld, conditioned or delayed.

10.3.6. **Determine Rates.** The Delivery Rate will be specific for each Party based on each Party's particular usage of the Facilities. Rates may include a charge for volume of water delivered, charges for reservations of capacity, or any combination of these based on specific circumstances and characteristics of demand for each Party.

Table 1

Facility Name	Description
Well Field	
Recharge Facilities	
Hydroelectric generation plant	
Solar Power System	
Pipeline	

** Infrastructure no longer used to provide APR Water deliveries shall be deleted.

Exhibit G to Groundwater Application Attachment 2

Summary of Updated Conceptual Design for Augustin Plains Ranch Water Resource Development Project

PREPARED FOR:	Augustin Plains Ranch, LLC
COPY TO:	File
PREPARED BY:	CH2M HILL
DATE:	December 19, 2014
PROJECT NUMBER:	461890

Introduction

The purpose of this technical memorandum (TM) is to present the preliminary conceptual level design for the Augustin Plains Ranch, LLC (APR)'s Water Resource Development Project. This project includes a pipeline, approximately 140 miles long, and collection well system to deliver water from a deep aquifer beneath the APR (located approximately 50 miles west of Socorro, New Mexico [NM]) to entities along the pipeline route as far North as Rio Rancho, NM. This TM includes a hydraulic analysis of the system as well as a preliminary conceptual design of the main transmission pipeline and supply laterals. This work is based on industry standards for pipeline design (AWWA, ASTM), readily available information, and previous experience.

Background

The project includes constructing up to 37 wells to an average depth of about 2,500 feet below the ground surface on 17,780 acres of fee title property (APR property) in the Plains of San Augustin, NM. The site may be permitted for up to 37 wells with only 25 wells required at the anticipated well yield. The wells are expected to have capacities of about 2,000 gallons per minute (gpm) each and be operated to produce a system total of 54,000 acre-feet per year (afy) (~35,000 gpm) of groundwater. Although the combined maximum daily production of 25 wells at 2,000 gpm each could be about 50,000 gpm, only about two-thirds of the wells are expected to operate at any one time, on a rotating basis, to achieve the average 35,000 gpm. Two 10 million gallon (MG) water storage tanks would be used for short-term operational storage of groundwater pumped from the wells before sending it to the transmission pipeline and then after production of hydropower.

Background Information Provided

In addition to the background information stated above, the following data were provided by APR to be used in this analysis:

- APR Water Resource Development Project, Routing Constraints Analysis, August 2012, SWCA Environmental Consultants (SWCA).
- Preliminary Solar Power Feasibility Study: Datil Property in Catron County, NM, URS, June 11, 2010.
- Memorandum - High Level Evaluation of Supplying Water from the Augustin Plains Ranch to Albuquerque from Capital Costs to O&M Costs, Bohannan Huston Inc. (BHI), February 26, 2008.
- Information provided by the APR representatives and/or included in the above reports are as follows:
  - A maximum of 37 wells can be permitted for construction and each could produce about 2,000 gpm
  - Static lift in each well will be about 800 feet

The information presented in the documents listed above is assumed to be correct and appropriate for the purpose of this analysis.

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EXHIBIT G TO ATTACHMENT 2

Project Description

Appendix 1 shows the general layout of the system. Based on analysis of the proposed layout, it was determined that the project could be segregated into two parts: 1) the wells and well field piping, and 2) the roughly 140-mile-long pipeline that conveys water from the APR property to the Albuquerque area. The proposed pipeline route is roughly along a corridor of Highway 60 and Interstate 25, as outlined in *Augustin Plains Ranch Water Resource Development Project, Routing Constraints Analysis, August 2012, SWCA.*

Augustin Plains Ranch Wells

The APR property, where a maximum of 37 wells will be constructed, consists of approximately 17,700 acres. Highway 60 crosses the southern end of the property and the proposed start of the transmission pipeline will be in the southeast corner of the property, along Highway 60. The highest point of the property is in the northwest corner at elevation 7,700 +/- feet and generally falls to the east and southeast to the lowest spot (elevation 7,100+/-) in the southeast corner near Highway 60.

Transmission Pipeline

The transmission pipeline starts along Highway 60 near the southeast corner of the APR property and travels about 56 miles east along Highway 60 to Socorro, NM. The pipeline then turns north and is routed parallel to Interstate 25 about 85 miles to Albuquerque, NM. The starting elevation of the pipeline is about 7,125 feet and has a slight uphill climb for about 20 miles peaking at a pipeline system highpoint elevation of about 7,220 feet. The pipeline then goes downhill to Socorro to an elevation of about 4,600 feet before going back uphill slightly to a final elevation of about 5,200 feet in Albuquerque.

In addition to supplying water to the greater Albuquerque metropolitan area, this project may also include additional deliveries along the pipeline alignment. Actual key connection points within the Albuquerque Bernalillo County Water Utility Authority, Rio Rancho, and all utility transmission systems will be determined at a later date once utility needs and hydraulic capacity can be assessed. Appendix 1 provides an overview of the alignment with supply laterals to locations along the Rio Grande, as well as the potential area of water sales. For the purposes of this analysis, two delivery points are noted for Albuquerque in Appendices 7 and 8 – to a water storage tank near mile 134 of the pipeline and into the pump station that supplies the San Juan-Chama drinking water project. There will also likely be several turnouts installed along the pipeline at various locations along the Rio Grande including Datil, Magdalena, Socorro, Belen, Los Lunas, and Rio Rancho, NM (Appendices 2, 3, 4, 5, 6, and 9, respectively). In addition there are two discharge points to the Rio Grande and two discharge points to irrigation canals. All connection points shown are conceptual. Final connection points will depend on the specific agreements in place as well as individual system hydraulic and demand analysis. It is not expected that the potential connections at intermediate locations will have significant flow when compared to the overall system capacity, so not all potential turnouts are listed. The small changes in flow due in the mainline due to these relatively small connections were not factored into the hydraulic analysis.

Supply Lateral Connections

There will be several lateral connections to the main transmission pipeline throughout the alignment that can be used to supply communities along the alignment once agreements are finalized. The first supply lateral serving Datil, NM will connect to the main transmission pipeline at mile 0 and run east to west for approximately 6.45 miles. There is no water storage tank in Datil, but the supply lateral could be connected to a water distribution system if agreements were in place to provide water supply or water storage could be constructed and used as a delivery point. Appendix 2 shows the supply lateral alignment to Datil. Further along the alignment another supply lateral will be connected in Magdalena, NM between mile 25 and 30. The supply lateral runs west to east for approximately 0.95 miles and connects to a water storage tank to the southwest of the city. Appendix 3 shows the supply lateral alignment in Magdalena. In Socorro between mile 50 and 55 another supply lateral runs east to west for approximately 1.87 miles to a water storage tank west of the New Mexico Tech Golf Course. There is also a lateral from the main transmission pipeline that allows water to be discharged into the Rio Grande for sales to agencies like the New Mexico Interstate Stream Commission or the US Bureau of Reclamation for environmental or other purposes. Appendix 4 shows the supply lateral alignment as well as the south connection to the Rio

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Grande in Socorro. Further north between mile 95 and 100 a supply lateral would connect from the main transmission pipeline to a water storage tank on the west side of I-25 in Belen. This supply lateral is very close to the main transmission pipeline and is approximately 0.01 miles long. Appendix 5 shows the supply lateral alignment in Belen. In Los Lunas between mile 110 and 115 of the alignment a supply lateral would connect to the main transmission pipeline and end in at a water storage tank east of I-25. The supply lateral is approximately 0.11 miles in length and is shown in Appendix 6. Appendix 7 shows a discharge to the Belen Highline Canal.

After the main transmission pipeline line reaches Albuquerque and continues north through the west side of the city, a supply lateral will connect near Coors Avenue and run east to west for approximately 1.63 miles. The supply lateral will end at a water storage tank north of Central Ave. near 98th St. There will also potentially be a discharge to the Rio Grande at Alameda Blvd, a discharge to the Atrisco Feeder Canal, and a connection to the San Juan-Chama Water Treatment Plant (SJCWTP) Diversion Pump Station. A supply lateral will run east from the main pipeline along Coors Blvd to the river. Appendix 8 shows the supply lateral alignment and Appendix 9 shows the lateral to the river and subsequently the SJCWTP. The final supply lateral will connect to the main transmission pipeline in Rio Rancho near mile 139 of the alignment. The supply lateral will run east to west for approximately 4.39 miles and end at a water storage tank west of Unser Blvd. Appendix 10 shows the alignment of the supply lateral in Rio Rancho.

It should be noted that all connections to water storage tanks or distribution systems mentioned are based on completing agreements between the municipalities, utilities, agencies, or other customers and the water supplier. Also, the locations of tanks and other inter-connections are based on a preliminary review of available data. Coordination with municipalities, utilities, agencies, or other customers will be completed along with additional analysis of individual system hydraulics and anticipated system demands to verify and further refine appropriate connection points. Based on these analyses, it is likely that connection points will change and/or additional connection points may be needed.

Hydraulic Analysis

Based on a review of the available information, data, and background documentation provided by APR, CH2M HILL completed a hydraulic evaluation for the project. It was assumed that a residual pressure of 60 pounds per square inch (psi) to 80 psi would be required at approximately mile 134, a potential connection to the Albuquerque potable water system near the end of the pipeline (Mile 141). Since it is unknown exactly where this connection will be and to what system (tank or distribution system) it will connect, it was assumed that modeling the hydraulics to the 141 mile mark in the original background information would be sufficient provided the residual pressure at mile 134 is met.

The proposed operational scheme for the overall project includes high pressure in the pipeline between APR and Socorro which would be used to generate hydroelectric energy at a location that would then allow water to flow by gravity to Albuquerque. Associated with the segregation of the APR well piping and collection system and the main transmission pipeline, there appears to be a segregation point for these two systems as evidenced by a high point at about mile 20 (20 miles east of the APR property). The hydraulic analysis includes an evaluation of how this high point affects the proposed operational scheme layout. This section provides an evaluation of the wells and well collection system and a separate evaluation of the transmission main.

Criteria assumed for the hydraulic analysis include:

- Hazen-Williams friction factor (C value) - 130
- Only about two-thirds of the 25 wells will operate at any given time, resulting in a well field flow of 35,000 gpm
- Flow from each well is about 2,000 gpm
- Static lift for each pump is 800 feet to ground surface plus friction losses (results in about 600 horsepower motor)
- Maximum pipe velocities should be between 4-6 feet per second
- Pump motors and hydroelectric generators have operational efficiency - 75 percent

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- Pipe wall thicknesses will be based on static water levels when there is no flow
- Yield strength pipe – maximum 70 kips per square inch (ksi)
- All joints will be welded

Augustin Plains Ranch Property Wells and Well Collection System

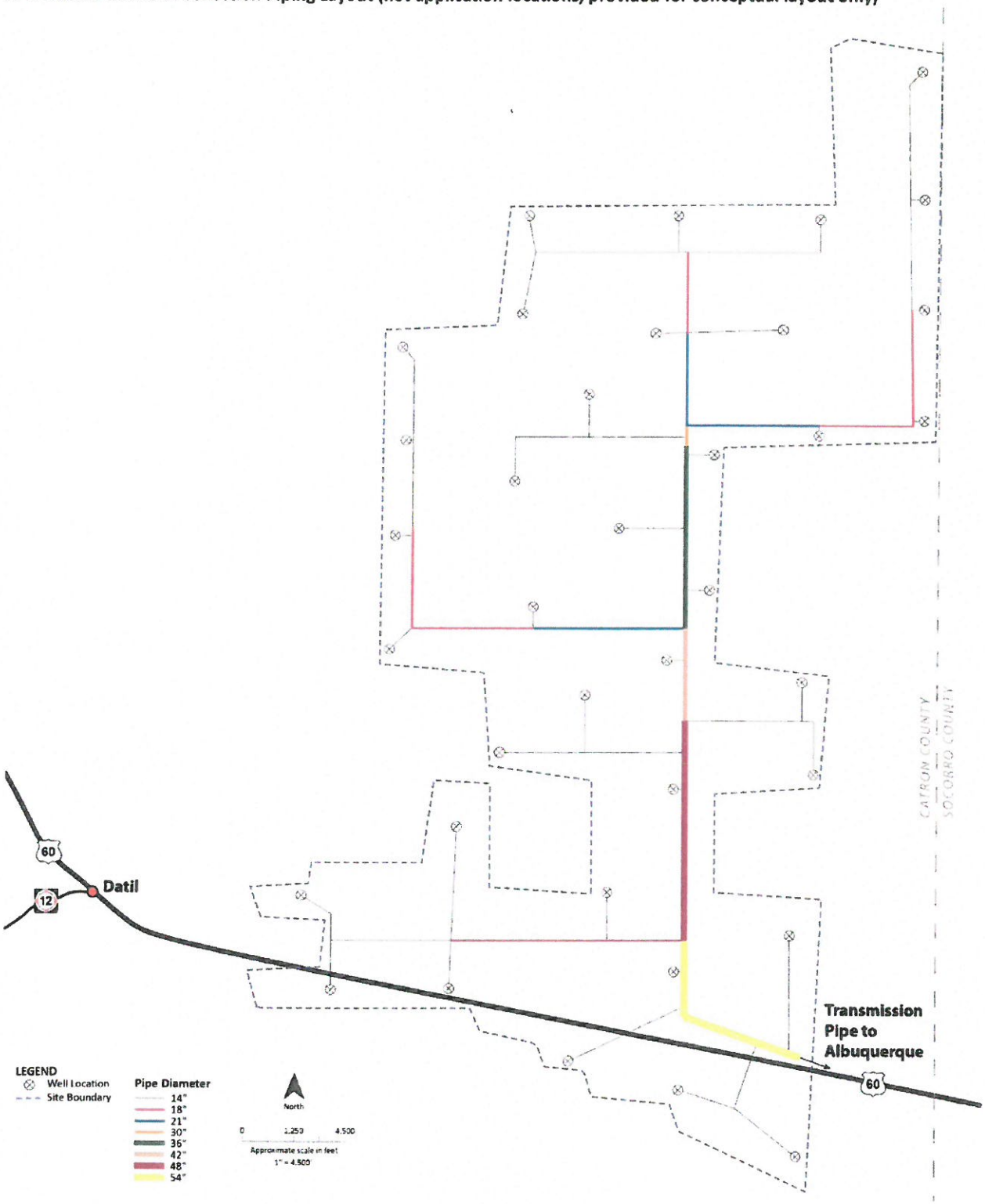
CH2M HILL did not conduct a detailed hydraulic analysis of the well pump collection system, but rather included simplifying assumptions to locate a maximum of 37 wells on the APR property and lay out well discharge piping for costing purposes (See Attachement 1). The layout of the wells was based on a uniform spacing to maximize water recovery from the aquifer. The well collection piping was sized based on a 2,000 gpm flow from every other well (based on earlier discussion of only half the wells operating). In total, this layout resulted in about 40 miles of collection piping with diameters ranging from 14 inches to 54 inches. Under this condition, only half the wells would be operating at any one time 24 hours each day. The minimum number of wells to be constructed will be 25, which would require all wells to operate about two-thirds of the time under peak flow conditions. Our analysis in this report assumes construction of at least 25 wells.

Groundwater would be pumped from each well to a tank located at mile 20 (off the APR property). The well pumps would be sized to lift water approximately 800 feet to the ground surface, plus any additional head required to convey water to the tank. Once the water reaches the tank, then flow would occur by gravity down toward Socorro.

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EXHIBIT 1

APR Generic Well and Collection Piping Layout (not application locations, provided for conceptual layout only)



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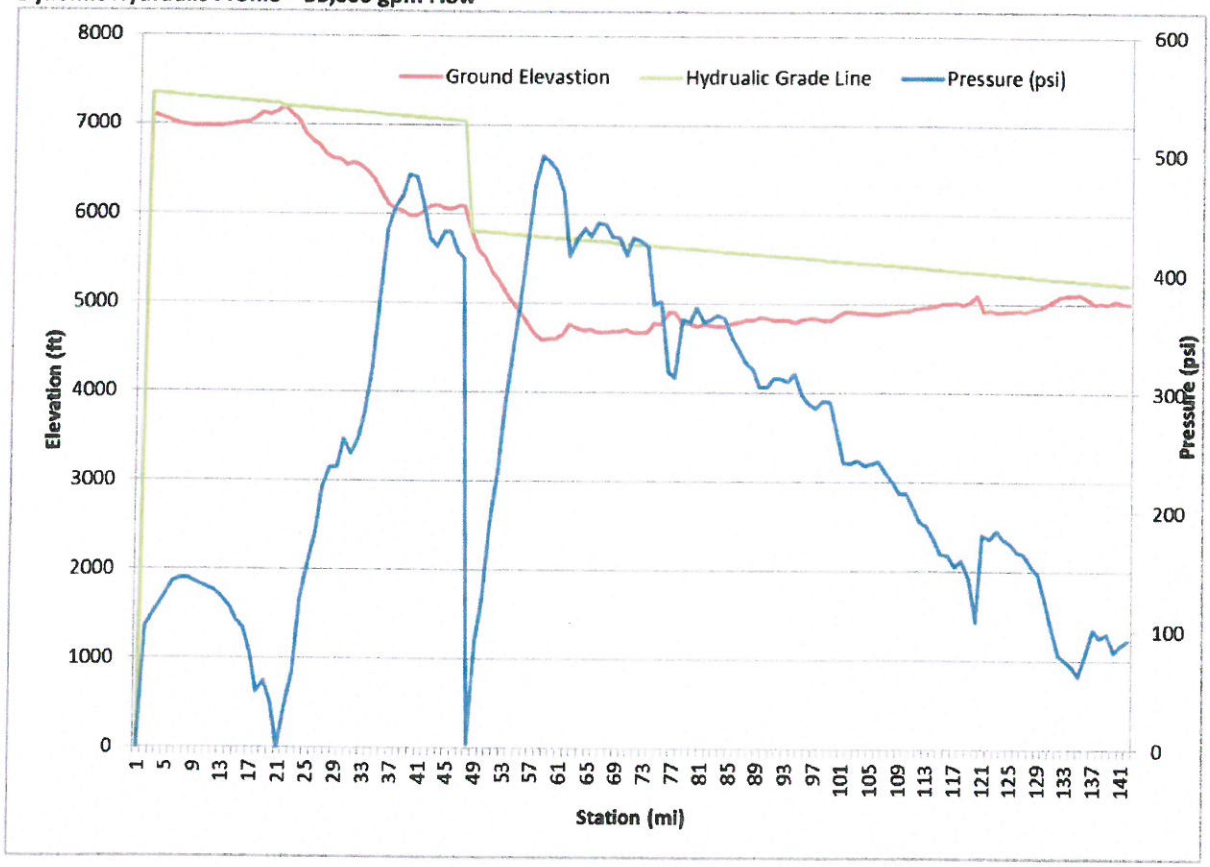
Transmission Pipeline System

In order to deliver water from the APR property to the Albuquerque area, it was assumed the main transmission pipeline would need to convey an average flow of 35,000 gpm for a 24 hour period from the well field to the upper 10 MG storage tank at mile 20. From the upper 10 MG storage tank, the flow would continue at a rate of about 35,000 gpm for a 24-hour period through a hydroelectric plant which will be located along the pipeline west of Socorro. In order to provide enough residual pressure beyond the hydroelectric plant to allow gravity flow to Albuquerque, the hydroelectric plant will be located at Mile 47 (just west of Socorro) which is at elevation 5,800 feet. For short-term operational purposes, tanks will be located at the high point in the system and at the discharge of the hydroelectric plant.

Once the flow passes the hydroelectric facility, it is discharged into a second 10 MG tank and then conveyed downstream towards Albuquerque at an average flow of 35,000 gpm. A 54-inch pipe diameter for the entire length of the pipeline was determined to be the most suitable diameter to convey this amount of water. This diameter allows for sufficient head for the hydroelectric facility, and provides the necessary pressure at the end of the alignment (60-70 psi). The maximum pipe wall thickness required is 0.438 inches in order to maintain the pressure within the transmission pipeline. See Exhibits 2 and 3 for the dynamic and static hydraulic profiles.

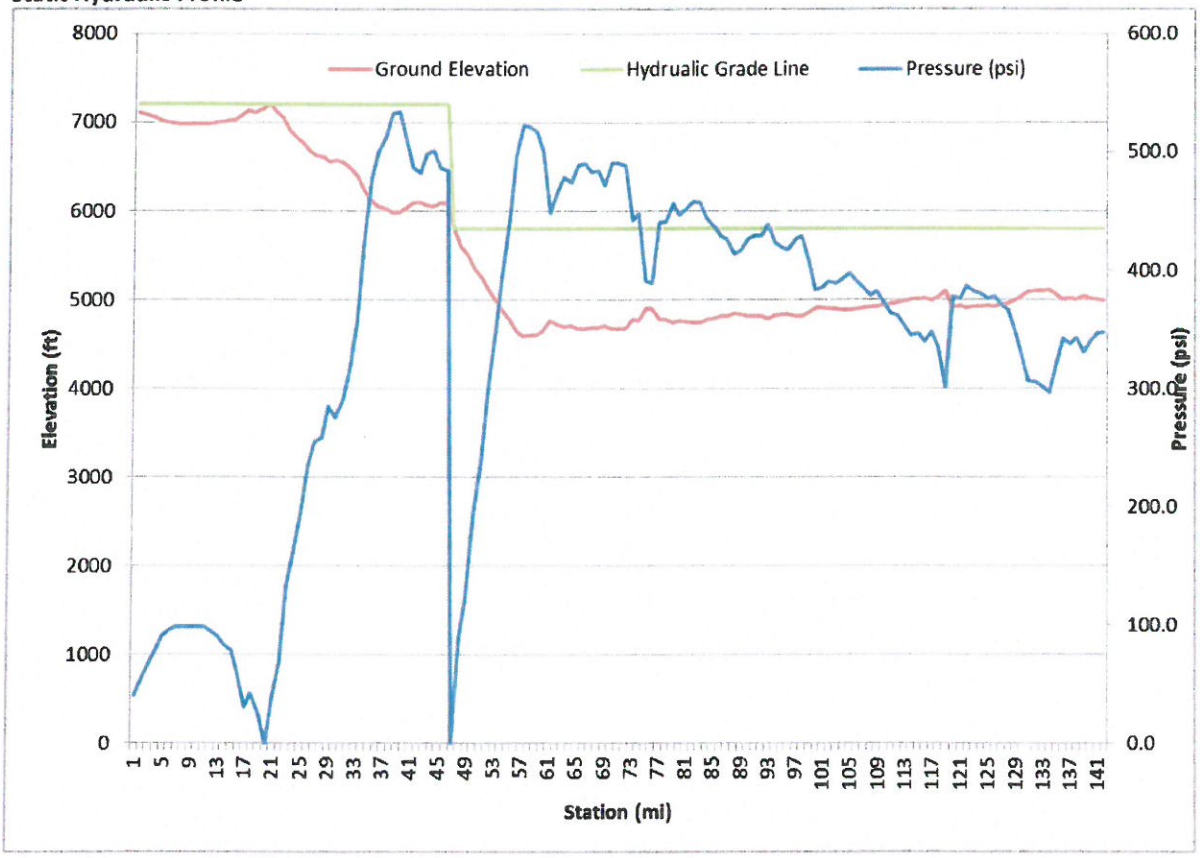
EXHIBIT 2

Dynamic Hydraulic Profile – 35,000 gpm Flow



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EXHIBIT 3
Static Hydraulic Profile



Energy Requirements

In order to quantify energy requirements an analysis was performed based on the proposed operational configuration using hydroelectric/gravity. This approach will use power, but also generate power through the hydroelectric facility.

As part of the hydraulic analysis, the pumping requirements for the wells were determined using assumptions previously provided. Using this information, it was determined that pumping about 54,000 acre-feet from the well field will take about 70 Gigawatt-hours (GWh).

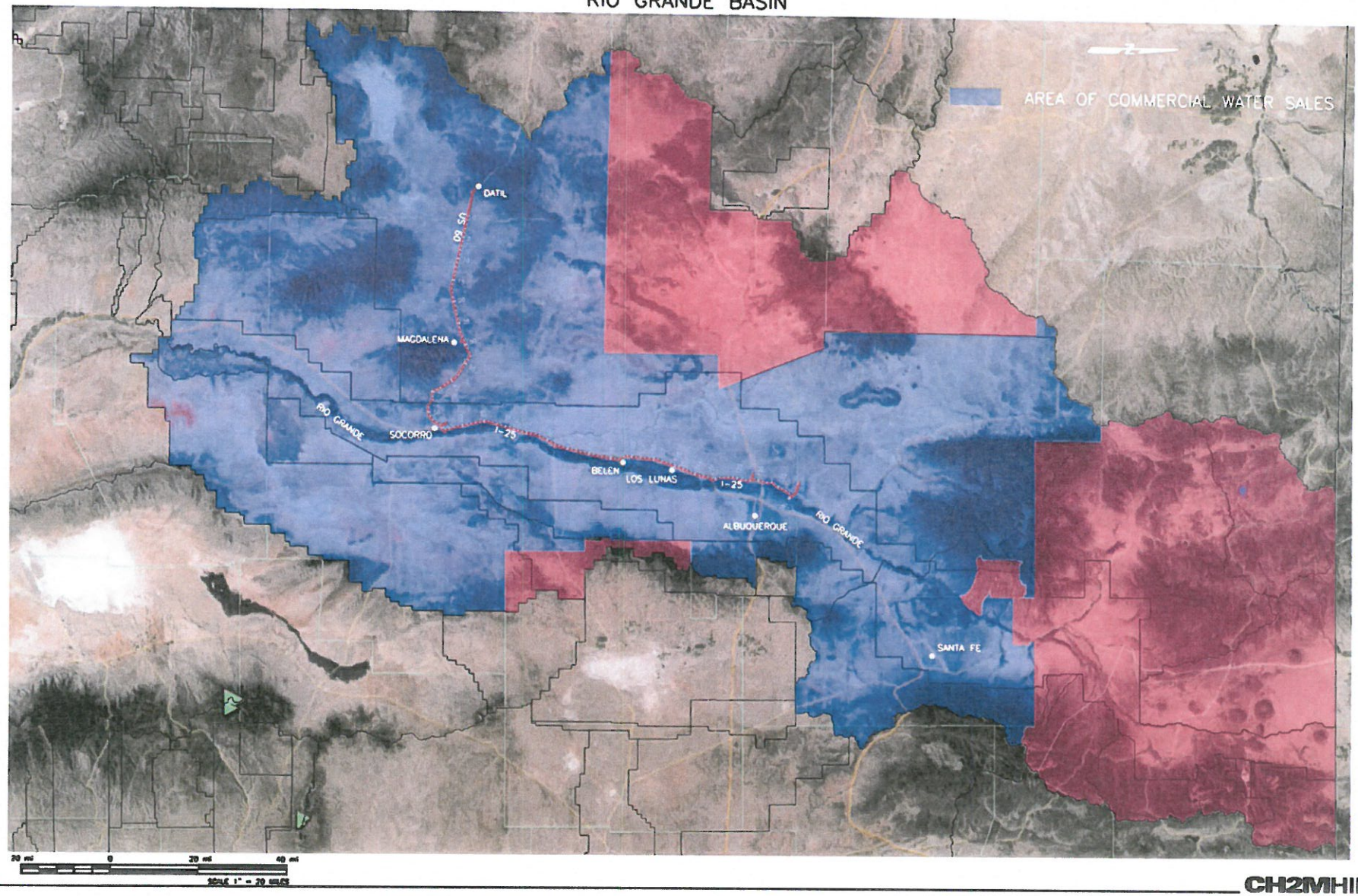
The expected energy generated from the hydroelectric power plant is about 53 GWh when 54,000 acre-feet are delivered. Lift and friction losses from the wells reduce available head by 900 feet and the head available for the hydroelectric power plant is about 1230 feet. The reason for the difference in Gigawatts used/generated is due to the compounded efficiencies of the well pump and motor and the hydroelectric generator. Both are assumed to have an efficiency of about 75% making the overall efficiency about 56% at best. In order to make power use and power generated equal between the hydroelectric and well pumps, the hydroelectric head will need to be almost twice the pump head requirement (friction and lift).

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Appendix 1
Augustin Plains Site Map

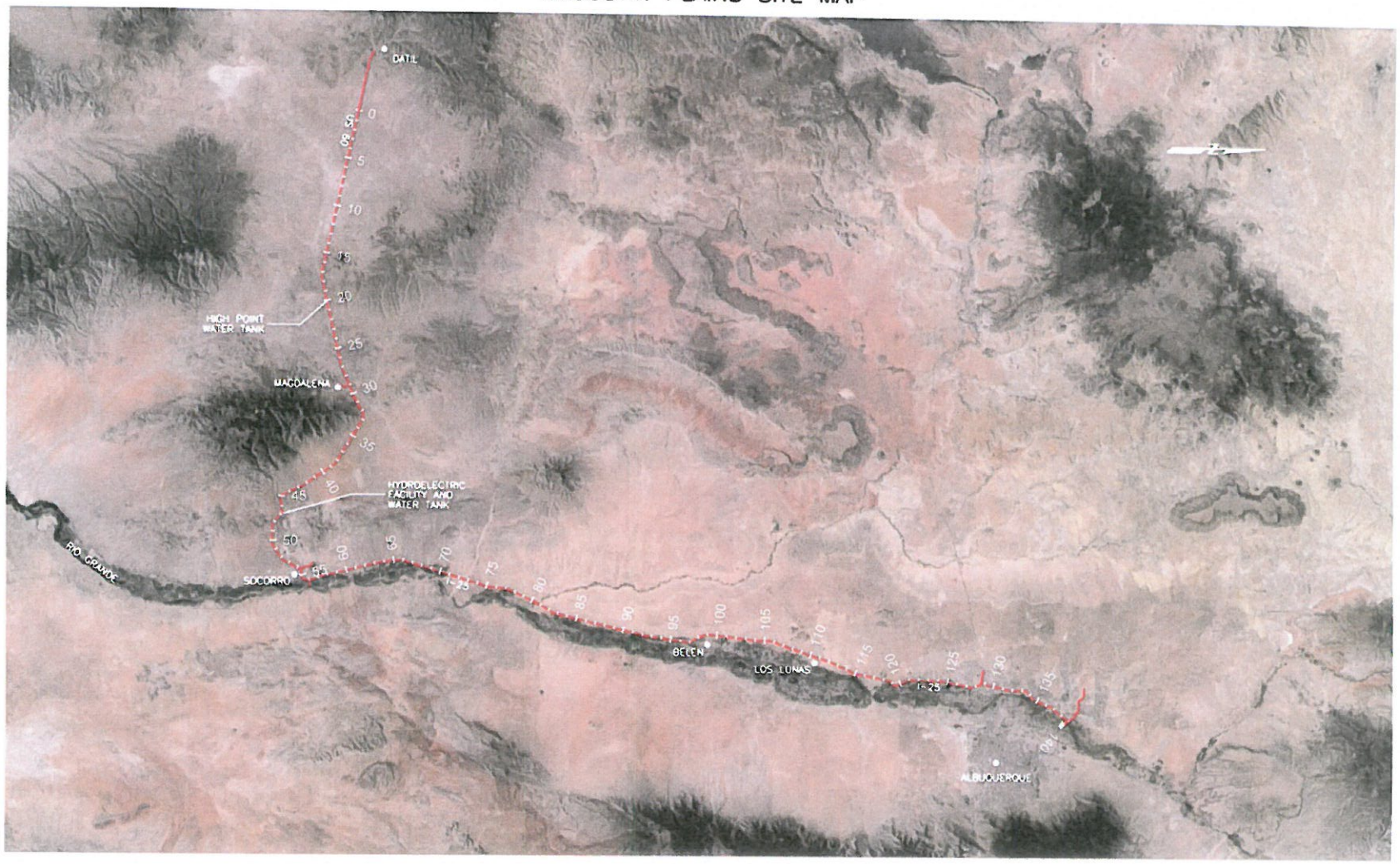
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RIO GRANDE BASIN



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AUGUSTIN PLAINS SITE MAP

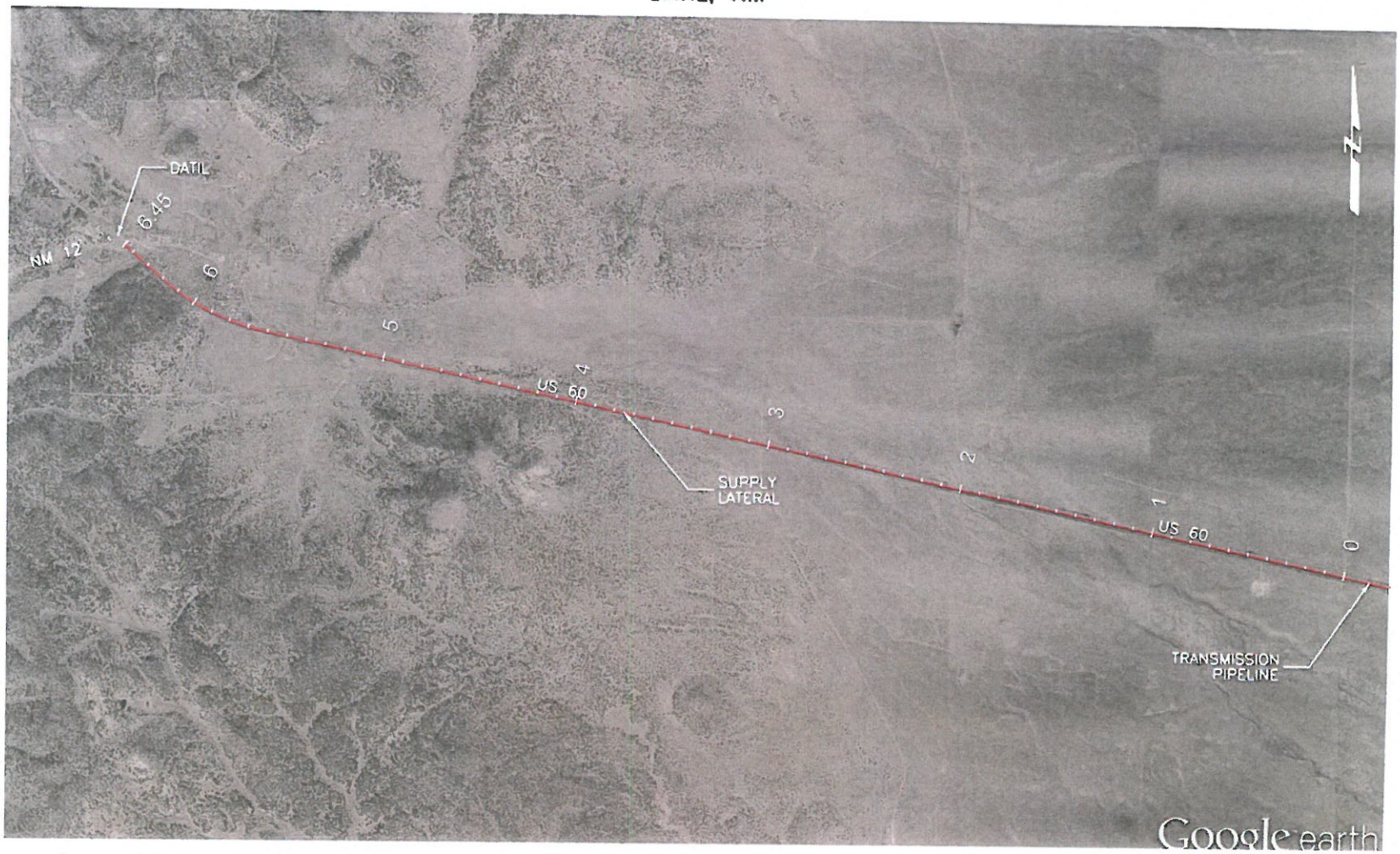


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Appendix 2
Datil, NM – Supply Lateral Alignment

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DATIL, NM



0.5 mi 0 0.5 mi 1.0 mi

SCALE 1"= 0.5 miles

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Appendix 3
Magdalena, NM – Supply Lateral Alignment

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MAGDALENA, NM

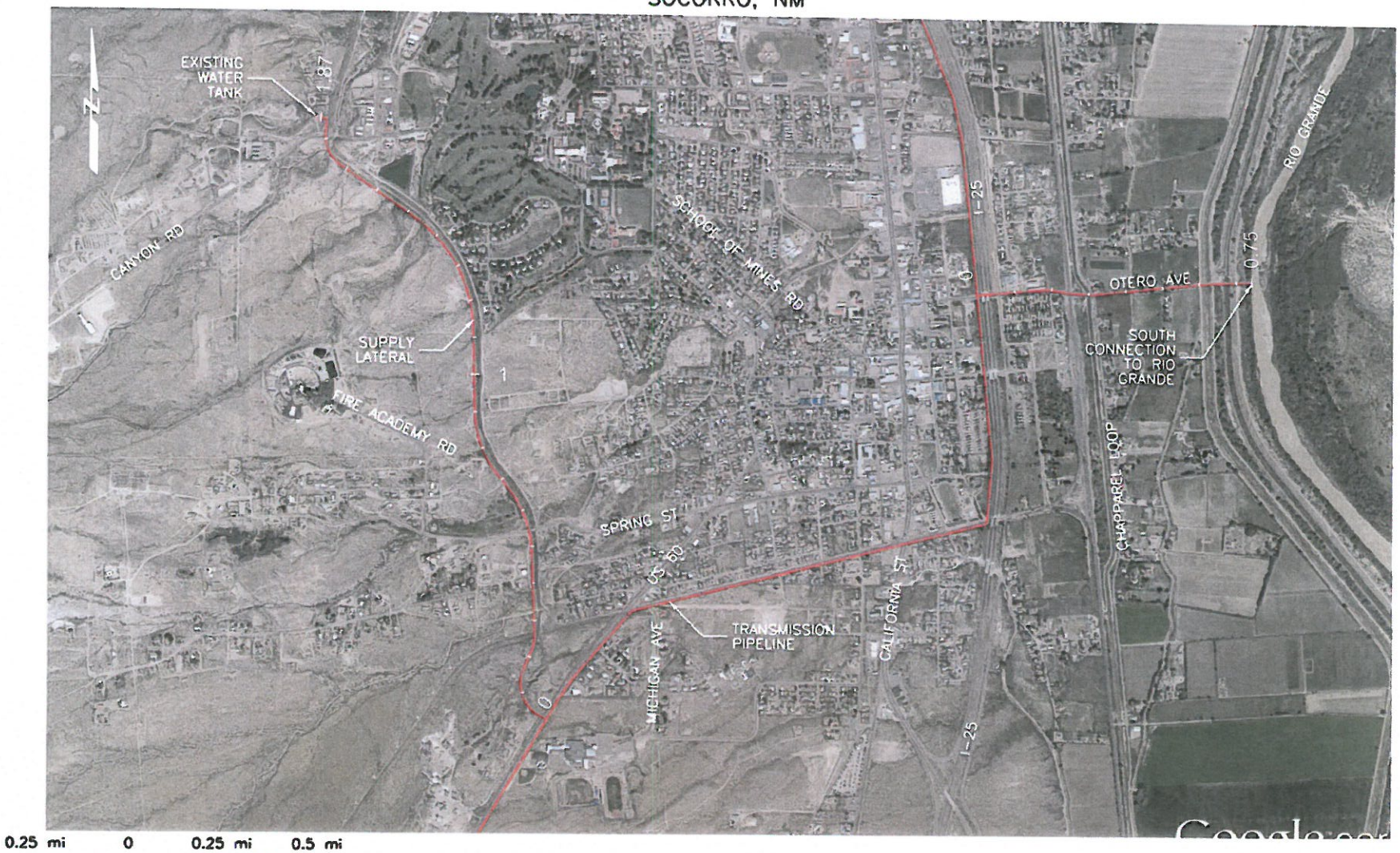


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Appendix 4
Socorro, NM – Supply Lateral Alignment

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SOCORRO, NM

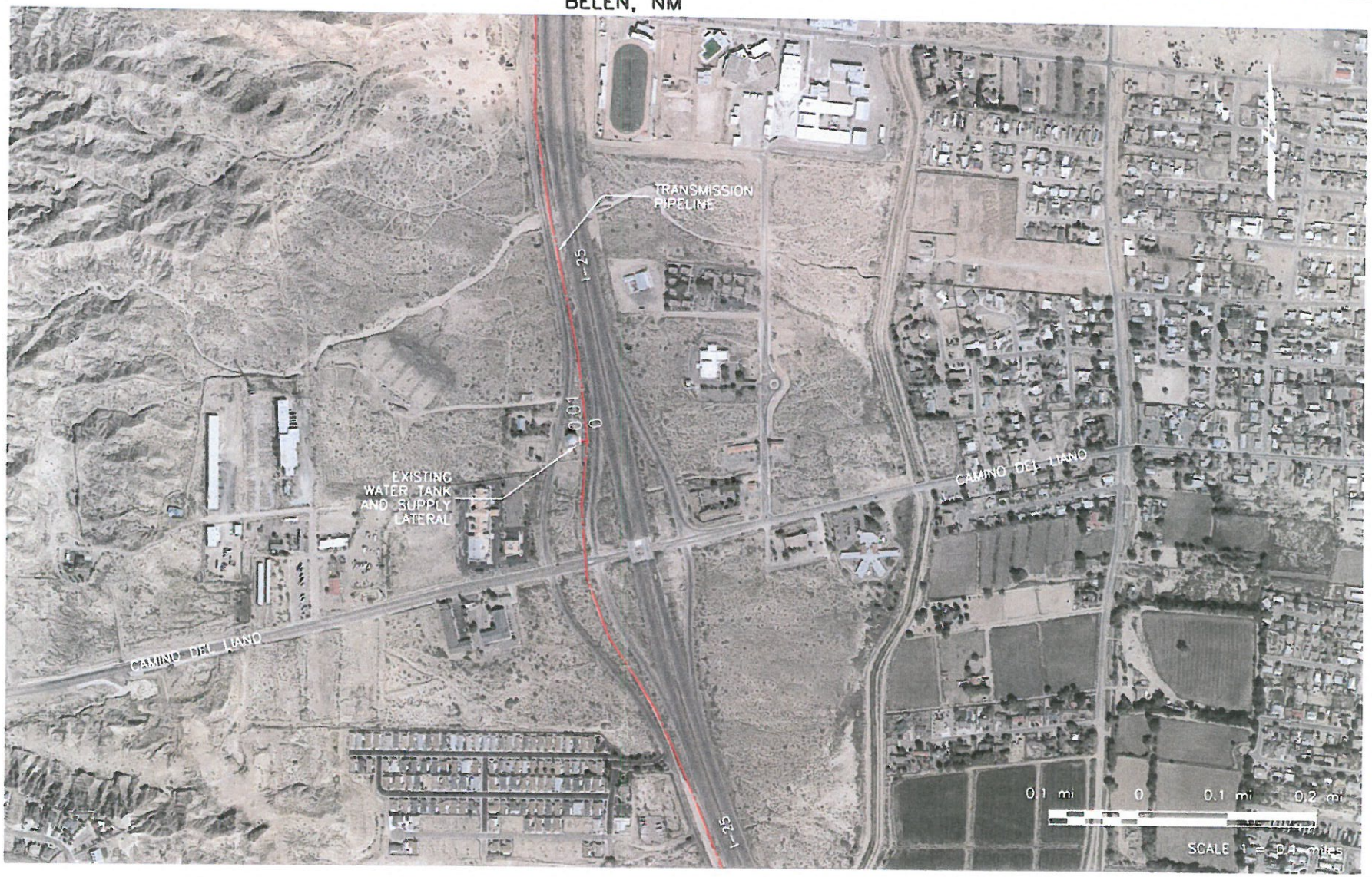


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Appendix 5
Belen, NM – Supply Lateral Alignment

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BELEN, NM

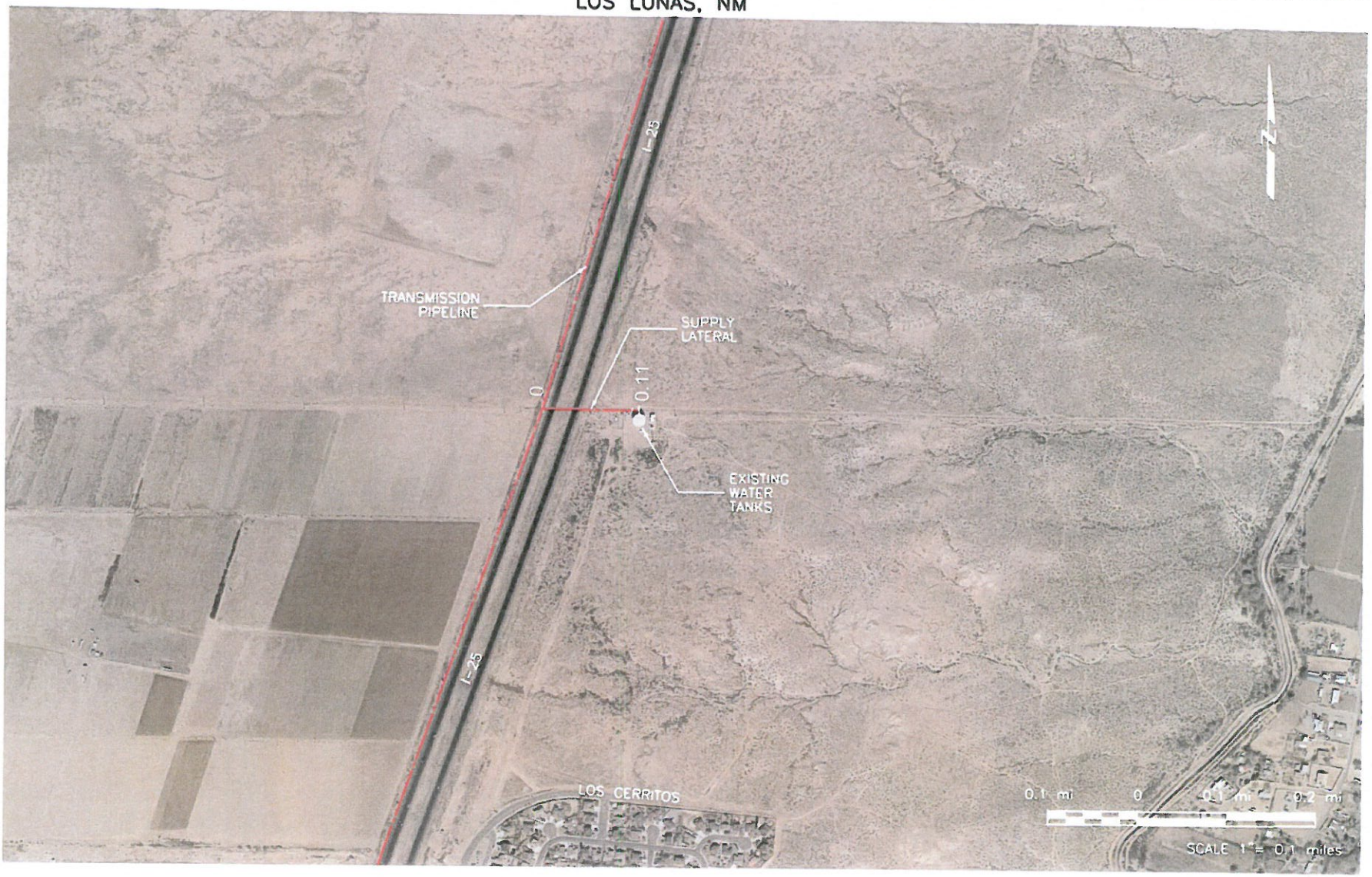


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Appendix 6
Los Lunas, NM – Supply Lateral Alignment

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LOS LUNAS, NM



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Appendix 7
Isleta, NM – Supply Lateral Alignment

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BELEN HIGHLINE CANAL



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Appendix 8
Albuquerque, NM – Supply Lateral Alignment

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ALBUQUERQUE NM



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Appendix 9
Albuquerque, NM – North Connection Tie-in

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ALBUQUERQUE, NM TIE–IN



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Appendix 10
Rio Rancho, NM – Supply Lateral Alignment

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RIO RANCHO, NM



0.25 mi 0 0.25 mi 0.5 mi

SCALE 1"= 0.25 miles

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