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**Monarch Energy Development LLC / Blake Johnson**

**City of Brush**

**Special Use**

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# TABLE OF CONTENTS

- **Monarch Energy Development LLC – Blake Johnson / City of Brush**
- File Summary
- Consultants
- Technical
  - Ditch Company Notification
  - Application Fee Receipt
- Referrals & Responses
  - Referrals sent & Responses received
  - Landowner Letter sent & Responses received
  - Notification & Responses received
  - Sign Posting Pictures & Affidavit
- Original Submittal
  - Application
  - Right to Farm
- Additional Information



## MORGAN COUNTY PLANNING AND BUILDING DEPARTMENT

October 6, 2023

Monarch Energy Development, LLC  
101 Cooper St  
Santa Cruz, CA 95060  
Sent via email:

Dear Applicant:

Your Application for a Special Use Permit has been received by our office and will go to review and decision by the Planning Commission and the Board of County Commissioners. The hearing for the Planning Commission will be held on **November 13<sup>th</sup>, 2023 at 7:00 P.M.**

**Mineral Right notifications need to be made by October 14, 2023 and proof of mailing provided to our office no later than October 29, 2023** (at least 15 days prior to the above mentioned hearing date).

**As per Section 2-390(B), notification sign postings need to occur no later than 10 days prior to each hearing and photographs accompanied by an affidavit to our office no later than 5 days prior to each hearing.** One sign facing each public right-of-way adjacent to the property is required. The county will provide one sign for each hearing, for County Road 28, it is up to you to post it.

Planning Commission sign notice dates: **Posted by November 3<sup>rd</sup>, 2023**  
**Pictures and Affidavit by November 8<sup>th</sup>, 2023**

We will have the sign ready to be picked up in our office on October 23<sup>rd</sup>, 2023.

It is necessary that you be present at the hearing to answer any questions the Planning Commission may have. Do not hesitate to contact us at any time if you have questions.

Sincerely,

*Nicole Hay*

Nicole Hay  
Planning Administrator

## FILE SUMMARY





**MORGAN COUNTY  
PLANNING AND BUILDING DEPARTMENT**

**MORGAN COUNTY PLANNING COMMISSION**

**FILE SUMMARY**

**November 10, 2023**

**Hearing date – November 13, 2023**

**APPLICANT: Monarch Energy Development LLC**

**OWNERS: The City of Brush!**

This application is for a special use permit to allow for a hydrogen and e-fuels production facility with a co-located fuel cell. The permitted area is located in the N1/2 NE1/4 of Section 15, Township 3 North, Range 56 West of the 6<sup>th</sup> PM, Morgan County, Colorado. The proposed permitted area is zoned Agriculture Production, is in the Brush Fire District, and a portion of the area is in the floodplain of Beaver Creek, Special Flood Hazard Area Zone AE.

The applicant, Monarch Energy Development, LLC, proposes a 250 MW overland green hydrogen and e-fuels project within an approximate 60 acre permitted area. The project will use raw water provided by Morgan County Quality Water District. The water molecules will be broken down into hydrogen and oxygen. The oxygen is released into the atmosphere and the hydrogen will be converted from a gas to a liquid, which will be stored onsite. The hydrogen will either be converted in electricity or trucked offsite to serve as an e-fuel product.

In addition to the permit application, packets include communication between Monarch Energy Development, LLC and the Upper Platte and Beaver Canal Company. Upper Platter and Beaver is requesting the applicant attend their November 14th meeting to further discuss the project.

Comments from the County's consulting engineer, Matt Harris with Harris Engineering Consultants, Inc. regarding the hydrologic and hydraulic report are also included.

In reviewing this application, the Planning Commission and Board of County Commissioners are required to make a finding that the criteria for granting a Use by Special Review in Section 2-395 of the Morgan County Zoning Regulations have been satisfied.

Section 2-395 Special Use Permit Criteria:

- A. The use and its location as proposed are in conformance with the Morgan County Comprehensive Plan. The property is located in the southeast area.

Chapter 2 – Plan Summary

2.II.A - Economic Development

Goal – Diversify the economy in Morgan County to broaden business employment opportunities for residents and to further economic growth.

*This project will create employment opportunities during both the construction and operating phases.*

## Chapter 5 - Environment

### 5.IX

Goal - To preserve the manmade and natural environment in order to enhance the quality of life in Morgan County.

*This project will not impact wetlands. This project lies within a Zone AE floodplain designation and will cooperate with the required Morgan County floodplain permits. This project will contribute to the encouraged use of renewable resources within Morgan County by providing green hydrogen*

- B. The application documents are complete and present a clear picture of how the use is to be arranged on the site.
- C. The Site Plan conforms to the district design standards of Section 2-420 of the Morgan County Zoning Regulations.
- D. All on and off-site impacts have been satisfactorily mitigated either through agreement, public improvement, site plan requirements or other mitigation measures.  
*The proposed project will result in minimal impacts to off-site areas. During construction and when necessary, water trucks will be used for dust mitigation. A Construction Stormwater Discharge Permit will be obtained through CDPHE.*
- E. The special use proposed has been made compatible with the surrounding uses and is adequately buffered from any incompatible uses by distance and topography.  
*All adjacent property is zoned Agricultural Production. There are 3 residences along County Road 28 within 1,320 feet of the project. Xcel Energy's Pawnee generation facility is approximately 2 miles to the west and Brush Cogeneration Facilities are approximately 1 mile to the north.*
- F. The special use poses no or minimal risk to the public health, safety and welfare.  
*Granting the Special Use Permit will not increase risk to public health, safety or welfare. Although hydrogen production using renewable energy and electrolysis is a new endeavor within the United States, industrial hydrogen production from fossil fuel-derived sources is an extremely mature industry with established safety protocols. These existing safety regulations at all federal, state, and local level will be complied with. An Emergency Response Plan and a Risk Management Plan (RMP), including Hazardous Operations Analysis (HAZOP) and OSHA Process Safety Management requirements.*
- G. The special use proposed is not planned on a nonconforming parcel.  
*The proposed Special Use is located on a conforming parcel.*
- H. The applicant has adequately documented a public need for the project. The Applicant has submitted all pertinent technical information, has demonstrated that it has adequate financial resources to implement the project, and has paid all County fees and review costs.  
*The project will contribute to the stabilization of the current and future electrical grid and allow for the development of additional renewable resources in the region.*
- I. For any special use requiring a supply of water that the applicant has demonstrated a source of water which is adequate for the proposed use in terms of quantity and reliability and in the case of human consumption, quantity, quality, and reliability.  
*Water supply will be provided by Morgan County Quality Water*

The following conditions are recommended if the Special Use Permit is approved:

1. All necessary land use, environmental, and construction permits, approvals and authorizations will be obtained prior to the start of and during construction as required and may include, but are not limited to, land use permits, right-of-way (ROW) permits, road use agreements, access permits, oversize/overweight permits, grading permits, and stormwater permits.
2. A floodplain development permit must be obtained in accordance with Section 3-790 of the Morgan County Zoning Regulations.
3. Monarch Energy Development, LLC will comply with proposed decommissioning plan, any modifications/deviations from the proposed plan must be approved by the County. The County must be notified in writing when Applicant commences decommissioning.
4. Prior to the commencement of construction, Monarch Energy Development, LLC must obtain all proper permissions from landowners to use private roads or develop access roads on any private property. No private access roads, new or currently in use, shall become public rights of way unless approved and accepted by the Board of County Commissioners.
5. Prior to the commencement of construction, Monarch Energy Development, LLC must obtain all applicable permissions from the Upper Platte and Beaver Canal Company and demonstrate satisfaction with this condition in writing from Upper Platte and Beaver Canal Company.
6. The Permitted area shall be reclaimed and/or reseeded as soon as practicable but no later than six months after Monarch Energy Development, LLC has completed construction, unless the County Planning Administrator grants an extension for demonstrated good cause.
7. Construction occurring within ¼ quarter mile of any residence shall not commence earlier than 7 a.m.
8. Monarch Energy Development, LLC shall prevent the existence of any nuisances by way of its construction activities. All trash, litter, construction waste and any potentially hazardous materials shall be disposed of properly off-site. If the County determines that a nuisance exists and the nuisance is not abated or an abatement plan is not submitted to the satisfaction of the County, the County may, upon five (5) days' notice abate the nuisance and charge expenses of abating the nuisance to Monarch Energy Development, LLC.
9. Monarch Energy Development, LLC shall comply with all applicable law and regulations related to safety and emergency management during construction and on-going operations.
10. Monarch Energy Development, LLC shall be responsible for the payment of all costs and fees incurred by the County associated with this Permit. The County shall invoice Monarch Energy Development, LLC for costs and fees and payment will be due by Monarch Energy Development, LLC within thirty (30) days of the date of the invoice. Failure to pay may result in enforcement actions by the County.

Nicole Hay,  
Morgan County Planning Administrator

## CONSULTANTS

Harris Engineering Consultants, Inc.



Nicole Hay &lt;nhay@co.morgan.co.us&gt;

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**Hydraulic report**

6 messages

Nicole Hay &lt;nhay@co.morgan.co.us&gt;

Mon, Oct 16, 2023 at 10:20 AM

To: Blake Johnson , Joan Heredia

Cc: Cheryl Brindisi &lt;cbrindisi@co.morgan.co.us&gt;, Jenafer Santos &lt;jsantos@co.morgan.co.us&gt;

Good morning,

Please see the following comments from my consultant

Per Rule 12, Part H, of RULES AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO, CWCB:

*Whenever a Stream Alteration activity is known or suspected to increase or decrease the established Base Flood Elevation in excess of 0.3 vertical feet (or a more stringent standard adopted by the local government authority), a Letter of Map Revision showing such changes shall be obtained in order to accurately reflect the proposed changes on FEMA's regulatory floodplain map for the stream reach. The local community is responsible for ensuring that this process is pursued. This section herein does not require a Conditional Letter of Map Revision (CLOMR) to be applied for, unless mandated by the local government having land use authority.*

In the report, the engineer cites 3-810(H) from the Morgan County Zoning regulations allowing an increase in flood elevation of as much as 0.5 feet, which is fine, but if the project results in a rise (or decrease) in the BFE of more than 0.3 feet, a LOMR will be required.

I noticed that the engineer used 2D modelling to estimate flood elevations, depths, velocities, etc. A comment was made that the BFE determined from the 2D modelling did not match the proximate BFE listed on the FIRM. I was unable to get a sense of the magnitude of the discrepancy from the color shaded mapping. The BFE for Beaver Creek shown on the FIRM is based on 1D hydraulic modelling. Any successive modelling within the Beaver Creek floodplain will need to use the current effective 1D model for Beaver Creek which will need to be obtained through the FEMA Engineering Library.

Thanks

--

Nicole F. Hay  
Planning Administrator  
Planning/Zoning Department  
231 Ensign St.  
Fort Morgan, CO 80701  
970-542-3526

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**Blake Johnson**

Mon, Oct 16, 2023 at 10:59 AM

To: Nicole Hay <nhay@co.morgan.co.us>, Joan Heredia  
Cc: Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Jenafer Santos <jsantos@co.morgan.co.us>

Hello Nicole,

Understood, thank you for the detail. We will track this down.

Thanks,

Blake



Blake Johnson

San Diego, CA

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**Nicole Hay** <nhay@co.morgan.co.us>

Wed, Nov 1, 2023 at 3:04 PM

To: Blake Johnson

Cc: Joan Heredia

<jsantos@co.morgan.co.us>

Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Jenafer Santos

Hello,

I am just checking to see if you have a response to the consultant's comments?

---

**Blake Johnson**

Wed, Nov 1, 2023 at 5:06 PM

To: Nicole Hay <nhay@co.morgan.co.us>

Cc: Joan Heredia

<jsantos@co.morgan.co.us>

Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Jenafer Santos

Hi Nicole,

We've engaged with both Tetra Tech and Westwood for quotes on running us through this process. I believe we have a good understanding of the process and potential outcomes. We are currently waiting on the quotes from each group and will begin the process once received.

I can let you know once we've kicked this off. Is there anything else you need from us aside from the additional information following outreach to FEMA and their determination?

Thanks,

Blake

Get [Outlook for iOS](#)

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**Nicole Hay** <nhay@co.morgan.co.us>

Thu, Nov 2, 2023 at 8:37 AM

To: Blake Johnson

Cc: Joan Heredia

<jsantos@co.morgan.co.us>

Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Jenafer Santos

Not that I can think of right now. There is a possibility this subject will be brought up, we have had a few people ask about this project being built in the floodplain.

---

**Blake Johnson**

Thu, Nov 2, 2023 at 10:10 AM

To: Nicole Hay <nhay@co.morgan.co.us>

Cc: Joan Heredia

<jsantos@co.morgan.co.us>

Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Jenafer Santos

Nicole,

Understood. Thank you.

For some context, our understanding is that this review process can have one of two outcomes. The first would be that FEMA completes a more detailed review of this site specifically (since floodplain maps can be dated and/or not precise at a scale which accurately portrays the subject property) and it's determined that their maps are inaccurate and the BFE needs updating to show the project has no impact. The second outcome is more involved and this would show that FEMA's data is relatively accurate and the project will need to plan for flood proofing the site or elevating infrastructure to avoid potential flooding events.

We can certainly speak to this at the public hearing if questions are brought forward.

Thanks,

Blake

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TECHNICAL

Ditch Company Notification

Application Fee Receipt



Jenafer Santos <jsantos@co.morgan.co.us>

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**FW: Overland Hydrogen & E-Fuels Facility - Morgan County SUP Application Review**

5 messages

**From:** Blake Johnson

**Sent:** Monday, October 2, 2023 10:54:41 AM

**To:**

**Cc:** Joan Heredia

**Subject:** Overland Hydrogen & E-Fuels Facility - Morgan County SUP Application Review

Hello Heather,

Thank you again for taking the time to speak with me this morning (10/2) about Monarch Energy's Overland Hydrogen and E-Fuels Production Facility in Brush, CO. As we discussed, the Overland SUP application was submitted on 9/25 and we are reaching out to nearby residents and local entities that may have interest in this development. As you can see from the site plan included in our SUP application, the Upper Platte and Beaver Canal runs adjacent to the Southwest corner of our project site. Overland looks forward to beginning a dialogue with you to review our project and answer any questions you may have pertaining to our development in relation to the proximity to the canal.

While our application is submitted, it is currently under review with Morgan County and may be subject to slight alterations. That being said, we would like to provide you with this preliminary copy for your review.

I am happy to schedule a call with you and other interested parties within your organization, following your review, to answer any questions you may have.

Thank you again and I look forward to discussing this project with you further.

Blake Johnson

Blake Johnson

San Diego, CA

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On Mon, Oct 9, 2023 at 12:39 PM Blake Johnson

wrote:

Hi Heather,

I want to follow up on our discussion about the Overland project and see if you have any questions.

The county did ask that I provide proof of my outreach, so maybe we can put together some kind of letter of understanding.

Thanks,

Blake

---

**From:** Heather Kalous

**Sent:** Monday, October 16, 2023 8:49 AM

**To:** Blake Johnson

**Subject:** Re: Overland Hydrogen & E-Fuels Facility - Morgan County SUP Application Review

Our board meeting was last week. They would like you or someone representing the project to attend the November meeting and further discuss the proposed placement of the project. UP&B has not agreed to any approvals at this time.

Heather

UP&B Secretary

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On Mon, Oct 16, 2023 at 11:54 AM Blake Johnson

wrote:

Hello Heather,

Thank you for getting back to me. What would the date of that meeting be? We will be in the Morgan County area for the public hearing on November 13<sup>th</sup>.

Thanks,

Blake

Blake Johnson

San Diego, CA



**From:** Heather Kalous

**Sent:** Tuesday, October 17, 2023 2:33 PM

**To:** Blake Johnson

**Subject:** Re: Overland Hydrogen & E-Fuels Facility - Morgan County SUP Application Review

Our November meeting would be the 14th at our office here in Brush.

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**From:** Blake Johnson

**Sent:** Monday, October 2, 2023 10:54:41 AM

**To:** Nicole Hay <nhay@co.morgan.co.us>, Joan Heredia

**Cc:** Jenafer Santos <jsantos@co.morgan.co.us>, Cheryl Brindisi <cbrindisi@co.morgan.co.us>

**Subject:** Overland Hydrogen & E-Fuels Facility - Morgan County SUP Application Review

Hello Morgan Co P&Z,

I want to provide an update on Monarch's conversations with Upper Platte & Beaver Canal since our application submittal. I'm attempting to retrieve a letter from them to indicate we've made contact with them and will work together for any required approvals. From their messaging it doesn't sound like that's something they're willing to provide prior to this November 14<sup>th</sup> meeting, but I will continue to work towards obtaining something to provide to you all.

Thanks,  
Blake

Blake Johnson

(715) 520-7344

San Diego, CA

# RECEIPT

## Morgan County

231 Ensign, Fort Morgan, CO 80701

(970) 542-3526



SU2023-0019 | Special Use Permit

Receipt Number: 544417

Payment Amount: \$650.00

October 1, 2023

Transaction Method	Payer	Cashier	Reference Number
Credit Card	Blake Johnson	Jenafer Santos	3240

### Comments

### Assessed Fee Items

Fee items being paid by this payment

Date	Fee Item	Account Code	Assessed	Amount Paid	Balance Due
10/06/23	Special Use - Full Review		\$650.00	\$650.00	\$0.00
<b>Totals:</b>			\$650.00	\$650.00	
			<b>Previous Payments</b>		\$0.00
			<b>Remaining Balance Due</b>		\$0.00

### Application Info

Property Address	Property Owner	Property Owner Address	Valuation
TBD Brush, CO 80723	The City of Brush	600 Edison St Brush, CO 80723	

### Description of Work

Hydrogen and E-Fuels Production Facility with a Co-Located Fuel Cell

## REFERRALS & RESPONSES

Referral Letter

Referral Responses

Landowner Letter

Landowner Letter Responses

Notifications

Public Comments or Concerns

Sign Posting Pictures & Affidavit

REFERRAL AGENCIES	RESPONSES RECEIVED
Brush Fire Department	
CDOT	
Century Link	
Cheyenne Plains Gas Pipeline Company	
City of Brush	
City of Fort Morgan	
Town of Wiggins	
Colo. Dept. of Natural Resources	<p><u>Response received via email on October 31, 2023</u></p> <p>Jenafer  CPW has no major wildlife concerns at this time.  Thank you  Todd  --  Todd Cozad  Colorado Parks and Wildlife  Area Wildlife Manager - Area 3, Brush</p>
CDPHE	
Colo. Oil & Gas Conservation Commission	
Colo. State Land Board	
Division of Wildlife	
Fort Morgan Fire Department	
Upper Platte & Beaver Canal	
Kinder Morgan, Inc.	
Morgan County Assessor	
Morgan County Communications Center	
Morgan County Quality Water	
Morgan County Road & Bridge	<p><u>Response received via email on September 25, 2023</u></p> <p>Kathryn/Nicole  John and I discussed the haul route for the Monarch Energy project and the following is our preferred route and recommendation:  I76 to Exit 92 (State Hwy 6 Exit), South on Hwy 6 to Hwy 34, Merge West onto Hwy 34 to State Highway 71, South on Hwy 71 to County Road R, West on Road R to County Road 28 (Clayton Street), South on County Road 28 to Destination.  Best Regards,  <i>Bruce Bass</i>  <i>Public Works Director</i></p>
Morgan County Rural Electric Assoc.	
Morgan County Sheriff	
Morgan Soil Conservation District	
USDA Farm Service Agency	
Western Area Power Administration	
Wiggins Fire Department	
Xcel Energy	See Attached Letter





## MORGAN COUNTY PLANNING AND BUILDING DEPARTMENT

### TO REFERRAL AGENCIES:

Brush Fire Department	Kinder Morgan, Inc.
CDOT	Morgan County Assessor
Century Link	Morgan County Communications Center
Cheyenne Plains Gas Pipeline Company	Morgan County Quality Water
City of Brush	Morgan County Road & Bridge
City of Fort Morgan	Morgan County Rural Electric Assoc.
Town of Wiggins	Morgan County Sheriff
Colo. Dept. of Natural Resources	Morgan Soil Conservation District
CDPHE	USDA Farm Service Agency
Colo. O&G Conservation Commission	Western Area Power Administration
Colo. State Land Board	Wiggins Fire Department
Division of Wildlife	Xcel Energy
Fort Morgan Fire Department	
Upper Platte & Beaver Canal	

FROM: Jenafer Santos, Morgan County Planning & Zoning Planning Technician  
231 Ensign St, PO Box 596, Fort Morgan, CO 80701  
970-542-3526 / 970-542-3509 fax / jsantos@co.morgan.co.us

DATE: October 16, 2023

RE: Land Use Application- Special Use Permit

The following Special Use Permit application will be heard by the Planning Commission on **Monday, November 13, 2023 at 7:00 p.m.** in the Assembly Room of the Morgan County Administrative Building, 231 Ensign Street, Fort Morgan, CO 80701 (Basement level; use elevator entrance in SW corner). You are welcome to attend and comment at this public meeting.

**Applicants:** Monarch Energy Development LLC  
**Landowners:** The City of Brush!

**Legal Description:** A part the NE¼ of Section 15, Township 3 North, Range 56 West of the 6<sup>th</sup> PM, Morgan County, Colorado.

**Request:** Special Use Permit to develop a 250MW Overland Green Hydrogen and E-Fuels facility. The project will serve as an energy storage facility by utilizing regionally sourced green renewable energy. The project will be interconnected to the Xcel Energy's transmission line and tie into the Pawnee Substation.

**You are encouraged to provide comments to this application by November 1, 2023 or attend the Planning Commission meeting on Monday, November 13, 2023.**

Sincerely,  
*Jenafer Santos*  
Morgan County Planning and Zoning Planning Technician





**Right of Way & Permits**

1123 West 3<sup>rd</sup> Avenue  
Denver, Colorado 80223  
Telephone: 303.285.6612

October 20, 2023

Morgan County Planning and Building Department  
231 Ensign / PO Box 596  
Fort Morgan, CO 80701

Attn: Jenafer Santos, Nicole Hay, and Cheryl Brindisi

**Re: Monarch Energy – Special Use Permit**

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the plan for **Monarch Energy** and has **no apparent conflict**. Please be aware PSCo owns and operates existing natural gas distribution facilities along east property line.

The property owner/developer/contractor must complete the application process for any new natural gas or modification to existing facilities via [xcelenergy.com/InstallAndConnect](https://xcelenergy.com/InstallAndConnect). It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.

As a safety precaution, PSCo would like to remind the developer to call the Utility Notification Center by dialing 811 for utility locates prior to construction.

Violeta Ciocanu (Chokanu)  
Right of Way and Permits  
Public Service Company of Colorado dba Xcel Energy  
Office: 303-285-6612 – Email:



## MORGAN COUNTY PLANNING AND BUILDING DEPARTMENT

October 16, 2023

Re: Monarch Energy Development LLC

Dear Neighboring Landowners:

Monarch Energy Development LLC as applicant and The City of Brush! as landowner have submitted an application to our office for a Use by Special Review Permit.

**Legal Description:** A part of the NE¼ of Section 15, Township 3 North, Range 56 West of the 6<sup>th</sup> PM, Morgan County, Colorado.

**Request:** Monarch Energy Development LLC has submitted a Special Use Permit Application to develop a 250MW Overland Green Hydrogen and E-Fuels facility. The project will serve as an energy storage facility by utilizing regionally sourced green renewable energy. The project will be interconnected to the Xcel Energy's transmission line and tie into the Pawnee Substation.

This application will be heard by the Planning Commission at a public hearing on Monday, **November 13 at 7:00 P.M.** in the Assembly Room of the Morgan County Administration Building, 231 Ensign St., (Basement Level, elevator entrance) Fort Morgan, Colorado. Landowners within ¼ mile of the subject property are notified of the application and hearing date.

Documents pertaining to the above identified matters are on file in the Planning Administrator's Office, 231 Ensign St., Fort Morgan, Colorado. Documents will also be available on the Morgan County Website <https://morgancounty.colorado.gov>

If you have any questions pertaining to this application or if you would like to review the file, either contact us at (970) 542-3526 or stop by our office prior to the hearing. You may attend the public hearing and provide comments on the application, or alternatively, if you are not able to attend you may submit written comments to our office no later than **November 1, 2023**.

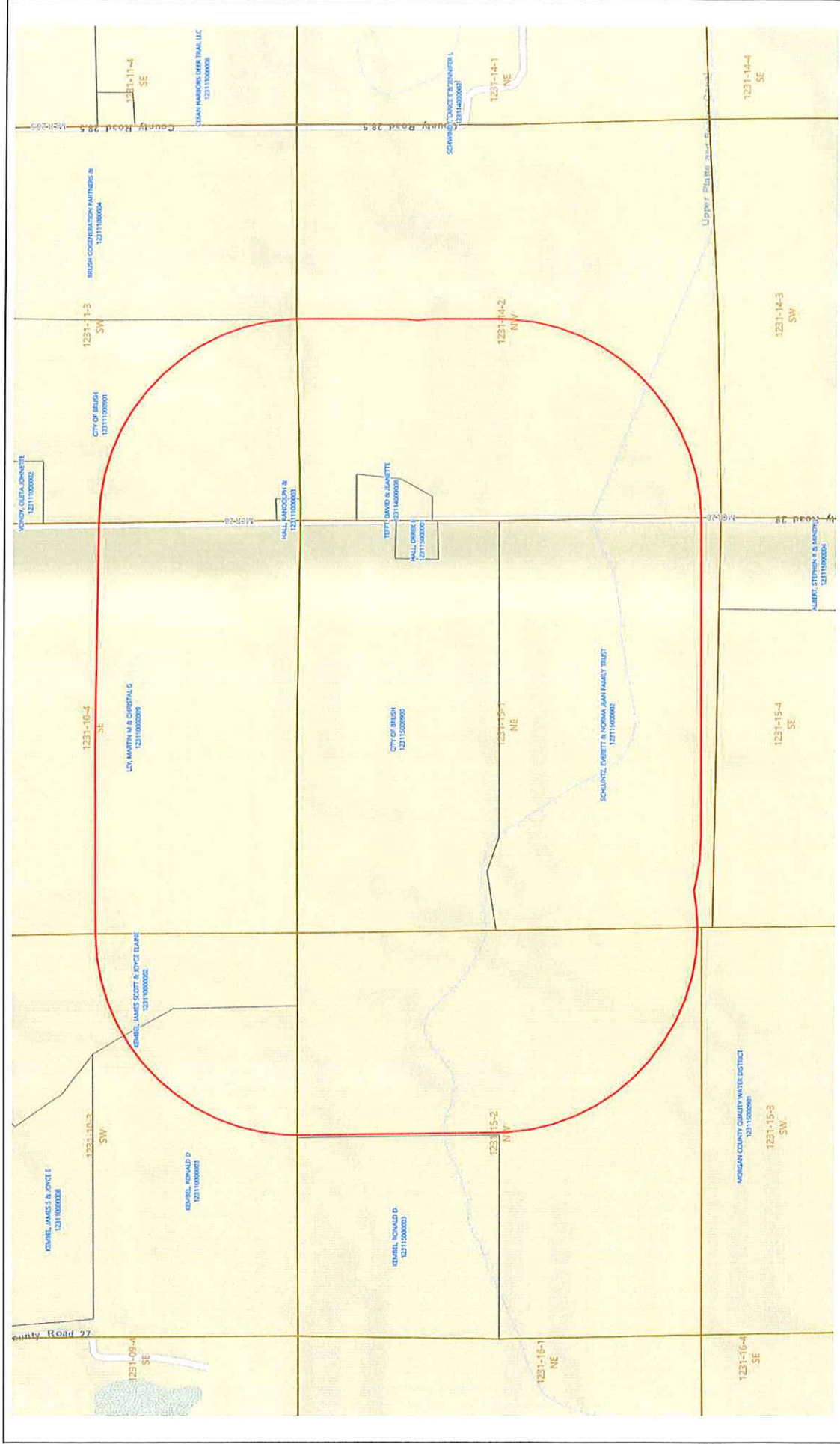
Sincerely,

*Nicole Hay*

Nicole Hay  
Planning & Zoning Director

*For special assistance for the mentioned hearing, please notify us at least 48 hours before the scheduled agenda item. Please call (970) 542-3526 to request any ADA accommodations.*

15-3-56\_Monarch Energy\_SU2023-0019 1320' Notification Map





# Exhibit 1

## Conceptual Site Layout

Prepared By: Blake Johnson  
Preparation Date: 9/18/2023

Project Description:  
Type: Hydrogen & E-fuels Facility  
Size: 250MW Electrolyzer, 48MW Fuel Cell, 32MW Liquefier

Property Legal Description:  
N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, EXCEPT a parcel of land described as follows: Commencing at the NE1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 380 feet; thence in a Southerly direction along same South right of way line a distance of 234 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence S00°42'07"E a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796; the point of beginning; thence S00°42'07"E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S. #14796; thence S89°57'53"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N09°55'52"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.

### Signature Blocks

Landowner  
Name:  
Title:

Planning Commission  
Name:  
Title:

County Board  
Name:  
Title:

County Clerk  
Name:  
Title:

Project Information  
Landowner Name: City of Brush  
Landowner Address: 600 Edison St., Brush, CO  
Developer Name: Monarch Energy  
Developer Address: 101 Cooper St., Santa Cruz, CA  
Site Location: ~2 miles South of Brush



## Legend

- Overland - Lease Area (60 ac)
- Parcel Boundaries
- Access Roads
- Fencing
- Residences
- Existing Electrical Infrastructure
- Road
- Hydrographic Features
- 1% Annual Chance Flood Hazard



KEMBEL JAMES  
SCOTT JOYCE  
ELAINE

LEY MARTIN M  
CHRISTAL G

CITY OF  
BRUSH

HALL RANDOLPH

HALL DEREK E

KEMBEL JAMES  
SCOTT JOYCE  
ELAINE

MORGAN  
COUNTY  
QUALITY  
WATER  
DISTRICT

SCHLUNTZ  
EVERETT  
NORMA JEAN  
FAMILY

0 250 500 ft

General Notes:  
1. Preliminary - Not for construction.  
2. This drawing is for visual purposes only. Location of all existing items shown is approximate and must be verified in final design.  
3. All specified equipment is preliminary. Final equipment selection shall be approved by owner.  
4. Use of this drawing set without written permission from Monarch Energy Development LLC is in violation of U.S. copyright laws and will be subject to civil damages and prosecutions.

Project Notes:  
1. Ground elevation across the project site subject to less than 5% slope.  
2. All access roads are 20' wide with 30' turn radius.  
3. All fences are chain link and 10' tall.  
4. No areas of moderate or severe soil limitations on site.  
5. No special geologic hazard or mineral resource areas on site.

CITY OF BRUSH  
P O BOX 363  
BRUSH, CO 80723

HALL, RANDOLPH &  
BRACE, CARRIE  
16038 CO RD 28  
BRUSH, CO 80723

KEMBEL, JAMES SCOTT & JOYCE ELAINE  
16750 HWY 71  
BRUSH, CO 80723

KEMBEL, RONALD D  
26976 CO RD R  
BRUSH, CO 80723

BRUSH COGENERATION PARTNERS &  
CITY OF BRUSH  
P O BOX 876  
EAST AURORA, NY 14052

SCHLUNTZ, EVERETT & NORMA JEAN FAMILY TRUST  
617 22ND AVE - APT B112  
KEARNEY, NE 688451289

HALL, DEREK E  
15837 CO RD 28  
BRUSH, CO 80723

TEFFT, DAVID & JEANETTE  
15898 CO RD 28  
BRUSH, CO 80723

LEY, MARTIN M & CHRISTAL G  
P O BOX 235  
BRUSH, CO 80723

MORGAN COUNTY QUALITY WATER DISTRICT  
P O BOX 1218  
FORT MORGAN, CO 80701



**NOTICE OF MORGAN COUNTY PLANNING COMMISSION'S REVIEW OF  
ONE LAND USE APPLICATION**

Notice is hereby given that on Monday, November 13, 2023 at 7:00 p.m., or as soon as possible thereafter, a public hearing will be held to consider the following applications:

- 1.) **Applicant:** Carolyn Wood  
**Landowner:** Carolyn Wood  
**Legal Description:** Located in the NE¼ of Section 9, Township 4 North, Range 57 West of the 6<sup>th</sup> P.M., Morgan County, Colorado.  
**Request:** Conditional Use Permit to allow the placement of a mobile home on a 35.78-acre parcel of land.  
**Date of Application:** August 18, 2023.
  
- 2.) **Applicant:** Monarch Energy Development LLC  
**Landowners:** The City of Brush!  
**Legal Description:** A part of the NE¼ of Section 15, Township 3 North, Range 56 West of the 6<sup>th</sup> PM, Morgan County, Colorado.  
**Request:** Special Use Permit to develop a 250MW Overland Green Hydrogen and E-Fuels facility. The project will serve as an energy storage facility by utilizing regionally sourced green renewable energy. The project will be interconnected to the Xcel Energy's transmission line and tie into the Pawnee Substation.  
**Date of Application:** September 27, 2023.

**THE COUNTY WILL CONTINUE TO OFFER THE OPTION TO ATTEND MEETINGS REMOTELY. IF YOU HAVE ANY QUESTIONS REGARDING ATTENDING THE MEETING, PLEASE CONTACT THE PLANNING OFFICES AT 970-542-3526.**

To participate remotely you may connect via Zoom at:

<https://us02web.zoom.us/j/81567774079>

Or Telephone:

Dial:

+1 719 359 4580 US

Webinar ID: 815 6777 4079

The applications and all materials are available for inspection at the Planning Administrator's Office, 231 Ensign Street, basement, Fort Morgan, Colorado, during regular office hours. At the time of hearing, opportunity will be given for the presentation of evidence in support of or in opposition to the application.

Nicole Hay

Nicole Hay

Morgan County Planning Administrator

Published: October 28, 2023





The above sign was posted on (date) 10/25/2023, pursuant to the  
Morgan County Zoning Resolution by (name of applicant) Monarch Energy Development LLC.

Project name and number: Overland Hydrogen and E-Fuels Production Facility

Signature of Applicant/Representative: \_\_\_\_\_

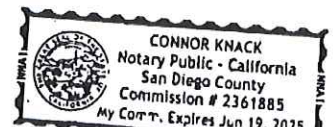
STATE OF California  
COUNTY OF San Diego ) ss.

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

Signed before me this date: 10/25/2023

My Commission expires: 06/19/2025

NOTARIZED BY: Connor Knack, Notary Public



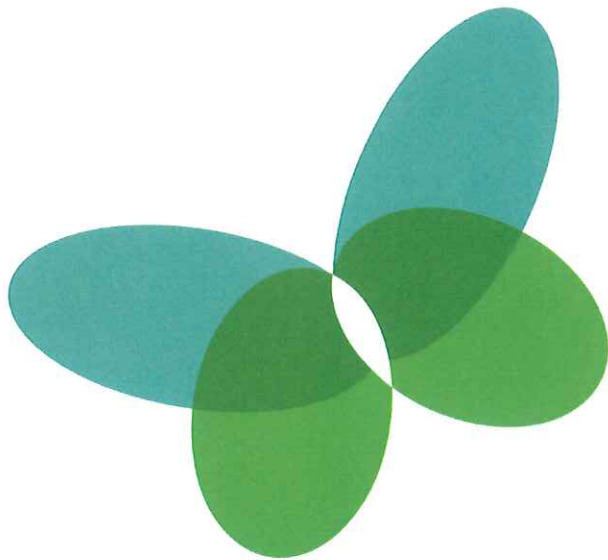
## ADDITIONAL INFORMATION



ORIGINAL SUBMITTAL

Original Application

Right to Farm



# **SPECIAL USE PERMIT APPLICATION**

**Morgan County, Colorado**

**SUBMITTED BY:**

**Monarch Energy Development LLC, a  
wholly-owned subsidiary of Monarch  
Energy**

**PREPARED FOR:**

**Morgan County Planning Department**

**SPECIAL USE:**

**Green Hydrogen and E-Fuels  
Production Facility**



EMAIL: [permits\\_licensing@co.morgan.us](mailto:permits_licensing@co.morgan.us)

Date Received 9/27/23 Received By JS  
App Fee \$150 Ck/CC #: 3240 Paid 9/27/23  
Minor Amend Fee: \$ \_\_\_\_\_ CK/CC #: \_\_\_\_\_ Paid \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Recording Fee \$ \_\_\_\_\_ Ck/CC #: \_\_\_\_\_ Paid \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
PC Date: 11/13/23 BOCC Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
100 Year Floodplain? ☒ Y ☐ N Taxes Current? ☒ Y ☐ N

## Landowner **MUST** Sign Application and Right to Farm Policy

## Email \_\_\_\_\_

**INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED OR PROCESSED.**

## SPECIAL USE PERMIT REQUIRED ATTACHMENT LIST

**Fee:**

☒ **Non-Refundable Application Fee** \$650

*\*Additional fees and charges may be required pursuant to Section 2-160 of Morgan County Zoning Regulations*

**Project Narrative:** ☒ **Narrative-- Including the following:**

- ☒ Project Description
- ☒ Purpose of request
- ☒ How this proposal complies with the Morgan County Comprehensive Plan  
*See: <https://morgancounty.colorado.gov/sites/morgancounty/files/Comprehensive-Plan-2008.pdf>*
- ☒ How this project/proposed use meets the criteria for Special Use Permit pursuant to Sec. 2-395 of the Zoning Regulations
- ☒ How the project/proposed use meets any specific criteria related to the project/proposed use. *See Morgan County Zoning Regulations Chapter 4-Supplementary Regulations, including but not limited to: Campgrounds, Livestock Confinement, Kennels, Outdoor Shooting Ranges, Home Occupations, Oil and Gas, Mobile Home Parks, Wireless Service Facilities, Solar, Wind and BESS*
- ☒ How project will relate to or impact existing adjacent uses
- ☒ All off-site impacts and proposed mitigation measures
- ☒ Development or implementation schedule of project
- ☒ Proposed length of time the permit, if applicable
- ☒ Discussion of any public improvements required to complete the project

**Environmental Impacts:** ☒ Discuss any environmental impacts the Special Use will have on the following and the proposed mitigation measures:

- |   |  |   |  |
|---|--|---|--|
| <input checked="" type="checkbox"/> Air Quality | <input checked="" type="checkbox"/> Dust     | <input checked="" type="checkbox"/> Existing Vegetation | <input checked="" type="checkbox"/> Land Forms         |
| <input checked="" type="checkbox"/> Noise       | <input checked="" type="checkbox"/> Odor     | <input checked="" type="checkbox"/> Storm Water Runoff  | <input checked="" type="checkbox"/> Water Resources    |
| <input checked="" type="checkbox"/> Wetlands    | <input checked="" type="checkbox"/> Wildlife | <input checked="" type="checkbox"/> Visual Amenities    | <input checked="" type="checkbox"/> Other <u>Soils</u> |

**Map & Plans:** ☒ **Special Use Map** meeting the requirements of Sec. 2-420 and any specific map requirements for the proposed use including but not limited to: *Campgrounds, Livestock Confinement, Kennels, Outdoor Shooting Ranges, Home Occupations, Oil and Gas, Mobile Home Parks, Wireless Service Facilities, Solar, Wind and BESS. Sample Map attached to application for reference*

☒ **Drainage/Run-Off Control Plan** may be required if the Planning Administrator determines that the use or building meets one of the following criteria:

- (1) The accessory use or building may have a drainage impact on adjacent properties;
- (2) The accessory use or building may have a drainage impact on adjacent right of ways;
- (3) The accessory structure is 5000 square feet or larger.

☒ **Decommissioning Plan** [Wind, Solar, BESS]

☐ **Geotechnical Report** [Wind, Solar]

☒ **Maintenance Statement** [Wind, Solar, BESS]

☒ **Water and/or Wind Erosion Control Plan** [Wind, Solar]

☒ **Fire Mitigation Plan** [BESS]

☐ **Specification Sheet** [BESS]

☒ **Emergency Operation Plan** [BESS]

**Ownership:** ☒ **Current title insurance commitment (last 6 months)**

☒ **Mineral Rights Holders Notification**

☐ **Notice to FFA & Approval Letter** [Wind]

☐ **Notice to Operator of Communication Link (if applicable)** [Wind]

☒ **Proof of current paid taxes**

**Utilities/Access:** ☒ **Water tap (Engineering Report from Quality Water or proof of access to a well)**

To be obtained ☒ **Sewer (Septic Permit, Will Serve Letter from NCHD or proof of other public system)**

To be obtained ☒ **Electric (Electric bill or letter of commitment from electricity provider)**

To be obtained ☒ **Driveway Permit from CDOT or Morgan County Road & Bridge (If required by staff)**

☒ **Ditch Company- Proof of contact if there is a ditch on or next to subject property**

☐ **Architecture Control Approval (if applicable)**

To be obtained ☐ **Utility Interconnection or Crossing Certification** [Wind, Solar]

To be obtained ☐ **Road Agreement** [Wind, Solar]

☐ **Electrical Diagram** [BESS]

**Vested Rights:** ☐ **Vesting Rights** (Optional). If applying for vested rights with special use application, the following must be submitted:

- ☐ Period of time Vesting Rights are requested
- ☐ Development schedule including timeline and phases
- ☐ Reason for request
- ☐ Other pertinent factors concerning the development
- ☐ Additional application fee for vesting rights application

**Miscellaneous:** ☒ **Right to Farm Policy** signed by Landowner(attached)

☐ **Liability Insurance for Solar, Wind and/or BESS projects**

☐ \_\_\_\_# **Paper Application sets**

☐ \_\_\_\_**Digital Copy of Application** (One sided only)

☐ **Posted Public Notice Verification:**

☐ Notarized affidavit with photographs from a distance & close-up

This must be submitted PRIOR to Planning Commission hearing and PRIOR to Morgan County Board of Commissioners hearing

☐ **Additional Information required by staff:**

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APPLICANT & LANDOWNERS **MUST** SIGN APPLICATION ON NEXT PAGE

## APPLICANT & LANDOWNER'S STATEMENT

I certify that the information and exhibits I have submitted are true and correct to the best of my knowledge.  
Application must be signed by landowners as shown on title insurance/commitment.

 9/23/2023  
Applicant Signature Date

Applicant Signature Date

 9/25/23  
Landowner Signature Date

Landowner Signature Date





**MORGAN COUNTY, PLANNING, ZONING & BUILDING DEPT.**

231 Ensign, P.O. Box 596

Fort Morgan, Colorado 80701

PHONE (970) 542-3526 FAX (970) 542-3509

**MORGAN COUNTY RIGHT TO FARM POLICY / NOTICE**

Morgan County is one of the most productive agricultural counties in Colorado. Ranching, farming, animal feeding, and all other manner of agricultural activities and operations in Morgan County are integral and necessary elements of the continued vitality of the county's economy, culture, landscape and lifestyle. Morgan County specifically recognizes the importance of agricultural operations as necessary and worthy of recognition and protection.

Landowners, residents and visitors must be prepared to accept as normal the effects of agriculture and rural living. These may include noise from tractors, equipment, and aerial spraying sometimes at night or in the early morning; dust from animal pens, field work, harvesting, and gravel roads; odor from animal confinement operations, silage and manure; smoke from ditch burning; flies and mosquitoes; the use of pesticides and fertilizers, including aerial spraying; and movement of livestock or machinery on public roads. Under the provisions of the State of Colorado's "Right to Farm" law (Section 35-3.5-101 and following, C.R.S.), all normal and non-negligent agricultural operations may not be considered nuisances.

Also public services in a rural area are not at the same level as in an urban or suburban setting. Road maintenance may be at a lower level, mail delivery may not be as frequent, utility services may be nonexistent or subject to interruption, law enforcement, fire protection and ambulance service will have considerably longer response times, snow may not be removed from county roads for several days after a major snow storm. First priority for snow removal is that school bus routes are normally cleared first.

Children are exposed to different hazards in a rural setting than they are in an urban or suburban area. Farm and oilfield equipment, ponds, and irrigation ditches, electrical service to pumps and oil field operations, high speed traffic, noxious weeds, livestock, and territorial farm dogs may present real threats to children. It is necessary that children's activities be properly supervised for both the protection of the children and protection of the farmer's livelihood.


All rural residents and property owners are encouraged to learn about their rights and responsibilities and to act as good neighbors and citizens of Morgan County. This includes but is not limited to obligations under Colorado State law and Morgan County Zoning Regulations regarding maintenance of fences, controlling weeds, keeping livestock and pets under control. There may be provisions of which you are unaware. For example, because Colorado is a Fence Law State, owners of property may be required to fence livestock out.

Information regarding these topics may be obtained from the Colorado State University Cooperative Extension Office and the County Planning and Zoning Department, and County Attorney.

**RECEIPT AND STATEMENT OF UNDERSTANDING**

I hereby certify that I have received, read, and understood the Morgan County Statement of Policy and Notice regarding Right to Farm.

I further state that I am aware that the conditions of living in an unincorporated area are different than living in a town or city and that the responsibilities of rural residents are different from urban or suburban residents. I understand that under Colorado law that a pre-existing, non-negligent agricultural operation may not be considered a public or private nuisance.

 9/25/23  
Signature Date  
Dana Sherman  
Printed Name

**To Be Signed by Landowner**

Address



September 26, 2023

RE: Statement of Authority

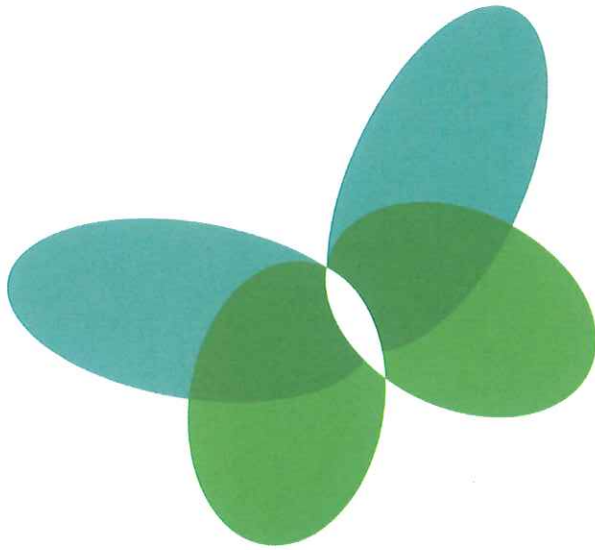
Morgan County Planning & Zoning

This letter certifies that I, Dana Sherman, as current Mayor of the City of Brush, am authorized to sign on behalf of the City of Brush as the landowner for the Special Use Permit Application for Monarch Energy Development LLC, dated 9/23/2023 by the applicant.

Please contact the City of Brush with any questions at 970.842.5001.

Regards

Dana Sherman  
Mayor



# **SPECIAL USE PERMIT APPLICATION**

**Morgan County, Colorado**

**SUBMITTED BY:**

**Monarch Energy Development LLC, a  
wholly-owned subsidiary of Monarch  
Energy**

**PREPARED FOR:**

**Morgan County Planning Department**

**SPECIAL USE:**

**Green Hydrogen and E-Fuels  
Production Facility**

## **Table of Contents**

- 1. Special Use Permit Application**
- 2. Project Narrative**
  - a. Project Overview
  - b. Project Description
  - c. Applicant Background
  - d. Purpose of Request
  - e. Compliance with Morgan County Comprehensive Plan
  - f. Compliance of Criteria for Review of Special Use Permit
  - g. Impact Assessment
  - h. Development Schedule
  - i. Length of Permit
  - j. Public Improvements
- 3. Environmental Impacts**
  - a. Air Quality, Noise, Wetlands, Dust, Odor, Wildlife, Existing Vegetation, Storm Water Runoff, Visual Amenities, Land Forms, Water Resources, Soils
- 4. Maps and Plans**
  - a. Site Plan
  - b. Easements
  - c. Drainage / Run-off Control Plan
- 5. Ownership**
- 6. Utilities and Access**
  - a. Water, Sewer, Electric, Driveway Permit, Fire Protection
- 7. Additional Materials**
  - a. Property Owners within 1,320 feet
  - b. Decommissioning Plan
  - c. Fire Mitigation and Emergency Operations Plan



## Project Narrative

### Project Overview

Monarch Energy Development LLC ("Overland"), a wholly-owned subsidiary of Monarch Energy ("Monarch"), is submitting this Special Use Permit ("SUP") application for the proposed 250 MW Overland Green Hydrogen and E-Fuels Project (Project). Overland is seeking to develop this facility about 1 mile south of Brush. The land is owned by the City of Brush ("Landowner") and is within unincorporated Morgan County. The Project will be sited on approximately 60 acres of land on parcel 1231-150-00-900 in the NE Quarter of Section 15, Township 03N, Range 56W Morgan County, Colorado (as shown in Figure 1 below).

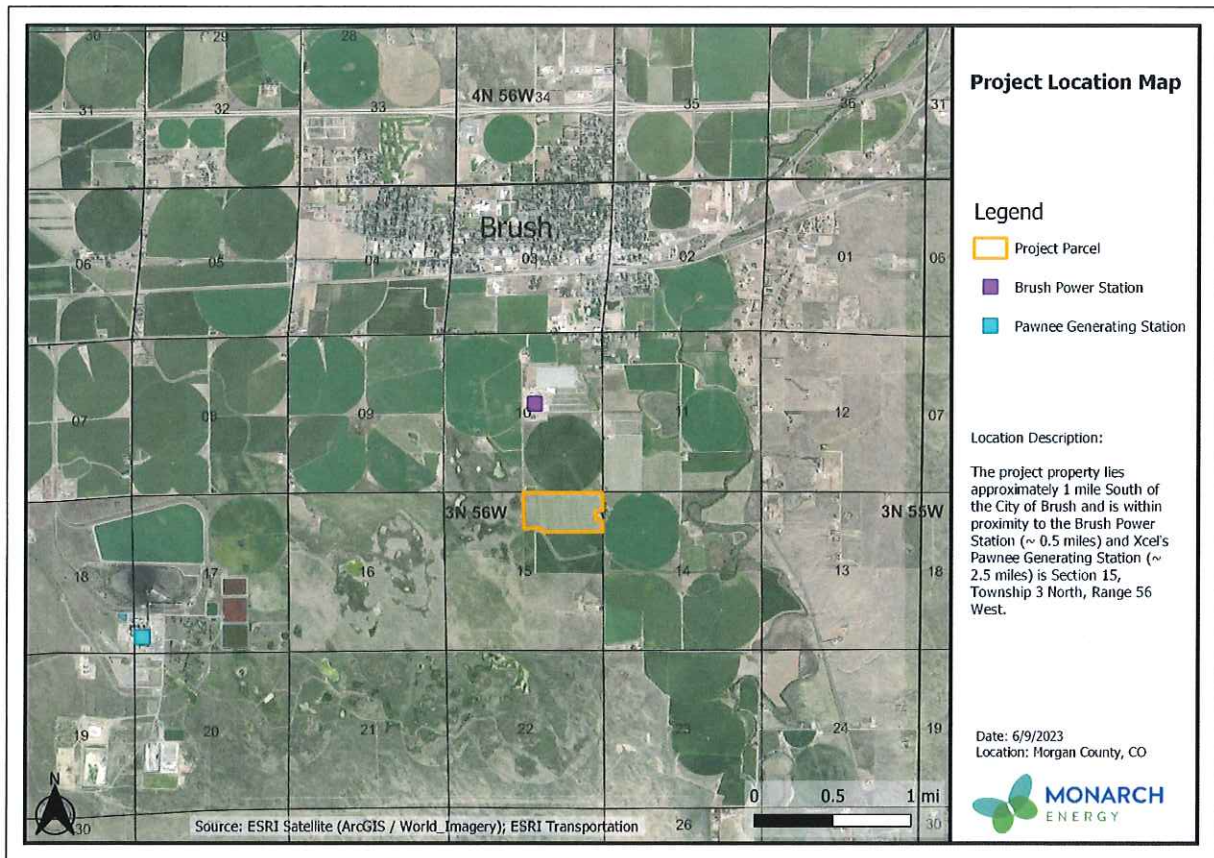


Figure 1: Overland Hydrogen and E-fuels Facility Location Map

The surrounding land use is agricultural (Project Area). The Brush Cogeneration Facility is located 0.5 miles north and the Pawnee Power Station is located approximately 2.5 miles to the southwest of the Project (Project Vicinity) The Project Vicinity is well suited for the development of a hydrogen facility due to existing energy facilities, electrical infrastructure and proximity to available water and water treatment disposal. The Project will support community and economic development in Morgan County through job creation, local taxes, and construction activities, as well as contributing to the development of hydrogen supply and Colorado's renewable energy goals for climate change mitigation and a low-carbon economy.



**Project Description**

The Project will serve as an energy storage facility by utilizing regionally sourced, green renewable energy that will be acquired through an interruptible tariff with PSCo. Raw water will be used to generate gaseous green hydrogen in the electrolyzer (illustrated in Figure 2 below). The electrolyzer uses electricity to break down water molecules into hydrogen and oxygen. The oxygen is released into the atmosphere and hydrogen will be processed through a liquefier (illustrated example in Figure 3 below) to convert the hydrogen from a gas to a liquid, which will be stored onsite. Overland plans to install hydrogen fuel cells (illustrated example in Figure 4 below) which will receive re-gasified liquid hydrogen (e-fuel) from the storage facility and convert the hydrogen to electricity, providing a long-duration green energy storage solution. In addition, a portion of the hydrogen will be trucked offsite to serve as an e-fuel for transportation.

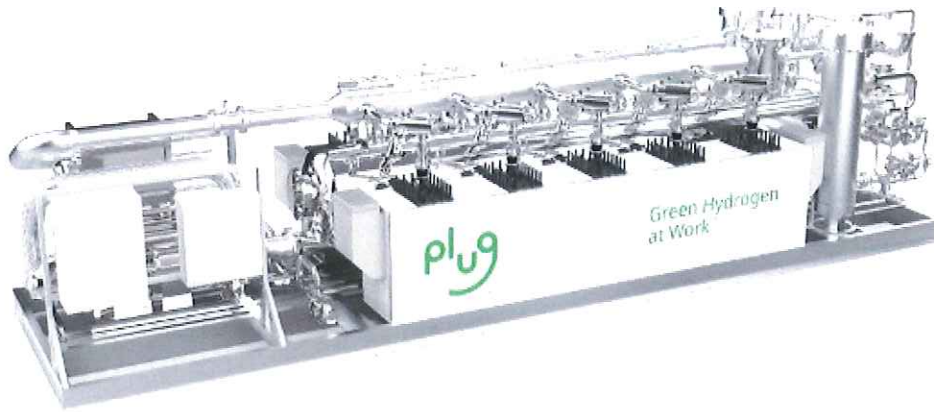
The Project will be interconnected to the Xcel Energy transmission system via an onsite substation and will tie into Xcel's existing Pawnee Substation which is located to the southwest 2.5 miles. Conversations are underway with PSCo to submit a load interconnection request for Overland.

Raw water will be provided by a Morgan County Quality Water District ("MCQWD") well (Brungardt West Well) that is located on an adjacent parcel to the south of the Project. A Reverse Osmosis (RO) water system will be located onsite to treat the water to electrolyzer manufacturer specifications and will generate a waste stream with concentrated total dissolved solids (brine discharge) that will be sent to an injection well at a location adjacent to the east of the project area.

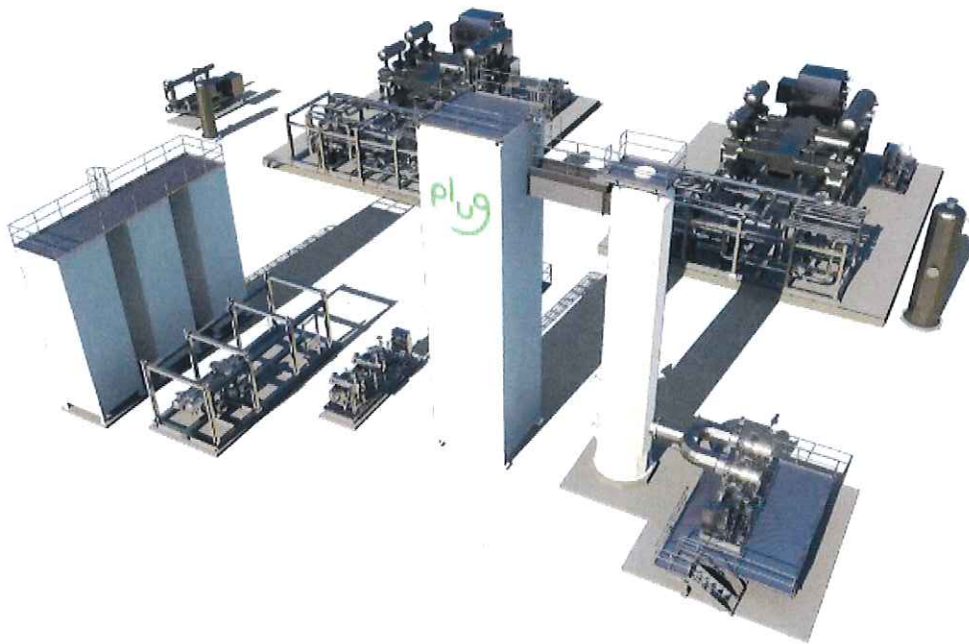
The footprint of the project area will cover most of the 60-acre site and will be fenced by a chain link fence with three-strand barbed wire affixed on top, for a total height of 10 feet. Gated and locked access points will be provided for the Project site (locations to be determined). The main Project entrance is proposed along County Road 28. Internal access roads to major equipment pads (water treatment, electrolyzer, liquefaction facilities, and storage tanks) will be all-weather to ensure first responder access and circulation for O&M. Major equipment will be less than 25 feet in height and supported by concrete foundations. However, the project may use a hydrogen storage sphere about 40 feet high. Lighting installed for the project will be designed to code to provide the minimum illumination needed to achieve safety and security and will be downward-facing and shielded to focus illumination on the desired area only. No plantings and/or screening are planned around or in the project area at this time. The actual layout of The Project may vary due to final design, materials, and more detailed engineering. The site would be constructed in one phase over 12 to 16 months.

Overland has secured a 1-year hydrogen and e-fuels lease with Landowner. By ordinance, Landowner is required to go through an administrative process to execute leases with a tenor longer than one year. Therefore, Overland has secured a short-term one-year lease for initial project development activities and has agreed with Landowner to pursue a 35-year lease for the Project. The long-term lease will consist of a 20-year operations term with three options to extend for 5 years each.

A full-time Operations and Maintenance ("O&M") crew of 20-30 employees will be hired and trained to perform routine inspections, maintenance, and repairs while also ensuring the Project is adhering to all necessary safety, hazardous materials, stormwater, and erosion requirements. There will also be approximately 300 part-time employees contracted during the construction phase of the Project. Upon the conclusion of the Project's useful life, Overland will remove all project materials to a minimum depth of 24 inches.

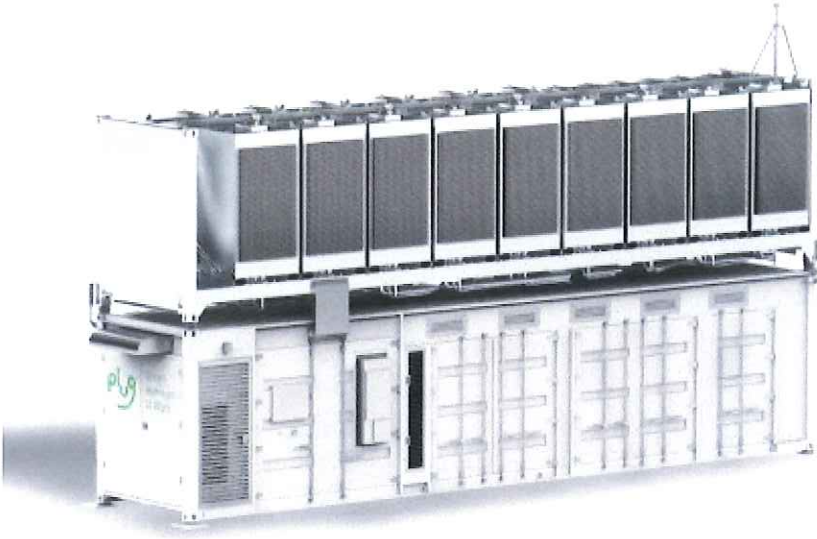


*Figure 2: This is a rendering of a green hydrogen electrolyzer array produced by Plug Power.*



*Figure 3: This is a rendering of a hydrogen liquefaction facility produced by Plug Power.*





*Figure 4: This is a rendering of hydrogen fuel cell technology, typically stored in containers, produced by Plug Power.*

### **Applicant Background**

Monarch is a development company headquartered in San Diego, CA that specializes in electrolytic green hydrogen production. The team leverages decades of industry experience to secure land rights, permitting approvals, power supply, interconnection, water inputs, and long-term offtake agreements to de-risk projects prior to the final investment decision. Monarch was founded in 2021 and now controls an early-stage project pipeline of over 4 GW of electrolyzer nameplate capacity, supplying products that benefit corporate decarbonization goals with niche specialties across renewable and conventional energy project development.

Monarch works closely with key partners such as fuel cell and electrolyzer equipment manufacturers; liquefaction, midstream, and storage development and construction companies; as well as renewable energy generators to deliver all aspects of the hydrogen project.

### **Purpose of Request**

The purpose of this application is to provide Morgan County with information regarding the Project, subject to the Morgan County Zoning Regulations.

### **Compliance with the Morgan County Comprehensive Plan**

A review of Morgan County's Comprehensive Plan<sup>1</sup> (2008) indicates that the Project will not conflict with the interest or goals of the County. The Project will comply with the County's goals as follows:

- A. Economic Development – "Diversify the economy in Morgan County to broaden business employment opportunities for residents and to further economic growth."
  - *Policy 10: "Contribute to the Colorado New Energy Economy; work to attract and maintain renewable energy projects to capture this."*

---

<sup>1</sup> *County of Morgan State of Colorado Comprehensive Plan 2008*, Prepared by County Planning and Zoning Staff, 2008

The Project will provide Morgan County with the newest technology in the clean energy space via electrolytic hydrogen. Overland will generate increased revenues to county, municipal, and school district tax bases.

Overland will create positive impacts for the county's residents through employment opportunities during both the construction and operating phases of the Project. Local, regional, and statewide employment during the construction phase will primarily benefit those in the construction industry, including equipment operators, truck drivers, laborers, and electricians. Overland encourages local contractors to bid on construction jobs for the Project. Additionally, throughout the construction period, employees will support local businesses, including hardware supply stores, restaurants, gas stations, and hospitality establishments.

Green hydrogen helps to foster the growth of renewable energy by utilizing the energy produced in areas where there may be transmission constraints. The Project will help to encourage additional development of renewable resources by providing stability and reliability to the local energy grid through long-duration renewable energy storage.

- B. Environment – “To preserve the manmade and natural environment in order to enhance the quality of life in Morgan County.”

- *Policy 14: “Encourage use of renewable resources and production of biofuels and electric power from such resources.”*

The Project area does not host any mapped wetlands according to the U.S. Fish and Wildlife Services National Wetlands Inventory. No waterbodies are present within the Project area. The Project lies within a Zone AE floodplain designation which documents that base flood elevations have been determined. The Project will cooperate with the required Morgan County floodplain mitigation efforts. There are no erosion or slope stability concerns associated with the Project area. The Project area does not host any mapped critical habitats for threatened or endangered species according to the U.S. Fish and Wildlife Services. The Project area hosts more than 90% of soil classified as non-prime farmland and the minimal portion that does have prime farmland is contingent upon irrigation to meet this classification.

Overland will contribute to the encouraged use of renewable resources within Morgan County and the State of Colorado by providing green hydrogen produced by renewable energy generated within PSCo's service territory. Hydrogen has many planned uses within the e-fuels sector and is commonly linked to the supplementation of the electric vehicle industry.

- C. Land Use – “To encourage development where: 1) it is in proximity to the activity centers; 2) the proposed development is compatible with existing land uses; 3) there is access to established public infrastructure (primarily roads and utilities); and 4) where in outlying areas of the county there is access to utilities and there is little additional burden on rural services.”

The Project area is approximately 1 mile south of the City of Brush and is within proximity to Xcel Energy's Pawnee generation facility, the Brush Cogeneration Facility, and multiple energy assets that are in development. The Project area has Agricultural zoning, allowing for large-scale renewable energy development through a Special Use Permit with Morgan County. There is adequate access to the Project area via County Road 28 with existing electrical infrastructure nearby. The Project will access a nearby MCQWD groundwater well for water supply, as memorialized by a will-serve letter provided to Overland by MCQWD.



The Project will utilize a planned, nearby injection well to dispose of concentrated brine waste. The Project is sited to provide no additional burden on rural services.

- D. Utilities – “To ensure that adequate and financially secure public utilities are provided to all developments in Morgan County.”

Overland will require access to telecommunications via the Internet for the O&M facility, which is within proximity to the Project vicinity. Overland will interconnect to Xcel Energy’s existing electrical infrastructure through a gen-tie and substation for power supply. The Project is compatible with the existing transmission infrastructure in the area and will not have a negative impact on the transmission uses present in the area. The Project will utilize an existing groundwater well nearby for water supply and pay for service through MCQWD. The Project will utilize a nearby injection well (currently in development) for the disposal of concentrated brine produced by the Project. Coordination between MCQWD and the injection well developer is underway for the development of these utilities. Overland will coordinate with the appropriate City of Brush departments to provide utilities to the O&M facilities on site.

- E. Circulation and Transportation – “To provide the residents and businesses in Morgan County with a circulation system that connects the major county activity centers with the outlying communities of the county, regional employment generators and the rest of the state in the interests of providing economic opportunity, access efficiency and safety and improving the quality of life.”

- *Policy 1: “New developments may be required to mitigate impacts to the existing road systems.”*

Access to the Project Area will generally utilize Business Route 76 during daily operations. Overland haul routes will be established in coordination with the Morgan County Road & Bridge Department (“Road and Bridge”) to have the least impact to existing travel patterns. The following preferred haul route has been identified by Road and Bridge: From the West on Interstate 76 (Heartland Expressway) the Project can be accessed by taking Exit 92 to travel South on Highway 6 and merging onto Highway 34, then turn left onto Highway 71, then continue West onto County Road R, and turning South onto County Road 28 to the Project Area (As generally depicted in Figure 5, below). Overland has consulted with the Morgan County Road and Bridge Departments to plan the best transportation routing to minimize the Project’s impact on existing roadways.

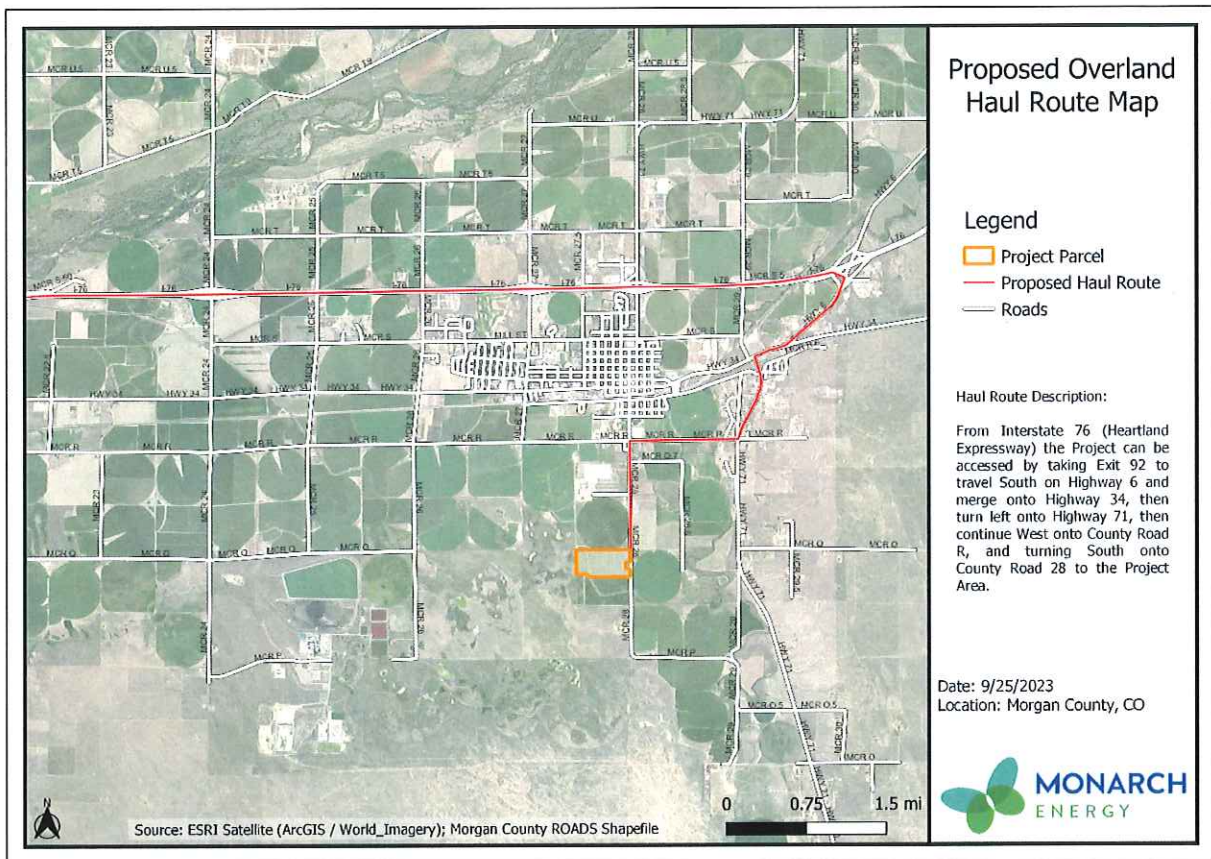


Figure 5: Proposed Overland Haul Route Map

The Project area will see an increase in traffic along county-approved haul routes during the construction phase of the project. The most disruptive construction traffic will happen at the beginning of this phase while equipment and materials are brought to the site. Following delivery, most of the construction activities over the next several months will only require smaller, on-site construction vehicles. Construction crews will require transportation to and from the construction site. Most of the traffic during the construction phase will happen outside of peak traffic times. Any larger vehicles entering or exiting the Project area will adhere to any maximum capacity requirements for county and rural roads. Overland will repair any damage caused by the Project to the approved transportation routes. Overland will negotiate a Construction Road Use Agreement with Morgan County prior to the start of construction.

During operations, there will be some traffic increase from workers traveling to and from the site and off-site transportation of hydrogen fuels. Annually, there will be 14 trucks of hydrogen fuel transported per day from the Project site to the State Highways. Given this limited traffic, operations are not expected to impact traffic circulation.

As outlined in the section above, the proposed Overland Hydrogen and E-fuels Project is consistent and complies with the guiding principles, goals, and policies for economic development, environment, land use, utilities, and transportation identified in the Morgan County Comprehensive Plan (2008).



**Compliance of Criteria for Review of Special Use Permits**

Through extensive discussion with the Morgan County Planning and Zoning Department, it is anticipated that the Overland Hydrogen and E-fuels Project will comply with the existing Zoning Regulations<sup>2</sup>. Overland will be examined under the regulatory requirements of Section 2-395 of the Zoning Regulations (Special Use Permits - Criteria Review). The Project will be a permitted use under a SUP within the Agricultural Production Zone (A).

The following criteria will be used by the Planning Commission and the Board when reviewing an application for a SUP:

- A. The use and its location as proposed are in conformance with the Morgan County Comprehensive Plan;
  - The Project is an allowed use under a SUP within the Agricultural Production Zone and aligns with Morgan County's Comprehensive Plan as demonstrated above. The Project goals and intent are consistent with that of the Morgan County Comprehensive Plan. Overland will provide economic benefits to the County and foster the growth of additional renewable resources in the region.
- B. All the application documents are complete and present a clear picture of how uses are to be arranged on the site or within Morgan County;
  - The Site Plan in Exhibit 1 provided presents a clear and complete picture of the layout of facilities within the Project Area.
- C. The site plan conforms to the district design standards of these Regulations;
  - The site plan presented with this application conforms to the regulations outlined in Sections 2-410 (Site Plan) and 2-240 (Special Use Plan Map).
- D. All on and off-site impacts have been satisfactorily mitigated either through agreement, public improvements, site plan requirements, or other mitigation measures;
  - Before construction, Overland will comply with all plans and agreements required to obtain a building permit for the Project. Necessary mitigation for the issuance of the CUP and building permit will be fully identified at that time and reviewed with appropriate Morgan County Staff.
- E. The special use proposed has been made compatible with the surrounding uses and adequately buffered as determined by the County;
  - Overland is sited on active agricultural land and is an allowed use for this development through a SUP. The Project Vicinity includes both Xcel Energy's Pawnee generation facility and the Brush Cogeneration Facility which were both developed on land with similar characteristics to the Project area.
  - The Project will adhere to all county setback requirements for allowed developments under a SUP. The existing contours of the land, vegetation, trees, and setback Project location should prove sufficient as a visual buffer from the several nearby residences.

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<sup>2</sup> *Morgan County Zoning Regulations*, prepared by Morgan County, Adopted June 2007, Updated through November 2019

Overland puts an emphasis on responsible siting during the initial phase of the development process and has allowed for a reasonable distance between the Project and potential, nearby visual impacts (residences and County Rd 28).

- F. The special use poses only the minimum amount of risk to the public health, safety, and welfare as set by either federal, state, or county regulations, whichever is the strictest;
- The proposed facility is about a mile from the nearest population center and surrounded by agricultural land, which will create a buffer to minimize public health risk. Further, although hydrogen production using renewable energy and electrolysis is a new endeavor within the United States, industrial hydrogen production from fossil fuel-derived sources at refineries and other chemical manufacturing facilities is an extremely mature industry with established safety protocols. Overland's planned development will comply with these existing safety regulations at all federal, state, or local levels and prepare an Emergency Response Plan and a Risk Management Plan (RMP), including Hazardous Operations Analysis (HAZOP), as required by the code or Federal Regulations (40 CFR 68) and OSHA Process Safety Management requirements. The Project will develop an Emergency Response Plan (ERP) as outlined in the Additional Materials at the end of this application.
- G. The special use proposed is not planned to be developed on a non-conforming parcel;
- The Project is on private property in the Agricultural Production Zone, which allows the development of renewable resources under a SUP. Therefore, Overland is a conforming land use.
- H. The applicant has adequately documented a public need for the project, all pertinent technical information, adequate financial resources to implement it, and has paid all fees and review costs levied by the County for application processing and review;
- Overland will contribute to the stabilization of the current and future electrical grid and allow for the development of additional renewable resources in the region by acting as a load on PSCo's system. PSCo's recent request for additional renewables supports a documented, public need for built infrastructure such as this.
  - Monarch has extensive experience in the development of utility-scale energy assets from conception to operation. Overland will align with the appropriate contractors and partners to develop, construct, and operate the Overland Hydrogen and E-fuels Facility.
  - Overland will adhere to the County's Submittal Requirements (Section 2-380), Review Procedures (2-385), and Notice Requirements (2-390).
- I. For any special use requiring a supply of water that the applicant has demonstrated a source of water that is adequate for the proposed use in terms of quantity and reliability and in the case of human consumption, quantity, quality, and reliability.
- MCQWD has provided Overland with a letter describing their ability to serve the Project with an adequate water supply to produce hydrogen through electrolysis. A copy of that letter is included in Exhibit 2.

#### **Impact on Adjacent Uses and County Services**

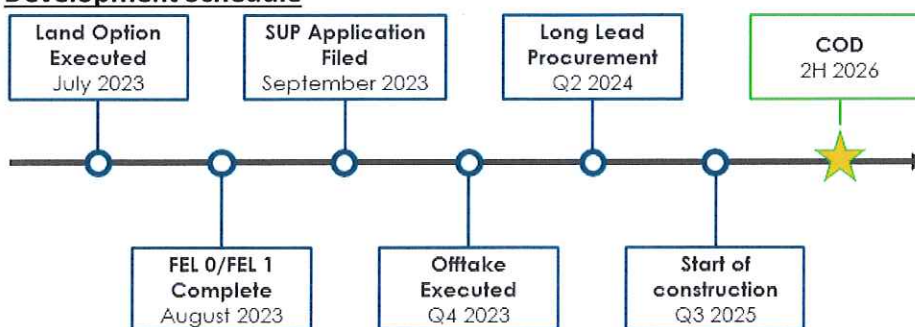
- Existing Adjacent Uses: The Project may have temporary impacts on existing adjacent uses during the construction phase. There may be an increase in traffic due to the delivery of



materials and the construction crew's transportation. There may also be an increase in noise during this phase of the project. During operations, typically the number of onsite workers will be 20 to 30 to operate the plant which would not result in traffic impacts to adjacent neighbors. An emergency response plan will be implemented to minimize any safety impacts to adjacent uses. Aside from the minor, temporary construction impacts, the Project is not anticipated to have a significant impact on existing adjacent uses.

- **Off-site Impacts:** The Project may have minor impacts on off-site activities during construction from increased traffic due to the construction crew's presence. There may be an increase in spending within the City of Brush and adjacent population centers due to the construction crews' utilization of marketed facilities such as gas stations, grocery stores, hospitality facilities, etc. The Project is not anticipating additional operating or infrastructure costs to Morgan County, public agencies, or local utilities. Overland will address any impacts on roadways from transportation, heavy equipment, or large deliveries by implementing a Traffic control Plan or Road Use Agreement, as requested by Morgan County. These agreements will require Overland to restore any roadways impacted by the Project during the construction and operation periods. Local, regional, and statewide employment should benefit during the construction phase of the project due to the need for those in the construction trades.
- **County Services Impacts –** During construction there may be temporary impacts on local housing and hotels. Given the relative proximity to the population centers of Brush and Fort Morgan and the major population area in Fort Collins, there will be adequate housing and other county services for temporary workers. Overland will also provide full-time employment to approximately 20-30 individuals to operate the Project's O&M facility. This number of full-time workers should not negatively impact available housing. Service availability for water and wastewater has already been confirmed with the appropriate entities. Further, MCQWD will implement a groundwater recharge plan for the Brungardt West Well to replenish groundwater supplies (for Brungart and other wells as required by the State of Colorado Water Court under the Double K Recharge Project). Local emergency responders are not expected to require new or additional equipment to respond to a fire, hazardous substance, or medical emergency relating to the Project beyond first aid, medical emergency, and fire vehicles and equipment typically found in rural fire departments. The Project is committed to training and informing first responders about the Project and its components to respond in the unlikely event of an emergency. The Project is not anticipated to cause a substantial increase in fire or police services.

#### Development Schedule





**Length of Permit**

The Project has a maximum useful life of 35 years. Overland requests the length of permit to run in parallel to the life of the Project. As indicated in the Development Schedule above, due to long lead procurement and the time required for construction the duration from the time of the SUP application submittal to COD is approximately 3 years. Therefore, it is requested that a time frame of approximately 3 years from SUP approval to completion of construction be allowed for this facility.

**Public Improvements**

There may be required public improvements to support the O&M facilities for the Project. Overland will coordinate with the necessary departments at the City of Brush and Morgan County to qualify for these improvements.

## **Environmental Impacts**

**Baseline Conditions**

- Baseline conditions for the Overland Project were assessed using, among other methods, desktop reviews using publicly available data bases and field-based preliminary studies and reports, including:
- Critical Issues Assessment, (Tetrattech 2023)
- Hydrologic and Hydraulic Report (Tetrattech 2023)
- USACOE Nationwide Wetland Inventory Database
- USFWS IPaC
- State of Colorado, Water Court, Water Division No. 1, Case No 19CW3230
- A summary of these reviews, studies and findings is provided and evaluated by section for key environmental impact areas.

**Air Quality**

Temporary impacts to air quality may occur due to construction fugitive dust and fossil-fueled equipment activities. However, these will only occur for a short duration and will have no long-term impacts.

During operations, the inputs for the Project are renewable electricity and water. Following the separation of the hydrogen and oxygen molecules, the hydrogen is captured and stored while the oxygen is released into the atmosphere. The Project will seek to obtain an operations Air Permit Exemption from the Colorado Department of Public Health & Environment – Air Pollution Control Division to validate that there are no air quality concerns associated with the Project.

The Project is not anticipated to negatively impact air quality during construction or operation.

**Noise**

There will be noise generated during the construction phase of the Project. Trucks will visit the site to drop off building materials and heavy machinery will be used during the assembly process. Much of the Project-related activity will be similar in volume to that produced during modern agricultural production. Due to the location of the Project, no negative impacts relating to noise are anticipated.

During operations, there will be noise generated from pumps, compressors, and other standard industrial equipment. The site is not anticipated to have any adverse impacts due to the remote location in relation to population centers.

### **Wetlands**

Based on an initial review of the US Fish and Wildlife Service ("USFWS") National Wetlands Inventory Mapper<sup>3</sup>, there is no presence of wetlands within the Project area (as shown in Exhibit 3). Overland will consult with the US Army Corps of Engineers to verify this finding. The Project is not anticipated to negatively impact wetlands within or near the Project area.

### **Dust**

There may be dust generated during the construction phase of the Project, including ingress and egress of traffic to the site, grading, and operation of heavy machinery. Any potential dust may be mitigated through water application during peak construction periods. During operation, the Project may generate minimal dust from ingress and egress of traffic to the site and can utilize similar dust suppression methods to those used during the construction phase of the Project. Therefore, dust is not anticipated to have any significant impacts off-site or to existing adjacent uses.

### **Odor**

There may be odor produced during the construction phase of the Project from the exhaust of vehicles and heavy machinery entering and exiting the property. Much of the Project-related odor produced during construction will be similar to that of the numerous agricultural operations inhabiting the region. The operating project should not be a source of odor.

### **Wildlife**

Based on a review of the USFWS IPAc<sup>4</sup> database there are no anticipated significant wildlife issues within the Project area. No critical habitats have been identified. Consultation with USFWS and CDWP will be conducted to obtain agency concurrence. The Project is not anticipated to negatively impact critical habitats or threatened or endangered species within or near the Project area. Potential threatened or endangered species in the project area are shown in Table 1, below.

Species	Status	Potential Presence
Gray Wolf ( <i>Canis lupus</i> ) - mammal	Endangered	Low, disperse gray wolves may be present throughout the State of Colorado. No significant wildlife corridors in project area.
Piping Plover ( <i>Charadrius melodus</i> )- bird	Threatened	Low, prefers large water bodies with sandy beach features. No such features on the project site.
Whooping Crane ( <i>Grus americana</i> )-bird	Endangered	Low, prefers large water bodies or water complexes with sandy soil beach features. No such features on the project site.

<sup>3</sup> <https://www.fws.gov/program/national-wetlands-inventory>

<sup>4</sup> <https://ipac.ecosphere.fws.gov/>



Pallid Sturgeon ( <i>Scaphirhynchus albus</i> ) - fish	Endangered	Unlikely, no water stream habitat present
Monarch Butterfly ( <i>Danaus plexippus</i> ) - insect	Candidate	Unlikely, no monarch habitat present
Ute Ladies'-Tresses ( <i>Spiranthes diluvialis</i> ) - flowering plants	Threatened	Low, site disturbed by farming activities
Western Prairie Fringed Orchid ( <i>Platanthera praeclara</i> ) - flowering plant	Threatened	Low, site disturbed by farming activities

Table X1 – List of potential Flora and Fauna at the Site

The Project Vicinity could provide habitat suitable for migratory birds and general avian species. However, the Project area is previously disturbed with existing agricultural practices and there are no trees or water features that may cause avian species to congregate on the site. Further, the limited acreage of the site should not impact available habitat for avian species in the Project Vicinity. Consultation with the US Fish and Wildlife Service (USFWS) and Colorado Parks and Wildlife (CDPG) will be performed to verify no significant impacts to protected species will occur.

#### **Existing Vegetation**

The Project area is currently used for agriculture. No additional vegetation is anticipated to be impacted by the construction or operations of the Project.

#### **Storm Water Runoff**

During construction, the project will prepare a Stormwater Pollution Prevention Plan for Construction Activities consistent with General Permit COR 400000 and other requirements from Morgan County. TetraTech (2023) conducted a desktop hydrology study and concluded that with appropriate drainage controls and engineering design any floodplain risk can be minimized. The Project will install and maintain drainage basins (highlighted in the Site Plan) to mitigate the potential for any significant impact caused by stormwater runoff during operations. Given the minimal velocities and flow based on existing landform conditions, minimal scour is expected onsite.

#### **Visual Amenities**

Overland has sited the project away from population centers to minimize visual impacts. There are three landowners situated directly East of the Project that may have viewshed impacts. Overland will coordinate with these landowners to address potential viewshed concerns.

#### **Land Forms**

The Project area is relatively flat ground, and minimal grading for site equipment is expected during construction. Drainage basins will cause some alterations along the edges of the site. The Project is not expected to significantly impact the general landform of this area.

#### **Water Resources**

The Project will utilize a nearby, off-site groundwater well (Brungardt West Well<sup>5</sup>) that will be owned and operated by Morgan County Quality Water Control District for water supply to the electrolyzer. Morgan County will implement a groundwater recharge plan (Double K Recharge Project) to avoid/minimize

<sup>5</sup> State of Colorado, Water Court, Water Division No. 1 – Case No. 19CW3230

impacts to groundwater. There are no water wells or surface waters identified within the Project area. The Upper Platte and Beaver Canal borders the southern edge of the Project parcel, and the Project will adhere to the setback requirements of Morgan County to mitigate any potential surface impact concerns. Therefore, there are no anticipated impacts on adjacent water resources.

**Soils**

The Project area contains soil types classified as loam, clay, or sand. Over 90% of the soils within the Project area are considered non-prime farmland by the U.S. Department of Agriculture ("USDA"). One soil type, Nunn Clay Loam "NcA" consisting of only 8.5% of the acreage within the Project area, has the designation of prime farmland with the contingency that this ground is subject to irrigation. A full Soil Resource Report from the USDA is included in the Hydrologic and Hydraulic Report included in [Exhibit 4](#). Therefore, the Project area location should not be considered prime farmland and should be considered an excellent use for the Project.

**Site Map & Plans****Site Plan**

See the Project Site Plan and Vicinity Map in [Exhibit 1](#).

**Easements**

The Project may require several easements to support the operational phase.

The electrolyzer will receive electricity supply from PSCO's Pawnee substation through Overland-developed gen-tie. The easement should reach the Project from the West. The easement will host a 345 kV overhead transmission line and should be approximately 150 feet in width.

The liquefier may receive electricity from Morgan County Rural Electric Association's (MCREA) transmission operator, Tri-State. Tri-State's 230kV transmission line is sited approximately 1.5 miles East of the Project. The easement for the liquefier is anticipated to be 100 feet in width and will host overhead transmission to supply firm power.

The fuel cell may supply electricity to PSCO's Pawnee substation, which is located approximately 2.5 miles to the West. The easement will host a 69kV overhead transmission line and is anticipated to utilize a path like that of the third-party transmission supplying the electrolyzer.

The water supply for the electrolyzer will require a pipeline easement to access the MCQWD well on the adjacent property. This easement will be approximately 30 feet in width.

**Drainage/Run-off Control Plan**

See Drainage/Run-off Control Plan in [Exhibit 4](#).

**Ownership**

A copy of the redacted lease has been included in [Exhibit 5](#).

Proof of a Title Commitment for the property has been included in [Exhibit 6](#).

A Mineral Report has been included in [Exhibit 7](#).



Proof of current, paid taxes has been included in Exhibit 8.

## **Utilities/Access**

### **Water**

MCQWD has provided Overland with a 'Water Availability / Will-serve Letter' from the groundwater well at the following location: W1/2 Section 15, Township 3 North, Range 56 West (AKA Brungardt Property). In December 2019, MCQWD filed an application for water rights in District Court, assigned Case No 19CW323. Public comment has been completed on this application and this case is set for trial in January 2024 which will provide MCQWD the ability to supply the Project with the raw water necessary for facility operations.

The Project's O&M facility will need limited potable water access for worker's sanitary and drinking water during the operational phase of the project. Overland will coordinate with Morgan County prior to construction to enter into a use agreement for the O&M building.

### **Sewer**

Overland plans to utilize an in-development, nearby disposal injection well for the Project's wastewater. The well owner will provide Overland with a 'Will-serve Letter' for utilization of the proposed injection well once they have made sufficient progress of their development.

The Project's O&M facility will need sewer access during the operational phase of the project. Overland will coordinate with Morgan County before construction to enter into a use agreement.

### **Electric**

The Project's O&M facility will need access to electrical services during the operational phase of the project. Overland will coordinate with Morgan County Rural Electric Association ("MCREA") before construction to enter into a use agreement.

### **Driveway Permit**

Overland will cooperate with Morgan County to secure a Driveway Permit prior to construction.

### **Fire Protection**

Overland will cooperate with Morgan County and the Brush Fire Department to develop a Fire Safety and Protection plan before construction.

## **Additional Materials**

### **List of Property Owners within 1,320'**

<b>Landowners</b>	<b>PID(s)</b>	<b>Address</b>
Brush Cogeneration Partners	123111000004	2575 Park Ln Suite 200, Lafayette, CO 80026
City Of Brush	123111000901	PO Box 363, Brush, CO 80723
Hall, Derek E	123115000001	15837 Co Rd 28, Brush, CO 80723
Hall, Randolph	123111000003	16038 Co Rd 28, Brush, CO 80723
Kemmel, James Scott & Joyce Elaine	123110000002; 123114000004	16750 Hwy 71, Brush, CO 80723
Kemmel, Ronald D	123110000003; 123115000003	26976 Co Rd R, Brush, CO 80723
Ley, Martin M & Christal G	123110000009	PO Box 235, Brush, CO 80723
Morgan County Quality Water District	123115000901	PO Box 1218, Fort Morgan, CO 80701
Schluntz Everett Norma Jean Family Trust	123115000002	617 22nd Ave Apt B112, Kearney, NE 68845
Tefft, David & Jeanette	123114000008	15898 Co Rd 28, Brush, CO 80723

### **Decommissioning Plan**

Upon termination of operations, Overland will commence decommissioning the Project within 180 days. Within 12 months following the start of decommissioning, Overland will remove all Project infrastructure from the Project property. Overland shall restore the Project property to the condition prior to development, minus any grading. Overland will provide Morgan County with a full decommissioning plan prior to construction with the following information:

- Contact information for all parties involved (e.g., landowner, developer, utilities, etc.);
- A detailed plan for the removal of all systems and equipment from the site, including provisions for the removal of structures, debris, and cabling including those below the soil surface to depths agreed to in landowner agreements or down to twenty-four (24) inches;
- A cost estimate for the decommissioning prepared by a professional engineer or contractor with expertise in related decommissioning projects;
- Roles and responsibilities of each party involved in the decommissioning.

Overland will adhere to the decommissioning bond or letter or credit requirements of Morgan County.

### **Fire Mitigation and Emergency Operation Plan**

The project will establish and maintain a comprehensive Emergency Response Plan (ERP) as part of its Environmental, Health, and Safety (EHS) protocols. These plans will specifically address potential incidents such as injuries, fires, spills, hazardous material leaks, and operational safety concerns. Their primary goal is to protect the well-being of personnel, prevent environmental impacts, and minimize risks to human health and safety.

The development of emergency response plans will involve collaboration with public emergency response services and the neighboring community, as part of the Risk Management Program (RMP). This ensures that the plans are well-coordinated and aligned with the expertise and resources of local authorities. A site visit ahead of plant startup will be coordinated by Overland for first responders to provide: 1) a physical walkthrough of the plant and 2) conduct on-site safety/response training.

In emergency response and medical services, the project site will mainly rely on the East Morgan County Hospital in Brush, CO, which is about 2 miles northwest of the facility. The local sheriff's department and fire department possess the necessary capabilities to respond to emergencies promptly. In the event of injuries, the fire department can provide initial triage services until emergency personnel from East Morgan County Hospital arrive to transport individuals to the most suitable medical facility.

To ensure the safety of first responders and the public, the local fire department will be provided with detailed information regarding potential hazards associated with both construction and operations. Also, a comprehensive project site plan will be shared with them to facilitate effective emergency response and protect against exposure to hazardous situations in a fire or industrial accident.



The ERP will include the following components to give the County and first responders the best available information on the Project to successfully address an emergency event:

- Site Location (Address and GPS Coordinates)
- Project Equipment Overview
  - Manufacturer, Model, and quantities
  - Total capacities
  - Fire Protection and Safety Measures
  - Alarms and Notifications
  - Enclosure Access
  - Ventilation
- Site Overview
  - Primary Site Access
  - Site Entrance
  - Site map and enclosure layouts
  - Enclosure access
- Public Safety Staging and First Responder Areas
- Emergency Response Considerations (Risks that you are most likely to see at this facility)
  - Leak
  - Fire
- Hazard and Risk Evaluation
  - Potential Site-Specific Hazards
  - Safety Data Sheets (SDS)
  - Site Signage
- Emergency Response Protocol
  - Defensive Approach
  - Managing the Incident
  - Safe Stand-off Distances
  - Personal Protective Equipment (PPE)
  - Working in conjunction with a Subject Matter Expert (SME)



# Proposed Overland Haul Route Map

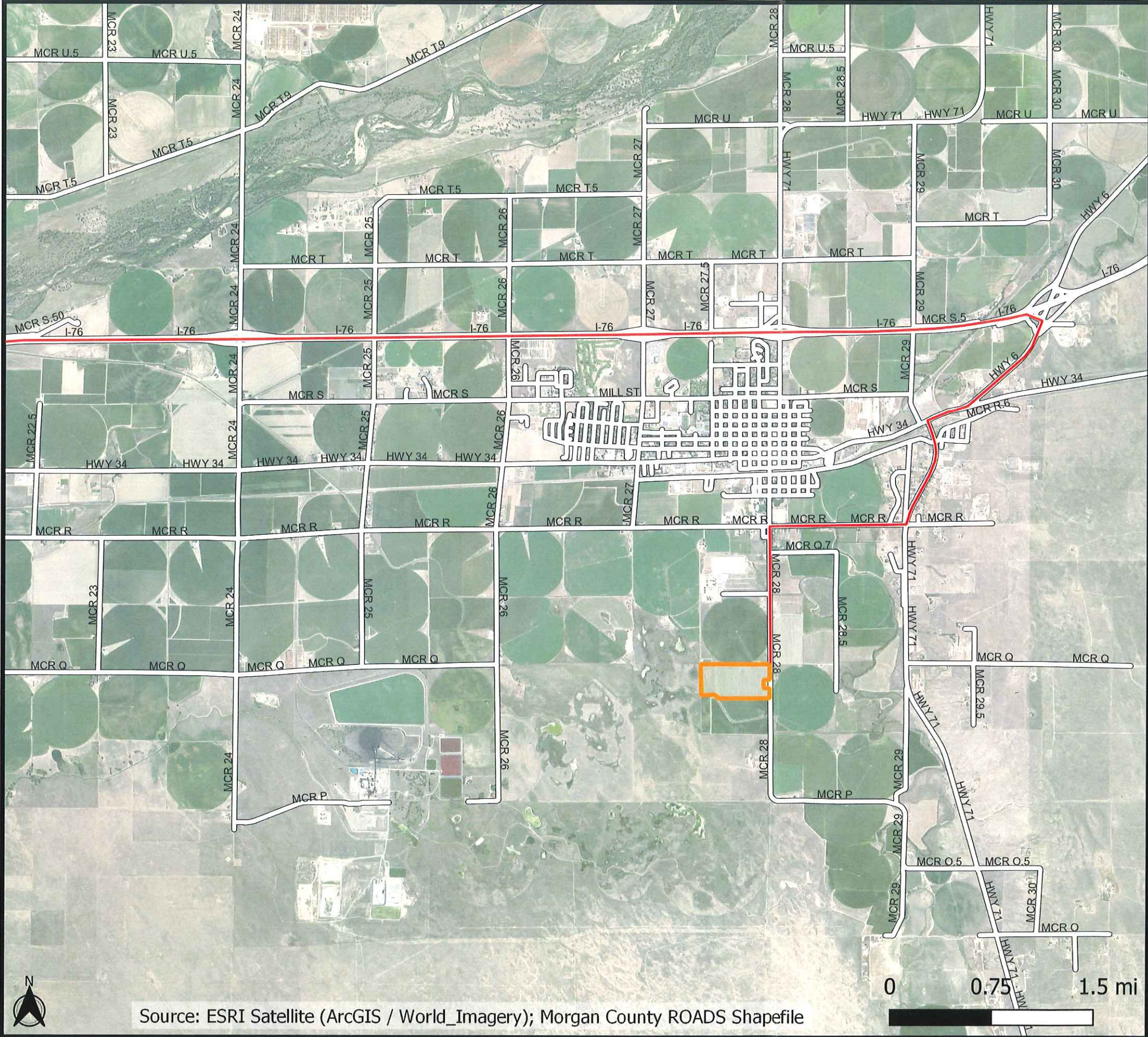
## Legend

-  Project Parcel
-  Proposed Haul Route
-  Roads

### Haul Route Description:

From Interstate 76 (Heartland Expressway) the Project can be accessed by taking Exit 92 to travel South on Highway 6 and merge onto Highway 34, then turn left onto Highway 71, then continue West onto County Road R, and turning South onto County Road 28 to the Project Area.

Date: 9/25/2023  
Location: Morgan County, CO



Source: ESRI Satellite (ArcGIS / World Imagery); Morgan County ROADS Shapefile



Exhibit 1

Conceptual Site Layout

Prepared By: Blake Johnson  
Preparation Date: 9/18/2023

Project Description:  
Type: Hydrogen & E-fuels Facility  
Size: 250MW Electrolyzer, 48MW Fuel Cell, 32MW Liquefier

Property Legal Description:  
N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, EXCEPT a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence 500°02'07"E along the East line of said Section 15 a distance of 622.34 feet; thence S89°57'53"W perpendicular to said east line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796, the point of beginning; thence S00°02'07"E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S.#14796; thence S88°05'26"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N89°55'24"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.

Signature Blocks

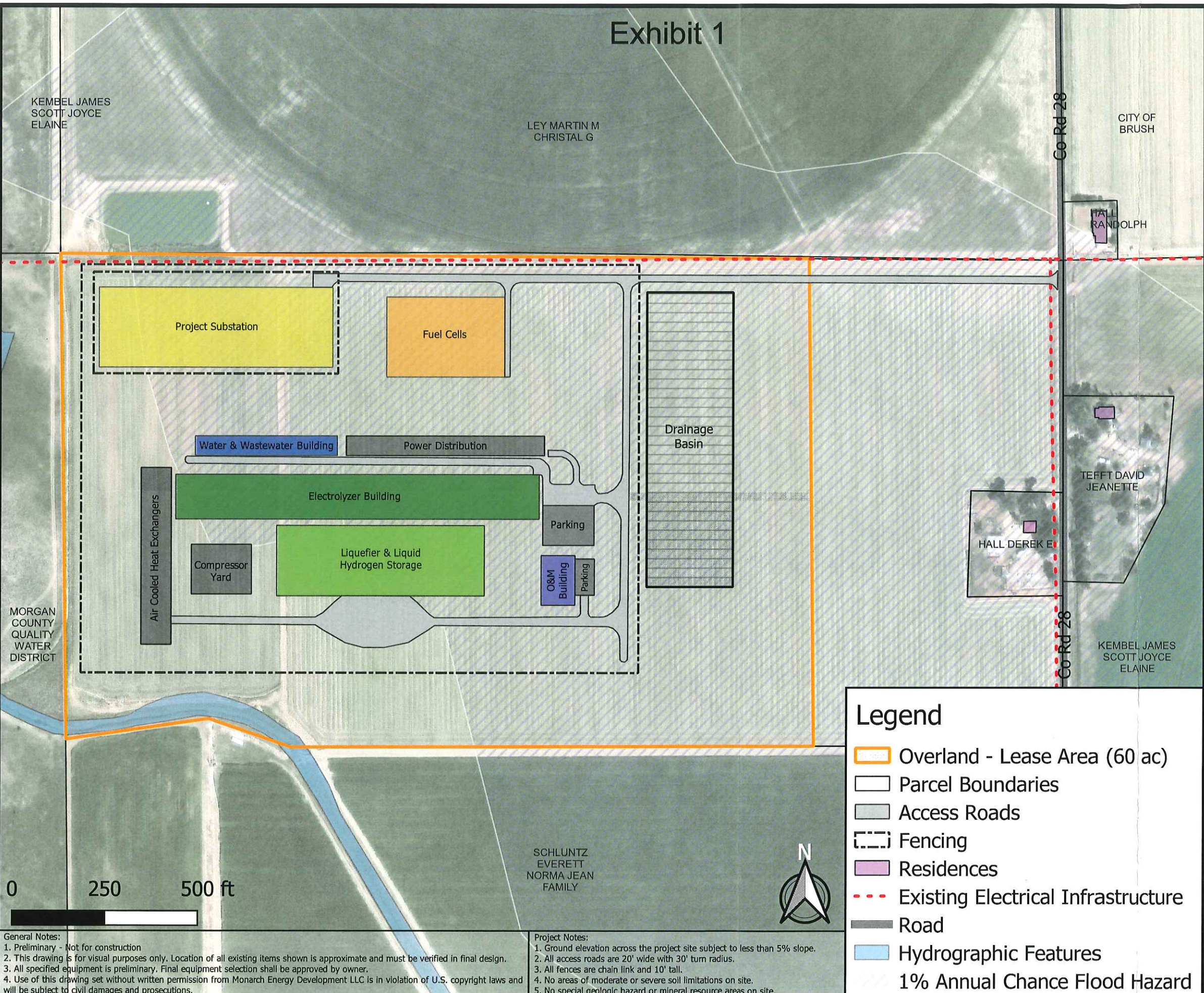
Landowner  
Name:  
Title:

Planning Commission  
Name:  
Title:

County Board  
Name:  
Title:

County Clerk  
Name:  
Title:

Project Information  
Landowner Name: City of Brush  
Landowner Address: 600 Edison St., Brush, CO  
Developer Name: Monarch Energy  
Developer Address: 101 Cooper St., Santa Cruz, CA  
Site Location: ~2 miles South of Brush



Legend

- Overland - Lease Area (60 ac)
- Parcel Boundaries
- Access Roads
- Fencing
- Residences
- Existing Electrical Infrastructure
- Road
- Hydrographic Features
- 1% Annual Chance Flood Hazard

General Notes:  
1. Preliminary - Not for construction  
2. This drawing is for visual purposes only. Location of all existing items shown is approximate and must be verified in final design.  
3. All specified equipment is preliminary. Final equipment selection shall be approved by owner.  
4. Use of this drawing set without written permission from Monarch Energy Development LLC is in violation of U.S. copyright laws and will be subject to civil damages and prosecutions.

Project Notes:  
1. Ground elevation across the project site subject to less than 5% slope.  
2. All access roads are 20' wide with 30' turn radius.  
3. All fences are chain link and 10' tall.  
4. No areas of moderate or severe soil limitations on site.  
5. No special geologic hazard or mineral resource areas on site.

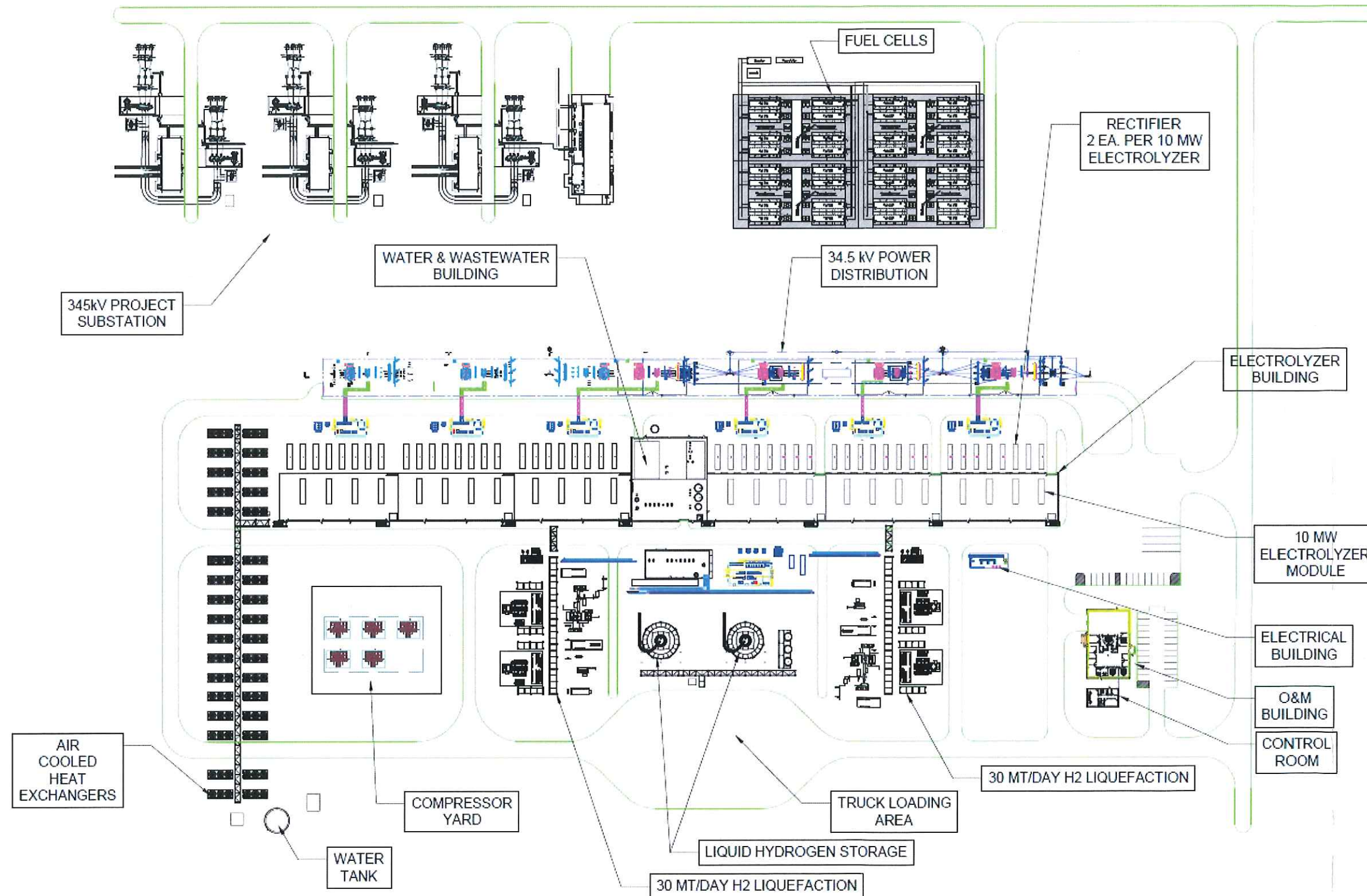


# Conceptual Site Layout Exhibit

Prepared By: Blake Johnson  
Preparation Date: 8/17/2023

Project Description:  
Type: Hydrogen & E-fuels Facility  
Size: 250MW Electrolyzer, 48MW Fuel Cell, 32MW Liquefier

Exhibit Description:  
A visual representation of a layout for a hydrogen and e-fuels facility to the size and scale of the proposed Overland Hydrogen and E-Fuels Facility. This exhibit is for visual purposes only. Final site design is subject to survey and Morgan County approvals.



## General Notes:

1. Preliminary - Not for construction
2. This drawing is for visual purposes only. Location of all existing items shown is approximate and must be verified in final design.
3. All specified equipment is preliminary. Final equipment selection shall be approved by owner.
4. Use of this drawing set without written permission from Monarch Energy Development LLC is in violation of U.S. copyright laws and will be subject to civil damages and prosecutions.

Project Information  
Developer Name: Monarch Energy  
Developer Address: 101 Cooper St., Santa Cruz, CA





Project Vicinity  
Map

Prepared By: Blake Johnson  
Preparation Date: 8/17/2023

Project Description:  
Type: Hydrogen & E-fuels Facility  
Size: 250MW Electrolyzer, 48MW Fuel Cell, 32MW Liquefier

Property Legal Description:  
N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, EXCEPT a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence S00°02'07"E along the East line of said Section 15 a distance of 622.34 feet; thence S89°57'53"W perpendicular to said east line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796, the point of beginning; thence S00°02'07"E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S. #14796; thence S88°05'26"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N89°55'24"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.

Signature Blocks

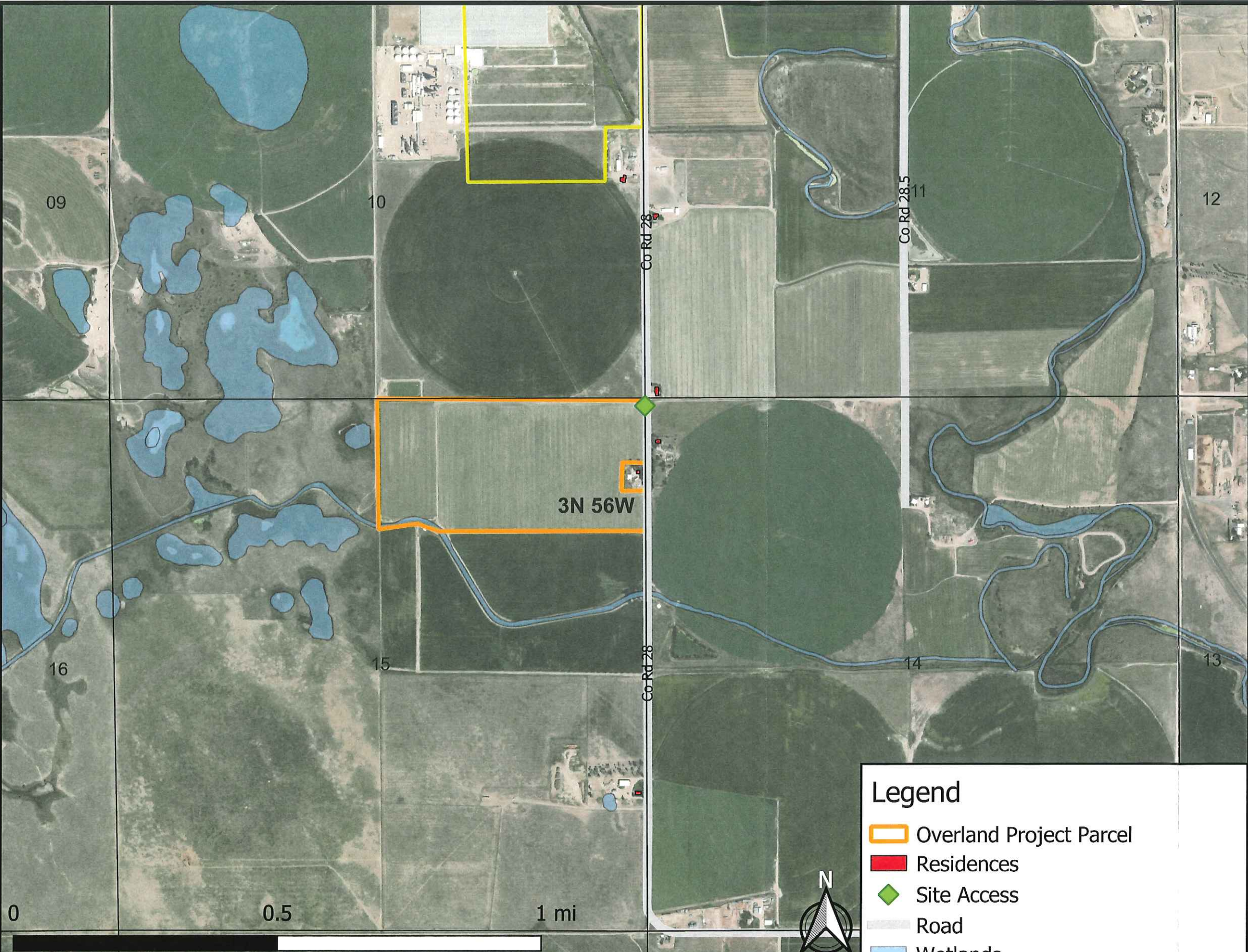
Landowner  
Name:  
Title:

Planning Commission  
Name:  
Title:

County Board  
Name:  
Title:

County Clerk  
Name:  
Title:

Project Information  
Landowner Name: City of Brush  
Landowner Address: 600 Edison St., Brush, CO  
Developer Name: Monarch Energy  
Developer Address: 101 Cooper St., Santa Cruz, CA  
Site Location: ~2 miles South of Brush



Legend

- Overland Project Parcel
- Residences
- Site Access
- Road
- Wetlands
- PLSS Section Lines
- City of Brush - Municipal Boundary

General Notes:  
1. Preliminary - Not for construction  
2. This drawing is for visual purposes only. Location of all existing items shown is approximate and must be verified in final design.  
3. All specified equipment is preliminary. Final equipment selection shall be approved by owner.  
4. Use of this drawing set without written permission from Monarch Energy Development LLC is in violation of U.S. copyright laws and will be subject to civil damages and prosecutions.

Project Notes:  
1. Only residences within 1/2 mile of the project area are represented on the map, per Morgan County regulations.  
2. No subdivisions about the project parcel.





# Morgan County Quality Water District

P.O. Box 1218

FORT MORGAN, COLORADO 80701

Bus: (970) 867-3054

Fax: (970) 867-3055

February 9, 2023

Monarch Energy  
Blake Johnson  
San Diego, CA

Blake,

In December of 2019, Morgan County Quality Water District (the District) filed an application for water rights in District Court, Water Division 1. This case (2019CW3230) is set for trial in January 2024. The District has included the well on the site in questions in this water rights application. Once approved the District will be able to use this well in a commercial water system and supply the water necessary (currently anticipating less than 300 acre feet annually) for the plant's operations. The augmentation credits needed to operate this well will be supplied by augmentation, retine and other wells listed in the decree. The District is currently establishing rates for the Commercial system and we anticipate setting the rates after the public hearing most likely set for the March 10, 2023 Board meeting. Additionally, we currently have a potable water supply available on the property for any of the facility's potable needs.

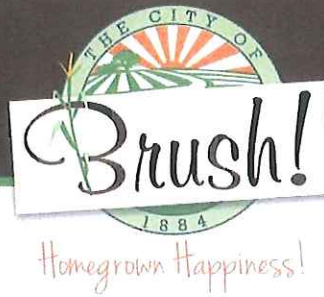
That attempts to sum up a 100 plus page application into a few sentences! Please let me know if you have any questions.

Sincerely,

Kent A Pflager  
General Manager

Exhibit 2





October 16, 2023

Blake Johnson  
Monarch Energy Development LLC  
101 Cooper St.  
Santa Cruz, California 95060

RE: Conditional Letter of Intent for Wastewater Disposal Services

Blake,

The City of Brush has received your request for wastewater brine disposal services from Monarch Energy's proposed hydrogen generation facility to be located on 60 acres of the western portion of N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado. The City of Brush is currently in the process of permitting a deep injection well for the City's own proposed reverse osmosis system brine disposal, to be located on the eastern 19 acres of the same parcel of land. The City is designing the deep injection well to include Monarch Energy's request to dispose of 75-acre feet of brine per year and will represent approximately 40% of the overall disposal well capacity.

The City of Brush has tentatively agreed to provide the disposal services based on the following conditions:

- Suitability of the selected formation to accept reverse osmosis brine based on the chemical composition of the source waters. To date, no immediate concerns have been identified;
- The issuance of a Class I Deep Injection Well permit from the US EPA. The permitting process has already started, and;
- A Brush City Council approved agreement between Monarch Energy and the City of Brush specifying the terms and conditions of the disposal services.

The City of Brush looks forward to assisting Monarch Energy with the proposed project. If you have any questions or comments, please feel free to contact me.

Sincerely,

Dale R. Colerick, Jr.  
Director of Public Works



June 9, 2023

### Wetlands\_Alaska

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Exhibit 3



# Hydrologic and Hydraulic Report

Overland Hydrogen Project  
Morgan County, Colorado

September 2023

**Prepared for**



**Monarch Energy Development, LLC**  
101 Cooper Street  
Santa Cruz, CA 95060

**Prepared by**



390 Union Blvd., Suite 400  
Lakewood, Colorado 80228



## TABLE OF CONTENTS

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
<b>2.0 HYDROLOGY .....</b>	<b>1</b>
<b>3.0 2D MODEL .....</b>	<b>2</b>
<b>4.0 POST DEVELOPMENT .....</b>	<b>12</b>
<b>5.0 CONCLUSION.....</b>	<b>12</b>
<b>6.0 REFERENCES .....</b>	<b>13</b>

## TABLES

Table 1.	Precipitation Depths .....	1
Table 2.	Peak Flow Rates and Runoff Volume .....	2
Table 3.	Pre- and Post-Development CN .....	2

## FIGURES

Figure 1.	10 -year Flood Depth Map .....	3
Figure 2.	50-year Flood Depth Map .....	4
Figure 3.	100-year Flood Depth Map .....	5
Figure 4.	10-year Flood Velocity Map .....	6
Figure 5.	50-year Flood Velocity Map .....	7
Figure 6.	100-year Flood Velocity Map .....	8
Figure 7.	10-year Flood Water Surface Elevation Map .....	9
Figure 8.	50-year Flood Water Surface Elevation Map .....	10
Figure 9.	100-year Flood Water Surface Elevation Map .....	11

## APPENDICES

- Appendix A: NRCS Soils Report
- Appendix B: NOAA Atlas 14 Point Precipitation Frequency Estimates
- Appendix C: FEMA Floodplain Map
- Appendix D: HEC-HMS Peak Discharges

## ACRONYMS AND ABBREVIATIONS

2D	Two Dimensional
BFE	Base Flood Elevation
CDPHE	Colorado Department of Public Health and the Environment
CN	Curve Number
ESC	Erosion and Sediment Control
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HSG	Hydrologic Soil Groups
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resources Conservation Service
SWM	Stormwater Management
SWMP	Stormwater Management Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
WSEL	Water Surface Elevation

## 1.0 INTRODUCTION

On behalf of Monarch Energy Development, LLC (Monarch), Tetra Tech, Inc. (Tetra Tech) has prepared this hydrologic and hydraulic report for the proposed Overland Hydrogen Project (Project). The proposed Project is a hydrogen facility located in Morgan County, Colorado. The Stormwater Management Plan (SWMP) and the Erosion and Sediment Control Plan (ESCP) will be designed following the requirements in the Morgan County Zoning Regulations (Morgan County 2023).

## 2.0 HYDROLOGY

The Project area consists of approximately 78.5 acres of land in Morgan County, Colorado, and is located 1.5 miles outside of the City of Brush. The Project is located off South Clayton Street, which parallels the eastern boundary of the Project area. Existing landcover was obtained from the National Landcover Database. The Project area consists of cultivated cropland and a few dirt access roads.

Soil information was obtained from the National Resources Conservation Service Web Soil Survey (USDA-NRCS 2019). Hydrologic Soil Groups (HSG) A and C are within the Project area. The soil report is provided as Appendix A. HSG C composes the majority of the Project area, or approximately 98.6 percent. Soil types within the Project area are primarily composed of Heldt clay (69.1 percent) and Heldt sandy loam (14.4 percent). HSG A makes up the remaining portion of the Project area in the southwestern corner.

Precipitation data for the 10-, 50-, and 100-year storm events were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Point Precipitation Frequency Estimates for the Project area (NOAA 2017; Appendix B). The precipitation depths for these storm events for a 24-hour duration are summarized in Table 1.

**Table 1. Precipitation Depths**

Storm Event (Year)	Average Depth (inches)
10	2.77
50	3.90
100	4.44

Beaver Creek is located east of the Project along with Upper Platte and Beaver Canal which runs south of the Project boundary. This Project is located within a Federal Emergency Management Agency (FEMA) floodplain zone AE that runs through a majority of the Project area (Appendix C). A two-dimensional (2D) model was performed to analyze the 10-, 50- and, 100-year flood inundation depth, water surface elevations (WSEL), and velocities within the Project area.

Existing topography was obtained from the HEC-RAS mapper U.S. Geological Service's EarthExplorer (USGS 2023). A point of analysis downstream was selected to delineate a subbasin for the Project area. This Project area receives a large amount of offsite drainage that travels from the southern boundary to the northeastern boundary. Based on aerial imagery it appears offsite water is captured by the Upper Platte and Beaver Canal and then conveyed through existing onsite channels. One of these



existing channels runs north to south through the middle of the Project area. Additional channels run parallel to the outside Project boundary. The design is currently based on desktop data, field verified information will be used in the final design.

Peak flow rates for the 10-, 50-, and 100-year storm events were calculated using the U.S. Army Corps of Engineers (USACE) HEC-HMS Hydrologic Modeling System, Version 4.5 (Appendix D). Pre-development peak flow rates and runoff volume for the subbasin are shown in Table 2.

**Table 2. Peak Flow Rates and Runoff Volume**

Storm Event (Year)	Peak Flow Rate (cfs)	Runoff Volume (acre-ft)
10	2,391.60	32,330.494
50	5,433.13	73,445.327
100	7,168.46	96,903.161

In the post-development condition, the impervious portion of the Project area will increase due to the addition of access roads and proposed buildings. The remaining Project area will naturally become desert shrub in the post-development once the site will no longer be irrigated for agriculture. Pre-development and post development curve numbers (CN) were calculated for the Project area. CN values are shown in Table 3.

**Table 3. Pre- and Post-Development CN**

Pre-Development CN	Post-Development CN
85	83

Post development the CN decreases due to existing landcover cultivated crop becoming desert shrub. Consequently, the peak flow rate will decrease post development.

### 3.0 2D MODEL

A 2D model of the pre-development Project area was created using the USACE HEC-RAS River Analysis System, Version 6.4 (USACE 2023) to analyze the 10-, 50-, and 100-year flood depths, WSEL, and velocities. The modeled 10-, 50-, and 100-year flood depths, WSEL, and velocities are shown below in Figures 1 through 9.

Figure 1. 10-year Flood Depth Map





Figure 2. 50-year Flood Depth Map





Figure 3. 100-year Flood Depth Map

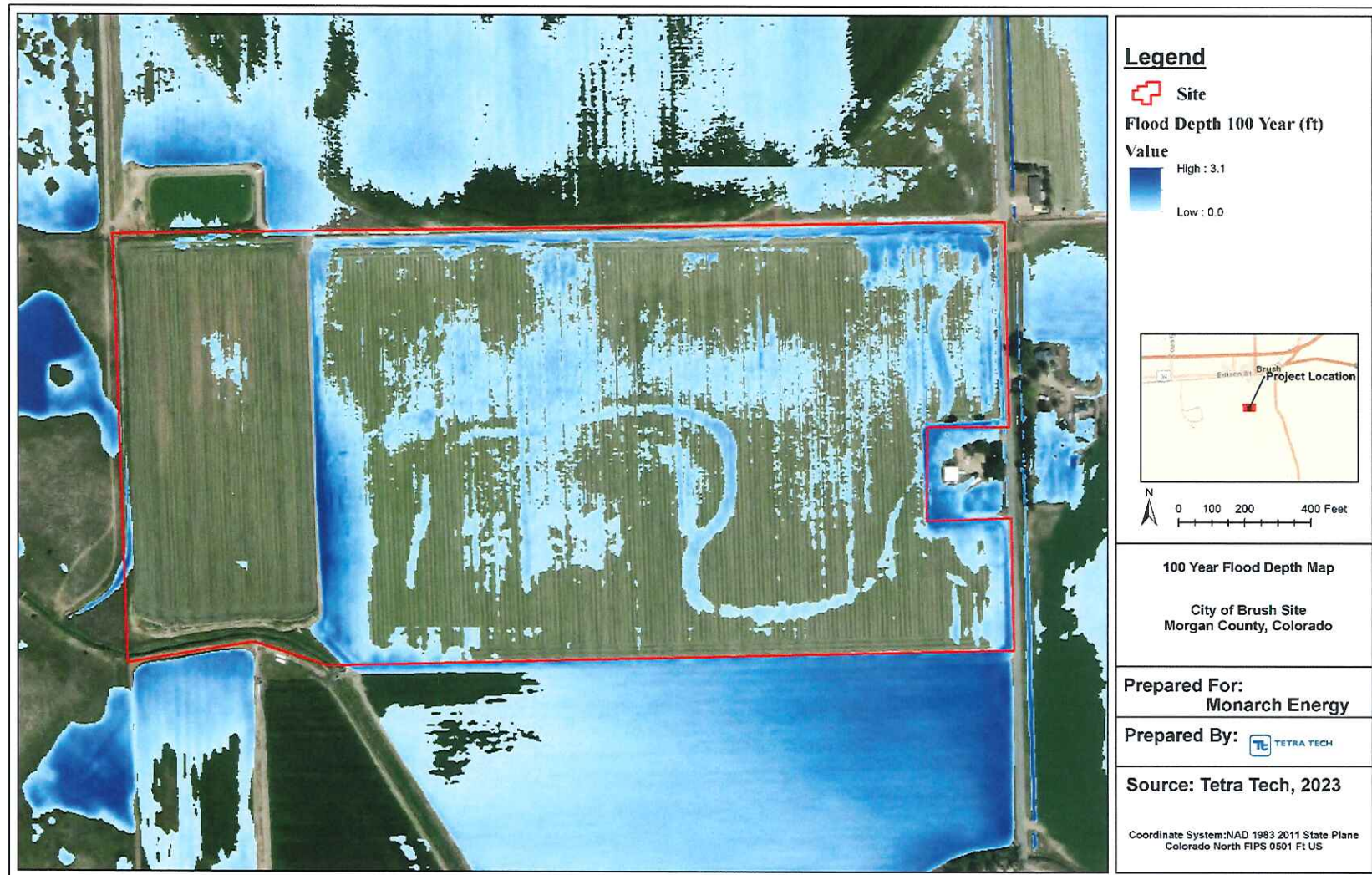


Figure 4. 10-year Flood Velocity Map

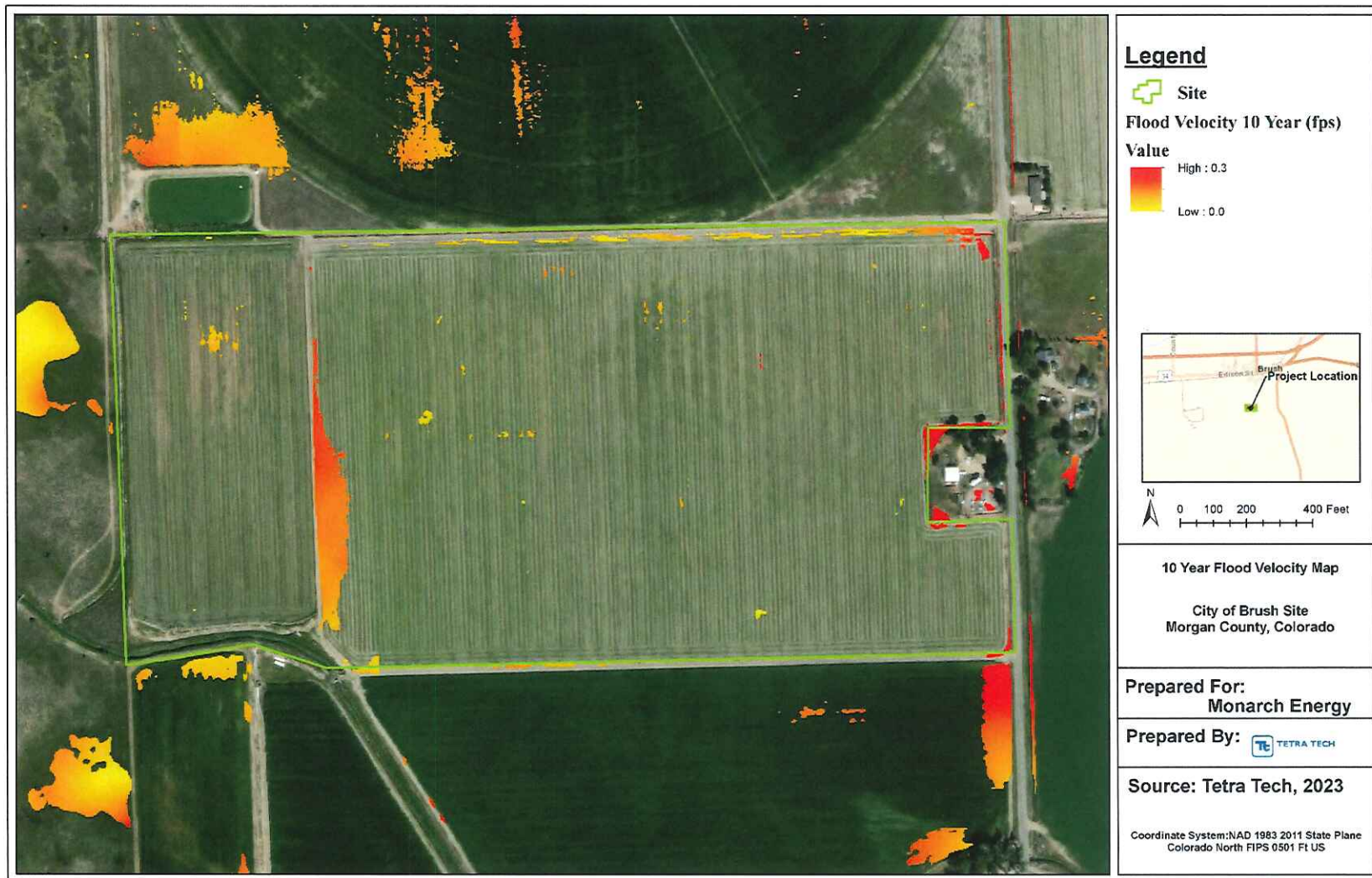




Figure 5. 50-year Flood Velocity Map

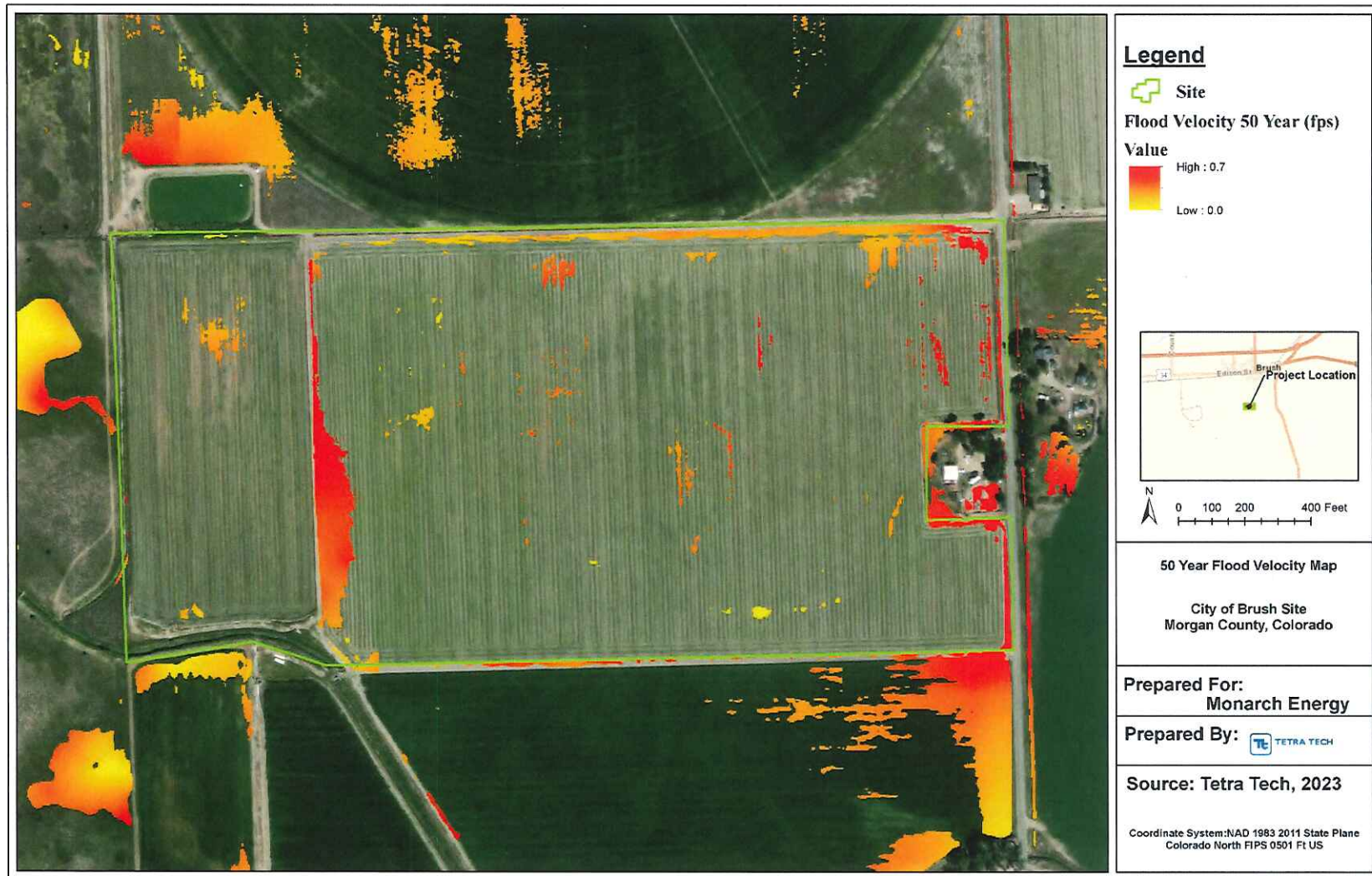




Figure 6. 100-year Flood Velocity Map



Figure 7. 10-year Flood Water Surface Elevation Map





**Figure 8. 50-year Flood Water Surface Elevation Map**

Figure 9. 100-year Flood Water Surface Elevation Map





The depths of the 100-year flood range from 0 to 3.1 feet within the Project area. Areas with flood depths of approximately 3 feet occur in proximity to areas with existing channels that run through and around the Project area.

The FEMA Flood Insurance Rate Map (FIRM) indicated a Base Flood Elevation (BFE) of 4,250 feet near the Project area. This would result in most of the Project area being inundated during a 100-year flood event. As the FEMA BFE does not match the 2D model 100-year inundation depths, Tetra Tech recommends coordination with the Morgan County Planning and Building Department regarding Morgan County floodplain regulations, modeling methods, and potential impacts as outlined in the “Zoning Amendment, Morgan County Floodplain Regulations” dated March 29, 2021. As final design is developed, it will ensure that the hydrogen equipment is above the 100-year water surface elevation by one foot (Zoning Amendment 3-820(D)) and that the proposed development does not increase the BFE by more than one-half foot (Zoning Amendment 3-810(H)).

#### **4.0 POST DEVELOPMENT**

The post-development Project area will be designed following section 3-705 of the Morgan County Zoning Regulations. Retention facilities to capture the 100-year storm will be designed to detain flows. Retention facilities and channels will be placed on the northern and eastern boundary of the site to capture and detain flow across the Project area.

During construction, erosion and sediment controls will be designed following the Morgan County Zoning Regulations and the Colorado Department of Public Health and the Environment (CDPHE) Water Quality Control Division and presented in the ESCP. Control measures will be placed to reduce onsite erosion during construction.

#### **5.0 CONCLUSION**

Tetra Tech recommends additional coordination with the Morgan County Planning and Building Department regarding Morgan County floodplain regulations and the site’s potential impacts. Discussions would include floodplain management processes and procedures, modeling methodologies and result discrepancies, and any applicable coordination and permitting with FEMA.

Retention facilities are required to detain the 100-year storm onsite. The SWMP and ESCP will be designed following the Morgan County Zoning Regulations and the CDPHE Water Quality Control Division regulations.

## 6.0 REFERENCES

- Morgan County Colorado. 2023. *Morgan County Zoning Regulations*. Available online at: <https://morgancounty.colorado.gov/sites/morgancounty/files/documents/Zoning%20Regulations%20-%20012323.pdf>. Accessed September 2023.
- NOAA (National Oceanic and Atmospheric Administration). 2017. *Atlas 14, Brush, Colorado*. Available online at: [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html?bkmrk=pa](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=pa). Accessed September 2023.
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- USDA-NRCS (U.S. Department of Agriculture-Natural Resources Conservation Service). 2019. Web Soil Survey. Available online at: [https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm?TARGET\\_APP=Web\\_Soil\\_Survey\\_application\\_ikzgygw3npuov2hmzd5n0uj](https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm?TARGET_APP=Web_Soil_Survey_application_ikzgygw3npuov2hmzd5n0uj). Accessed September 2023.
- USGS (U.S. Geological Survey). 2023. EarthExplorer. Available online at: <https://earthexplorer.usgs.gov/>. Accessed September 2023.



## **APPENDIX A: NRCS SOILS REPORT**



United States  
Department of  
Agriculture

NRCS

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Morgan County, Colorado



August 29, 2023



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# Contents

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<b>Preface.....</b>	<b>2</b>
<b>How Soil Surveys Are Made.....</b>	<b>5</b>
<b>Soil Map.....</b>	<b>8</b>
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Morgan County, Colorado.....	13
HaA—Haverson clay loam, 0 to 1 percent slopes.....	13
HIA—Heldt clay, 0 to 1 percent slopes.....	14
HvA—Heldt sandy loam, 0 to 1 percent slopes.....	15
NcA—Nunn clay loam, 0 to 1 percent slopes.....	16
VcD—Valent sand, 3 to 9 percent slopes.....	18
Ve—Valent-Dwyer sands, terrace, 0 to 3 percent slopes.....	19
<b>References.....</b>	<b>22</b>

# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil



## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.



## Soil Map










































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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



## MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	 Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	 Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	 Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Morgan County, Colorado  
Survey Area Data: Version 23, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2022—Jun 15, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HaA	Haverson clay loam, 0 to 1 percent slopes	5.2	6.6%
HIA	Heldt clay, 0 to 1 percent slopes	54.5	69.1%
HvA	Heldt sandy loam, 0 to 1 percent slopes	11.4	14.4%
NcA	Nunn clay loam, 0 to 1 percent slopes	6.7	8.5%
VcD	Valent sand, 3 to 9 percent slopes	0.2	0.2%
Ve	Valent-Dwyer sands, terrace, 0 to 3 percent slopes	0.9	1.1%
<b>Totals for Area of Interest</b>		<b>78.9</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

## Custom Soil Resource Report

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Morgan County, Colorado

### HaA—Haverson clay loam, 0 to 1 percent slopes

#### Map Unit Setting

*National map unit symbol:* 3px7  
*Elevation:* 3,500 to 6,000 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 46 to 54 degrees F  
*Frost-free period:* 125 to 180 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Haverson and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Haverson

##### Setting

*Landform:* Flood plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Strongly calcareous loamy alluvium

##### Typical profile

*H1 - 0 to 10 inches:* clay loam  
*H2 - 10 to 60 inches:* stratified sand to clay loam

##### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* RareNone  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* High (about 9.8 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R067BY036CO - Overflow  
*Other vegetative classification:* OVERFLOW (067BY036CO)  
*Hydric soil rating:* No

#### Minor Components

##### Gilcrest

*Percent of map unit:* 8 percent



## Custom Soil Resource Report

*Hydric soil rating:* No

### **Bijou**

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

## **HIA—Heldt clay, 0 to 1 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 1nlfg

*Elevation:* 4,000 to 6,200 feet

*Mean annual precipitation:* 11 to 15 inches

*Mean annual air temperature:* 46 to 59 degrees F

*Frost-free period:* 110 to 150 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Heldt and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Heldt**

#### **Setting**

*Landform:* Stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium clayey

#### **Typical profile**

*H1 - 0 to 5 inches:* clay

*H2 - 5 to 14 inches:* clay

*H3 - 14 to 35 inches:* clay

*H4 - 35 to 60 inches:* clay

#### **Properties and qualities**

*Slope:* 0 to 1 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Gypsum, maximum content:* 1 percent

*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 10.0

*Available water supply, 0 to 60 inches:* Moderate (about 9.0 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated): 3s*  
*Land capability classification (nonirrigated): 4e*  
*Hydrologic Soil Group: C*  
*Ecological site: R067BY042CO - Clayey Plains*  
*Hydric soil rating: No*

### Minor Components

#### Limon

*Percent of map unit: 5 percent*  
*Hydric soil rating: No*

#### Nunn

*Percent of map unit: 5 percent*  
*Hydric soil rating: No*

#### Ulm

*Percent of map unit: 5 percent*  
*Hydric soil rating: No*

## HvA—Heldt sandy loam, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol: 3pxn*  
*Elevation: 4,000 to 6,200 feet*  
*Mean annual precipitation: 11 to 15 inches*  
*Mean annual air temperature: 46 to 59 degrees F*  
*Frost-free period: 110 to 150 days*  
*Farmland classification: Not prime farmland*

### Map Unit Composition

*Heldt and similar soils: 85 percent*  
*Minor components: 15 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Heldt

#### Setting

*Landform: Stream terraces*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Parent material: Clayey alluvium*

#### Typical profile

*H1 - 0 to 12 inches: sandy loam*  
*H2 - 12 to 22 inches: clay*  
*H3 - 22 to 35 inches: clay*  
*H4 - 35 to 60 inches: clay*

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 10.0  
*Available water supply, 0 to 60 inches:* Moderate (about 8.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* R067BY024CO - Sandy Plains  
*Hydric soil rating:* No

### Minor Components

#### Nunn

*Percent of map unit:* 8 percent  
*Hydric soil rating:* No

#### Limon

*Percent of map unit:* 7 percent  
*Hydric soil rating:* No

## NcA—Nunn clay loam, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol:* 2tln  
*Elevation:* 4,100 to 5,700 feet  
*Mean annual precipitation:* 14 to 15 inches  
*Mean annual air temperature:* 48 to 52 degrees F  
*Frost-free period:* 135 to 152 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Nunn and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*



## Custom Soil Resource Report

### Description of Nunn

#### Setting

*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Pleistocene aged alluvium and/or eolian deposits

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt1 - 6 to 10 inches:* clay loam  
*Bt2 - 10 to 26 inches:* clay loam  
*Btk - 26 to 31 inches:* clay loam  
*Bk1 - 31 to 47 inches:* loam  
*Bk2 - 47 to 80 inches:* loam

#### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 7 percent  
*Maximum salinity:* Nonsaline (0.1 to 1.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 0.5  
*Available water supply, 0 to 60 inches:* High (about 9.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* R067BY042CO - Clayey Plains  
*Hydric soil rating:* No

### Minor Components

#### Heldt

*Percent of map unit:* 10 percent  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R067BY042CO - Clayey Plains  
*Hydric soil rating:* No

#### Wages

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* R067BY002CO - Loamy Plains

*Hydric soil rating:* No

### **VcD—Valent sand, 3 to 9 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 2tczf

*Elevation:* 3,050 to 5,150 feet

*Mean annual precipitation:* 12 to 18 inches

*Mean annual air temperature:* 48 to 55 degrees F

*Frost-free period:* 130 to 180 days

*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Valent and similar soils:* 80 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Valent**

##### **Setting**

*Landform:* Hills, dunes

*Landform position (two-dimensional):* Backslope, shoulder, footslope, summit

*Landform position (three-dimensional):* Side slope, head slope, nose slope, crest

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex, linear

*Parent material:* Noncalcareous eolian sands

##### **Typical profile**

*A - 0 to 5 inches:* sand

*AC - 5 to 12 inches:* sand

*C1 - 12 to 30 inches:* sand

*C2 - 30 to 80 inches:* sand

##### **Properties and qualities**

*Slope:* 3 to 9 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Excessively drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 39.96 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 1 percent

*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water supply, 0 to 60 inches:* Very low (about 2.4 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 6e

## Custom Soil Resource Report

*Hydrologic Soil Group:* A

*Ecological site:* R067BY015CO - Deep Sand, R072XY109KS - Rolling Sands

*Hydric soil rating:* No

### Minor Components

#### Dailey

*Percent of map unit:* 10 percent

*Landform:* Interdunes

*Landform position (two-dimensional):* Footslope, toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Ecological site:* R067BY015CO - Deep Sand, R072XA021KS - Sands (North) (PE 16-20)

*Hydric soil rating:* No

#### Vona

*Percent of map unit:* 5 percent

*Landform:* Hills

*Landform position (two-dimensional):* Footslope, backslope, shoulder

*Landform position (three-dimensional):* Side slope, head slope, nose slope, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R067BY024CO - Sandy Plains, R072XA022KS - Sandy (North) Draft (April 2010) (PE 16-20)

*Hydric soil rating:* No

#### Haxtun

*Percent of map unit:* 5 percent

*Landform:* Interdunes

*Landform position (two-dimensional):* Footslope, toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Ecological site:* R067BY024CO - Sandy Plains, R072XY111KS - Sandy Plains

*Hydric soil rating:* No

### Ve—Valent-Dwyer sands, terrace, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2yvr7

*Elevation:* 4,100 to 4,800 feet

*Mean annual precipitation:* 12 to 17 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 130 to 155 days

*Farmland classification:* Not prime farmland



## Custom Soil Resource Report

### Map Unit Composition

*Valent and similar soils: 45 percent*

*Dwyer and similar soils: 44 percent*

*Minor components: 11 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Valent

#### Setting

*Landform: Sand sheets on stream terraces*

*Landform position (three-dimensional): Tread*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Wind-reworked, noncalcareous sandy alluvium*

#### Typical profile

*Ap - 0 to 4 inches: sand*

*C - 4 to 80 inches: sand*

#### Properties and qualities

*Slope: 0 to 3 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Excessively drained*

*Runoff class: Negligible*

*Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 39.96 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Calcium carbonate, maximum content: 1 percent*

*Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*

*Available water supply, 0 to 60 inches: Very low (about 2.4 inches)*

#### Interpretive groups

*Land capability classification (irrigated): 4e*

*Land capability classification (nonirrigated): 7s*

*Hydrologic Soil Group: A*

*Ecological site: R067BY015CO - Deep Sand*

*Hydric soil rating: No*

### Description of Dwyer

#### Setting

*Landform: Sand sheets on stream terraces*

*Landform position (three-dimensional): Tread*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Wind-reworked, calcareous sandy alluvium*

#### Typical profile

*Ap - 0 to 4 inches: sand*

*C - 4 to 80 inches: sand*

#### Properties and qualities

*Slope: 0 to 3 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Excessively drained*

## Custom Soil Resource Report

*Runoff class:* Negligible

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 39.96 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Very low (about 2.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* A

*Ecological site:* R067BY015CO - Deep Sand

*Hydric soil rating:* No

### Minor Components

#### Vona

*Percent of map unit:* 6 percent

*Landform:* Stream terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R067BY015CO - Deep Sand

*Hydric soil rating:* No

#### Olneet

*Percent of map unit:* 5 percent

*Landform:* Stream terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R067BY024CO - Sandy Plains

*Hydric soil rating:* No

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## Custom Soil Resource Report

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## **APPENDIX B: NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES**



NOAA Atlas 14, Volume 8, Version 2  
Location name: Brush, Colorado, USA\*  
Latitude: 40.2309°, Longitude: -103.6256°  
Elevation: 4249 ft\*\*  
\* source: ESRI Maps  
\*\* source: USGS



## POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aeriels](#)

### PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.279 (0.221-0.360)	0.339 (0.268-0.439)	0.447 (0.352-0.580)	0.545 (0.427-0.710)	0.693 (0.528-0.947)	0.816 (0.605-1.13)	0.949 (0.677-1.34)	1.09 (0.746-1.58)	1.29 (0.848-1.93)	1.46 (0.925-2.18)
10-min	0.408 (0.323-0.527)	0.497 (0.393-0.642)	0.655 (0.516-0.849)	0.798 (0.625-1.04)	1.01 (0.774-1.39)	1.20 (0.886-1.65)	1.39 (0.992-1.96)	1.60 (1.09-2.32)	1.90 (1.24-2.82)	2.14 (1.35-3.20)
15-min	0.498 (0.394-0.643)	0.606 (0.479-0.783)	0.799 (0.629-1.04)	0.974 (0.762-1.27)	1.24 (0.943-1.69)	1.46 (1.08-2.01)	1.69 (1.21-2.39)	1.95 (1.33-2.83)	2.31 (1.51-3.44)	2.60 (1.65-3.90)
30-min	0.675 (0.534-0.873)	0.819 (0.647-1.06)	1.08 (0.848-1.40)	1.31 (1.03-1.71)	1.67 (1.27-2.29)	1.97 (1.46-2.72)	2.29 (1.64-3.24)	2.64 (1.81-3.83)	3.14 (2.06-4.67)	3.54 (2.25-5.31)
60-min	0.827 (0.654-1.07)	1.01 (0.795-1.30)	1.33 (1.04-1.72)	1.62 (1.27-2.11)	2.06 (1.57-2.82)	2.43 (1.80-3.36)	2.83 (2.02-4.00)	3.26 (2.23-4.73)	3.87 (2.54-5.76)	4.37 (2.77-6.54)
2-hr	0.978 (0.783-1.24)	1.19 (0.954-1.52)	1.58 (1.26-2.01)	1.92 (1.52-2.47)	2.45 (1.89-3.30)	2.89 (2.17-3.94)	3.36 (2.44-4.69)	3.88 (2.69-5.54)	4.60 (3.06-6.75)	5.19 (3.34-7.66)
3-hr	1.05 (0.849-1.33)	1.28 (1.04-1.62)	1.70 (1.36-2.15)	2.07 (1.65-2.63)	2.63 (2.05-3.51)	3.10 (2.35-4.18)	3.60 (2.63-4.97)	4.14 (2.89-5.87)	4.91 (3.29-7.13)	5.53 (3.59-8.09)
6-hr	1.20 (0.983-1.50)	1.46 (1.19-1.81)	1.90 (1.55-2.37)	2.30 (1.86-2.89)	2.90 (2.29-3.82)	3.40 (2.61-4.52)	3.94 (2.91-5.35)	4.51 (3.20-6.28)	5.32 (3.62-7.61)	5.97 (3.94-8.61)
12-hr	1.39 (1.15-1.71)	1.66 (1.37-2.04)	2.13 (1.76-2.62)	2.55 (2.09-3.15)	3.16 (2.52-4.07)	3.66 (2.84-4.77)	4.19 (3.14-5.59)	4.76 (3.42-6.51)	5.55 (3.83-7.80)	6.18 (4.14-8.77)
24-hr	1.64 (1.37-1.98)	1.90 (1.59-2.29)	2.36 (1.97-2.86)	2.77 (2.30-3.37)	3.39 (2.74-4.30)	3.90 (3.07-5.00)	4.44 (3.38-5.84)	5.02 (3.67-6.77)	5.85 (4.10-8.09)	6.50 (4.43-9.08)
2-day	1.90 (1.61-2.25)	2.16 (1.83-2.57)	2.63 (2.22-3.14)	3.05 (2.56-3.65)	3.67 (3.01-4.58)	4.19 (3.34-5.28)	4.73 (3.65-6.12)	5.32 (3.94-7.05)	6.14 (4.38-8.36)	6.80 (4.71-9.35)
3-day	2.08 (1.78-2.45)	2.34 (2.00-2.76)	2.81 (2.39-3.32)	3.23 (2.74-3.83)	3.85 (3.18-4.76)	4.37 (3.52-5.46)	4.92 (3.83-6.30)	5.51 (4.12-7.24)	6.35 (4.56-8.55)	7.02 (4.90-9.54)
4-day	2.22 (1.91-2.60)	2.49 (2.14-2.92)	2.97 (2.54-3.48)	3.39 (2.89-4.00)	4.02 (3.34-4.93)	4.54 (3.68-5.63)	5.09 (3.99-6.46)	5.68 (4.27-7.40)	6.51 (4.71-8.71)	7.18 (5.05-9.70)
7-day	2.54 (2.20-2.93)	2.85 (2.48-3.30)	3.39 (2.93-3.93)	3.85 (3.32-4.48)	4.52 (3.78-5.43)	5.05 (4.13-6.15)	5.60 (4.43-6.99)	6.18 (4.70-7.91)	6.97 (5.10-9.17)	7.59 (5.41-10.1)
10-day	2.82 (2.46-3.22)	3.18 (2.78-3.64)	3.78 (3.29-4.34)	4.29 (3.72-4.95)	5.00 (4.20-5.94)	5.55 (4.57-6.69)	6.12 (4.87-7.55)	6.70 (5.13-8.49)	7.48 (5.52-9.74)	8.09 (5.81-10.7)
20-day	3.68 (3.26-4.14)	4.16 (3.68-4.68)	4.93 (4.35-5.57)	5.56 (4.88-6.31)	6.43 (5.46-7.49)	7.09 (5.90-8.38)	7.74 (6.24-9.37)	8.40 (6.52-10.4)	9.26 (6.93-11.8)	9.91 (7.24-12.9)
30-day	4.42 (3.95-4.93)	4.99 (4.45-5.57)	5.90 (5.25-6.60)	6.64 (5.88-7.47)	7.64 (6.54-8.79)	8.39 (7.04-9.80)	9.12 (7.42-10.9)	9.84 (7.70-12.1)	10.8 (8.14-13.6)	11.5 (8.46-14.7)
45-day	5.35 (4.82-5.91)	6.05 (5.44-6.69)	7.15 (6.42-7.93)	8.03 (7.17-8.94)	9.19 (7.92-10.4)	10.0 (8.48-11.6)	10.8 (8.89-12.8)	11.6 (9.18-14.1)	12.6 (9.61-15.7)	13.3 (9.93-16.9)
60-day	6.14 (5.57-6.74)	6.96 (6.30-7.64)	8.23 (7.43-9.06)	9.23 (8.29-10.2)	10.5 (9.10-11.8)	11.4 (9.72-13.1)	12.3 (10.1-14.4)	13.1 (10.4-15.8)	14.1 (10.8-17.4)	14.8 (11.1-18.7)
<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.										

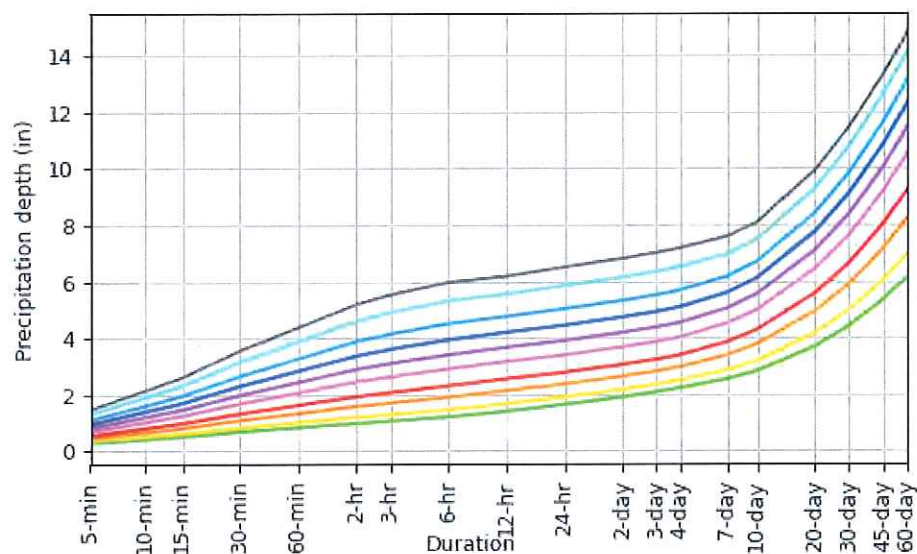
[Back to Top](#)

### PF graphical

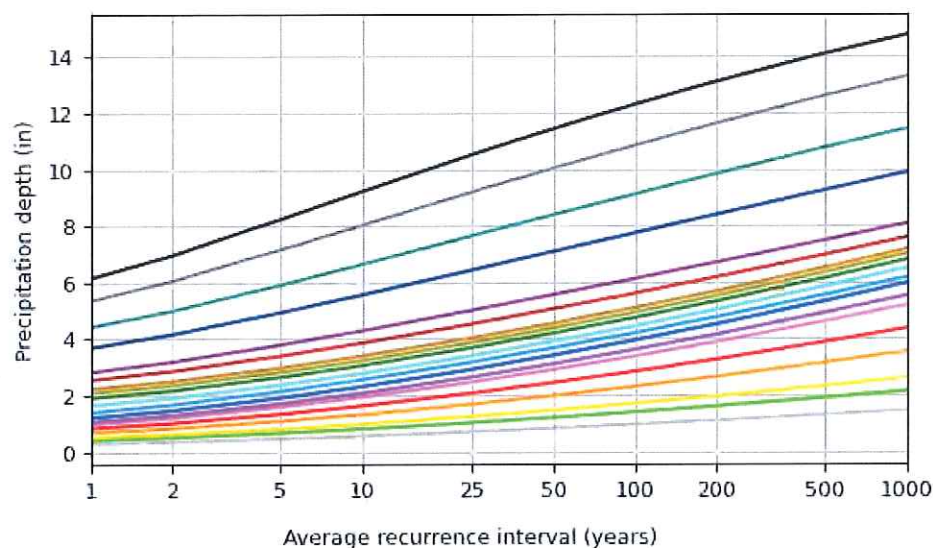


# PDS-based depth-duration-frequency (DDF) curves

Latitude: 40.2309°, Longitude: -103.6256°



Average recurrence interval (years)	
1	2
5	10
25	50
100	200
500	1000

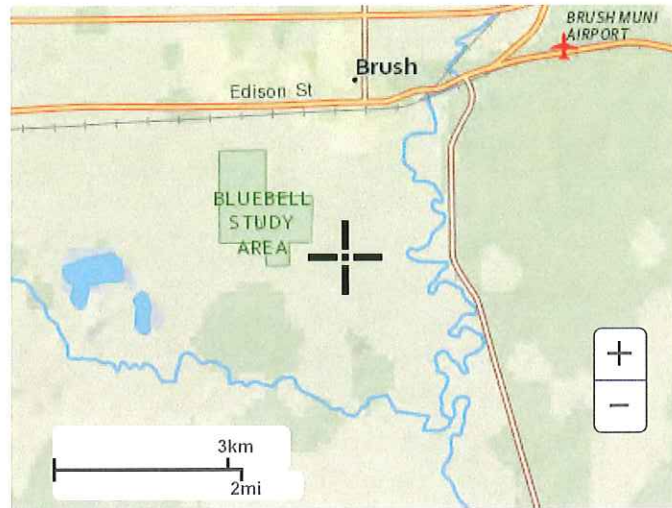


Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

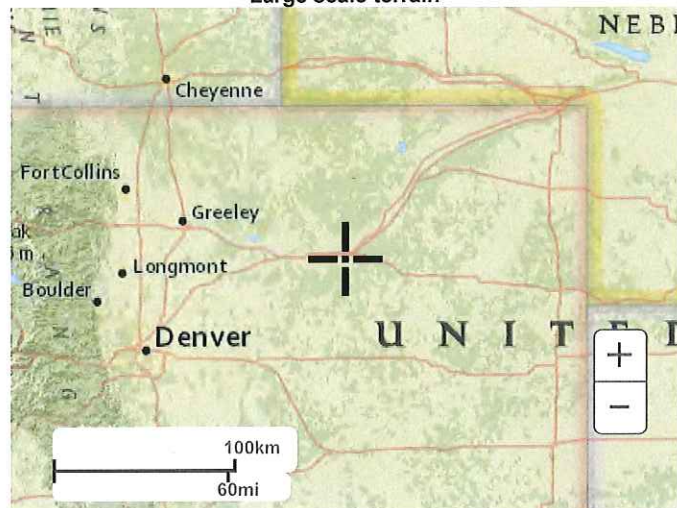
[Back to Top](#)

## Maps & aerals

Small scale terrain



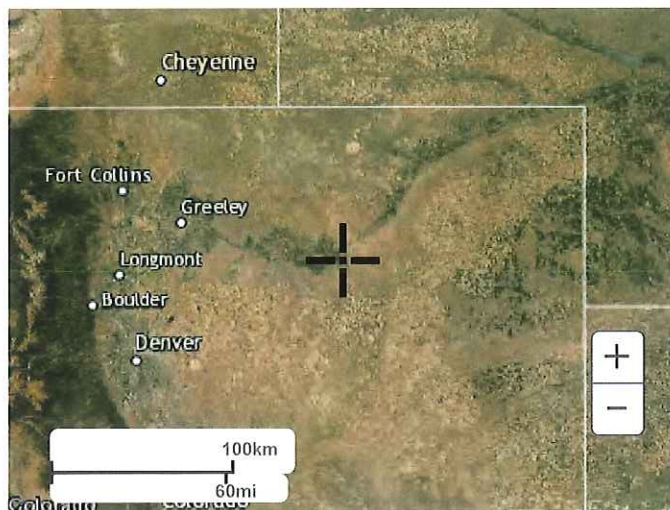
Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

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[US Department of Commerce](#)  
[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)



## **APPENDIX C: FEMA FLOODPLAIN MAP**

# NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Delaware Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies the FIRI. Users should be aware that BFEs shown on the FIRI represent rounded whole-foot elevations. These BFEs are not intended for flood protection purposes and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRI for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.2 North American Vertical Datum of 1988 (NAVD83). Users of the FIRI should be aware that coastal flood elevations are also provided in the Summary of Delaware Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Delaware Elevations table should be used for construction and/or floodplain management purposes where they are higher than the elevations shown on this FIRI.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to recurrence of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The horizontal datum was NAD83. GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRI.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD83). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding differences in datum, spheroid, projection or UTM zones, please consult the National Geographic Survey at (202) 755-1234 or visit its website at <http://www.ngs.noaa.gov>.

NGS Information Services:  
NOAA, NGS012  
National Geographic Survey  
COM-3, 97032  
1315 East-West Highway  
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geographic Survey at (202) 755-3242 or visit its website at <http://www.ngs.noaa.gov>.

**Base Map** information shown on this FIRI was derived from multiple sources. Base map files were provided in digital format by Anderson Consulting Engineers, Inc. This information was compiled from National Geographic Survey (2004), National Aeronautics and Space Administration (2005), Bureau of Land Management (2005), U.S. Department of Commerce (2005). Additional information was photogrammetrically compiled at 1:25,000 scale from aerial photography dated 2005.

This map reflects more detailed and up-to-date stream channel configurations and floodplain delineations than those shown on the previous FIRI for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRI may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contain authoritative hydraulic data) may reflect stream channel elevations that differ from what is shown on this map.

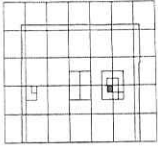
**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or disannexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FEMA) at 1-877-336-2672 for information on available products associated with this FIRI. Available products may include previously issued Letters of Map Change or Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9622 and its website at <http://www.fema.gov>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2672) or visit the FEMA website at <http://www.fema.gov/businessinfo>.

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperative Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWB) and the Federal Emergency Management Agency (FEMA).



Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.

Approximate Site Location

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 33 NORTH, RANGE 54 WEST

# LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, AR, AV, X, and V.

**Zone A** - No Base Flood Elevation (BFE) shown. Areas of potential flood damage.

**Zone AE** - Base Flood Elevation (BFE) shown. Areas of potential flood damage.

**Zone AH** - Areas of high water table. Areas of potential flood damage.

**Zone AO** - Areas of ocean waves. Areas of potential flood damage.

**Zone AR** - Special Flood Hazard Area formerly protected from the 1% annual chance flood by a levee. Areas of potential flood damage.

**Zone AV** - Areas of very high water table. Areas of potential flood damage.

**Zone X** - Coastal flood areas with velocity hazard (wave action). Base Flood Elevation (BFE) shown.

**Zone V** - Coastal flood areas with velocity hazard (wave action). Base Flood Elevation (BFE) shown.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream and any adjacent floodplain areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOODED AREAS**

**Zone X** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone V** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone A** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AE** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AH** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AO** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AR** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AV** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone X** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone V** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone A** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AE** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AH** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AO** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AR** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AV** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone X** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone V** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

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**Zone AH** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

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**Zone AR** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

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**Zone AE** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.

**Zone AH** - Areas of 1% annual chance flood, areas of 1% annual chance flood with wave heights of 10 feet or more, or with wave heights of 10 feet or more.





## **APPENDIX D: HEC-HMS PEAK DISCHARGES**

# **HEC-HMS PEAK DISCHARGES REPORT**

## **OVERLAND HYDROGEN PROJECT MORGAN COUNTY, COLORADO**

**Prepared for:**  
Monarch Energy Development, LLC

**Prepared by:**



**September 6, 2023**

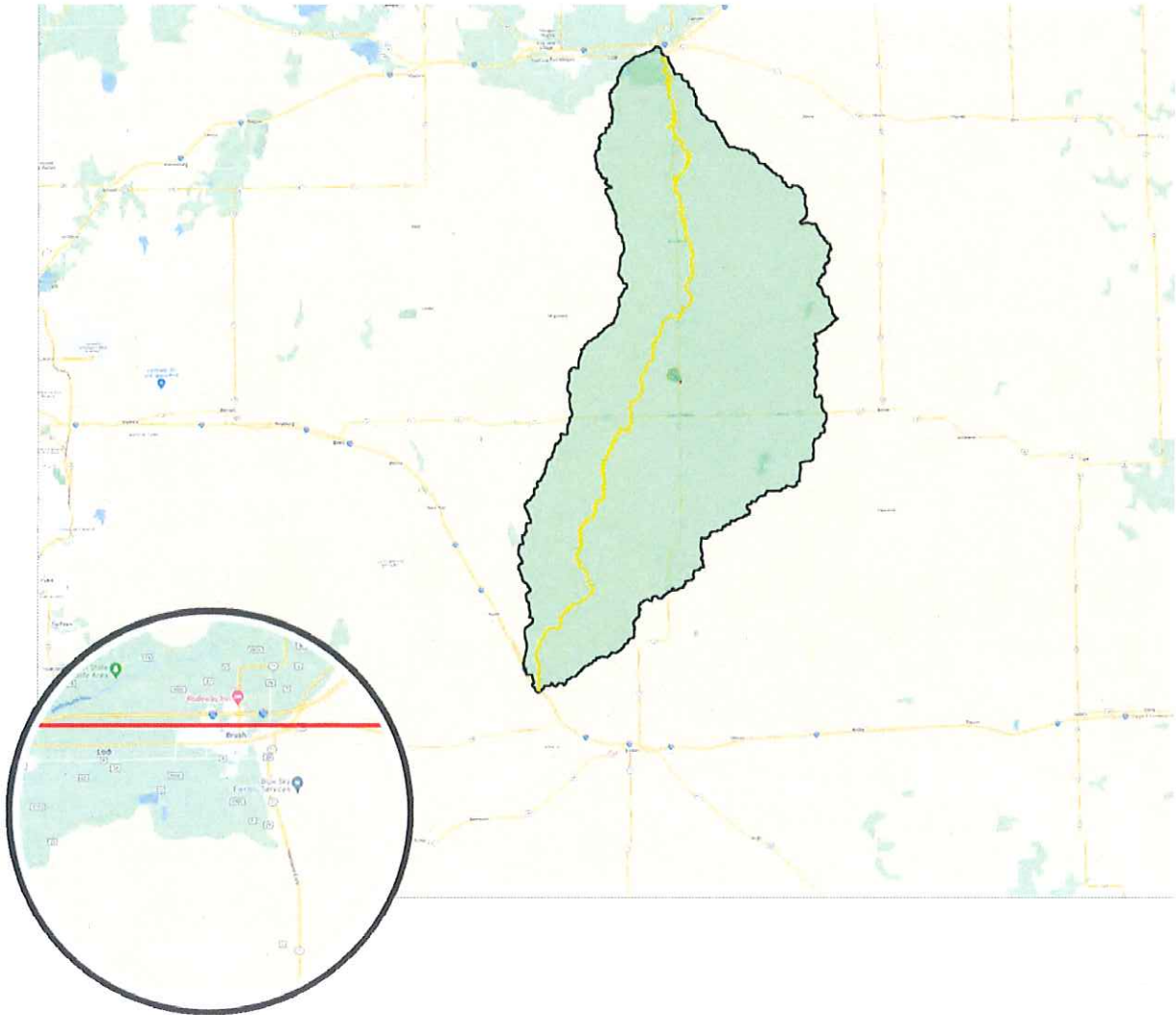
## Contents

Project Location .....	1
Purpose.....	1
Methodology Used .....	1
10-year Storm .....	2
Watershed Routing Diagram .....	2
Design 10-year Storm.....	3
Watershed Summary .....	3
Subbasins .....	4
50 Year Storm.....	6
Watershed Routing Diagram .....	6
Design 50-year Storm.....	7
Watershed Summary .....	7
Subbasins .....	8
100-year Storm .....	10
Watershed Routing Diagram .....	10
Design 100-year Storm .....	11
Watershed Summary .....	11
Subbasins .....	12



## Project Location

The Project area is located near Brush, Colorado in Morgan County.



## Purpose

The purpose of this hydrology study is to determine the peak runoff rates for pre-development conditions and the 10-, 50-, and 100-year flood conditions.

## Methodology Used

The HEC-HMS version 4.5 computer software was used in this hydrology study. The **SCS Curve Number** infiltration (loss) method and **SCS Unit Hydrograph** runoff (transform) method

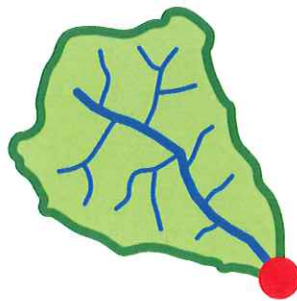
was used for determining the stormwater runoff. Multiple routing methods were used for routing the stormwater.

The following scenarios were analyzed in this hydrology study:

- **10 Year Storm** - This scenario contains one delineated subbasin area and corresponding lag time flow paths.
- **50 Year Storm** - This scenario contains one delineated subbasin area and corresponding lag time flow paths.
- **100 Year Storm** - This scenario contains one delineated subbasin area and corresponding lag time flow paths.

## 10-year Storm

### Watershed Routing Diagram



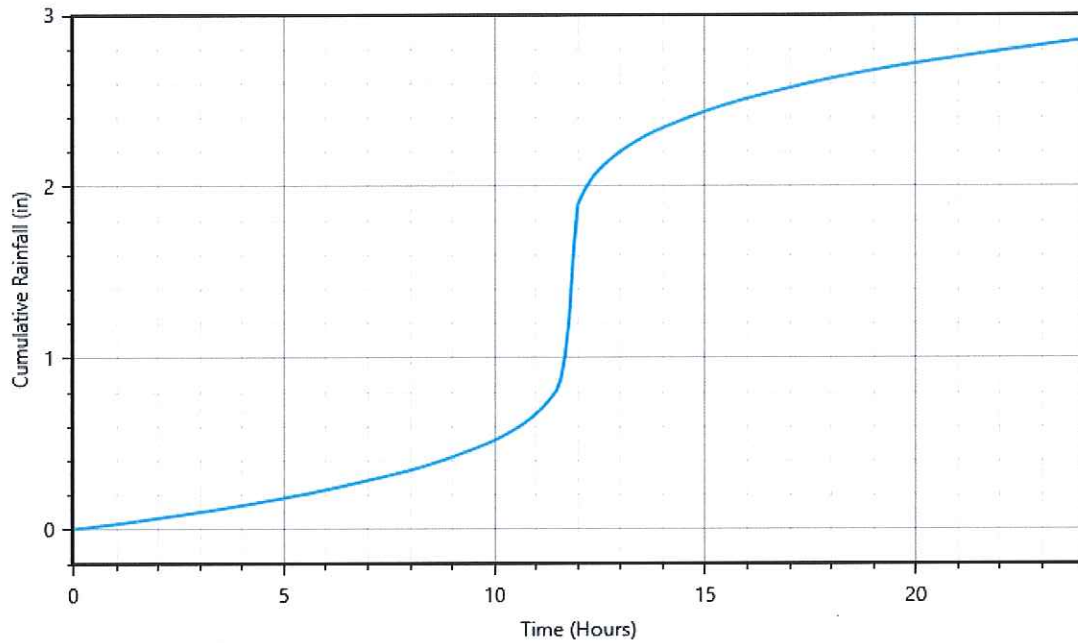
**1B**

## Design 10-year Storm

Precipitation type: SCS Storm

SCS storm distribution: Type II

Rainfall depth: 2.85 in



## Watershed Summary

Subbasin ID	Drainage Area (acres)	Initial Abstraction (in)	Curve Number	Impervious Surface (%)	Lag Time (minutes)	Peak Discharge (cfs)
1B	687,928.100	N/A	68.22	0.21	7,353.90	2,391.60



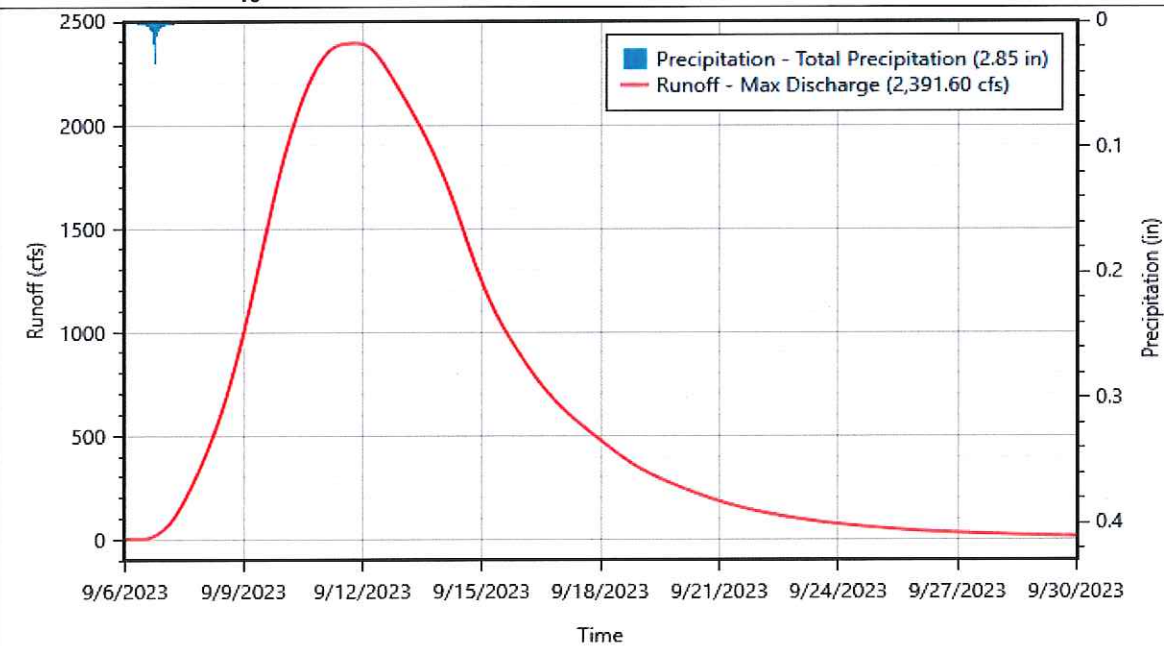
## Subbasins

<b>Subbasin ID:</b>	<b>1B</b>			
<b>Scenario:</b>	<b>10 Year</b>		<b>Depth</b>	<b>Volume</b>
<b>Peak discharge:</b>	2,391.60 cfs	<b>Time of peak:</b>	11 Sep 2023, 07:00	
<b>Drainage area:</b>	687,928.100 acres	<b>Total rainfall:</b>	2.85 in	163,382.969 ac-ft
<b>Initial abstraction:</b>	N/A	<b>Losses:</b>	2.29 in	131,030.770 ac-ft
<b>Curve Number:</b>	68.22	<b>Precip excess:</b>	0.56 in	32,352.199 ac-ft
<b>Impervious surface:</b>	0.21%	<b>Direct runoff:</b>	0.56 in	32,330.494 ac-ft
<b>Peaking factor:</b>	484	<b>Baseflow:</b>	0.00 in	0.000 ac-ft
<b>Lag time:</b>	7,353.90 minutes	<b>Total runoff:</b>	0.56 in	32,330.494 ac-ft
<b>Weighted Curve Number Calculations</b>				
<b>Soil Group</b>	<b>Land Use Description</b>	<b>Area (acres)</b>	<b>Area (%)</b>	<b>Composite CN</b>
B	Developed, Low Density	241.591	0.04	75.00
A	Developed, Low Density	119.916	0.02	61.00
D	Developed, Low Density	217.908	0.03	87.00
C	Developed, Low Density	778.721	0.11	83.00
A	Undeveloped, Evergreen Forest	7.877	0.00	30.00
B	Undeveloped, Evergreen Forest	6.973	0.00	55.00
C	Undeveloped, Evergreen Forest	0.646	0.00	70.00
D	Undeveloped, Grassland	66,481.392	9.66	78.00
D	Undeveloped, Evergreen Forest	335.744	0.05	77.00
C	Undeveloped, Grassland	100,145.201	14.56	71.00
A	Undeveloped, Grassland	84,402.787	12.27	30.00
D	Open Water	31.767	0.00	100.00
C	Open Water	257.748	0.04	100.00
B	Open Water	27.118	0.00	100.00
B	Wetlands, Non-Forested	118.673	0.02	100.00
A	Open Water	172.620	0.03	100.00
A	Wetlands, Non-Forested	270.919	0.04	100.00
D	Wetlands, Non-Forested	77.608	0.01	100.00
C	Wetlands, Non-Forested	565.863	0.08	100.00
D	Agricultural, Cultivated Crops	33,730.191	4.90	89.00
C	Agricultural, Cultivated Crops	145,532.813	21.16	85.00
B	Agricultural, Cultivated Crops	66,560.464	9.68	78.00
A	Agricultural, Cultivated Crops	12,594.230	1.83	67.00
D	Undeveloped, Deciduous Forest	1.550	0.00	77.00
C	Undeveloped, Deciduous Forest	23.488	0.00	70.00
B	Undeveloped, Deciduous Forest	16.787	0.00	55.00
A	Undeveloped, Deciduous Forest	11.880	0.00	30.00
D	Undeveloped, Barren Land	8.523	0.00	94.00
C	Undeveloped, Barren Land	31.121	0.00	91.00
D	Undeveloped, Shrub/Scrub	3,725.850	0.54	73.00
B	Undeveloped, Barren Land	11.880	0.00	86.00
C	Undeveloped, Shrub/Scrub	1,316.430	0.19	65.00
A	Undeveloped, Barren Land	38.352	0.01	77.00
B	Undeveloped, Shrub/Scrub	2,344.501	0.34	48.00
A	Undeveloped, Shrub/Scrub	895.387	0.13	30.00
B	Agricultural, Pasture/Hay	1,611.201	0.23	61.00
A	Agricultural, Pasture/Hay	1,183.345	0.17	39.00
D	Agricultural, Pasture/Hay	180.785	0.03	80.00
C	Agricultural, Pasture/Hay	4,088.396	0.59	74.00
C	Undeveloped, Mixed Forest	7.748	0.00	70.00

B	Undeveloped, Mixed Forest	0.646	0.00	55.00
A	Undeveloped, Mixed Forest	0.129	0.00	30.00
D	Developed, Medium Density	64.090	0.01	92.00
C	Developed, Medium Density	372.467	0.05	90.00
C	Developed, Open Space	4,738.457	0.69	79.00
B	Developed, Medium Density	48.721	0.01	85.00
D	Developed, Open Space	692.589	0.10	84.00
A	Developed, Medium Density	71.683	0.01	77.00
A	Developed, Open Space	1,524.668	0.22	49.00
B	Developed, Open Space	3,313.596	0.48	69.00
B	Wetlands, Forested	28.581	0.00	100.00
A	Wetlands, Forested	74.251	0.01	100.00
D	Wetlands, Forested	17.175	0.00	100.00
C	Wetlands, Forested	62.887	0.01	100.00
D	Developed, High Density	2.583	0.00	95.00
C	Developed, High Density	142.415	0.02	94.00
B	Developed, High Density	3.874	0.00	92.00
A	Developed, High Density	45.456	0.01	89.00
B	Undeveloped, Grassland	148,547.834	21.59	58.00
<b>Weighted Average</b>		<b>687,928.094</b>	<b>100.00</b>	<b>68.22</b>

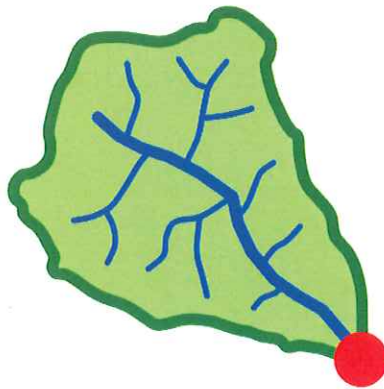
#### Time of Concentration (TOC) / Lag time Calculations

TOC (min)	Length (ft)	Slope (ft/ft)	Velocity (ft/s)	Description
28.80	100.00	0.01854	0.5058	Sheet Flow
12,227.70	603,416.40	0.00260	1.6830	Shallow Concentrated Flow
<b>12,256.50</b>	<b>603,516.40</b>	<b>Total</b>	<b>Lag Time = 7,353.90 minutes</b>	



50 Year Storm

Watershed Routing Diagram



**1B**

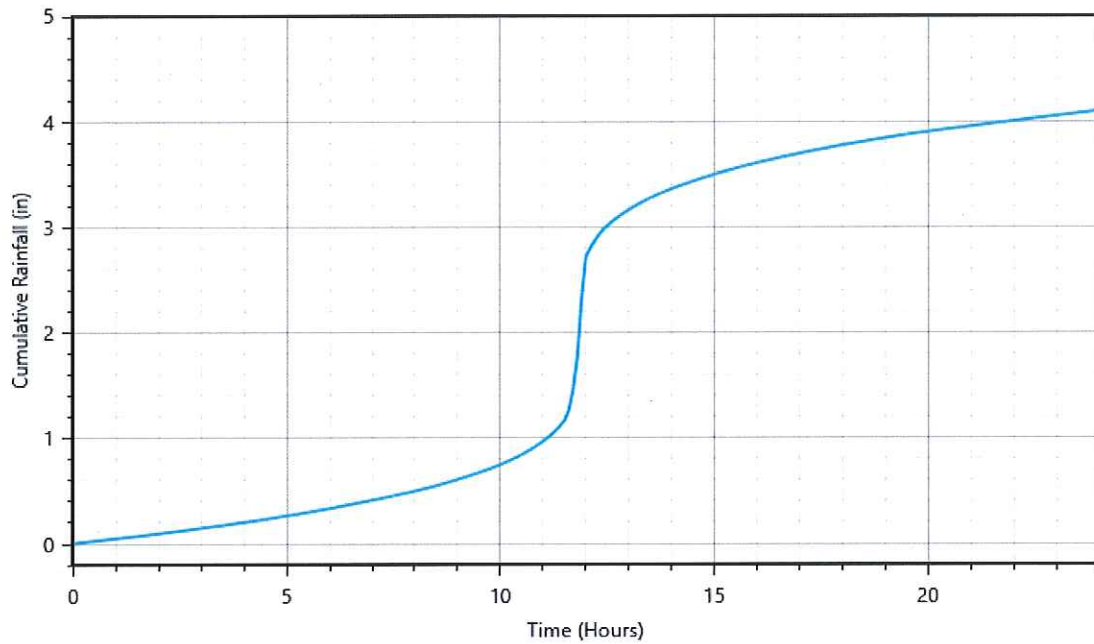


## Design 50-year Storm

Precipitation type: SCS Storm

SCS storm distribution: Type II

Rainfall depth: 4.09 in



## Watershed Summary

Subbasin ID	Drainage Area (acres)	Initial Abstraction (in)	Curve Number	Impervious Surface (%)	Lag Time (minutes)	Peak Discharge (cfs)
1B	687,928.100	N/A	68.22	0.21	7,353.90	5,433.13

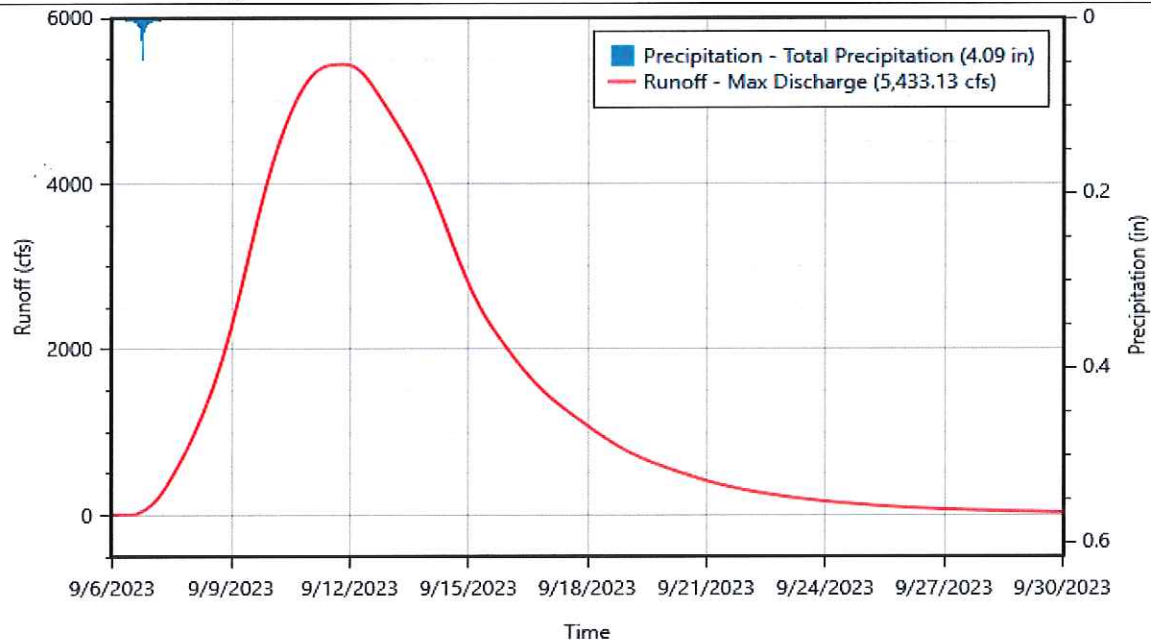
## Subbasins

<b>Subbasin ID:</b>	<b>1B</b>			
<b>Scenario:</b>	<b>50 Year</b>		<b>Depth</b>	<b>Volume</b>
<b>Peak discharge:</b>	5,433.13 cfs	<b>Time of peak:</b>	11 Sep 2023, 06:40	
<b>Drainage area:</b>	687,928.100 acres	<b>Total rainfall:</b>	4.09 in	234,468.892 ac-ft
<b>Initial abstraction:</b>	N/A	<b>Losses:</b>	2.81 in	160,975.158 ac-ft
<b>Curve Number:</b>	68.22	<b>Precip excess:</b>	1.28 in	73,493.735 ac-ft
<b>Impervious surface:</b>	0.21%	<b>Direct runoff:</b>	1.28 in	73,445.327 ac-ft
<b>Peaking factor:</b>	484	<b>Baseflow:</b>	0.00 in	0.000 ac-ft
<b>Lag time:</b>	7,353.90 minutes	<b>Total runoff:</b>	1.28 in	73,445.327 ac-ft
<b>Weighted Curve Number Calculations</b>				
<b>Soil Group</b>	<b>Land Use Description</b>	<b>Area (acres)</b>	<b>Area (%)</b>	<b>Composite CN</b>
B	Developed, Low Density	241.591	0.04	75.00
A	Developed, Low Density	119.916	0.02	61.00
D	Developed, Low Density	217.908	0.03	87.00
C	Developed, Low Density	778.721	0.11	83.00
A	Undeveloped, Evergreen Forest	7.877	0.00	30.00
B	Undeveloped, Evergreen Forest	6.973	0.00	55.00
C	Undeveloped, Evergreen Forest	0.646	0.00	70.00
D	Undeveloped, Grassland	66,481.392	9.66	78.00
D	Undeveloped, Evergreen Forest	335.744	0.05	77.00
C	Undeveloped, Grassland	100,145.201	14.56	71.00
A	Undeveloped, Grassland	84,402.787	12.27	30.00
D	Open Water	31.767	0.00	100.00
C	Open Water	257.748	0.04	100.00
B	Open Water	27.118	0.00	100.00
B	Wetlands, Non-Forested	118.673	0.02	100.00
A	Open Water	172.620	0.03	100.00
A	Wetlands, Non-Forested	270.919	0.04	100.00
D	Wetlands, Non-Forested	77.608	0.01	100.00
C	Wetlands, Non-Forested	565.863	0.08	100.00
D	Agricultural, Cultivated Crops	33,730.191	4.90	89.00
C	Agricultural, Cultivated Crops	145,532.813	21.16	85.00
B	Agricultural, Cultivated Crops	66,560.464	9.68	78.00
A	Agricultural, Cultivated Crops	12,594.230	1.83	67.00
D	Undeveloped, Deciduous Forest	1.550	0.00	77.00
C	Undeveloped, Deciduous Forest	23.488	0.00	70.00
B	Undeveloped, Deciduous Forest	16.787	0.00	55.00
A	Undeveloped, Deciduous Forest	11.880	0.00	30.00
D	Undeveloped, Barren Land	8.523	0.00	94.00
C	Undeveloped, Barren Land	31.121	0.00	91.00
D	Undeveloped, Shrub/Scrub	3,725.850	0.54	73.00
B	Undeveloped, Barren Land	11.880	0.00	86.00
C	Undeveloped, Shrub/Scrub	1,316.430	0.19	65.00
A	Undeveloped, Barren Land	38.352	0.01	77.00
B	Undeveloped, Shrub/Scrub	2,344.501	0.34	48.00
A	Undeveloped, Shrub/Scrub	895.387	0.13	30.00
B	Agricultural, Pasture/Hay	1,611.201	0.23	61.00
A	Agricultural, Pasture/Hay	1,183.345	0.17	39.00
D	Agricultural, Pasture/Hay	180.785	0.03	80.00
C	Agricultural, Pasture/Hay	4,088.396	0.59	74.00
C	Undeveloped, Mixed Forest	7.748	0.00	70.00

B	Undeveloped, Mixed Forest	0.646	0.00	55.00
A	Undeveloped, Mixed Forest	0.129	0.00	30.00
D	Developed, Medium Density	64.090	0.01	92.00
C	Developed, Medium Density	372.467	0.05	90.00
C	Developed, Open Space	4,738.457	0.69	79.00
B	Developed, Medium Density	48.721	0.01	85.00
D	Developed, Open Space	692.589	0.10	84.00
A	Developed, Medium Density	71.683	0.01	77.00
A	Developed, Open Space	1,524.668	0.22	49.00
B	Developed, Open Space	3,313.596	0.48	69.00
B	Wetlands, Forested	28.581	0.00	100.00
A	Wetlands, Forested	74.251	0.01	100.00
D	Wetlands, Forested	17.175	0.00	100.00
C	Wetlands, Forested	62.887	0.01	100.00
D	Developed, High Density	2.583	0.00	95.00
C	Developed, High Density	142.415	0.02	94.00
B	Developed, High Density	3.874	0.00	92.00
A	Developed, High Density	45.456	0.01	89.00
B	Undeveloped, Grassland	148,547.834	21.59	58.00
<b>Weighted Average</b>		<b>687,928.094</b>	<b>100.00</b>	<b>68.22</b>

#### Time of Concentration (TOC) / Lag time Calculations

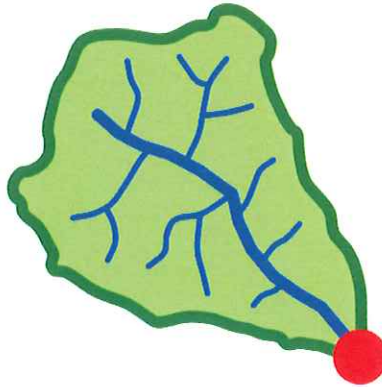
TOC (min)	Length (ft)	Slope (ft/ft)	Velocity (ft/s)	Description
28.80	100.00	0.01854	0.5058	Sheet Flow
12,227.70	603,416.40	0.00260	1.6830	Shallow Concentrated Flow
<b>12,256.50</b>	<b>603,516.40</b>	<b>Total</b>	<b>Lag Time = 7,353.90 minutes</b>	





100-year Storm

Watershed Routing Diagram



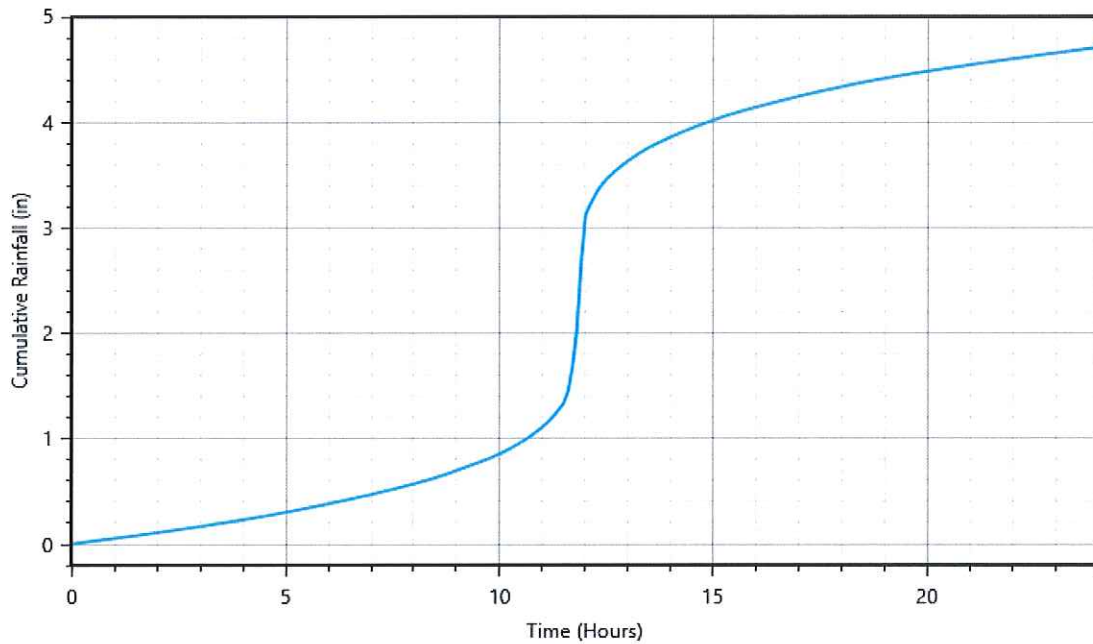
**1B**

## Design 100-year Storm

Precipitation type: SCS Storm

SCS storm distribution: Type II

Rainfall depth: 4.70 in



## Watershed Summary

Subbasin ID	Drainage Area (acres)	Initial Abstraction (in)	Curve Number	Impervious Surface (%)	Lag Time (minutes)	Peak Discharge (cfs)
1B	687,928.100	N/A	68.22	0.21	7,353.90	7,168.46

## Subbasins

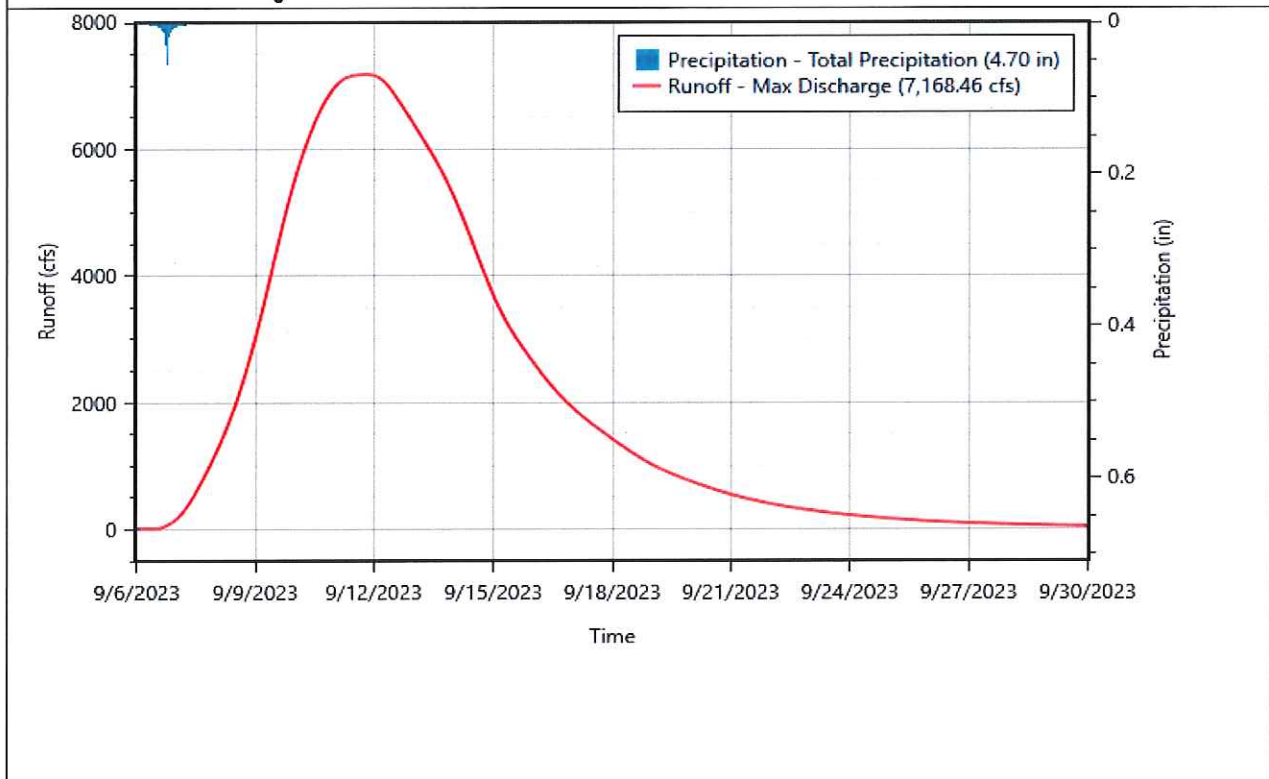
<b>Subbasin ID:</b>	<b>1B</b>			
<b>Scenario:</b>	<b>100 Year</b>		<b>Depth</b>	<b>Volume</b>
<b>Peak discharge:</b>	7,168.46 cfs	<b>Time of peak:</b>	11 Sep 2023, 06:35	
<b>Drainage area:</b>	687,928.100 acres	<b>Total rainfall:</b>	4.70 in	269,438.581 ac-ft
<b>Initial abstraction:</b>	N/A	<b>Losses:</b>	3.01 in	172,471.907 ac-ft
<b>Curve Number:</b>	68.22	<b>Precip excess:</b>	1.69 in	96,966.674 ac-ft
<b>Impervious surface:</b>	0.21%	<b>Direct runoff:</b>	1.69 in	96,903.161 ac-ft
<b>Peaking factor:</b>	484	<b>Baseflow:</b>	0.00 in	0.000 ac-ft
<b>Lag time:</b>	7,353.90 minutes	<b>Total runoff:</b>	1.69 in	96,903.161 ac-ft
<b>Weighted Curve Number Calculations</b>				
<b>Soil Group</b>	<b>Land Use Description</b>	<b>Area (acres)</b>	<b>Area (%)</b>	<b>Composite CN</b>
B	Developed, Low Density	241.591	0.04	75.00
A	Developed, Low Density	119.916	0.02	61.00
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A	Undeveloped, Evergreen Forest	7.877	0.00	30.00
B	Undeveloped, Evergreen Forest	6.973	0.00	55.00
C	Undeveloped, Evergreen Forest	0.646	0.00	70.00
D	Undeveloped, Grassland	66,481.392	9.66	78.00
D	Undeveloped, Evergreen Forest	335.744	0.05	77.00
C	Undeveloped, Grassland	100,145.201	14.56	71.00
A	Undeveloped, Grassland	84,402.787	12.27	30.00
D	Open Water	31.767	0.00	100.00
C	Open Water	257.748	0.04	100.00
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A	Open Water	172.620	0.03	100.00
A	Wetlands, Non-Forested	270.919	0.04	100.00
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A	Agricultural, Pasture/Hay	1,183.345	0.17	39.00
D	Agricultural, Pasture/Hay	180.785	0.03	80.00
C	Agricultural, Pasture/Hay	4,088.396	0.59	74.00
C	Undeveloped, Mixed Forest	7.748	0.00	70.00
B	Undeveloped, Mixed Forest	0.646	0.00	55.00



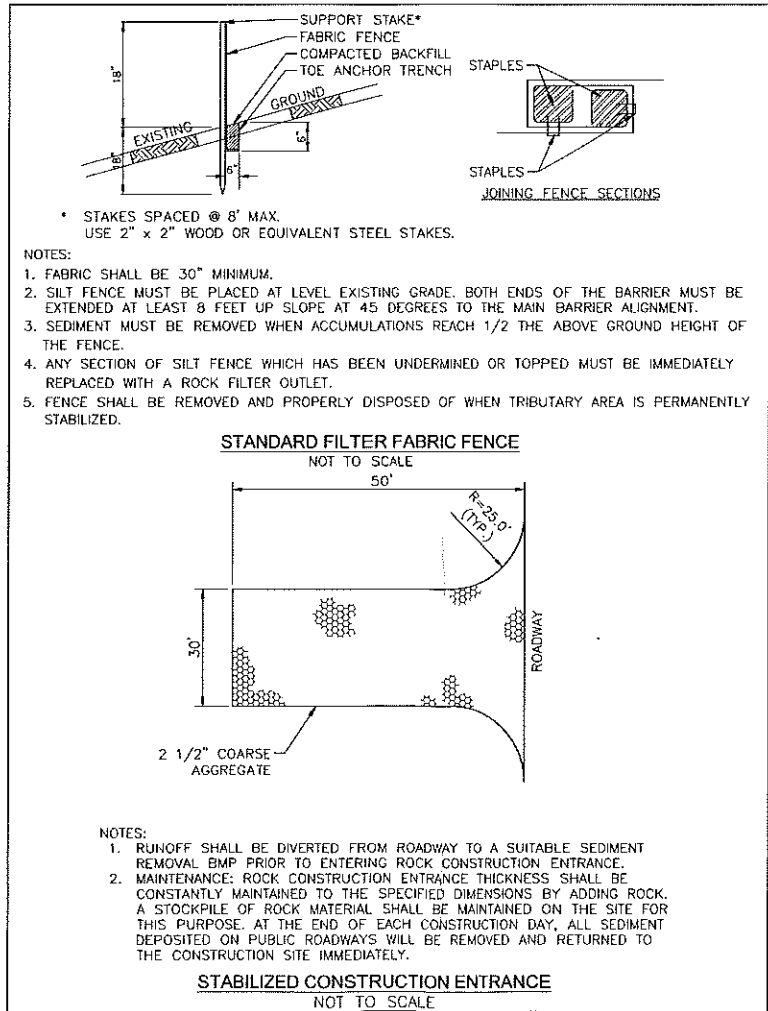
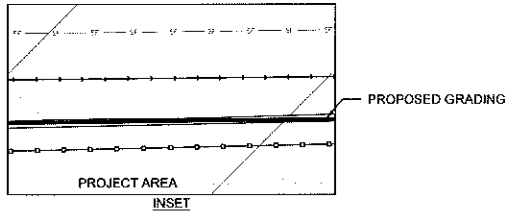
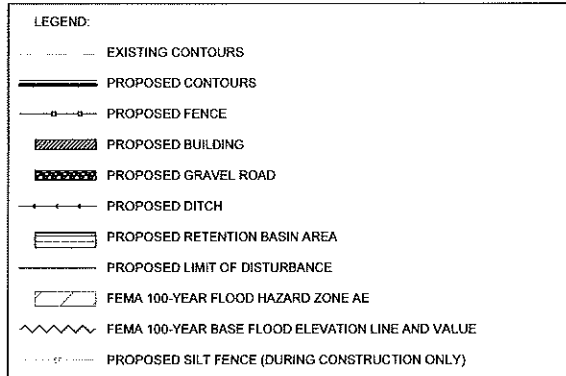
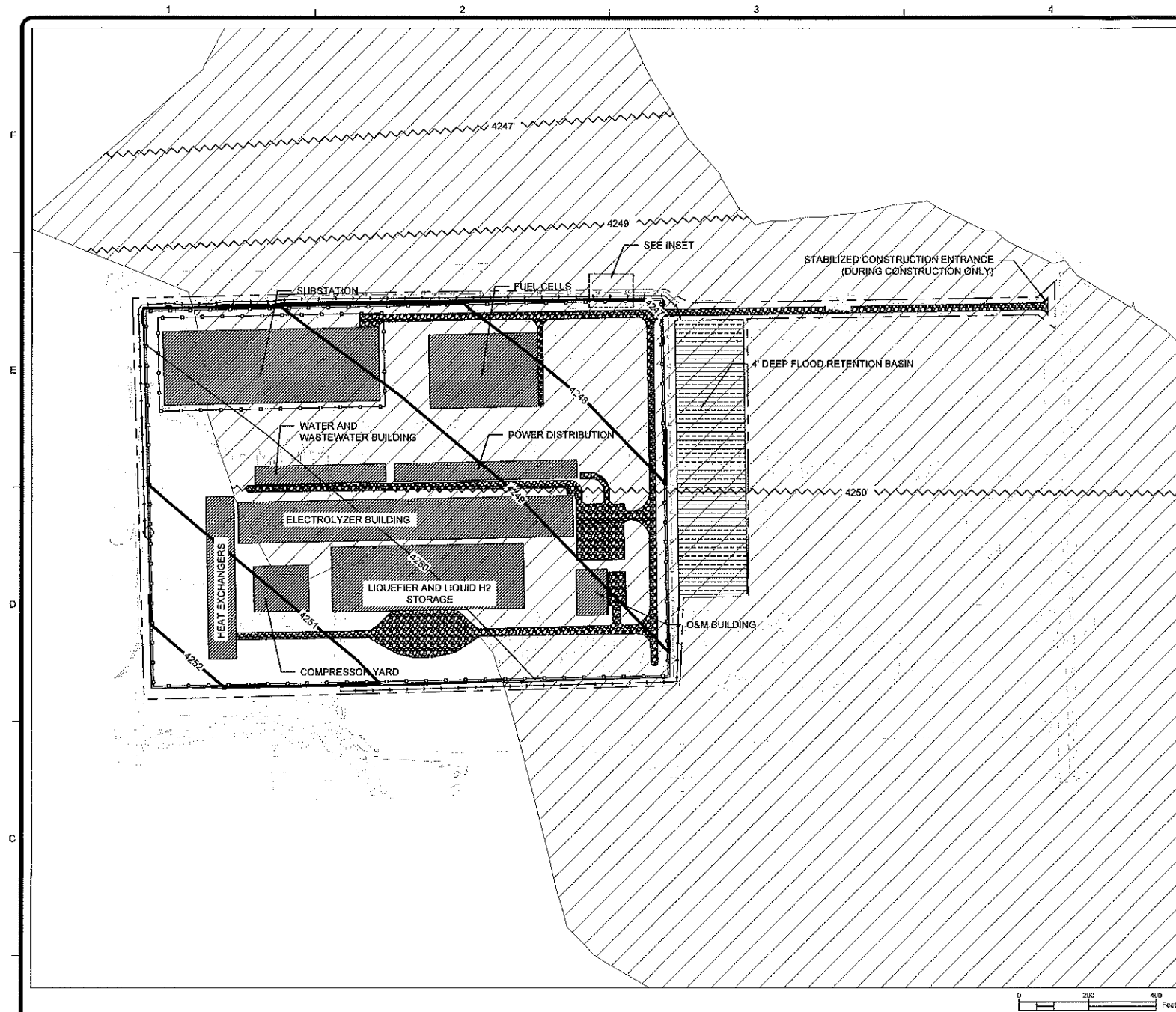
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C	Developed, Medium Density	372.467	0.05	90.00
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B	Developed, Medium Density	48.721	0.01	85.00
D	Developed, Open Space	692.589	0.10	84.00
A	Developed, Medium Density	71.683	0.01	77.00
A	Developed, Open Space	1,524.668	0.22	49.00
B	Developed, Open Space	3,313.596	0.48	69.00
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A	Developed, High Density	45.456	0.01	89.00
B	Undeveloped, Grassland	148,547.834	21.59	58.00
<b>Weighted Average</b>		<b>687,928.094</b>	<b>100.00</b>	<b>68.22</b>

#### Time of Concentration (TOC) / Lag time Calculations

TOC (min)	Length (ft)	Slope (ft/ft)	Velocity (ft/s)	Description
28.80	100.00	0.01854	0.5058	Sheet Flow
12,227.70	603,416.4	0.00260	1.6830	Shallow Concentrated Flow
<b>12,256.50</b>	<b>603,516.4</b>	<b>Total</b>	<b>Lag Time = 7,353.90 minutes</b>	
	0			



9/19/2023 2:46:05 PM - C:\USERS\ANDREW.LINTZ\TETRA TECH\MONARCH ENERGY - CO\_OVERLAND\07 - DRAINAGE & RUNOFF CONTROL PLAN\GRADING\_DRAINAGE\_REV8.DWG - LINTZ, ANDREW



MARK	DATE	DESCRIPTION	BY
A	05/14/23	DRAFT FOR REVIEW	AML
B	06/21/23	DRAFT FOR REVIEW	AML

MONARCH ENERGY  
OVERLAND HYDROGEN  
MORGAN COUNTY, COLORADO  
GRADING AND  
DRAINAGE PLAN

PROJ:	
DESIGN:	AML
DRWN:	AML
CHKD:	JPP

## Exhibit 5

### AGREEMENT TO LEASE REAL PROPERTY

The City of Brush, Colorado, 600 Edison St., P.O. Box 363, Brush, Colorado 80723, hereinafter referred to as "Lessor," hereby leases to Monarch Energy Development LLC, 101 Cooper St, Santa Cruz, CA 95060, hereinafter referred to as "Lessee," the surface and approximately 500 feet below the surface of the approximately 60 acres of real property more fully described in Exhibit A attached hereto, as well as the surface of the Property designated and described on Exhibit A as "the Site", hereinafter collectively referred to as the "Premises," and incorporated herein, by this reference as though fully set forth, on the following terms and conditions:

1. Term of Lease. The term of this Lease shall be for a period of one year commencing on July 19, 2023 and ending July 18, 2024.
2. Rent. Lessee shall pay to Lessor as rent for the use and possession of the Premises, the sum of [REDACTED] per year for rental of the surface and approximately 500 feet beneath the sixty (60) acres of land identified and described in Exhibit A, amounting to approximately [REDACTED] payable in quarterly installments commencing 30 days after invoicing by Lessor. A delinquency fee of 5 percent shall be charged monthly for any outstanding balance. The late fee shall not exceed 25 percent of the billing statement.
3. Use of Premises. The Premises shall be used for the purpose of assessing the viability of the Property for building, operating and maintaining; (i) electrolyzer and hydrogen generation, liquefaction and storage, (ii) e-fuels generation and storage, and (iii) a fuel cell ("Hydrogen and E-Fuels Facility") and as such, Lessee intends to conduct reasonable engineering studies, environmental tests and studies (including a Phase 1 Environmental Site Assessment), soil and compaction tests, a survey of the Property, a geotechnical report, a wetlands assessment, and other tests and studies (hereinafter referred to as "the Approved Uses"). The Premises shall not be used for any purpose other than the Approved Uses without the prior written consent of Lessor. Lessee acknowledges the current existing and continuing Farm Lease of the Property for farming purposes and expressly warrants the Approved Uses will not interfere or cause damages to the current Farm Lease, planted crops, or tenant's property or investments. To the extent any damage, injury, or cause of action is raised by the current Farm Lease tenant, Lessee shall indemnify the Lessor and take commercially reasonable efforts to make the Farm Lease Tenant whole.
4. Use of Surface Area Above the Premises. The surface area above the Premises shall remain leased by Lessor to the Farm Tenant, for agricultural uses including irrigation using the Water Rights. Lessee shall be entitled to use the Site for the Approved Uses, subject to the Lessee's obligation to obtain all necessary authorizations and permits to conduct such Approved Uses as well as Lessee's obligation to not interfere with or damage Farm Lease Tenant in any way.
5. Water Rights. In connection with Lessor's lease of the surface above the Premises to the Farm Tenant, Lessee acknowledges Lessor will continue to lease the water rights



described in Exhibit B attached hereto and incorporated herein by this reference (hereinafter collectively referred to as the "Water Rights"), pursuant to and in accordance with the terms and conditions set forth in the Farm Lease between Lessor and the Farm Tenant.

- (a) Lessee acknowledges that the lessor under the Farm Lease is entitled to use the Water Rights to irrigate the surface above the Premises to the fullest extent permitted by law and consistent with sound irrigation practices;
  - (b) Any Water Rights described in Exhibit B not used under the terms of the Farm Lease may be utilized by the Lessor at the Lessor's sole discretion;
  - (c) Subject to the terms of paragraph 6 during the term of this Lease, Lessee, at its sole expense, shall take full responsibility for operation and maintenance of all equipment and apparatus and other structures, materials or improvements used in connection with the Approved Uses, and shall pay all other costs associated with such uses.
6. Operations on Premises. All operations conducted on the Premises by Lessee shall be conducted by Lessee in accordance with the best industry practices. Should Lessee fail to take any action required by the best industry practices or should Lessee fail to conduct any operation undertaken by him on the Premises in accordance with the best industry practices, Lessor may, after serving ten-days written notice of such failure on Lessee in the manner provided for service of notices in this Lease, enter the Premises and take such action as Lessor may deem necessary to protect its interest in this Lease and in the Premises. Lessee agrees to reimburse Lessor on demand for the commercially reasonable cost of any actions taken by Lessor pursuant to the provisions of this paragraph.
7. Payment of Utilities. Lessee shall pay all charges for the furnishing of gas, electricity, water service, and all other utilities to the Premises.
8. Waste or Nuisance. Lessee shall not commit or permit the commission by others of any waste on the Premises. Lessee shall not maintain, commit, or permit the maintenance or commission of any nuisance as defined by the Colorado Revised Statutes or the Brush Municipal Code on the Premises. Lessee shall not use or permit the use of the Premises for any unlawful purpose.
9. Insurance Hazards. Lessee shall not commit or permit the commission of any hazardous acts on the Premises nor use or permit the use of the Premises in any manner that will increase the existing rates for or cause the cancellation of any fire, liability, or other insurance policy insuring the Premises, the improvements, and the crops on the surface above the Premises. Lessee shall, at his own cost and expense, comply with any and all requirements of Lessor's insurance carriers necessary for the continued maintenance at reasonable rates of reasonable fire and liability insurance on the surface above the Premises and the improvements thereon.

10. General Maintenance. Lessee shall, at his own cost and expense, keep and maintain the Premises, any and all facilities appurtenant to the Premises in good order and repair and in as safe and clean a condition as they were when received by him from Lessor, reasonable wear and tear excepted.
11. Noxious Weeds. Lessee will use diligence to prevent noxious weeds from going to seed on the Premises and will destroy the same.
12. Maintenance of Improvements. Lessee will keep improvements on or used on connection with the Premises in good repair and condition.
13. Additional Improvements. Lessee will not without prior, written consent of Lessor:
  - (a) Erect or permit to be erected on the Premises any nonremovable structure or building;
  - (b) Incur any expense to Lessor for such purpose;
  - (c) Add electrical wiring, plumbing, or heating to any buildings, and if consent is given, they will make such additions meet standards and requirements of power and insurance companies; or
  - (d) Interfere with or damage Farm Lease Tenant's property including, but not limited to crops, outbuildings, and equipment.
14. Removal of Improvements. Minor improvements of a temporary or removable nature, which do not mar the condition or appearance of the surface above the Premises may be made by Lessee at his own expense. Lessee may at any time this Lease is in effect, or within a reasonable time thereafter, remove such improvements, provided he leaves in good condition that part of the surface above the Premises from which they are removed.
15. Compensation for Damages. When Lessee leaves the Premises they will pay Lessor reasonable compensation for any damages to the Premises or the surface above the Premises for which Lessee is responsible, except ordinary wear and depreciation and damages beyond Lessee's control.
16. Inspection by Lessor. Lessee shall permit Lessor or Lessor's agents, representatives, or employees to enter the surface above the Premises at all reasonable times with advance notice for the purpose of inspecting the Premises to determine whether Lessee is complying with the terms of this Lease and for the purpose of doing other lawful acts that may be necessary to protect Lessor's interest in the Premises.
17. Monitoring Wells and Activities by Lessor. Lessee agrees that at such times and in such manner as Lessor or Lessor's engineer reasonably deems necessary, Lessor shall be entitled to enter upon the surface above the Premises and drill and utilize such monitoring wells into the Premises or use such other devices to monitor the activities of Lessee in

connection with the Premises. However, Lessor is not obligated to undertake any monitoring and any such monitoring Lessor voluntarily undertakes shall be not relieve Lessee of any of its obligations under this Agreement to protect the Premises, the surface above the Premises, or the Lessor.

18. Lessor Contact. The City Administrator of the City of Brush! shall be the contact person for Lessee on issues related to this lease.
19. Acceptance by Lessee. Lessee accepts the Premises and the surface above the Premises, as well as the improvements thereon and the facilities appurtenant thereto, in their present condition. Lessee agrees with, and represents to Lessor, that the Premises and the area above the Premises have been inspected by it and that they have been assured by means independent of Lessor or any agent of Lessor of the truth of all facts material to this Lease and that the Premises are being Leased by Lessee as a result of his inspection and investigation and not as a result of any representations made by Lessor or any agent of Lessor.
20. Hold Harmless. Lessee agrees to indemnify and hold Lessor and the property of Lessor, including the Premises, free and harmless from any and all claims, liability, loss, damage, or expense including the Lessor's reasonable attorney fees resulting from Lessee's occupation and use of the Premises, specifically including without limitations any claim, liability, loss, or damage arising:
  - (a) By reason of the injury to person or property, from whatever cause, while in or on the Premises or in any way connected with the Premises or with the improvements or personal property in or on the Premises or the surface above the Premises including any liability for injury to the person or personal property of Lessee, its agents, officers, employees or invitees;
  - (b) By reason of any work performed on the Premises or materials furnished to the Premises at the instance or request of Lessee, its agents, or employees;
  - (c) By reason of Lessee's failure to perform any provision of this Lease or to comply with any requirement imposed on it or on the Premises by any duly authorized governmental agency or political subdivision;
  - (d) Because of Lessee's failure or inability to pay as they become due any obligations incurred by it in the operations to be conducted by it on the Premises.
21. Subleasing and Assigning. The Lessee shall not encumber, assign, or otherwise transfer this Lease, any right or interest in this Lease, or any right or interest in the Premises or any of the improvements that may now or hereafter be constructed or installed on the Premises, without the express written consent of Lessor first had and obtained. Neither shall Lessee sublet the Premises or any part thereof or allow any other persons, other than Lessee's agents, and employees, to use the Premises or any part thereof without the prior



written consent of Lessor. A consent by Lessor to one assignment, subletting, occupation, or use shall not constitute such a consent for another person or entity. Any encumbrance, assignment, transfer, or subletting without the prior written consent of Lessor, whether it be voluntary or involuntary, by operation of law or otherwise, is void and shall, at the option of, Lessor, terminate this Lease. The consent of Lessor to any such assignment of Lessee's interest in this Lease or the subletting by Lessee or the Premises shall not unreasonably be withheld.

22. Abandonment by Lessee. Should Lessee breach this Lease and abandon the Premises prior to the termination or expiration of the terms of this Lease, Lessor may:
  - (a) Continue this Lease in effect by not terminating Lessee's right to possession of the Premises, in which event Lessor shall be entitled to enforce all its rights and remedies under this Lease including the right to recover the rent specified in this Lease as it becomes due under this Lease; or
  - (b) Terminate this Lease and recover from Lessee:
    - (1) The worth at the time of award of the unpaid rent which had been earned at the time of termination of the Lease;
23. Default by Lessee. All covenants and agreements contained in this Lease are declared to be conditions to this Lease and to the term hereby demised to Lessee. Should Lessee default in the performance of any covenant, condition, or agreement contained in this Lease and fail to cure such default within thirty (30) days from receipt of notice of default from Lessor, Lessor may terminate this Lease and re-enter and regain possession of the Premises in the manner then provided by the laws of unlawful detainer of the State of Colorado then in effect.
24. Insolvency of Lessee. The insolvency of Lessee as evidenced by a receiver being appointed to take possession of all or substantially all of the property of Lessee, the making of a general assignment for the benefit of creditors by Lessee, or the adjudication of Lessee as a bankrupt under the Federal Bankruptcy Code shall terminate this Lease and entitle Lessor to re-enter and regain possession of the Premises.
25. Cooperation and Intent for Long-Term Operational Lease. Lessor and Lessee commit to in good faith endeavor to cooperatively negotiate and execute a thirty-five (35) year operational lease that grants reasonable rights to Lessee to construct and operate a facility in accordance with the Approved Uses. The Lessor and Lessee intend to finalize such agreement during the period of the Lease.
26. Notices. Except as otherwise expressly provided by law, any and all notices or other communications required or permitted by this Lease or by law to be served on or given to either party hereto by the other party hereto shall be in writing and shall be deemed duly served and given when personally delivered to the party to whom it is directed, or in lieu

of such personal service when deposited in the United States mail, first-class postage prepaid, addressed to Lessor or Lessee at the address provided in the first paragraph of this Lease. Either party, Lessee or Lessor, may change their address for the purpose of this paragraph by giving written notice of such change to the party in the manner provided in this paragraph.

27. Successors and Assigns. This Lease shall be binding on and shall inure to the benefit of the successors, and assigns of the parties hereto, but nothing in this paragraph contained shall be construed as a consent by Lessor to any assignment of this Lease or any interest therein by Lessee except as provided in paragraph 21 of this Lease.
28. Time of Essence. Time is expressly declared to be the essence of this Lease.
29. Required Insurance. For the purpose of this Lease, Lessee shall carry the following types of insurance in at least the limits (which may be a combination of primary and excess coverage) specified below:
- | <u>Coverages</u>  | <u>Limits of Liability</u>  |
|---|-----------------------------|
| Worker's Compensation                                       | Statutory                   |
| Employer's Liability  | \$1,000,000 each Occurrence |
| General Liability Including<br>Bodily Injury and<br>Damage. | \$1,000,000 each Occurrence |
30. Waiver. The waiver of any breach of any of the provisions of this Lease by Lessor shall not constitute a continuing waiver or a waiver of any subsequent breach by Lessee either of the same or of another provision of this Lease.
31. Surrender of Possession. Lessee agrees to surrender possession and occupancy of the premises peaceably at the expiration or earlier termination of the Lease.
32. No Partnership Created. This Lease shall not be deemed to give rise to a partnership or joint venture relationship, and neither party shall have authority to obligate the other without written consent, except as specifically provided in this Lease.
33. Debts and Accidents. Each party agrees that the other party shall in no way be responsible for the debts of, or liabilities for accidents or damages caused by, the other party.
34. Willful Neglect. Willful neglect, failure, or refusal by either party to carry out any substantial provision of this Lease shall give the other party the benefits of any proceedings provided by law.
35. Colorado Governmental Immunity Act. The parties acknowledge and agree that Lessor is a Colorado municipality and is therefore entitled to the protections afforded it under the

Colorado Governmental Immunity Act, C.R.S. Sections 24-10-101, et seq. ("the Act"). The parties further acknowledge and agree that nothing in the Agreement or any act by the Lessor is intended or shall be deemed to be a waiver of the Act.

36. Law Governing. This Lease, and the performance hereof, shall be governed, interpreted, construed and regulated by the laws of the State of Colorado.
37. Confidentiality. The parties recognize and agree that Lessor is a Colorado municipality and subject to certain laws including but not limited to the Colorado Open Records Act, C.R.S. Sections 24-72-101, et seq., and the Colorado Open Meetings Laws, C.R.S. Sections 24-6-101, et seq. Subject to the limitations of the Open Records Act and the Open Meetings Laws, the Lessor agrees to keep confidential the project Lessee is contemplating developing in the Premises.
38. Partial Invalidity. If any term, covenant, condition or provision of this Lease or the application thereof to any person or circumstance shall, at any time or to any extent, be invalid or unenforceable, the remainder of this Lease, or the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term, covenant, condition and provision of this Lease shall be valid and be enforced to the fullest extent permitted by law.
39. Interpretation. Wherever herein the singular number is used, the same shall include the plural, as the context shall require. The paragraph headings used herein are for reference and convenience only and shall not enter into the interpretation hereof.
40. Execution of Counterparts. This Lease may be executed in several counterparts, each of which shall be an original, but all of which shall constitute one and the same instrument.
41. Entire Agreement. No oral statement or prior written material shall have any force or effect. Lessor and Lessee agree that they are not relying on any representation or agreements, other than those contained in this Lease and the attachments which are made a part hereof. This Lease shall not be modified, except by a writing executed by all parties. This Lease supersedes all previous agreements concerning use or access to the Demised Premises between parties.

Executed this 19th day of July, 2023



LESSOR:

City of Brush!, Colorado

By: 

Title Mayor

LESSEE:

By: 

Name: Ben Alingh

Title: President

Address: 101 Cooper St, Santa Cruz, CA 95060

## EXHIBIT A

### PROPERTY DESCRIPTION

An area containing approximately 60 acres more particularly described as follows:

N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, EXCEPT a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence S00°02'07"E along the East line of said Section 15 a distance of 622.34 feet; thence S89°57'53"W perpendicular to said east line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796, the point of beginning; thence S00°02'07"E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S.#14796; thence S88°05'26"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N89°55'24"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.

**EXHIBIT B**  
**WATER RIGHTS DESCRIPTION**

All water and water rights appurtenant thereto, including but not limited to 6 shares to the capital stock of the Upper Platte and Beaver Canal Company; one irrigation Well No. 10361-R-F as decreed in Case No. W-2968-A-33, Division 1 Water Court, State of Colorado, together with the pump and appurtenant switches associated with said irrigation well, and also a lift pump (turbine style) with motor included but not installed to raise the irrigation water from the Upper Platte and Beaver Canal to field level.




**First American**
**Commitment for Title Insurance  
Colorado - 2021 v. 01.00 (07-01-2021)**
**Transaction Identification Data, for which the Company assumes no liability as set forth in  
Commitment Condition 5.e.:**

Issuing Agent: First American Title Insurance Company National Commercial Services  
 Issuing Office: 9255 Towne Center Drive, Suite 200, San Diego, CA 92121  
 Issuing Office's ALTA® Registry ID: 1104968  
 Commitment Number: NCS-1164691-NRG  
 Issuing Office File Number: NCS-1164691-NRG  
 Property Address: APN 123115000900, , CO  
 Revision Number:

**SCHEDULE A**

1. Commitment Date: July 24, 2023 at 5:00 P.M.
2. Policy to be issued:
  - a. 2021 ALTA Policy - form(s) To Be Determined  
 Proposed Insured: A Purchaser To Be Determined  
 Proposed Amount of Insurance: \$1,000.00  
 The estate or interest to be insured: See Item 3 below
3. The estate or interest in the Land at the Commitment Date is:
 

A Leasehold Estate created by that certain unrecorded Lease Agreement dated \_\_\_\_\_, 2023, by and between City of Brush, Colorado, a municipal corporation, as Lessor, and \_\_\_\_\_, as Lessee, and as evidenced by that certain Memorandum of Lease recorded \_\_\_\_\_, 2023 at Reception No. \_\_\_\_\_, in the records of the Clerk and Recorder of Morgan County, Colorado
4. The Title is, at the Commitment Date, vested in:
 

City of Brush, Colorado, a municipal corporation
5. The Land is described as follows:
 

See Exhibit A attached hereto and made a part hereof

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Commitment No. NCS-1164691-NRG

**EXHIBIT A**

The Land referred to herein below is situated in the County of Morgan, State of Colorado, and is described as follows:

North 1/2 Northeast 1/4, Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, Except a parcel of land described as follows:

Commencing at the North 1/4 corner of said Section 15; thence 1266 feet South along the West line of said Northeast 1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the South line of the North 1/2 Northeast 1/4 of Section 15; thence West along said South line of the North 1/2 Northeast 1/4 a distance of 54 feet to the point of beginning, and;

Except a parcel of land described as follows;

Commencing at the Northeast corner of said Section 15; thence S 00°2'07" E along the East line of said Section 15 a distance of 622.34 feet; thence S 89°57'53" W perpendicular to said East line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796, the point of beginning; thence S 00°02'07" E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S. #14796; thence S 88°05'26" W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N 89°55'24" E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in [Book 1010 at Page 515](#).

County of Morgan,  
State of Colorado.

For informational purposes only: APN: 123115000900

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Commitment No. NCS-1164691-NRG

**SCHEDULE B, PART I—Requirements**

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.
5. Payment of all taxes and assessments now due and payable as shown on a certificate of taxes due from the County Treasurer or the County Treasurer's Authorized Agent.

NOTE: Tax certificate(s) must be ordered by or provided to the Company at least one week prior to closing.

6. Local ordinances may impose inchoate liens on the Land for unpaid water, sewer, stormwater drainage, or other utilities charges. If this transaction includes a sale of the Land, a Utilities Agreement and/or escrow is required.
7. Evidence that all assessments for common expenses, if any, have been paid.
8. Receipt by the Company of an ALTA/NSPS Land Title Survey, certified to First American Title Insurance Company, and in form and content satisfactory to the Company. The Company reserves the right to make further requirements and/or exceptions upon review of this survey.
9. Receipt by the Company of the Lease to be insured hereunder, and all amendments and modifications thereto, if any.

NOTE: This commitment is subject to further requirements and/or exceptions upon review of this lease agreement.

10. Recordation of a Memorandum of Lease satisfactory to the Company, between City of Brush, Colorado, a municipal corporation, as Lessor, and A Lessee To Be Determined, as Lessee.

NOTE: The Company reserves the right to make further requirements and/or exceptions upon review of the above item(s).

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11. Estoppel Affidavit from City of Brush, Colorado, a municipal corporation, as Landlord under the Lease, which contains the following:
  - (i) consent to the sale/assignment of the leasehold interest,
  - (ii) statement that the Lease and all amendments thereto are in full force and effect,
  - (iii) statement that there are no existing defaults, or conditions or events that could ripen into default,
  - (iv) the remaining lease term (noting extensions or options), and
  - (v) affirmation that the lease is still valid and enforceable.
12. This item has been intentionally deleted.
13. This item has been intentionally deleted.
14. Receipt by the Company of a Corporate Resolution executed by the officers of City of Brush, Colorado, a municipal corporation, authorizing the transaction herein contemplated and setting forth the names and authority of those authorized to sign for the corporation.

NOTE: The Company reserves the right to make further requirements and/or exceptions upon review of the above item(s).
15. Receipt by the Company of the following documentation for City of Brush, Colorado, a municipal corporation, a Colorado corporation:

Certificate of Good Standing issued by the Colorado Secretary of State.  
Certificate of Incorporation issued by the Colorado Secretary of State.

NOTE: The Company reserves the right to make further requirements and/or exceptions upon review of the above item(s).
16. This item has been intentionally deleted.
17. Receipt by the Company of a satisfactory Final Affidavit and Indemnity, executed by City of Brush, Colorado, a municipal corporation.

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Commitment No. NCS-1164691-NRG

**SCHEDULE B, PART II—Exceptions**

**Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This Commitment and the Policy treat any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document will be excepted from coverage.**

The Policy will not insure against loss or damage resulting from the terms and conditions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any facts, rights, interests or claims which are not shown by the Public Records, but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.
2. Easements, or claims of easements, not shown by the Public Records.
3. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, and any facts which a correct land survey and inspection of the Land would disclose, and which are not shown by the Public Records.
4. Any lien or right to a lien for services, labor, material or equipment, unless such lien is shown by the Public Records at Date of Policy and not otherwise excepted from coverage herein.
5. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I—Requirements are met.

Note: Exception number 5 will be removed from the policy provided the Company conducts the closing and settlement service for the transaction identified in the commitment.

6. Any and all unpaid taxes, assessments and unredeemed tax sales.
7. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof.
8. Any water rights, claims of title to water, in, on or under the Land.
9. Any existing leases or tenancies.
10. This item has been intentionally deleted.

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11. This item has been intentionally deleted.
  12. This item has been intentionally deleted.
  13. This item has been intentionally deleted.
  14. Lease by and between Rush Brungardt, as lessor, and Colorado Power Partners, as lessee, as evidenced by Water Lease Agreement recorded February 20, 1990 at Reception No. [717998](#).
  15. Lease, and easements by and between Brungardt Farms Company, a Colorado general partnership, as lessor, and Brush Cogeneration Partners, a Colorado general partnership and Colorado Power Partners, a Colorado general partnership, as lessee, as evidenced by Water Lease Agreement recorded May 5, 1992 at Reception No. [730220](#).
  16. Terms, conditions, provisions, obligations, easements and agreements as set forth in the Easement Agreement recorded May 5, 1992 at Reception No. [730226](#).
  17. Lease by and between Brungardt Farms Company, a Colorado general partnership, as lessor, and Brush Cogeneration Partners, a Colorado general partnership and Colorado Power Partners, a Colorado general partnership, as lessee, as evidenced by Amended and Restated Water Lease Agreement recorded July 6, 1992 at Reception No. [731173](#).
- Assignment of Lease and Assumption Agreement in connection therewith recorded February 27, 2004 at Reception No. [815793](#) and re-recorded March 11, 2004 at Reception No. [816114](#).
- Assignment of Lease & Assumption Agreement in connection therewith recorded June 15, 2007 at Reception No. [843298](#).
18. This item has been intentionally deleted.
  19. This item has been intentionally deleted.
  20. This item has been intentionally deleted.
  21. This item has been intentionally deleted.
  22. Morgan County Quality Water District Map recorded December 15, 2009 at Reception No. [1900004](#).
  23. This item has been intentionally deleted.
  24. Terms, conditions, provisions, obligations and agreements as set forth in the Deed recorded March 9, 1889 in [Book 18 at Page 256](#).

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25. Reservation of oil, gas and other minerals as reserved in Warranty Deed recorded February 10, 1953 in [Book 514 at Page 188](#), and any and all assignments thereof or interests therein.
26. Any tax, lien, fee or assessment by reason of inclusion of subject property in the Northern Colorado Water Conservancy District, and the Lower South Platte Water Conservancy District, and the Brush Rural Fire Protection District, and the East Morgan County Hospital District, as evidenced by instrument recorded February 18, 1976 in [Book 758 at Page 811](#).
27. Terms, conditions, provisions, obligations and agreements as set forth in the Exemption from the Morgan County Subdivision Regulations recorded May 7, 1997 at Reception No. [761731](#).
28. Reservation of oil, gas and other minerals as reserved in Special Warranty Deed recorded October 31, 2002 at Reception No. [803663](#), and any and all assignments thereof or interests therein.

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**DISCLOSURE STATEMENT**

Pursuant to C.R.S. 30-10-406(3)(a) all documents received for recording or filing in the Clerk and Recorder's office shall contain a top margin of at least one inch and a left, right and bottom margin of at least one-half of an inch. The Clerk and Recorder will refuse to record or file any document that does not conform to the requirements of this section.

NOTE: If this transaction includes a sale of the property and the price exceeds \$100,000.00, the seller must comply with the disclosure/withholding provisions of C.R.S. 39-22-604.5 (Nonresident withholding).

NOTE: Colorado Division of Insurance Regulations 8-1-2 requires that "Every title insurance company shall be responsible to the proposed insured(s) subject to the terms and conditions of the title commitment, other than the effective date of the title commitment, for all matters which appear of record prior to the time of recording whenever the title insurance company, or its agent, conducts the closing and settlement service that is in conjunction with its issuance of an owner's policy of title insurance and is responsible for the recording and filing of legal documents resulting from the transaction which was closed.

Pursuant to C.R.S. 10-11-122, the company will not issue its owner's policy or owner's policies of title insurance contemplated by this commitment until it has been provided a Certificate of Taxes due or other equivalent documentation from the County Treasurer or the County Treasurer's authorized agent; or until the Proposed Insured has notified or instructed the company in writing to the contrary.

The subject property may be located in a special taxing district. A Certificate of Taxes due listing each taxing jurisdiction shall be obtained from the County Treasurer or the County Treasurer's authorized agent. Information regarding special districts and the boundaries of such districts may be obtained from the Board of County Commissioners, the County Clerk and Recorder, or the County Assessor.

C.R.S. 10-11-122 (4), Colorado Notaries may remotely notarize real estate deeds and other documents using real-time audio-video communication technology. You may choose not to use remote notarization for any document.

**NOTE: Pursuant to CRS 10-11-123, notice is hereby given:**

**This notice applies to owner's policy commitments containing a mineral severance instrument exception, or exceptions, in Schedule B, Section 2.**

- A. That there is recorded evidence that a mineral estate has been severed, leased, or otherwise conveyed from the surface estate and that there is a substantial likelihood that a third party holds some or all interest in oil, gas, other minerals, or geothermal energy in the property; and**
- B. That such mineral estate may include the right to enter and use the property without the surface owner's permission.**

**NOTE: Pursuant to Colorado Division of Insurance Regulations 8-1-2, Affirmative mechanic's lien protection for the Owner may be available (typically by deletion of Exception no. 4 of Schedule B, Section 2 of the Commitment from the Owner's Policy to be issued) upon compliance with the following conditions:**

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- A. **The land described in Schedule A of this commitment must be a single family residence which includes a condominium or townhouse unit.**
- B. **No labor or materials have been furnished by mechanics or material-men for purposes of construction on the land described in Schedule A of this Commitment within the past 6 months.**
- C. **The Company must receive an appropriate affidavit indemnifying the Company against un-filed mechanic's and material-men's liens.**
- D. **The Company must receive payment of the appropriate premium.**
- E. **If there has been construction, improvements or major repairs undertaken on the property to be purchased within six months prior to the Date of the Commitment, the requirements to obtain coverage for unrecorded liens will include: disclosure of certain construction information; financial information as to the seller, the builder and or the contractor; payment of the appropriate premium, fully executed Indemnity Agreements satisfactory to the company, and, any additional requirements as may be necessary after an examination of the aforesaid information by the Company.**

**No coverage will be given under any circumstances for labor or material for which the insured has contracted for or agreed to pay.**

NOTE: Pursuant to C.R.S. 38-35-125(2) no person or entity that provides closing and settlement services for a real estate transaction shall disburse funds as a part of such services until those funds have been received and are available for immediate withdrawal as a matter of right.

NOTE: C.R.S. 39-14-102 requires that a real property transfer declaration accompany any conveyance document presented for recordation in the State of Colorado. Said declaration shall be completed and signed by either the grantor or grantee.

**NOTE: Pursuant to CRS 10-1-128(6)(a), It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policyholder or claimant for the purpose of defrauding or attempting to defraud the policyholder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado division of insurance within the department of regulatory agencies.**

Nothing herein contained will be deemed to obligate the company to provide any of the coverages referred to herein unless the above conditions are fully satisfied.

*This page is only a part of a 2021 ALTA Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.*

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Form 50095700 (12-17-21)



**First American**

Commitment for Title Insurance  
Colorado - 2021 v. 01.00 (07-01-2021)

**ALTA COMMITMENT FOR TITLE INSURANCE**  
**issued by**  
**FIRST AMERICAN TITLE INSURANCE COMPANY**

**NOTICE**

**IMPORTANT—READ CAREFULLY:** THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

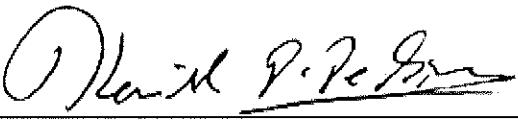
THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

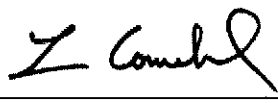
**COMMITMENT TO ISSUE POLICY**

Subject to the Notice; Schedule B, Part I—Requirements; Schedule B, Part II—Exceptions; and the Commitment Conditions, First American Title Insurance Company, a Nebraska Corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Amount of Insurance and the name of the Proposed Insured.

If all of the Schedule B, Part I—Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

**FIRST AMERICAN TITLE INSURANCE COMPANY**

By:   
Kenneth D. DeGiorgio, President

By:   
Lisa W. Cornehl, Secretary

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Form 50095700 (12-17-21)





**COMMITMENT CONDITIONS**

**1. DEFINITIONS**

- a. "Discriminatory Covenant": Any covenant, condition, restriction, or limitation that is unenforceable under applicable law because it illegally discriminates against a class of individuals based on personal characteristics such as race, color, religion, sex, sexual orientation, gender identity, familial status, disability, national origin, or other legally protected class.
- b. "Knowledge" or "Known": Actual knowledge or actual notice, but not constructive notice imparted by the Public Records.
- c. "Land": The land described in Item 5 of Schedule A and improvements located on that land that by State law constitute real property. The term "Land" does not include any property beyond that described in Schedule A, nor any right, title, interest, estate, or easement in any abutting street, road, avenue, alley, lane, right-of-way, body of water, or waterway, but does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
- d. "Mortgage": A mortgage, deed of trust, trust deed, security deed, or other real property security instrument, including one evidenced by electronic means authorized by law.
- e. "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
- f. "Proposed Amount of Insurance": Each dollar amount specified in Schedule A as the Proposed Amount of Insurance of each Policy to be issued pursuant to this Commitment.
- g. "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
- h. "Public Records": The recording or filing system established under State statutes in effect at the Commitment Date under which a document must be recorded or filed to impart constructive notice of matters relating to the Title to a purchaser for value without Knowledge. The term "Public Records" does not include any other recording or filing system, including any pertaining to environmental remediation or protection, planning, permitting, zoning, licensing, building, health, public safety, or national security matters.
- i. "State": The state or commonwealth of the United States within whose exterior boundaries the Land is located. The term "State" also includes the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and Guam.
- j. "Title": The estate or interest in the Land identified in Item 3 of Schedule A.

- 2.** If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

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Form 50095700 (12-17-21)

Page 11 of 14



3. The Company's liability and obligation is limited by and this Commitment is not valid without:
  - a. the Notice;
  - b. the Commitment to Issue Policy;
  - c. the Commitment Conditions;
  - d. Schedule A;
  - e. Schedule B, Part I—Requirements; and
  - f. Schedule B, Part II—Exceptions; and
  - g. a counter-signature by the Company or its issuing agent that may be in electronic form.
4. **COMPANY'S RIGHT TO AMEND**

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company is not liable for any other amendment to this Commitment.
5. **LIMITATIONS OF LIABILITY**
  - a. The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
    - i. comply with the Schedule B, Part I—Requirements;
    - ii. eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
    - iii. acquire the Title or create the Mortgage covered by this Commitment.
  - b. The Company is not liable under Commitment Condition 5.a. if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
  - c. The Company is only liable under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
  - d. The Company's liability does not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Condition 5.a. or the Proposed Amount of Insurance.
  - e. The Company is not liable for the content of the Transaction Identification Data, if any.
  - f. The Company is not obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
  - g. The Company's liability is further limited by the terms and provisions of the Policy to be issued to the Proposed Insured.

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- 6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT; CHOICE OF LAW AND CHOICE OF FORUM**
- a. Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
  - b. Any claim must be based in contract under the State law of the State where the Land is located and is restricted to the terms and provisions of this Commitment. Any litigation or other proceeding brought by the Proposed Insured against the Company must be filed only in a State or federal court having jurisdiction.
  - c. This Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
  - d. The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
  - e. Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
  - f. When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.
- 7. IF THIS COMMITMENT IS ISSUED BY AN ISSUING AGENT**
- The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for closing, settlement, escrow, or any other purpose.
- 8. PRO-FORMA POLICY**
- The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.
- 9. CLAIMS PROCEDURES**
- This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. Commitment Condition 9 does not modify the limitations of liability in Commitment Conditions 5 and 6.
- 10. CLASS ACTION**
- ALL CLAIMS AND DISPUTES ARISING OUT OF OR RELATING TO THIS COMMITMENT, INCLUDING ANY SERVICE OR OTHER MATTER IN CONNECTION WITH ISSUING THIS COMMITMENT, ANY BREACH OF A COMMITMENT PROVISION, OR ANY OTHER CLAIM OR DISPUTE ARISING OUT OF OR RELATING TO THE TRANSACTION GIVING RISE TO THIS COMMITMENT, MUST BE BROUGHT IN AN INDIVIDUAL CAPACITY. NO PARTY MAY SERVE AS PLAINTIFF, CLASS MEMBER, OR PARTICIPANT IN ANY CLASS OR REPRESENTATIVE PROCEEDING. ANY POLICY ISSUED PURSUANT TO THIS COMMITMENT WILL CONTAIN A CLASS ACTION CONDITION.

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**11. ARBITRATION**

The Policy contains an arbitration clause. All arbitrable matters when the Proposed Amount of Insurance is \$2,000,000 or less may be arbitrated at the election of either the Company or the Proposed Insured as the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at <http://www.alta.org/arbitration>.

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Form 50095700 (12-17-21)





October 12, 2023

City of Brush!

Attn: Monty Torres

PO Box 363

Brush, CO 80723

Mr. Torres,

On behalf of the mineral ownership interest for the following property:

*N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, EXCEPT a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence S00°02'07"E along the East line of said Section 15 a distance of 622.34 feet; thence S89°57'53"W perpendicular to said east line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796, the point of beginning; thence S00°02'07"E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S.#14796; thence S88°05'26"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N89°55'24"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.*

Please accept this letter as notification for a public hearing on November 13, 2023, at 7:00 PM to consider the Special Use Permit application for Monarch Energy Development LLC's Overland Hydrogen and E-Fuels Production Facility. The Morgan County, CO Planning and Zoning Public Hearing will take place at the Assembly Room, Morgan County Administrative Building, 231 Ensign, Fort Morgan, CO.

Sincerely,

Blake Johnson  
Project Developer  
Monarch Energy Development LLC

9589 0710 5270 1056 5747 64

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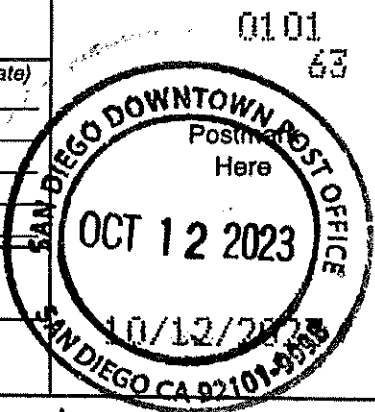
Brush, CO 80723 **OFFICIAL USE**

Certified Mail Fee  
\$ **\$4.35**

Extra Services & Fees (check box, add fee as appropriate)  
☐ Return Receipt (hardcopy) \$ **\$0.00**  
☐ Return Receipt (electronic) \$ **\$0.00**  
☐ Certified Mail Restricted Delivery \$ **\$0.00**  
☐ Adult Signature Required \$ **\$0.00**  
☐ Adult Signature Restricted Delivery \$ **\$0.00**

Postage  
\$ **\$0.66**

Total Postage and Fees  
\$ **\$5.01**



Sent To  
**City of Brush Attn. Mary Torres**  
Street and Apt. No., or PO Box No.  
**PO Box 363**  
City, State, ZIP+4®  
**Brush CO. 80723**



Travis Warren  
First American Title Company  
National Energy Services  
601 Travis, Suite 1875  
Houston, Texas 77002

Re: Monarch Energy – Overland Hydrogen – Mineral Title Report – FA#1164691 – Ernest L. Larsen

Mr. Warren,

Pursuant to your request, I submit this letter as documentation of the Mineral Title research performed on parcel: PID 1231-150-00-900,

Legal Description: 77.550 acres of land, more or less, situated in the North Half (N2) of the Northeast Quarter (NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, and being more particularly described in that certain Warranty Deed dated October 31, 2002, from Milton Uhlenhopp and Lila M. Uhlenhopp to City of Brush, Colorado, a municipal corporation, recorded in Volume 1127 Page 0111, Official Public Records, Morgan County, Colorado.

EXCEPT: a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the South line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning.

AND EXCEPT: 1.410 acres, more or less, being out of North Half (N2) of the Northeast Quarter (NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.

The mineral ownership reflects 50% ownership to Ernest L. Larsen and 50% to the City of Brush, Colorado.

Vanguard was then given a request to research the status of Ernest L. Larsen as living or deceased.  
The following actions were made to provide said action:

- Examining Agent was contacted to re-affirm the completeness of research
- The online deed records were re-examined for any information on Ernest L. Larsen, none located after about 1958
- Research on Ancestry.com and FamilySearch.org, both genealogy sites were searched- nothing found

Vanguard does not provide this as confirmation of the FACT OF LIFE of Ernest L. Larsen, but only as the historical research carried out.

Sincerely;

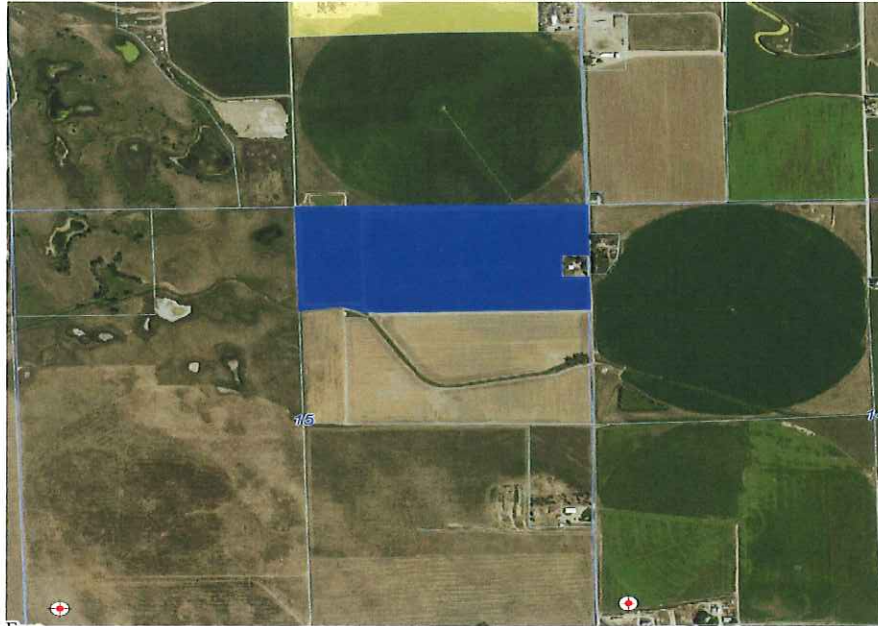
A handwritten signature in blue ink, appearing to read "Gordon Miller".

Gordon Miller  
Director of Title  
Vanguard Real Estate Solutions, LLC

## MINERAL OWNERSHIP WORKSHEET

MAP/TRACT NO: 1231-150-00-900  
 COMPANY: Vanguard Real Estate Solutions, LLC  
 LANDMAN/#: Nikki Archer  
 PROSPECT: Monarch Energy  
 STATE: Colorado  
 COUNTY: Morgan  
 RECORDS EFFECTIVE DATE: 9/1/2023  
 LAST VIEWED BOOK/PAGE/INSTRUMENT: 1236/370 Affidavit and Death Certificate  
 RESEARCH TYPE: January 1, 1925 to September 1, 2023

GROSS ACRES: 77.55



TRACT DESCRIPTION

SECTION:	15	TOWNSHIP:	3	RANGE/BLOCK:	56
PARCEL or TAX ID:	1231-150-00-900				
ABSTRACT: N/A					
LEGAL DESCRIPTION: 77.550 acres of land, more or less, situated in the North Half (N 1/2) of the Northeast Quarter (NE 1/4) of Section 15, Township 3, Range 56, Morgan County, Colorado, and being more particularly described in that certain Warranty Deed dated October 31, 2002, from Milton Uhlenhopp and Lila M. Uhlenhopp to City of Brush, Colorado, a municipal corporation, recorded in Volume 1127 Page 0111, Official Public Records, Morgan County, Colorado.					
EXCEPT: a parcel of land described as follows: Commencing at the Northeast Quarter (NE 1/4) corner of said Section 15; thence 1266 feet South along the West line of said Northeast Quarter (NE 1/4), Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the South line of the North Half (N 1/2) of the Northeast Quarter (NE 1/4) of Section 15; thence West along said South line of the North Half (N 1/2) of the Northeast Quarter (NE 1/4) a distance of 54 feet to the point of beginning.					
AND EXCEPT: 1.410 acres, more or less, being out of North Half (N 1/2) of the Northeast Quarter (NE 1/4) of Section 15, Township 3, Range 56, Morgan County, Colorado.					

TABLE OF SURFACE OWNERSHIP			
Surface Owner	PID#	OWNERSHIP INTEREST	NET ACRES
City of Brush, Colorado, a municipal corporation	1231-150-00-900	1.0000	77.5500
<b>TOTAL:</b>		1.0000	77.5500



Mineral Owner	NET INTEREST	NET ACRES	NRI	LEASEHOLD STATUS
Ernest L. Larsen	0.5000000	38.7750000		N/A
City of Brush, Colorado, a municipal corporation P.O. Box 363 Brush, CO 80723	0.5000000	38.7750000		N/A
<b>TOTAL:</b>	1.0000000	77.5500000		

**EXAMINER'S NOTES:**

The herein contained information is based on a search of the Deed Records from April 23, 1889 to September 6, 2023 in Morgan County, Colorado.

# **LIMITED MINERAL AND WORKING INTEREST RUNSHEET**

Certified from Sovereignty to September 1, 2023 at 4:30 p.m.

77.550 Acres

Morgan County, Colorado

Legal Description: 77.550 acres of land, more or less, situated in the North Half (N2) of the Northeast Quarter (NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, and being more particularly described in that certain Warranty Deed dated October 31, 2002, from Milton Uhlenhopp and Lila M. Uhlenhopp to City of Brush, Colorado, a municipal corporation, recorded in Volume 1127 Page 0111, Official Public Records, Morgan County, Colorado.

EXCEPT: a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the South line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning.

AND EXCEPT: 1.410 acres, more or less, being out of North Half (N2) of the Northeast Quarter (NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.

FAT-CO-S - Monarch Energy - Overland Hydrogen

Runsheets

No.	Instrument Type	Book	Instrument Number	Volume	Page	Date	Filed	Grantor	Grantee	Legal	Comments
1	Patent	N/A	BLM Website			6/2/1879	N/A	United States of America	State of Colorado	Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
GAP - Unable to find conveyance into The Beaver Live Stock and Land Company.											
2	Deed	DR	1788	28	133	8/25/1890	9/9/1890	The Beaver Live Stock and Land Company	James W. McCreary	Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 320 acres.	Conveys all of Grantor's right, title and interest into the described property.
3	Warranty Deed	DR	N/A	28	8	1/14/1895	1/15/1895	James W. McCreary	James A. Lamb	Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
4	Special Warranty Deed	DR	N/A	38	214	9/25/1899	11/16/1899	James A. Lamb and Ella M. Lamb	A. J. Smith	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
5	Warranty Deed	DR	88048	141	519	3/27/1919	3/27/1919	A. J. Smith	Clarence A. Gray and A. A. Leech	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
6	Warranty Deed	DR	102223	188	210	7/9/1920	7/12/1920	Clarence A. Gray and A. A. Leech	Addie F. Leech	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	EXCEPT: established roads and rights of ways by, on or through property.
7	Warranty Deed	DR	153390	180	502	9/2/1925	9/8/1925	Addie F. Leech	Clair May Buckles	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
8	Warranty Deed	DR	153641	222	528	9/19/1925	9/23/1925	Clair May Buckles	Horace B. Cochran and James M. Cochran	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 80 acres, more or less.	EXCEPT: established roads and rights of ways by, on or through property.
9	Trustee's Deed	DR	174659	253	242	1/9/1928	1/9/1928	Edw. H. Madison, Trustee	Flora Fields	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all right, title and interest into the described property.
											Horace B. Cochran and Jennie M. Cochran were in default of a certain DOT, recorded in 239-301.

No.	Instrument Type	Book	Instrument Number	Volume	Page	Date	Filed	Grantor	Grantee	Legal	Comments
10	Warranty Deed	DR	212038	310	459	11/16/1931	12/10/1931	Flora Fields	Horace Yeakle	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 80 acres, more or less.	Conveys all of Grantor's right, title and interest into the described property.
11	Warranty Deed	DR	296272	394	127	12/8/1941	3/27/1942	Horace Yeakle	Lars Anderson and Helen Anderson	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
12	Quit Claim Deed	DR	294735	397	100	1/2/1942	1/6/1950	Flora Fields	Horace Yeakle	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
13	Warranty Deed	DR	352987	466	391	2/24/1945	1/6/1950	Lars Anderson and Helen Anderson	Herbert Koehler and Ida Rose Koehler	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
14	Quit Claim Deed	DR	354360	468	414	3/6/1950	3/7/1950	Lars Anderson	Herbert Koehler and Ida Rose Koehler	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	This deed is given to correct the spelling of Grantee's name from Andersen to Anderson.
15	Warranty Deed	DR	354892	468	415	3/6/1950	3/7/1950	Herbert Koehler and Ida Rose Koehler	Ernest L. Larsen	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 80 acres, more or less.	Conveys all of Grantor's right, title and interest into the described property.
16	Warranty Deed	DR	384547	514	188	2/9/1963	2/10/1963	Ernest L. Larsen	Joseph Hoff	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 80 acres, more or less.	Conveyance of the described property. Grantor reserves one-half (1/2) interest in minerals.
GAP - No Probate found for Ernest L. Larsen in online records search, in person search or per Morgan County clerk.											
17	Warranty Deed	DR	411018	551	419	4/23/1955	5/18/1955	Joe Hoff	Robert J. Haeker and Helena Haeker	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 0.9, of an acre, more or less.	Conveys all of Grantor's right, title and interest into the described property.
18	Warranty Deed	DR	487060	652	222	12/29/1961	12/29/1961	Joseph Hoff	Joseph Hoff and Katie Hoff	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 80 acres, more or less.	Conveys all of Grantor's right, title and interest into the described property.
19	Warranty Deed	DR	601229	758	811	2/14/1976	2/18/1976	Joseph Hoff and Katie Hoff	Milton Uhlenhopp and Lila M. Uhlenhopp	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado, containing 80 acres, more or less.	Conveys all of Grantor's right, title and interest into the described property.
20	Certificate of Survey	OPR	761731	1010	515	4/21/1997	5/7/1997	Milton E. Uhlenhopp and Lila M. Uhlenhopp	The Public	A parcel of land containing 1.410 acres, more or less, situated in the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	EXCEPT: 1 acre, described by metes & bounds. Exemption from the Morgan County Subdivision Regulations. Noting this is in Zone AE Agricultural Zone of the Flood Plain.
21	Warranty Deed	OPR	762322	1011	905	6/4/1997	6/4/1997	Milton Uhlenhopp and Lila M. Uhlenhopp	Jeffrey A. Cook	A parcel of land situated in the Northeast Quarter (NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property.
22	Special Warranty Deed	OPR	803663	1127	0111	10/31/2002	10/31/2002	Milton Uhlenhopp and Lila M. Uhlenhopp	City of Brush, Colorado, a municipal corporation	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	Conveys all of Grantor's right, title and interest into the described property. EXCEPT: 1.410 acres, described by metes & bounds. ALSO EXCEPTING: 0.9 acres, described by metes & bounds. Grantor reserves all interest owned in minerals during their joint lives then become property of current landowner.
23	Letters	OPR	947182	N/A	N/A	5/7/2007	1/11/2008	Estate of Lila M. Uhlenhopp, deceased	The Public	North Half (N2) of the Northeast Quarter(NE4) of Section 15, Township 3, Range 56, Morgan County, Colorado.	The decedent owned a one-half (1/2) interest of minerals in the described property to which now becomes property of current landowner.

No.	Instrument Type	Book	Instrument Number	Volume	Page	Date	Filed	Grantor	Grantee	Legal	Comments
24	Affidavit and Death Certificate	OPR	833554	1236	370	DOD 6/3/2006	2/22/2009	Estate of Milton Eugene Uhlenhopp, deceased	The Public	North Half (N2) of the Northeast Quarter (NE4) of Section 15, Township 3, Range 96, Morgan County, Colorado.	The decedent, together with his wife, Lia M. Uhlenhopp, owned a one-half (1/2) interest of minerals in the described property to which now becomes property of current landowner.



## Morgan County Treasurer

### Statement of Taxes Due

Account Number R800646  
Assessed To

Parcel 123115000900  
CITY OF BRUSH  
P O BOX 363  
BRUSH, CO 80723

**Legal Description****Situs Address**

S: 15 T: 3 R: 56 N1/2NE1/4 EX B551 P419 & B1011 P905

Year	Tax	Interest	Fees	Payments	Balance
<b>Grand Total Due as of 09/23/2023</b>					<b>\$0.00</b>

Tax Billed at 2022 Rates for Tax Area 220 - 220 - RE 2J

Authority	Mill Levy	Amount	Values	Actual	Assessed
COUNTY GENERAL FUND	19.4830000	\$0.00	POLITICAL SUBDIV - LAND	\$40,810	\$11,830
ROAD AND BRIDGE FUND	7.5000000	\$0.00			
SOCIAL SERVICES FUND	2.0000000	\$0.00	Total	\$40,810	\$11,830
BRUSH RURAL FIRE DIST	3.5130000	\$0.00			
E MORGAN COUNTY HOSPITAL	4.5000000	\$0.00			
E MORGAN COUNTY LIBRARY	3.5000000	\$0.00			
LOWER S PLATTE WATER CD	1.0000000	\$0.00			
MORGAN CO QUALITY WATER	0.8240000	\$0.00			
NORTHERN COLO WATER CD	1.0000000	\$0.00			
RE 2-J BRUSH GENERAL FD	27.0400000	\$0.00			
RE 2-J BRUSH M/L OVRD	9.3120000	\$0.00			
RE 2-J BRUSH BOND RED	12.7470000	\$0.00			
Taxes Billed 2022	92.4190000	\$0.00			

\*\*\*\*\*TAX LIEN SALE REDEMPTIONS MUST BE PAID BY CASH OR CASHIER'S CHECK\*\*\*\*\*

Special taxing districts and the boundaries of such districts may be on file with the County Commissioners, County Clerk, or County Assessor. Unless specifically mentioned, this statement does not include land or improvements assessed under a separate account number, personal property taxes, transfer tax or miscellaneous tax collected on behalf of other entities, special or local improvement district assessments, or manufactured homes.

ROBERT A SAGEL, MORGAN COUNTY TREASURER  
231 Ensign St, PO Box 593, Fort Morgan, CO 80701  
Phone: 970-542-3518, Fax: 970-542-3520, Email: esale@co.morgan.co.us  
Website: morgancounty.colorado.gov



## **Brush Volunteer Fire Department**

*Proudly Volunteering Since  
1907*

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To whom it may concern,

The Brush Volunteer Fire Department, Chief Tad Anderson and Assistant Chief Ray Uhrick, had an initial meeting with Blake Johnson and Will Cox, Monarch Energy on October 6, 2023. We had an introduction to the planned Overland Project, Hydrogen Generation Plant. We talked about the purpose of the plant, need for long term storage, transportation of product, Transportation routes, and Emergency Response. We felt it was an informative introduction and look forward to addition meetings and interactions as this project moves forward.

Tad Anderson, Chief



Brush Volunteer Fire Department



October 6, 2023

Overland Hydrogen & E-Fuels  
Blake Johnson  
101 Copper St  
Santa Cruz, CA 95060

Dear Mr. Johnson:

Northeast Colorado Health Department (NCHD) has no objection to the proposed plans for the Overland Hydrogen & E-Fuels a hydrogen production facility in Morgan County. The Onsite Wastewater Treatment System (OWTS) will be designed for appropriate number of employees and used for sanitary waste only. Said project site will be located in Section 15 – Township 3N – Range 56W of Morgan County, Colorado.

Potable water will be served by the Morgan County Quality Water District.

During construction, porta-potties will be used for the collection of sanitary waste. We ask that you provide NCHD a signed contract with a licensed NCHD pumper before operations begin.

Prior to installation, the owner(s) shall obtain from this office, an application to install an OWTS and remit the appropriate fee. The system will need to be designed by a P/E, once the design is received and approved, this department will issue a permit to install the system. Construction of a septic system shall conform to all REGULATION NO. 43 - ON-SITE WASTEWATER TREATMENT SYSTEM REGULATION 5 CCR 1002-43; including, but not limited to, setback distances from wells, creeks, irrigation ditches, property lines, buildings, high water and other septic systems.

Please Note: sewage systems for commercial businesses or facilities may have further requirements such as but not limited to the following:

1. A professional engineer may be required to design the OWTS.
2. Approval from the Colorado Department of Public Health and Environment, Water Quality Division may be needed.
3. Approval from the EPA, Class V Underground Injection Control Program may be needed.

If there are any questions please call me at 970/867-4918 ext. 2282

Sincerely,

A handwritten signature in black ink, appearing to read "Melvin Bustos". The signature is fluid and cursive, with a large, stylized 'M' and 'B'.

Melvin Bustos  
Environmental Health Manager  
Northeast Colorado Health Department

Cc: Trish McClain, BSN, RN | Public Health Director  
Northeast Colorado Health Department



**Right of Way & Permits**

1123 West 3<sup>rd</sup> Avenue  
Denver, Colorado 80223  
Telephone: 303.285.6612

October 20, 2023

Morgan County Planning and Building Department  
231 Ensign / PO Box 596  
Fort Morgan, CO 80701

Attn: Jenafer Santos, Nicole Hay, and Cheryl Brindisi

**Re: Monarch Energy – Special Use Permit**

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the plan for **Monarch Energy** and has **no apparent conflict**. Please be aware PSCo owns and operates existing natural gas distribution facilities along east property line.

The property owner/developer/contractor must complete the application process for any new natural gas or modification to existing facilities via [xcelenergy.com/InstallAndConnect](http://xcelenergy.com/InstallAndConnect). It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.

As a safety precaution, PSCo would like to remind the developer to call the Utility Notification Center by dialing 811 for utility locates prior to construction.

Violeta Ciocanu (Chokanu)  
Right of Way and Permits  
Public Service Company of Colorado dba Xcel Energy  
Office: 303-285-6612 – Email:





# Morgan County Rural Electric Association

734 Barlow Road · P.O. Box 738 · Fort Morgan, Colorado 80701

(970) 867-5688 · FAX: (970) 867-3277 · e-mail: customerservice@mcrea.org



A Touchstone Energy<sup>®</sup> Cooperative  
The power of human connections<sup>®</sup>

October 3, 2023

Blake Johnson  
Monarch Energy

**RE: Certification of Electric Power  
N ½ of NE ¼ of Sec 15, T3N, R56W  
Monarch Energy**

This letter is in regard to a request to provide certification to the Morgan County Planning and Zoning Commission, that we can provide sufficient electric power for Monarch Energy in the North Half of the Northeast Quarter of Section 15, Township 3 North, Range 56 West.

Morgan County REA presently has electric distribution lines near this property, and will be able to provide electric service to the proposed site.

We hope this letter will suffice. If we can be of any further assistance, please feel free to contact the office.

Sincerely,

**Stephan Sundet**  
Engineer  
Morgan County REA  
734 Barlow Road  
PO Box 738  
Fort Morgan, CO 80701  
970-867-5688 (Office)



**Approved Driveway Access Permit**  
**Morgan County, Colorado**

<b>Driveway Access Code:</b>		<b>CLD28-0.845-W-P</b>		<b>Date:</b>		<b>10-02-2023</b>	
<b>Property Owner (Permittee):</b>							
	<b>Name:</b>	<b>City of Brush</b>					
	<b>Address:</b>	<b>600 Edison</b>					
	<b>Address:</b>						
	<b>City:</b>	<b>Brush</b>	<b>State:</b>	<b>CO</b>	<b>Zip Code:</b>	<b>80723</b>	
	<b>Phone:</b>		<b>Email:</b>				
<b>Agent of Property Owner (If Applicable)</b>							
	<b>Name:</b>	<b>Monarch Energy Development LLC Blake Johnson</b>					
	<b>Address:</b>	<b>101 Cooper St.</b>					
	<b>Address:</b>						
	<b>City:</b>	<b>Santa Cruz</b>	<b>State:</b>	<b>CA</b>	<b>Zip Code:</b>	<b>95060</b>	
	<b>Phone:</b>		<b>Email:</b>	<b> </b>			
<b>Parcel Number:</b>		<b>12311500900</b>					
<b>Legal Description:</b>		<b>North 1/2 of the Northeast 1/4 of Sec 15, Township 3, N, Range 56 West of the 6<sup>th</sup> PM EXCEPT B551 P419 &amp; B1011 P905.</b>					
<b>GPS Coordinates at the Centerline of Driveway:</b>				<b>Latitude:</b>	<b>40.233223</b>		
				<b>Longitude:</b>	<b>-103.623032</b>		
<b>Access onto County Road:</b>							
		<b>MCR 28</b>					
<b>Driveway Type:</b>	<b>X</b>	<b>New</b>		<b>Existing</b>			
<b>Maximum Width of Approved Driveway is:</b>				<b>40 FEET</b>			
<b>Culvert Required:</b>		<b>No</b>	<b>X</b>	<b>Yes</b>	<b>If Yes, Required Size is:</b>	<b>21</b>	<b>Inch</b>

*If a culvert is not required at the time of permit issuance but future conditions deem one necessary, the cost of said culvert may be at the property owner's expense.*

The above identified driveway has been approved by Morgan County Road and Bridge Department pursuant to all terms and conditions outlined in the Application for Driveway Access Permit are adhered to. Failure to comply with these term and conditions may result in this permit being revoked and/or the driveway being removed at permittee's expense. This permit is valid only for the one driveway access identified above. Construction of said driveway may proceed.

Morgan County, Colorado  
Public Works Department

BRUCE BASS

Authorized Morgan County Agent Signature

Date:



**Application for Driveway Access Permit**  
Morgan County, Colorado

**Instructions for Completing and Submitting Application**

1. **Property Owner (Permittee):** Please provide the full name, mailing address, telephone number and email address (if available) of the legal property owner. The provided telephone number should be one where the Permittee can be reached during business hours Monday through Friday, 8:00 a.m. to 4:00 p.m. MDT.
2. **Agent of Permittee:** If the applicant (person or company completing this application) is different from the legal property owner (Permittee), provide entity name (if applicable), the full name of the person serving as the agent, mailing address, telephone number, and email address (if available). The provided telephone number should be one where the Agent can be reached during business hours Monday through Friday, 8:00 a.m. to 4:00 p.m. MDT. *Please provide documentation you are an agent of property owner.*
3. **Legal Description of property:** Provide the legal description to the full extent that applies for the property to be accessed by the requested driveway. Include the Assessor parcel number. This information is available through the County Assessor or Clerk and Records office or on your property deed(s).
4. **Road Access:** Complete the information on the County Road that will be accessed by this proposed driveway.
5. **New or Existing Driveway:** Complete the information for the driveway type.  
**New Driveways:**
  - In determining location for the proposed driveway, take into account: line of site distances, relationship to road intersections, and relationship to crests of hills.
  - Please indicate the desired width of the new requested driveway.
  - If possible, provide a map showing the desired location of the proposed driveway.
  - ***The proposed area for the new driveway must be clearly marked with flagged stakes on each side of the proposed area. Please have the location marked as indicated prior to submitting application.***
6. Initial the bottom of page two (2) in the provided location indicating that you have read and understand the terms and conditions.
7. Signature Section must be signed and dated by the property owner or agent. Applications will not be processed until they are fully completed, initialed, signed and submitted, along with any additional required documents.
8. **Submittal of Application:** Please submit application and all corresponding paperwork to:  
By mail or in person: Morgan County Road and Bridge Department  
P.O. Box 516  
17303 County Road S  
Fort Morgan, CO 80701  
By Email to: [rbmorganc@co.morgan.co.us](mailto:rbmorganc@co.morgan.co.us)



**Application for Driveway Access Permit**  
Morgan County, Colorado

**Terms and Conditions**

1. The granting of this permit application is for one (1) property access across the county right of way onto a county road. The access must not exceed the approved width defined on the approved permit. Additional accesses crossing the right of way must be applied for separately.
2. If this access is to be onto an access/travelling easement, then a copy of the easement, recorded plat or use agreement must accompany this application.
3. The granting of a driveway access permit by Morgan County is only for the purpose of crossing the right of way under the counties jurisdiction. It is the permittee's responsibility to identify and obtain permissions to cross any other easements, covenants, right of ways or private agreements that may exist.
4. If the access request is onto any Federal or State lands, you must provide the names and contact information for the relevant agencies and attach a copy of the authorization for the property use.
5. All property owners/agents are responsible for any damages that may occur to the county road or right of way during installation of said driveway.
6. The construction and all costs associated with the construction of the driveway are the responsibility of the property owner/agent. The construction cannot exceed the defined width and must include any specified culverts required as defined in the approved permit. Culverts may be purchased from anywhere, however they must be approved by the county prior to installation. Culverts may also be purchased from Morgan County Road and Bridge.
7. If a culvert is required, it is for use by Morgan County to protect the road and right of way. Morgan County retains the right to utilize the culvert in any way it deems necessary.
8. If a culvert is not required at the time of permit issuance, however, in the future a culvert is deemed necessary, the cost of said culvert may be at the property owner's expense.
9. Inside the county right of way, the driveway may only consist of the travelling surface to access the property. No other structures or appurtenances may be placed in the right of way (*examples: columns, walls, fencing, large rocks, etc.*). The only exception to this requirement is mailboxes.
10. During the construction of an approved driveway, it is the responsibility of the property owner/agent and/or their contractor to insure safety to the travelling public. This could include the use of signs, cones and/or traffic control as necessary.
11. All repairs, maintenance and costs associated with said driveway are the responsibility of the property owner/agent.
12. Morgan County is not responsible for any damages to the driveway caused by normal maintenance operations, including but not limited to mowing, grading, and snowplowing.
13. The property owner/agent agrees to hold harmless, indemnify, and defend Morgan County from any claim of any person arising from the installation, use, maintenance, or removal of the driveway in the county right of way.
14. The terms, conditions and requirements defined in this application and subsequent approved permit will remain valid through any future sales, transfer of ownership or assignments of the property defined in this driveway application.

BA

Please Initial that you have read and understand the terms and conditions outlined on this page.



**Application for Driveway Access Permit**  
Morgan County, Colorado

**1. Property Owner (Permittee):**Name: City of Brush!Address: 600 Edison St.City/State/Zip Code: Brush, CO 80723

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**2. Agent of Property Owner (If Applicable)**Company/Individual Name Monarch Energy Development LLCContact Name (If Applicable) Blake JohnsonAddress: 101 Cooper St.City/State/Zip Code: Santa Cruz, CA 95060

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**3. Legal Description:**N/2 NE/4 Section 15, Township 3, Range 56 EXCEPT B551 P419 & B1011 P905North 1/2 of the NE 1/4Parcel Number: 12311500900**4. Road Access:**Access onto County Road 28 (Circle Direction) North / South / East West of County Road \_\_\_\_\_**5. Driveway Type:** (Check One) ☒ **\*\*New Driveway**

Existing Driveway \_\_\_\_\_

Desired width of New Driveway 20 Feet.**\*\*If this is a new driveway location, please place flagged stake marker on each side of the requested driveway location.**

I have read the instructions, terms and conditions outlined in this Driveway Access Permit Application, and agree to all terms and conditions outlined therein, furthermore, I understand no liability is assumed by the County of Morgan, Colorado or its agents by issuance of a permit for this application and all costs, present and future, associated with the access provided by an Approved Driveway Access Permit are the responsibility of the property owner/agent and or any future assignees. The applicant declares the information provided are true and complete to the best of their knowledge.

Designated by:

Ben Alving9/23/2023

Property Owner/Agent Signature

Date

Submit Completed Application and All Supporting Documents to:

Morgan County Road and Bridge Department

P.O. Box 516

17303 County Road S

Fort Morgan, CO 80701

Or by Email to: [rbmorganc@co.morgan.co.us](mailto:rbmorganc@co.morgan.co.us)

Phone: (970) 542-3560 Fax: (970) 542-3569

For Office Use only below this line

Determination: ☒ Approved \_\_\_\_\_ Denied (Reason for Denial): \_\_\_\_\_GPS Coordinates, Centerline of Driveway in relation to road: Latitude: 040.233223Maximum Width of Driveway: 40 Feet Longitude: -103.623032Culvert Required ☒ YES ☐ NO If Yes, Size: 21"Closest Intersecting Road P Measurement from Closest Intersecting Road 4463' FeetDriveway Access Code: CLD28-0.845-W-PCompleted By: KEN NELSEN Date: 10-2-23



# Exhibit 1

## Conceptual Site Layout

Prepared By: Blake Johnson  
Preparation Date: 9/18/2023

Project Description:  
Type: Hydrogen & E-fuels Facility  
Size: 250MW Electrolyzer, 48MW Fuel Cell, 32MW Liquefier

Property Legal Description:  
N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Meridian, Colorado, EXCEPT a parcel of land described as follows: Commencing at the N1/4 corner of said Section 15; thence 1256 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a Southerly direction along the South right of way line of an irrigation ditch 388 feet; thence in a Southwesterly direction along same South right of way line a distance of 224 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence S00°02'07"E along the East line of said Section 15 a distance of 622.34 feet; thence S89°57'53"W perpendicular to said East line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14796, the point of beginning; thence S00°02'07"E parallel to and 30.00 feet West of said East line a distance of 277.88 feet to a set #5 rebar with a plastic cap stamped L.S. #14796; thence S88°15'52"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14796; thence N89°55'24"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.

### Signature Blocks

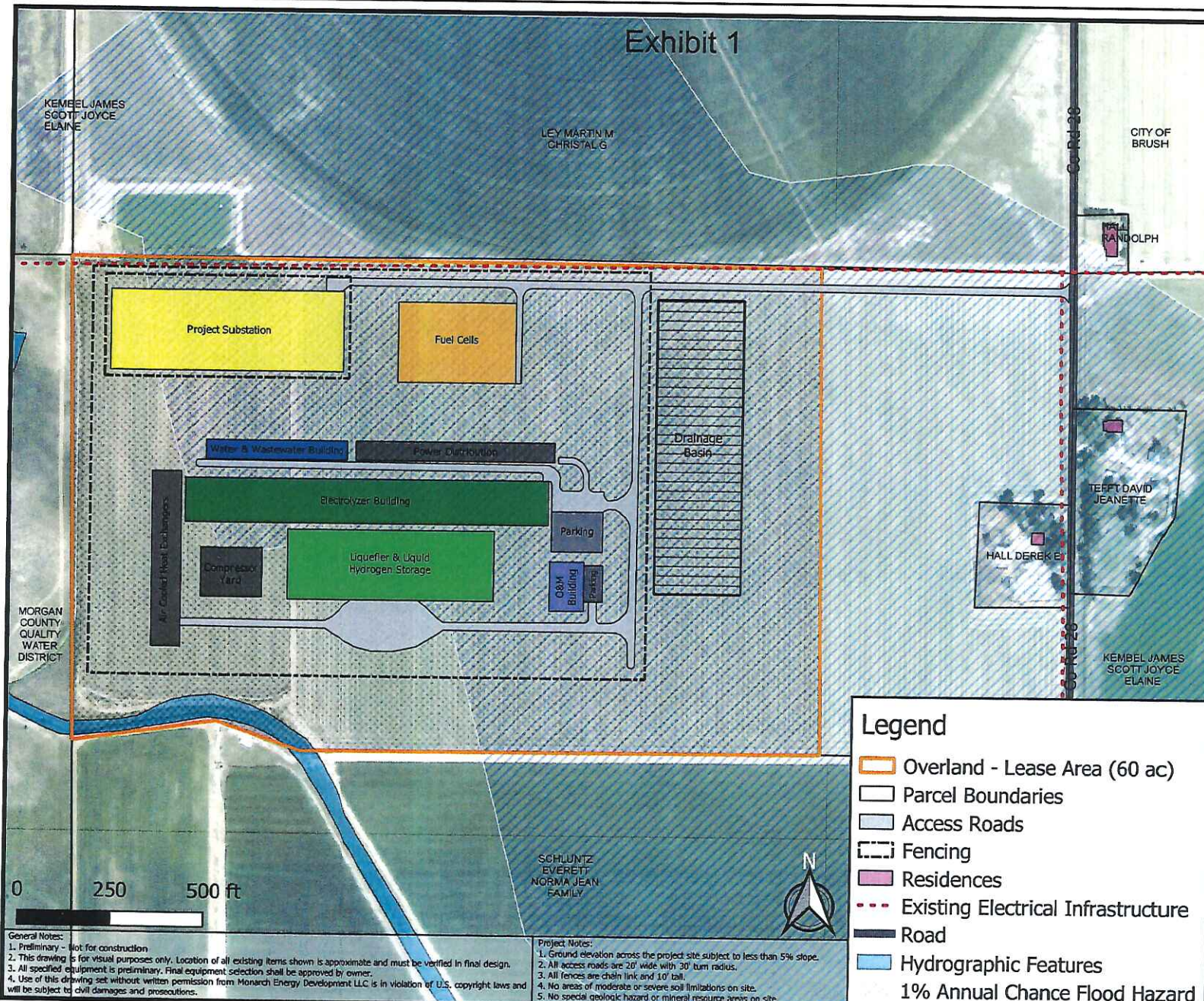
Landowner  
Name:  
Title:

Planning Commission  
Name:  
Title:

County Board  
Name:  
Title:

County Clerk  
Name:  
Title:

Project Information  
Landowner Name: City of Brush  
Landowner Address: 600 Edison St., Brush, CO  
Developer Name: Monarch Energy  
Developer Address: 101 Cooper St., Santa Cruz, CA  
Site Location: ~2 miles South of Brush



### Legend

- Overland - Lease Area (60 ac)
- Parcel Boundaries
- Access Roads
- Fencing
- Residences
- Existing Electrical Infrastructure
- Road
- Hydrographic Features
- 1% Annual Chance Flood Hazard

General Notes:  
1. Preliminary - Not for construction.  
2. This drawing is for visual purposes only. Location of all existing items shown is approximate and must be verified in final design.  
3. All specified equipment is preliminary. Final equipment selection shall be approved by owner.  
4. Use of this drawing set without written permission from Monarch Energy Development LLC is in violation of U.S. copyright laws and will be subject to civil damages and prosecutions.

Project Notes:  
1. Ground elevation across the project site subject to less than 5% slope.  
2. All access roads are 20' wide with 30' turn radius.  
3. All fences are chain link and 10' tall.  
4. No areas of moderate or severe soil limitations on site.  
5. No special geologic hazard or mineral resource areas on site.



## Project Vicinity Map

Prepared By: Blake Johnson  
Preparation Date: 8/17/2023

Project Description:  
Type: Hydrogen & E-fuels Facility  
Size: 250MW Electrolyzer, 48MW Fuel Cell, 32MW Liquefier

Property Legal Description:  
N1/2NE1/4 Section 15, Township 3 North, Range 56 West of the 6th P.M. Morgan County, Colorado, EXCEPT a parcel of land described as follows: Commencing at the NE1/4 corner of said Section 15; thence 1266 feet South along the West line of said NE1/4, Section 15 to the point of beginning; thence in a southerly direction along the South right of way line of an irrigation ditch 348 feet; thence in a Southwesterly direction along same South right of way line a distance of 234 feet to a point on the south line of the N1/2NE1/4 of Section 15; thence West along said South line of the N1/2NE1/4 a distance of 54 feet to the point of beginning, AND EXCEPT a parcel of land described as follows: Commencing at the Northeast corner of said Section 15; thence S00°02'07"E along the East line of said Section 15 a distance of 612.34 feet; thence S89°57'53"W perpendicular to said east line, a distance of 30.00 feet to a set #5 rebar with plastic cap stamped L.S. #14795, the point of beginning; thence S00°02'07"E parallel to and 30.00 feet West of said East line a distance of 277.80 feet to a set #5 rebar with a plastic cap stamped L.S. #14796; thence S89°00'26"W a distance of 220.01 feet to a set #5 rebar with plastic cap stamped L.S. #14795; thence N89°55'24"E a distance of 216.74 feet to the point of beginning, according to survey by Powers Elevation Co., Inc. recorded in Book 1010 at Page 515 and commonly known as VACANT.

### Signature Blocks

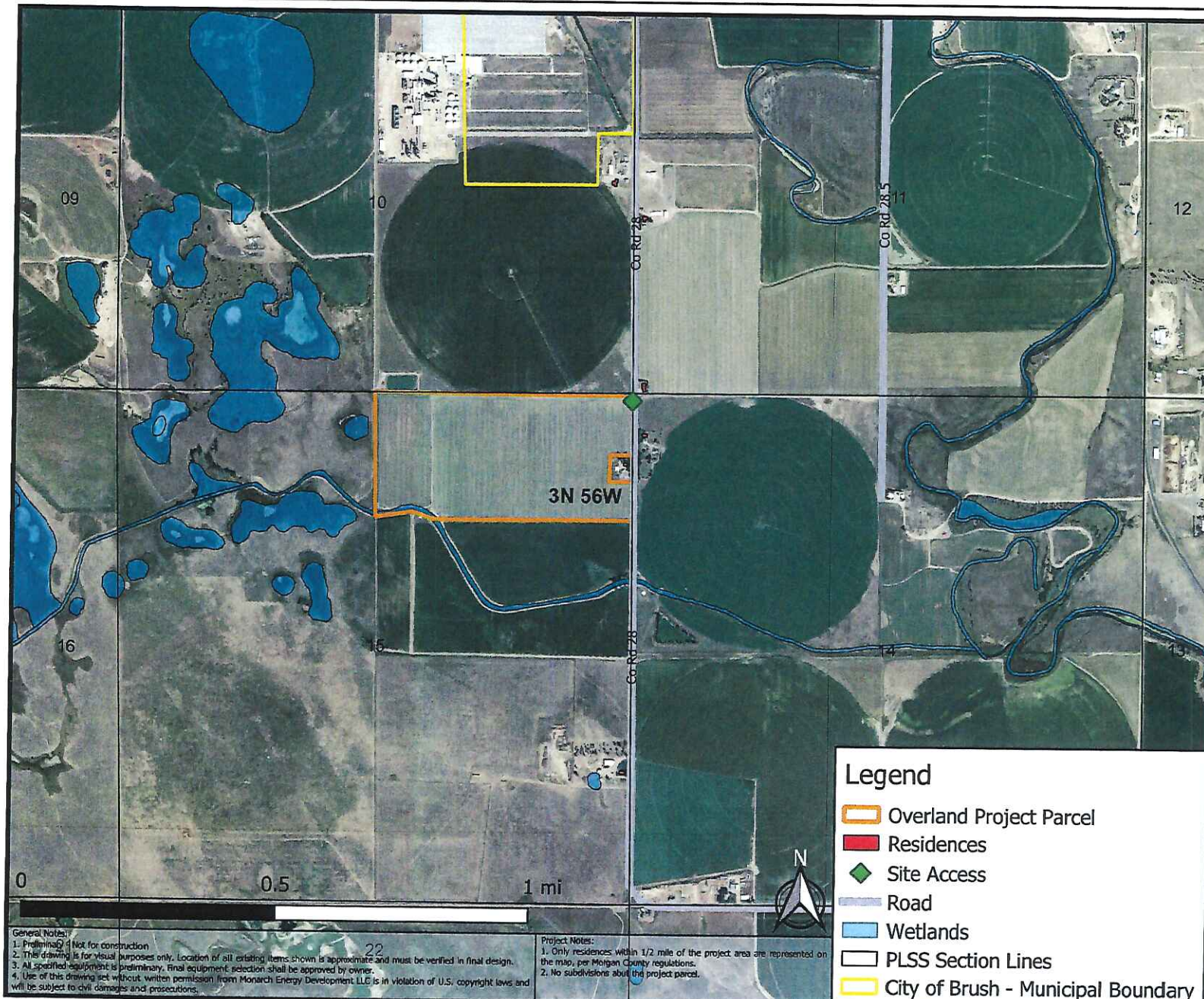
Landowner  
Name:  
Title:

Planning Commission  
Name:  
Title:

County Board  
Name:  
Title:

County Clerk  
Name:  
Title:

Project Information  
Landowner Name: City of Brush  
Landowner Address: 600 Edison St., Brush, CO  
Developer Name: Monarch Energy  
Developer Address: 101 Cooper St., Santa Cruz, CA  
Site Location: ~2 miles South of Brush



### Legend

- Overland Project Parcel
- Residences
- ◆ Site Access
- Road
- Wetlands
- PLSS Section Lines
- City of Brush - Municipal Boundary

General Notes:  
1. Preliminary. Not for construction.  
2. This drawing is for visual purposes only. Location of all existing items shown is approximate and must be verified in final design.  
3. All specified equipment is preliminary. Final equipment selection shall be approved by owner.  
4. Use of this drawing set without written permission from Monarch Energy Development LLC is in violation of U.S. copyright laws and will be subject to civil damages and prosecutions.

Project Notes:  
1. Only residences within 1/2 mile of the project area are represented on the map, per Morgan County regulations.  
2. No subdivisions about the project parcel.

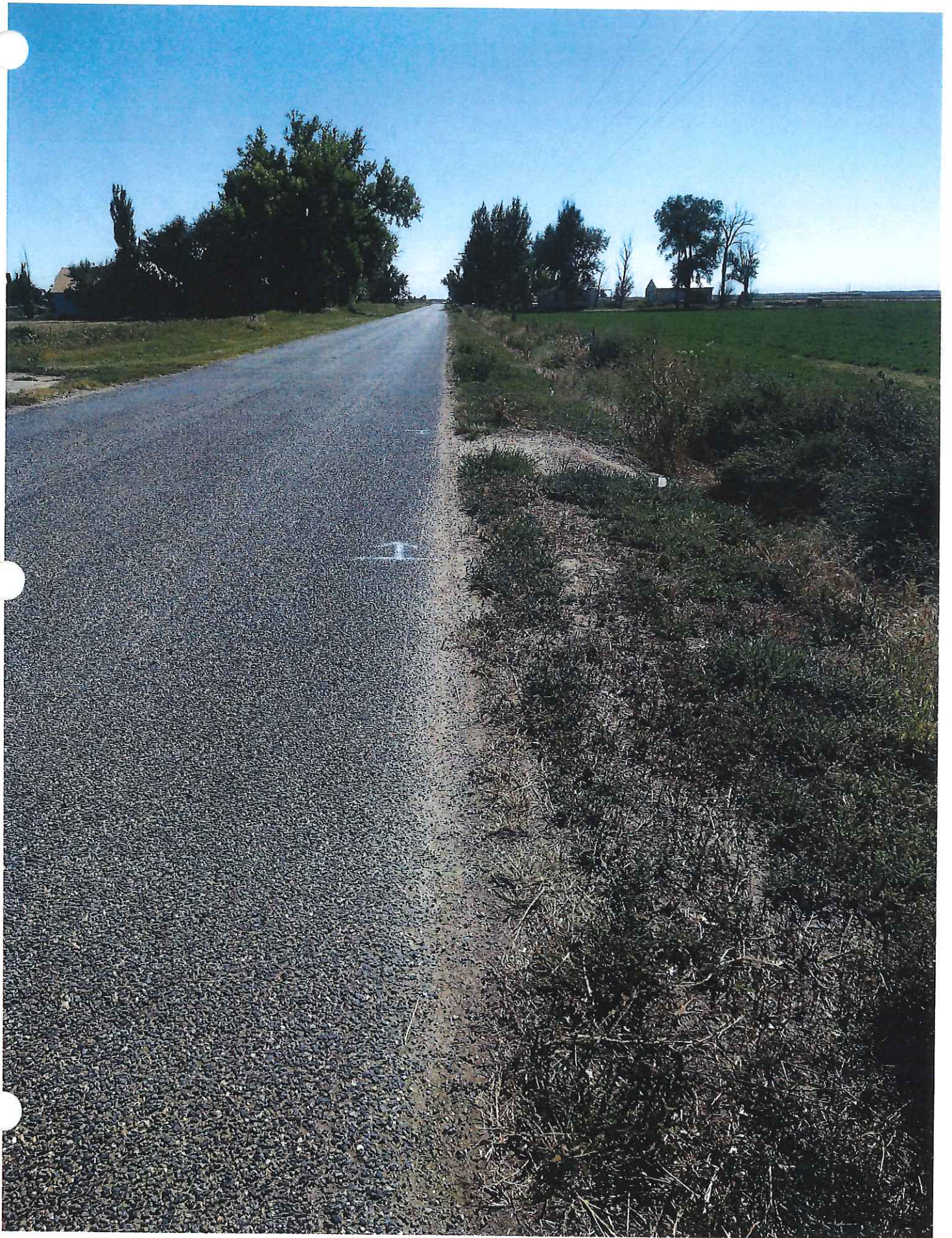








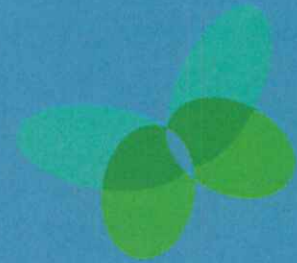






# Green Hydrogen 101

April 2023



**MONARCH**  
— ENERGY —

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# Executive Summary

## Why Green Hydrogen? Why Monarch?

- **Monarch** is the premier **Green Hydrogen** Developer
  - Twelve game-changing projects (4.2 GW)
  - 150+ years of US energy experience
  - Partners: Plug Power, Lancium, Denbury, Entergy
- What is **Green Hydrogen**?
  - Hydrogen is a \$200B industry today: used for fertilizer, steel, and oil refining
  - 95% of US hydrogen production is fossil fuel based; **Green Hydrogen** is made from clean electricity and water
  - **Green Hydrogen** can be used for energy storage, making clean fuels, fertilizer, steel and oil refining
- Why is **Green Hydrogen** important?
  - Cleaner, American-made hydrogen
  - EU targeting massive **Green Hydrogen** supply; global competition brewing<sup>1</sup>
  - Green Power will see an investment of \$11 Trillion by 2050<sup>2</sup>
  - 700,000 jobs expected by 2030<sup>3</sup>
  - Can reduce emissions by 900 Million Tons of CO<sub>2</sub> per Year (2.4%)<sup>4</sup>
- How is **Green Hydrogen** made?
  - It's straight-forward: clean electricity splits water into oxygen and **Green Hydrogen**



### How it's made



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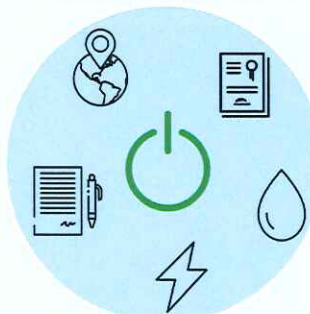
# Monarch Energy | Company Overview

*Monarch Energy leverages decades of industry expertise to rapidly develop electrofuels projects using surplus renewable energy*

## The Business

To de-risk electrolyzer projects for investment by long-term infrastructure owners, our team secures:

- Land rights
- Permitting approvals
- Green Power
- Water
- Long-term offtake contracts



The current pipeline consists of projects ranging from 100-500 MW in electrolyzer nameplate capacity

Monarch's siting strategy matches proximity to renewable energy generation with large-scale industrial hydrogen consumers to provide lowest cost green hydrogen to our customers

## The Projects

*Monarch controls 12 development projects totaling 4,300MW of future electrolyzer and 1,050MW of future renewables generation*



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# Uses of Green Hydrogen

*12 million tons of hydrogen were consumed in 2021 with demand estimated to grow to 30 million by 2040 – Green Hydrogen is expected to play an important role in the new sectors driving this growth*

Products	Use Cases
<ul style="list-style-type: none"><li>• Green Hydrogen</li><li>• Green Ammonia</li><li>• Green Methanol</li><li>• ElectroFuels<ul style="list-style-type: none"><li>• Sustainable Aviation Fuel (SAF)</li><li>• Synthetic Natural Gas (SNG)</li><li>• Renewable Diesel</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Steel</li><li>• Oil Refining</li><li>• Plastics and Chemicals</li><li>• Energy Storage</li><li>• Fertilizer</li><li>• Maritime Bunkering</li></ul>



# Green Hydrogen Production

Green Hydrogen is an energy carrier produced simply with water & clean electricity. The molecule can be used as a feedstock, standalone energy source, or used to create more complex and energy dense molecules.

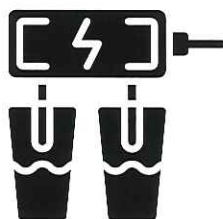
Clean Electricity



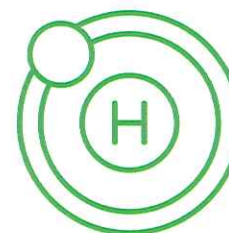
Water



Splits water into oxygen and hydrogen



Creates **Green Hydrogen**



## Derivatives

- ☐ Green Hydrogen
- ☐ Green Ammonia
- ☐ Green Methanol
- ☐ Sustainable Aviation Fuel (SAF)
- ☐ E-Fuels

Inputs

Production

Product



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# Requirements for Developing Green H2

## Clean Electricity



Wind



Solar



Nuclear

## Water

- Can use various water supply sources
  - Produced, reclaimed ground or surface water
- Three gallons of H<sub>2</sub>O produces one kg of H<sub>2</sub>
  - One kg of H<sub>2</sub> ≈ one gallon of gasoline energy
- A 500 MW project can produce 200,000 kg of H<sub>2</sub> daily

## Land

- Electrolyzer:
  - 500 MW project footprint requires only 40 acres





# Safely Transporting Green Hydrogen

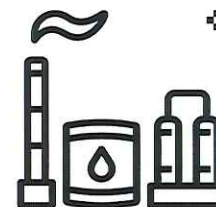
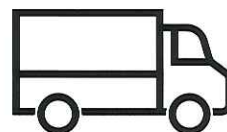
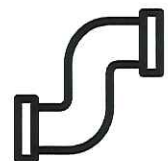
*Hydrogen has been safely transported around the world for nearly 100 years*

Green Hydrogen

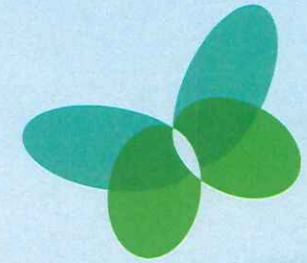
Underground  
Storage

Pipelines,  
Trains & Trucks

Downstream  
Consumers



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# **Appendix & Sources**

*For further learning*

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9

# How is Green Hydrogen Produced?

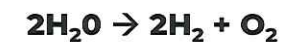
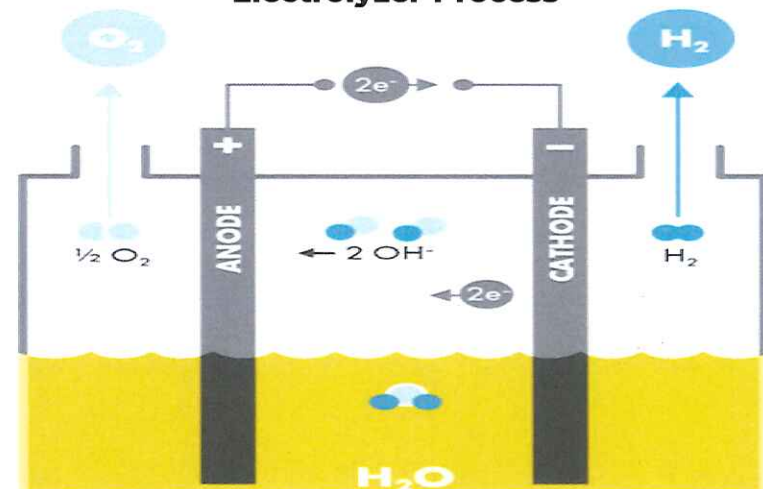
*Electrolyzers transform clean electricity, water and land into green hydrogen*

**Electrolyzer Infrastructure**



**A 500 MW electrolyzer needs only 40 acres**

**Electrolyzer Process**



# Sources

1. Hydrogen Europe. "Historical Day for Green Hydrogen." Hydrogen Europe, [www.hydrogeneurope.eu/historical-day-for-green-hydrogen/](http://www.hydrogeneurope.eu/historical-day-for-green-hydrogen/), 22 Feb. 2023.
2. Mathis, Will, and Jeremy Hodges. "Green Power to Draw \$11 Trillion Investment by 2050: BNEF." Bloomberg.com, Bloomberg, 27 Oct. 2020, <https://www.bloomberg.com/news/articles/2020-10-27/green-power-to-draw-11-trillion-investment-by-2050-bnef-says>.
3. "Road Map to a US Hydrogen Economy: Full Report." Hydrogen Council, 2023, [www.hydrogencouncil.org/wp-content/uploads/2023/03/Hydrogen-Economy-Road-Map-Full-Report.pdf](http://www.hydrogencouncil.org/wp-content/uploads/2023/03/Hydrogen-Economy-Road-Map-Full-Report.pdf).
4. International Energy Agency. "Hydrogen Supply." IEA, 2023, [www.iea.org/reports/hydrogen-supply](http://www.iea.org/reports/hydrogen-supply).

