

PLANNING COMMISSION

Mike Simone, Chairperson
Bushrod White, Vice-Chairperson
Carlos Barron
Lynne Derby
Kathy Kvasnicka
Thomas Meyers
Paul Weber

**Planning Commission Agenda
Regular Meeting
Fort Lupton City Hall – 130 S. McKinley Ave.*
Thursday, June 24, 2021
6:00 P.M.**

(Order & Contents Subject to Change by Action of the Commission)

** Login information on how to attend this meeting virtually (optional) is on the second page of this Agenda.*

Call to Order – Roll Call

Approval of Agenda

Consent Agenda – Consent Agenda items are considered to be routine and will be enacted by one motion and vote. There will be no separate discussion of Consent Agenda items unless a Commission member so requests, in which case the item may be removed from the Consent Agenda and considered at the end of the Consent Agenda.

- a. Approval of the Minutes of the June 10, 2021 Meeting

Public Comment – This portion of the Agenda is provided to allow members of the audience to present comments to the Planning Commission related to items not otherwise listed on the Agenda.

Action Items

- a. **P2021-017 Been Minor Subdivision**
- b. **P2021-018 Been RV Park Special Use Permit**
- c. **P2021-019 Fort Lupton East Change of Zone**

Discussion Items

- a. Review of Meeting Discussion
- b. Development Code Update

Future Business

- a. Next Meeting of the Planning Commission is July 8, 2021 at 6:00 PM.

Adjourn

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Virtual Meeting Instructions

If you would like to participate remotely, we encourage you to test the phone number and links provided above prior to the start of the meeting, as each device requires initial adjustment. It is also recommended to log into the meeting early, and if you encounter any issues to call 303-304-4498 or email PlanningDept@fortluptonco.gov immediately.

When calling in, please be sure to mute your microphone on your computer, phone or tablet. Planning staff and/or the Chairman of the Planning Commission will provide instructions on when and how comments can be made by the public virtually.

**RECORD OF PROCEEDINGS
FORT LUPTON PLANNING COMMISSION
June 10, 2021**

The Planning Commission of the City of Fort Lupton met in session at the City Complex, 130 South McKinley Avenue, the regular meeting place of the Planning Commission and virtually via GoToMeeting, on Thursday, April 8, 2021.

Chair Mike Simone called the meeting to order at 6:00 p.m. and gave the following advisement:

Tonight's meeting shall be held virtually so as to ensure the health and safety of the general public and the City of Fort Lupton Planning Commission and staff.

The intent and purpose of the virtual appearance options is to allow the City to be innovative in providing the general public the most meaningful access possible in light of the current challenges present as a result of the Covid-19 pandemic. Therefore, subject to social distancing and public health orders, members of the general public will be offered the opportunity to be electronically present for meetings at the City, subject to existing health conditions.

An electronic link has been made available for tonight's meeting on the City's website and social media platforms and as posted at City Hall, so that the general public, Planning Commission and staff may participate electronically via the internet or on the phone.

ROLL CALL

Roll was taken and those present were Chair Mike Simone and Commission Members Carlos Barron and Kathy Kvasnicka. Member Lynne Derby participated via phone. Also in attendance were City Planner II Alyssa Knutson, City Planner I Maria Lancto, and Administrative Assistant Magaly Morales-Tejada.

APPROVAL OF AGENDA

A motion to approve the agenda was moved by Carlos Barron and seconded by Kathy Kvasnicka.

CONSENT AGENDA

A motion to approve the consent agenda was moved by Carlos Barron and seconded by Kathy Kvasnicka.

PUBLIC COMMENT

Chair Simone asked if there was anyone who would like to comment on an item not on the agenda tonight. Hearing none, he closed Public Comment.

ACTION ITEMS

P2021-015: A&D Custom Cruisers

Chair Simone addressed the applicant, David Corder, 155 Valle Dr. and asked if he understood that a Member of the Planning Commission is appearing tonight via virtual connection and will not be appearing

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FORT LUPTON PLANNING COMMISSION
June 10, 2021**

in-person. He asked if he consented to the applicable member voting on his submittal, even though said member was not present in person and if he voluntarily signed and submitted the written waiver and consent to proceed electronically tonight.

Mr. Corder stated yes to all questions.

Planner Maria Lancto presented this item. She stated that this application was submitted for a special use permit for an auto body and paint shop at a site located at 721 5th Street in the 'C-1' General Commercial Zone District. Ms. Lancto stated that this site was previously an auto parts retail store, and there are other auto body businesses in the immediate area, which is why staff is supportive of the special use permit. Ms. Lancto stated that all notification requirements had been met, including posting in the newspaper and mailing to all surrounding properties. She stated that Mr. Corder was present to answer any questions.

Mike Simone addressed the applicant, David Corder. He asked if he had anything to add or present on behalf of his application.

Mr. Corder stated that he started his business in Fort Lupton in 2006 and was simply moving locations within the city.

Chair Simone opened up the public comment portion of the Hearing for the action item. Hearing no one from the public wishing to speak, Chair Simone closed the Public Hearing.

Chair Simone opened up the hearing to Planning Commissioners' comments and questions. With no questions from Planning Commissioners, Chair Simone called for a motion to approve P2021-0015.

It was moved by Carlos Barron and seconded by Kathy Kvasnicka. Motion passed unanimously.

P2021-016 Murata Farms Preliminary Plat & Preliminary PUD Plan

Chair Simone addressed the applicant, Eric Eckberg, 2696 S Colorado Blvd, and asked if Mr. Eckberg understood that a Member of the Planning Commission is appearing tonight via virtual connection and will not be appearing in-person, if he consented to the applicable member voting on his submittal, even though said member was not present in person, if he voluntarily signed and submitted the written waiver and consent to proceed electronically tonight and if he waived his right to have said member appear in person and consented to proceed with tonight's hearing.

Mr. Eckberg stated yes to all questions.

Planner Alyssa Knutson presented this item. She stated that this application was for a Preliminary Plat and Preliminary PUD Plan for a property located south of Hwy 52 and west of County Road 29, to be known as the Murata Farms Subdivision. She stated that this application was for a mixed density residential development which will also include commercial development on the upper northeast corner. Ms. Knutson stated that the Preliminary Plat is platting 180 single family residences and future phases will include mixed use residential and commercial. She stated that there are several trails and pocket parks. Ms. Knutson stated

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that zoning is currently PUD and the proposal complies with the PUD zoning. Ms. Knutson stated that all notification requirements had been met and that the applicant had a presentation for the commission.

Eric Eckberg stated that also present with him was Travis Frazier, Project Engineer and Karen Henry, Planner. Mr. Eckberg stated that the sketch plat for this project was previously approved by the Planning Commission and since then a new subdivision, Mountain Sky, has developed to the south. He stated that they have coordinated infrastructure with Mountain Sky. Mr. Eckberg stated that there will be 280 lots, with varying lot sizes allowing for single-family detached, single-family attached and multi-family units as well as varying price points. Mr. Eckberg stated that the commercial village corner will provide amenities to the community. Mr. Eckberg referred to the utility plan and pointed out that there is a non-potable water line that they will tie in to Mountain Sky's non-potable infrastructure to use for irrigation. He also pointed out that the regional detention pond on the southwest corner will be completed. Mr. Eckberg referred to the street improvements map and stated that they will be doing improvements to Highway 52 as well as turn lane improvements. Mr. Eckberg stated that all the infrastructure is tied to phase one, the single family lots. He stated that phase 3 and 4 are interchangeable or may occur concurrently. He then referred to the trail map and stated that they will have several connecting trails to the surrounding areas. Mr. Eckberg stated that they will be providing several amenities in the parks such as play structures, shelters and picnic tables. Mr. Eckberg stated that they believe this subdivision is a logical extension to Fort Lupton.

Chair Simone opened up the public comment portion of the Hearing for the action item. Seeing no one from the public wishing to speak, Chair Simone closed the Public Hearing.

Chair Simone opened up the hearing to Planning Commissioners' comments and questions.

Member Barron asked if the native weeds and plants near the well site would be left there.

Mr. Eckberg stated yes. Mr. Frazier added that that is part of the easement agreement with Occidental Petroleum Corp.

Chair Simone asked if the fencing would be wood or vinyl. He stated that he would like to see consistency and asked if this decision would be the developers or each home owner's.

Ms. Henry stated that at this phase in the plan they are leaving the option to either wood or vinyl but will ultimately be the developers decision for perimeter fencing. She stated that any open space or trail corridor will be open rail fencing, fencing on rear-yard and side-yard on homes will be privacy fencing. She stated that they will set a standard to provide consistency.

Chair Simone stated that he is not personally a fan of wood fencing on the perimeter and would like to see vinyl fencing, he also stated that he has seen standards in other cities where the developer installs fencing and likes how that works.

Ms. Henry stated that is something that they could consider.

Chair Simone asked if they would consider vinyl fencing on the perimeter?

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June 10, 2021

Ms. Henry stated that they could definitely look at it with the team, she stated that in many cases a stain on wood fencing prevents sprinkler rings.

Member Kvasnicka added that she has seen many different materials that should be considered for the fencing.

Chair Simone asked that a condition of approval be added stating that the applicant will present to City Council the pros and cons of different fencing materials.

Chair Simone asked if there will be a standard for streetlights to be downcast

Mr. Frazier stated that in the current state of design they have not yet addressed streetlight standards but they will work with United Power's standards as well as consider public safety when lighting pathways and roadways while keeping in mind the concerns of the commission of lighting spilling out to surrounding properties.

Chair Simone asked that a condition of approval be added stating that they will present downcast lighting to City Council.

Chair Simone asked if the hook up to the water main connection to Silverado would cause a decrease in pressure to surrounding neighborhoods.

Roy Vestal, Public Works Director, stated that this line was recently connected to the Mountain Sky development and there was no change in pressure. He stated that this connection actually removes the potential of stale water due to the dead end on Silverado.

Mr. Frazier added that looping the water system should help stabilize the system and that they will be providing a water model and ensure that they are not creating any pressure drops.

Chair Simone asked for clarification the number of units.

Mr. Eckberg stated that there will be 180 single-family, he stated that 60 units more or less are planned for phase 3 and phase 4, based on acreage and density. For a total of 300 units.

Mr. Frazier stated that one of the conditions of approval is a preliminary plat for phases 3 and 4.

Chair Simone asked if they are looking at 4 sided architecture for homes facing highway 52.

Mr. Eckberg stated that they are and they welcome city planners input.

Chair Simone asked if they have an idea of when the traffic light will be installed.

Mr. Frazier stated that they do not yet, they are reevaluating the access based on CDOT's comments and are working with the city.

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Chair Simone asked if this would be a metro district and if so, how many mills they would have.

Mr. Eckberg stated that they would be following the standard service plan for Fort Lupton and he believes that they are 55 mills.

Member Barron asked if they had an idea of what commercial would be coming in to the commercial village.

Mr. Eckberg stated that they do not know, but that it is a large area that gives opportunity for various commercial developments.

Chair Simone called for a motion to conditionally approve P2021-0016. It was moved by Carlos Barron and seconded by Lynne Derby. Motion passed unanimously.

DISCUSSION ITEMS

Review of Meeting Discussion

A review of meeting discussions took place.

Development Code Update

A discussion of the Development Code Update took place.

FUTURE BUSINESS

The next meeting of the Planning Commission is scheduled for June 24, 2021 at 6:00 PM.

ADJOURNMENT

Chair Simone adjourned the meeting at 6:47 PM.

Submitted by

Magaly Morales-Tejada, Planning Assistant

Approved by Planning Commission

Mike Simone, Chair-person

RESOLUTION NO. P2021-017

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF THE BEEN MINOR SUBDIVISION TO CREATE FOUR SEPARATE LOTS ON A PROPERTY LOCATED IN THE NORTHEAST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on June 24, 2021, for the purpose of reviewing the Been Minor Subdivision application; and

WHEREAS, the minor subdivision will divide the property into four (4) separate lots planned; and

WHEREAS, after review of the application and supporting documentation, the Planning Commission finds the request for a minor subdivision to create four (4) separate lots generally conforms with City codes and requirements and policies therein; and

WHEREAS, all legal requirements for the public hearing have been met, including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within 100 feet and posting of the hearing on the site; and

NOW THEREFORE BE IT RESOLVED, the Planning Commission has considered the application and has taken into consideration all referral comments and any citizen testimony in response to this application. Based upon the facts presented on this date, the Planning Commission hereby recommends approval of the Been Minor Subdivision to create four (4) separate lots on a property located in the Northeast Quarter of Section 16, Township 1 North, Range 67 West of the 6th P.M., County of Weld, State of Colorado with the following conditions:

I. Prior to recording the minor subdivision plat:

- A. The title of the minor subdivision map shall include the Project No.: LUP2021-0013 & Plan No.: MSD2021-0002.
- B. Any redline comments provided by staff shall be made to the minor subdivision plat.
- C. Applicant shall dedicate by separate document 55' of right-of-way on County Road 19 requested by the Public Works Director.
- D. Applicant shall verify and delineate all utility easements on the plat.
- E. Applicant shall review the lots that the access easement(s) will benefit and update the map if necessary.
- F. Applicant shall finalize inclusion into the Northern Colorado Water Conservancy District.

- G. Applicant shall provide written evidence that the comments from the Public Works Director have been adequately addressed.
- H. Applicant shall identify any oil and gas wells and/or equipment on the property and provide a buffer in the size required by staff.
- I. Applicant shall provide written evidence that the comments from United Power have been adequately addressed.
- J. Applicant shall provide written acknowledgment of the comments from the Weld County Department of Public Health and Environment.
- K. Applicant shall provide written evidence that the comments from the Colorado Division of Water Resources have been adequately addressed.
- L. The following notes shall be added to the minor subdivision map:
 - 1. The property owner must submit evidence of adequate water supply prior to any change of use for the lots that are part of the Been Minor Subdivision.
 - 2. Access easements are dedicated for the benefit of owners of lots as depicted on this plat. No lot owner may install a gate or otherwise impede the use of such easements without the approval of all persons with rights of use of such easements.

DONE THIS 24TH DAY OF JUNE, 2021 BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Chairman

ATTEST:

Planning Director



**BEEN MINOR SUBDIVISION & SPECIAL USE PERMIT
PROJECT NO. LUP2021-0013 / PLAN NO. MSD2021-0002 & SUP2021-0002**

PROJECT DESCRIPTION

Project No.: LUP2021-0013 / Plan No.: MSD2021-0002 & SUP2021-0002

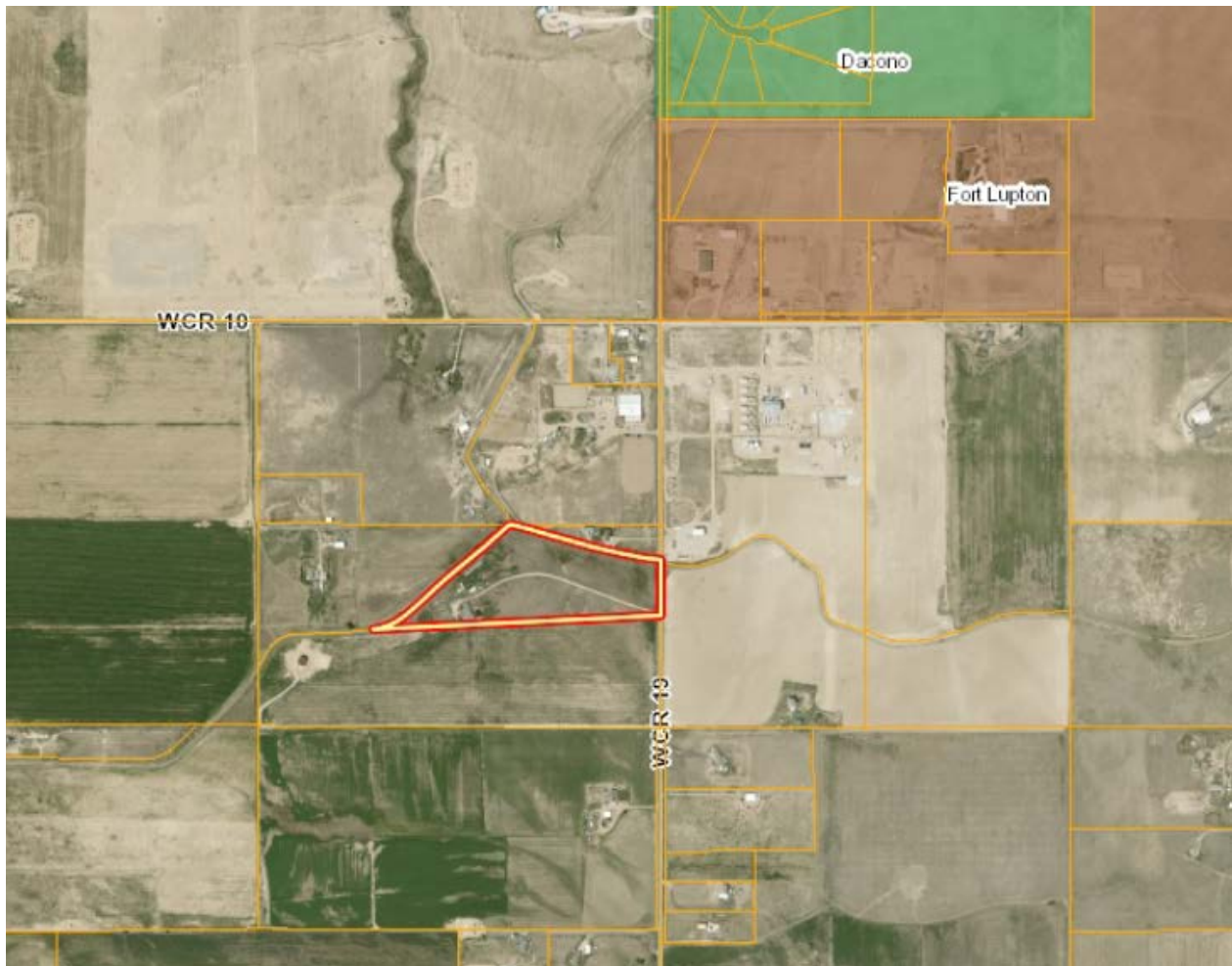
Project name: Been Minor Subdivision & Special Use Permit

Owner: Sheryl Been ("Applicant")

Representative: Chadwin Cox with Western Engineering

Location of Request:

The site consists of a parcel of land located west and adjacent to County Road 19 and approximately 0.29 miles south from County Road 10 in Weld County, Colorado (Parcel No. 146916100006) (the "Property"). The Property is located in the Northeast Quarter of Section 16, and the Northwest Quarter of Section 15, Township 1 North, Range 67 West of the 6th P.M., County of Weld, State of Colorado.



Nature of Request:

The Applicant has submitted a request for a minor subdivision of the Property into four separate lots. Lot 1 has an existing residence and this use is proposed to remain as is. An additional existing single-family residence is proposed for Lot 2. The Applicant is requesting a special use permit for a proposed RV park for 75 - 141 RVs at Lot 3. Finally, Lot 4 does not have any development planned at this time, but anticipates future development that will be reviewed separately by the Planning Department. There is also an outlot, Outlot A, being proposed for drainage. The Property is zoned 'A' Agricultural.

Additional information on this request is included in the application materials.

Site Size: 15.97 acres, more or less, with the planned subdivided lots measuring as follows:

- Lot 1: 2.15 acres, more or less
- Lot 2: 1.83 acres, more or less
- Lot 3: 9.92 acres, more or less
- Lot 4: 1.06 acres, more or less
- Outlot A: 0.50 acres, more or less

Zone District: The Property is currently zoned 'A' Agriculture, and this designation is not being proposed to change.

Proposed Use: Residential for Lots 1 and 2, and RV park for Lot 3. Lot 4 does not have any development planned at this time.

Existing Use: Lot 1 contains an existing residence. The remaining property has historically been used for agricultural land.

Hearing Dates: Planning Commission – June 24, 2021 at 6:00 PM; and
City Council – July 20, 2021 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado.

Staff Recommendation: Approval with conditions, as shown on the proposed resolution.

SUMMARY OF PREVIOUS APPLICATIONS

The property was annexed into Fort Lupton in 2021 (City Council hearing was on February 16, 2021), and was initially zoned to the 'A' Agriculture Zone District (Been Annexation and Initial Zoning).

APPLICATION PROCESS

The Applicant is requesting approval of a minor subdivision for four lots, and a special use permit for an RV park on Lot 3 of the proposed Been Minor Subdivision. A minor subdivision is processed under [Section 17-30](#) of the Fort Lupton Municipal Code ("Code"). A special use permit for the proposed RV Park is processed under [Section 16-7](#) of the Code.

After required public notice of the minor subdivision request, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the minor subdivision. The Planning

Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the application, referral agency comments, Planning Commission recommendation and any public testimony, and shall approve, conditionally approve, continue for additional information or for further study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

NOTIFICATION REQUIREMENTS

The Subdivision and Zoning Regulations require published notice of the hearings at least fifteen (15) days prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton Press on Wednesday, June 9, 2021.

Notice of the public hearings were posted on the Property pursuant to the Subdivision and Zoning Regulations, which require the Applicant post the Property with notice of hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbors within one-hundred (100) feet of the Property on June 8, 2021. Mineral notifications were sent as a courtesy at least 15 days prior to the Planning Commission hearing date.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The intent of a minor subdivision is to expedite the process of subdivisions that are minor in size and scope (Section 17-30). A minor subdivision must consist of four or fewer lots, meet zoning and subdivision regulations of the city, and must not include a dedication of public right-of-way. There also may not be other minor plats within the same subdivision that, in combination with the proposed minor plat, would circumvent the intent of Chapter 17 – Subdivision of the Code. The Been Minor Subdivision meets all of the necessary criteria as long as the conditions of approval are met.

An RV park is not a listed use by right in the 'A' Agricultural Zone District. Section 16-7 of the Fort Lupton Municipal Code (the "Code") states that similar or compatible uses may be permitted as special uses, subject to such conditions and limitations as the City may prescribe to ensure that the location and operation of the special uses will comply with special use criteria. Pursuant to Section 16-7(a), special uses are granted to individuals or entities, and not to the property itself. Therefore, this proposed use requires a special use permit review prior to beginning business operations. A special use review requires a public hearing before Planning Commission and City Council. The intent of the special use permit is to provide flexibility, to provide a means for setting performance standards for individual land uses and to help diversify uses within a zoning district.

Section 16-7(d) states that the City shall use the following criteria to evaluate the Applicant's request:

1. The special use shall satisfy all applicable provisions of the Code and shall be consistent with the intent of the Comprehensive Plan.

Staff Comment: The Applicant has been working with City staff to comply with applicable provisions of the Code, and has submitted all required special use permit application materials as

required. Information on the proposed project's consistency with the Comprehensive Plan is described later in this Staff Report.

2. The special use shall not substantially alter the character of the district or the neighborhood.

Staff Comment: The Property is surrounded by agricultural, rural residential, and oil and gas operation land uses. There is a landscape plan that has been submitted in order to buffer the proposed RV park from the adjacent properties.

3. The special use will result in efficient on- and off-site traffic circulation, and will not have an adverse impact on adjacent uses or present hazardous conditions for pedestrians or vehicles.

Staff Comment: A traffic letter has been submitted with the application and is part of the Planning Commission packet materials for review. The Public Works Director has accepted the submitted letter.

4. Adequate conditions of approval shall address: traffic; activity levels; light; noise; odor; building type, style and scale; hours of operation; dust; erosion and other performance issues identified through the public hearing process.

Staff Comment: These items are addressed in the code, as well as addressed as conditions of approval on the proposed resolution, including addressing traffic, lighting, and screening.

5. The term of the special use permit and any reporting and inspection requirements as might be reasonably necessary to ensure compliance with conditions of approval may also be specified by the City Council.

Staff Comment: A special use permit is non-transferable, and therefore if a new owner were to occupy the Property, the RV park will no longer be permitted unless a new application was submitted and approved. The Planning Department staff will ensure compliance with other conditions of approval, either as listed on the proposed Resolution or as added by City Council.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Fort Lupton Comprehensive Plan designates this area for the Agriculture and Rural Residential land use type. This designation allows for agricultural and related uses as well as low density residential on the periphery of the planning area, intended to preserve a generally rural character. This also includes a variety of miscellaneous uses, such as isolated industrial businesses and semi-rural properties located under Estate Zoning. Given the availability of viable land for development in more appropriate districts, commercial or residential investment within agricultural areas should be discouraged. This will help limit unnecessary loss of agricultural lands and reduce the potential of suburban sprawl.

The property is surrounded by agricultural and rural residential land uses on all sides. The proposed use substantively conforms to the designated land use type and zoning, and specifically meets the intent of the Comprehensive Plan for the Agricultural and Rural Residential land use type by allowing miscellaneous uses.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

City Attorney	Police Chief	Public Works Director
Building Inspector	Water Treatment Plant Manager	GIS Specialist
Fort Lupton Fire Protection District	CDOT	Colorado DRMS
Colorado Parks & Wildlife	Division of Water Resources	United Power
Comcast	CenturyLink	Xcel Energy
Postmaster	Weld County Department of Planning	Weld Cty Dept of Public Health & Env
Weld County Public Works	Weld County School District RE-8	NCWCD
Town of Frederick	City of Dacono	Bull Canal

RECOMMENDATION

Staff recommends conditional approval of the Been Minor Subdivision and Special Use Permit. Conditions are listed on the proposed Resolution provided to Planning Commission.

***For more information on this development, please refer to the Planning Commission packet provided.
Additional documents are available for review at the Fort Lupton City Hall.***



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortluptonco.gov

Project No. _____

Land Use Application Form

A. CONTACT INFORMATION

- 1) Property Owner Name: BEEN SHERYL A
 Company: N/A
 Phone: 303-902-9262 Email: wereafrog@yahoo.com
 Address: 3647 County Road 19, Fort Lupton, CO 806218408
 Preferred method of contact? Email: ☒ Phone: ☐ Mail: ☐
- 2) Representative Name: CHADWIN F. COX
 Company: Western Engineering Consultants, inc. LLC
 Phone: 720-685-9951 Email: chadwin.cox@westerneci.com
 Address: 127 South Denver Ave. Fort Lupton, CO 80621
 Preferred method of contact? Email: ☒ Phone: ☒ Mail: ☐
- 3) Billing Contact (where invoices should be directed to): BEEN SHERYL A.
 Billing Company: N/A
 Phone: 303-902-9262 Email: wereafrog@yahoo.com
 Address: PO BOX 375, Fort Lupton, CO 80621

B. SITE DESCRIPTION

Site Address: 3647 County Road 19, Fort Lupton, CO 806218408
 Parcel Number: 146916100006
 Existing Zone Classification: AG Proposed Zone Classification: AG
 Water Type: Municipal Name: Central Weld County Water District
 Sewage Type: Septic system District Name or Location Hauled to: N/A

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

Sketch Plat	Administrative Site Plan	PUD Plan (Preliminary & Final)
Preliminary Plat	Special Use Permit	Variance
Final Plat	Oil & Gas Permit	Administrative Variance
Minor Subdivision ☒	Annexation & Initial Zone ☒	Appeal
Amended Plat	Change of Zone	Other: <u>Special Use Permit</u>
Site Plan	Comp Plan Amendment	

Instructions for Submitting the Land Use Application Form

DEFINITIONS

Words in the singular include the plural and words in the plural include the singular.

Application refers to the official submittal to the City of Fort Lupton's Planning Department for review of the proposed land use development identified in the land use application form. The application includes the form, all materials submitted for review of the project, including those documents required under the Land Use Regulations of the Municipal Code, and any additional information provided.

Project refers to the land use development identified on the land use application form and application materials.

Property refers to the land that is being proposed for development as described in the land use application form and application materials.

A. CONTACT INFORMATION

- 1) Provide contact information for all owners of any property that is the subject of the application. If the contact information for all property owners will not fit on the space provided, submit a separate sheet for the additional owners.
- 2) Provide contact information for all persons, firms or businesses that are authorized by the owners identified in Section A(1) to work on the land use application, including, but not limited to, discussing the project, submitting application materials, and attending meeting and hearings. If the contact information for all representatives will not fit on the space provided, submit a separate sheet for the additional representatives.
- 3) Provide contact and mailing information for the person that should receive all invoices for the project. If this person changes at any time, contact the Planning Department immediately to update this information.

B. SITE DESCRIPTION

Provide all information requested. Parcel numbers and address information may be found at the Weld County Property Portal at <https://www.co.weld.co.us/maps1/propertyportal/>. Current zoning can be found at <https://www.fortluptonco.gov/405/Zoning>.

C. APPLICATION TYPE

Select the land use application that is applicable to the project. If there are multiple land use application types being submitted to run concurrently, select all that apply. The land use application types will be identified during the required pre-application meeting. If you have any questions about this, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Please select a project name that will be referenced throughout the project and a description of what the project entails. If you need more space for the project description, please attach a separate sheet.

E. REQUIRED DOCUMENTS

Required documents will be discussed during the pre-application meeting with the Planning Department. If any documents are missing, the acceptance of the application may be delayed until the submittal is complete.

F. CERTIFICATIONS

Representative Certification. Provide the signature of all authorized representatives in this section.

Owner Certification. Provide the signature of all owners of properties included in the application in this section.

For any other questions, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Project No. _____

Project Name: BEEN RV PARK

Please provide a short description of the proposed project in the space provided below:

Been RV Park will be constructed over multiple phases on an approximate 10 acre site. Up to 2 (two)
employees are expected at buildout to run day to day operations. The hours of operations are intended to
be from 6:00 am to 10:00pm. Quiet hours are anticipated from 10:00pm to 6am. The number of overnight
or long term RV vehicles will be based on the sewer system capacity. Initially 120 with OWTS and a total of
161 when connection to the future City sewer line is available.

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: _____

Date: 3/18/21

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: Sheryl A. Barr

Date: 8/5/2020

For Office Use Only

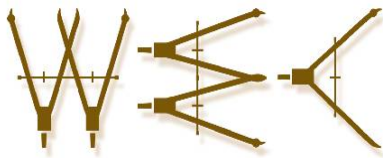
Received Date: _____

If the application is not complete, state reasons why it is incomplete:

Deemed Complete Date: _____

Fees Submitted: _____

Escrow Submitted: _____



WESTERN ENGINEERING CONSULTANTS,
127 S Denver Ave. Fort Lupton, CO 80621
2501 Mill Street, Brush, CO 80723
Office: 720-685-9951
Cell. 303-913-7341, Fax 720-294-1330
Email: chadwin.cox@westerneci.com
Inc LLC

April 23rd, 2021

City of Fort Lupton
130 South McKinley Ave.
Ft. Lupton, CO 80621

RE: BEEN RV PARK MINOR SUBDIVISION NARRATIVE

City Design Review Committee:

Western Engineering Consultants Inc. LLC (WEC) has prepared this narrative letter to briefly summarize the "BEEN RV PARK" project and the proposed Minor Subdivision.

Sheryl Been wishes to subdivide her approximate 15.97 acres into 4 lots through the Minor Subdivision process.

The subject property is located in the northeast quarter of section 16, township 1 north, range 67 west of the sixth principal meridian, County of Weld, State of Colorado.

The property has historically been farmland and its currently zoned Agricultural with one existing residence and a couple accessory buildings.

BACKGROUND AND PURPOSE

Sheryl Been desires to develop her property into four (4) lots as follows: two (2) single family residences, one existing in proposed 2.15 acres lot (Lot 1), and one new in the proposed 1.83 acres lot (Lot 2), a Recreational Vehicle Park for short or long-term living in a 9.92 acres lot (Lot 3), and a future 1.06 acre (Lot 4) adjacent to WCR 19.

ADJACENT USES

To the north agricultural land and one rural residence. To the east/northeast lies and Oil and Gas tank and battery assembly. To the south and west are agriculture crops and pastures.

Currently the Bull Canal runs along the North and West sides of the property and Weld County Road 19 exists along the eastern boundary.

RELATIONSHIP TO & IMPACT UPON ADJACENT USES

The existing residence in the southwest corner (Lot 1) will remain as is. An additional single-family residence is proposed north of the existing residence will complete the western boundary (Lot 2) thus uses will remain consistent with current conditions along the west property line.

The center portion of the development (Lot 3) is proposed as a residential (RV Living Park) that will be buffered (setback) from the north and south properties that are currently farmed.

The northeastern corner adjacent to WCR 19 will be developed in the future (Lot 4). Any future use(s) for Lot 4 will be submitted through the City's Development process accordingly.

The City Comprehensive Plan show this area as Agricultural & Rural Residential - see Figure 1 below.

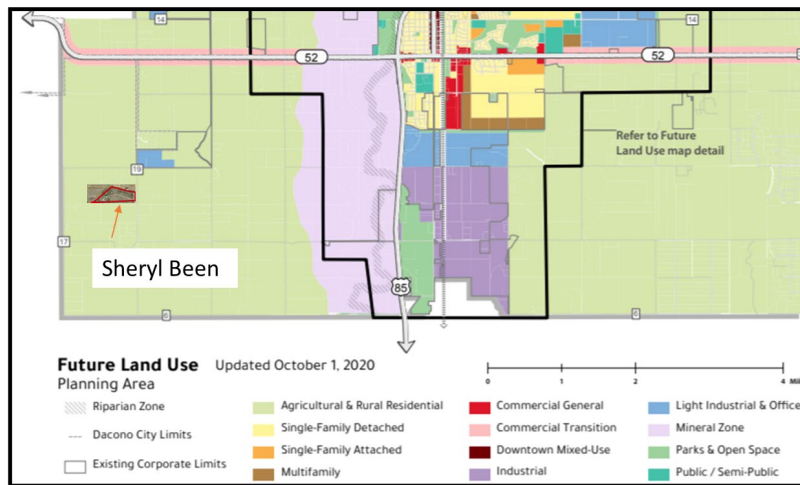


Fig. 1 Future Land Use

ACCESS LAYOUT

The project is proposing two access at each north/south extents of the property. The intent is to have one main access from Weld County Road 19 at the south extent of the property located approximately 1,851 feet south of the WCR 19 and WCR 10 intersection and a second access that may be for emergency only at the northern extent (270 feet north, 1,580 feet south of WCR 10).

Highway 52 lies less than 2 miles north of this property.

On site will be 2 dedicated access easements (connected and looped within the RV Park Lot – Lot 3) in order to serve both Lots 1 and 2 (the existing and proposed single family residences) and provide acceptable emergency access to said Lots.

MINOR SUBDIVISION DATA TABLE

LOT DATA TABLE		
LOT	AREA (acres)	PROPOSED USE
1	2.15	Rural Residence
2	1.83	Rural Residence
3	9.92	RV Living Park
4	1.06	AG Lot
OUTLOT A	0.50	Drainage area
Dedicated area	0.51	CR 19 Right of Way
TOTAL	15.97	

WATER, SEWER, ELECTRICITY, & NATURAL GAS

The applicant has completed the Affidavit of historic water use and has applied for inclusion to the Northern Colorado Water Conservancy District. WEC has coordinated with and the Applicant has funded the Central Weld County Water District water demand and supply study. Currently CWCWD water main exists 1,850 feet +/- north of the site.

On site wastewater systems will be utilized until the City sanitary system is extended to the property frontage. Multiple Test Pits and OWTS designs have been completed and are included in this submittal.

United Power electricity is immediately adjacent and available. It is unclear if natural gas exists near the Site.

MINERAL RIGHTS & ON-SITE GAS/OIL FACILITIES

The Zeren mineral rights notification certification is attached. There are two leases identified.

There is also a gas line located within the center of the site (runs north-south) that has been determined to be abandoned (see attached email from DCP Pipeline). WEC will assist the Applicant to have said line removed and easement vacated.

MINOR SUBDIVISION CHECKLIST

- | | |
|--|---------------------------------------|
| 1. Complete Land Use Application | Enclosed |
| 2. Fees | To be paid after completeness review. |
| 3. Complete Fee Deposit (escrow) Agreement | Enclosed |
| 4. Proof of ownership | Enclosed |
| 5. One set of No. 10 envelopes, stamped, addressed to property owners within 500 feet of property. Envelopes shall be return addressed to the City.
In the case of "flagpole" annexation – separate envelopes required. | By City |
| 6. One set of all documents provided in a hard copy and USB | Enclosed |
| 7. Minor Subdivision Map | Enclosed |
| 8. Detailed Project Description | This document |
| 9. Water Study | Enclosed |
| 10. Septic Systems design | In process. |
| 11. Drainage Report | Enclosed |
| 12. Traffic Study | Enclosed |
| 13. Water rights or an equivalent cash amount | Enclosed |
| 14. Word Format Legal description | Enclosed |
| 15. Mineral owners of minerals and oil and gas leases Report | Enclosed |
| 16. Word format document with the legal description | Enclosed |

CLOSING

The Applicant is excited to bring this project to the City of Fort Lupton!

The desired schedule is to achieve approvals and begin Construction within 60 days after receiving said approvals late 2021.

Please contact me with any questions or comments you may have on this Project Narrative.

Sincerely,



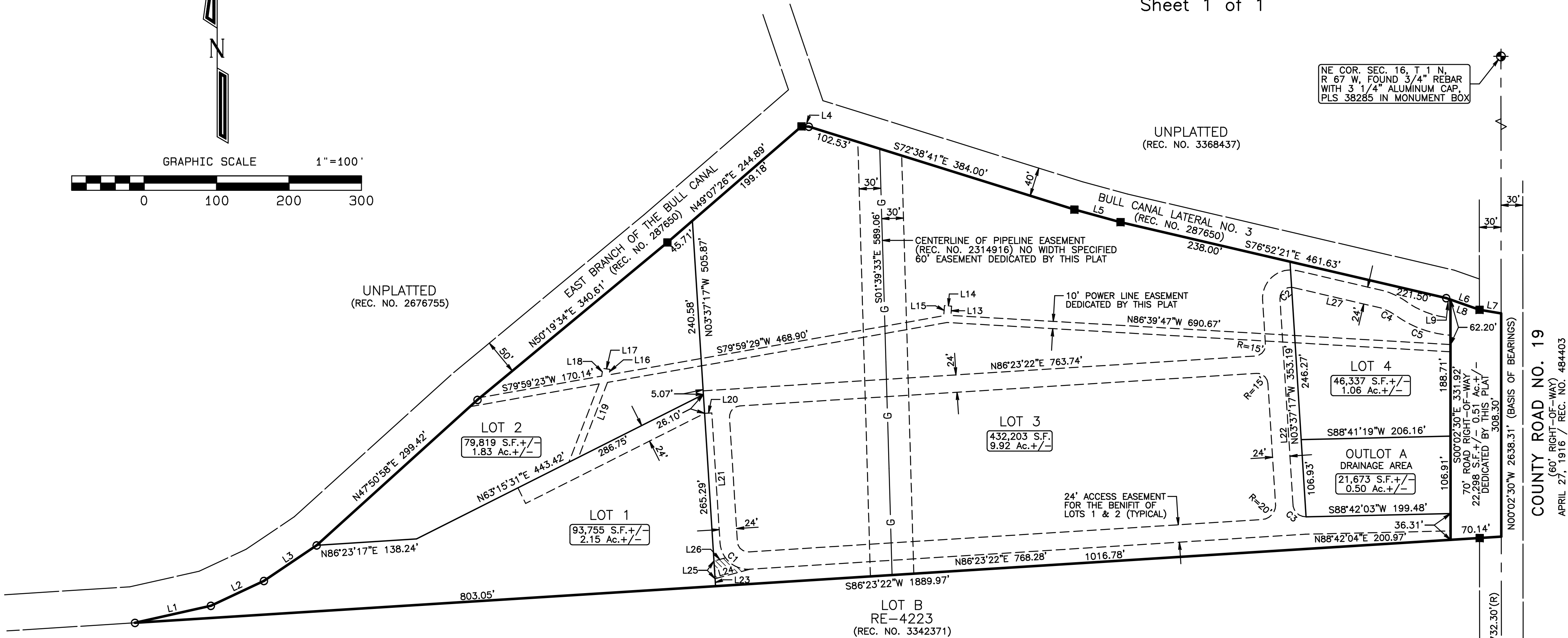
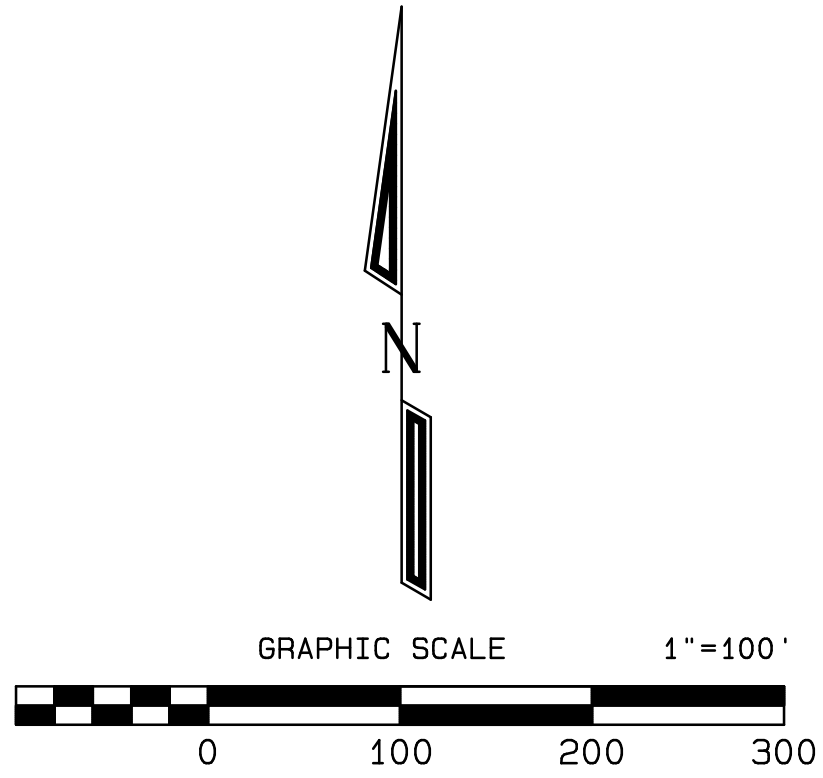
Western Engineering Consultants inc., LLC
Chadwin F. Cox, P.E.
Senior Project Manager

Encl. Minor Subdivision Documents

BEEN MINOR SUBDIVISION

Located in the Northeast 1/4 of Section 16,
Township 1 North, Range 67 West of the 6th P.M.,
City of Fort Lupton, County of Weld, State of Colorado

Sheet 1 of 1



LINE	BEARING	DISTANCE
L1	N77°19'47"E	107.46'
L2	N64°53'14"E	80.89'
L3	N55°59'32"E	87.83'
L4	S88°13'30"E	10.12'
L5	S74°44'39"E	66.09'
L6	S70°36'14"E	48.76'
L7	S80°22'33"E	30.26'
L8	N70°36'14"W	42.60'
L9	N70°36'14"W	6.16'
L10	N60°46'39"E	55.80'
L11	N23°42'04"W	20.09'
L12	N60°46'39"E	125.48'
L13	N04°03'59"E	12.86'
L14	N85°56'01"W	10.00'
L15	S04°03'59"W	14.01'
L16	N08°06'43"E	7.55'
L17	N81°53'17"W	10.00'
L18	S08°06'43"W	10.82'
L19	N21°08'37"E	93.93'
L20	N86°22'45"E	10.00'
L21	S03°37'15"E	179.84'
L22	N03°37'17"W	285.08'
L23	N03°37'17"W	10.34'
L24	S74°49'55"W	50.00'
L25	N03°37'17"W	24.50'
L26	N74°49'55"E	16.60'
L27	S76°52'59"E	124.44'

LEGEND:

- ◆ = ALIQUOT MONUMENT, AS NOTED.
- = FOUND 5/8" REBAR WITH ORANGE PLASTIC CAP, PLS 25937.
- = FOUND 5/8" REBAR.
- ▨ = 24' ACCESS EASEMENT FOR THE BENEFIT OF LOT 1 ONLY.

LINE	RADIUS	ARC	DELTA	CHORD BEARING	CHORD
C1	39.00'	61.25'	89°59'23"	S48°36'56"E	55.15'
C2	15.00'	27.94'	106°44'18"	N49°44'52"E	27.07'
C3	17.71'	27.10'	87°40'40"	N47°27'37"W	24.53'
C4	88.91'	25.34'	16°19'39"	S62°22'38"E	25.25'
C5	146.20'	78.78'	30°52'33"	S70°33'25"E	77.84'

NOTES:

- 1) BASIS OF BEARING: THE EAST LINE OF THE NORTHEAST 1/4 OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE 6TH P.M., IS ASSUMED TO BEAR NORTH 00°02'30" WEST, BEING MONUMENTED ON THE NORTH AND SOUTH END BY A 3 1/4" ALUMINUM CAP, PLS 38285 IN MONUMENT BOX, AND WITH ALL BEARINGS SHOWN HEREON RELATIVE THERETO.
- 2) ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.
- 3) CERTIFICATION DEFINED: THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A REGISTERED PROFESSIONAL LAND SURVEYOR, IN THE PRACTICE OF LAND SURVEYING, CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OF FINDINGS WHICH ARE SUBJECT OF THE CERTIFICATION, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESS OR IMPLIED.
- 4) ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTIONS BASED UPON A DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
- 5) THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY AMERICAN WEST LAND SURVEYING CO. TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD.
- 6) ALL DISTANCES SHOWN HEREON ARE MEASURED GROUND DISTANCES REPORTED IN U.S. SURVEY FEET.

DESCRIPTION:

A PARCEL OF LAND LOCATED IN THE CITY OF FORT LUPTON, BEING A PORTION OF THE NORTHEAST 1/4 OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

LOT A, RECORDED EXEMPTION NO. 1469-16-1 RE-4223, RECORDED NOVEMBER 23, 2005 AS RECEPTION NO. 3342371, BEING A PART OF THE SOUTH 1/2 OF THE NORTHEAST 1/2 OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO.

DEDICATION:

KNOW ALL MEN BY THESE PRESENTS, THAT THE BEEN ROSENZWEIG TRUST DATED NOVEMBER 13, 2007, BEING THE SOLE OWNERS OF THE LAND DESCRIBED HEREIN, HAVE CAUSED SAID LAND TO BE LAID OUT AND PLATTED UNDER THE NAME OF BEEN MINOR SUBDIVISION, AND DO HEREBY DEDICATE TO THE CITY OF FORT LUPTON AND ITS LICENSEES FOR PUBLIC USE FOREVER ALL STREETS, ALLEYS AND UTILITY EASEMENTS AS INDICATED HEREON, IN COMPLIANCE WITH THE CITY OF FORT LUPTON SUBDIVISION REGULATIONS AND BY CONTRACTUAL AGREEMENT, THE LANDOWNERS SHALL BEAR ALL EXPENSES INVOLVED IN IMPROVEMENTS.

IN WITNESS WHEREOF, WE HAVE HEREUNTO SET OUR HANDS AND SEALS THIS _____

DAY OF _____, 20____.

OWNERS: THE BEEN ROSENZWEIG TRUST DATED NOVEMBER 13, 2007

SHERYL BEEN - TRUSTEE _____

STATE OF COLORADO }
COUNTY OF WELD } SS

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME BY 4 Z INVESTMENTS, LLP
ON THIS _____ DAY OF _____, 20____

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC _____

OWNER'S APPROVAL:

KNOW ALL MEN BY THESE PRESENTS, THAT THE BEEN ROSENZWEIG TRUST DATED NOVEMBER 13, 2007, BEING THE SOLE OWNERS OF THE LAND DESCRIBED HEREIN, AND _____ ARE ALL OF THE MORTGAGEES AND HOLDERS OF LIENS UPON THE PROPERTY AND EACH AND ALL HEREBY CONSENT TO THIS PLAT AND JOIN THE CONVEYANCE AND DEDICATION OF OUTLOT A AS PUBLIC ROADWAY AS SHOWN HEREON.

IN WITNESS WHEREOF, WE HAVE HEREUNTO SET OUR HANDS AND SEALS THIS _____

DAY OF _____, 20____

OWNERS: THE BEEN ROSENZWEIG TRUST DATED NOVEMBER 13, 2007

SHERYL BEEN - TRUSTEE _____

STATE OF COLORADO }
COUNTY OF WELD } SS

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME BY 4 Z INVESTMENTS, LLP
ON THIS _____ DAY OF _____, 20____

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC _____

SURVEYOR'S CERTIFICATE:

I, CURTIS D. HOOS, A DULY REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT OF THUNDER VALLEY WAS PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THIS PLAT HAS BEEN PREPARED IN COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO AT THE TIME OF THIS SURVEY AND WITHIN MY CONTROL, AND IS ACCURATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

CURTIS D. HOOS PLS 37971
FOR AND ON BEHALF OF:
AMERICAN WEST LAND SURVEYING CO.
A COLORADO CORPORATION

CITY ENGINEER'S APPROVAL:

APPROVED THIS ____ DAY OF _____, 20____.

CITY ENGINEER _____

PLANNING COMMISSION RECOMMENDATION:

RECOMMENDED THIS _____, DAY OF _____, 20____, BY RESOLUTION NO. _____.

MAYOR'S CERTIFICATE:

THIS IS TO CERTIFY THAT THE PLAT OF THE ABOVE-DESCRIBED PROPERTY WAS APPROVED BY RESOLUTION NO. _____ OF THE CITY OF FORT LUPTON PASSED AND ADOPTED ON THE _____ DAY OF _____, A.D., 20____, AND THAT THE MAYOR AND THE CITY OF FORT LUPTON, AS AUTHORIZED BY RESOLUTION NO. _____ ON BEHALF OF THE CITY OF FORT LUPTON, HEREBY ACKNOWLEDGES AND ADOPTS THE SAID PLAT UPON WHICH THIS CERTIFICATE IS ENDORSED FOR ALL PURPOSES INDICATED THEREON.

APPROVED THIS ____ DAY OF _____, 20____.

ATTEST: CITY CLERK _____ MAYOR _____

CITY ADMINISTRATOR'S APPROVAL:

APPROVED THIS ____ DAY OF _____, 20____.

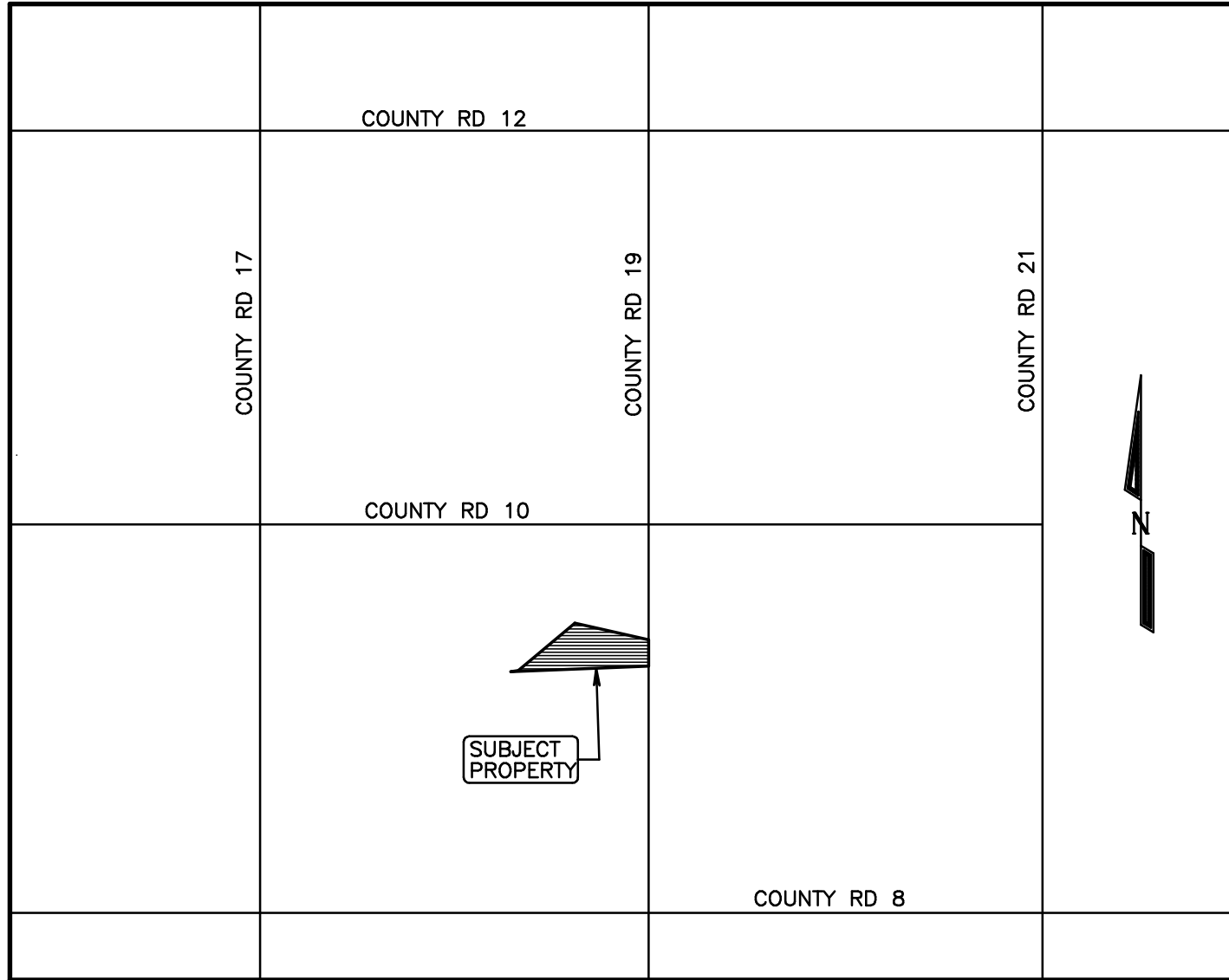
CITY ADMINISTRATOR _____

CITY WATER AND SEWER DEPARTMENT APPROVAL:

APPROVED THIS ____ DAY OF _____, 20____.

DIRECTOR OF PUBLIC WORKS _____

EAST 1/4 COR. SEC. 16,
T 1 N, R 67 W, FOUND 3/4" REBAR WITH 3 1/4" ALUMINUM CAP, PLS 38285 IN MONUMENT BOX



VICINITY MAP: NTS

American West
Land Surveying Co.
A Colorado Corporation
PO Box 129, Brighton, CO 80601 * P:303-659-1532 F:303-655-0575 * amwestlls.com
SCALE 1" = 100' | DRAWN BY: CDH | CHECKED BY: MJH | DATE: MARCH 19, 2021
REVISIONS:
JOB NO: 21- | FILE: Z:\T1-2N\T1N_R67W\S16\3647 CR 19_SUB_REV10072020.pro



Sustainable Traffic Solutions

Joseph L. Henderson PE, PTOE
Traffic Engineer / Principal

August 10, 2020

Mr. Chadwin F. Cox, PE
Western Engineering Consultants
127 South Denver Avenue
Fort Lupton, CO 80735

RE: Trip Generation Estimate for the Been RV Park in Fort Lupton

Dear Chad,

This letter contains a trip generation estimate for the Been RV Park in Fort Lupton. Figure 1 contains a vicinity map that shows the location of the project on the west side of WCR 19 between WCR 10 and WCR 8. A site plan is contained in Figure 2 that shows the site access on WCR 19 and the configuration of the lots. The development will include 123 to 155 recreational vehicle spaces, a light industrial building, and a single-family dwelling unit. A pipeline runs through the middle of the site. If the pipeline is abandoned, 155 spaces will be developed, otherwise only 123 spaces will be developed if the pipeline is not abandoned.

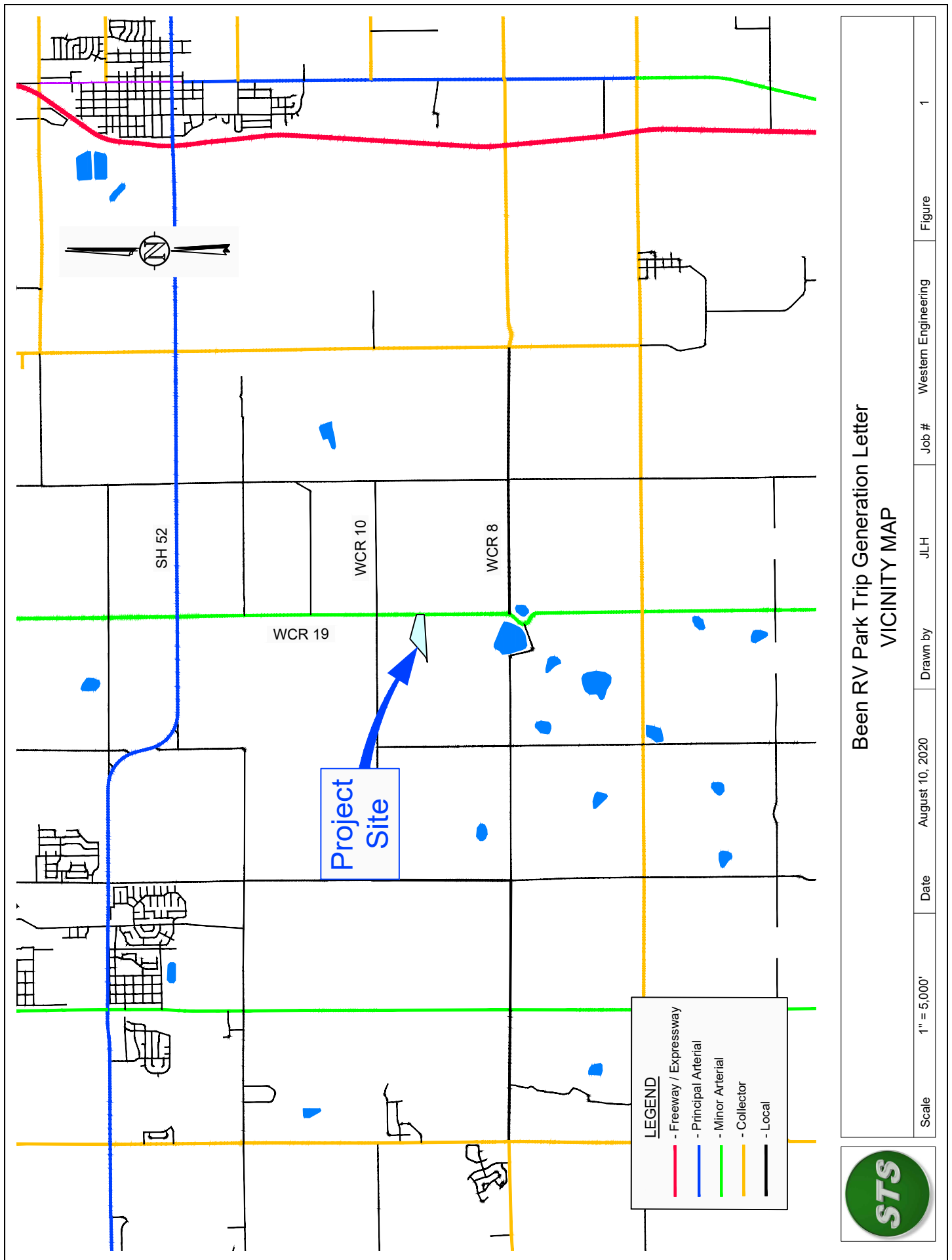
The trip generation for the development was estimated using rates that are contained in the Institute of Transportation Engineers (ITE) Trip Generation¹ manual. The development is expected to generate approximately 689 trips on an average weekday, 68 trips during the morning peak hour, and 127 trips during the evening peak hour (see Table 1).

Feel free to contact me to discuss the contents of this report.

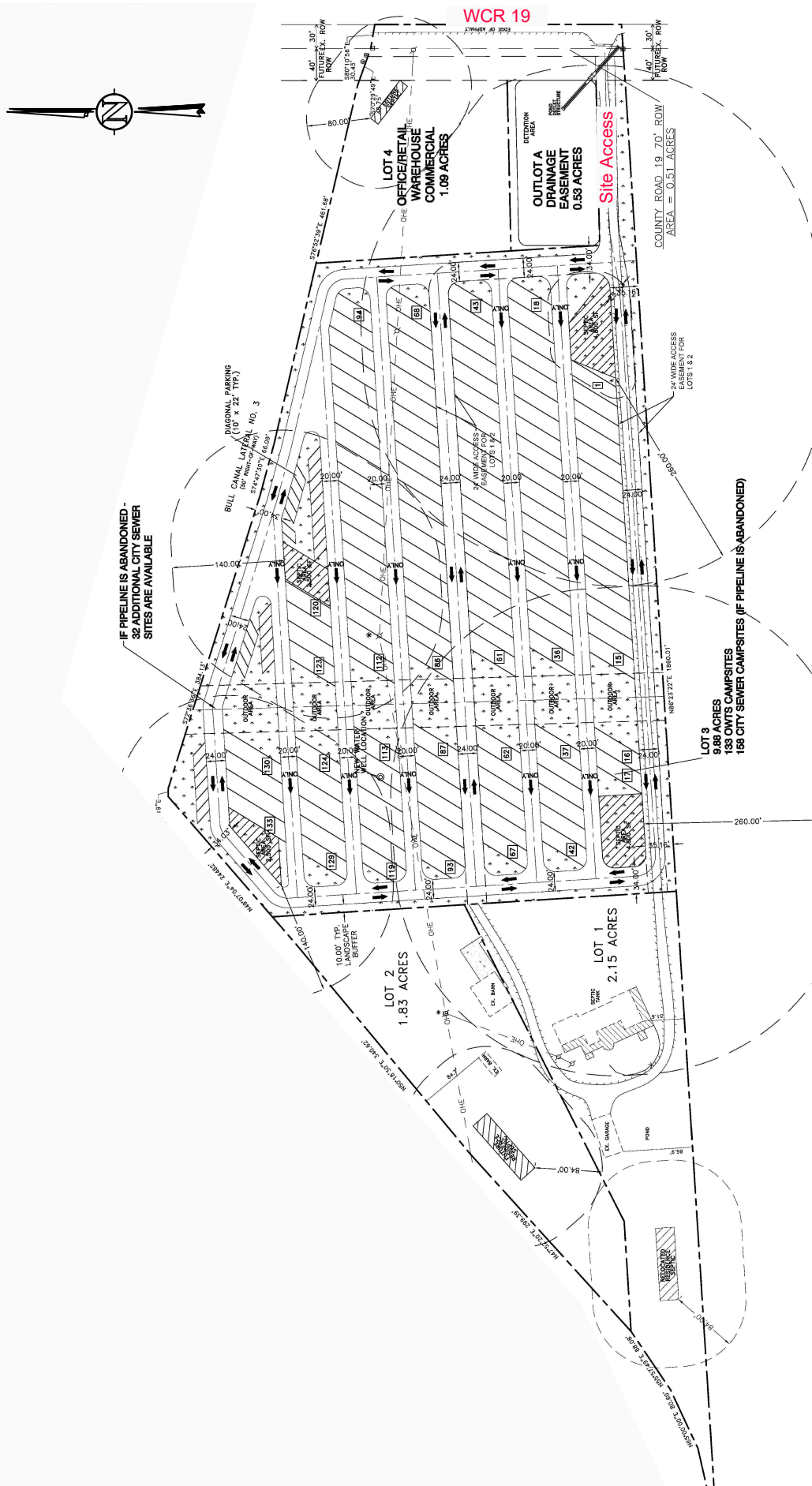
Sincerely,

Joseph L. Henderson, PE, PTOE
Project Manager / Principal
Been RV Park Trip Generation Letter

¹ Trip Generation, 10th Edition. Institute of Transportation Engineers. September 2017.



Been RV Park Trip Generation Letter VICINITY MAP



Been RV Park Trip Generation Letter

SITE PLAN

Scale	NTS	Date	August 10, 2020	Drawn by	JLH	Job #	Western Engineering	Figure	2
-------	-----	------	-----------------	----------	-----	-------	---------------------	--------	---

Table 1. Trip Generation Estimate

Land Use ^{1,2}	ITE Code	Size	Unit	Average Daily Trips				Morning Peak Hour Trips				Evening Peak Hour Trips			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Campground / RV Park ^{3,4,5}	416	93	Occupied Camp Sites	3.47	323	161	161	0.48	45	19	26	0.98	91	63	28
Mobile Home Park ^{4,5}	240	62	Dwelling Units	5.00	310	155	155	0.26	16	5	11	0.46	29	18	11
General Light Industrial ⁶	110	10	1,000 ft ² GLA	4.96	50	25	25	0.70	7	6	1	0.63	6	1	5
Single Family Detached Housing	210	1	Dwelling Units	9.44	9	5	5	0.74	1	0	1	0.99	1	1	0
Total			---	---	692	346	346	---	69	30	38	---	127	82	45

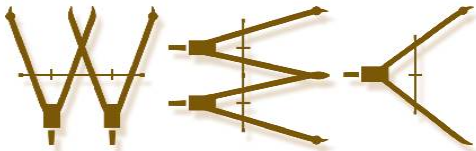
Notes:

1. Trip generation estimates are based on rates contained in Trip Generation, 10th Edition (Institute of Transportation Engineers, 2017).
2. Land use estimates are based on the site plan.
3. Trip Generation doesn't have a daily trip rate for an RV park, therefore, STS assumed the daily rate for a recreational home (land use code 260).
4. 60% of the spaces are assumed to be occupied by short term users and 40% by long term residents.
5. The total number of spaces includes 32 spaces that will be developed if a pipeline is abandoned.
6. The commercial parcel is assumed to have a 10,000 sf² building that will occupy approximately 20% of the site.

**FINAL DRAINAGE REPORT
FOR
BEEN RV PARK
PART OF THE S ½ OF THE NE ¼ SEC 16,
T1N, R67W
FORT LUPTON, COLORADO
WELD COUNTY**

CASE NO.

**SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621**



*Western Engineering Consultants Inc LLC
127 South Denver Avenue
Fort Lupton, CO 80621*

Original: October 19, 2020
Revised: March 09, 2021

FINAL DRAINAGE REPORT
FOR
BEEN RV PARK
PART OF THE S ½ OF THE NE ¼ SEC 16, T1N, R67W
FORT LUPTON, COLORADO

Prepared For:

BEEN RV PARK
Contact: Sheryl Been - Owner
3647 County Road 19
Fort Lupton, CO 80621
303-902-9262

Prepared By:

WESTERN ENGINEERING CONSULTANTS inc LLC
127 South Denver Avenue
Fort Lupton, CO 80621
(720) 685-9951
Contact: Chadwin F. Cox, P.E.

Original: October 19, 2020
Revised: March 09, 2021

CERTIFICATIONS

I hereby certify that this report and plan for the drainage design of City of Fort Lupton Been RV Park was prepared by me, or under my direct supervision, for the owners thereof, in accordance with the provisions of Colorado Floodplain and Stormwater Criteria Manual, and Urban Drainage and Flood Control District Design and Technical Criteria, and approved variances and exceptions hereto. I understand that City of Fort Lupton does not and will not assume liability for drainage facilities designed by others.

Chadwin F. Cox, P.E.
Registered Professional Engineer
State of Colorado No. 33802

Sheryl Been hereby certifies that the drainage facilities for Been RV Park design shall be constructed according to the design presented in this report. I understand that City of Fort Lupton does not and will not assume liability for the drainage facilities designed and/or certified by my engineer, and that City of Fort Lupton reviews drainage plans pursuant to Colorado revised Statutes Title 30, Article 28, but cannot, on behalf of Been RV Park, guarantee that final drainage design review will absolve Been RV Park and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat, Final Development Plan, and/or Subdivision Development Plan does not imply approval of my engineer's drainage design.

Been RV Park
Sheryl Been or Owner's Representative

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APPENDICES

APPENDIX A

- Vicinity Map (USGS)
- Key Map (Google Earth)
- FEMA Firmette
- Legal Description
- Soil Survey Map & Soil Legend
- Geotechnical Study

APPENDIX B

- NOAA Atlas 14 Rainfall - Point Precipitation Frequency
- WEC Rational Method Runoff Calculations

APPENDIX C

- Detention Pond Design
- Forebay Design
- Pipe, Inlet, and Channel Capacities

APPENDIX D

- Drainage Plan – (full size – 24 x 36)

INTRODUCTION

This study provides the final drainage design for the construction of Been RV Park. The overall site is an approximate 15.79 acre property as defined by the Minor Subdivision Plat prepared by American West Land Surveying Co. dated October 07, 2020.

The proposed Been RV Park site is proposed on a predominantly undeveloped site. The existing site includes an existing residence, garage, two barns, and a gravel driveway, while the remainder of the site is undeveloped.

The project shall include approximately four (4) Lots. Lots 1 & 2 will be residential lots, with Lot 1 containing the existing residence. Lot 3 will contain the proposed RV Park, and Lot 4 will remain an agricultural lot. A series of gravel roads throughout the RV Park will also serve as access for Lots 1 & 2.

Been RV Park lies approximately 4 miles southwest of the City of Fort Lupton. County Road 19 is the east border, and County Road 10 lies approximately 1,850 feet to the north of the site.

The entire Been RV Park site and all adjacent and surrounding properties are historically tributary to the South Platte River which lies approximately 4 miles northeast of the site.

Based on the initial coordination with the City, no Final Drainage Studies for any adjacent properties were known to exist.

Been RV Park does not lie within a Master Flood or Drainage Planned Study. The entire property is within Zone X "Area of Minimal Flood Hazard" and not within the 100 year floodplain per FEMA FIRM 08123C2100E – effective January 20, 2016.

I. GENERAL LOCATION AND DESCRIPTION

A. Site Location

The property lies in the South $\frac{1}{2}$ of the Northeast $\frac{1}{4}$ of Section 16, Township 1 North, Range 67 West of the 6th P.M.

The overall property nets 15.79 acres +/- . County Road 19 lies along the eastern border.

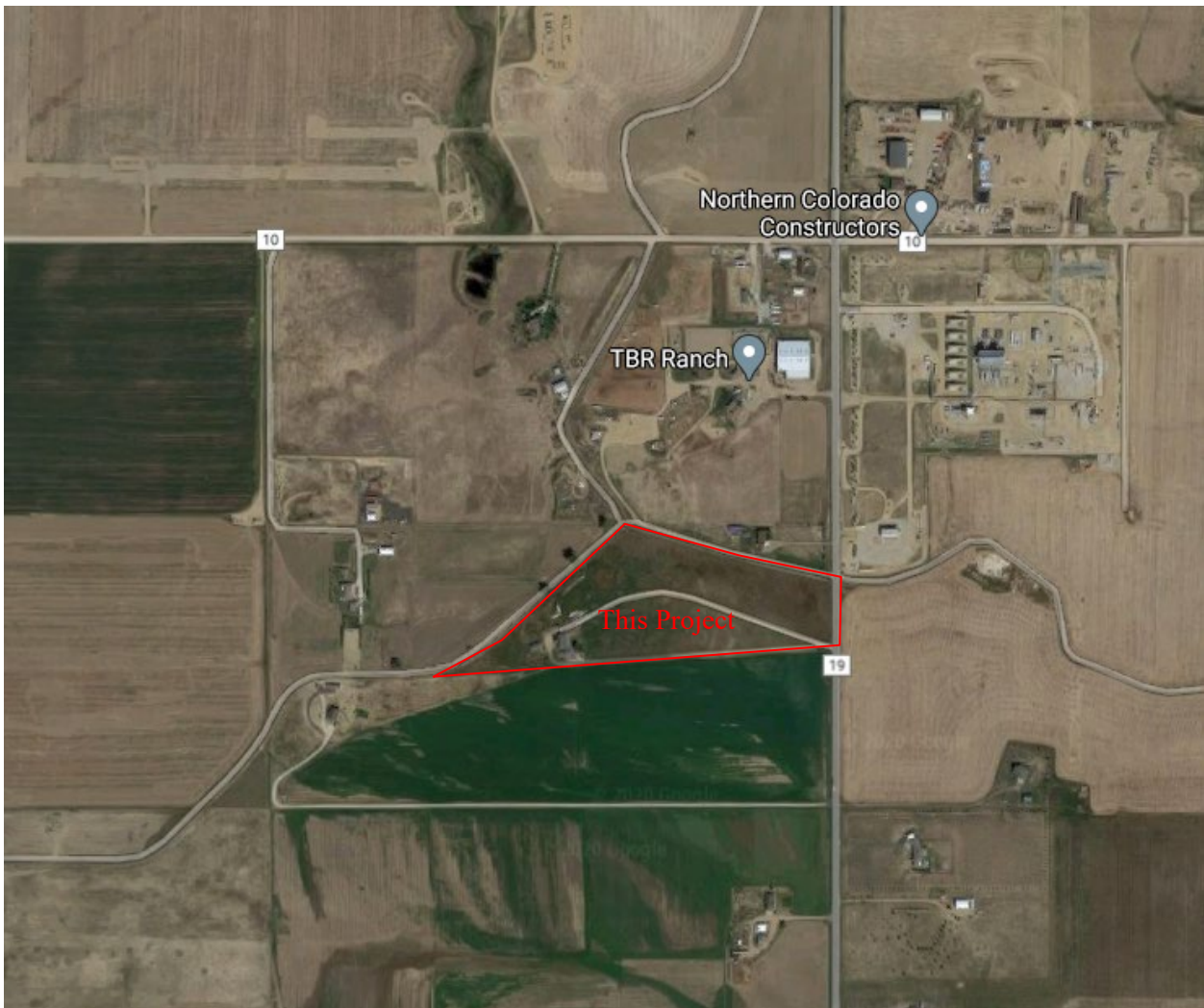
A vicinity and key map of the site are included in Appendix A of this study as well as on the following page.

The scales below are not accurate since the maps included herein are for exhibit purposes only.

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

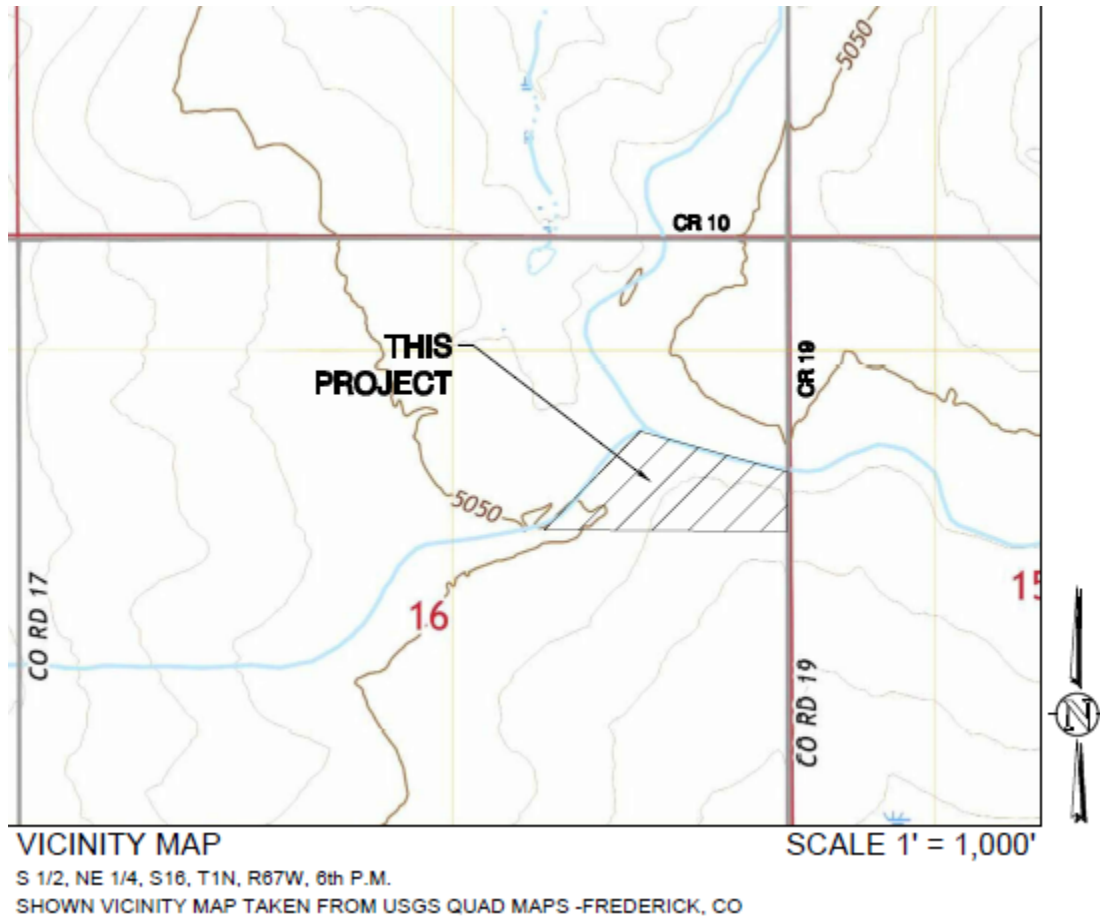
March 09, 2021

Page 1 of 13



The project is located south of Weld County Road 10, and immediately west of Weld County Road 19.

The Google Earth Exhibit above shows the site and the adjacent properties west of the City of Fort Lupton.



The USGS Exhibit above details the adjacent Weld County Roads and historic topography of the surrounding area.

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

March 09, 2021

Page 3 of 13

B. Description of Property

The metes and bounds legal description for the property is included in Appendix A.

Currently this parcel has slight to moderate topographical relief – 15 feet from the southwest corner (5052 elevation) to the southeast corner (5035 elevation). Ultimately the site does slope generally in one direction – to the existing low point just south of the access point with WCR 19 at the southeast corner of the site. The undeveloped lot is nearly bare with moderate weeds and shrub vegetation. Existing slopes average range from 0.5% to 1.7%. The historic slopes appear to be 1.4% based on the USGS Quad from northwest to southeast.

The existing grades in general match the historical direction per USGS Quad maps, but not at consistent slope due to the developed portion of the site.

The approximate grade at the four corners of the property are as follows – 5051.39 SW corner, 5044.19 N corner, 5044.16 NE corner, and 5035.16 SE corner of Been RV Park.

The property is made up of entirely 82 (Wiley-Colby complex), NRCS classified B soils. The soil type is noted as well drained. Soil classifications were taken from Hydrologic Soil Type Map (Appendix A) USDA Soil Survey.

II. DRAINAGE BASINS AND SUB-BASINS

A. Major Drainage Basins

The Been RV Park site is solely located in the South Platte River basin and all existing and developed drainage is ultimately tributary to the South Platte River. The historic and existing basins are shown on sheet 22 of the Construction Drawings.

HISTORIC

Basin H (15.79 ac) includes the entire property up to the existing WCR 398 ROW. As noted above, the historic grades (1.4%) drained off-site to the southeast. As noted previously, the entirety of the site and this basin is (100%) NRCS Soil Type B.

All runoff values presented herein have been prepared with the recently updated method of check for time of concentration – the UDFCD 2017 equation of: $(26-17i) + [L_{\text{travel}} / (60 * (14i + 9) * (S_o)^{.5})]$. All values provided in this study are as determined by the 2017 time of concentration check.

The Historic effective imperviousness value used was 2.0%. The minor (5yr) storm runoff is approximately 0.20 cfs, and the major storm runoff is approx. 20.54 cfs at Design Point H.

EXISTING

Basin E (15.79 ac) includes the entire property up to the existing WCR 398 ROW. As noted previously the topography slightly changes from 0.5% to 1.7% throughout the basin. This parcel currently drains to the existing low point just south of the access point with WCR 19 at the southeast corner of the site. The entirety of the site and this basin is (100%) NRCS Soil Type B.

The existing effective imperviousness value used was modeled at 4.06% since the overall basin (primarily undeveloped) includes the existing residence, accessory buildings, and gravel access road. The minor (5yr) storm runoff is approximately 0.57 cfs, and the major storm runoff is approximately 22.24 cfs at Design Point E1.

OFFSITE BASINS

Based on existing (USDA) topography, no runoff from offsite basins will contribute to the runoff of this site. Runoff from adjacent properties to the north will be captured by the East Branch of the Bull Canal before reaching this site, and existing topography suggests that runoff from the adjacent property to the south will flow south away from this site.

B. Minor Developed Drainage Basins

The Developed sub-basins related to this project are shown on sheet 23 of the Construction Drawings.

This study provides the final developed drainage characteristics for the ~ 15.79 acre site.

The developed basins for the Been RV Park site are defined as Basins Lot 1, Lot 2, Lot 3, and Lot 4. Basin Lot 3 includes the designed Subdivision Detention Pond.

The weighted average imperviousness for the entire site (All Basins including 100yr water surface is 29.43%). The overall imperviousness of the site with a dry pond bottom is 26.36%.

Each minor storm event referred to below is the 5 year event and each major storm event referred to below is the 100 year event. The 10 year event has also been calculated.

Calculations are carried out to the hundredths for consistency purposes only.

1. Basin Lot 1 (2.15 acres)

Basin Lot 1 is the developed lot in the southwest corner of the site. This basin contains the existing residence, garage, and a portion of the existing gravel access road. No improvements are proposed on this Lot with this development.

Runoff from Basin Lot 1 begins as roof runoff and then will be directed overland south and east towards southeast corner of Lot 1. Runoff will then enter Swale S and will be conveyed east and ultimately north to Forebay S in the proposed Detention Pond. The release from Basin Lot 1 occurs at Design Point 1 at the southeast corner of the lot where runoff will leave the basin.

The effective imperviousness value calculated for Basin Lot 1 is 15.24% and the Rational runoff calculations were based on said existing conditions. NRCS Soil Type for this basin is solely Type B. The minor (5yr) storm runoff is approximately 0.53 cfs, and the major storm runoff approximately 5.10 cfs.

2. Basin Lot 2 (1.83 acres)

Basin Lot 2 is located in the northwest corner of the site, directly north of Lot 1. This basin contains the two existing barns and has been modeled to receive a 4,000 square foot residence in the future.

Runoff from Basin Lot 2 begins as roof runoff and is directed overland towards southeast corner of Lot 2. Runoff will then enter the roadside pan of Center Ave and will be conveyed east to Swale E and ultimately south to Forebay N in the proposed Detention Pond. The release from Basin Lot 2 occurs at Design Point 2 where runoff will leave the basin.

The developed effective imperviousness value calculated for Basin Lot 2 is 8.57%. NRCS Soil Type for this basin is solely Type B. The minor storm runoff is 0.23 cfs, and the major storm runoff is 3.92 cfs. Calculations were carried out to the hundredths for consistency purposes only.

3. Basin Lot 3 (10.42 acres)

Basin Lot 3 is the center lot of the site. Although this Basin is primarily undeveloped ground, it has been modeled to receive the proposed RV stalls, a series of gravel roads with concrete roadside pans, and the proposed Detention Pond.

Runoff from Basin Lot 3 will flow overland southeast and be captured the roadside pans on the north side of each proposed road. Runoff will then be conveyed east to Swale E and ultimately south to Forebay N in the proposed Detention Pond. The release from Basin Lot 3 occurs at Design Point 3 where the proposed outlet structure will release the detained flow offsite.

The developed effective imperviousness value calculated for Basin Lot 3 is 38.40%. NRCS Soil Type for this basin is solely Type B. The minor storm runoff is 5.95 cfs, and the major storm runoff is 27.24 cfs. Calculations were carried out to the hundredths for consistency purposes only.

4. Basin Lot 4 (1.08 acres)

Basin Lot 4 is located in the northeast corner of the site. Although this Basin is currently undeveloped ground, it has been modeled to receive the proposed second gravel access road off WCR 19.

Runoff from Basin Lot 4 begins in the northwest corner of the basin and is directed overland south to the south lot line of Lot 4. Runoff will then be conveyed west to Swale E and ultimately south to Forebay N in the proposed Detention Pond. The release from Basin Lot 4 occurs at Design Point 4 where the runoff will leave the basin.

The developed effective imperviousness value calculated for Basin Lot 4 is 6.64%. NRCS Soil Type for this basin is solely Type B. The minor storm runoff is 0.11 cfs, and the major storm runoff is 2.55 cfs. Calculations were carried out to the hundredths for consistency purposes only.

III. DRAINAGE DESIGN CRITERIA

A. Regulations

The calculations provided in this letter report have been prepared in conformance with the City of Fort Lupton Development Standards and Regulations, the Colorado Water Conservation Board and Colorado Department of Natural Resources “*Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2*” (Ref 1), and “*Urban Drainage Flood Control District (UDFCD) Urban Storm Drainage Criteria Manual, Volumes I thru III*” (Ref 2), latest release unless otherwise noted.

All design elements outlined in this report, and illustrated in the construction plans, are proposed as final conditions (as directed, assumed, or otherwise prepared) in order to complete the development of this Project.

B. Drainage Studies, Outfall Systems Plans, Site Constraints

No apparent Final Drainage Study appears to have been prepared as part of this property or any adjacent properties in the past. The City of Fort Lupton falls just outside of the Urban Drainage boundary.

Coordination with Town staff confirmed no Final Drainage Report is known to exist for this property or any adjacent properties.

No significant constraint was identified as part of the design of this project beyond the flat nature of the area and the proximity of the East Branch of the Bull Canal to the north.

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

C. Hydrology

The rainfall intensity information was obtained from the NOAA Atlas 14 using 1 hour rainfall depths as taken from UDSDC Manual Vol 1 (Ref 2).

City of Fort Lupton adopted the Colorado Water Conservation Board and Colorado Department of Natural Resources “*Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2*” (Ref 1), and “*Urban Drainage Flood Control District (UDFCD) Urban Storm Drainage Criteria Manual, Volumes I thru III*” (Ref 2), latest release unless otherwise noted were utilized for confirmation of 100 year and 10 year event storm rainfall data.

Upon review of the aforementioned references, the NOAA Atlas 14 was referenced and data derived for 1 hour rainfall depths at 2, 5, 10, and 100 year events are as follows:

DESIGN STORM	WEC Derived from USDCM NOAA Atlas 14
	1-hr Event (inches)
2	0.83
5	1.11
10	1.38
100	2.62

The precipitation depth derived from the NOAA Atlas 14 by WEC for the 1-hour design storm was 2.62 inches rainfall depth for the 100-year storm, 1.38 inches rainfall depth for the 10-year storm, and 1.11 inches rainfall depth for the 5 year storm.

The Rational Method for storm-water runoff calculations, using the Equations as described in the UDFCD (Reference 2) Criteria Manual Chapter 5 Runoff was used to calculate stormwater flows within this study. The run-off coefficient ‘C’ values were obtained from the UDFCD (Reference 2) Criteria Manual as well based on the predominate NRCS Soil Type.

It appears no on site water quality or detention has been provided or maintained for any of the adjacent or neighboring properties (currently primarily agricultural/residential lots).

The use of weighted runoff coefficients is to accurately portray the proposed final conditions of the maximum build out (maximum lot coverage) for this project based on the best available information at this time. Sole use of Table RO-5 is applicable for Master Plan Drainage analysis including projects of this type – however calculation of proposed final conditions using weighted runoff coefficients provides a more thorough and accurate analysis.

The site has been modeled based on the current expected build out conditions. However, should additional paving occur the Swale conveyances have been sized to handle added runoff.

The proposed pond has been sized to capture all of the developed runoff from this site (at an expected build-out effective imperviousness of 40%).

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No other offsite basins have been modeled for Pond A sizing since the adjacent surveyed topography indicated adjacent runoff is not directed onto this property (nor is runoff directed from this property due to the generally flat perimeter and proposed drainage swales).

It is the expectation of this study that any development or improvements to the adjacent properties will require them to provide appropriate stormwater design(s).

This project will not negatively affect the adjacent property and will provide modern stormwater control that does not currently exist. In short, this project will be an enormous improvement to the area.

D. Hydraulics

The conveyance of onsite site stormwater occurs primarily overland across pavements and then through landscape and into swales and roadside pans that will ultimately convey runoff to the proposed Detention Pond. Please see Appendix C for all related pipe and swale capacities.

Hydraulic grade lines have been calculated for the pond outlet pipe based on the 100 year restricted release rate (1.72 cfs) into the WCR 19 roadside ditch.

It is WEC's opinion the modeled and calculated (routed peak runoffs) are likely higher than the expected final developed conditions (final lot development not expected to meet buildout imperviousness modeled). The runoff rates presented in this report are based on the modeled imperviousness of the site (roughly 30%). It is likely that a portion of the developed runoff will be captured by landscape areas while being routed to the pond, and therefore result in a lower total runoff than what is presented in this report.

There are no major drainage ways on this site or immediately adjacent. The East Branch of the Bull Canal lies just north of this site but does not serve this site.

E. Water Quality Enhancement

Water quality will be provided by overland runoff (gravel or vegetated native grasses) and also by the proposed forebays and landscaped pond bottom. Additional grass swales may be incorporated by the future lots.

F. Groundwater

A Project Geotechnical Report was completed by Earth Engineering Consultants, LLC on December 04, 2020.

Groundwater was encountered at a depth of 10-11 feet in five of the test borings.

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Developed runoff is not anticipated to increase groundwater levels but will be infiltrated into the subsurface soils.

Should groundwater levels surface (above the design bottom) at any time for more than 24 hours the Engineer of Record should be contacted and plans to mitigate said groundwater be undertaken (i.e. cleaning of outlet structure and/or raising of Pond bottom above groundwater).

IV. STORMWATER MANAGEMENT FACILITY DESIGN

A. Stormwater Conveyance Facilities

Runoff analysis for stormwater management has been included and presented in this report.

No Master study exists for this area.

Capacity calculations for concrete pans, the proposed storm pipes, and the proposed Swales are included in Appendix C.

B. Stormwater Storage Facilities

Traditional stormwater storage and attenuation (water quality and detention) is currently proposed since this site has a source of formal outfall. A Detention Pond has been designed with an outlet structure and is located in the southeast corner of the site.

UDFCD Criteria Volumes (Ref 2) and Weld County Drainage Criteria (Ref 3) were referenced for determining necessary storage volumes.

Four independent volumes were calculated – (1) WQCV, (2) Required 10 yr, (3) required 100 yr, (4) Available volume @ Emergency Overflow. UDFCD UD spreadsheet version 4.00 was utilized to calculate said volumes; (1) 8,519 cubic feet, (2) 20,842 cubic feet, (3) 39,427 cubic feet, and (4) 45,443 cubic feet.

The current Been RV Park Detention Pond storage/grading design provides volume for the residential Lots 1 & 2, the proposed RV Park (Lot 3), and the future Lot 4.

All calculations are included in Appendix C.

C. Water Quality BMP's

Overland runoff will provide some water quality. Detention Pond Forebays will treat all routed runoff. Additional BMP's in accordance with current UDFCD Volume III criteria (Ref 2) may be added in the future.

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D. Floodplain

This project does not lie within a floodplain. The entire subdivision is within Zone X “Area of Minimal Flood Hazard” per FEMA FIRM 08123C2100E – effective January 20, 2016. See also the FIRMETTE map included Appendix A.

E. Groundwater

Typical Lot runoff is expected to moderately infiltrate the seeded grasses and gravel covered site under most minor events. Under multiple minor events or major events runoff is expected to sheet flow to adjacent swales and be routed to the Detention Pond as designed. Minimal effect to the groundwater is expected.

Typical commercial geotechnical reports recommend the building design to incorporate foundation drains and sump pumps for protection against groundwater.

F. Additional permitting

No additional permitting is anticipated.

G. Storm System Maintenance

This section defines the maintenance responsibilities for Been RV Park Site:

- Swales – including but not limited to mowing, weed control, cleaning and removing debris, removing accumulated sediment, adding erosion control, and replacement of any damaged or failing improvements. Improvements for Swales include the concrete pan and adjacent grades and vegetation.
- Drainage Basins – including but not limited to mowing, weed control, cleaning and removing debris, removing accumulated sediment, adding erosion control, and replacement of any damaged or failing improvements. Improvements for each Basin beyond all Swales include the on site grading, on site native grass, and proposed concrete curb adjacent to all proposed Buildings, parking, and access.
- Storm Infrastructure (inlets and piping) – including but not limited to trash and sediment capture and removal, adding erosion control, and replacement of any damaged or failing improvements. Upstream street sweeping will also provide protection against sediment accumulation.
- Detention Pond – including but not limited to mowing, weed control, cleaning and removing debris, removing accumulated sediment, adding erosion control, and replacement of any damaged or failing improvements. Improvements for the Detention Pond includes side slopes, forebays, trickle pan, pond bottom, and the outlet structure located on the east edge.

Frequency of inspections and maintenance are as follows:

- Swales, Basins, Storm Infrastructure, and Detention Pond should be inspected monthly or within 24 hours of each measureable precipitation event.
- Any damaged or lost material (riprap) should be replaced immediately
- Mowing should occur monthly or more often depending upon growth.
- Weed control should occur a minimum of two times per spring/summer/fall season
- Cleaning beyond inspections noted above should occur at a minimum of annually

V. CONCLUSIONS

A. Compliance with standards

This Drainage Study for the Been RV Park site was prepared in conformance with the City of Fort Lupton Development Standards and Regulations, Colorado Water Conservation Board and Colorado Department of Natural Resources “*Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2*” (Ref 1), and the Urban Drainage Flood Control District Storm Drainage Design and Technical Criteria (Reference 2).

This drainage design and concept quantifies the requirements to manage stormwater runoff.

B. Variances

No variance is proposed or requested.

C. Drainage concept

The intent of this design is to provide the drainage analysis necessary for capture, routing, and detention of the runoff generated by the Been RV Park property.

D. Additional Items

No additional items were considered at this time.

VI. REFERENCES

1. Colorado Water Conservation Board and Colorado Department of Natural Resources “Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2”
2. Urban Storm Drainage Criteria Manual, Volumes I-III, Denver Regional Council of Governments, 2016, Revised 2017 & 2018, and all subsequent updates
3. Weld County Storm Drainage Design Manual “Weld County Engineering and Construction Criteria – Chapter 8: Storm Drainage Criteria” Revised 2019.

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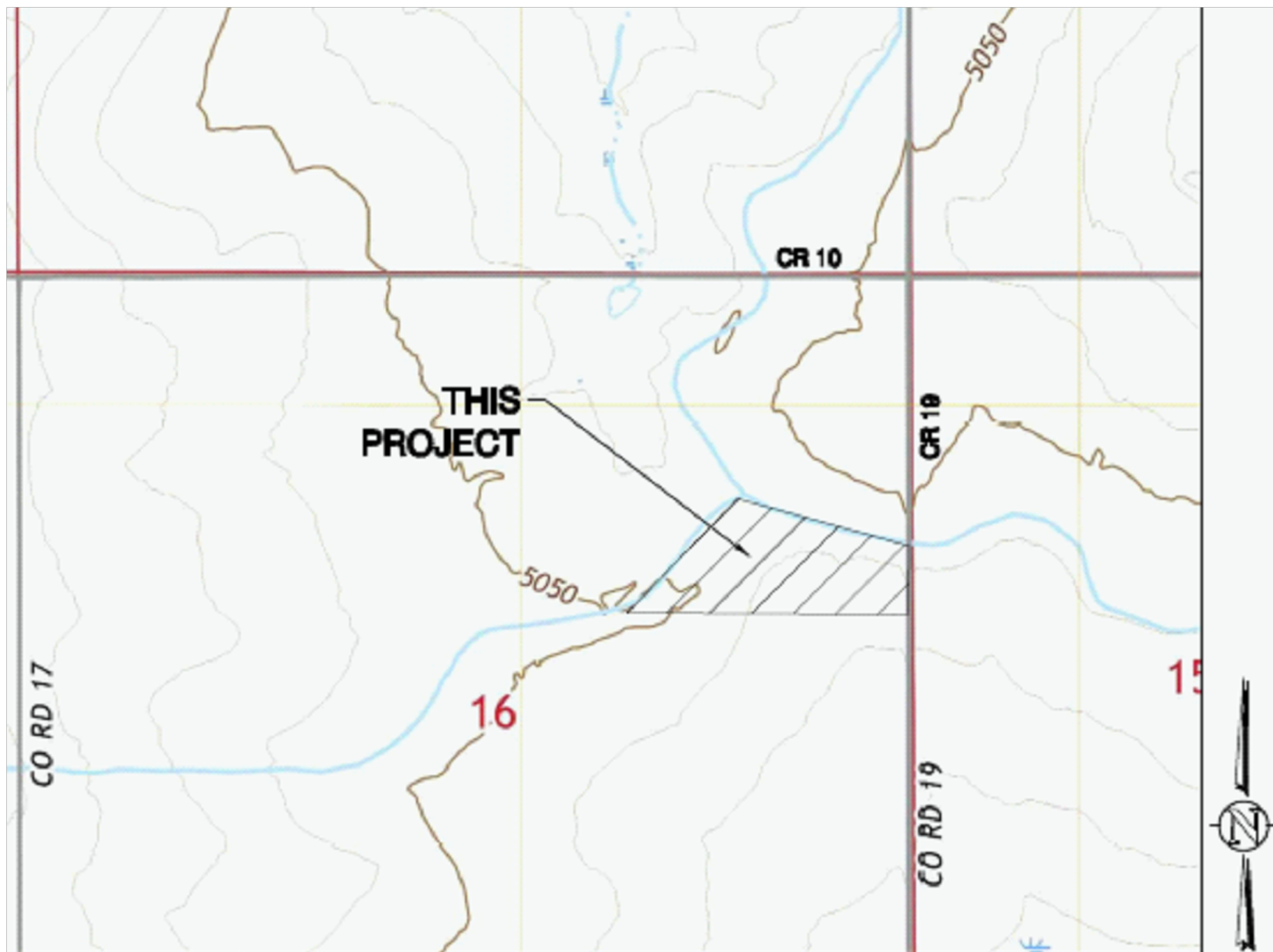
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March 09, 2021

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APPENDIX A

**Vicinity Map (USGS) / Key Map / FEMA Flood Insurance Rate Map (FIRM),
Legal Description, Soil Survey Map and Soil Legend, Geotechnical Report**



VICINITY MAP

S 1/2, NE 1/4, S16, T1N, R67W, 6th P.M.

SHOWN VICINITY MAP TAKEN FROM USGS QUAD MAPS -FREDERICK, CO

SCALE 1' = 1,000'



Sheryl Been
Write a description for your map.

Legend

 3647 Co Rd 19



National Flood Hazard Layer FIRMMette



104°53'46"W 40°3'25"N



USGS The National Map: Orthoimagery. Data refreshed April 2020

0 250 500 1,000 1,500 2,000 Feet

1:6,000

104°53'8"W 40°2'57"N

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SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/9/2020 at 1:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



United States
Department of
Agriculture

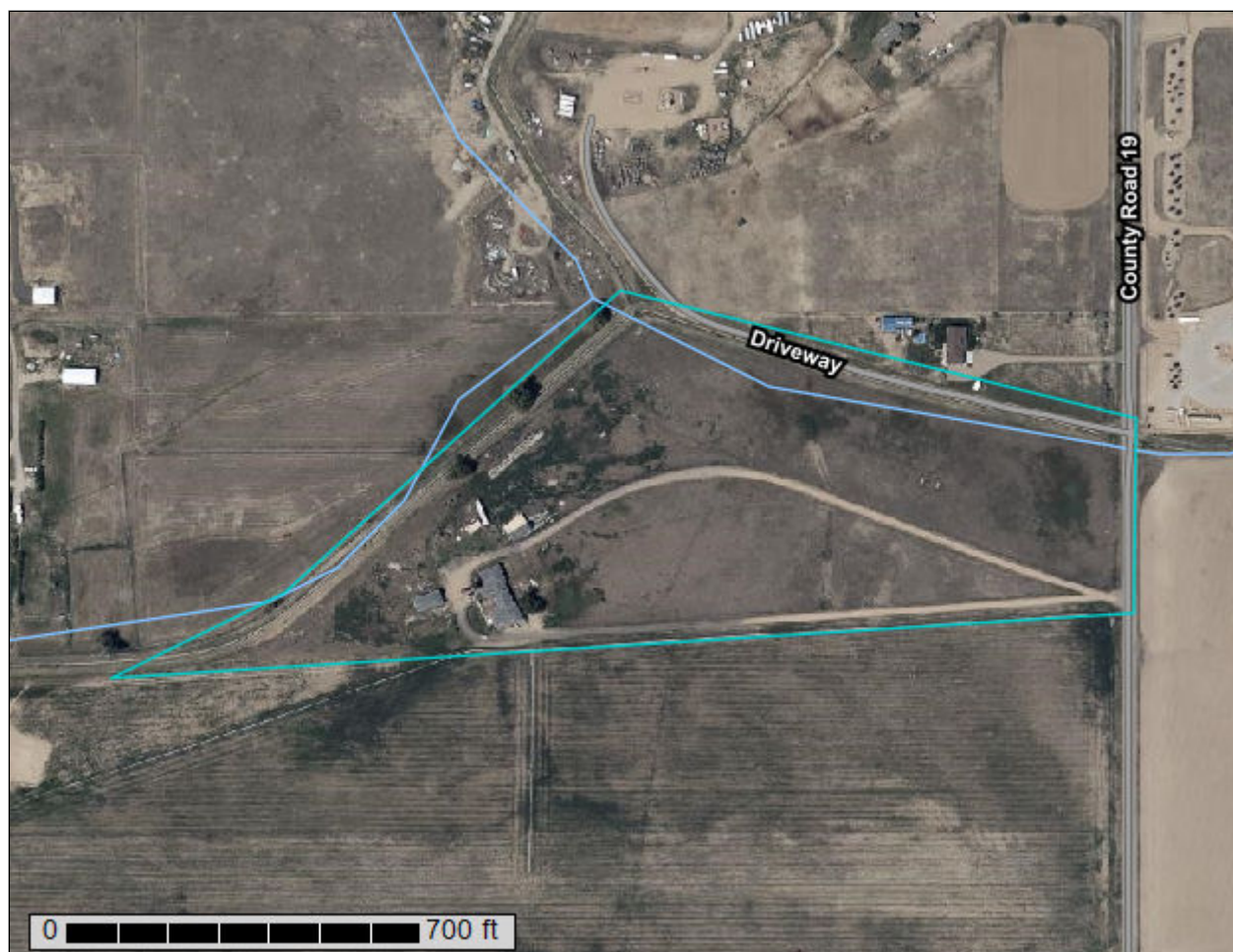
NRCS

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 Weld County, Colorado, Southern Part

Been RV



Preface

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).

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

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

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

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)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

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: Weld County, Colorado, Southern Part
Survey Area Data: Version 19, Jun 5, 2020

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

Date(s) aerial images were photographed: Jul 19, 2018—Aug 10, 2018

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
82	Wiley-Colby complex, 1 to 3 percent slopes	19.9	100.0%
Totals for Area of Interest		19.9	100.0%

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 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.

Weld County, Colorado, Southern Part

82—Wiley-Colby complex, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3643
Elevation: 4,850 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Wiley and similar soils: 60 percent
Colby and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiley

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 60 inches: silty clay loam
H3 - 60 to 64 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Loamy Plains (R067BY002CO)
Hydric soil rating: No

Description of Colby

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Loamy Plains (R067BY002CO)
Hydric soil rating: No

Minor Components

Weld

Percent of map unit: 4 percent
Hydric soil rating: No

Heldt

Percent of map unit: 4 percent
Hydric soil rating: No

Keith

Percent of map unit: 2 percent
Hydric soil rating: No

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**GEOTECHNICAL ENGINEERING REPORT
BEEN RV PARK
3647 ROAD 19, WELD COUNTY, COLORADO
EEC PROJECT NO. 1202083**

Prepared for:

Western Engineering Consultants
127 South Denver Avenue
Fort Lupton, Colorado 80621

Prepared by:

Earth Engineering Consultants, LLC
4396 Greenfield Drive
Windsor, Colorado 80550





December 4, 2020

Western Engineering Consultants
127 South Denver Avenue
Fort Lupton, Colorado 80621

Attn: Mr. Chadwin Cox (chadwin.cox@westerneci.com)

Re: Geotechnical Engineering Report
Been RV Park
3647 Road 19, Weld County, Colorado
EEC Project No. 1202083

Mr. Cox:

Enclosed, herewith, are the results of the subsurface exploration completed by Earth Engineering Consultants, LLC (EEC) for the referenced project. For this exploration, seven (7) test borings were advanced to depths of approximately 20 to 30 feet below existing site grades. This subsurface exploration was carried out in general accordance with our proposal dated October 13, 2020.

In summary, the subsurface conditions encountered in the test borings generally consisted of lean clay underlain by bedrock at depths of about 4 to 9 feet below ground surface. At current moisture and density conditions, the subgrades/bedrock exhibited moderate to very high swell potential. Groundwater was encountered at depths as shallow as 10 feet below ground surface.

The expansive soils encountered present a risk of post-construction heaving of site improvements should those subgrades become wet subsequent to construction. Due to the presence of expansion soils, it is our opinion that building foundations and structural floor slabs should be supported on drilled pier foundations. As an alternative, post-tension slab foundations could be considered, however, over excavation and replacement of a zone of subgrades beneath the foundations/floor slab should be anticipated with an expectation of higher risk of heave potential/movement of site structure. We anticipate that site roadways and associated flatwork

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could be supported on a shallow zone of over excavated and backfilled material with the understanding of a higher risk of movement. Geotechnical recommendations concerning design and construction of foundations and support of floor slabs and pavements are presented in the text of the attached report.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the enclosed report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,
Earth Engineering Consultants, LLC



Ethan P. Wiechert, P.E.
Senior Project Engineer

Reviewed by: David A. Richer, P.E.
Senior Geotechnical Engineer

**GEOTECHNICAL ENGINEERING REPORT
BEEN RV PARK
3647 ROAD 19, WELD COUNTY, COLORADO
EEC PROJECT NO. 1202083**

December 4, 2020

INTRODUCTION

The geotechnical subsurface exploration for the proposed Been RV Park planned for construction at 3647 Road 19 in Weld County, Colorado has been completed. To develop subsurface information in the proposed development area, seven (7) test borings were drilled to depths of approximately 20 to 30 feet below existing site grades. Individual boring logs and a diagram indicating the approximate boring locations are included with this report.

We understand the planned development would include an RV Park with approximately 133 campsites and associated roadways. The development would also include an approximate 10,000 square-foot commercial building on the east side of the site and a residence on the west side of the site. Numerous onsite wastewater treatment systems are anticipated for the campsites, residence, and commercial structure. Subsurface exploration and geotechnical engineering for the residence and the onsite wastewater treatment systems are outside the scope of our services and provided by others.

The commercial building would likely be a one- or two-story, wood/steel framed structure constructed at-grade (no basement). We estimate foundation loads for the planned building would be relatively light with continuous wall loads less than 3 kips-per-foot and individual column loads less than 50 kips. Floor loads are expected to be relatively light, consistent with commercial/retail use. We anticipate roadways would be utilized by low volumes of light passenger vehicles with areas designated for low volumes of light truck traffic. Based on areal imagery of the site, we anticipate cuts and fill to develop site grades would be less than 2 feet (+/-).

The purpose of this report is to describe the subsurface conditions encountered in the test borings, analyze and evaluate the field and laboratory test data, and provide geotechnical recommendations concerning design and construction of the commercial building's foundations and floor slabs, and support of site flatwork and pavements. Recommended pavement sections, which are based on assumed traffic conditions, are also included.

EXPLORATION AND TESTING PROCEDURES

The test boring locations were selected and established in the field by EEC personnel by pacing and estimating angles from identifiable site features. The approximate locations of the borings are shown on the attached boring location diagram. The boring locations should be considered accurate only to the degree implied by the methods used to make the field measurements.

The test borings were advanced using a truck mounted, CME-55 drill rig equipped with a hydraulic head employed in drilling and sampling operations. The boreholes were advanced using 4-inch nominal diameter continuous flight augers. Samples of the subsurface materials encountered were obtained using split-barrel and California barrel sampling procedures in general accordance with ASTM Specifications D1586 and D3550, respectively.

In the split-barrel and California barrel sampling procedures, standard sampling spoons are advanced into the ground by means of a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the split-barrel and California barrel samplers is recorded and is used to estimate the in-situ relative density of cohesionless soils and, to a lesser degree of accuracy, the consistency of cohesive soils. In the California barrel sampling procedure, relatively intact samples are obtained in removable brass liners. All samples obtained in the field were sealed and returned to our laboratory for further examination, classification and testing.

Laboratory testing on each of the recovered samples included moisture content tests with unconfined compressive strength of appropriate samples estimated using a calibrated hand penetrometer. Atterberg limits and washed sieve analysis tests were completed on select samples to evaluate the quantity and plasticity of fines in the subgrades. Swell/consolidation tests were performed on select samples to evaluate the potential for the subgrade materials to change volume with variation in moisture content and load. The quantity of water-soluble sulfates was determined on numerous samples to evaluate the potential for sulfate attack on site concrete and for selection of appropriate soils stabilization materials if needed. Results of the outlined tests are indicated on the attached boring logs and summary sheets.

As part of the testing program, all samples were examined in the laboratory and classified in general accordance with the attached General Notes and the Unified Soil Classification System, based on the soil's texture and plasticity. The estimated group symbol for the Unified Soil Classification System is indicated on the boring logs and a brief description of that classification system is included with this report.

SITE AND SUBSURFACE CONDITIONS

The proposed campsite and commercial building area (development property) is located on the west side of Road 19, about a ¼-mile south of Road 10. The development property is about 15 acres in size with about 11 acres planned for the campsites and commercial building. At the time of our site visit, with exception of an existing unsurfaced driveway through the property, the development property was vacant and covered with a thin mantle of topsoil and sparse vegetation. The ground surface in this area was relatively flat with approximately 5 feet of fall from the north to the south. On the development property, evidence of prior building construction was not observed by EEC personnel. Site photos taken at the time of our drilling operations are included with this report.

EEC field personnel were on site during drilling to evaluate the subsurface conditions encountered and direct the drilling activities. Field logs prepared by EEC site personnel were based on visual and tactual observation of disturbed samples and auger cuttings. The final boring logs included with this report may contain modifications to the field logs based on results of laboratory testing and evaluation. Based on results of the field borings and laboratory testing, subsurface conditions can be generalized as follows.

From the ground surface, the topsoil and vegetation was underlain by brown lean clay which extended to depths of approximately 4 to 9 feet below ground surface. The clay soils were relatively dry, dense, very stiff and exhibited high potential to swell with increase in moisture content at current moisture and density conditions. The lean clay soils were underlain by bedrock which extended to the bottom of the completed test borings. The bedrock generally consist of claystone with intermittent sandstone, which transitioned to claystone with depth. The bedrock, particularly the claystone, was moderately hard and exhibited a moderate swell potential.

The stratification boundaries indicated on the boring logs represent the approximate location of changes in soil types; in-situ, the transition of materials may be gradual and indistinct.

GROUNDWATER CONDITIONS

Observations were made while drilling and after completion of the borings to detect the presence and depth to hydrostatic groundwater. At the time of drilling, free water was observed in five of the test borings while drilling at depths of about 12 to 15 feet below ground surface, and in test borings B-1 and B-6 at depths of approximately 10 to 11 feet after drilling. Free water was not observed in test borings B-4 and B-7, generally located on the south side of the site. The borings were backfilled upon completion of the drilling operations; therefore, subsequent groundwater measurements were not obtained. The groundwater level observations are included on the attached boring logs.

Fluctuations in groundwater levels can occur over time depending on variations in hydrologic conditions, and other conditions not apparent at the time of this report. We anticipate the irrigation canal boarding the north side of the site may impact groundwater levels at this site. Longer term monitoring of water levels in cased wells, which are sealed from the influence of surface water, would be required to more accurately evaluate fluctuations in groundwater levels at the site. We have typically noted deepest groundwater levels in late winter and shallowest groundwater levels in mid to late summer.

ANALYSIS AND RECOMMENDATIONS

General

The subgrades encountered in the test borings generally consisted of moderately to highly plastic clay, which was relatively dry, dense, and very stiff, underlain at relatively shallow depth by bedrock. At current moisture and density conditions, the subgrades/bedrock exhibited a moderate to very high potential to swell. Movement of foundations, pavements and other at-grade improvements placed directly on expansive materials would be expected if the moisture content of those materials increases subsequent to construction.

Due to the expansive soils encountered at this site, care will be needed to see that site preparation and designs of site improvements include measures to mitigate the potential of heaving of the site improvements to an acceptable level. Outlined herein are recommendations for development of this site; however, the client should recognize that building on expansive soils is risky, even when

mitigation plans are followed. Mitigation plans outlined herein would reduce the risk of heaving of site improvements, but that risk cannot be eliminated.

Site Preparation

Prior to placement of any fill and/or improvements, we recommend any existing topsoil, vegetation, and any unsuitable materials be removed from the planned improvement areas. After stripping the site and after making all cuts and prior to placing any fill, we recommend over excavating the subgrades beneath pavements and exterior flatwork (sidewalks, curb-and-gutter, etc.). The over excavations should extend to a depth of at least 3 feet below ground surface. The over excavations should extend laterally 8 inches for every 12 inches of over excavation depth. Note, recommendations for preparation in the building areas is included in the section titled *Building Foundations*.

The over excavation depths recommended should reduce the amount of heaving of site flatwork and promote a more even risk of heaving; even though that risk is reduced, it is not eliminated. If those subgrades become substantially wet subsequent to construction, heaving upwards of 6 inches or more could be possible. If that is not acceptable, greater over excavation depths up to 10 feet below ground surface would be necessary to significantly reduce that risk. EEC should be contacted to provide alternative recommendations if that is desirable.

After completing the over excavations, the exposed soils should be scarified to a depth of 9 inches, adjusted in moisture content and compacted to at least 95% of the material's standard Proctor maximum dry density as determined in accordance with ASTM Specification D698. The moisture content should be adjusted to within -1 to +3%.

Fill soils should consist of approved materials which are free from organic matter and debris. In our opinion, the over excavated clay soils or similar soils could be used. The fill soils should be placed in loose lifts not to exceed 9 inches in thickness, adjusted in moisture content and compacted as recommended for the scarified soils. Care will be needed to maintain the recommended moisture content prior to and during construction of overlying improvements. Care should be taken after preparation of the subgrades to avoid disturbing the subgrade materials. Materials which are loosened or disturbed should be reworked prior to placement of foundations/flatwork.

Foundations/Floor Slabs**Drilled Piers**

Based on the materials encountered in the completed test borings, we recommend the commercial building foundations and floor slabs (structural floor) are supported on deep foundations (drilled piers) extending to bear in competent bedrock.

We recommend drilled piers extend to bear at least 20 feet into firm competent bedrock and have a minimum length of at least 30 feet. Both minimum length and minimum penetration into the underlying bedrock should be met. For design of drilled piers, we recommend using a total end bearing pressure not to exceed 15,000 psf. In addition, a skin friction value of 1,500 psf could be used for that portion of the drilled piers extending into competent bedrock. Lower values may be appropriate for pier groups depending on pier diameter and spacing. Exterior foundation grade beams, or foundations in unheated areas should be located a minimum of 30 inches below adjacent exterior grade to provide frost protection. The use of at least 18 inches of void form beneath grade beams and floor slabs is recommended.

When the lateral capacity of drilled piers is evaluated by the LPILE program, we recommend that internally generated load-deformation (P-Y) curves be used. Table 1 below includes recommended soil parameters for design of drilled piers using LPILE.

Table 1. Soil parameters for design of drilled piers using LPILE program.

Parameters	Native Overburden	Bedrock
Unit Weight of Soil (pcf)	130 ⁽¹⁾	130 ⁽¹⁾
Undrained Shear Strength (psf)	2,000	3,000
Angle of Internal Friction, ϕ (degrees)	25	20
Strain Corresponding to $\frac{1}{2}$ Max. Principal Stress Difference, ϵ_{50}	0.01	0.005

All piers should be reinforced full depth for the applied axial, lateral, and uplift stresses imposed. The amount of reinforcing steel for expansion should be determined by the tensile force created by the uplift force on each pier with allowance for dead load. Unit weights in Table 1 should be adjusted for buoyant conditions as appropriate.

Drilling caissons to design depth should be possible with conventional heavy-duty single flight power augers equipped with rock teeth; however, areas of well-cemented bedrock lenses may be encountered throughout the site at various depths where specialized drilling equipment and/or rock excavating equipment may be required.

Cohesive subgrades were encountered overlying the bedrock stratum. Groundwater was also encountered at a depth as shallow as approximately 10 feet below existing site grades. We anticipate temporary casing could be necessary for the portion of the drilled shaft above the bedrock at the time of construction.

Due to the presence of groundwater on the site, we expect some water may infiltrate the drilled shaft borehole. A maximum 3-inch depth of groundwater is acceptable in each pier prior to concrete placement. If pier concrete cannot be placed in relatively dry conditions, a tremie should be used for concrete placement. Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes. Pier concrete with slumps in the range of 6 to 8 inches is recommended. If casing is used for the pier construction, it should be withdrawn in a slow and continuous manner maintaining a sufficient head of concrete to prevent influx of water and/or the creation of voids in the pier concrete.

The foundation pier excavations should be observed by the geotechnical engineer. A representative of the geotechnical engineer should inspect the bearing surface and pier configuration. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations could be required.

We estimate the long-term settlement of drilled pier foundations designed and constructed as outlined above would be less than 1 inch.

Post-Tension Slab

As an alternative to deep foundations, it is our opinion the site commercial building could be supported on a post-tension slab foundation bearing on a zone of over excavated and replaced subgrades. Post-tensioned slab foundations consist of a combined floor slab and foundation system joined together with post-tensioning cables. The post-tensioned system moves as a single unit

significantly reducing the amount of differential movement across the building area and between foundation/floor slab elements. Total movement of the overall system should still be expected.

To develop the building areas for a post tension slab foundation system, prior to completing any cuts, fills and/or site improvements, we recommend all existing surficial vegetation and topsoil be stripped from the site. Once the site is stripped, we recommend any additional cuts be completed. Following stripping of the site and after making all cuts, we recommend over excavating a zone of soil beneath the building footprints (foundations and floor slabs) and replacing those soils with moisture conditioned and compaction-controlled material. The over excavations should extend to a minimum depth of at least 6 feet below ground surface and extend laterally 8 inches for every 12 inches of over excavation depth. After the completing the over excavations, the exposed soils should be scarified to a minimum depth of 9 inches, adjusted to within -1 to +3% of standard Proctor optimum moisture content and compacted to at least 95% of the material's standard Proctor maximum dry density as determined in accordance with ASTM Specification D698.

Fill soils to replace the over excavated soils should consist of approved materials, which are free from organic matter and debris. It is our opinion, the over excavated soils or similar could be used as fill in these areas. We recommend the fill soils be placed in loose lifts not to exceed 9 inches thickness, adjusted in moisture content and compacted as recommended for the scarified soils.

Care will be needed to maintain the recommended moisture content within the fill prior to and during construction of overlying improvements. Materials which are allowed to dry excessively or materials which are over compacted by subsequent construction traffic may require removal and replacement or reworking in-place prior to construction of overlying improvements.

Outlined in Table 2 are recommended post-tension slab design criteria based on the subsurface conditions encountered and the above recommendations for subgrade preparation below the site structures. The criteria in Table 2 is developed in general accordance with the 3rd Edition of the Post-Tensioning Institute design manual. Post-tension slab foundations should be designed and constructed in accordance with the appropriate design criteria below.

Table 2. Recommended post-tension slab design criteria.

Maximum Allowable Bearing Pressure		2,000 psf
Edge Moisture Variation Distance, e_m	Center Lift Condition	7.0 ft
	Edge Lift Condition	3.8 ft
Differential Soil Movement, y_m	Center Lift Condition	0.6 in
	Edge Lift Condition	2.1 in
Slab-Subgrade friction coefficient, μ	on polyethylene sheeting	0.75
	on cohesionless soils (sands)	1.0
	on cohesive soils (clays)	2.0

Exterior foundation grade beams, or foundations in unheated areas should be located a minimum of 30 inches below adjacent exterior grade to provide frost protection.

Care should be taken to include flexible connections where utilities enter the building to allow for overall structural movement. Care would be needed to allow for some differential movement between the structure and adjacent exterior flatwork. We estimate total heave of post-tension slab foundations following an over excavation and replacement as outlined above could be 4 inches. Greater over excavation depths could be considered to reduce the total heave potential.

Foundation Wall and Utility Backfill

Backfill needed to develop site grades following installation of foundations and site utilities should consist of low volume change materials which are free of organic matter and debris. In our opinion the site lean clay soils could be used. Backfill soils should be placed in loose lifts not to exceed 9 inches thickness, adjusted in moisture content and compacted to at least 95% of the material's maximum dry density as determined by the standard Proctor procedure, ASTM D698. The moisture content should be adjusted to with -1 to +3% of optimum moisture content.

Seismic

The site soil conditions consist of very stiff lean clay overlying moderately hard bedrock to the depths explored. For those site conditions, the International Building Code indicates a Seismic Site Classification of D. Evaluating borings to a greater depth could reveal an alternative site classification.

Corrosion Potential for Site Concrete

Results of water-soluble sulfate testing on three (3) select subgrade samples indicate sulfate (SO_4) contents ranging from 0.16 to 1.95%. ACI 318, Section 4.2 indicates the site soils have a severe risk of sulfate attack on Portland cement concrete and indicates site concrete should be designed using a sulfate exposure of S2. Note that concrete mixtures with a severe sulfate exposure may require sulfate resistant cements and/or pozzolans in the mixtures; refer to ACI 318 Section 4.3 for mixture design.

Pavements

Pavement subgrades should be prepared as outlined in the section *Site Preparation*. Once the subgrades are prepared as recommended and prior to surfacing with aggregate base, we recommend proof rolling the pavement subgrades to identify any soft, wet and yielding areas. Yielding and/or soft areas in the subgrades should be reworked and/or replaced prior to placement of aggregate base materials. Note that laboratory testing indicated the subgrades contain appreciable amounts of water-soluble sulfates, as such, stabilizing the soil with calcium-based materials (i.e. Class C fly ash, lime, cement) is not recommended.

We anticipate the site pavements would include areas designated for low volumes of light weight passenger vehicles (Light Duty) and areas of low volumes of light trucks (Heavy Duty). Equivalent daily load application (EDLA) values of 15 and 5 were assumed for the Heavy Duty and Light Duty areas, respectively. Based on the subsurface conditions encountered at the site, an assumed R-value of 5 was used in design of the pavement sections.

Recommended minimum pavement sections are provided below in Table 3. Hot bituminous pavement (HBP) sections may show rutting/distress in truck loading and drive areas; therefore, concrete pavements should be considered in those areas. The recommended pavement sections are considered minimum; thus, periodic maintenance should be expected.

Table 3. Recommended minimum pavement sections for estimated traffic loads.

Design Information	Heavy Duty	Light Duty
EDLA	15	5
Reliability (%)	80	80
Resilient Modulus (psi)	3025	3025
Serviceability Loss (psi)	2.2	2.2
Design Structure Number	3.05	2.57
Option 1: Composite		
HBP	5"	4"
Aggregate Base	8"	8"
Option 2: PCC (Non-reinforced)	6.5"	5.5"

We recommend aggregate base meet CDOT Class 5 or Class 6 aggregate base. Aggregate base should be adjusted in moisture content and compacted to achieve a minimum of 95% of standard Proctor maximum dry density.

HBP should be graded as S or SX and prepared with 75 gyrations using a Superpave gyratory compactor in accordance with CDOT standards. Grading SX is recommended for surface course of the pavement. The HBP should consist of PG 58-28 or PG 64-22 asphalt binder; however, if the mix contains reclaimed asphalt pavement (RAP) material, we recommend using PG 58-28 binder. HBP should be compacted to achieve 92 to 96% of the mix's theoretical maximum specific gravity (Rice Value).

Portland cement concrete should be an approved exterior pavement mix with a minimum 28-day compressive strength of 4,500 psi and should be air entrained. Based on appreciable amounts of water-soluble sulfate contents in the subgrades, concrete pavement should be designed using a severe sulfate exposure of S2. Wire mesh or fiber could be considered to reduce shrinkage cracking.

Longitudinal and transverse joints should be provided as needed in concrete pavements for expansion/contraction and isolation. The location and extent of joints should be based upon the final pavement geometry. Sawed joints should be cut in general accordance with ACI recommendations. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

Other Considerations

Positive drainage should be developed away from the structures and pavement areas with a minimum slope of 1 inch per foot for the first 10 feet away from the improvements in landscape areas. Care should be taken in planning of landscaping adjacent to the buildings to avoid features which would pond water adjacent to the foundations or stemwalls. Placement of plants which require irrigation systems or could result in fluctuations of the moisture content of the subgrade material should be avoided adjacent to site improvements. Irrigation systems should not be placed within 5 feet of the perimeter of the buildings and parking areas. Spray heads should be designed not to spray water on or immediately adjacent to the structures or site pavements. Roof drains should be designed to discharge at least 5 feet away from the structures and away from the pavement areas.

The individual contractor(s) should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

GENERAL COMMENTS

The analysis and recommendations presented in this report are based upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations, which may occur between borings or across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observations during earthwork phases to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of Western Engineering Consultants for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is made. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the geotechnical engineer.

DRILLING AND EXPLORATION

DRILLING & SAMPLING SYMBOLS:

SS: Split Spoon - 13/8" I.D., 2" O.D., unless otherwise noted
 ST: Thin-Walled Tube - 2" O.D., unless otherwise noted
 R: Ring Barrel Sampler - 2.42" I.D., 3" O.D. unless otherwise noted
 PA: Power Auger
 HA: Hand Auger
 DB: Diamond Bit = 4", N, B
 AS: Auger Sample
 HS: Hollow Stem Auger

PS: Piston Sample
 WS: Wash Sample
 FT: Fish Tail Bit
 RB: Rock Bit
 BS: Bulk Sample
 PM: Pressure Meter
 WB: Wash Bore

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL : Water Level
 WCI: Wet Cave in
 DCI: Dry Cave in
 AB : After Boring

WS : While Sampling
 WD : While Drilling
 BCR: Before Casing Removal
 ACR: After Casting Removal

Water levels indicated on the boring logs are the levels measured in the borings at the time indicated. In pervious soils, the indicated levels may reflect the location of ground water. In low permeability soils, the accurate determination of ground water levels is not possible with only short term observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil Classification is based on the Unified Soil Classification system and the ASTM Designations D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive
 Strength, Qu, psf

Consistency

< 500	Very Soft
500 - 1,000	Soft
1,001 - 2,000	Medium
2,001 - 4,000	Stiff
4,001 - 8,000	Very Stiff
8,001 - 16,000	Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense
80 +	Extremely Dense

PHYSICAL PROPERTIES OF BEDROCK

DEGREE OF WEATHERING:

Slight	Slight decomposition of parent material on joints. May be color change.
Moderate	Some decomposition and color change throughout.
High	Rock highly decomposed, may be extremely broken.

HARDNESS AND DEGREE OF CEMENTATION:

Limestone and Dolomite:

Hard	Difficult to scratch with knife.
Moderately	Can be scratched easily with knife.
Hard	Cannot be scratched with fingernail.
Soft	Can be scratched with fingernail.

Shale, Siltstone and Claystone:

Hard	Can be scratched easily with knife, cannot be scratched with fingernail.
Moderately	Can be scratched with fingernail.
Hard	
Soft	Can be easily dented but not molded with fingers.

Sandstone and Conglomerate:

Well Cemented	Capable of scratching a knife blade.
Cemented	Can be scratched with knife.
Poorly Cemented	Can be broken apart easily with fingers.



UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests				Soil Classification		
				Group Symbol	Group Name	
Coarse - Grained Soils more than 50% retained on No. 200 sieve	Gravels more than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines	Cu≥4 and 1<Cc≤3 ^E	GW	Well-graded gravel ^F	
			Cu<4 and/or 1>Cc>3 ^E	GP	Poorly-graded gravel ^F	
		Gravels with Fines more than 12% fines	Fines classify as ML or MH	GM	Silty gravel ^{G,H}	
			Fines Classify as CL or CH	GC	Clayey Gravel ^{F,G,H}	
	Sands 50% or more coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	Cu≥6 and 1<Cc≤3 ^E	SW	Well-graded sand ^I	
			Cu<6 and/or 1>Cc>3 ^E	SP	Poorly-graded sand ^I	
		Sands with Fines more than 12% fines	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}	
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silt and Clays Liquid Limit less than 50	inorganic	PI>7 and plots on or above "A" Line	CL	Lean clay ^{K,L,M}	
			PI<4 or plots below "A" Line	ML	Silt ^{K,L,M}	
		organic	Liquid Limit - oven dried	<0.75	OL	Organic clay ^{K,L,M,N}
			Liquid Limit - not dried		Organic silt ^{K,L,M,O}	
	Silt and Clays Liquid Limit 50 or more	inorganic	PI plots on or above "A" Line	CH	Fat clay ^{K,L,M}	
			PI plots below "A" Line	MH	Elastic Silt ^{K,L,M}	
		organic	Liquid Limit - oven dried	<0.75	OH	Organic clay ^{K,L,M,P}
			Liquid Limit - not dried		Organic silt ^{K,L,M,O}	
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat	

^ABased on the material passing the 3-in. (75-mm) sieve

^BIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^CGravels with 5 to 12% fines required dual symbols:

GW-GM well graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly-graded gravel with silt
GP-GC poorly-graded gravel with clay

^DSands with 5 to 12% fines require dual symbols:

SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

$$^E C_u = D_{60} / D_{10} \quad C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^FIf soil contains $\geq 15\%$ sand, add "with sand" to

^GIf fines classify as CL-ML, use dual symbol GC-CM, or SC-SM.

^HIf fines are organic, add "with organic fines" to group name

^IIf soil contains $> 15\%$ gravel, add "with gravel" to group name

^JIf Atterberg limits plots shaded area, soil is a CL-ML, Silty clay

^KIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel", whichever is predominant.

^LIf soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

^MIf soil contains $\geq 30\%$ plus No. 200 predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI \leq 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.

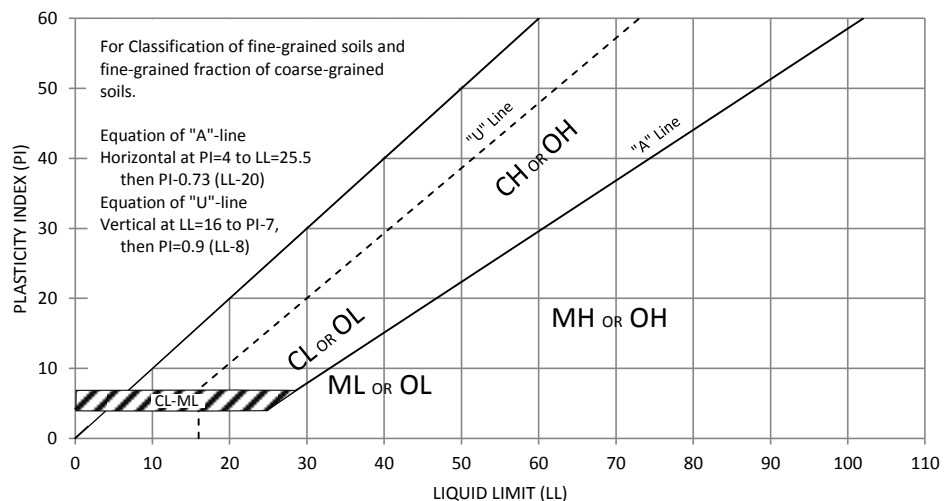




PHOTO # 1



PHOTO # 2

BEEN RV PARK
WELD COUNTY, COLORADO
EEC PROJECT No. 1202083
NOVEMBER 2020



3647 ROAD 19, WELD COUNTY, COLORADO

Continued on Sheet 2 of 2

Page 84 of 435

BEEN RV PARK												
3647 ROAD 19, WELD COUNTY, COLORADO												
PROJECT NO: 1202083		LOG OF BORING B-1 SHEET 2 OF 2					DATE: NOVEMBER 2020					
RIG TYPE: CME55							WATER DEPTH					
FOREMAN: DG		START DATE		11/11/2020		WHILE DRILLING		12'				
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020		AFTER DRILLING		10'				
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A								
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
		TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF
Continued from Sheet 1 of 2 CLAYSTONE gray moderately hard			26									
			--									
			27									
			--									
			28									
			--									
			29									
			--									
		SS	30	46	9000+	20.8						
BOTTOM OF BORING DEPTH 30.5'			--									
			31									
			--									
			32									
			--									
			33									
			--									
			34									
			--									
			35									
			--									
			36									
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Earth Engineering Consultants

BEEN RV PARK												
3647 ROAD 19, WELD COUNTY, COLORADO												
PROJECT NO: 1202083		LOG OF BORING B-2					DATE: NOVEMBER 2020					
RIG TYPE: CME55		SHEET 1 OF 1					WATER DEPTH					
FOREMAN: DG		START DATE		11/11/2020		WHILE DRILLING		12'				
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020		AFTER DRILLING						
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A								
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
		TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF
VEGETATION AND TOPSOIL			1									
			2									
LEAN CLAY (CL)												(@ 150 PSF)
brown		CS	3	21	8000	9.2					~12000 PSF	13.7%
very stiff			4									
		SS	5	10	8000	11.4						
			6									
			7									
			8									
			9									
		CS	10	25	9000+	14.2	116.2					
CLAYSTONE/SANDSTONE			11									
brown/gray/rust			12									
moderately hard / poorly cemented			13									
			14									
		SS	15	50/6"		22.0						
			16									
			17									
CLAYSTONE			18									
gray			19									
moderately hard		CS	20	50/8"	9000+	16.6	116.5				4800 PSF	5.2%
			21									
			22									
			23									
			24									
		SS	25	34	7000	19.7						
BOTTOM OF BORING DEPTH 25.5'												

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BEEN RV PARK													
3647 ROAD 19, WELD COUNTY, COLORADO													
PROJECT NO: 1202083		LOG OF BORING B-3 SHEET 1 OF 1					DATE: NOVEMBER 2020						
RIG TYPE: CME55							WATER DEPTH						
FOREMAN: DG		START DATE		11/11/2020		WHILE DRILLING		14'					
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020		AFTER DRILLING							
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A									
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL			
		TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL		--											
		1											
		--											
		2											
		LEAN CLAY (CL)		water soluble sulfate content = 0.69%									(@ 150 PSF)
		brown	CS	3	21	9000+	10.6	129.0	47	32	89.6	~10000 PSF	14.0%
very stiff		--											
	4												
	--												
	5	SS	10	8000	13.4								
	--												
	6												
CLAYSTONE/SANDSTONE	--												
	7												
	--												
	8												
	--												
	9												
	--												
	10	CS	50/6"	2500	13.3	111.2							
	--												
	11												
	--												
	12												
	--												
	13												
with cemented lenses at 12.5'	--												
	14												
	--												
	15	SS	50/2"	2500	3.5								
	--												
	16												
	--												
	17												
	--												
	18												
	--												
	19												
	--												
	20	CS	50/3"										
	--												
	21												
BOTTOM OF BORING DEPTH 20'	--												
	22												
	--												
	23												
	--												
	24												
	--												
	25												

Earth Engineering Consultants, LLC

BEEN RV PARK												
3647 ROAD 19, WELD COUNTY, COLORADO												
PROJECT NO: 1202083		LOG OF BORING B-4					DATE: NOVEMBER 2020					
RIG TYPE: CME55		SHEET 1 OF 1					WATER DEPTH					
FOREMAN: DG		START DATE		11/11/2020			WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020			AFTER DRILLING					
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A								
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
TYPE		(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL		--										
		1										
		--										
		2										
		SS	--									
			3	34	9000+	10.8						
		--										
		4										
CS	--											
	5	37	9000+	9.8	126.3					12.1%		
CLAYSTONE gray moderately hard with gypsum crystals		--										
		6										
		--										
		7										
		--										
		8										
		--										
		9										
		SS	--									
			10	36	8500	14.3						
		--										
		11										
		--										
		12										
		--										
		13										
--												
14												
CS	--											
	15	26	9000+	22.4	104.7							
BOTTOM OF BORING DEPTH 20.5'		--										
		16										
		--										
		17										
		--										
		18										
		--										
		19										
		SS	--									
			20	28	9000	19.8						
		--										
		21										
		--										
		22										
		--										
		23										
		--										
		24										
		--										
		25										
		--										
		26										

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BEEN RV PARK															
3647 ROAD 19, WELD COUNTY, COLORADO															
PROJECT NO: 1202083			LOG OF BORING B-5					DATE: NOVEMBER 2020							
RIG TYPE: CME55			SHEET 1 OF 1					WATER DEPTH							
FOREMAN: DG			START DATE		11/11/2020		WHILE DRILLING		14.5'						
AUGER TYPE: 4" CFA			FINISH DATE		11/11/2020		AFTER DRILLING								
SPT HAMMER: AUTOMATIC			SURFACE ELEV		N/A										
SOIL DESCRIPTION			D	N	QU	MC	DD	A-LIMITS		-200	SWELL				
			TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF		
VEGETATION AND TOPSOIL				--											
				1											
				--											
				2											
				--											
				3	50	9000+	9.4	124.9							(@ 150 PSF)
				--											
				4											
				--											
				5	27	9000+	11.5								
LEAN CLAY (CL) brown very stiff				--											
				6											
				--											
				7											
				--											
				8											
				--											
				9											
				--											
				10	44	9000+	12.8	119.8							11.6%
CLAYSTONE gray moderately hard				--											
				11											
				--											
				12											
				--											
				13											
				--											
				14											
				--											
				15	33	9000+	16.6								
with gypsum crystals				--											
				16											
				--											
				17											
				--											
				18											
				--											
				19											
				--											
				20	42	9000+	18.8	109.7							
BOTTOM OF BORING DEPTH 20'				--											
				21											
				--											
				22											
				--											
				23											
				--											
				24											
				--											
				25											

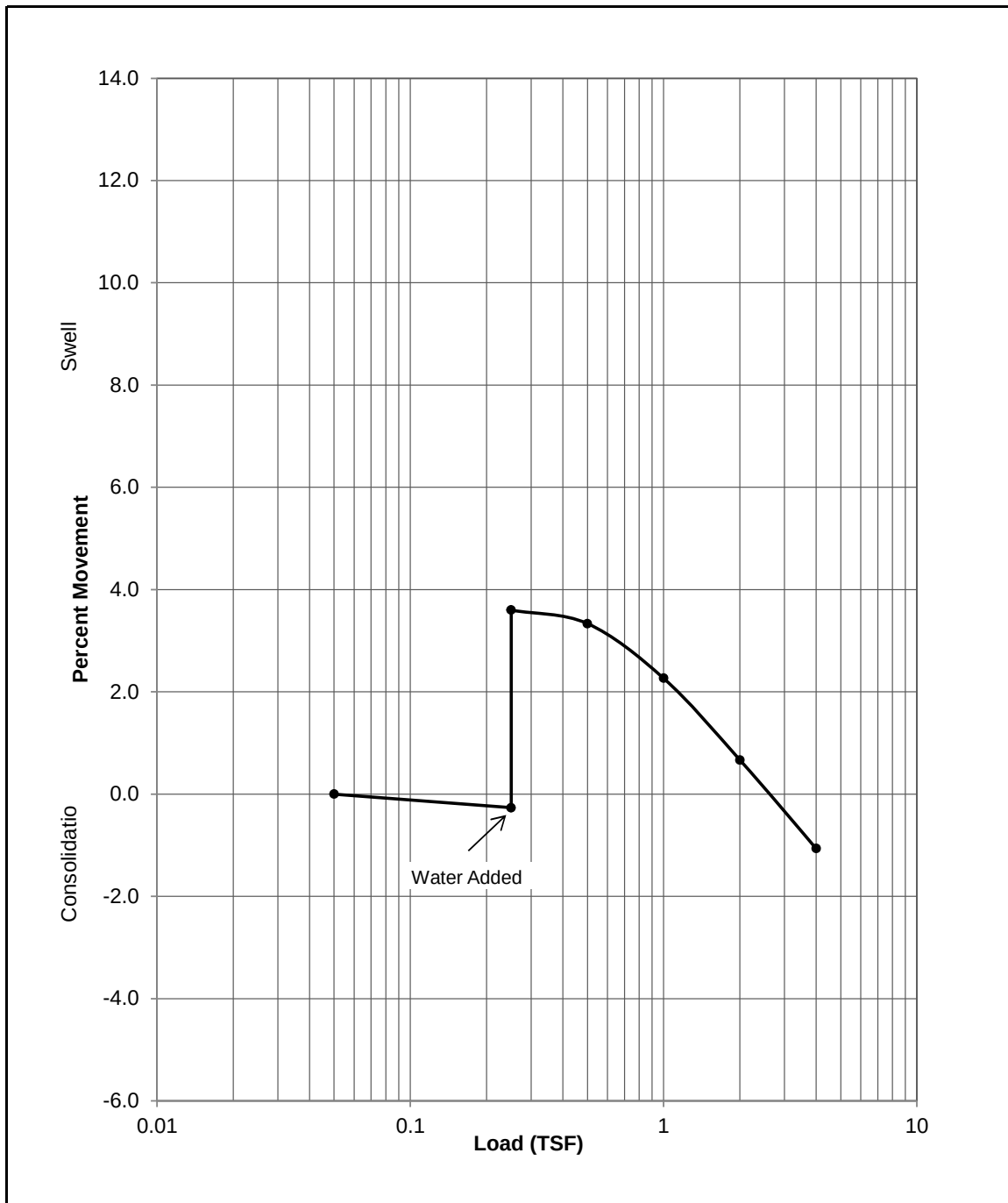
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BEEN RV PARK												
3647 ROAD 19, WELD COUNTY, COLORADO												
PROJECT NO: 1202083		LOG OF BORING B-6					DATE: NOVEMBER 2020					
RIG TYPE: CME55		SHEET 1 OF 1					WATER DEPTH					
FOREMAN: DG		START DATE		11/11/2020			WHILE DRILLING		14'			
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020			AFTER DRILLING		11'			
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A								
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
TYPE		(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL		--										
		1										
		--										
		2										
		SS	--									
			3	10	7000	20.8						
		CS	--									
			4									
LEAN CLAY (CL) brown very stiff		--	water soluble sulfate content = 1.95%									
		5	11	8500	14.6	112.0	40	17	90.8	3000 PSF	3.1%	
		6										
		7										
		8										
		SS	--									
			9									
			--									
			10	50	7000	14.1						
		CS	11									
			12									
			13									
			14									
			15	50/8"	7500	12.9	120.1					
			16									
			17									
18												
SS	--											
	19											
	--											
	20	50/2"		21.0								
BOTTOM OF BORING DEPTH 20.5'		--										
		21										
		22										
		23										
		24										
		25										

BEEN RV PARK														
3647 ROAD 19, WELD COUNTY, COLORADO														
PROJECT NO: 1202083			LOG OF BORING B-7 SHEET 1 OF 1				DATE: NOVEMBER 2020							
RIG TYPE: CME55							WATER DEPTH							
FOREMAN: DG			START DATE		11/11/2020		WHILE DRILLING		None					
AUGER TYPE: 4" CFA			FINISH DATE		11/11/2020		AFTER DRILLING							
SPT HAMMER: AUTOMATIC			SURFACE ELEV		N/A									
SOIL DESCRIPTION			D	N	QU	MC	DD	A-LIMITS		-200	SWELL			
			TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL			--											
			1											
			--											
			2											
			SS	3	15	8500	17.4							
				4										
			CS	5	15	9000+	11.4							
				6										
CLAYSTONE gray soft to moderately hard with gypsum crystals			--											
			9											
			SS	10	18	7500	17.6							
				11										
			--											
			12											
			--											
			13											
			--											
			14											
			CS	15	50	9000+	16.6	115.3						
				16										
			--											
			17											
			--											
			18											
--														
19														
with sandstone lenses			SS	20	34	9000+	17.3							
				21										
			--											
			22											
BOTTOM OF BORING DEPTH 20.5'			--											
			23											
			--											
			24											
			--											
			25											
			--											

SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone/Sandstone		
Sample Location: Boring 1, Sample 2, Depth 4'		
Liquid Limit: 26	Plasticity Index: 12	% Passing #200: 43.1%
Beginning Moisture: 6.7%	Dry Density: 130.6 pcf	Ending Moisture: 14.2%
Swell Pressure: 6000 psf		% Swell @ 500: 3.9%

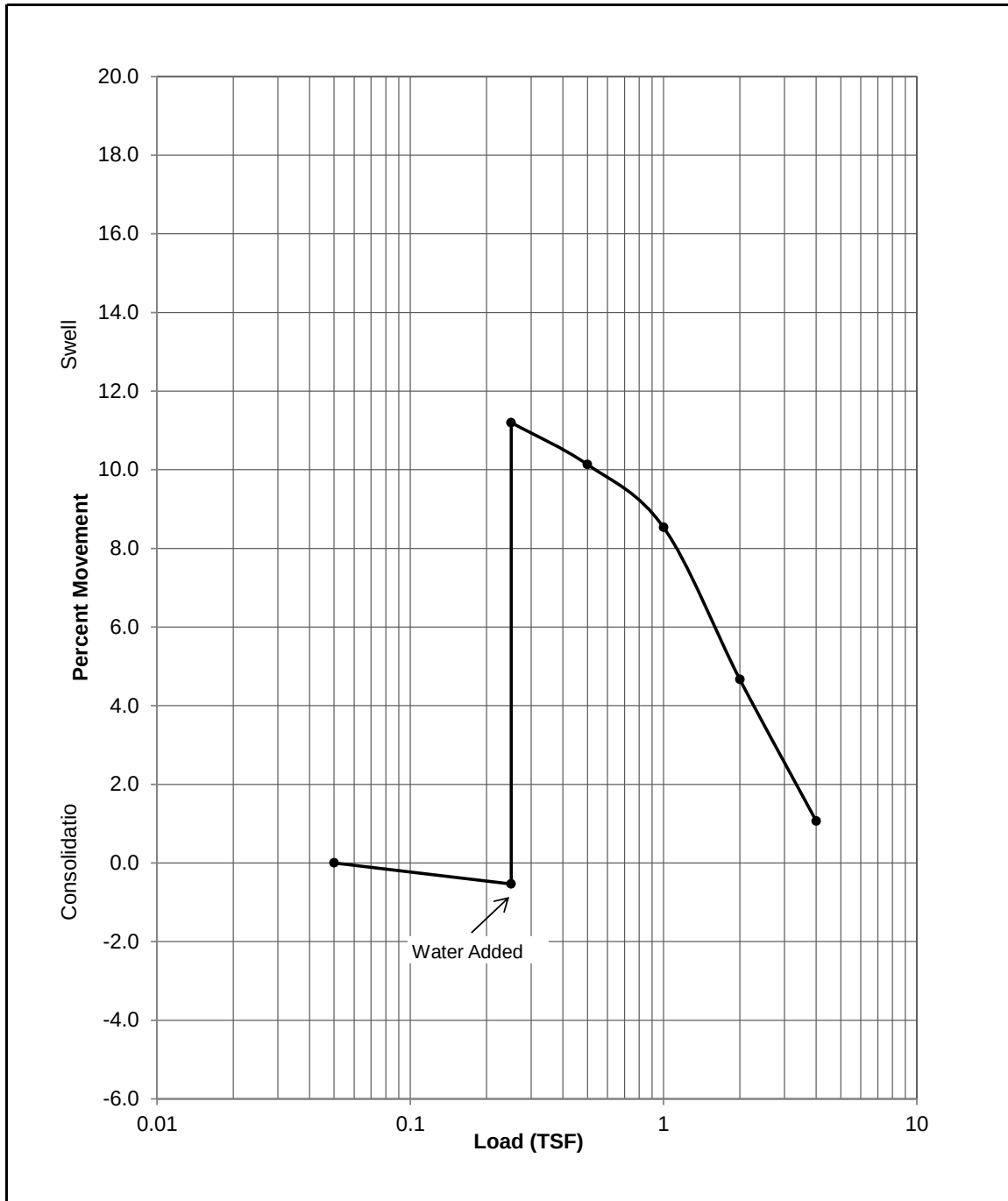


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone		
Sample Location: Boring 1, Sample 6, Depth 24'		
Liquid Limit: 83	Plasticity Index: 60	% Passing #200: 99.6%
Beginning Moisture: 21.3%	Dry Density: 107.5 pcf	Ending Moisture: 25.6%
Swell Pressure: ~10,000 psf		% Swell @ 500: 11.7%

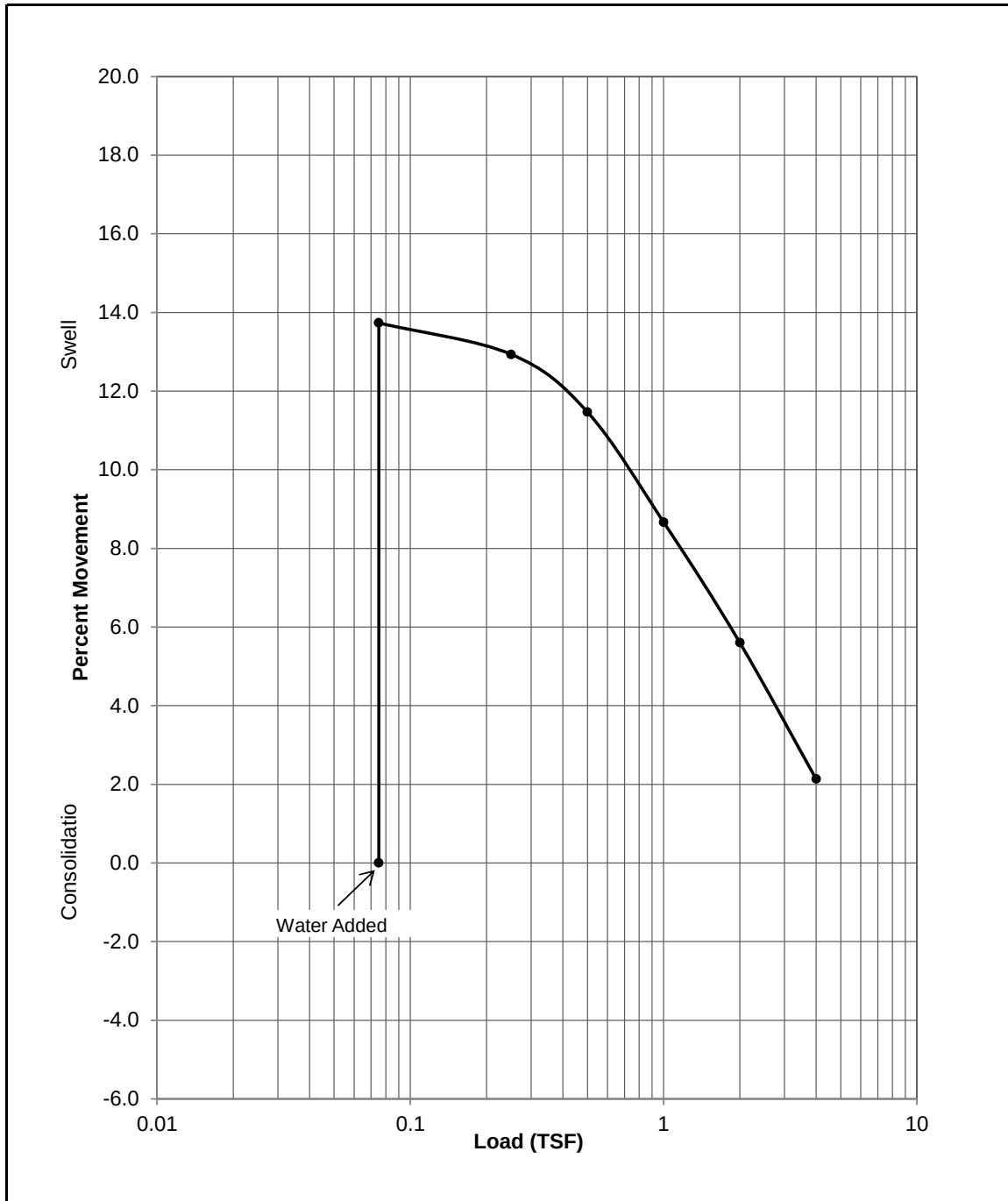


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 2, Sample 1, Depth 2'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 9.2%	Dry Density: 122.9 pcf	Ending Moisture: 15.8%
Swell Pressure: ~12,000 psf		% Swell @ 150: 13.7%

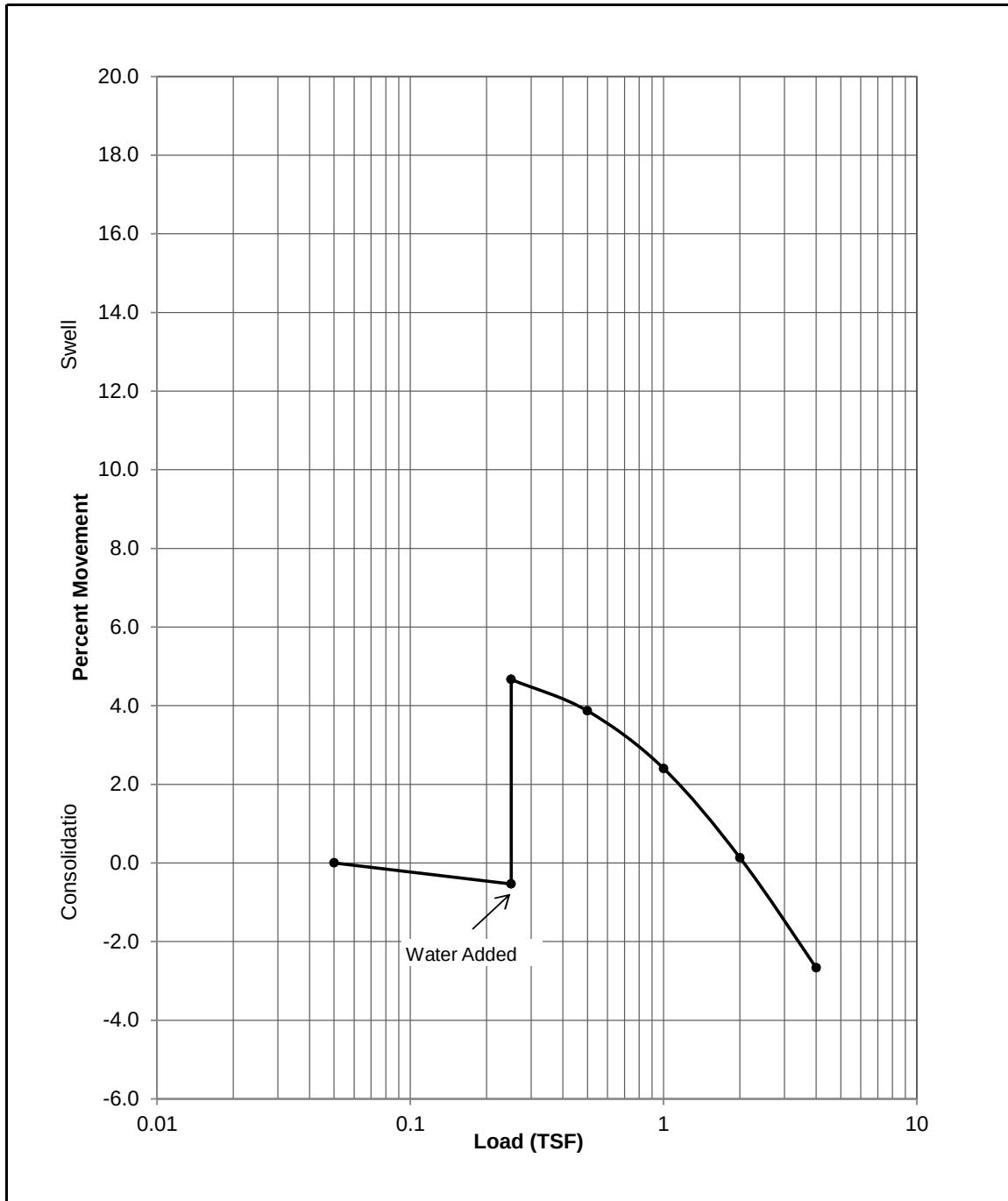


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone		
Sample Location: Boring 2, Sample 5, Depth 19'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 16.6%	Dry Density: 116.1 pcf	Ending Moisture: 18.2%
Swell Pressure: 4800 psf		% Swell @ 500: 5.2%

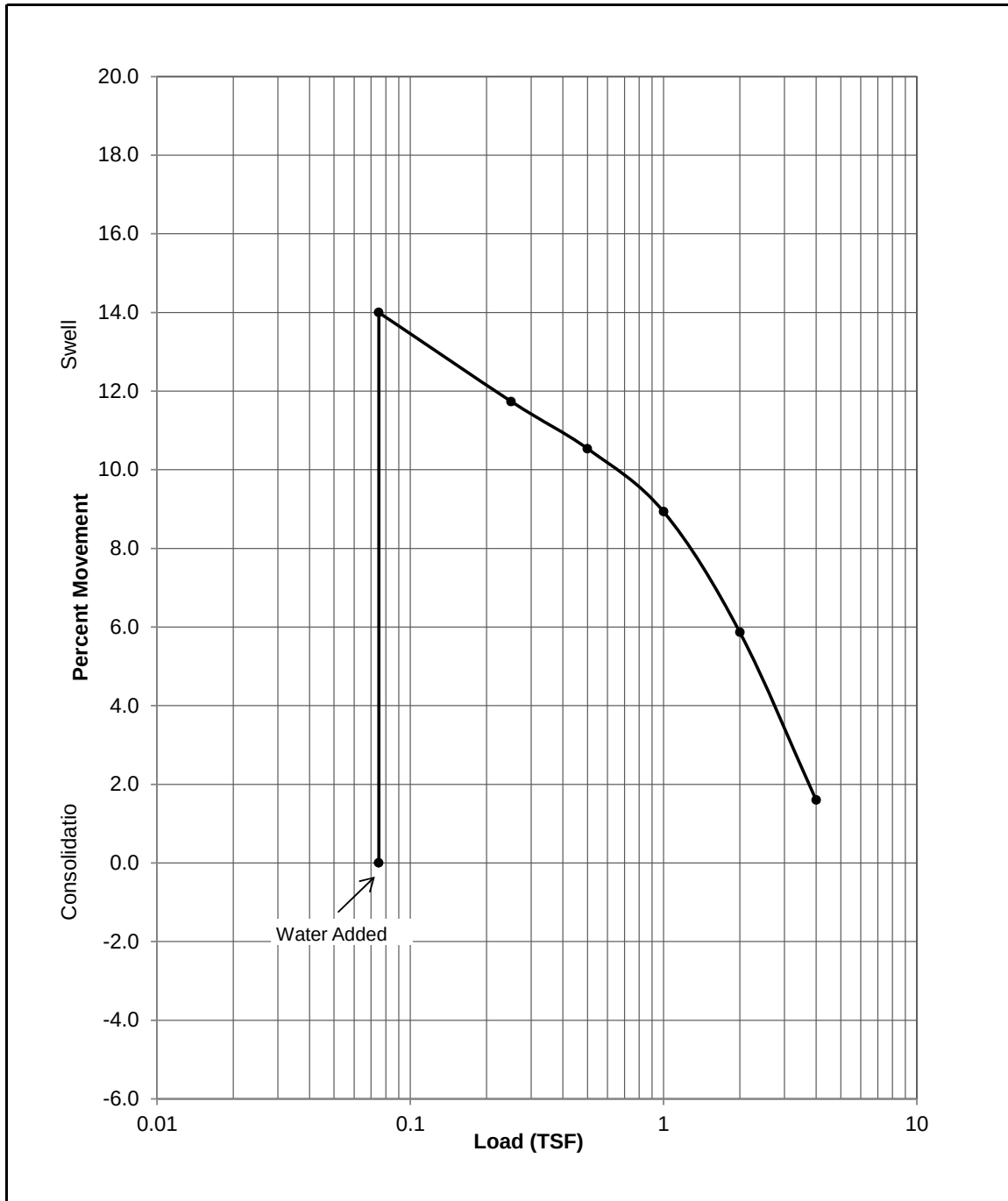


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 3, Sample 1, Depth 2'		
Liquid Limit: 47	Plasticity Index: 32	% Passing #200: 89.6%
Beginning Moisture: 10.6%	Dry Density: 129 pcf	Ending Moisture: 16.5%
Swell Pressure: ~10,000 psf		% Swell @ 150: 14.0%

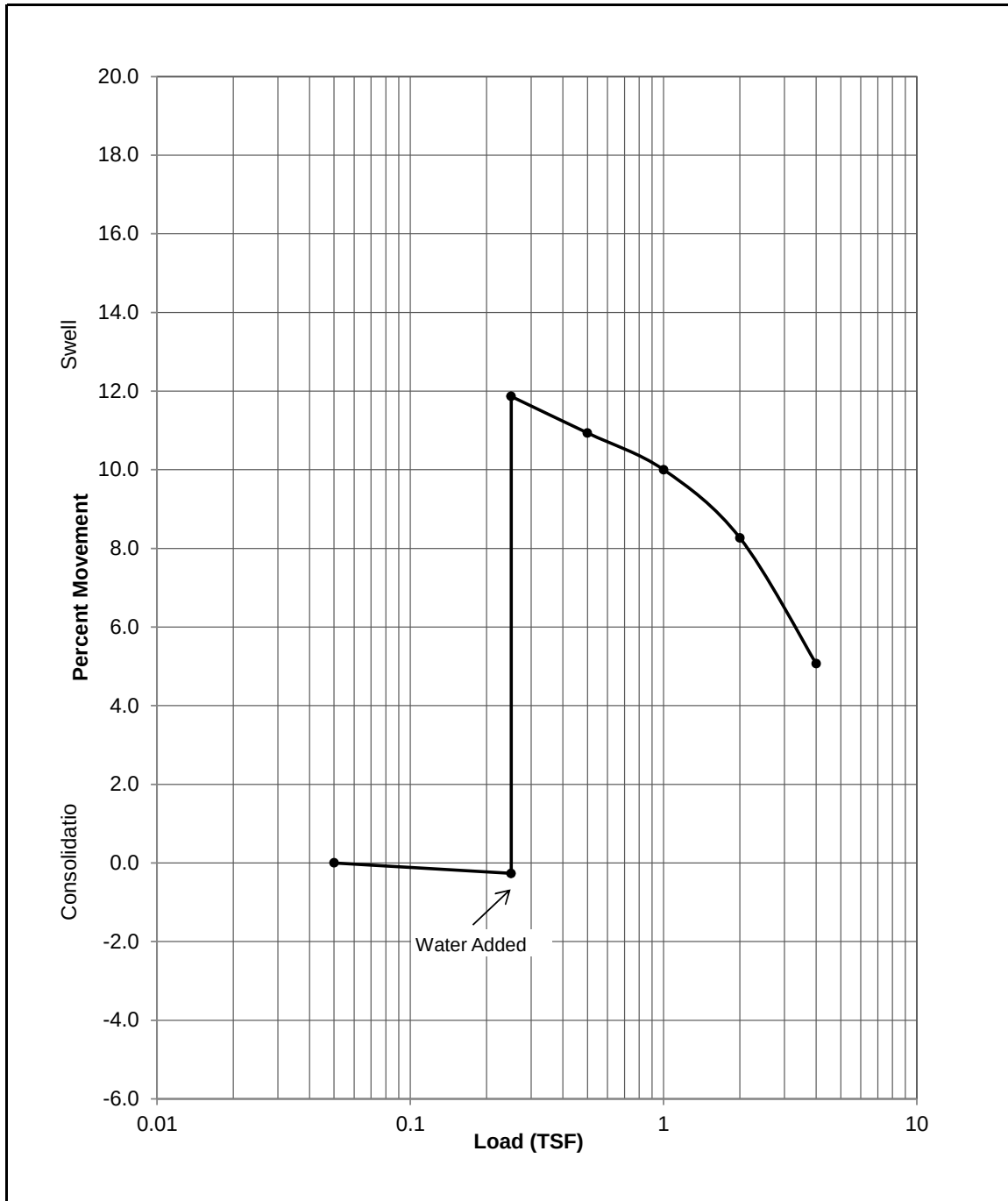


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 4, Sample 2, Depth 4'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 9.8%	Dry Density: 126.3 pcf	Ending Moisture: 16.1%
Swell Pressure:		% Swell @ 500: 12.1%

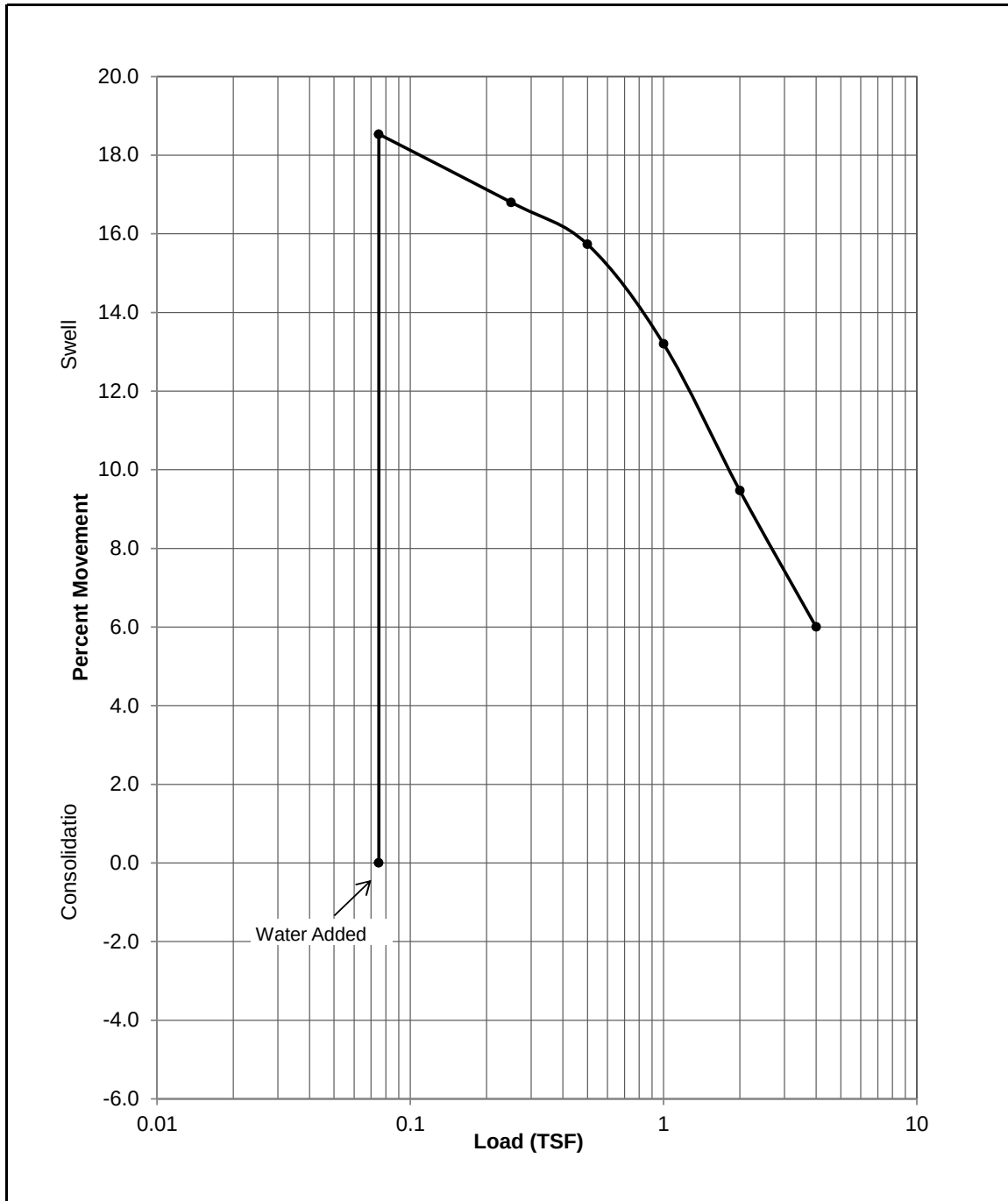


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Sandy Clay		
Sample Location: Boring 5, Sample 1, Depth 2'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 9.4%	Dry Density: 128.8 pcf	Ending Moisture: 19.0%
Swell Pressure:		% Swell @ 150: 18.5%

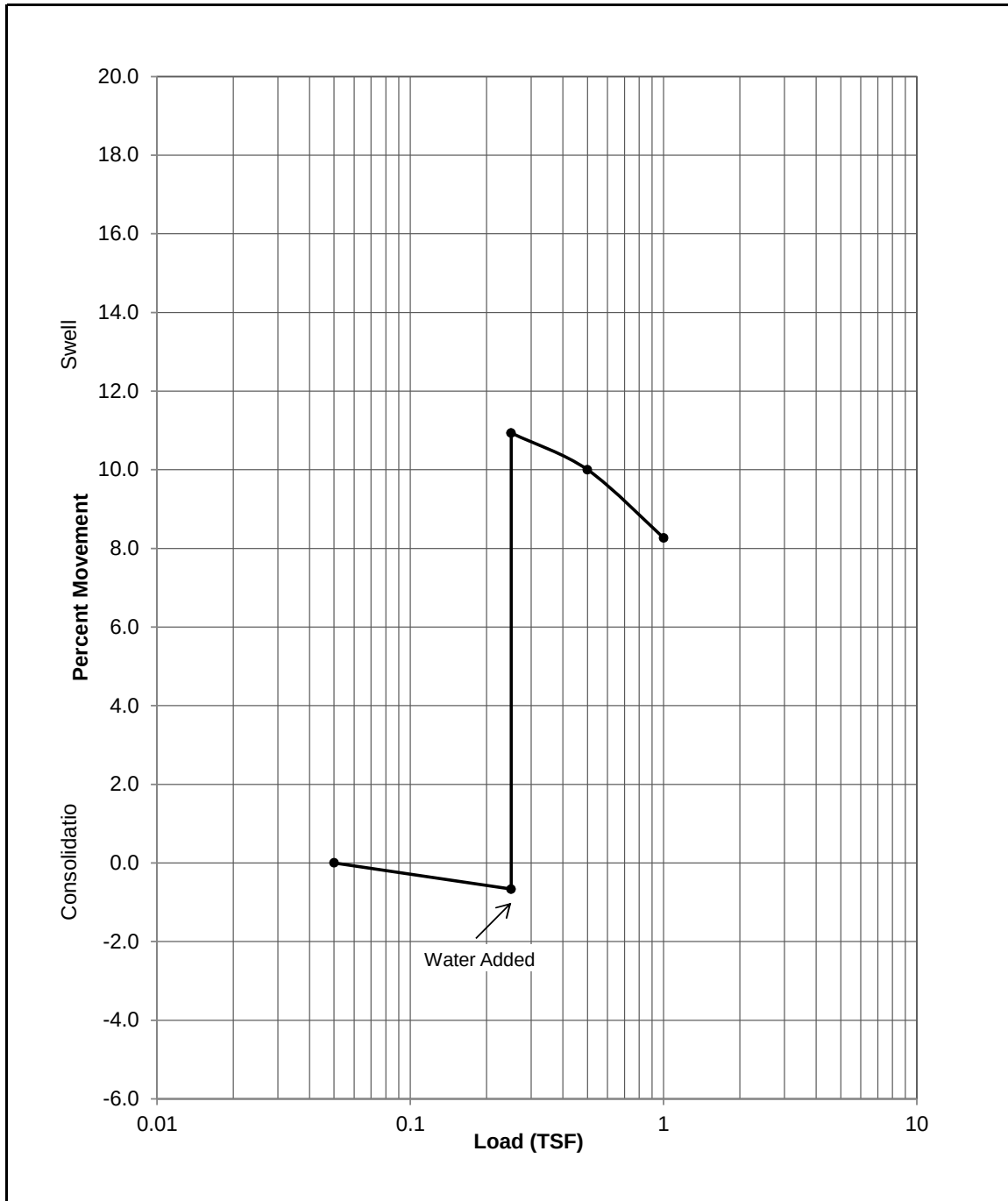


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone		
Sample Location: Boring 5, Sample 3, Depth 9'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 12.8%	Dry Density: 120.4 pcf	Ending Moisture: 21.9%
Swell Pressure:		% Swell @ 500: 11.6%

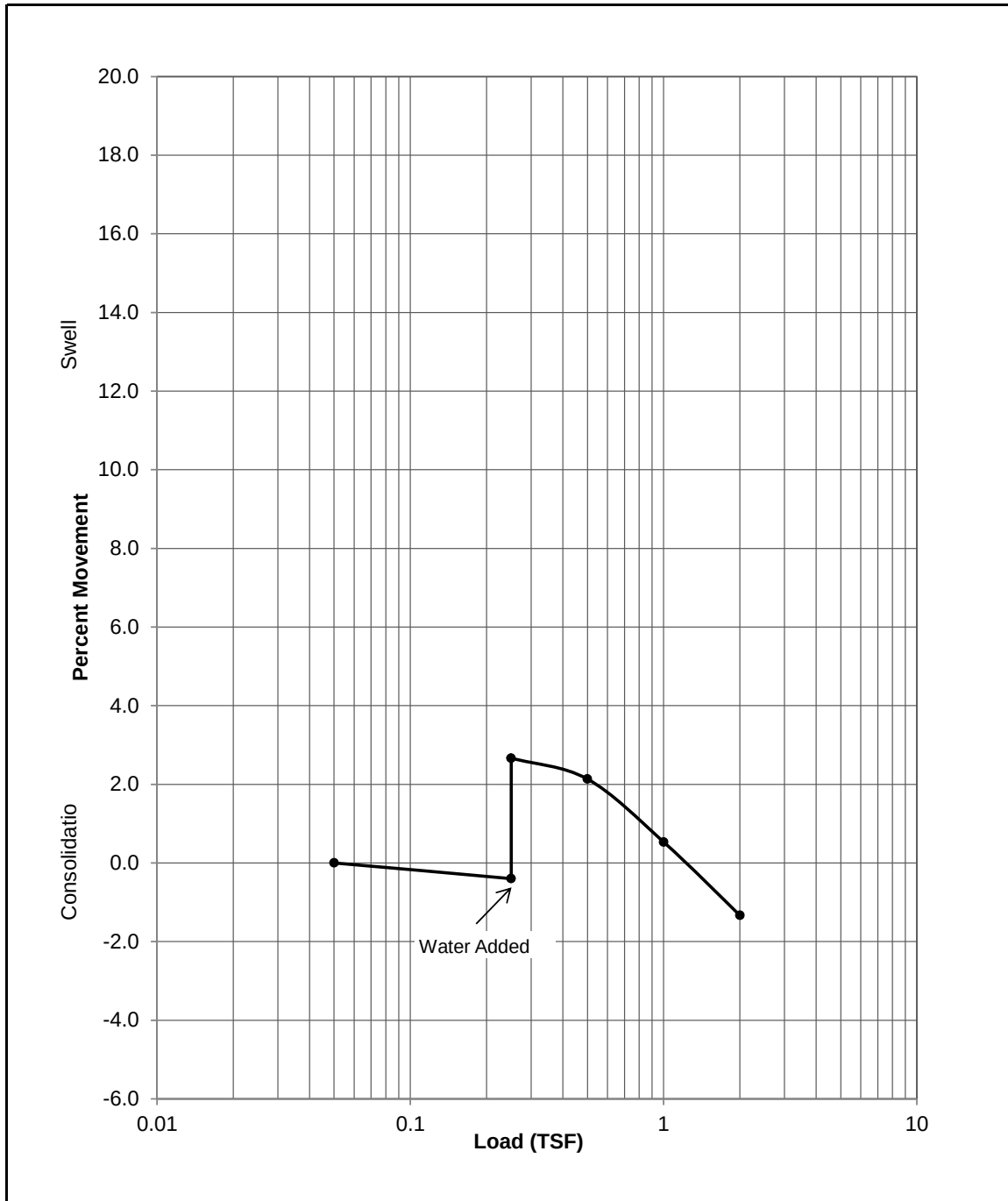


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 6, Sample 2, Depth 4'		
Liquid Limit: 40	Plasticity Index: 17	% Passing #200: 90.8%
Beginning Moisture: 14.6%	Dry Density: 112 pcf	Ending Moisture: 21.2%
Swell Pressure: 3000 psf		% Swell @ 500: 3.1%



Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



APPENDIX B

NOAA Atlas Rainfall / WEC Rational Method Runoff Calculations



NOAA Atlas 14, Volume 8, Version 2
Location name: Fort Lupton, Colorado, USA*
Latitude: 40.0537°, Longitude: -104.8887°
Elevation: 5039.15 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, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

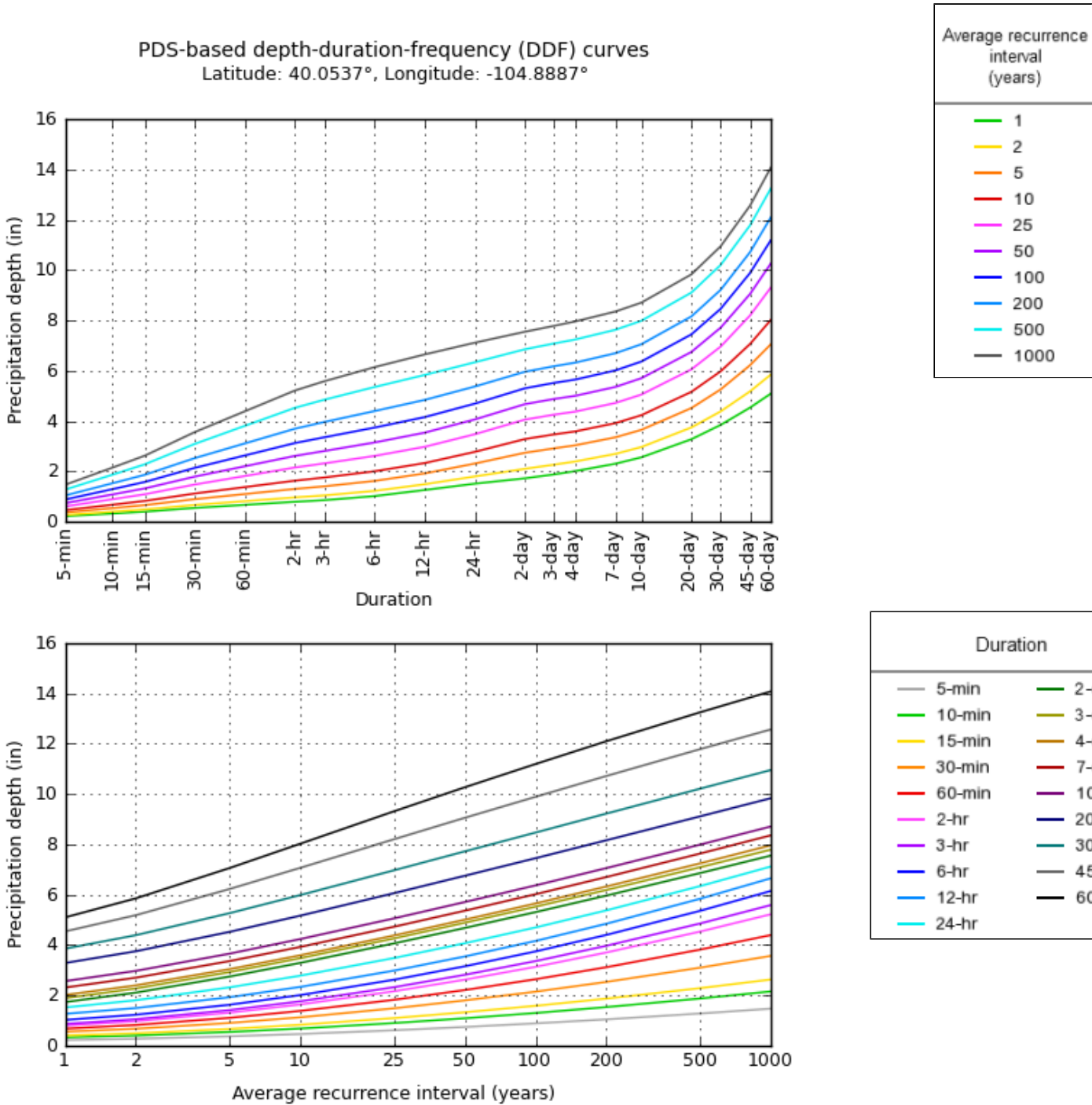
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.227 (0.175-0.295)	0.277 (0.213-0.361)	0.373 (0.286-0.487)	0.466 (0.355-0.612)	0.614 (0.463-0.862)	0.744 (0.544-1.05)	0.888 (0.627-1.28)	1.05 (0.711-1.56)	1.28 (0.837-1.95)	1.47 (0.932-2.25)
10-min	0.333 (0.256-0.433)	0.406 (0.312-0.528)	0.547 (0.418-0.714)	0.683 (0.520-0.896)	0.900 (0.678-1.26)	1.09 (0.797-1.54)	1.30 (0.919-1.88)	1.53 (1.04-2.28)	1.87 (1.23-2.86)	2.16 (1.36-3.30)
15-min	0.406 (0.312-0.528)	0.495 (0.380-0.644)	0.667 (0.510-0.870)	0.833 (0.634-1.09)	1.10 (0.826-1.54)	1.33 (0.971-1.88)	1.59 (1.12-2.29)	1.87 (1.27-2.78)	2.29 (1.49-3.49)	2.63 (1.66-4.02)
30-min	0.556 (0.427-0.723)	0.675 (0.518-0.879)	0.904 (0.692-1.18)	1.13 (0.859-1.48)	1.49 (1.12-2.08)	1.80 (1.32-2.54)	2.15 (1.52-3.11)	2.53 (1.72-3.77)	3.10 (2.03-4.73)	3.57 (2.26-5.46)
60-min	0.678 (0.521-0.881)	0.824 (0.633-1.07)	1.11 (0.848-1.45)	1.38 (1.05-1.81)	1.82 (1.37-2.56)	2.21 (1.62-3.12)	2.64 (1.87-3.82)	3.12 (2.12-4.63)	3.82 (2.50-5.82)	4.39 (2.78-6.72)
2-hr	0.800 (0.621-1.03)	0.974 (0.756-1.25)	1.31 (1.01-1.69)	1.64 (1.26-2.12)	2.16 (1.65-3.00)	2.62 (1.94-3.66)	3.13 (2.24-4.48)	3.70 (2.54-5.43)	4.53 (3.00-6.82)	5.22 (3.34-7.88)
3-hr	0.864 (0.676-1.10)	1.05 (0.821-1.34)	1.41 (1.10-1.81)	1.76 (1.37-2.27)	2.32 (1.78-3.20)	2.82 (2.09-3.90)	3.36 (2.42-4.76)	3.97 (2.74-5.77)	4.85 (3.23-7.25)	5.59 (3.60-8.36)
6-hr	1.02 (0.810-1.29)	1.23 (0.972-1.56)	1.63 (1.28-2.06)	2.01 (1.57-2.56)	2.62 (2.03-3.55)	3.15 (2.37-4.31)	3.75 (2.72-5.23)	4.40 (3.07-6.31)	5.36 (3.60-7.88)	6.15 (4.00-9.07)
12-hr	1.27 (1.01-1.58)	1.50 (1.19-1.87)	1.93 (1.53-2.41)	2.34 (1.85-2.94)	2.98 (2.33-3.97)	3.54 (2.69-4.76)	4.16 (3.05-5.72)	4.84 (3.42-6.84)	5.84 (3.96-8.45)	6.65 (4.37-9.67)
24-hr	1.52 (1.23-1.87)	1.81 (1.46-2.23)	2.32 (1.86-2.86)	2.78 (2.23-3.45)	3.48 (2.73-4.54)	4.07 (3.11-5.36)	4.70 (3.47-6.33)	5.38 (3.82-7.44)	6.34 (4.34-9.01)	7.12 (4.73-10.2)
2-day	1.73 (1.41-2.11)	2.11 (1.72-2.57)	2.75 (2.23-3.35)	3.29 (2.66-4.03)	4.06 (3.19-5.17)	4.68 (3.59-6.02)	5.31 (3.95-7.00)	5.96 (4.26-8.08)	6.86 (4.73-9.55)	7.55 (5.08-10.7)
3-day	1.89 (1.55-2.28)	2.27 (1.87-2.75)	2.92 (2.39-3.54)	3.48 (2.83-4.23)	4.26 (3.37-5.37)	4.88 (3.77-6.24)	5.52 (4.13-7.23)	6.18 (4.45-8.31)	7.09 (4.92-9.79)	7.79 (5.27-10.9)
4-day	2.02 (1.67-2.42)	2.40 (1.98-2.88)	3.04 (2.50-3.67)	3.59 (2.94-4.35)	4.38 (3.48-5.49)	5.01 (3.89-6.36)	5.65 (4.25-7.35)	6.32 (4.57-8.45)	7.24 (5.05-9.94)	7.96 (5.41-11.1)
7-day	2.31 (1.93-2.75)	2.70 (2.25-3.22)	3.36 (2.79-4.01)	3.92 (3.24-4.70)	4.72 (3.79-5.86)	5.36 (4.20-6.73)	6.02 (4.57-7.74)	6.70 (4.89-8.84)	7.63 (5.37-10.3)	8.36 (5.73-11.5)
10-day	2.56 (2.15-3.03)	2.97 (2.49-3.51)	3.66 (3.05-4.33)	4.24 (3.52-5.04)	5.06 (4.08-6.22)	5.71 (4.50-7.11)	6.37 (4.86-8.12)	7.05 (5.18-9.23)	7.99 (5.65-10.7)	8.71 (6.01-11.9)
20-day	3.28 (2.79-3.83)	3.75 (3.18-4.38)	4.52 (3.82-5.29)	5.17 (4.34-6.07)	6.06 (4.93-7.32)	6.75 (5.38-8.27)	7.45 (5.75-9.34)	8.16 (6.05-10.5)	9.11 (6.51-12.0)	9.83 (6.86-13.2)
30-day	3.85 (3.29-4.46)	4.39 (3.75-5.09)	5.26 (4.48-6.11)	5.98 (5.06-6.98)	6.97 (5.70-8.33)	7.72 (6.19-9.36)	8.47 (6.57-10.5)	9.22 (6.88-11.7)	10.2 (7.34-13.3)	10.9 (7.69-14.6)
45-day	4.54 (3.95-5.21)	5.18 (4.46-5.96)	6.22 (5.33-7.17)	7.06 (6.02-8.17)	8.20 (6.75-9.71)	9.05 (7.30-10.9)	9.88 (7.72-12.1)	10.7 (8.04-13.5)	11.8 (8.52-15.2)	12.6 (8.89-16.5)
60-day	5.10 (4.41-5.82)	5.85 (5.05-6.69)	7.05 (6.07-8.08)	8.02 (6.87-9.23)	9.31 (7.69-10.9)	10.3 (8.31-12.2)	11.2 (8.77-13.6)	12.1 (9.11-15.1)	13.2 (9.62-17.0)	14.1 (10.0-18.4)

¹ 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.

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PF graphical



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Maps & aerials

Small scale terrain



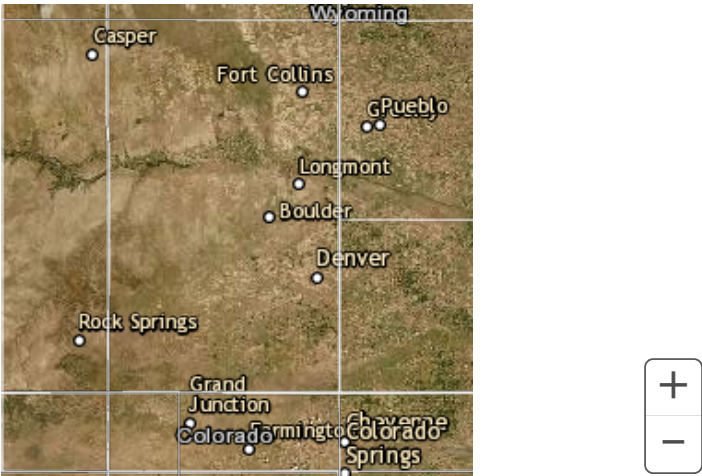
Large scale terrain



Large scale map



Large scale aerial



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Silver Spring, MD 20910
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Historic Runoff Table - Been RV Park							
BASIN	Impervious	C-YR	I	A	CIA(YR-historic)	Flow	DESIGN POINT
H							
C₂ (UDFCD 2018)	2.00	0.01	0.94	15.79	0.15	cfs	H
C₅	2.00	0.01	1.25	15.79	0.20	cfs	
C₁₀	2.00	0.07	1.56	15.79	1.72	cfs	
C₁₀₀	2.00	0.44	2.96	15.79	20.54	cfs	

Been RV Park - Historic Runoff Calcs
10/19/2020

for soils - C₂ C₅ C₁₀ C₁₀₀ --> from Table RO-5

$Ti = (.395 * (1.1 - C_{yr}) * (L^{.5})) / (S)^{.333}$
From UDFCD 2018, Equation 6-3

**for Ti calculations - only C₅ is used

	2	5	10	100
1-Hour Point Rainf	0.829	1.11	1.38	2.62

H	Historic - 2, 5, 10, 100 yr NRCS Types 100% B		15.786 acres								
			C _{yr} - see frequency left	Ti**	Velocity	Tt	Tc	Use Tc	I	A	CIA ₅ existing
2yr			0.01	39.89	1.18	10.92	50.81	50.81	0.94	15.79	0.15 cfs
		Length Slope									
		initial 500 0.014									
5yr		travel 775 0.014	0.01	39.89	1.18	10.92	50.81	50.81	1.25	15.79	0.20 cfs
		1275									
10yr	Overland flow		0.07	39.89	1.18	10.92	50.81	50.81	1.56	15.79	1.72 cfs
	300 ft max for urban, 500 ft max for rural										
	Remainder carried as travel										
100yr		Cv= 10	0.44	39.89	1.18	10.92	50.81	50.81	2.96	15.79	20.54 cfs

H	Undeveloped	Gravel	Building	Concrete	Water/Aphalt	EFFECTIVE
NRCS Types 100% B						
Imperviousness %	2	40.00	90.00	100.00	100.00	2.00
C2	0.01	0.29	0.74	0.84	0.84	0.01
C5	0.01	0.32	0.76	0.86	0.86	0.01
C10	0.07	0.38	0.78	0.86	0.86	0.07
C100	0.44	0.61	0.84	0.89	0.89	0.44
AREA	15.786	0.00	0.00	0.00	0.00	15.79

H2	Undeveloped	Gravel	Building	Concrete	Water/Aphalt	EFFECTIVE
NRCS Types 100% B						
Imperviousness %	2	40.00	90.00	100.00	100.00	#DIV/0!
C2	0.01	0.29	0.74	0.84	0.84	#DIV/0!
C5	0.01	0.32	0.76	0.86	0.86	#DIV/0!
C10	0.07	0.38	0.78	0.86	0.86	#DIV/0!
C100	0.44	0.61	0.84	0.89	0.89	#DIV/0!
AREA	0.000	0.00	0.00	0.00	0.00	0.00

TABLE RO-2 (taken from UDFCD Manual - Vol. I)	
Type of Land Surface	Conveyance coefficient,
Heavy Meadow	2.5
Tillage/field	5
Short pasture/Lawns	7
Nearly Bare Ground	10.00
Grassed Waterway	15.00
Paved areas and shallow paved swales	20.00

Existing Runoff Table - Been RV Park							
BASIN	Impervious	C-YR	I	A	CIA(YR-existing)	Flow	DESIGN POINT
E							
C₂ (UDFCD 2018)	4.06	0.03	0.99	15.79	0.42	cfs	E1
C₅	4.06	0.03	1.33	15.79	0.57	cfs	
C₁₀	4.06	0.09	1.65	15.79	2.26	cfs	
C₁₀₀	4.06	0.45	3.14	15.79	22.24	cfs	

Been RV Park - Existing Runoff Calcs

10/19/2020

for soils - C2 C5 C10 C100 = from Table RO-5

**for Ti calculations - only C5 is used

$Ti = (.395 * (1.1 - C_{yr}) * (L^{\wedge} .5)) / (S)^{\wedge} .333$
From UDFCD 2018, Equation 6-3

	2	5	10	100
1-Hour Point Rainfall	0.829	1.11	1.38	2.62

2018 UDFCD >>> Tc Check = (26-17i) + [Ltravel / (60*(14i + 9)(So)^{.5})]

E		Existing - 2, 5, 10, 100 yr				15.786 acres							
		NRCS Types 100% B		C _{yr} - see frequency left		Ti**		Velocity		Ti		Tc	
2yr				0.03		41.32		1.05		16.18		57.50	
												check	
												Use Tc	
												I	
												A	
												CIA _s existing	
												15.79	
												0.42 cfs	

Developed Runoff Table - Been RV Park							
BASIN	Impervious	C-YR	I	A	CIA(YR-DEVELOPED)	cfs	DESIGN POINT
LOT 1							
C₂ (UDFCD 2018)	15.24	0.12	1.50	2.15	0.37	cfs	1
C₅	15.24	0.12	2.01	2.15	0.53	cfs	
C₁₀	15.24	0.18	2.49	2.15	0.95	cfs	
C₁₀₀	15.24	0.50	4.74	2.15	5.10	cfs	
LOT 2							
C₂ (UDFCD 2018)	8.57	0.06	1.44	1.83	0.17	cfs	2
C₅	8.57	0.07	1.93	1.83	0.23	cfs	
C₁₀	8.57	0.12	2.39	1.83	0.54	cfs	
C₁₀₀	8.57	0.47	4.54	1.83	3.92	cfs	
LOT 3							
C₂ (UDFCD 2018)	38.40	0.29	1.37	10.42	4.11	cfs	3
C₅	38.40	0.31	1.83	10.42	5.95	cfs	
C₁₀	38.40	0.37	2.28	10.42	8.70	cfs	
C₁₀₀	38.40	0.60	4.33	10.42	27.24	cfs	
LOT 4							
C₂ (UDFCD 2018)	6.64	0.04	1.62	1.08	0.08	cfs	4
C₅	6.64	0.05	2.17	1.08	0.11	cfs	
C₁₀	6.64	0.11	2.69	1.08	0.31	cfs	
C₁₀₀	6.64	0.46	5.11	1.08	2.55	cfs	

Been RV Park - Developed Runoff Calcs (% Max Bldg-Pavement)

3/9/2021

See below for effective C values as calculated from Table RO-5

$$Ti = (.395 * (1.1 - C_{yr}) * (L^{.5})) / (S)^{.333}$$

From UDFCD 2018, Equation 6-3

**for Ti calculations - only C₅ is used

	2	5	10	100
Point Rainfall	0.829	1.11	1.38	2.62

2018 UDFCD >>> Tc Check = (26-17i) + [Ltravel / (60*(14i + 9)(So)^.5)]

LOT 1	Developed -2, 5, 10, 100 yr NRCS Types 100% B			C ₅	2.15 acres		T _i	Velocity	T _t	T _c	check	Use T _c	C _{yr - see above}	I	A	CIA ₅ developed	
2yr				0.12		27.09		1.81	0.00	27.09	23.41	23.41	0.12	1.50	2.15		0.37 cfs

TOTAL AREA		2.153 acres		Water/Asphalt		EFFECTIVE
LOT 1	Landscaping	Gravel	Building	Concrete		
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	15.24
C2	0.01	0.29	0.74	0.84	0.84	0.12
C5	0.01	0.32	0.76	0.86	0.86	0.12
C10	0.07	0.38	0.78	0.86	0.86	0.18
C100	0.44	0.61	0.84	0.89	0.89	0.50
AREA	1.67	0.29	0.11	0.08	0.00	2.153

TOTAL AREA		10.418 acres		Water/Asphalt		EFFECTIVE
LOT 3	Landscaping	Gravel	Building	Concrete		
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	38.40
C2	0.01	0.29	0.74	0.84	0.84	0.29
C5	0.01	0.32	0.76	0.86	0.86	0.31
C10	0.07	0.38	0.78	0.86	0.86	0.37
C100	0.44	0.61	0.84	0.89	0.89	0.60
AREA	1.89	7.59	0.07	0.44	0.42	10.418

TOTAL AREA		1.834 acres		Water/		EFFECTIVE
LOT 2	Landscaping	Gravel	Building	Concrete	Asphalt	
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	8.57
C2	0.01	0.29	0.74	0.84	0.84	0.06
C5	0.01	0.32	0.76	0.86	0.86	0.07
C10	0.07	0.38	0.78	0.86	0.86	0.12
C100	0.44	0.61	0.84	0.89	0.89	0.47
AREA	1.70	0.00	0.14	0.00	0.00	1.834

TOTAL AREA		1.085 acres		Water/		EFFECTIVE
LOT 4	Landscaping	Gravel	Building	Concrete	Asphalt	
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	6.64
C2	0.01	0.29	0.74	0.84	0.84	0.04
C5	0.01	0.32	0.76	0.86	0.86	0.05
C10	0.07	0.38	0.78	0.86	0.86	0.11
C100	0.44	0.61	0.84	0.89	0.89	0.46
AREA	0.95	0.13	0.00	0.00	0.00	1.085

TABLE RO-2 (taken from UDFCD Manual - Vol. I)	
Type of Land Surface	Conveyance coefficient, Cv
Heavy Meadow	2.5
Tillage/field	5
Short pasture/Lawns	7
Nearly Bare Ground	10.00
Grassed Waterway	15.00
Paved areas and shallow paved swales	20.00

APPENDIX C

**Empirical Detention Calculations / Design Pond Volume / MHFD Detention
Calculations / Forebay Design / Pipe & Channel Capacities**

REQUIRED DETENTION (FULL SPECTRUM EMPIRICAL for COMPARISON)

UDFCD 2018 VOL 1 thru 3

IN ACCORDANCE WITH UDFCD, THE EFFECTIVE IMPERVIOUSNESS OF THE TOTAL AREA IS USED TO CALCULATE WQCV, EURV, & 100YR VOL IN LIEU OF THE SUMMATION OF EACH BASIN
(CORRECT VALUE INDICATED BY AN ARROW)

WATER QUALITY CALCULATIONS

from Figure EDB-2, 40 hr drain @ I, WQCV= noted below

BASIN	Actual I	Used Herein I	A acres	WQCV (in/watershed)	WQCV DEPTH in (FIG 3-1)	WQCV OTHER (in/watershed)	WQCV acre ft
LOT 1	15.24	16.00	2.15	0.10	0.43	0.10	0.018
LOT 2	8.57	9.00	1.83	0.06	0.43	0.06	0.009
LOT 3	38.40	39.00	10.42	0.18	0.43	0.18	0.154
LOT 4	6.64	7.00	1.08	0.05	0.43	0.05	0.004
TOTAL	29.43	30.01	15.49	0.39	0.43	0.39	0.185
				0.15	0.43	0.15	0.196

WQCV (ZONE 1) ←

EXCESS URBAN RUNOFF VOLUME (EURV)

BASIN	Actual I	Used Herein I	A acres	NCS SOIL TYPE %	EURV _A (in/watershed)	EURV _B (in/watershed)	EURV _C (in/watershed)	WEIGHTED AVE. EURV (in/watershed)	EURV** acre ft
LOT 1	15.24	16.00	2.15	100% B	0.16	0.19	0.17	0.19	0.034
LOT 2	8.57	9.00	1.83	100% B	0.08	0.10	0.09	0.10	0.015
LOT 3	38.40	39.00	10.42	100% B	0.50	0.49	0.43	0.49	0.427
LOT 4	6.64	7.00	1.08	100% B	0.06	0.08	0.07	0.08	0.007
TOTAL	29.43	30.01	15.49	100% B	0.80	0.86	0.76	0.86	0.483
					0.36	0.37	0.33	0.37	0.478
									0.283

→ EURV
→ ZONE 2

100YR VOLUME

BASIN	Actual I	Used Herein I	A acres	1hr Rainfall Depth in	NCS SOIL TYPE %	V ₁₀₀ (in/watershed)	V ₁₀₀ acre ft
LOT 1	15.24	16.00	2.15	2.62	100% B	0.58	0.104
LOT 2	8.57	9.00	1.83	2.62	100% B	0.44	0.067
LOT 3	38.40	39.00	10.42	2.62	100% B	0.98	0.853
LOT 4	6.64	7.00	1.08	2.62	100% B	0.39	0.035
TOTAL	29.43	30.01	15.49	2.62	100% B	2.39	1.059
						0.70	0.905
							0.427

← 100YR VOL
← ZONE 3

FOREBAY CALCS

FOREBAY	BASINS	A acres	WQCV cubic feet	Min Req'd Vol % of WQCV	Min Req'd Vol cubic feet	Max Depth (in)	Forebay Dimensions	Forebay Volume (ft ³)	Release Rate 2% of Dev Q (cfs)	Weir Width (in)
S	L1, 2/3L3	9.13	5,255.6	2%	105.1	12	10' * 10'	100	0.48	3.8"
N	L2, 1/3L3, L4	6.36	2,811.9	2%	56.2	12	8' * 9'	72	0.32	3.2"
TOTAL		15.49	8,067.55		161.35			172.00	0.80	

DETENTION POND - LOT BUILDOUT Imp = 40.0 %
100 YEAR DETENTION VOLUME - WATER SURFACE
ESTIMATED POND (TYPICAL) VOLUME vs ELEVATION

MODELED IMPERVIOUSNESS	40.0%	
POND OUTLET INVERT		5008.70 ELEVATION
WQCV:	8,518.3 ft^3	5034.65 ELEVATION
REQUIRED EURV:	20,841.5 ft^3	5035.52 ELEVATION
REQUIRED 100 yr per EURV:	39,426.3 ft^3	5036.65 ELEVATION
Avail Vol @ Emer Overflow:	45,442.4 ft^3	5037.00 ELEVATION
DESIGN 100 yr RELEASE POND A		1.79 CFS

43560

<u>ELEV</u>	<u>AREA</u>	<u>t</u>	<u>VOL</u>	<u>ACCUM</u>	<u>ACUM (ac-ft)</u>
5,034.00	12,038.5				
		1.00	13,032.2	13,032.2	0.30
5,035.00	14,051.8				
		1.00	15,109.9	28,142.0	0.65
5,036.00	16,193.2				
		1.00	17,300.4	45,442.4	1.04
5,037.00	18,431.7				

MHFD-Detention, Version 4.03 (May 2020)

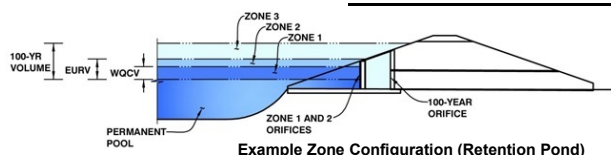
Basin ID: DETENTION POND A



DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.03 (May 2020)

Project: **BEEN RV PARK**
Basin ID: **DETENTION POND A**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.33	0.232	Orifice Plate
Zone 2 (EURV)	2.63	0.419	Rectangular Orifice
Zone 3 (100-year)	3.73	0.419	Weir&Pipe (Restrict)
Total (all zones)		1.070	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth = ft (distance below the filtration media surface)
Underdrain Orifice Diameter = inches

Calculated Parameters for Underdrain

Underdrain Orifice Area = ft²
Underdrain Orifice Centroid = feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate = ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing = inches
Orifice Plate: Orifice Area per Row = sq. inches (diameter = 1-7/16 inches)

Calculated Parameters for Plate

WQ Orifice Area per Row = ft²
Elliptical Half-Width = feet
Elliptical Slot Centroid = feet
Elliptical Slot Area = ft²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.50	1.00					
Orifice Area (sq. inches)	1.60	1.60	1.60					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

Invert of Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Height = inches
Vertical Orifice Width = inches

Calculated Parameters for Vertical Orifice

Zone 2 Rectangular Not Selected
Vertical Orifice Area = ft²
Vertical Orifice Centroid = feet

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe)

Overflow Weir Front Edge Height, H_o = ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length = feet
Overflow Weir Grate Slope = H:V
Horiz. Length of Weir Sides = feet
Overflow Grate Open Area % = %
Debris Clogging % = %

Height of Grate Upper Edge, H_u = feet
Overflow Weir Slope Length = feet
Grate Open Area / 100-yr Orifice Area = ft²
Overflow Grate Open Area w/o Debris = ft²
Overflow Grate Open Area w/ Debris = ft²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

Depth to Invert of Outlet Pipe = ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter = inches
Restrictor Plate Height Above Pipe Invert = inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

Zone 3 Restrictor Not Selected
Outlet Orifice Area = ft²
Outlet Orifice Centroid = feet
Half-Central Angle of Restrictor Plate on Pipe = radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage = ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length = feet
Spillway End Slopes = H:V
Freeboard above Max Water Surface = feet

Calculated Parameters for Spillway

Spillway Design Flow Depth = feet
Stage at Top of Freeboard = feet
Basin Area at Top of Freeboard = acres
Basin Volume at Top of Freeboard = acre-ft

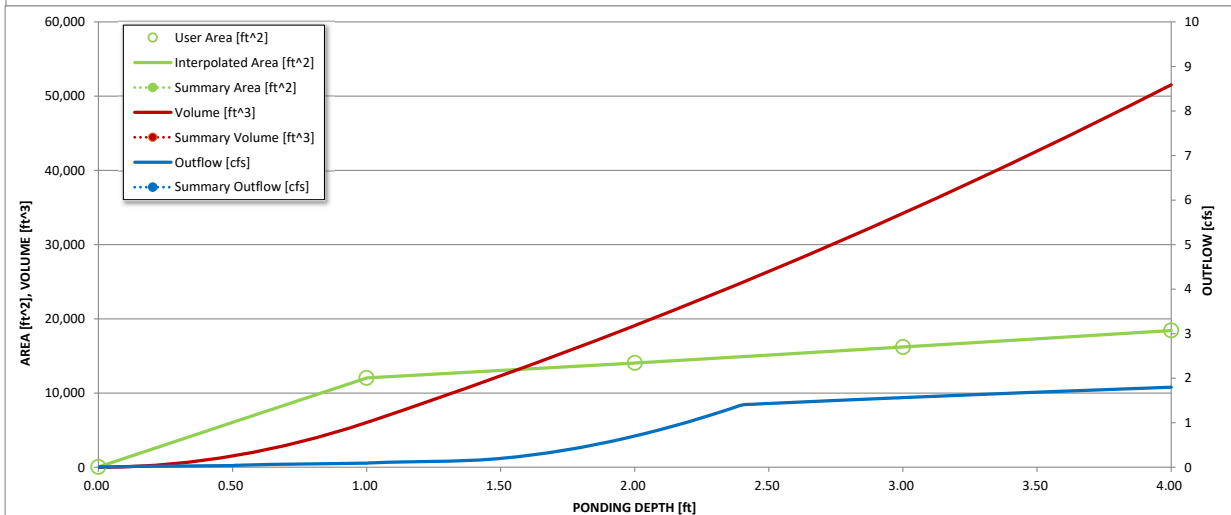
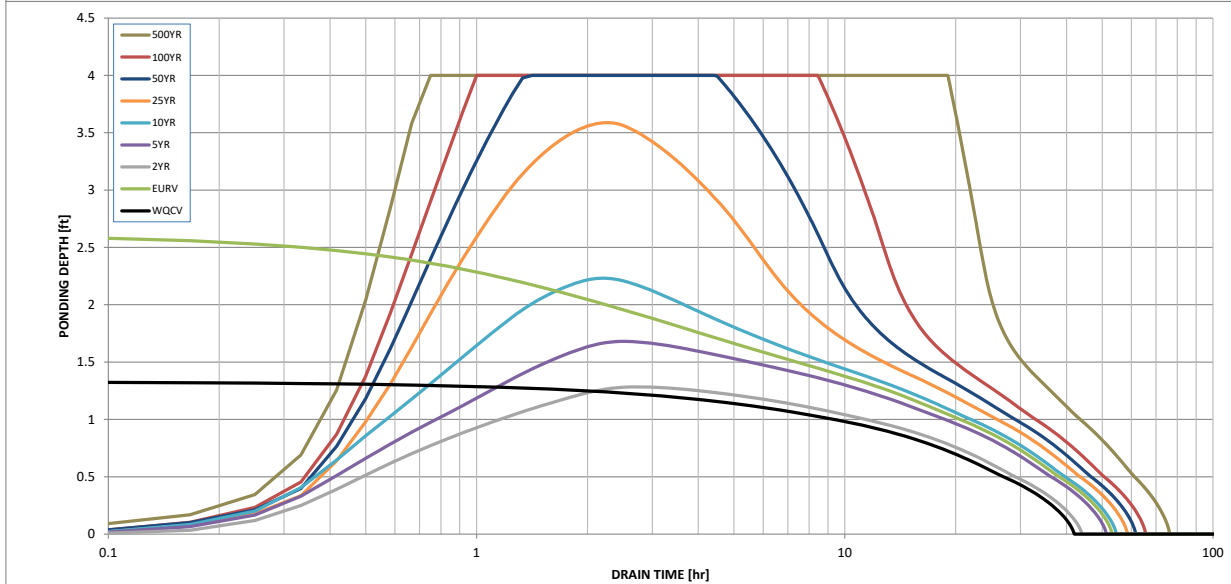
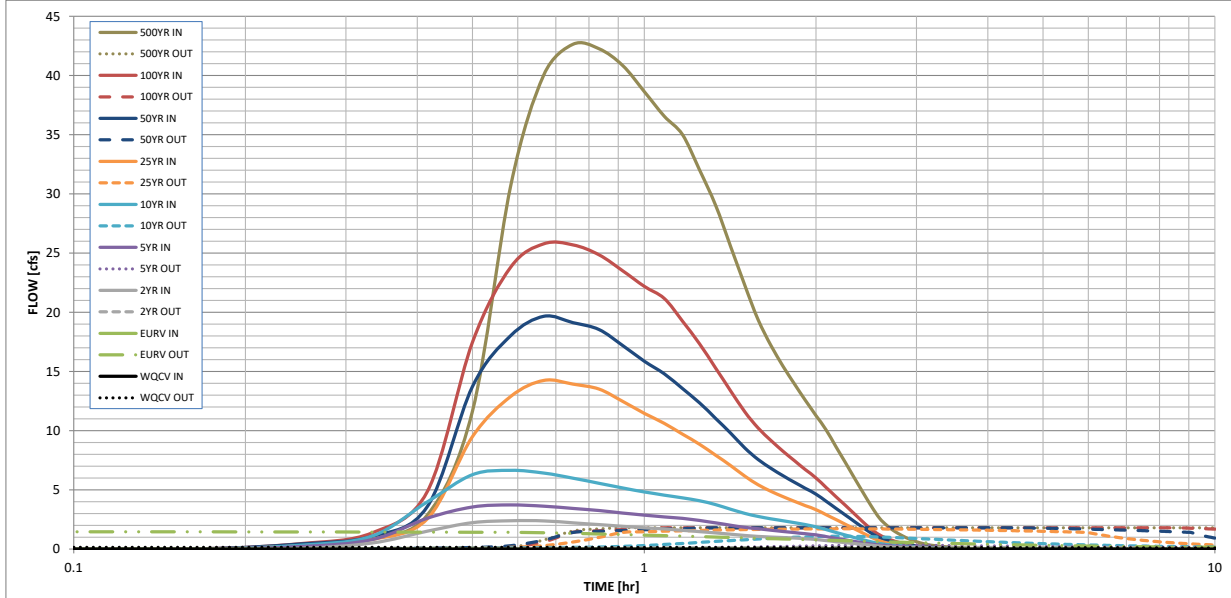
Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =	N/A	N/A	0.83	1.11	1.38	1.82	2.21	2.62	3.82
One-Hour Rainfall Depth (in) =	N/A	N/A	0.83	1.11	1.38	1.82	2.21	2.62	3.82
CUHP Runoff Volume (acre-ft) =	0.232	0.651	0.245	0.382	0.635	1.254	1.744	2.347	3.939
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.245	0.382	0.635	1.254	1.744	2.347	3.939
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.1	0.2	2.5	8.9	13.2	18.6	32.4
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.01	0.01	0.16	0.57	0.85	1.20	2.09
Peak Inflow Q (cfs) =	N/A	N/A	2.4	3.7	6.6	14.2	19.7	25.8	42.6
Peak Outflow Q (cfs) =	0.14	1.46	0.14	0.33	1.08	1.71	1.80	1.80	1.80
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	1.6	0.4	0.2	0.1	0.1	0.1
Structure Controlling Flow =	Plate	Outlet Plate 1	Plate	Vertical Orifice 1	Vertical Orifice 1	Outlet Plate 1	N/A	N/A	N/A
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	-0.1	-0.1	-0.1	-0.1
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	44	39	45	45	43	43	43	46
Time to Drain 99% of Inflow Volume (hours) =	40	49	42	49	50	52	53	55	60
Maximum Ponding Depth (ft) =	1.33	2.63	1.28	1.68	2.23	3.59	4.00	4.00	4.00
Area at Maximum Ponding Depth (acres) =	0.29	0.35	0.29	0.31	0.33	0.40	0.42	0.42	0.42
Maximum Volume Stored (acre-ft) =	0.232	0.651	0.218	0.337	0.514	1.010	1.183	1.183	1.183

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.00 (December 2019)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

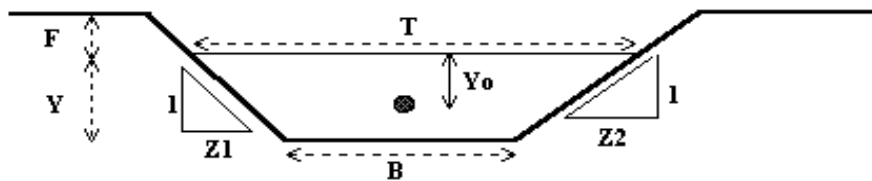
Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

Time Interval	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.20
	0:15:00	0.00	0.00	0.06	0.21	0.32	0.28	0.42	0.46	0.85
	0:20:00	0.00	0.00	0.51	0.79	1.09	0.80	1.06	1.37	2.87
	0:25:00	0.00	0.00	1.50	2.60	3.99	2.55	3.59	4.86	11.64
	0:30:00	0.00	0.00	2.23	3.55	6.28	9.50	13.72	17.47	30.70
	0:35:00	0.00	0.00	2.39	3.72	6.65	12.89	18.03	23.82	40.05
	0:40:00	0.00	0.00	2.38	3.62	6.41	14.25	19.66	25.78	42.64
	0:45:00	0.00	0.00	2.22	3.42	5.99	13.92	19.13	25.69	42.26
	0:50:00	0.00	0.00	2.06	3.25	5.55	13.51	18.55	24.86	40.85
	0:55:00	0.00	0.00	1.92	3.04	5.16	12.47	17.19	23.51	38.64
	1:00:00	0.00	0.00	1.79	2.86	4.82	11.46	15.87	22.18	36.57
	1:05:00	0.00	0.00	1.69	2.72	4.56	10.62	14.80	21.18	35.00
	1:10:00	0.00	0.00	1.58	2.58	4.32	9.71	13.55	19.25	32.02
	1:15:00	0.00	0.00	1.47	2.41	4.08	8.85	12.35	17.34	29.05
	1:20:00	0.00	0.00	1.36	2.21	3.75	7.93	11.04	15.29	25.57
	1:25:00	0.00	0.00	1.25	2.01	3.36	7.05	9.79	13.37	22.29
	1:30:00	0.00	0.00	1.15	1.83	3.01	6.16	8.54	11.59	19.37
	1:35:00	0.00	0.00	1.07	1.71	2.75	5.43	7.57	10.23	17.20
	1:40:00	0.00	0.00	1.01	1.59	2.56	4.88	6.82	9.17	15.46
	1:45:00	0.00	0.00	0.97	1.48	2.38	4.43	6.19	8.26	13.93
	1:50:00	0.00	0.00	0.93	1.38	2.22	4.03	5.63	7.45	12.55
	1:55:00	0.00	0.00	0.87	1.29	2.06	3.66	5.12	6.71	11.27
	2:00:00	0.00	0.00	0.80	1.19	1.88	3.32	4.64	6.00	10.06
	2:05:00	0.00	0.00	0.71	1.05	1.64	2.90	4.03	5.20	8.65
	2:10:00	0.00	0.00	0.62	0.91	1.40	2.49	3.45	4.43	7.32
	2:15:00	0.00	0.00	0.54	0.77	1.18	2.09	2.88	3.69	6.02
	2:20:00	0.00	0.00	0.46	0.65	0.97	1.71	2.34	2.98	4.79
	2:25:00	0.00	0.00	0.39	0.53	0.78	1.35	1.82	2.30	3.61
	2:30:00	0.00	0.00	0.32	0.42	0.61	1.00	1.34	1.66	2.61
	2:35:00	0.00	0.00	0.25	0.33	0.47	0.70	0.96	1.19	1.95
	2:40:00	0.00	0.00	0.20	0.27	0.38	0.52	0.72	0.88	1.48
	2:45:00	0.00	0.00	0.16	0.22	0.31	0.39	0.55	0.66	1.12
	2:50:00	0.00	0.00	0.13	0.18	0.26	0.30	0.43	0.49	0.83
	2:55:00	0.00	0.00	0.11	0.15	0.21	0.23	0.33	0.36	0.62
	3:00:00	0.00	0.00	0.09	0.12	0.17	0.18	0.26	0.26	0.45
	3:05:00	0.00	0.00	0.08	0.10	0.14	0.14	0.20	0.19	0.34
	3:10:00	0.00	0.00	0.07	0.08	0.11	0.11	0.16	0.15	0.27
	3:15:00	0.00	0.00	0.05	0.07	0.09	0.09	0.12	0.12	0.21
	3:20:00	0.00	0.00	0.05	0.05	0.07	0.07	0.10	0.10	0.17
	3:25:00	0.00	0.00	0.04	0.04	0.05	0.05	0.08	0.07	0.13
	3:30:00	0.00	0.00	0.03	0.03	0.04	0.04	0.06	0.06	0.10
	3:35:00	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.07
	3:40:00	0.00	0.00	0.02	0.02	0.02	0.02	0.03	0.03	0.05
	3:45:00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03
	3:50:00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	3:55:00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Normal Flow Analysis - Trapezoidal Channel

Project: **Been RV Park**
Channel ID: **Swale S**



Design Information (Input)

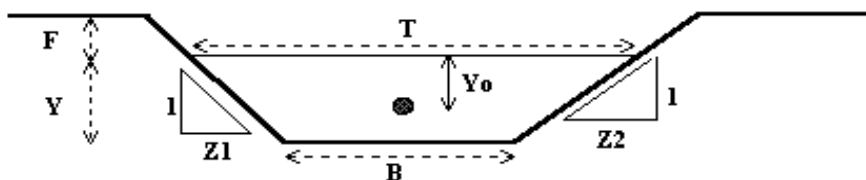
Channel Invert Slope	$S_o =$ <u>0.0100</u> ft/ft
Manning's n	$n =$ <u>0.020</u>
Bottom Width	$B =$ <u>1.00</u> ft
Left Side Slope	$Z1 =$ <u>4.00</u> ft/ft
Right Side Slope	$Z2 =$ <u>4.00</u> ft/ft
Freeboard Height	$F =$ <u>0.00</u> ft
Design Water Depth	$Y =$ <u>1.00</u> ft

Normal Flow Condition (Calculated)

Discharge	$Q =$ <u>24.72</u> cfs
Froude Number	$Fr =$ <u>1.17</u>
Flow Velocity	$V =$ <u>4.94</u> fps
Flow Area	$A =$ <u>5.00</u> sq ft
Top Width	$T =$ <u>9.00</u> ft
Wetted Perimeter	$P =$ <u>9.25</u> ft
Hydraulic Radius	$R =$ <u>0.54</u> ft
Hydraulic Depth	$D =$ <u>0.56</u> ft
Specific Energy	$E_s =$ <u>1.38</u> ft
Centroid of Flow Area	$Y_o =$ <u>0.36</u> ft
Specific Force	$F_s =$ <u>0.35</u> kip

Normal Flow Analysis - Trapezoidal Channel

Project: **Been RV Park**
Channel ID: **Swale E**



Design Information (Input)

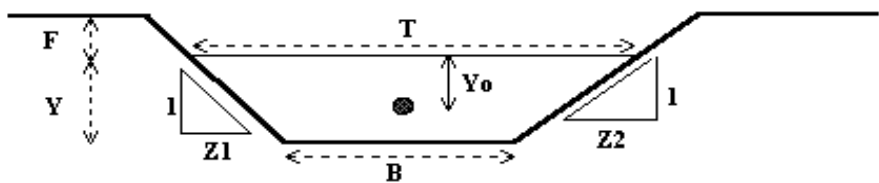
Channel Invert Slope	$S_o =$ 0.0100 ft/ft
Manning's n	$n =$ 0.020
Bottom Width	$B =$ 1.00 ft
Left Side Slope	$Z1 =$ 4.00 ft/ft
Right Side Slope	$Z2 =$ 4.00 ft/ft
Freeboard Height	$F =$ 0.00 ft
Design Water Depth	$Y =$ 0.90 ft

Normal Flow Condition (Calculated)

Discharge	$Q =$ 19.21 cfs
Froude Number	$Fr =$ 1.15
Flow Velocity	$V =$ 4.64 fps
Flow Area	$A =$ 4.14 sq ft
Top Width	$T =$ 8.20 ft
Wetted Perimeter	$P =$ 8.42 ft
Hydraulic Radius	$R =$ 0.49 ft
Hydraulic Depth	$D =$ 0.50 ft
Specific Energy	$E_s =$ 1.23 ft
Centroid of Flow Area	$Y_o =$ 0.33 ft
Specific Force	$F_s =$ 0.26 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **Been RV Park**
Channel ID: **Roadside Pans**



Design Information (Input)

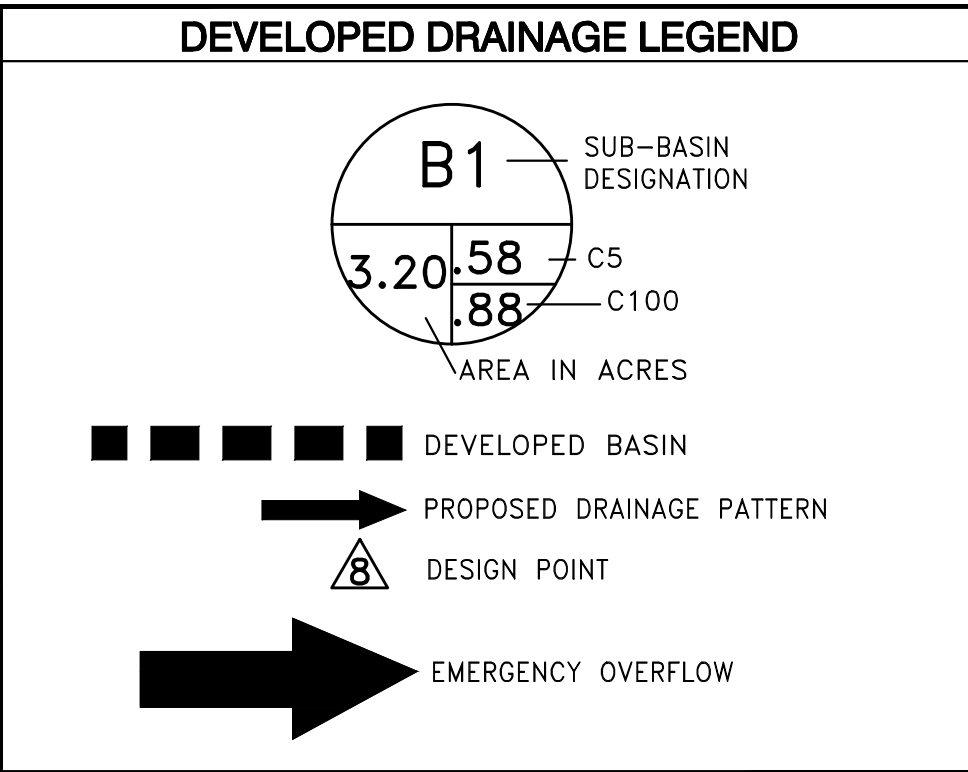
Channel Invert Slope	$S_o =$	<u>0.0060</u> ft/ft
Manning's n	$n =$	<u>0.013</u>
Bottom Width	$B =$	<u>2.00</u> ft
Left Side Slope	$Z_1 =$	<u>6.00</u> ft/ft
Right Side Slope	$Z_2 =$	<u>6.00</u> ft/ft
Freeboard Height	$F =$	<u>0.00</u> ft
Design Water Depth	$Y =$	<u>0.33</u> ft

Normal Flow Condition (Calculated)

Discharge	$Q =$	<u>4.23</u> cfs
Froude Number	$Fr =$	<u>1.21</u>
Flow Velocity	$V =$	<u>3.22</u> fps
Flow Area	$A =$	<u>1.31</u> sq ft
Top Width	$T =$	<u>5.96</u> ft
Wetted Perimeter	$P =$	<u>6.01</u> ft
Hydraulic Radius	$R =$	<u>0.22</u> ft
Hydraulic Depth	$D =$	<u>0.22</u> ft
Specific Energy	$E_s =$	<u>0.49</u> ft
Centroid of Flow Area	$Y_o =$	<u>0.14</u> ft
Specific Force	$F_s =$	<u>0.04</u> kip

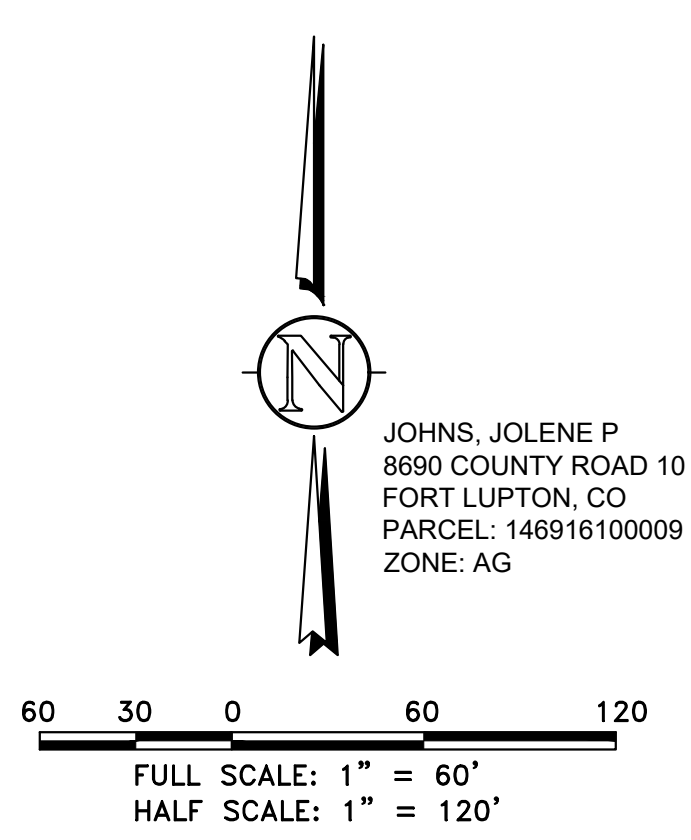
APPENDIX D

Drainage Plans

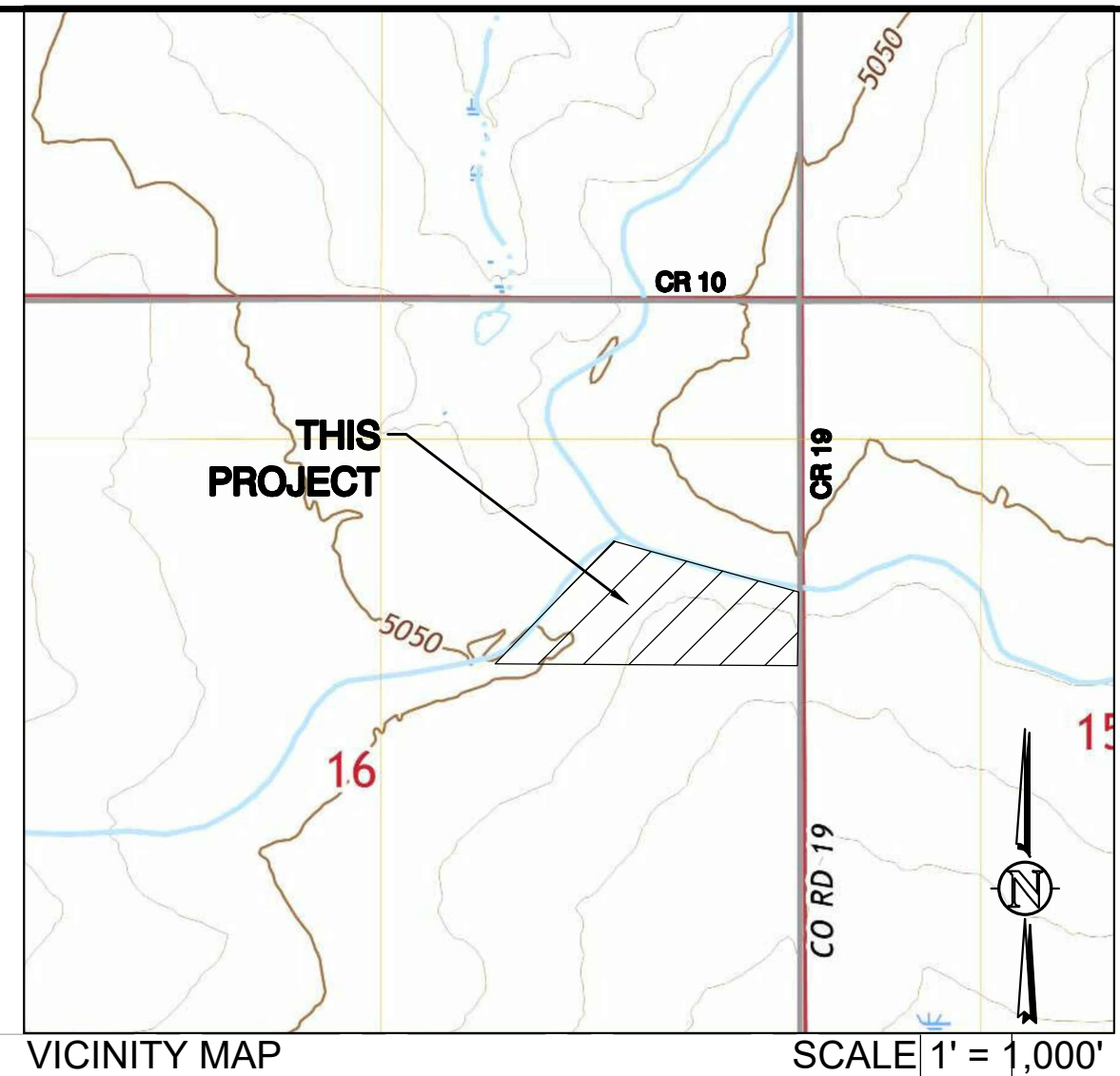


L_i - INITIAL LENGTH
 S_i - INITIAL SLOPE
 L_t - TRAVEL LENGTH
 S_t - TRAVEL SLOPE

$L_i = L_t$
 $S_i = S_t$



EXISTING TOPOGRAPHY THIS SHEET IS FROM
SURVEY DATA RECEIVED FROM
CES CONSULTANTS, LLC
DATED JUNE 29, 2020.

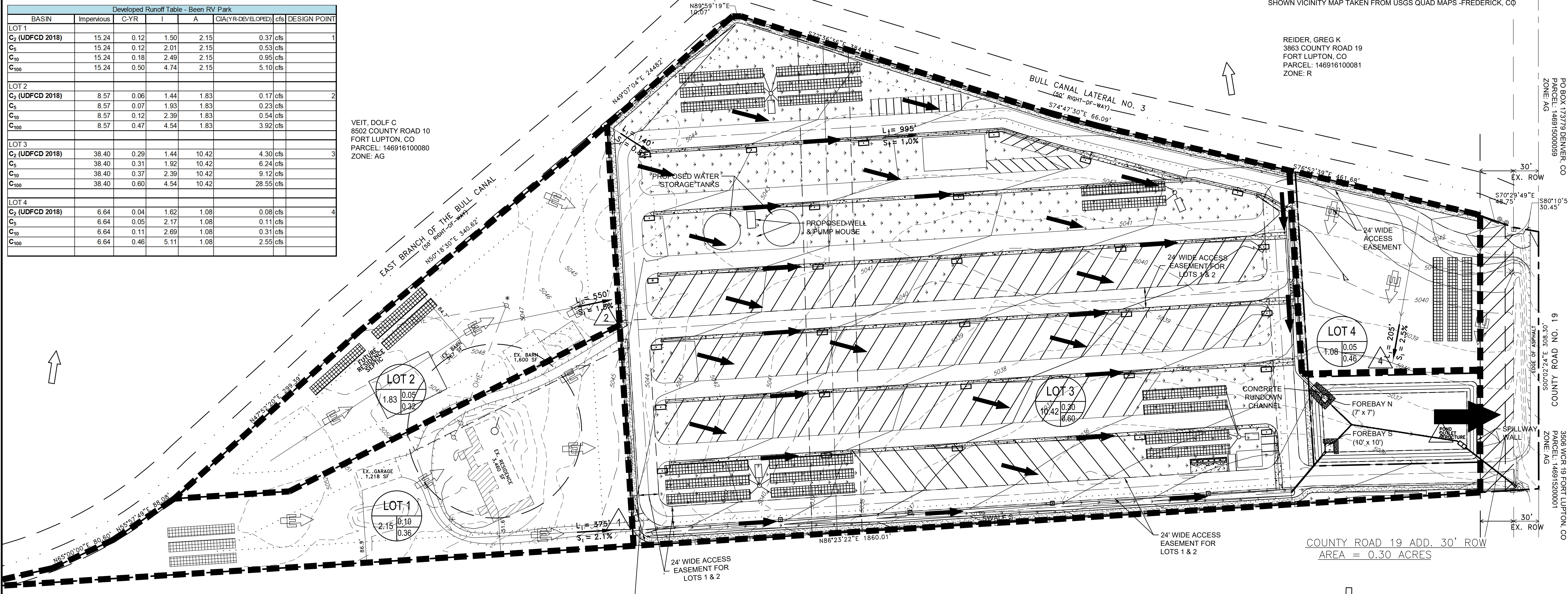


127 S. DENVER AVE
FT. LUPTON, CO 80621
www.westerneci.com
email@westerneci.com
(720) 685-9951
FAX (720) 294-1330

Western Engineering Consultants, Inc LLC

Developed Runoff Table - Been RV Park						
BASIN	Impervious	C-YR	I	A	CIA(YR-DEVELOPED) cfs	DESIGN POINT
LOT 1						
C ₂ (UDFCD 2018)	15.24	0.12	1.50	2.15	0.37 cfs	1
C ₅	15.24	0.12	2.01	2.15	0.53 cfs	
C ₁₀	15.24	0.18	2.49	2.15	0.95 cfs	
C ₁₀₀	15.24	0.50	4.74	2.15	5.10 cfs	
LOT 2						
C ₂ (UDFCD 2018)	8.57	0.06	1.44	1.83	0.17 cfs	2
C ₅	8.57	0.07	1.93	1.83	0.23 cfs	
C ₁₀	8.57	0.12	2.39	1.83	0.54 cfs	
C ₁₀₀	8.57	0.47	4.54	1.83	3.92 cfs	
LOT 3						
C ₂ (UDFCD 2018)	38.40	0.29	1.44	10.42	4.30 cfs	3
C ₅	38.40	0.31	1.92	10.42	6.24 cfs	
C ₁₀	38.40	0.37	2.39	10.42	9.12 cfs	
C ₁₀₀	38.40	0.60	4.54	10.42	28.55 cfs	
LOT 4						
C ₂ (UDFCD 2018)	6.64	0.04	1.62	1.08	0.08 cfs	4
C ₅	6.64	0.05	2.17	1.08	0.11 cfs	
C ₁₀	6.64	0.11	2.69	1.08	0.31 cfs	
C ₁₀₀	6.64	0.46	5.11	1.08	2.55 cfs	

VEIT, DOLF C
8502 COUNTY ROAD 10
FORT LUPTON, CO
PARCEL: 146916100080
ZONE: AG



COUNTY ROAD 19 ADD. 30' ROW
AREA = 0.30 ACRES

POND WATER SURFACE TABLE		
DESCRIPTION	ELEVATION	VOLUME (cft)
WQCV	5034.65	8.519
100yr	5036.65	39.427
OVERFLOW	4937.00	45.443

PO BOX 17379 DENVER CO
PARCEL: 146916000089
ZONE: AG

CONTACT: SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621
MOBILE: (303) 902-9262

DEVELOPED DRAINAGE
BEEN RV PARK - 3647 WCR 19
WELD COUNTY, COLORADO

Dig Safely.
CALL UNCC
THREE WORKING DAYS
BEFORE YOU DIG
1-800-922-1987
www.uncc.org
UTILITY NOTIFICATION
CENTER OF COLORADO

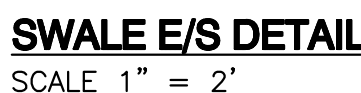
FOR APPROVAL

ONLY VALID FOR CONSTRUCTION
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ARE ON EACH SHEET

INITIAL PLAN
RELEASE: 03/10/21
DESIGNED BY: CFC
DRAWN BY: CFC
CHECKED BY: CFC

PROJECT NO.
01-0342.001.00
DOC CON #
0036-DEV DRNG
SHEET
36 OF 53

PUGH, THOMAS JAMES
3503 COUNTY ROAD 19
FORT LUPTON, CO
PARCEL: 146916100007
ZONE: AG

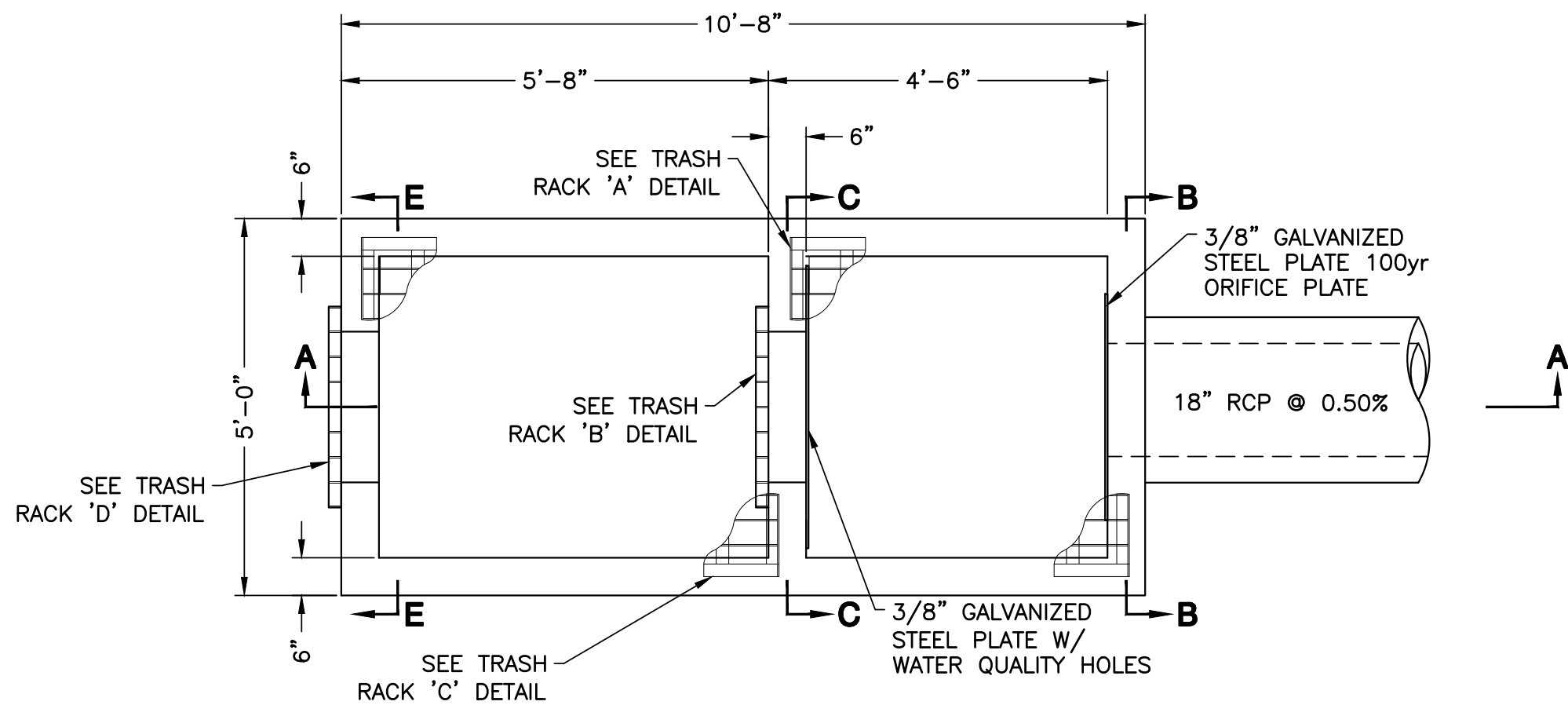


* May substitute one 12-inch layer of type II bedding. The substitution of one layer of type II bedding shall not be permitted at drop structures. The use of a combination of filter fabric and Type II bedding at drop structures is acceptable.

Classification & Gradation of Ordinary Riprap UDFCD			
Table MD-7			
Riprap Designation	% Smaller Than Given Size by Weight	Intermediate Rock Dimensions (inches)	d50 (inches)*
Type VL	70-100 50-70 35-50 2-10	12 9 6 2	6**
Type L	70-100 50-70 35-50 2-10	15 12 9 3	
Type M	70-100 50-70 35-50 2-10	21 18 12 3	12**
Type H	70-100 50-70 35-50 2-10	40 30 24 18	

POND WATER SURFACE TABLE		
DESCRIPTION	ELEVATION	VOLUME (cft)
WQCV	5034.65	8,519
100yr	5036.65	39,427
OVERFLOW	4937.00	45,443

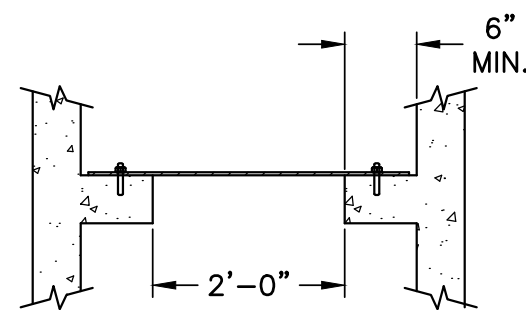
		127 S. DENVER AVE FT. LUPTON, CO 80621 www.westerneng.com email@westerneng.com (720) 685-9951 FAX (720) 294-1350	
Western Engineering Consultants, Inc LLC			
NO.	REVISION	DATE	BY
0	INITIAL RELEASE	03/09/21	CF
BEEN RV PARK CONTACT: SHERYL BEEN 3647 COUNTY ROAD 19 FORT LUPTON, CO 80621 MOBILE: (303) 902-9262			
DRAINAGE DETAILS BEEN RV PARK - 3647 WCR 19 WELD COUNTY, COLORADO			
Dig Safely. CALL UNCC THREE WORKING DAYS BEFORE YOU DIG 1-800-922-1987 www.uncc.org UTILITY NOTIFICATION CENTER OF COLORADO			
FOR APPROVAL			
ONLY VALID FOR CONSTRUCTION IF SEAL & ORIGINAL SIGNATURE ARE ON EACH SHEET			
INITIAL PLAN RELEASE: 03/08/21 DESIGNED BY: CFC DRAWN BY: CFC CHECKED BY: CFC			
PROJECT NO. 01-0342.001.00			
DOC CON # 0037-DRNG DTLs			
SHEET 37 OF 42			



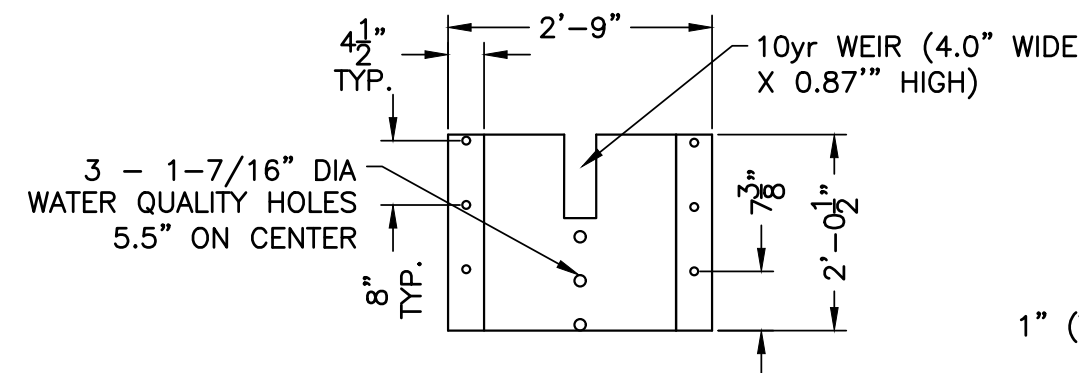
PLAN VIEW
SCALE 1" = 2'

STRUCTURAL NOTES:

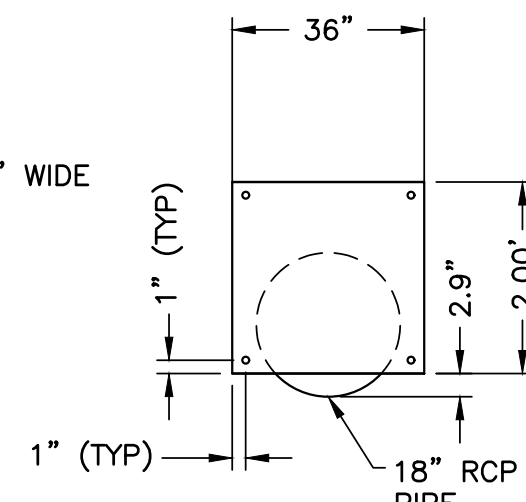
1. ALL CONCRETE SHALL BE C.D.O.T. CLASS B CAST IN PLACE.
2. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFER 3/4".
3. ALL REINFORCING BARS SHALL HAVE A MINIMUM 2" CLEARANCE.
4. ALL REINFORCING BARS SHALL BE EPOXY COATED.
5. ALL STEPS SHALL BE IN ACCORDANCE WITH AASHTO M199.



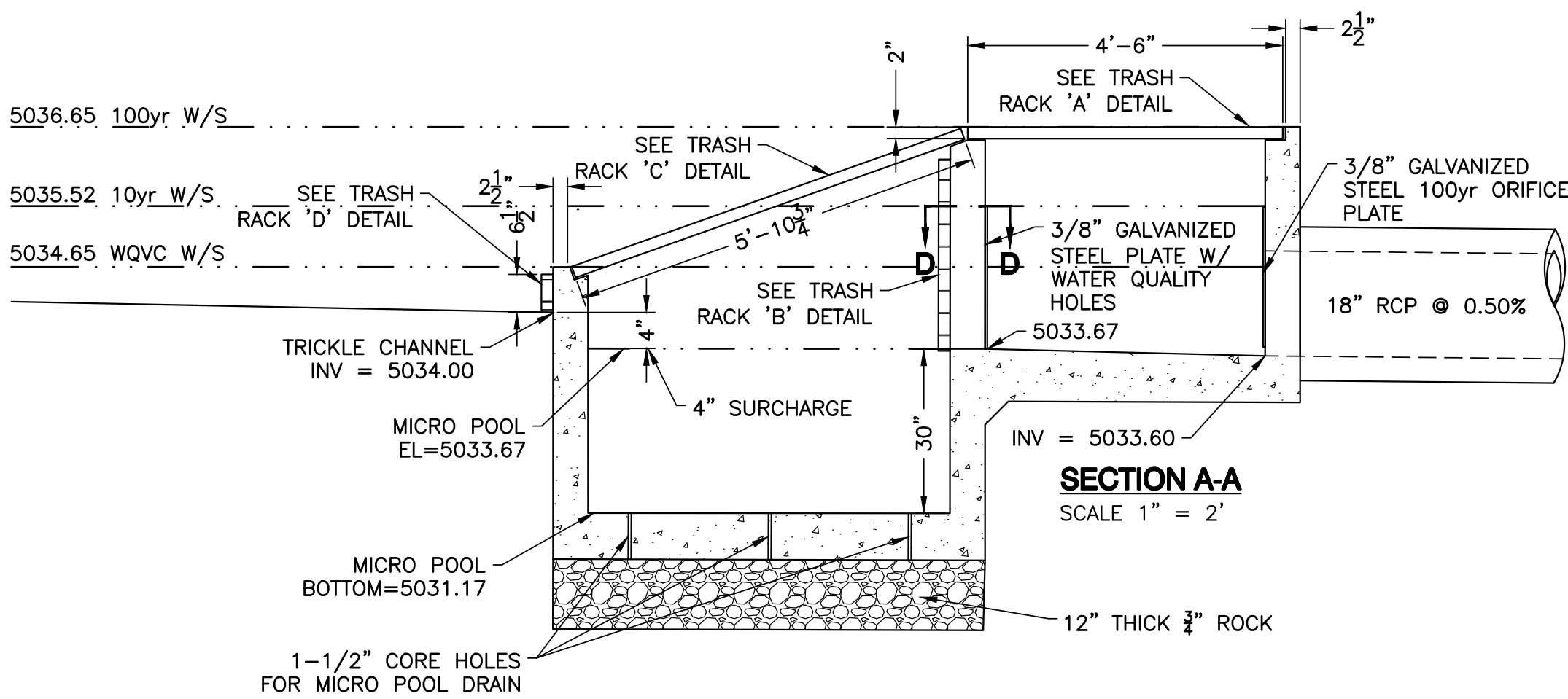
SECTION D-D
SCALE 1" = 2'



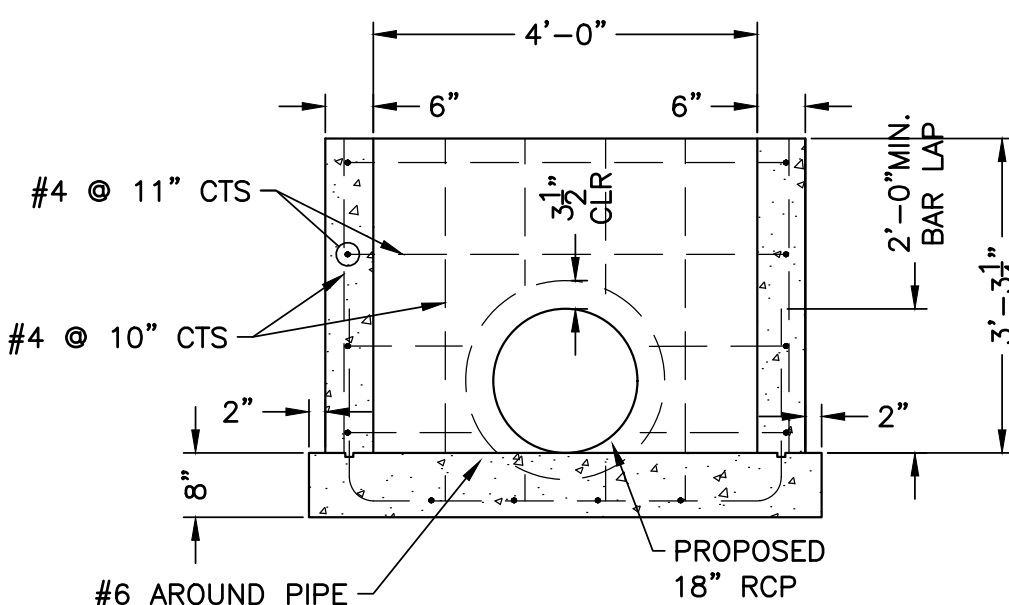
**3/8" GALVANIZED STEEL PLATE
W/ WATER QUALITY HOLES**
SCALE 1" = 2'



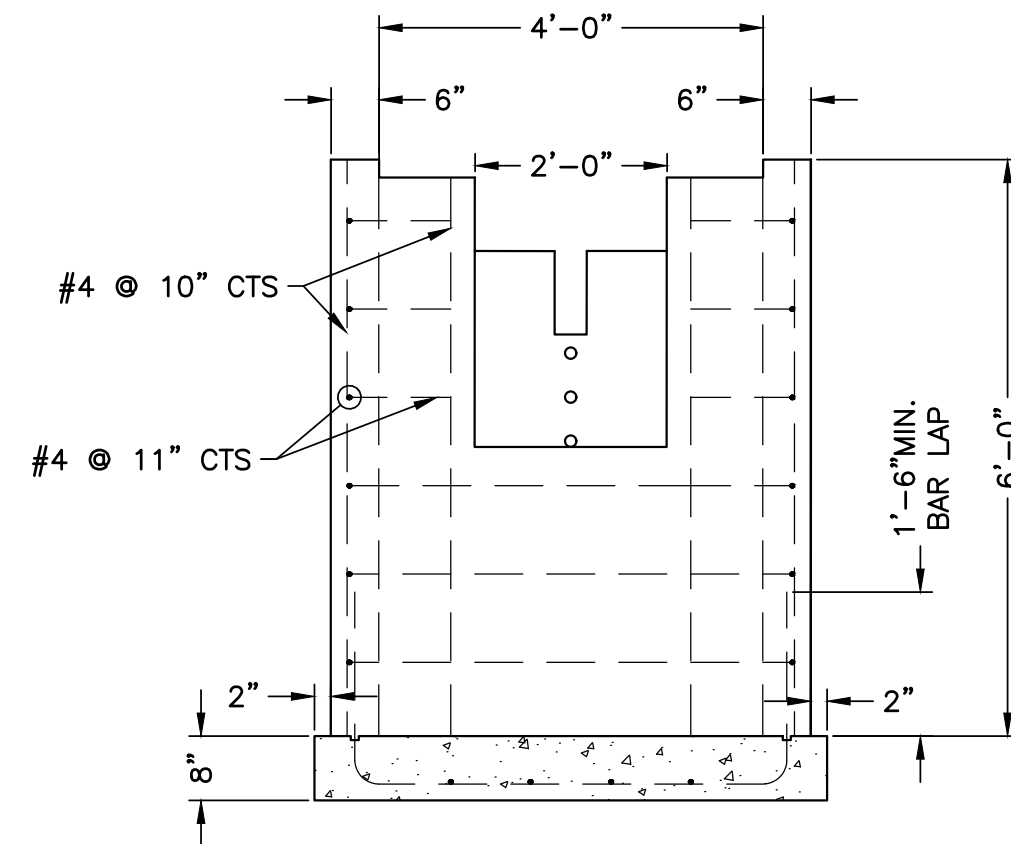
**3/8" GALVANIZED STEEL PLATE
100yr ORIFICE PLATE**
SCALE 1" = 2'



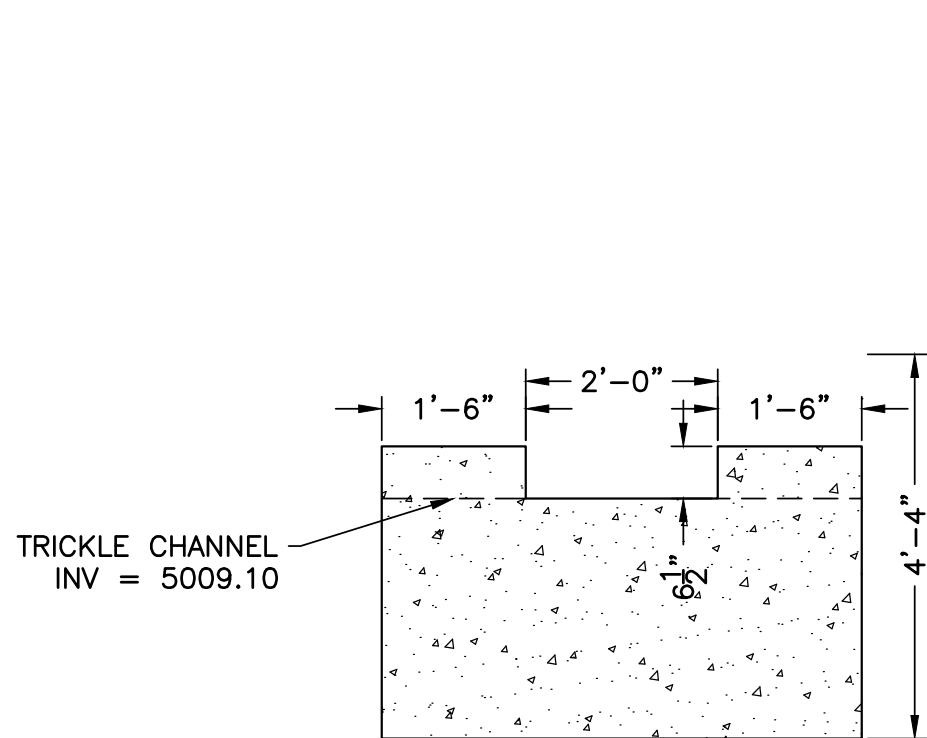
SECTION A-A
SCALE 1" = 2'



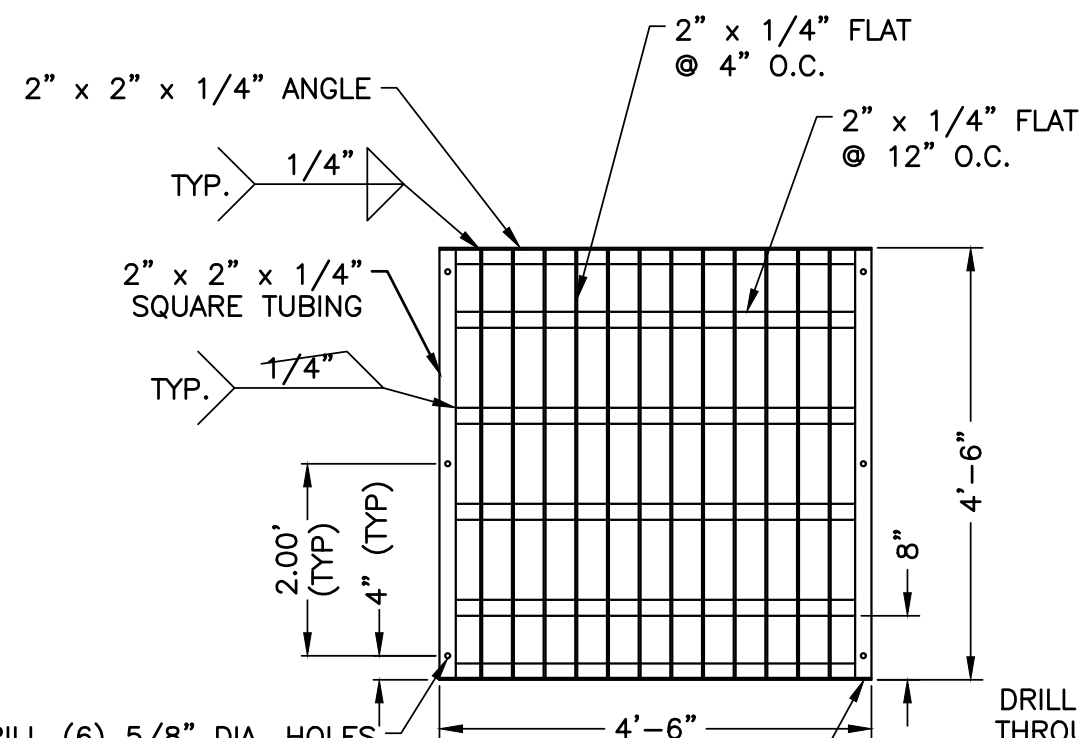
SECTION B-B
SCALE 1" = 2'



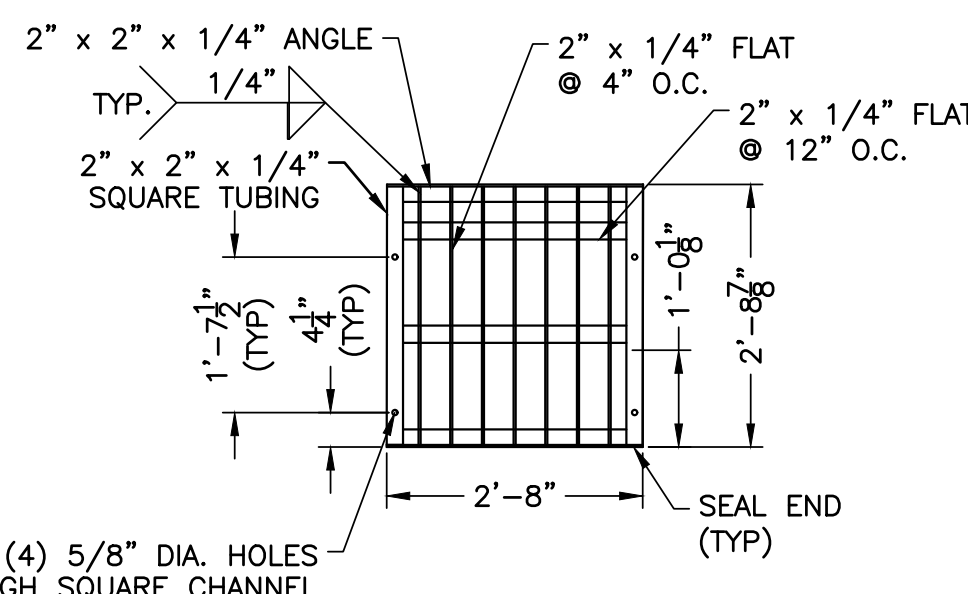
SECTION C-C
SCALE 1" = 2'



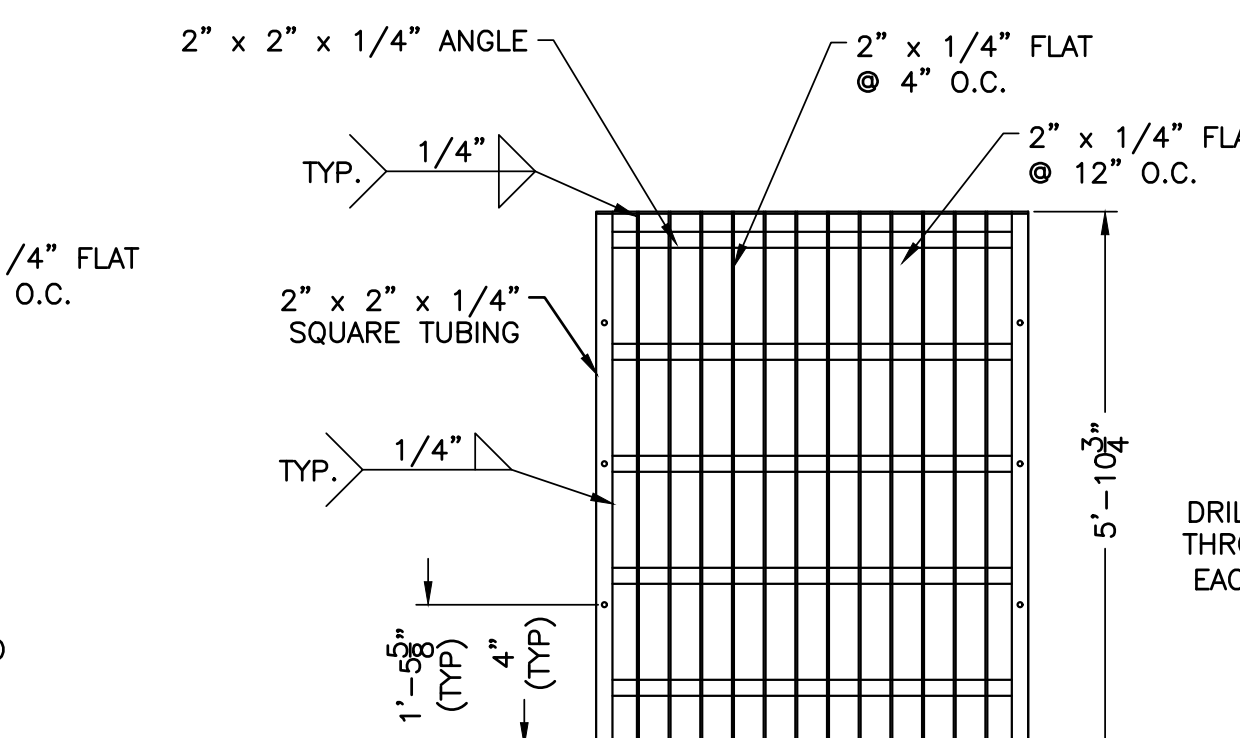
SECTION E-E
SCALE 1" = 2'



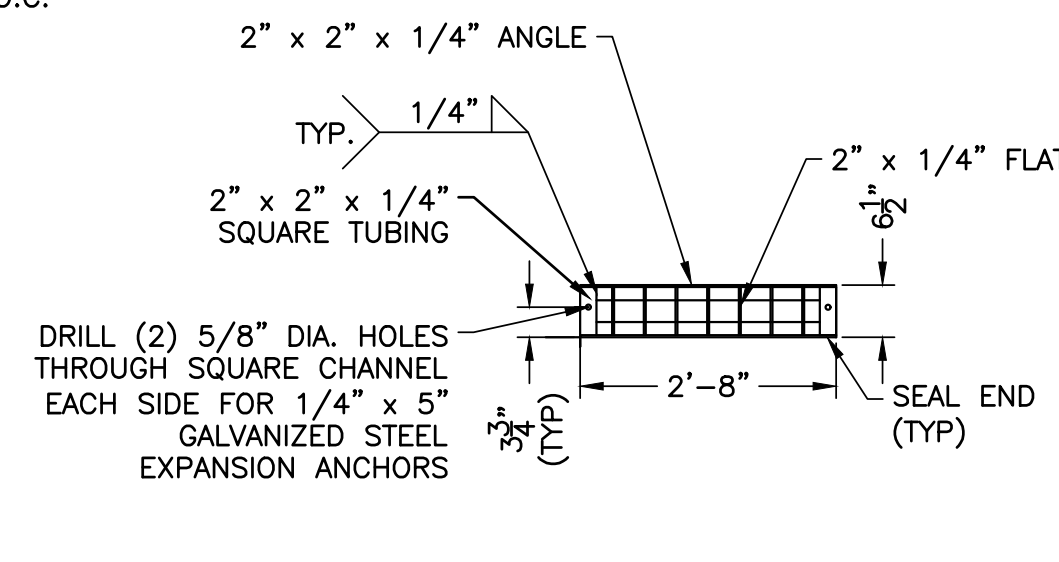
TRASH RACK 'A'
SCALE 1" = 2'



TRASH RACK 'B'
SCALE 1" = 2'



TRASH RACK 'C'
SCALE 1" = 2'



TRASH RACK 'D'
SCALE 1" = 2'

127 S. DENVER AVE
FT. LUTON, CO 80621
www.westerneci.com
email@westerneci.com
(720) 685-9951
FAX (720) 294-1330

Western Engineering Consultants, Inc. LLC

NO.	DATE	BY	DATE	BY
1	10/26/21	CF		
2				
3				
4				
5				
6				
7				
8				
9				
10				

BEEN RV PARK

CONTACT: SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUTON, CO 80621
MOBILE: (303) 902-9262

DRAINAGE DETAILS

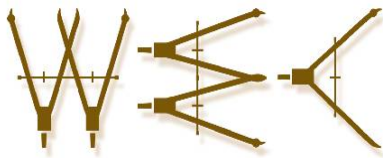
BEEN RV PARK - 3647 WCR 19
WELD COUNTY, COLORADO

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INITIAL PLAN
RELEASE: 03/08/21
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DRAWN BY: CFC
CHECKED BY: CFC
PROJECT NO.
01-0342.001.00
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0038-DRNG DTLS
SHEET
38 OF 42



WESTERN ENGINEERING CONSULTANTS,
127 S Denver Ave. Fort Lupton, CO 80621
2501 Mill Street, Brush, CO 80723
Office: 720-685-9951
Cell. 303-913-7341, Fax 720-294-1330
Email: chadwin.cox@westerneci.com
Inc LLC

March 10, 2021

City of Fort Lupton
130 South McKinley Ave.
Ft. Lupton, CO 80621

RE: BEEN RV PARK WATER SERVICE NARRATIVE

City Design Review Committee:

Western Engineering Consultants Inc. LLC (WEC) has prepared this narrative letter to briefly summarize the Been RV Park water demands and proof of service.

Attached to this letter are the following:

- WEC Preliminary Water Demand Study
- Been RV Park Well Permit and supporting documents
- Wild Country RV Park 2020 Consumption Report
- Water Usage Affidavit
- CWCWD Will Serve Letter, Fire Flow Study, and water study receipt

A preliminary water study has been completed by WEC dated August 20, 2020 to estimate the demand and to size the future water meter for the calculated peak flow. The study was broken into phasing, with phases 1 & 2 consisting of 80 RV stalls, phase 3 adding 40 additional stalls, and phase 4 adding the final 40 stalls.

The interim RV Park (75 total RV stalls) will be serviced for consumptive use by the proposed well (Permit #84713-F) located within Lot 3. The approved well permit allows the property to withdraw 4.92 acre-feet annually from the Laramie-Fox Hills aquifer. At a usage rate for each RV stall of 50 gallons per day, the use of this well would provide water for 87 units (only 75 proposed as Phase 1 at this time). 75 RV stalls is the threshold above which traffic improvements will be required.

The attached Wild Country RV Park 2020 consumption report details the annual water usage (in gallons) of a larger RV Park located in Keenesburg, CO (180 total RV stalls). The average daily usage of the 180 stall RV Park (domestic and irrigation) was 55 gpd per RV stall, resulting in a yearly water usage of approximately 10.88 acre-feet.

The applicant has completed the Affidavit of historic water use and has applied for inclusion to the Northern Colorado Water Conservancy District. WEC has coordinated with and the Applicant has funded the Central Weld County Water District water demand and supply study. Currently CWCWD water main exists 1,850 feet +/- north of the site. The CWCWD water main will be extended for fire suppression unless the applicant receives alternative methods and means approval by the Fort Lupton Fire Protection District.

A will serve letter from CWCWD has been received, and a water study is currently underway. A Fire Flow study was performed by NOCO Engineering Company dated September 18, 2020 recommending approval of the requested fire flow tap at a flow rate of 800 gpm.

CLOSING

The Applicant is excited to bring this project to the City of Fort Lupton!

Please contact me with any questions or comments you may have on this Project Narrative.

Sincerely,

A handwritten signature in black ink, appearing to be "Chadwin F. Cox", written over a faint horizontal line.

Western Engineering Consultants inc., LLC
Chadwin F. Cox, P.E.
Senior Project Manager



WESTERN ENGINEERING CONSULTANTS INC LLC

Preliminary Draft

**BEEN RV PARK
3647 WCR 19, Ft Lupton, 80603
Weld County, CO**

WATER AND SANITARY SEWER STUDY

August 20, 2020
(WECI # 0342.001.00)

PROJECT DESCRIPTION

A 161-unit RV park is proposed in Ft Lupton, on WCR 19, south of WCR 10. Phases 1 and 2 will be constructed initially. A one-acre commercial lot is also proposed. One existing and one proposed residence are located on the western portion of the site.

PHASE	RV Units		Shower/Laundry in Commercial Building
1 and 2	80	--	1
3	40	--	1
4	41	--	1
TOTAL	161	--	3

Water service will be provided by the North Weld County Water District. The owner is in discussions with the district regarding service. The District's nearest line is currently about 1,900 feet from the site. The on-site 8-inch water lines will provide water to fire hydrants as well as to the RV units. A master water meter near the eastern entrance will meter the domestic use.

Wastewater will be collected near the site's low points and treated on site (designed by others). Please refer to the WEC site. Future sewer service by the City of Ft Lupton is anticipated.

DOMESTIC WATER

Attached are the calculations for estimating the demand and sizing the water meter for calculated peak flow using the IPC (International Plumbing Code). It was assumed that an RV unit will have a shower, lavatory sink, kitchen sink and water closet. Meter capacity is based on Denver Water standards using 80% off AWWA C700 capacities.

The private on-site 8-inch water lines will provide water to fire hydrants as well as to the RV units. A master water meter will meter the domestic use. A PRV (pressure regulating valve) on a meter bypass line will open during extreme pressure drop, such as high demand during firefighting or line flushing. [?? A second connection to the District water line will be made and will have a PRV only.]

For this preliminary report, the Design Pressure is assumed to be 60 psi at the connection to the District system at the site. This is for preliminary design only and has not been verified.

The IPC demand method results in the following estimated cumulative peak demands (also the design demand for this report) by phase. Meter capacity is based on the Denver Water recommendation (80% of AWWA C700 meter standards), which is commonly used in the area.

PHASE	Cumulative Design Demand, gpm	Meter Diameter, inches	Meter Capacity, gpm
1 and 2	119	2	128
3	163	3	250
4	202	3	250

The friction losses due to the length of the internal lines are mitigated by using the 8-inch domestic/fire lines for distribution. For example, the loss at 202 gpm for 5,000 feet of 8-inch is 3 psi.

For each pair of RV's served, a 1-inch tap and service will be installed on the main line in the street. Friction loss would be too high if ¾-inch services were used with the proposed line lengths.

IRRIGATION WATER

Irrigation is assumed to be minimal.

FIRE PROTECTION

To be determined.

[from keenesburg project:

16 fire hydrants are proposed on the site for fire protection and line flushing. An 6-inch PRV on a bypass at the meter will open when pressure is low enough to open it during high demand when the hydrants are operated. The PRV and domestic meter will be in a precast vault. A second connection with a PRV also will serve the site.

It appears that 750 gpm could be delivered to the site with the 8-inch main extension, assuming the Town's system has the capacity. 525 gpm fireflow plus domestic demand of 222 gpm for a total 750 gpm. This flow rate in the 5,300 off-site line extension results in 32 psi loss for the pipe.]

SANITARY SEWER SERVICES

On-site mains are gravity flow with manholes for maintenance. Minimum pipe size hydraulically is 4 and 6-inch (see attached calculations); however, 8-inch could provide more efficient system maintenance.

Each pair of RV's should be served by a 4-inch PVC service connection. 4-inch, with a clean out at the pad allows for adequate service line maintenance.

Wastewater demand (2009 IPC) and sewer size for two RV's is:

18 DFU	Use 1 x 4-inch PVC @ 2%
The IPC allows:	Up to 216 DFUs are allowed on a 4-inch line @ 2%.
	Up to 180 DFUs are allowed on a 4-inch line @ 1%.

SANITARY SEWER SITE

Build out average demand is estimated to be 11,500 gallons per day (calculated), or 11 gpm. Using 50 gallons per day per RV unit (travel trailer excluding laundry facilities, Table 6-2, Colorado Regulation 43):

<u>PHASE</u>	<u>Average Daily Estimated Flow, gpd</u>	<u>Cumulative Average Daily Estimated Flow, gpd (gpm)</u>
1 and 2	5,150	5,150 (3.6)
3	3,150	8,300 (5.8)
4	<u>3,200</u>	11,500 (8.0)
TOTAL	11,500	

Revision Draft 202X

Revision 1 202x xxxx

--End of Text

2012 INTERNATIONAL PLUMBING CODE ----- TABLE E103.3(3)
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSHOMETER VALVES		
Load	Demand		Load	Demand	
(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)	(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)
1	3.0	0.04104			
2	5.0	0.0684			
3	6.5	0.86892			
4	8.0	1.06944			
5	9.4	1.256592	5	15.0	2.0052
6	10.7	1.430376	6	17.4	2.326032
7	11.8	1.577424	7	19.8	2.646364
8	12.8	1.711104	8	22.2	2.967696
9	13.7		9	24.6	3.288528
10	14.6	1.951728	10	27.0	3.60936
11	15.4	2.058672	11	27.8	3.716304
12	16.0	2.13888	12	28.6	3.823248
13	16.5	2.20572	13	29.4	3.930192
14	17.0	2.27256	14	30.2	4.037136
15	17.5	2.3394	15	31.0	4.14408
16	18.0	2.90624	16	31.8	4.241024
17	18.4	2.459712	17	32.6	4.357968
18	18.8	2.513184	18	33.4	4.464912
19	19.2	2.566656	19	34.2	4.571856
20	19.6	2.620128	20	35.0	4.6788
25	21.5	2.87412	25	38.0	5.07984
30	23.3	3.114744	30	42.0	5.61356
35	24.9	3.328632	35	44.0	5.88192
40	26.3	3.515784	40	46.0	6.14928
45	27.7	3.702936	45	48.0	
50	29.1	3.890088	50	50.0	6.684
60	32.0	4.27776	60	54.0	7.21872
70	35.0	4.6788	70	58.0	7.75344
80	38.0	5.07984	80	61.2	8.181216
90	41.0	5.48088	90	64.3	8.595624
100	43.5	5.81508	100	67.5	9.0234
120	48.0		120	73.0	9.75864
140	52.5	7.0182	140	77.0	10.29336
160	57.0	7.61976	160	81.0	10.82808
180	61.0	8.15448	180	85.5	11.42964
200	65.0	8.6892	200	90.0	12.0312
225	70.0	9.3576	225	95.5	12.76644
250	75.0	10.026	250	101.0	13.50168

(continued)

E103.3(3)-continued
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSHOMETER VALVES		
Load	Demand		Load	Demand	
(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)	(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)
275	80.0	10.6944	275	104.5	13.96956
300	85.0	11.3628	300	108.0	14.43744
400	105.0	14.0364	400	127.0	16.97736
472	119				
500	124.0	16.57632	500	143.0	19.11624
713	163				
750	170.0	22.7256	750	177.0	23.66136
959	202				
1,000	208.0	27.80544	1,000	208.0	27.80544
1,250	239.0	31.94952	1,250	239.0	31.94952
1,500	269.0	35.95992	1,500	269.0	35.95992
1,750	297.0	39.70296	1,750	297.0	39.70296
2,000	325.0	43.446	2,000	325.0	43.446
2,500	380.0	50.7984	2,500	380.0	50.7984
3,000	433.0	57.88344	3,000	433.0	57.88344
4,000	525.0	70.182	4,000	525.0	70.182
5,000	593.0	79.27224	5,000	593.0	79.27224

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m, 1 cubic foot per minute 0.28 m³ per minute.

August 18, 2020

Been RV Park, refer to report.

August 20, 2020

Revision 0

Askeland

WATER METER AND SERVICE LINE SIZE

BEEN RV PARK

3647 WCR 19, Ft Lupton, Colorado

Preliminary Draft

A. ESTIMATE FIXTURE COUNT AND PEAK FLOW RATE (IPC 2012) AND METER SIZE

Showers (public) per phase	1	1	1	
Washing Machines (public) per phase	1	1	1	Check column
RV Units each Phase	80	40	41	161

FIXTURE	FIXTURE UNITS per FIXTURE WSFU	PHASES 1 AND 2		PHASE 3		PHASE 4		
		Q	WSFU	Q	WSFU	Q	WSFU	
Bathtub or Shower (private)	1.4	80	112	40	56	41	57	
Bathtub or Shower (public) - combo	4.0	1	4	1	4	1	4	
Dishwasher (private)	1.4	0	0	0	0	0	0	
Dishwasher (public, estimated WSFU)	4.0	0	0	0	0	0	0	
Drinking Fountain (offices, etc.) - COM BLD	0.25	1	0.25	0	0	0	0	
Hose Bib - COM BLD	2.5	1	2.5	0	0	0	0	
Hose Bib, each additional misc.	1.0	1	1	1	1	1	1	
Lavatory (private)	0.7	80	56	40	28	41	29	
Lavatory (public) - COM BLD	2.0	1	2	1	2	1	2	
Sink, Bar (public)	2.0	0	0	0	0	0	0	
Sink, Kitchen (private)	1.4	80	112	40	56	41	57	
Sink, Kitchen (hotel, restaurant, etc.)	4.0	0	0	0	0	0	0	
Sink, Service (offices, etc.) COM BLD laundry	3.0	1	3	1	3	1	3	
Urinal (public, 3/4" flush valve)	5.0	0	0	0	0	0	0	
Urinal (public, 3/4" flush tank)	3.0	0	0	0	0	0	0	
Washing Machine, 8 lb (private)	1.4	0	0	0	0	0	0	
Washing Machine, 8lb (public)- COM BLD	3.0	1	3	1	3	1	3	
Washing Machine, 15lb (public)	4.0	0	0	0	0	0	0	
Water Closet, tank (private)	2.2	80	176	40	88	41	90	
Water Closet, flushometer valve (private)	6.0	0	0	0	0	0	0	
Water Closet, tank (public)	5.0	0	0	0	0	0	0	
Water Closet, flushometer valve (public)	10.0	0	0	0	0	0	0	
Water Closet, flushometer tank valve (public)	2.0	0	0	0	0	0	0	
TOTAL FIXTURES		327		165		169		661
TOTAL WSFU per Phase			472		241		247	959
% of Buildout			49%		25%		26%	100%
CUMULATIVE TOTAL WSFU			472		713		959	
For use in Table E103.3(3)								
CUMULATIVE PEAK FLOW RATE, gpm			119		163		202	
IPC, Table E103.3(3)			gpm		gpm		gpm	
USED AS DESIGN FLOW RATE								
Site METER SIZE MINIMUM, INCHES			2		3		3	
meter capacity, gpm (See note 6 below)			128		250		250	
Peak Flow Rate, gpm (prorated by phase at build out)			99		51		52	202

NOTES:

1. Fixture type and quantity are estimates.
2. Tank water closets. Used IPC Table E103.3.3.column for predominantly flush tanks (attached).
3. Use is "private" since use is restricted to employees and guests, except as noted public.
4. Final design should confirm fixture types and quantities.
5. IPC (International Plumbing Code) rate is "Peak Flow Rate" and is used as the Design Flow Rate in other calculations.
- 5.b. WSFU = Water Supply Fixture Unit. COM BLD = Commercial Building/Warehouse.
- 6.a. Meter design capacity recommended by the Denver Water (80% of AWWA C700 meter standards):
- 6.b. 3/4" - 16 gpm, 1" - 40 gpm, 1 1/2" - 80 gpm, 2" - 128 gpm, 3" - 250 gpm, 4" - 400gpm, 6" - 800 gpm.
7. Phases 1 and 2 combined constitute the initial development phase.

Revision x 2020 xxxx

---- END OF PAGE -----

August 20, 2020

Revision 0

Askeland

SANITARY SEWER DEMANDS

BEEN RV PARK

3647 WCR 19, Ft Lupton, Colorado

Preliminary Draft

C.1. SEWER DEMAND ESTIMATE

Showers (public) per phase	1						
Washing Machines (public) per phase	1						Check column
RV Units each Phase		80		40		41	161
XXXXX		0		0		0	0
TOTAL		80		40		41	161

UNIT OR FIXTURE	DEMAND gpd	PHASES 1 AND 2		PHASE 3		PHASE 4		
		Q	gpd	Q	gpd	Q	gpd	
Travel Trailer (demand per unit, see note 4)	50 per unit	80	4,000	40	2,000	41	2,050	8,050
Shower, public park, 100 gpd per fixture per hour assume 6 hours operation per day	600 per fixture	1	600	1	600	1	600	1,800
Washing Machine, public, per machine	400 per fixture	1	400	1	400	1	400	1,200
Sink, public, 15 gpd per hour - Laundry assume 10 hours operation per day	150 per fixture	1	150	1	150	1	150	450
								11,500
TOTAL Estimate gpd, per Phase			5,150		3,150		3,200	11,500
CUMULATIVE ESTIMATED TOTAL BY PHASE, gpd			5,150		8,300		11,500	
Average Day Rate			3.6		5.8		8.0	gpm
								57,500
BY INDIVIDUAL PHASE (for pipe)								
PEAK DAY RATE ESTIMATE, gpd Peaking F =	5	phase 1	25,750	phase 2	15,750	phase 3	16,000	57,500
LINE SIZE MINIMUM, INCHES (See note 6)			4		4		4	Total Site
gravity pipe capacity, gpd (half full, s=0.005, n=0.013)			43,000		43,000		43,000	6
								181,000

NOTES:

1. Fixture type and quantity are estimates.
2. Use is "private" since use is restricted to employees and guests, except as noted "public".
3. Final design should confirm fixture types and quantities.
- 4.a. Colorado Dept of Public Health, Regulation #43, On-Site WW Treatment System Reg, TABLE 6-2 Estimate of Average Daily Wastewater Flow
- 4.b. Travel Trailer demand is gpd per Unit, Shower (public park) demand is 100 gpd per fixture per hour operation.
- 4.c. Laundries self serve demand is 400 gpd per machine.
5. Phases 1 and 2 combined constitute the initial phase.
- 6.a. Minimum pipe size is only for reference. Other factors impact minimum pipe size, such as type of waste and maintenance methods.

Revision XX 2020 XXXX

---- END OF PAGE -----



COLORADO
Division of Water Resources
Department of Natural Resources

WELL PERMIT NUMBER 84713-F
RECEIPT NUMBER 10005293

ORIGINAL PERMIT APPLICANT(S)

SHERYL A BEEN

APPROVED WELL LOCATION

Water Division: 1 Water District: 2
Designated Basin: N/A
Management District: N/A
County: WELD
Parcel Name: RECORDED EXEMPTION NO. 1469-16-1
RE-4223

AUTHORIZED AGENT

STEVEN JANSSEN

Lot: A Block: Filing:
Physical Address: 3647 WCR 19 FORT LUPTON, CO 80621
SE 1/4 NE 1/4 Section 16 Township 1.0 N Range 67.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 509408.8 Northing: 4433691.5

PERMIT TO CONSTRUCT A NEW WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

- 1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- 2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-90-137(4) and the findings of the State Engineer dated September 16, 2020.
- 4) The use of groundwater from this well is limited to domestic, livestock watering, industrial, irrigation and commercial.
- 5) Production is limited to the Laramie-Fox Hills aquifer which is located approximately 445 feet below ground surface and extends to a depth of approximately 770 feet. In accordance with Rule 10.4.8 of the Water Well Construction Rules, plain steel casing must be installed and grouted from the top of the permitted production zone up to at least ten feet above the base of the surface casing, or to the depth required by Rule 10.5.2.1, if no surface casing is installed. (NOTE: If coals and/or carbonaceous shales are encountered in the borehole, plain casing and grout should be installed through these intervals to exclude poor quality water from entering the well.)
- 6) The pumping rate of this well shall not exceed 50 GPM (as requested).
- 7) The average annual amount of groundwater to be withdrawn shall not exceed 4.92 acre-feet and the total volume of groundwater to be withdrawn shall not exceed 492 acre-feet.
- 8) The entire length of the hole shall be geophysically logged as required by Rule 9 of the Statewide Nontributary Ground Water Rules prior to installing casing.
- 9) The owner shall mark the well in a conspicuous location with well permit number(s), name of the aquifer, and court case number(s) as appropriate. The owner shall take necessary means and precautions to preserve these markings.
- 10) A totalizing flow meter must be installed on this well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (recorded at least annually) and submitted to the Division Engineer upon request.
- 11) This well shall be constructed more than 600 feet from any existing well, completed in the same aquifer, that is not owned by the applicant.
- 12) This well shall be constructed not more than 200 feet from the location specified on this permit.
- 13) Pursuant to CRS 37-90-137(9)(b) and the Denver Basin Rules, no more than 98% of the nontributary groundwater withdrawn annually shall be consumed and the well owner shall demonstrate to the reasonable satisfaction of the State Engineer that no more than 98% of the water withdrawn will be consumed.
- 14) This well is subject to administration by the Division Engineer in accordance with applicable decrees, statutes, rules, and regulations.

- 15) ADVANCE NOTICE REQUIRED - Pursuant to Construction Rule 6.2.2.1 (2 CCR 402-2), licensed or private drillers and pump installers must provide advance notification to the State Engineer prior to each of the following for this well: the start of well construction, the initial installation of the first permanent pump, and the initial installation of a cistern connected to the water well supply system. Any change in the date of construction/installation must be re-noticed prior to the activity. Information regarding the notification process and a link to the electronic notification form can be found on the Division of Water Resources website.

NOTE: This well is withdrawing water from a non-renewable aquifer. While the withdrawals from this aquifer are administered based on a 100 year aquifer life, water level declines may prevent this well from diverting the permitted amounts for that 100 years.

NOTE: To ensure a maximum productive life of this well, perforated casing should be set through the entire producing interval of the approved zone or aquifer indicated above.

NOTE: This permit will expire on the expiration date unless the well is constructed and a pump is installed by that date. A Well Construction and Yield Estimate Report (GWS-31) and Pump Installation and Production Equipment Test Report (GWS-32) must be submitted to the Division of Water Resources to verify the well has been constructed and the pump has been installed. A one-time extension of the expiration date may be available. Contact the DWR for additional information or refer to the extension request form (GWS-64) available at: <http://Colorado.gov/water>

NOTE: A hydrogeologic aquifer evaluation has been completed for this permit and the details of the evaluation can be viewed in the hydrogeologic aquifer evaluation imaged document and the original permit file.



Issued By IOANA COMANICIU

Date Issued: 9/16/2020

Expiration Date: 9/16/2021

FINDINGS OF THE STATE ENGINEER

IN THE MATTER OF AN APPLICATION FOR A PERMIT TO CONSTRUCT A WELL IN WATER DIVISION NO. 1,
WELD COUNTY, COLORADO

APPLICANT: SHERYL A. BEEN

AQUIFER: LARAMIE-FOX HILLS

PERMIT NO.: 84713-F

In compliance with C.R.S. 37-90-137(1) and the Statewide Nontributary Ground Water Rules, Sheryl A. Been, (hereinafter "applicant") submitted an application for a permit to construct a well. Based on information provided by the applicant and records of the Division of Water Resources, the State Engineer finds as follows:

1. The application was received complete by the State Engineer on August 7, 2020.
2. The applicant proposes to construct the well in the SE1/4 of the NE1/4 of Section 16, Township 1 North, Range 67 West, 6th Principal Meridian.
3. The proposed well is located outside the boundaries of a designated ground water basin.
4. The applicant proposes to apply the water withdrawn from the well to the following beneficial uses: domestic, livestock watering, industrial, irrigation, and commercial.
5. The proposed maximum pumping rate of the well is 50 gallons per minute, and the requested average annual amount of ground water to be withdrawn is 5.40 acre-feet.
6. The applicant is the owner of the land on which the well will be constructed.
7. The proposed well would withdraw ground water from the Laramie-Fox Hills Aquifer (hereinafter "aquifer"), which, based on site specific information, is located approximately 445 feet to 770 feet below land surface.
8. The location of the proposed well is more than 600 feet from any existing well completed in the aquifer.
9. According to a sworn statement, the applicant owns, or has consent to withdraw ground water underlying 16 acres of land as further described in said statement, which is attached hereto as Exhibit A.
10. Withdrawal of ground water from the aquifer underlying the land claimed by the applicant will not, within one hundred years of continuous withdrawal, deplete the flow of a natural stream at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and therefore the ground water is nontributary ground water as defined in C.R.S. 37-90-103(10.5).
11. In considering whether the requested permit shall be approved the provisions of C.R.S. 37-90-137(4) and the Denver Basin Rules shall apply. Withdrawals shall be allowed on the basis of an aquifer's life of 100 years, C.R.S. 37-90-137(4)(b)(I).

12. The quantity of water in the aquifer, exclusive of artificial recharge, underlying the 16 acres of land described in Exhibit A is 492 acre-feet. This determination was based on the following as specified in the Denver Basin Rules and site specific information:
- a. The average specific yield of the saturated aquifer materials underlying the land under consideration is 15 percent.
 - b. The average thickness of the saturated aquifer materials underlying the land under consideration is 205 feet.

Based on the above, the State Engineer finds that there is water available for withdrawal by the proposed well and no material injury to vested water rights would result from the issuance of the requested permit subject to the following conditions:

- c. The allowed average annual amount of water to be withdrawn from the aquifer by the well shall not exceed 4.92 acre-feet (the quantity of water which is considered available divided by the 100 year aquifer life).
- d. The total volume of water that may be withdrawn from the aquifer by the well shall not exceed 492 acre-feet.
- e. The well shall be constructed no more than 200 feet from the location specified on the permit application.
- f. The applicant shall submit geophysical and lithologic logs after the construction of the well. The geophysical logs shall be obtained from the hole before the casings are installed.
- g. The maximum pumping rate of the well shall not exceed 50 gallons per minute.
- h. A totalizing flow meter must be installed on the well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (recorded at least annually) and submitted to the Division Engineer upon request.
- i. Production is limited to the Laramie-Fox Hills Aquifer. The well must be constructed with plain, non-perforated casing properly grouted so as to prevent intermingling of water between aquifers.
- j. Pursuant to C.R.S. 37-90-137(9)(b) and the Denver Basin Rules, no more than 98% of the nontributary ground water withdrawn annually shall be consumed and the applicant shall demonstrate to the reasonable satisfaction of the State Engineer that no more than 98% of the water withdrawn will be consumed.
- k. The owner shall mark the well in a conspicuous place with appropriate well permit numbers, name of the aquifer, and court case numbers. He shall take necessary means and precautions to preserve these markings.

Applicant: Sheryl A. Been
Aquifer: Laramie-Fox Hills
Permit No.: 84713-F

Page 3

Dated this 16th day of September, 2020.



Kevin G. Rein, P.E.
Director/State Engineer

By: 

Ioana Comaniciu
Water Resource Engineer

Prepared by: idc

Form no. **DIVISION OF WATER RESOURCES**
GWS-1 **DEPARTMENT OF NATURAL RESOURCES**
(1/2020) **1313 Sherman St, Room 821, Denver, CO 80203**
(303) 866-3581, www.colorado.gov/water, dwrpermitsonline@state.co.us

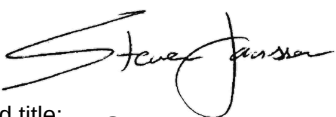
NONTRIBUTARY GROUNDWATER LANDOWNERSHIP STATEMENT

This form is to be submitted with applications for the following, when the applicant is the owner of the overlying land.

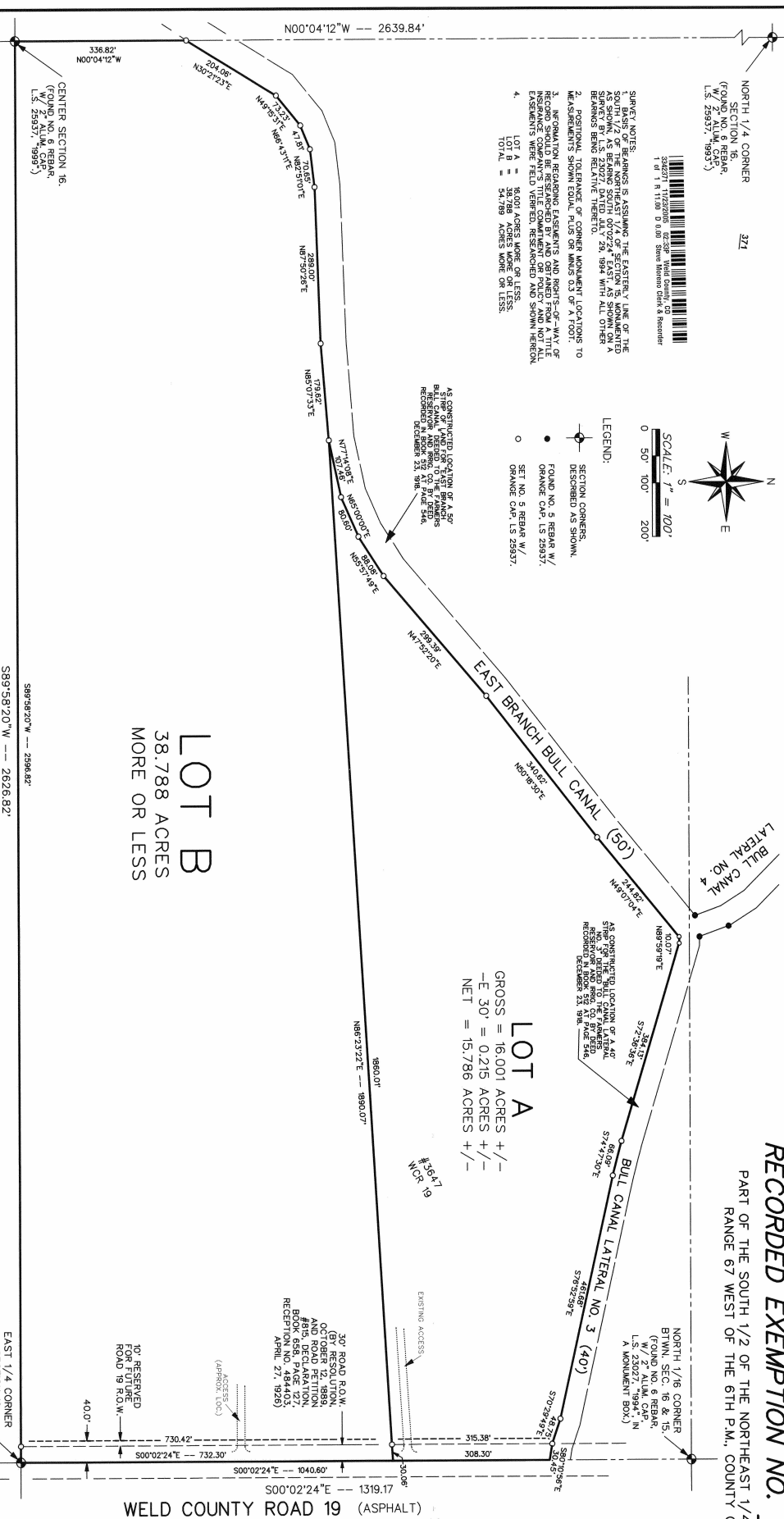
1) A well permit to withdraw groundwater from the Dawson, Denver, Arapahoe or Laramie-Fox Hills aquifers, or other aquifer the applicant claims contains nontributary groundwater, outside of a Designated Groundwater Basin subject to section 37-90-137(4), C.R.S., except when the right to withdraw the groundwater has been determined by a valid decree; OR

2) A determination of water right in the Dawson, Denver, Arapahoe or Laramie-Fox Hills aquifers, or a well permit to withdraw groundwater from those aquifers that are subject to Designated Basin Rule 5.4, within a Designated Groundwater Basin.

NOTE: Form submittal instructions can be found on our website Colorado.gov/water. See instructions on the reverse of this form.
Type or print in black or blue ink.

1. APPLICANT INFORMATION			
Name of Applicant Sheryl A. Been			
Mailing Address P. O. Box 375	City Fort Lupton	State CO	Zip Code 80621
Telephone Number (include area code) (303) 902-9262		Email wereafrog@yahoo.com	
2. AQUIFER Laramie-Fox Hills			
3. CLAIM OF OWNERSHIP – I hereby claim that I am the owner of the following described property, as evidenced by the attached copy of a deed recorded in the county in which the property is located. Number of acres: <u>16</u> in the county of: <u>Weld</u> described as follows (insert legal description). <u>Lot A, Recorded Exemption No. 1469-16-1 RE-4223, recorded November 23, 2005 at</u> <u>reception no. 3342371, being a part of the South Half of the Northeast Quarter of</u> <u>Section 16, Township 1 North, Range 67 West of the 6th P.M., Weld County, State of Colorado</u> _____ _____ - I further claim that the right to withdraw the groundwater in the aquifer underlying the above described property has not been reserved by another, nor has consent been given to another for the right to its withdrawal.			
4. THE APPLICANT MUST PROVIDE – a Verification of Notice of Application (form no. GWS-43) (see instructions for exceptions).			
5. SIGNATURE – Sign or enter name(s) of applicant(s) or authorized agent. The making of false statements herein constitutes perjury in the second degree, which is punishable as a class 1 misdemeanor pursuant to C.R.S. 24-4-104(13)(a). I have read the statements herein, know the contents thereof, and state that they are true to my knowledge. Signature:  Date: July 28, 2020 Print name and title: Steven L. Janssen, Authorized Agent and Attorney for Sheryl A. Been			

Form No. GWS-11 08/2016	COLORADO DIVISION OF WATER RESOURCES DEPARTMENT OF NATURAL RESOURCES 1313 Sherman St., Ste 821, Denver CO 80203 (303) 866-3581 dwrpermitsonline@state.co.us	For Office Use Only RCVD DWR 08/07/2020
CHANGE IN OWNER NAME/MAILING ADDRESS		
PRIOR TO COMPLETING THIS FORM, SEE INSTRUCTIONS ON REVERSE SIDE INCOMPLETE, POOR QUALITY, OR ILLEGIBLE FORMS CANNOT BE PROCESSED AND WILL BE RETURNED		
Name, address and phone number of person claiming ownership of the well permit:		
Name(s): <u>Sheryl A. Been</u>		
Mailing Address: <u>P. O. Box 375</u>		
City, St. Zip: <u>Fort Lupton, CO 80621</u>		
Phone: (<u>303</u>) <u>902</u> - <u>9262</u> Email: <u>wereafrog@yahoo.com</u>		
Well Permit Number: <u>9930</u> Receipt Number: <u>9060225</u> Case Number (optional): _____		
WELL LOCATION: County: <u>Weld</u> Well Name or # (optional): _____		
<u>2647 County Road 19</u> Street Address at Well Location	<u>Fort Lupton</u> City	<u>CO</u> <u>80621</u> State Zip
☐ Check if well address is same as owner's mailing address		
<u>SE</u> 1/4 of the <u>NE</u> 1/4, Sec. <u>16</u> , Township <u>1.0</u> ☒ N. or ☐ S., Range <u>67.0</u> ☐ E. or ☒ W., <u>6th</u> _____ P.M.		
Distance from Section Lines: <u>1740</u> Ft. from ☒ N. or ☐ S. Line, <u>1200</u> Ft. from ☒ E. or ☐ W. Line.		
Subdivision Name (if applicable): _____, Lot _____, Block _____, Filing/Unit _____		
NOTE: If changing/correcting the permitted location of a well, use Form No. GWS-42.		
I (we) claim and say that I am (we are) the owner(s) of the well permit described above, know the contents of the statements made herein, and state that they are true to my (our) knowledge. This filing is made pursuant to C.R.S. 37-90-143.		
Signature(s) of the New Owner 	Please print the Signer's Name & Title <u>Sheryl A. Been, by Steven L. Janssen, Attorney & Authorized Agent</u>	Date <u>August 6, 2020</u>
It is the responsibility of the new owner of this well permit to complete and sign this form. If an agent is signing or entering information, please see instructions. Please allow 4 to 6 weeks for processing of this form. Thereafter, you can view or print the accepted document at: https://www.dwr.state.co.us/Tools/WellPermits		
Signature of DWR staff indicates acceptance as a Change in Owner Name and/or Mailing Address.		
For Staff Use Only		
		<u>09/14/2020</u> Date



8	9	10
17	16	15
ROAD 17	ROAD 10	ROAD 19
20	21	22
	ROAD 8	

[illegible][illegible]

JOEL B. CROWE
L.S. NO. 25937
11-22-07
DATE

PROPERTY OWNERS CERTIFICATE:
THE UNDERSIGNED, BEING THE SOLE OWNERS IN FEE OF THE ABOVE DESCRIBED PROPERTY DO HEREBY SUBDUCE THE SAME AS SHOWN ON THE ATTACHED MAP. WE UNDERSTAND THIS PROPERTY IS LOCATED IN THE "A" (AGRICULTURAL) ZONE DISTRICT AND IS ALSO INTENDED TO PROVIDE AREAS FOR THE CONDUCT OF OTHER USES BY RIGHT, ACCESSORY USES AND EASES BY SPECIAL REVENUE.

Thomas J. Koch
THOMAS J. KOCH, JR.
STATE OF COLORADO)
COUNTY OF WELD) SS.
THE FOREGOING CERTIFICATION WAS ACKNOWLEDGED BEFORE ME

THE ABOVE SIGNED _____
 MY COMMISSION EXPIRES 5/29/07

AND
Paul B. Larson
PAUL B. LARSON

THE FOREGOING CERTIFICATION WAS ACKNOWLEDGED BEFORE ME
ON 23rd DAY OF November, A.D., 2005, BY
THE ABOVE SIGNED.

NOTARY PUBLIC, WITNESS MY HAND AND SEAL.

AS PLAT IS ACCEPTED AND APPROVED BY THE DEPARTMENT OF PLANNING SERVICES FOR FLING.

STATE OF COLORADO)
COUNTY OF WELD) SS.
THE FORECLOSURE CERTIFICATE WAS ACKNOWLEDGED BEFORE ME
ON _____ A.D. 2005, BY
_____ DAY OF _____

COMMISSION EXPIRES: 7/29/08

Wendell J. Ows

WENDELL J. OWS
NOTARY PUBLIC
STATE OF COLORADO

NOTARY PUBLIC, WITNESS MY HAND AND SEAL.

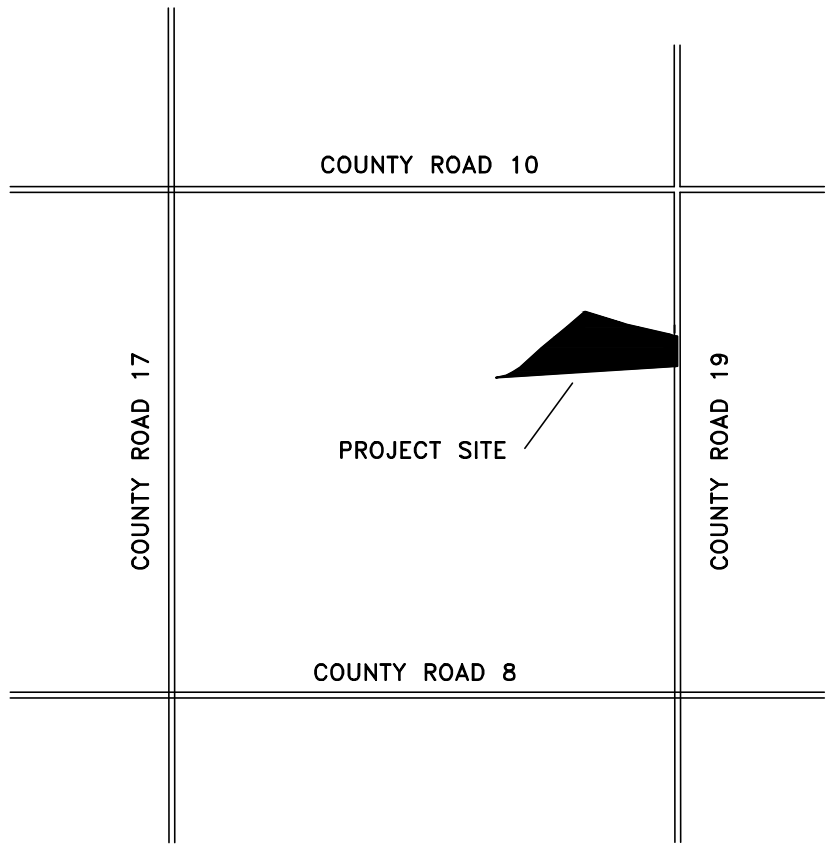
PHA SURVEYING CO.
Box 392, 1010 S. FULTON AVE., FORT LUPTON, COLORADO 80606
557-2308 OR 303-857-2010, CELL: 303-550-6666

IN7N4RE4223R.VCD		CONTACT: RANDY B./TOM (RE	
IONS	BY	DATE	DWG BY: RC/JC
VINDING LINE	JC	11-22-05	FDBK: DATA
			DATE: NOV. 19,
			FILE NO. 16-IN7N
			PG: COLL.

SHERRY BEEN PROPE
NEW WATER WELL LOCATION MAP

LOT A, RECORDED EXEMPTION NO. 1469-16-1 RE-4223
3641 WELD COUNTY ROAD 19
FT. LUPTON, CO 80621

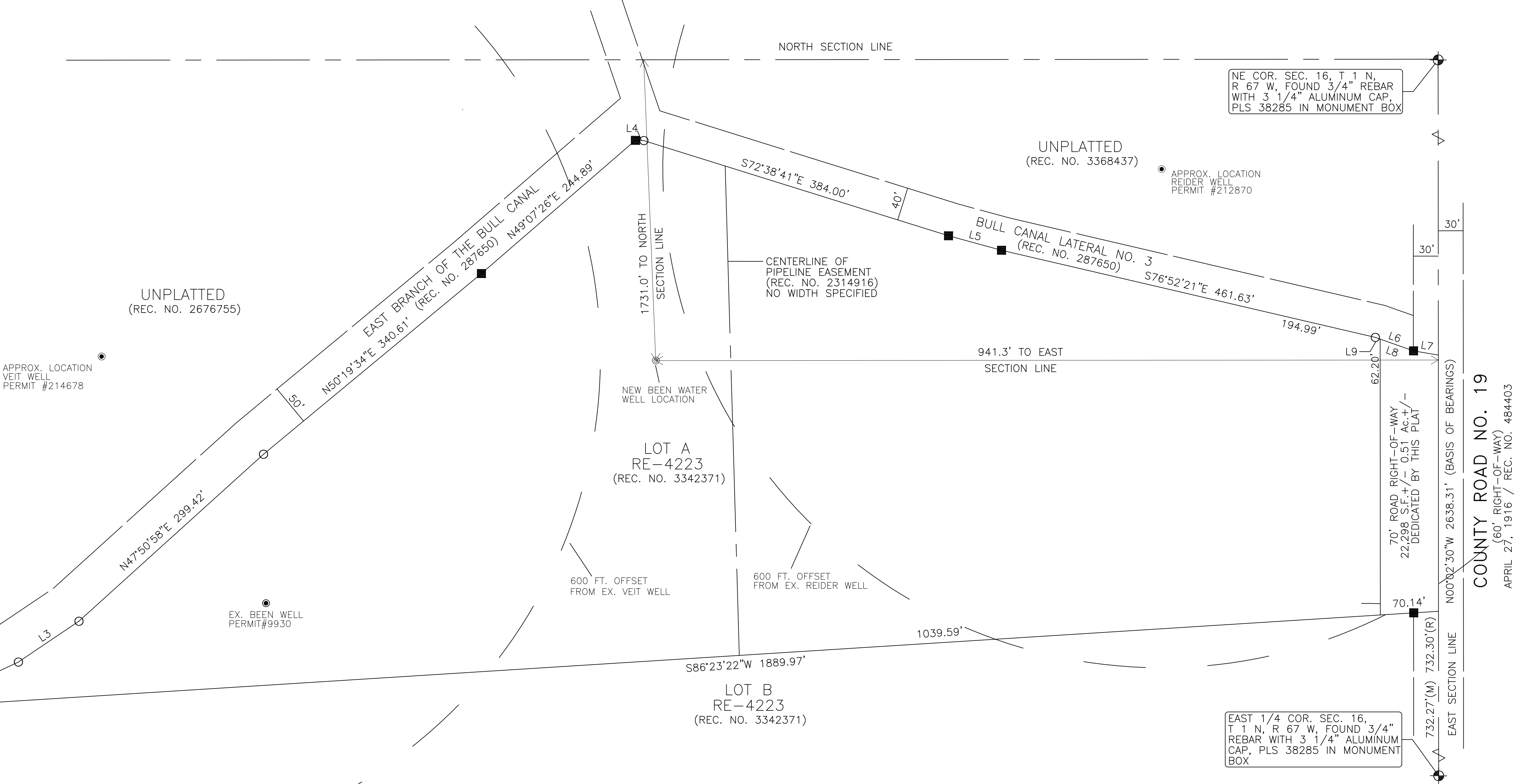
PART OF THE SOUTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 16, TOWNSHIP 1 NORTH,
RANGE 67 WEST OF THE 6TH P.M. COUNTY OF WELD, STATE OF COLORADO.



VICINITY MAP

SCALE: 1" = 2000'
(FOR 24"x36')

LINE	BEARING	DISTANCE
L1	N77°19'47"E	107.46'
L2	N64°53'14"E	80.89'
L3	N55°59'32"E	87.83'
L4	S88°13'30"E	10.12'
L5	S74°44'39"E	66.09'
L6	S70°36'14"E	48.76'
L7	S80°22'33"E	30.26'
L8	N70°36'14"W	42.60'
L9	N70°36'14"W	6.16'



LEGEND:

- ⊕ = ALIQUOT MONUMENT, AS NOTED.
- = FOUND 5/8" REBAR WITH ORANGE PLASTIC CAP, PLS 25937.
- = FOUND 5/8" REBAR.
- = EXISTING WATER WELLS
- ⊙ = NEW BEEN WATER WELL

LOCATION OF NEW WELL:

LATITUDE & LONGITUDE (DECIMAL DEGREES):
LAT: 40.055381°
LONG: -104.89416°

LATITUDE & LONGITUDE (DMS):
LAT: 40°03'19"
LONG: -104°53'39"

UMT COORDINATES (ZONE 13T):
4433909.4 NORTH
509027.5 EAST

SCALE: 1" = 60'
(FOR 24"x36')

CES CONSULTANTS, LLC 121 4th STREET, SUITE 1 FT. LUPTON, CO. 80621 PH: (970) 373-4480	BEEN PROPERTY WATER WELL LOCATION MAP LOT A - RE NO. 1469-16-1 RE-4223 3641 WELD COUNTY ROAD 19 FT. LUPTON, CO 80621	DRAWING INFO. DESIGNER: KR/CD DRAWN BY: KR/CD APPROV. BY: KR/CD SCALE: 1" = 60' DATE: 8/5/20 JOB NO.: 11-0035-001 SHEET NO.: 1 OF 1
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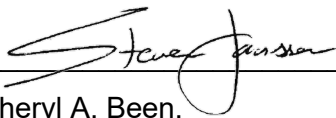
I (we) Sheryl A. Been state as follows:

1. I (we) own real property described as Lot A, Recorded Exemption No. 1469-16-1 in the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 16, Township 1N, Range 67W, 6th P.M., Weld County, Colorado. We own the right and easement to the following well:

Permit #	1/4	1/4	Sec.	Twp.	Rng.	Actual Distance from N/S Sec. Line	Actual Distance from E/W Sec. Line
<u>9930</u>	<u>SE</u>	<u>NE</u>	<u>16</u>	<u>1N</u>	<u>67</u>	<u>1740</u> ft.	<u>1200</u> ft.

2. I (we) have been apprised that Sheryl A. Been, the present owners of a parcel of land in the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 16, Township 1N, Range 67W, 6th P.M., desire to drill a new well or extend the use of an existing well. I (we) also understand that the purpose of such well is set forth in the well permit application, and that I (we) have reviewed the application that was submitted to the State Engineer and receipted by him under receipt no. _____.
3. The proposed location for the subject well will be 600 feet or less from my (our) well.
4. By this statement I (we) am (are) specifically waiving any objection to the issuance of a well permit for the subject well, as set forth in the referenced application, and would request that permit issuance not be postponed or denied because of any concerns by the Division or others that the proposed well will materially affect my (our) well or water right. I (we) am (are) also specifically waiving my (our) right I (we) may have to participate in a hearing before the State Engineer pursuant to Section 37-90-137(2), C.R.S.

Dated this 6th day of August, 2020



 Sheryl A. Been,
 by Steven L. Janssen, Attorney & Authorized Agent

WILD COUNTRY RV PARK, 29521 WCR 398 KEENESBURG, COLORADO

Usage Period	BillDate	ChargeType	Consumption
1/2/2020-2/4/2020	43865	2" Tap Water Services	365,324
2/4/2020-3/3/2020	43893	2" Tap Water Services	340,693
3/3/2020-4/1/2020	43922	2" Tap Water Services	344,024
4/1/2020-5/1/2020	43952	2" Tap Water Services	307,904
5/1/2020-6/2/2020	43984	2" Tap Water Services	220,228
6/2/2020-6/30/2020	44012	2" Tap Water Services	257,373
6/30/2020-8/3/2020	44046	2" Tap Water Services	292,410
8/3/2020-9/1/2020	44075	2" Tap Water Services	264,700
9/1/2020-10/1/2020	44105	2" Tap Water Services	246,233
10/1/2020-11/2/2020	44137	2" Tap Water Services	243,690
11/2/2020-12/1/2020	44166	2" Tap Water Services	318,131
12/1/2020-12/29/2020	44194	2" Tap Water Services	347,267
		2020 TOTAL	3,547,977

AFFIDAVIT RE: WATER USAGE

STATE OF Florida,
COUNTY OF Palm Beach) ss:

I, Sheryl A. Been, being first duly sworn upon my Oath, depose and say as follows:

1. I am the owner of Lot A of Recorded Exemption No. 1469-16-1 RE-4223, recorded November 23, 2005 at Reception No. 3342371, being a part of the Northeast Quarter of Section 16, Township 1 North, Range 67 West of the 6th P.M., County of Weld, State of Colorado, also known as: 3647 County Road 19, Fort Lupton, CO 80621.

2. I purchased the Subject Property, along with my late Mother, Marleen Rosensweig, on November 29, 2005 and I am personally familiar with Water Usage upon the Subject Property.

3. The Subject Property is comprised of 16 acres of land, one 3,400 square foot residence, an 800 square foot utility building and a 300 square foot animal shelter.

4. The Subject Property includes a tributary exempt well producing 10 gallons per minute, which well was approved by the State of Colorado, Division of Water Resources, as Well Permit #9930 on October 9, 1961 and which well has been continuously used since that date.

5. I have used Well Permit #9930 for all indoor domestic water demands, outdoor irrigation of one-half acre of lawn/garden and watering of six goats and one horse.

6. Based upon my personal knowledge of the use of Well Permit #9930, one to two acre feet of water per year have been used during my ownership of the Subject Property.

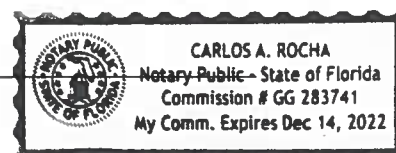
7. I also received non-tributary Well Permit #84713-F from the State of Colorado, Division of Water Resources on September 16, 2020, which well has yet to be drilled, but which well is permitted to withdraw 4.92 acre feet per year from the Laramie-Fox Hills aquifer and may be used for all domestic, livestock watering, industrial, irrigation and commercial purposes.

8. Further I sayeth naught.

Sheryl A. Been
Sheryl A. Been

SUBSCRIBED AND SWORN to before me, a Notary Public, by Sheryl A. Been this 13th day of October, 2020.

Witness my hand and official seal:





CENTRAL WELD COUNTY WATER DISTRICT

August 18, 2020

Sheryl A. Been
3647 CR 19
Fort Lupton, CO 80621

RE: Can Serve

Dear Ms. Been,

This letter is in response to a request for water service to serve the following property described as follows:

PTS2NE4 16 1 67 LOT A REC EXEMPT RE 4223 Parcel #146916100006

Water service can be made available to the above described property, located on CR 19 between CR 8 and CR 10, with a line extension and new tap purchase, provided all requirements of Central Weld County Water District, Northern Colorado Water Conservancy District, Subdistrict, and U. S. Bureau of Reclamation are satisfied. Central Weld County Water District will require that a Tap Agreement be consummated prior to the setting of a tap or this letter shall become null and void unless extended in writing by the District. Subdivisions requiring 10 or more taps will be required to purchase and transfer raw water prior to District approval. *Please note that it is your responsibility to contact Northern Colorado Water Conservancy District at 800-369-7246 for petitioning confirmation into the Northern Colorado Water Conservancy District and Subdistrict. Central Weld cannot issue a tap until all requirements are satisfied. This is in accordance with the Rules and Regulations of Northern Colorado Water Conservancy District.* A review of the District's system in this water service area must be completed prior to water taps being sold. **A water tap installation is for a specific parcel of property and a customer will not be permitted to extend a service line from one parcel or property to another parcel to provide additional water service.**

Due to the rapid cost increase of raw water, existing tap fees may not apply for water service to this property. The District will **not** notify, by separate letter, any prospective landowners or land purchasers of tap fee or line extension cost increases. The cost of a tap fee and/or line extension must be paid in advance to the District, by the prospective customer, in accordance with District policy within one (1) year from the date of this letter

It is your responsibility to confirm with your local Fire Protection Authority if fire flow water capacity is required for your project.

Sincerely,

CENTRAL WELD COUNTY WATER DISTRICT

Stan Linker, District Manager
SL/kn

Merchant: Central Weld County Water District

2235 2nd Avenue
Greeley, CO 80631
US

(970) 352-1284

Order Information

Description: Been RV Park Study

Order Number:

P.O. Number:

Customer ID: 30120

Invoice Number: 30120

Billing Information

Sheryl Been

Shipping Information

Shipping: 0.00

Tax: 0.00

Total: USD 1,550.00

Payment Information

Date/Time: 17-Aug-2020 08:08:41 MDT

Transaction ID: 42177890006

Transaction Type: Authorization w/ Auto Capture

Transaction Status: Captured/Pending Settlement

Authorization Code: 16053Z

Payment Method: MasterCard XXXX2446

March 8, 2021

Western Engineering Consultants Inc., LLC
127 South Denver Avenue
Fort Lupton, Colorado 80621

Attn: Mr. Chadwin Cox (chadwin.cox@westerneci.com)

Re: OWTS Test Pit Observation Results and OWTS Schematic
Proposed Been RV Park
3647 Weld County Road 19
Weld County, Colorado
EEC Project No. 20-01-185

Mr. Cox:

As requested, Earth Engineering Company, Inc. (EEC) personnel completed the test pit observations at 3647 Weld County Road 19 for the above referenced project. To complete the site observations, EEC personnel observed two (2) excavated soil profile test pits to a depth of approximately 8 feet below present site grades at each of the four (4) proposed On-site Wastewater Treatment System (OWTS) sites to serve the proposed RV park. The logs of the 8 feet deep test pits are included with this report.

The referenced parcel is located at 3647 Weld County Road 19 in an area west of Fort Lupton in Weld County, Colorado. According to the information made available to EEC, there are no utilities or easements in conflict with the presented locations of the system components.

The purpose of this letter is to provide the results of the test pits observations completed at the site and to provide general OWTS sizing calculations and a schematic layout of the proposed OWTS systems to service the proposed RV park.

Test Pit Observations

Two (2) 8-feet deep test pits were completed in the identified area of each of the proposed on-site wastewater treatment systems. The materials encountered in the profile test pits at the OWTS sites generally consisted of brown sandy clay soils (Soil Type 4) underlain by brown sandy clay soils (Soil Type 4A) at a depth of approximately 2 to 3 feet below present site grades. The sandy clay soils (Soil Type 4A) were underlain by grey/tan and rust

sandstone/claystone and grey/rust claystone bedrock (Soil Type 5) at a depth of approximately 6 to 7½ feet below present site grades which extended to the bottom of the test pits at a depth of approximately 8 feet below present site grades. Groundwater was not observed in the test pits at the time of our observations.

Based upon the visual soil classification, the near surface site soils classify as sandy clay (Soil Type 4A) which corresponds to a percolation rate of 91 to 120 minutes per inch. Soil Type 4A classification could be used in the design along with a percolation rate of 91 to 120 minutes per inch. Weld County guidelines also require that neither groundwater nor bedrock be encountered within 4 feet of the base of the infiltrative at the location of an absorption field. The test pits completed indicates the near surface site soils do meet the separation from bedrock and groundwater criteria provided the base of the absorption beds are placed no deeper than 2 feet below present site grades. Based on the results as outlined above, it appears engineered septic absorption systems would be required for the RV park. When constructing the absorption fields, Weld County criteria concerning proximity to property lines, drainage ways and other site features should be addressed.

Wastewater Strength

We expect the wastewater disposed through the OWTS for this RV site will be within the range of properties for strong residential applications as shown in the following table:

Table 8: Typical Composition of Untreated Domestic Wastewater

Composition	Units	Concentration		
		Weak	Average	Strong
Total Suspended Solids	Mg/L	100	220	350
BOD ₅ at 20°C	Mg/L	110	220	400
Nitrogen (total as N)	Mg/L	20	40	85
Phosphorus (total as P)	Mg/L	4	8	15
Fats, Oil & Grease (FOG)	Mg/L	50	100	150
Total Coliform	Mg/L	10 ⁶ -10 ⁷	10 ⁷ -10 ⁸	10 ⁸ -10 ⁹

Source: Table 8, Typical Composition of Untreated Domestic Wastewater from Wastewater Engineering, Treatment, Disposal and Reuse, Metcalf & Eddy, 1991

Assumptions

It is our understanding the RV Park will accommodate a total of 90 RV sites with full hookups which will be served by the proposed OWTS systems. Based on water use records for similar sites in eastern Colorado, a design flow rate of 50 gallons per RV stall per day is assumed. The total design flow for the site is therefore 4,500 gallons per day; however, the design flow will be divided between four (4) separate OWTS. This will result in design flows of 1,500 gpd for two of the systems and 1,000 gpd for one of the systems and 500 gpd for the final system.

A Long Term Absorption Rate (LTAR) of 0.15 gpd/ft² was determined from Table 30-10-1 utilizing the Soil Type 4A classification. Size calculation summaries for all four (4) proposed OWTS to serve the RV park are provided below in the summary table. The calculations include size adjustment factors for pressure dosed bed systems (1.0) and use of chambers (0.7), yielding the below outlined design areas. In addition, the equivalent area for Quick4 Infiltrators of 12 ft² per chamber for a bed system was applied for each system.

<i>OWTS Designation</i>	<i>Design Flow Rate (gpd)</i>	<i>LTAR</i>	<i>Size Adjustment Factors</i>	<i>Required Area</i>	<i>Min. Number of Quick4 Infiltrators</i>	<i>Number of Q4 Chambers in design</i>
<i>North</i>	1,500	0.15	1.0 & 0.7	7,000ft ²	584	600
<i>Northeast</i>	500	0.15	1.0 & 0.7	2,333ft ²	195	200
<i>Southeast</i>	1,000	0.15	1.0 & 0.7	4,667ft ²	389	400
<i>Southwest</i>	1,500	0.15	1.0 & 0.7	7,000ft ²	584	600

The prepared design schematic includes the outlined number of chambers with each system broken up into separate beds of 100 chambers per bed, as shown on the attached exhibit.

System Component Specifications

Due to the 'strong' wastewater strength as expected from the RV hookups, each of the four (4) separate systems is intended to utilize its own pre-treatment system. The pre-treatment systems should consist of Orenco AdvanTex AX100 pre-treatment systems in order to

bring the effluent to TL2 or better prior to discharge into each absorption bed system. Each Orenco AdvanTex AX100 system shall be sized with the recommended number of treatment pods corresponding to each system's design flow rate. We expect a single Orenco AdvanTex AX100 pod would be sufficient for each system. In addition, each system is intended to be constructed with sufficient septic tank capacity to provide at least 48 hours of septic tank effluent detention prior to discharge into the absorption fields. The septic tanks shall comply with the structural design criteria of ASTM C1227-12 (Standard Specification for Precast Septic Tanks). 30" risers may be needed to facilitate required bury depth based on pipe elevations. Shop drawings and specifications should be furnished by the installer once a tank supplier is selected. Groundwater was not observed in the test pits at the site, therefore anchoring of the septic tanks does not appear necessary.

Installation Procedures

It appears the system could be installed using conventional excavation equipment (i.e. rubber tire backhoe or track hoe). All system components shall be installed using current state-of-practice technology by a licensed installer approved by the Weld County Department of Health and Environment.

GENERAL COMMENTS

The analysis and recommendations presented in this report are based upon the data obtained from the soil test pits performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations which may occur across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observations during earthwork and foundation construction phases to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of Western Engineering Consultants, Inc., LLC for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the geotechnical engineer.

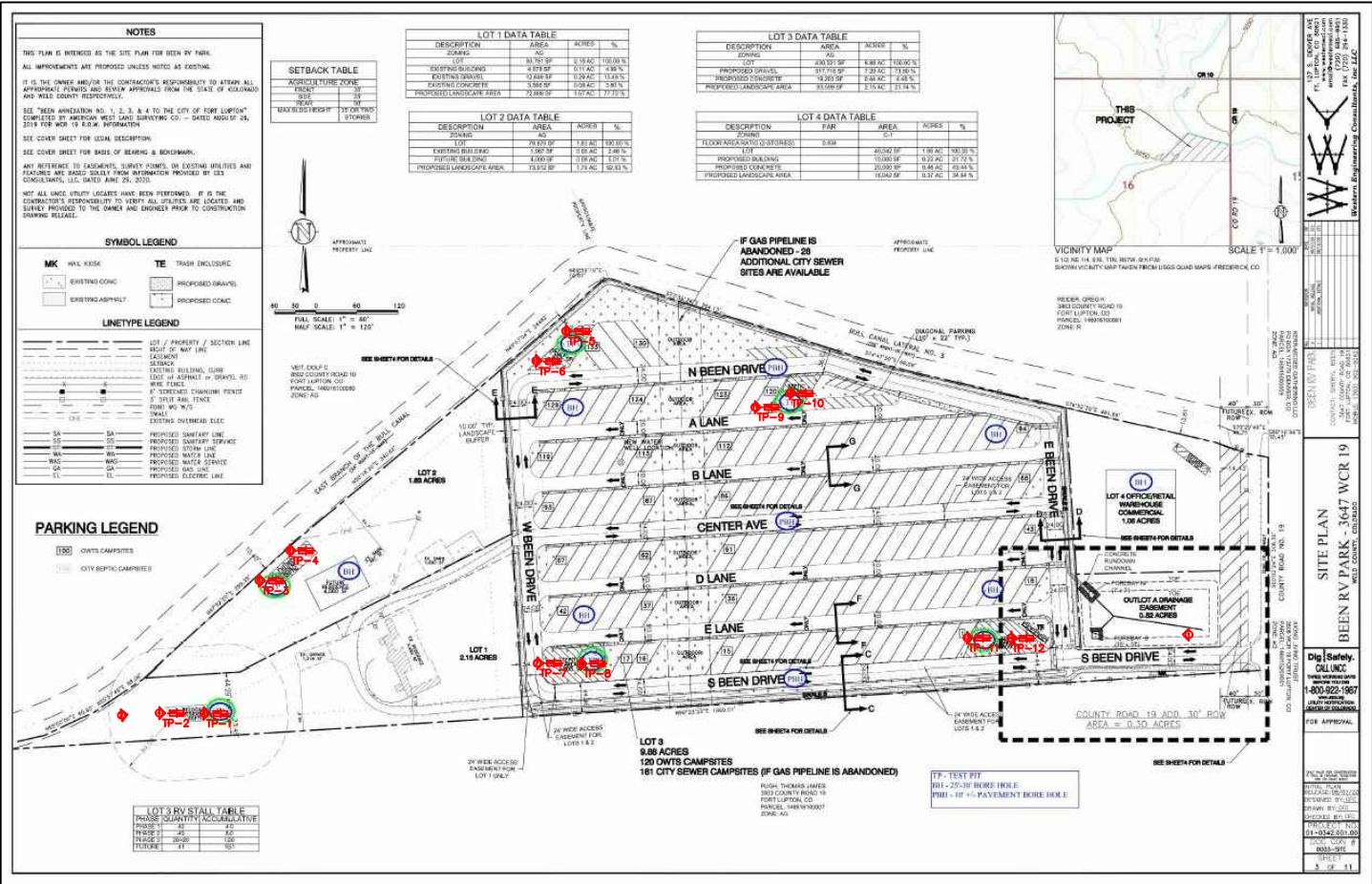
We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,
Earth Engineering Company, Inc.



Michael J. Coley, P.E.
Principal Engineer

N
Not To Scale



TEST PIT LOCATION DIAGRAM
3647 WELD COUNTY ROAD 19
WELD COUNTY, COLORADO
PROJECT NUMBER: 20-01-185 DATE: NOVEMBER 2020



3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020





3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



PHOTO # 5



PHOTO # 6

3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



PHOTO # 9



PHOTO # 10

3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



PHOTO # 11



PHOTO # 12

3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO													
PROJECT NO: 20-01-185			LOG OF TEST PIT #1 (LEACHFIELD SITE #1)				DATE: NOVEMBER 2020						
RIG TYPE: BACKHOE			SHEET 1 OF 1				WATER DEPTH						
FOREMAN: SM			START DATE		11/12/2020		WHILE EXCAVATING		NONE				
AUGER TYPE: N/A			FINISH DATE		11/12/2020		AFTER EXCAVATING		NONE				
SPT HAMMER: N/A			SURFACE ELEV		N/A		24 HOUR		N/A				
SOIL DESCRIPTION		TYPE	D (FEET)	DC (BLOWS/.5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL		
								LL	PI		PRESSURE	% @ 500 PSF	
6" TOPSOIL AND VEGETATION			--										
			1										
SANDY CLAY (SOIL TYPE 4) brown moderate strong		BS	--										
			2	--	--	9.9		36	22	88.8			
			3										
SANDY CLAY (SOIL TYPE 4A) brown structureless grey/brown/rust		BS	--										
			4	--	--	21.5							
			5										
			6										
SANDSTONE/CLAYSTONE (SOIL TYPE 5) grey/tan/rust platy		BS	--	--	11.8								
8' BOTTOM OF TEST PIT			7										
			8										
			--										
			9										
			--										
			10										
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Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #2 (LEACHFIELD SITE #1)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown										
structureless										
					5					
grey/brown/rust					6					
SANDSTONE/CLAYSTONE (SOIL TYPE 5)					7					
grey/tan/rust										
platy										
					8					
					9					
					10					
					11					
					12					
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					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #3 (LEACHFIELD SITE #2)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown to grey/brown/rust										
structureless										
					5					
SANDSTONE/CLAYSTONE (SOIL TYPE 5)					6					
grey/tan/rust										
platy										
with cemented sandstone lense @ 5' to 5.5'										
					7					
					8					
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Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #4 (LEACHFIELD SITE #2)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown to grey/brown/rust										
structureless										
					5					
					6					
SANDSTONE/CLAYSTONE (SOIL TYPE 5)					7					
grey/tan/rust										
platy										
with cemented sandstone lenses										
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #5 (LEACHFIELD SITE #3)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D	DC	QU	MC	DD	
					(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown										
structureless										
					5					
CLAYSTONE (SOIL TYPE 5)					6					
grey/rust										
platy										
					7					
8' BOTTOM OF TEST PIT					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #6 (LEACHFIELD SITE #3)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			SWELL		
					LL			PI		
					-200			PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D	DC	QU	MC	DD	
SANDY CLAY (SOIL TYPE 4)					(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	
brown					1					
moderate strong					2					
BS					--	--		20.4		
SANDY CLAY (SOIL TYPE 4A)					3					
brown					4					
structureless					5					
BS					--	--		20.9		
grey/brown/rust					6					
CLAYSTONE (SOIL TYPE 5)					7					
grey/rust					8					
platy					9					
8' BOTTOM OF TEST PIT					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #7 (LEACHFIELD SITE #4)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
					4					
SANDY CLAY (SOIL TYPE 4A)										
brown										
structureless										
					5					
grey/brown/rust					6					
CLAYSTONE (SOIL TYPE 5)										
grey/brown/rust										
platy										
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #8 (LEACHFIELD SITE #4)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D	DC	QU	MC	DD	
					(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong						--	--	11.1		
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown						--	--	17.4		
structureless					5					
grey/brown/rust					6					
CLAYSTONE (SOIL TYPE 5)					7	--	--	22.8		
grey/brown/rust					8					
platy					9					
8' BOTTOM OF TEST PIT					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #9 (LEACHFIELD SITE #5)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
TYPE	D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
						LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION	--									
	1									
	--									
SANDY CLAY (SOIL TYPE 4) brown moderate strong	2									
	BS	--	--	10.6						
	3									
SANDY CLAY (SOIL TYPE 4A) brown to brown/light brown structureless	--									
	4									
	BS	--	--	12.6		390	27	84.6		
SANDSTONE/CLAYSTONE (SOIL TYPE 5) grey/tan/rust platy	5									
	--									
	6									
8' BOTTOM OF TEST PIT	BS	--	--	7.5						
	7									
	--									
	8									
	--									
	9									
	--									
	10									
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	24									
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	25									

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #10 (LEACHFIELD SITE #5)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION								WATER DEPTH		
TYPE	D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
						LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION	--									
	1									
	--									
SANDY CLAY (SOIL TYPE 4) brown moderate strong	2									
	BS	--	--	11.2						
	3									
SANDY CLAY (SOIL TYPE 4A) brown structureless	4									
	BS	--	--	15.3						
	5									
	--									
	6									
	BS	--	--	14.0						
SANDSTONE/CLAYSTONE (SOIL TYPE 5)	7									
	--									
	8									
8' BOTTOM OF TEST PIT	9									
	--									
	10									
	--									
	11									
	--									
	12									
	--									
	13									
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	24									
	--									
	25									

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #11 (LEACHFIELD SITE #6)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown										
structureless										
calcareous deposits										
grey/brown/rust										
					5					
CLAYSTONE (SOIL TYPE 5)					6					
grey/brown/rust										
platy										
					7					
					8					
8' BOTTOM OF TEST PIT					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

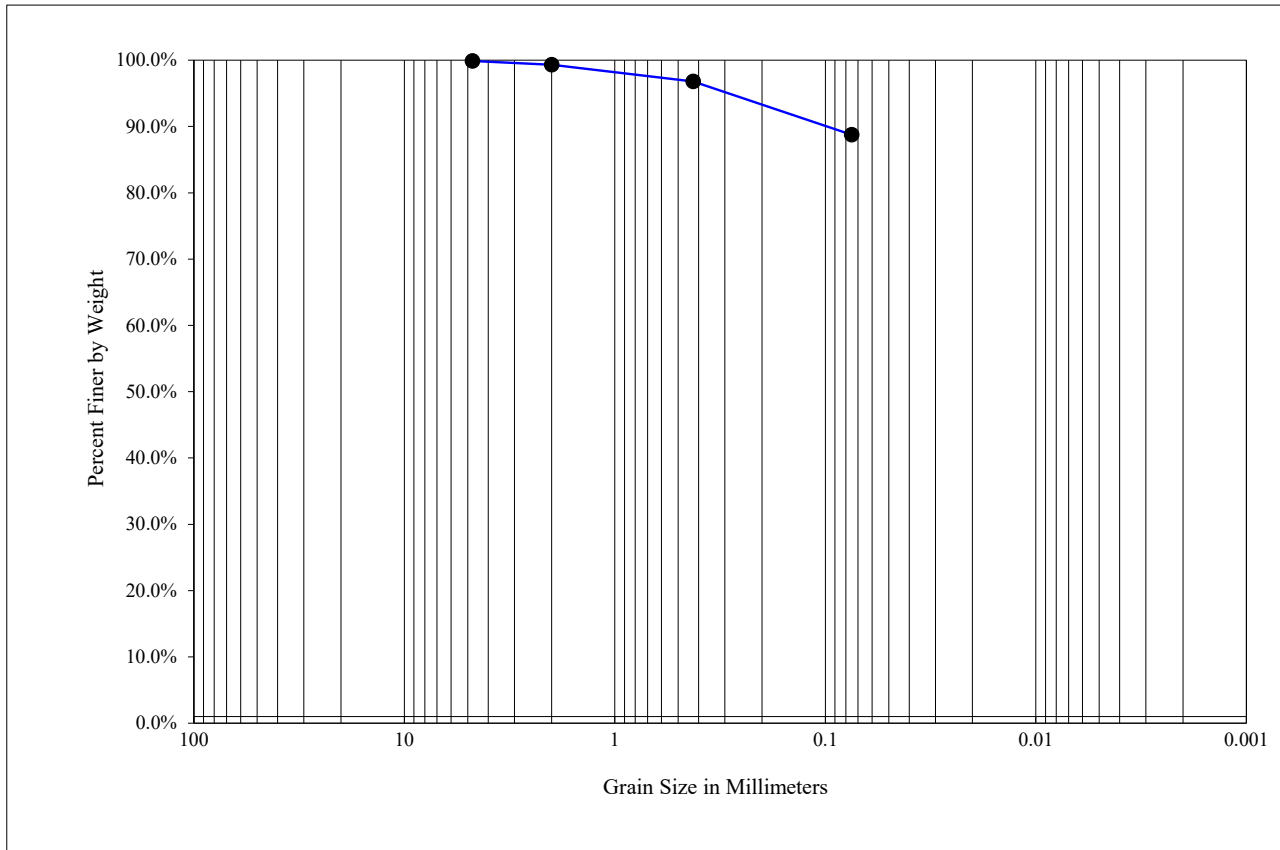
Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #12 (LEACHFIELD SITE #6)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
						--	--	10.3		
SANDY CLAY (SOIL TYPE 4A)					4					
brown						--	--	15.3		
structureless					5					
calcareous deposits										
grey/brown/rust					6					
CLAYSTONE (SOIL TYPE 5)					7					
grey/brown/rust						--	--	20.3		
platy					8					
8' BOTTOM OF TEST PIT					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	99%
No. 40	97%
No. 200	89%

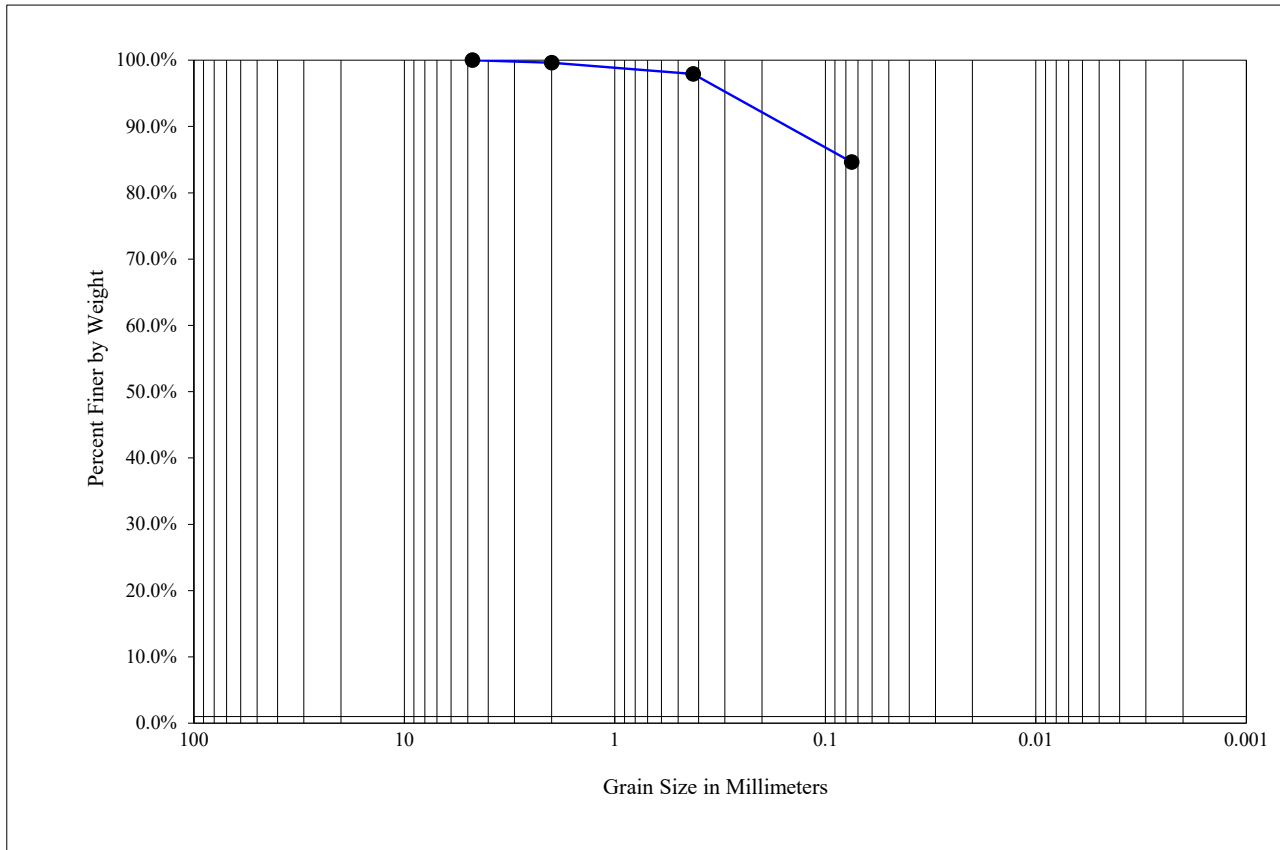
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-1, S-1 @ 2'
Description: Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	98%
No. 200	85%

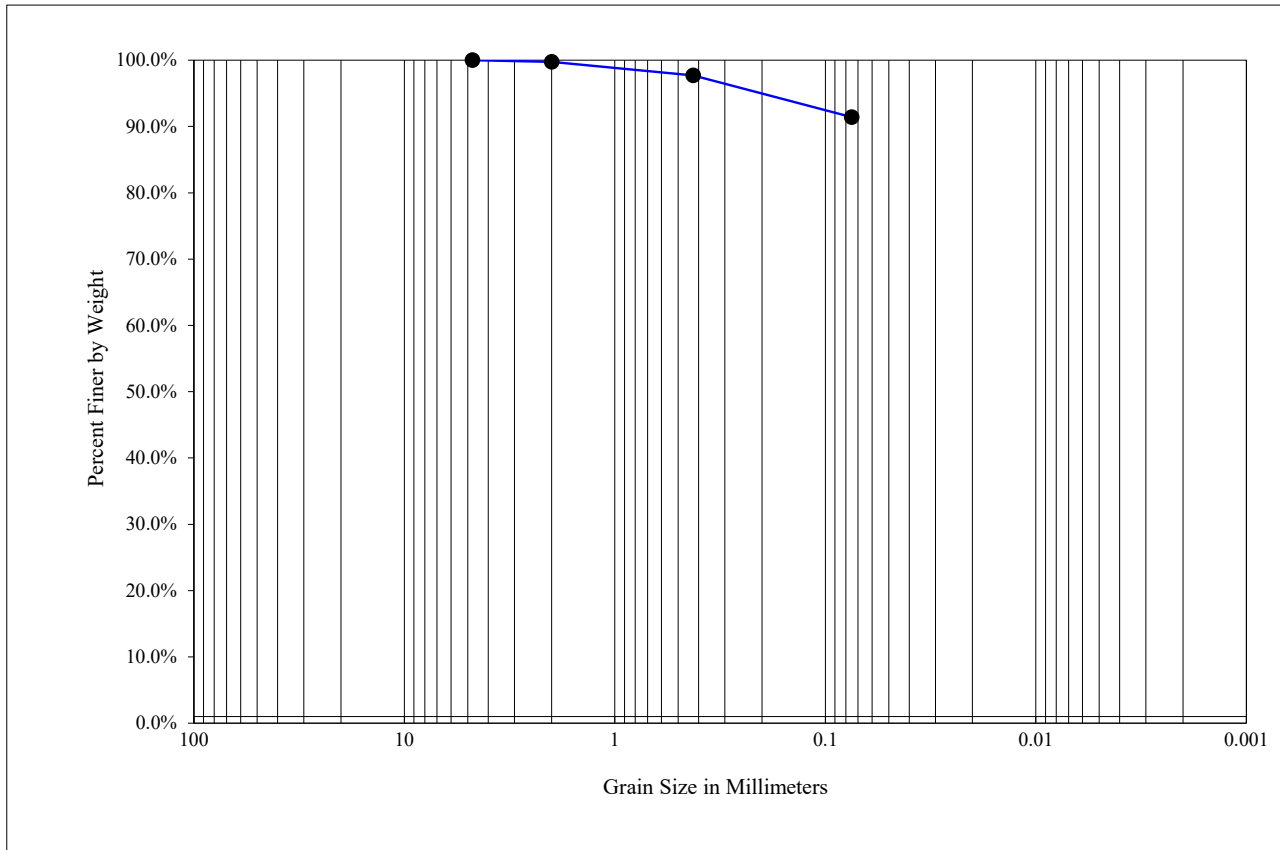
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-3, S-2 @ 4'
Description: Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	98%
No. 200	91%

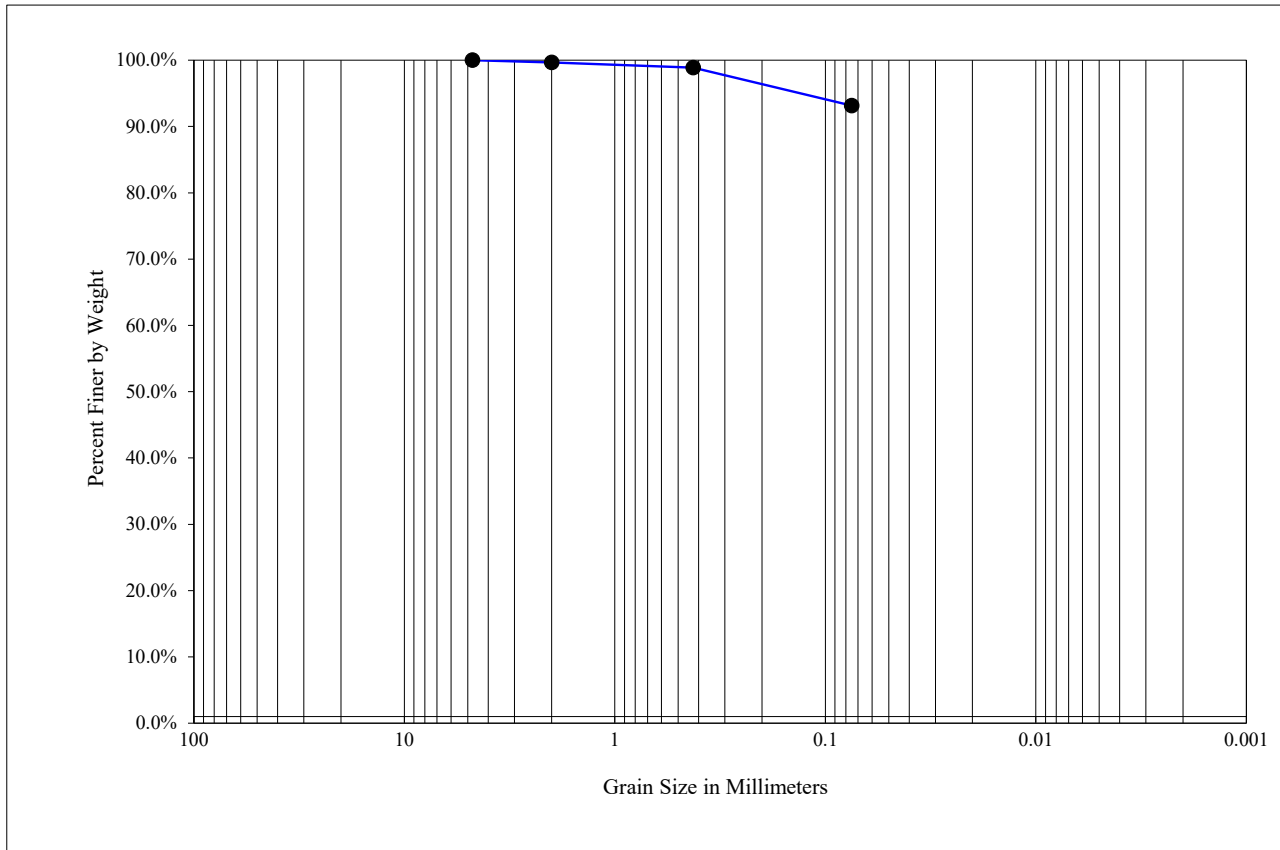
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-5, S-1 @ 2'
Description: Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	99%
No. 200	93%

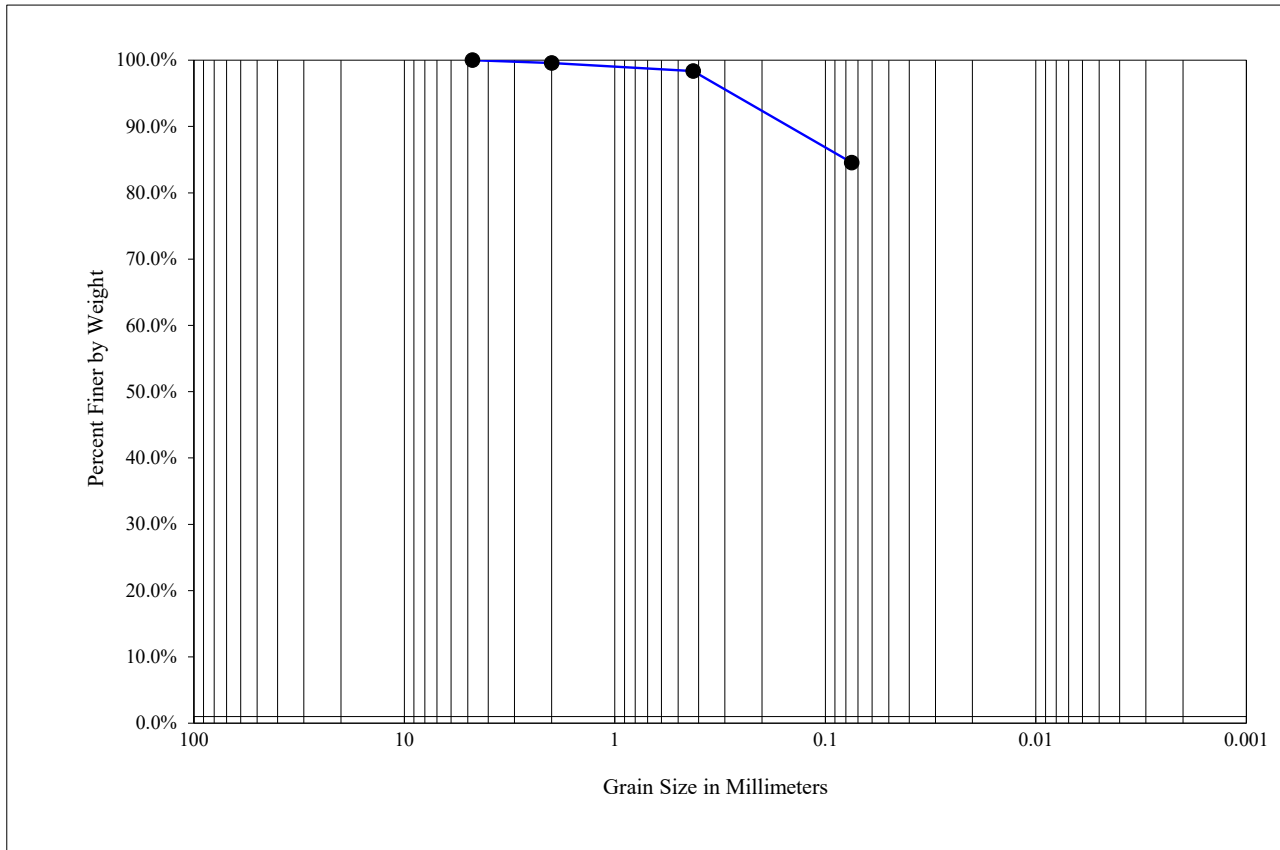
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-7, S-3 @ 6'
Description: Grey/Brown/Rust Claystone



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	98%
No. 200	85%

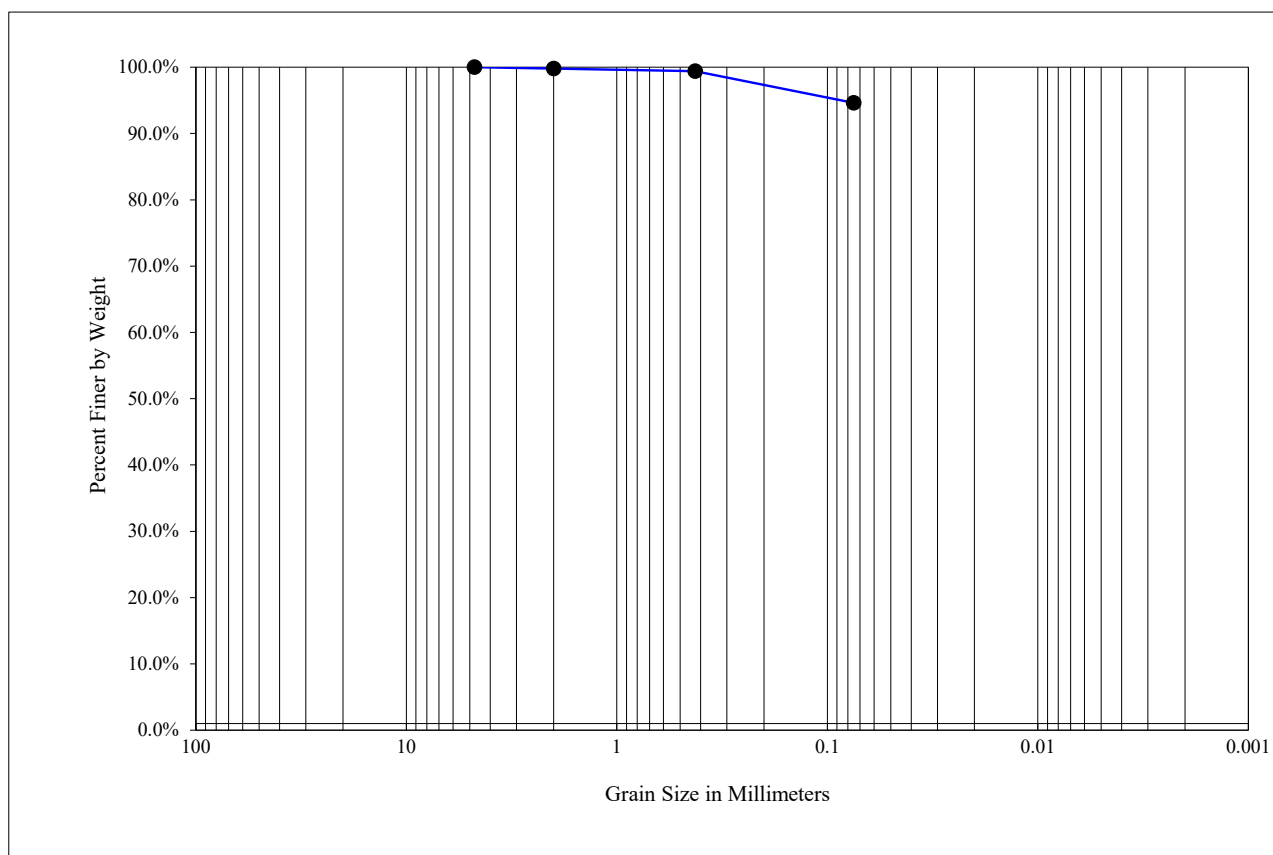
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-9, S-2 @ 4'
Description: Brown/Light Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	99%
No. 200	95%

Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-11, S-1 @ 2'
Description: Brown Sandy Clay



[illegible]

North
NTS

Page 182 of 435



CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 8th day of June, 2021, a true and correct copy of the foregoing Notice of Public Hearings and project maps for the Been Minor Subdivision & Special Use Permit was sent via U.S. Mail, postage pre-paid, to the following addresses:

ATTN: APC PROPERTY TAX
KERR MC-GEE GATHERING LLC
PO BOX 173779
DENVER, CO 80217

VEGA HECTOR MARIO MADRID
3506 COUNTY ROAD 19
FORT LUPTON, CO 80621

TBR RANCH LLC
3474 HANCOCK LN
CHEYENNE, WY 82007

MELESINA PUGH
THOMAS JAMES PUGH
3503 COUNTY ROAD 19
FORT LUPTON, CO 80621

JOLENE P JOHNS
HLII JOHNS
8690 COUNTRY ROAD 10
FORT LUPTON, CO 80621

SUSAN A VEIT
DOLF C VEIT
8502 COUNTY ROAD 10
FORT LUPTON, CO 80621

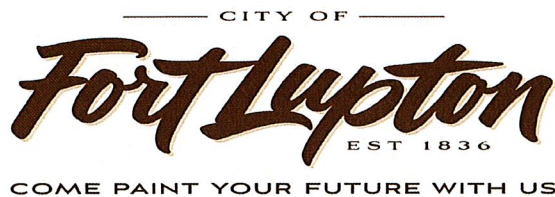
GREG K REIDER
3863 COUNTY ROAD 10
FORT LUPTON, CO 80621

ATTN: DJ SURFACE LAND DEPT.
CRESTONE PEAK RESOURCES HOLDINGS LLC
1801 CALIFORNIA ST
STE 2500
DENVER, CO 80202

ATTN: WATTENBERG LAND DEPT.
NOBLE ENERGY INC
1625 BROADWAY ST
STE 2000
DENVER, CO 80202



City Official



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortluptonco.gov

CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application submitted by Sheryl Been for a minor subdivision and special use permit for proposed RV park at a property located west and adjacent to County Road 19 and approximately 0.29 miles south from County Road 10 in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on Thursday, June 24, 2021, at 6:00 P.M., and before the City Council on Tuesday, July 20, 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that the City Hall remains closed at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

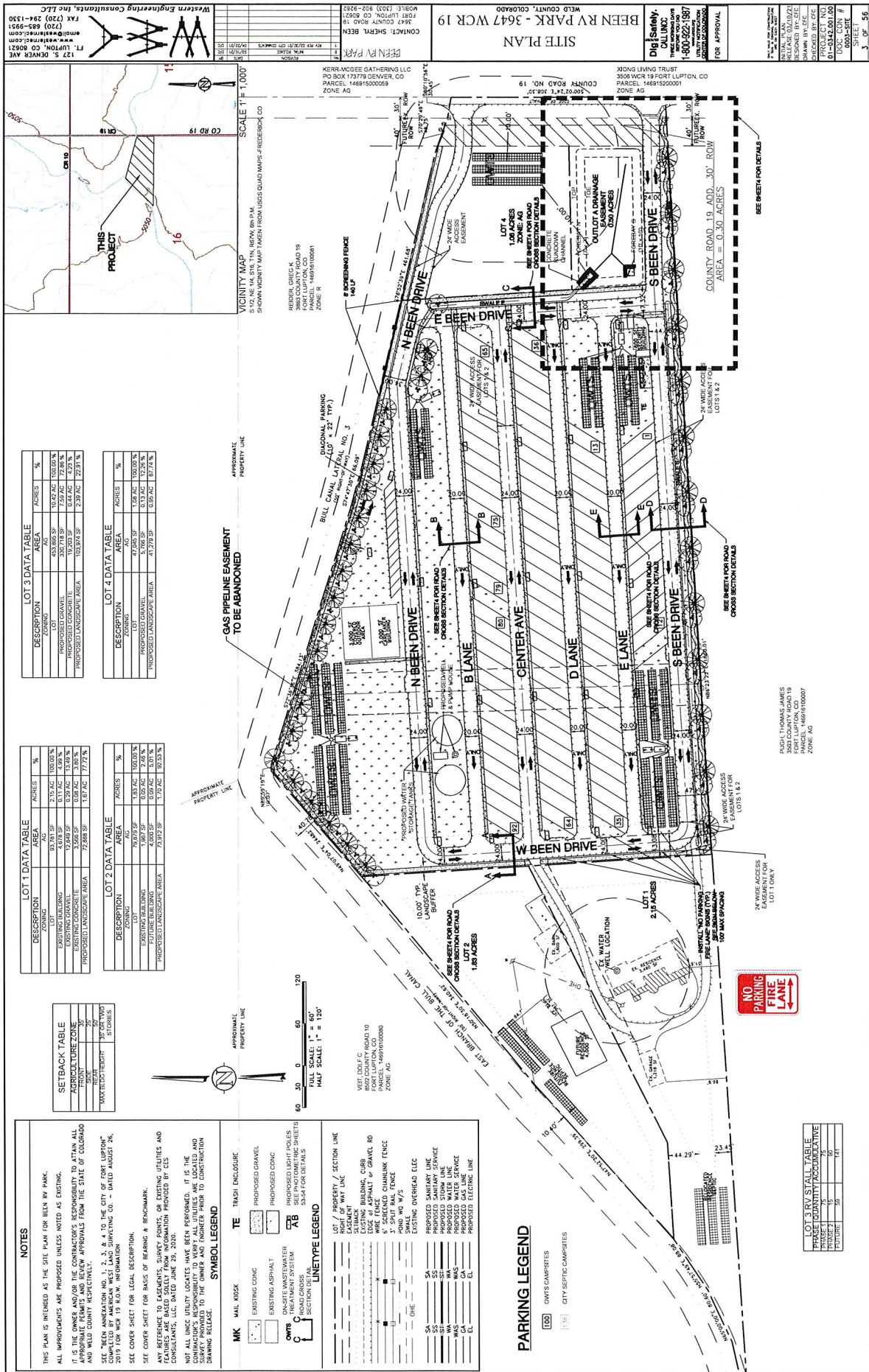
ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: BEEN MINOR SUBDIVISION & SPECIAL USE PERMIT

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

LOT A OF RECORDED EXEMPTION NO. 1469-16-1 RE-4223, ACCORDING TO THE MAP RECORDED NOVEMBER 23, 2005 AT RECEPTION NO. 3342371, BEING A PART OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 687,638 SQUARE FEET OR 15.786 ACRES MORE OR LESS



Colorado Community Media
750 W. Hampden Ave. Suite 225
Englewood, CO 80110

City of Ft Lupton Legals(mw)
130 S McKinley Avenue
Fort Lupton CO 80621

Description: FLP222319 Pub Hear Proposed RV Park

AFFIDAVIT OF PUBLICATION

State of Colorado }
County of Weld } ss

This Affidavit of Publication for the Fort Lupton Press, a weekly newspaper, printed and published for the County of Weld, State of Colorado, hereby certifies that the attached legal notice was published in said newspaper once in each week, for 1 successive week(s), the last of which publication was made 6/9/2021, and that copies of each number of said paper in which said Public Notice was published were delivered by carriers or transmitted by mail to each of the subscribers of said paper, according to their accustomed mode of business in this office.



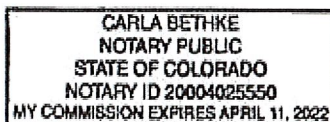
For the Fort Lupton Press

State of Colorado }
County of Weld } ss

The above Affidavit and Certificate of Publication was subscribed and sworn to before by the above named Gerard Healey, publisher of said newspaper, who is personally known to me to be the identical person in the above certificate on 6/9/2021. Gerard Healey has verified to me that he has adopted an electronic signature to function as his signature on this document.

20004025550-000871

Carla Bethke
Notary Public
My commission ends April 11, 2022



CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application submitted by Sheryl Been for a minor subdivision and special use permit for proposed RV park at a property located west and adjacent to County Road 19 and approximately 0.29 miles south from County Road 10 in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on Thursday, June 24, 2021, at 6:00 P.M., and before the City Council on Tuesday, July 20, 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held in the City Hall, 130 South McKinley Avenue, Fort Lupton, Colorado, or at such other time or place in the event this hearing is adjourned. In the event that City Hall is closed to the public at the time of the hearings due to COVID-19, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning & Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND

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SAID PARCEL CONTAINS 687,638 SQUARE FEET OR 15.786 ACRES MORE OR LESS

Legal Ad No.: FLP222319
First Publication: June 9, 2021
Last Publication: June 9, 2021
Published In: Fort Lupton Press

Fort Lupton

EST 18 Planning & Building

COME PAINT YOUR FUTURE WITH US

130 S. McKinley Avenue
Fort Lupton, CO 80621

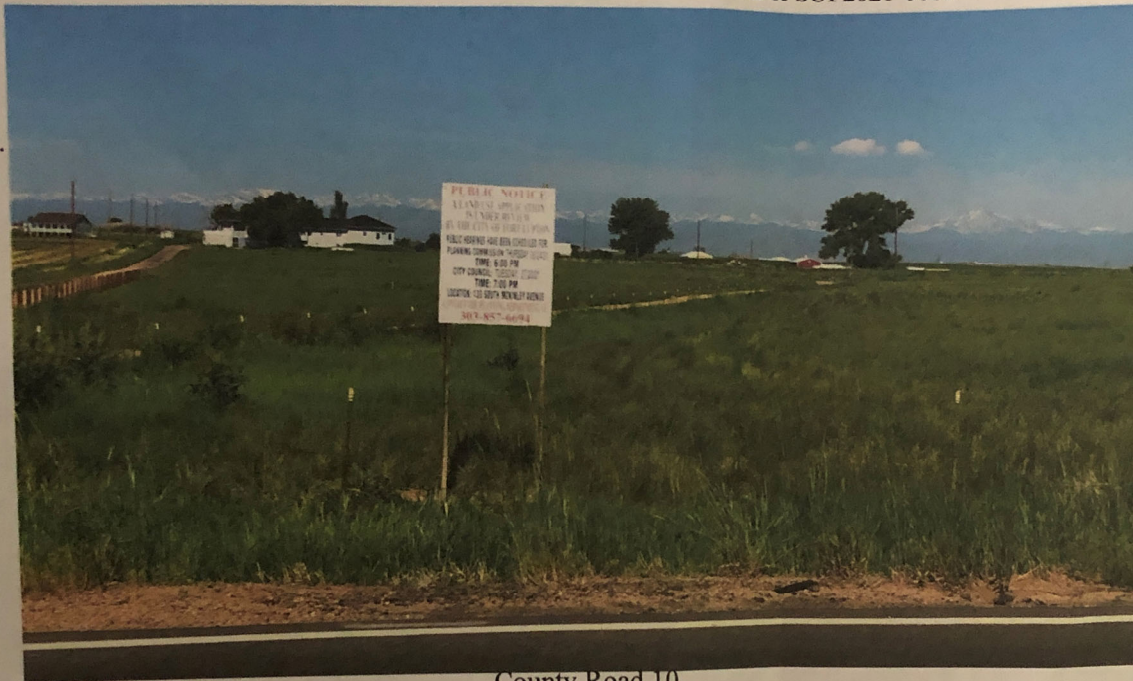
www.fortluptonco.gov

Phone: 303.857.6694
Fax: 303.857.0351

Sign Posting Affidavit

Been Minor Subdivision & Special Use Permit

Project No. LUP2021-0013 / Plan No. MSD2021-0002 & SUP2021-0002



County Road 10

I, Sheryl Ann Been
aforementioned property was
City Codes. Said public hearing
8th day of
June, 2021.

Sheryl Ann Been
Signature of Owner or Owner's

hereby acknowledge that the
posted in accordance with
notice was posted on this

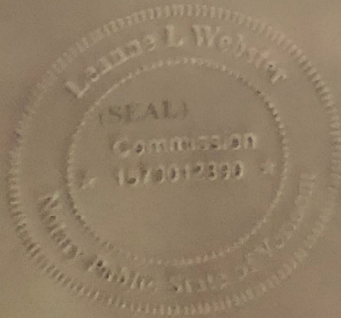
Representative

The foregoing instrument was acknowledged before me by Sheryl Ann Been, this 8th
day of June, 2021. Witness my hand and seal.

My commission expires 1/31/2023

Leanne L Webster
Notary Public

Leanne L Webster
Notary Public • State of Vermont
My Commission Expires 1/31/2023



Magaly Morales-Tejada

From: Jonathan Gesick
Sent: Thursday, May 20, 2021 4:11 PM
To: Magaly Morales-Tejada
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)
Attachments: Minimum submittal requirements commercial-industrial.pdf

Hi Magaly.

Please see the attached minimal submittal requirements for the construction of the new proposed structures that can be passed on to the applicant.

Thank you.

Jonathan Gesick

Certified Building Official

(970) 305-3161

www.procodeinc.net



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From: Magaly Morales-Tejada
Sent: Thursday, May 20, 2021 3:00 PM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for a minor subdivision and special use permit being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link:

<https://www.fortluptonco.gov/DocumentCenter/Index/595>

Any comments you consider relevant to this request would be appreciated. Please reply by **June 10, 2021** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 20, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada

Planning assistant

130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111



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MINIMUM STANDARDS FOR CODE

SUBMISSIONS

Construction documents for most projects consist of drawings, specifications and appropriate calculations. All elements shall complement each other. Completeness and coordination of all necessary information are the responsibility of the registered architect or professional engineer. Construction documents submitted to the building official must be of sufficient nature to clearly show the project in its entirety with emphasis on the following:

1. Life safety
2. Means of egress
3. Barrier free accessibility
4. Structural integrity
5. Building code compliance
6. Definition of scope of work

The required construction documents will depend upon the size, nature and complexity of the project. The following is a suggested standard of the minimum required construction documents for review by building officials.

Cover Sheet

1. Project identification
2. Project address and a location map
3. All licensed architects and engineers identified
4. The licensed architect or engineer in responsible control (the professional responsible for project co-ordination) shall be identified. All communications should be directed through this individual.
5. Design Criteria list:
 - I. Occupancy group
 - II. Type Construction classification
 - III. Location of property



- IV. Seismic risk
- V. Design loads
- VI. Structural systems
- VII. Square Footage/Allowable floor area
- VIII. Fire sprinkler systems
- IX. Height and number of stories
- X. Occupant load
- XI. Land use zone

Site Plan

Show proposed new building or structure and any existing buildings or structures, all property lines with dimensions, all streets, easements and setbacks. Show all water, sewer, communication services, natural gas, telephone, and cable TV. Electrical points of connection, proposed utility service routes and existing utilities on the site. Show all required parking, drainage and grading information. Indicate drainage inflow and outflow locations and specify areas required to be maintained for drainage purposes. A topographical survey should be provided with a benchmark elevation. Show north arrow. Show dimensions for the location and size of components delineated on the site plan.

Geotechnical Report

Provide a geotechnical report for the proposed structure at that site.

Exterior Elevations

Show each view. Show vertical dimensions and heights. Show openings and identify materials and show lateral bracing system, where applicable. Show dimensions and schedules.

Foundation Plan

Show all foundations and footings. Indicate size, locations, thickness, materials and strengths, and reinforcing. Show all imbedded anchoring such as anchor bolts, hold-downs, post bases, etc. Show dimensions for the location and size of all components delineated on the foundation plan.



Floor Plans

Show all floors including basements. Show all rooms, with their use, overall dimensions and locations of all structural elements and openings. Show all doors and windows. Provide door and window schedules. All fire resistance rated assemblies, areas of refuge, occupancy separations, fire blocking and draft stopping shall be shown. Show dimensions for the size of all rooms and the locations of other components delineated on the floor plans.

Framing Plans and Roof Framing Plans

Show all structural members, their size, methods and details of attachment, connections, location and materials for floors and roofs. Show roof plan. Show dimensions for the location and size of all components delineated on the roof plan.

Schedules

Room finishes, doors, hardware, windows, plumbing, mechanical, electrical and structural.

Addenda and Changes

It shall be the responsibility of the individual identified on the cover sheet as the licensed architect or engineer in responsible control to notify the building official of any and all changes throughout the project and provide revised construction documents, calculations or other appropriate documentation prior to commencement of that portion of the construction.

Revisions

The party submitting changes shall be identified at the beginning of the approval process. For clarity, all re-visions should be identified and clouded on the construction drawings and appropriately marked in the project manual or resubmitted as a new set of construction documents.

Completeness of Documents

Construction Documents for most projects consist of drawings, specifications and appropriate calculations. All elements shall complement each other. Completeness and coordination of all necessary information is the responsibility of the registered design professional(s).



Building Sections Wall Sections

Show materials of construction, non-rated and fire resistance rated assemblies, and fire resistance rated penetrations. Show dimensions.

Mechanical System

Show the mechanical system. Include all units, their sizes, mounting details, all ductwork and duct sizes. Indicate all fire dampers where required. Provide equipment schedules. Submit energy conservation calculations. Show dimensions.

Plumbing System

Show all fixtures, piping, slopes, materials and sizes. Show point of connections to utilities, septic tanks, pre-treatment sewer systems and water wells. Show dimensions.

Electrical system

Show all electrical fixtures (interior, exterior and site), wiring sizes and circuiting, grounding, panel schedules, single line diagrams, load calculations and fixture schedules. Provide fault-current calculations for entire system. Show point of connection to utility. Show dimensions.

Structural Systems

Show foundation, structural members and where required provide structural calculations for the structural systems of the project. Include calculations indicating compliance with seismic, wind, snow and other design loads. Completeness of the necessary calculations is the responsibility of the registered design professional.

Specifications

Prepare specifications to further define the construction components, the quality of the materials, delineation of the materials and methods of construction, wall, floor and ceiling finishes, exterior finishes, and descriptions of all pertinent equipment. Schedules may be incorporated into the project manual in lieu of being delineated on the construction drawings.





June 15, 2021

Alyssa Knutson
City of Fort Lupton
Transmitted via email:
aknutson@fortluptonco.gov

RE: Been Minor Subdivision and Special Use Permit
Project no. LUP2021-0013
Part of S ½ of the NE ¼, Sec. 16, T1N, R67W, 6th P.M.
Lot A, Recorded Exemption No. 1469-16-1 RE-4223
Water Division 1, Water District 2

Dear Ms. Knutson:

We have reviewed the information received by this office on May 20, 2021 regarding the above referenced referrals. The Applicant is proposing to subdivide 15.97 acres into four lots being two residential lots (Lots 1 and 2), a Recreational Vehicle Park lot (Lot 3) and a 1.06 acre AG lot (Lot 4); and a special use permit for an RV Park on the proposed Lot 3.

Pursuant to Section 30-28-136, C.R.S. the State Engineer's office will provide an opinion on water supply plans for new subdivisions regarding material injury to existing water rights or the adequacy of the proposed plan if a referral is submitted to this office by the board of county commissioners. This referral was submitted to this office from the City of Fort Lupton ("City") therefore, pursuant to the State Engineer's March 4, 2005 and March 11, 2011 memorandums to the county planning directors, this office will only perform a cursory review of the referral information and provide comments. The comments do not address the adequacy of the water supply plan for this project or the ability of the water supply plan to satisfy any County regulations or requirements.

The proposed water supply is a future water taps with Central Weld County Water District. Our office has no comments on Central Weld County Water District's ability to supply the proposed four lot subdivision and RV Park. The referral material also includes reference to well permit 84713-F, which has not been constructed, for use in the RV Park until water taps from Central Weld County Water District can be brought to the subdivision.

A review of our records found well permit no. 9930 located in the subject property. Permit no. 9930 was issued on October 9, 1961 for domestic use. Section 37-92-602(3)(b)(III), C.R.S., requires that the cumulative effect of all wells in a subdivision be considered when evaluating material injury to decreed water rights. **Prior to further evaluation of the water supply plan the applicant must clarify, if the well will be used within the subdivision or if the well will be plugged and abandoned. If well will be used within the subdivision, the proposed uses must be specified and the applicant must demonstrate that a court approved augmentation plan has been obtained for the well prior to subdivision approval.**

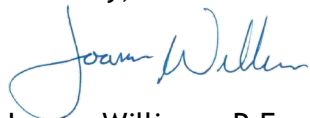


Well permit no. 84713-F was issued on September 16, 2020 pursuant to section 37-90-137(4) C.R.S., and the Findings of the State Engineer to construct a well in the Laramie-Fox Hills aquifer underlying 16 acres (subject property). The well permit allows for the average annual withdrawal of 4.92 acre-feet per year from the nontributary Laramie-Fox Hills aquifer to be used for domestic, livestock watering, industrial, irrigation and commercial. This office has not received information that a well under permit no. 84713-F has been constructed. Well permit no. 84713-F will expire on September 16, 2021 unless this office receives information that the well was constructed and a pump was installed before the permit expired or the applicant applies for a one time one year expiration extension. Should the well be constructed, this office has no comments regarding the well being used for an RV Park; however, the well permit claims all the groundwater underlying the complete 15.97 acres of the subdivision, this can affect the issuance of well permits in the Laramie-Fox Hills aquifer on the other proposed lots of the subdivision.

The applicant should be aware that any proposed detention pond for this project, must meet the requirements of a "storm water detention and infiltration facility" as defined in section 37-92-602(8), Colorado Revised Statutes, otherwise the structure may be subject to administration by this office. The applicant should review DWR's [Administrative Statement Regarding the Management of Storm Water Detention Facilities and Post-Wildland Fire Facilities in Colorado](#) to ensure that the notification, construction and operation of the proposed structure meets statutory and administrative requirements. The applicant is encouraged to use Colorado Stormwater Detention and Infiltration Facility Notification Portal, located at <https://maperture.digitaldataservices.com/gvh/?viewer=cswdif>, to meet the notification requirements.

Should you or the applicant have any questions, please contact Ailis Thyne at (303) 866-3581 x8216.

Sincerely,

A handwritten signature in blue ink that reads "Joanna Williams". The signature is fluid and cursive, with the first name "Joanna" and last name "Williams" clearly distinguishable.

Joanna Williams, P.E.
Water Resource Engineer

Ec: Subdivision File #27751
File for Permit Nos. 9930 & 84713-F

Magaly Morales-Tejada

From: Maureen Welsh
Sent: Friday, May 21, 2021 1:39 PM
To: PlanningDept
Subject: LUP2021-0013 Referral Response

Good afternoon,

The Town of Frederick has no issues with this application.

Thank you,

Maureen Welsh | Planner I
Town of Frederick | 720-382-5654
MWelsh@FrederickCO.gov | FrederickCO.gov

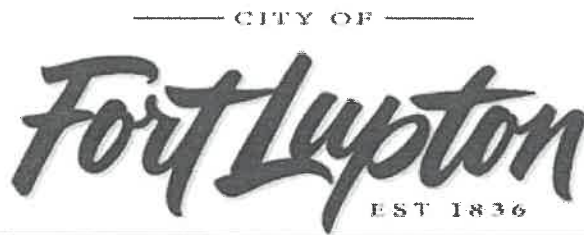


Built On What Matters



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FROM: Alyssa Knutson
DATE: 05/20/21
PROJECT: Been Minor Subdivision & Special Use Permit
Project No. LUP2021-0013; Plan Nos. MSD2021-0002 & SUP2021-0002

INTERNAL DISTRIBUTION:

☐ Buildings/Grounds Manager	☒ City Attorney	☒ Police Chief
☐ City Administrator	☐ City Clerk	☒ Public Works Director
☒ Building Inspector	☐ Recreation Manager	☐ Golf Course Manager
☒ OMI	☒ GIS Specialist	☐ Finance Director

OUTSIDE DISTRIBUTION:

☒ Fort Lupton Fire Protection District	☒ Weld County Dept. of Public Health & Env.
☒ CDOT	☒ Weld County Public Works
☒ Colorado DRMS	☒ Weld County School District RE-8
☒ Colorado Parks and Wildlife	☒ NCWCD
☒ Division of Water Resources	☐ Fulton Ditch Company
☐ Army Corp of Engineers	☐ Platteville Ditch Company
☒ United Power	☐ City of Brighton
☒ Comcast	☒ Town of Frederick
☒ CenturyLink	☐ Town of Platteville
☒ Xcel Energy	☒ City of Dacono
☒ Postmaster	☐ Town of Firestone
☒ Weld County Department of Planning	☒ Other: Bull Canal

If you have comments, please respond by: 06/10/21

Comments may be sent via mail, faxed to 303.857.0351 or emailed to planningdept@fortluptonco.gov. A non-response to this referral may be considered a favorable response.

COMMENTS:

Property owner has filed Petitions for Inclusion with Northern Colorado Water Conservancy District & the Municipal Subdistrict, which are in process.

Magaly Morales-Tejada

From: John Fryar
Sent: Thursday, May 20, 2021 3:05 PM
To: Magaly Morales-Tejada
Subject: RE: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

No LE concerns other than distance from normal patrol areas.



Chief John Fryar

From: Magaly Morales-Tejada
Sent: Thursday, May 20, 2021 3:00 PM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for a minor subdivision and special use permit being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link:

<https://www.fortluptonco.gov/DocumentCenter/Index/595>

Any comments you consider relevant to this request would be appreciated. Please reply by **June 10, 2021** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 20, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada
Planning assistant
130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111





Public Works

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694

Fax: 303.857.0351

www.fortluptonco.gov

MEMO

To: Todd Hodges
Alyssa Knutson
CC: Chadwin Cox (WEA)
From: Roy Vestal
Date: May 28, 2021
Subject: Been Minor Subdivision and Special Use Permit (LUP2021-0013)
Public Works Review

Public Works has reviewed the submitted documents for the above referenced development project with the following comments for inclusion with the Final Plat and Site Plan submittal. There may be additional concerns as this design develops.

1. Utilities

a. Water - Chapter 3

- i. Water supply is intended to be by well with future connection potential to Central Weld Water District.

b. Sanitary Sewer - Chapter 4

- i. Sanitary service with on-site OWTS permitting through the county.

2. Plat

- a. ROW dedication cannot be done with the Minor Subdivision Plat. ROW dedication needs to be by separate document (see attached template). Annotate ROW on MSP with recording information.

3. Site Plan

- a. The water line will require an easement dedication, 20' wide.
- b. Site Plan A-1 – Please move the gate from 14th Street entry to the property line. Need to leave adequate room for truck to park out of the street to open gate.

4. Drainage

- a. Final Drainage Study is approved.
- b. Detention facility will be privately owned and maintained.
- c. As-built documentation of volumes and elevations will be required following construction.

5. Transportation

- a. Additional ROW dedications are acceptable.

6. Landscape / Grading - *Chapter 2 Design Standards*

- a. A SWMP and Stormwater Discharge permit must be acquired from CDPH&E. Please submit proof of prior to receiving construction permits. Please provide copy of permit from CDPH&E.
- b. Review proposed landscape plans at street locations and evaluate for sight triangle conflicts.

7. Roadway - Chapter 6

- a. Both access drives will require an improved apron at CR 19.

8. Traffic Control - Chapter 8

- a. The Traffic letter as submitted is acceptable.

June 10, 2021

Fort Lupton Planning Department
130 S. McKinley Avenue
Fort Lupton, CO 80621
www.fortlupton.org

Re: Been Minor Subdivision & Special Use Permit Project No. LUP2021-0013; Plan Nos. MSD2021-0002 & SUP2021-0002

Dear Mr. Hodges and Ms. Knutson:

On behalf of United Power, Inc., thank you for inviting us to review and comment on the Been Minor Subdivision & Special Use Permit Project No. LUP2021-0013; Plan Nos. MSD2021-0002 & SUP2021-0002. After review of the information, we have the following comments:

- **Perimeter Lot Distribution** – United Power requires continuous dry utility easements for reliable electric facility installation. This allows us to install electric facilities in a continuous manner for our loop feed which provides reliability. We prefer the separation of gas and electric. We will need 8' to 10' wide dry utility easements around the perimeter of all lots.
- **Streetlights** – When streetlight locations are identified, we need a 5' wide dry utility easement along one side of the lot closest to the streetlight location. All streetlight locations must be approved and signed off by the city/town, etc. Please note, if we do not get these through the platting process, we will have to get individual ones during the design which will slow United Power's ability to start construction significantly.

Please note, the property owner/developer/contractor must submit an application along with CAD data for new electric service via <https://www.unitedpower.com/construction>. United Power would like to work with these persons early in the construction process on getting an electric design prepared so that we can request any additional easements needed and hopefully have those easements dedicated on the plat rather than obtaining separate document(s). Obtaining easements via a separate document can be time consuming and could cause delays.

As a Reminder: No permanent structures are acceptable within the dry utility easement(s); such as, window wells, wing walls, retaining walls, basement walls, roof overhang, anything affixed to the house like decks, etc. United Power considers any structure that impedes the access, maintenance, and safety of our facilities a permanent structure. No exceptions will be allowed, and any encroachments could result in penalties.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested. We look forward to safely and efficiently providing reliable electric power and outstanding service.

Thank you,

Amber Mendoza

Amber Mendoza, RWA
ROW Agent
720.249.9315 | platreferral@unitedpower.com

Magaly Morales-Tejada

From: Lauren Light
Sent: Thursday, May 27, 2021 1:27 PM
To: Magaly Morales-Tejada
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

If this was one parcel the septic systems would qualify to be reviewed by the State. However, since they all will be on separate parcels the review will be completed by Weld County Environmental Health.

Lauren Light, M.B.S.
Program Manager/Environmental Planner, Environmental Health Services
Weld County Department of Public Health & Environment
1555 N. 17th Ave.
Greeley, CO 80631
llight@weldgov.com
970-400-2211 (office)



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From: Magaly Morales-Tejada
Sent: Thursday, May 20, 2021 3:00 PM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

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Good Afternoon,

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<https://www.fortluptonco.gov/DocumentCenter/Index/595>

Any comments you consider relevant to this request would be appreciated. Please reply by **June 10, 2021** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

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- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 20, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada

Planning assistant

130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111



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Right of Way & Permits
1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303.571.3284
donna.l.george@xcelenergy.com

June 10, 2021

City of Fort Lupton Planning Department
130 South McKinley Avenue
Fort Lupton, CO 80621

Attn: Alyssa Knutson and Todd Hodges

Re: Been Minor Subdivision and Special Use Permit, Case # LUP2021-0013

Public Service Company of Colorado's Right of Way & Permits Referral Desk has reviewed the documentation for **Been Minor Subdivision and Special Use Permit** and has no apparent conflict. No resubmittals necessary.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

RESOLUTION NO. P2021-018

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF A SPECIAL USE PERMIT FOR AN RV PARK KNOWN AS THE BEEN RV PARK SPECIAL USE PERMIT ON A PROPERTY LOCATED IN THE NORTHEAST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on June 24, 2021, for the purpose of reviewing the Been RV Park Special Use Permit application; and

WHEREAS, after review of the application and supporting documentation, the Planning Commission finds the request for a special use permit for an RV park on Lot 3 of the Been Minor Subdivision generally conforms with City codes and requirements and policies therein; and

WHEREAS, all legal requirements for the public hearing have been met, including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within 100 feet and posting of the hearing on the site; and

NOW THEREFORE BE IT RESOLVED, the Planning Commission has considered the application and has taken into consideration all referral comments and any citizen testimony in response to this application. Based upon the facts presented on this date, the Planning Commission hereby recommends approval of the Been RV Park Special Use Permit on Lot 3 of the Been Minor Subdivision on a property located in the Northeast Quarter of Section 16, Township 1 North, Range 67 West of the 6th P.M., County of Weld, State of Colorado with the following conditions:

I. Prior to recording the special use permit:

- A. The title of the minor subdivision map shall include the Project No.: LUP2021-0013 & Plan No.: SUP2021-0002.
- B. Any redline comments provided by staff shall be made to the special use permit map.
- C. Applicant shall show 55' of right-of-way on County Road 19 as requested by the Public Works Director.
- D. Applicant shall verify and delineate all utility easements on the plat.
- E. Applicant shall review the lots that the access easement(s) will benefit and update the map if necessary.
- F. Applicant shall provide written evidence that the comments from the Public Works Director have been adequately addressed.

- G. Applicant shall identify any oil and gas wells and/or equipment on the property and provide a buffer in the size required by staff.
- H. Applicant shall provide written evidence that the comments from United Power have been adequately addressed.
- I. Applicant shall provide written acknowledgment of the comments from the Weld County Department of Public Health and Environment.
- J. Applicant shall provide written evidence that the comments from the Colorado Division of Water Resources have been adequately addressed.
- K. Applicant shall provide evidence that there is adequate water to serve the RV Park.
- L. The following notes shall be added to the special use permit map:
 - 1. Lighting on the site shall be maintained so that light is directed downwards and shall not spill onto adjacent properties.
 - 2. Dead and dying landscape material shall be replaced at the earliest reasonable date.
 - 3. The property shall maintain compliance with the Weld County Department of Public Health and Environment.
 - 4. The City reserves the right to reevaluate traffic impacts in the future if there is an increase from what was represented to the City in evaluating the special use permit.
 - 5. If construction has not substantially commenced within one (1) year after final approval, the approved site plan shall become void unless an extension is approved by City Council.

II. Prior to the release of building permits:

- A. A set of Mylars shall be submitted for recording, with recording not to be completed until evidence of adequate water to serve the RV Park has been provided.

DONE THIS 24TH DAY OF JUNE, 2021 BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Chairman

ATTEST:

Planning Director



**BEEN MINOR SUBDIVISION & SPECIAL USE PERMIT
PROJECT NO. LUP2021-0013 / PLAN NO. MSD2021-0002 & SUP2021-0002**

PROJECT DESCRIPTION

Project No.: LUP2021-0013 / Plan No.: MSD2021-0002 & SUP2021-0002

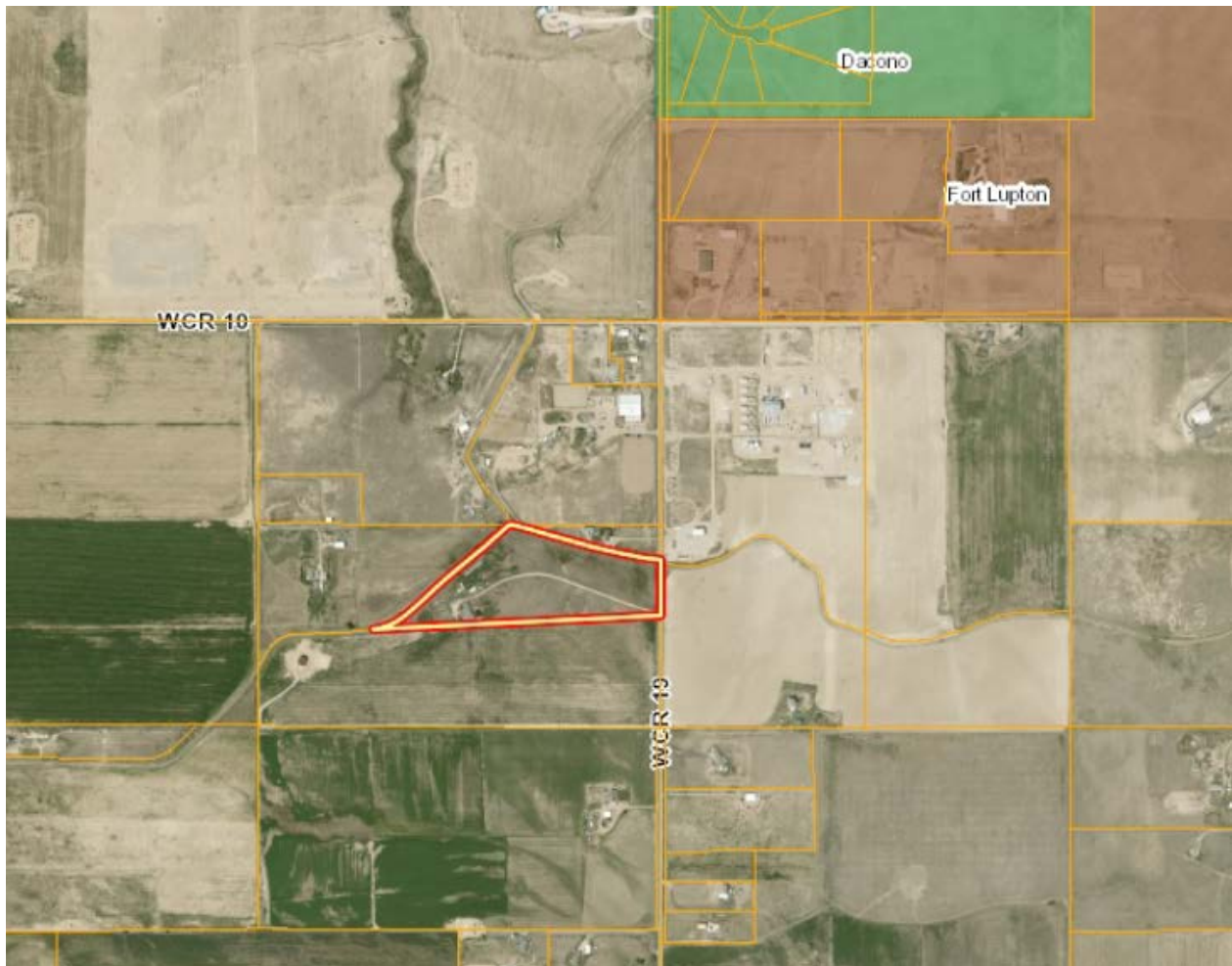
Project name: Been Minor Subdivision & Special Use Permit

Owner: Sheryl Been ("Applicant")

Representative: Chadwin Cox with Western Engineering

Location of Request:

The site consists of a parcel of land located west and adjacent to County Road 19 and approximately 0.29 miles south from County Road 10 in Weld County, Colorado (Parcel No. 146916100006) (the "Property"). The Property is located in the Northeast Quarter of Section 16, and the Northwest Quarter of Section 15, Township 1 North, Range 67 West of the 6th P.M., County of Weld, State of Colorado.



Nature of Request:

The Applicant has submitted a request for a minor subdivision of the Property into four separate lots. Lot 1 has an existing residence and this use is proposed to remain as is. An additional existing single-family residence is proposed for Lot 2. The Applicant is requesting a special use permit for a proposed RV park for 75 - 141 RVs at Lot 3. Finally, Lot 4 does not have any development planned at this time, but anticipates future development that will be reviewed separately by the Planning Department. There is also an outlot, Outlot A, being proposed for drainage. The Property is zoned 'A' Agricultural.

Additional information on this request is included in the application materials.

Site Size: 15.97 acres, more or less, with the planned subdivided lots measuring as follows:

- Lot 1: 2.15 acres, more or less
- Lot 2: 1.83 acres, more or less
- Lot 3: 9.92 acres, more or less
- Lot 4: 1.06 acres, more or less
- Outlot A: 0.50 acres, more or less

Zone District: The Property is currently zoned 'A' Agriculture, and this designation is not being proposed to change.

Proposed Use: Residential for Lots 1 and 2, and RV park for Lot 3. Lot 4 does not have any development planned at this time.

Existing Use: Lot 1 contains an existing residence. The remaining property has historically been used for agricultural land.

Hearing Dates: Planning Commission – June 24, 2021 at 6:00 PM; and
City Council – July 20, 2021 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado.

Staff Recommendation: Approval with conditions, as shown on the proposed resolution.

SUMMARY OF PREVIOUS APPLICATIONS

The property was annexed into Fort Lupton in 2021 (City Council hearing was on February 16, 2021), and was initially zoned to the 'A' Agriculture Zone District (Been Annexation and Initial Zoning).

APPLICATION PROCESS

The Applicant is requesting approval of a minor subdivision for four lots, and a special use permit for an RV park on Lot 3 of the proposed Been Minor Subdivision. A minor subdivision is processed under [Section 17-30](#) of the Fort Lupton Municipal Code ("Code"). A special use permit for the proposed RV Park is processed under [Section 16-7](#) of the Code.

After required public notice of the minor subdivision request, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the minor subdivision. The Planning

Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the application, referral agency comments, Planning Commission recommendation and any public testimony, and shall approve, conditionally approve, continue for additional information or for further study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

NOTIFICATION REQUIREMENTS

The Subdivision and Zoning Regulations require published notice of the hearings at least fifteen (15) days prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton Press on Wednesday, June 9, 2021.

Notice of the public hearings were posted on the Property pursuant to the Subdivision and Zoning Regulations, which require the Applicant post the Property with notice of hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbors within one-hundred (100) feet of the Property on June 8, 2021. Mineral notifications were sent as a courtesy at least 15 days prior to the Planning Commission hearing date.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The intent of a minor subdivision is to expedite the process of subdivisions that are minor in size and scope (Section 17-30). A minor subdivision must consist of four or fewer lots, meet zoning and subdivision regulations of the city, and must not include a dedication of public right-of-way. There also may not be other minor plats within the same subdivision that, in combination with the proposed minor plat, would circumvent the intent of Chapter 17 – Subdivision of the Code. The Been Minor Subdivision meets all of the necessary criteria as long as the conditions of approval are met.

An RV park is not a listed use by right in the 'A' Agricultural Zone District. Section 16-7 of the Fort Lupton Municipal Code (the "Code") states that similar or compatible uses may be permitted as special uses, subject to such conditions and limitations as the City may prescribe to ensure that the location and operation of the special uses will comply with special use criteria. Pursuant to Section 16-7(a), special uses are granted to individuals or entities, and not to the property itself. Therefore, this proposed use requires a special use permit review prior to beginning business operations. A special use review requires a public hearing before Planning Commission and City Council. The intent of the special use permit is to provide flexibility, to provide a means for setting performance standards for individual land uses and to help diversify uses within a zoning district.

Section 16-7(d) states that the City shall use the following criteria to evaluate the Applicant's request:

1. The special use shall satisfy all applicable provisions of the Code and shall be consistent with the intent of the Comprehensive Plan.

Staff Comment: The Applicant has been working with City staff to comply with applicable provisions of the Code, and has submitted all required special use permit application materials as

required. Information on the proposed project's consistency with the Comprehensive Plan is described later in this Staff Report.

2. The special use shall not substantially alter the character of the district or the neighborhood.

Staff Comment: The Property is surrounded by agricultural, rural residential, and oil and gas operation land uses. There is a landscape plan that has been submitted in order to buffer the proposed RV park from the adjacent properties.

3. The special use will result in efficient on- and off-site traffic circulation, and will not have an adverse impact on adjacent uses or present hazardous conditions for pedestrians or vehicles.

Staff Comment: A traffic letter has been submitted with the application and is part of the Planning Commission packet materials for review. The Public Works Director has accepted the submitted letter.

4. Adequate conditions of approval shall address: traffic; activity levels; light; noise; odor; building type, style and scale; hours of operation; dust; erosion and other performance issues identified through the public hearing process.

Staff Comment: These items are addressed in the code, as well as addressed as conditions of approval on the proposed resolution, including addressing traffic, lighting, and screening.

5. The term of the special use permit and any reporting and inspection requirements as might be reasonably necessary to ensure compliance with conditions of approval may also be specified by the City Council.

Staff Comment: A special use permit is non-transferable, and therefore if a new owner were to occupy the Property, the RV park will no longer be permitted unless a new application was submitted and approved. The Planning Department staff will ensure compliance with other conditions of approval, either as listed on the proposed Resolution or as added by City Council.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Fort Lupton Comprehensive Plan designates this area for the Agriculture and Rural Residential land use type. This designation allows for agricultural and related uses as well as low density residential on the periphery of the planning area, intended to preserve a generally rural character. This also includes a variety of miscellaneous uses, such as isolated industrial businesses and semi-rural properties located under Estate Zoning. Given the availability of viable land for development in more appropriate districts, commercial or residential investment within agricultural areas should be discouraged. This will help limit unnecessary loss of agricultural lands and reduce the potential of suburban sprawl.

The property is surrounded by agricultural and rural residential land uses on all sides. The proposed use substantively conforms to the designated land use type and zoning, and specifically meets the intent of the Comprehensive Plan for the Agricultural and Rural Residential land use type by allowing miscellaneous uses.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

City Attorney	Police Chief	Public Works Director
Building Inspector	Water Treatment Plant Manager	GIS Specialist
Fort Lupton Fire Protection District	CDOT	Colorado DRMS
Colorado Parks & Wildlife	Division of Water Resources	United Power
Comcast	CenturyLink	Xcel Energy
Postmaster	Weld County Department of Planning	Weld Cty Dept of Public Health & Env
Weld County Public Works	Weld County School District RE-8	NCWCD
Town of Frederick	City of Dacono	Bull Canal

RECOMMENDATION

Staff recommends conditional approval of the Been Minor Subdivision and Special Use Permit. Conditions are listed on the proposed Resolution provided to Planning Commission.

***For more information on this development, please refer to the Planning Commission packet provided.
Additional documents are available for review at the Fort Lupton City Hall.***



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortluptonco.gov

Project No. _____

Land Use Application Form

A. CONTACT INFORMATION

- 1) Property Owner Name: BEEN SHERYL A
 Company: N/A
 Phone: 303-902-9262 Email: wereafrog@yahoo.com
 Address: 3647 County Road 19, Fort Lupton, CO 806218408
 Preferred method of contact? Email: ☒ Phone: ☐ Mail: ☐
- 2) Representative Name: CHADWIN F. COX
 Company: Western Engineering Consultants, inc. LLC
 Phone: 720-685-9951 Email: chadwin.cox@westerneci.com
 Address: 127 South Denver Ave. Fort Lupton, CO 80621
 Preferred method of contact? Email: ☒ Phone: ☒ Mail: ☐
- 3) Billing Contact (where invoices should be directed to): BEEN SHERYL A.
 Billing Company: N/A
 Phone: 303-902-9262 Email: wereafrog@yahoo.com
 Address: PO BOX 375, Fort Lupton, CO 80621

B. SITE DESCRIPTION

Site Address: 3647 County Road 19, Fort Lupton, CO 806218408
 Parcel Number: 146916100006
 Existing Zone Classification: AG Proposed Zone Classification: AG
 Water Type: Municipal Name: Central Weld County Water District
 Sewage Type: Septic system District Name or Location Hauled to: N/A

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

Sketch Plat	Administrative Site Plan	PUD Plan (Preliminary & Final)
Preliminary Plat	Special Use Permit	Variance
Final Plat	Oil & Gas Permit	Administrative Variance
Minor Subdivision ☒	Annexation & Initial Zone ☒	Appeal
Amended Plat	Change of Zone	Other: <u>Special Use Permit</u>
Site Plan	Comp Plan Amendment	

Instructions for Submitting the Land Use Application Form

DEFINITIONS

Words in the singular include the plural and words in the plural include the singular.

Application refers to the official submittal to the City of Fort Lupton's Planning Department for review of the proposed land use development identified in the land use application form. The application includes the form, all materials submitted for review of the project, including those documents required under the Land Use Regulations of the Municipal Code, and any additional information provided.

Project refers to the land use development identified on the land use application form and application materials.

Property refers to the land that is being proposed for development as described in the land use application form and application materials.

A. CONTACT INFORMATION

- 1) Provide contact information for all owners of any property that is the subject of the application. If the contact information for all property owners will not fit on the space provided, submit a separate sheet for the additional owners.
- 2) Provide contact information for all persons, firms or businesses that are authorized by the owners identified in Section A(1) to work on the land use application, including, but not limited to, discussing the project, submitting application materials, and attending meeting and hearings. If the contact information for all representatives will not fit on the space provided, submit a separate sheet for the additional representatives.
- 3) Provide contact and mailing information for the person that should receive all invoices for the project. If this person changes at any time, contact the Planning Department immediately to update this information.

B. SITE DESCRIPTION

Provide all information requested. Parcel numbers and address information may be found at the Weld County Property Portal at <https://www.co.weld.co.us/maps1/propertyportal/>. Current zoning can be found at <https://www.fortluptonco.gov/405/Zoning>.

C. APPLICATION TYPE

Select the land use application that is applicable to the project. If there are multiple land use application types being submitted to run concurrently, select all that apply. The land use application types will be identified during the required pre-application meeting. If you have any questions about this, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Please select a project name that will be referenced throughout the project and a description of what the project entails. If you need more space for the project description, please attach a separate sheet.

E. REQUIRED DOCUMENTS

Required documents will be discussed during the pre-application meeting with the Planning Department. If any documents are missing, the acceptance of the application may be delayed until the submittal is complete.

F. CERTIFICATIONS

Representative Certification. Provide the signature of all authorized representatives in this section.

Owner Certification. Provide the signature of all owners of properties included in the application in this section.

For any other questions, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Project No. _____

Project Name: BEEN RV PARK

Please provide a short description of the proposed project in the space provided below:

Been RV Park will be constructed over multiple phases on an approximate 10 acre site. Up to 2 (two)
employees are expected at buildout to run day to day operations. The hours of operations are intended to
be from 6:00 am to 10:00pm. Quiet hours are anticipated from 10:00pm to 6am. The number of overnight
or long term RV vehicles will be based on the sewer system capacity. Initially 120 with OWTS and a total of
161 when connection to the future City sewer line is available.

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: _____

Date: 3/18/21

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: Sheryl A. Bann

Date: 8/5/2020

For Office Use Only

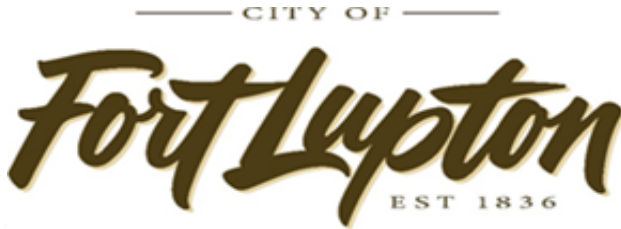
Received Date: _____

If the application is not complete, state reasons why it is incomplete:

Deemed Complete Date: _____

Fees Submitted: _____

Escrow Submitted: _____



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303-857-6694
Fax: 303.857.0351

www.fortluptonco.gov

APPLICATION FOR SPECIAL USE PERMIT

A pre-application conference and site visit may be required prior to submitting the Special Use Permit Application. The applicant may meet with representatives from the Planning Department to discuss the applicant's intended submittal, the City's application requirements and processes and other information relevant to the proposed application. Please contact the Planning Department at 303-857-6694.

Applicant should provide the following:

1. Plat of area with proposed zoning with vicinity map identifying site and surrounding area. If you are constructing a new building or adding to an existing building as part of this application, you must also submit a plot plan, construction plans, and a drainage plan. Approval of the special use permit will be based upon the drawings submitted unless changes are recommended by the engineer, planning commission, or city council.
2. Information as requested.

The applicant is responsible for the following:

1. Posting a hearing notice on the property 15 days prior to the hearing.

Name of Property Owner(s): SHERRYL A. BEEN Phone: 303-902-9262

Address: 3647 County Road 19, Fort Lupton CO 80621-8408

Applicant (if different from owner): _____

Address: _____

Home Phone: _____ Cell Phone: _____

Address or location of Property for which Special Use Permit is being requested:

3647 County Road 19, Fort Lupton, CO 80621-8408

Legal Description See attached sheet

Current Zoning: AG

Reason for Request:

The proposed of the Special Use Permit is to have a living RV Park on Lot 3- wich required a Special Use Permit approval. The proposed uses will be required to conform to all applicable City of Fort Lupton zoning regulations and standards.

Please answer the following questions in detail.

1. What is the proposed use?

A Recreational Vehicle living Park to provide affordable living options for temporary work force and long-term residency as well RV tourism that is not currently available in the area. The development is proposing from 75-149 spaces (Phased)

2. How will the proposed use impact the surrounding properties as it relates to the following areas:

Noise

Some small level of additional noise may be added, but, it's impact outside of the property will be near zero.

Dust

Dust can be produced during construction, and will be controlled by watering.

Odor

No odor producing activities are to be performed

Safety

A 1000 sqft. security building is proposed for access control and site monitoring.

Traffic

See Traffic Letter.

Light

On sight lighting has been designed to avoid any off-site infiltration

3. What are the proposed hours of operation?

Operating hours are from 6:00 am to 11:00 pm. Quiet hours are from 11:00 pm to 6:00 am.

4. Are you required to obtain any special licenses or permits through any other government agency? If yes, what types of licenses and permits are required?

CDPS Permit for Construction Stormwater Discharges (COR400000)

5. If this application is for a daycare, how many children will you be caring for?

N/A

6. If this application is for an assisted living facility, how many units will you have in the facility?

N/A

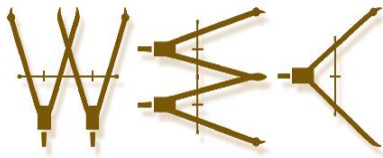
7. How many employees will work at the proposed facility?

Anticipated employees are 2.

The applicant hereby certifies that the above information, along with the attached plans and project descriptions, is correct. The applicant agrees to comply with the provisions of the zoning ordinances, building code and all other applicable sections of the City Code, Land Use Code, City Plan and all other laws and ordinances affecting the construction and occupancy of the proposed building.

Signature(s): Shuf Ben

Date: 4/1/2021

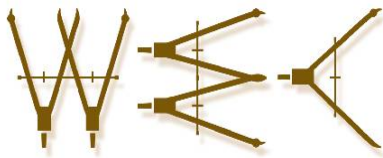


WESTERN ENGINEERING CONSULTANTS,
127 S Denver Ave. Fort Lupton, CO 80621
2501 Mill Street, Brush, CO 80723
Office: 720-685-9951
Cell. 303-913-7341, Fax 720-294-1330
Email: chadwin.cox@westerneci.com
Inc LLC

LEGAL DESCRIPTION FOR CHANGE OF ZONE
According to:
Land Title Guarantee Company
Dated March 9, 2021

LOT A OF RECORDED EXEMPTION NO. 1469-16-1 RE-4223, ACCORDING TO THE MAP RECORDED NOVEMBER 23, 2005 AT RECEPTION NO. 3342371, BEING A PART OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 687,638 SQUARE FEET OR 15.786 ACRES MORE OR LESS



WESTERN ENGINEERING CONSULTANTS,
127 S Denver Ave. Fort Lupton, CO 80621
2501 Mill Street, Brush, CO 80723
Office: 720-685-9951
Cell. 303-913-7341, Fax 720-294-1330
Email: chadwin.cox@westerneci.com
Inc LLC

March 23rd, 2021

City of Fort Lupton
130 South McKinley Ave.
Ft. Lupton, CO 80621

RE: BEEN RV PARK SPECIAL USE NARRATIVE

City Design Review Committee:

Western Engineering Consultants Inc. LLC (WEC) has prepared this narrative letter to briefly summarize the "BEEN RV PARK" project and the proposed Special Use.

Sheryl Been wishes to subdivide her approximate 15.97 acres into 4 lots through the Minor Subdivision process that has been submitted simultaneous with this Special Use Permit request.

The subject property is located in the northeast quarter of section 16, township 1 north, range 67 west of the sixth principal meridian, County of Weld, State of Colorado.

The property has historically been farmland and its currently zoned Agricultural within the City of Fort Lupton with one existing residence and a couple accessory buildings.

BACKGROUND AND PURPOSE

Sheryl Been desires to subdivide the property into four (4) lots as submitted by separate but simultaneous application. The proposed Ag zoned lot uses are as follows:

- two (2) single family residences - one existing home to be on Lot 1 (2.15 ac) and one new home proposed on Lot 2 (1.83 ac)
- a Recreational Vehicle Living Park (between 75-141 units) for short or long term on proposed 9.92 acre Lot 3
- a future 1.06 acre Lot 4 adjacent to WCR 19

All lots were annexed and zoned Ag within the City of Fort Lupton this year (2021).

The purpose of the Special Use Permit is to have a living RV Park on Lot 3 – which requires a Special Use Permit approval.

The proposed uses will not be detrimental to the public health, safety, or general welfare.

A Recreational Vehicle living Park provides affordable living options for temporary work force and long-term residency as well RV tourism that is not currently available in the area. The proposed uses will be required to conform to all applicable City of Fort Lupton zoning regulations and standards.

The development is proposing from 75-141 RV spaces (Phased), as well as two (2) Single family Residential acreages and one Agricultural parcel along WCR 19.

ADJACENT USES

The adjacent property to the north is agricultural land with one rural residence. To the east/northeast lies an Oil and Gas tank and battery assembly (east of WCR 19). To the south and west are agriculture crops and pastures.

Currently the Bull Canal runs along the North and West sides of the property and Weld County Road 19 exists along the eastern boundary.

RELATIONSHIP TO & IMPACT UPON ADJACENT USES

The existing residence in the southwest corner (Lot 1) will remain as is. An additional single-family residence is proposed north of the existing residence will complete the western boundary (Lot 2) thus uses will remain consistent with current conditions along the west property line.

The center portion of the development (Lot 3) is proposed as a residential (RV Living Park) that will be buffered (setback) from the north and south properties that are currently farmed.

The northeastern corner adjacent to WCR 19 will be developed in the future (Lot 4). Any future use(s) for Lot 4 will be submitted through the City's Development process accordingly.

LOT DATA TABLE:

LOT DATA TABLE		
LOT	AREA (acres)	PROPOSED USE
1	2.15	Rural Residence
2	1.83	Rural Residence
3	9.92	RV Living Park
4	1.06	AG Lot
OUTLOT A	0.50	Drainage area
Dedicated area	0.51	CR 19 Right of Way
TOTAL	15.97	

HOURS OF OPERATION:

Operating hours are from 6:00 am to 11:00 pm. Quiet hours are from 11:00 pm to 6:00 am.

NUMBER OF EMPLOYEES:

Anticipated employees are 2.

CUSTOMERS AND VISITORS:

On average 2-3 visitors/ new customers are expected daily. A complete Traffic Impact Study was completed and is included with these submittals.

BUILDING:

A future 3,000 sqft. caretaker building, 3,000 sqft. covered patio, and 600 sqft. security building are proposed.

TRAFFIC:

The development is expected to generate approximately 689 trips on an average weekday, 68 trips during the morning peak hour, and 127 trips during the evening peak hour.

WATER, SEWER, ELECTRICITY, & NATURAL GAS

The applicant has completed the Affidavit of historic water use and has applied for inclusion to the Northern Colorado Water Conservancy District. WEC has coordinated with and the Applicant has funded the Central Weld County Water District water demand and supply study. Currently CWCWD water main exists 1,850 feet +/- north of the site.

On site wastewater systems will be utilized until the City sanitary system is extended to the property frontage. Multiple Test Pits and OWTS designs have been completed and are included in this submittal.

United Power electricity is immediately adjacent and available. It is unclear if natural gas exists near the Site.

ACCESS:

The project is proposing one main access from Weld County Road 19 located approximately 1,851 feet South of the WCR 19 and WCR 10 intersection, and one future access is proposed from the same County Road 19.

PHASING:

The development is proposed in four (4) Phases as shown in Fig. 1

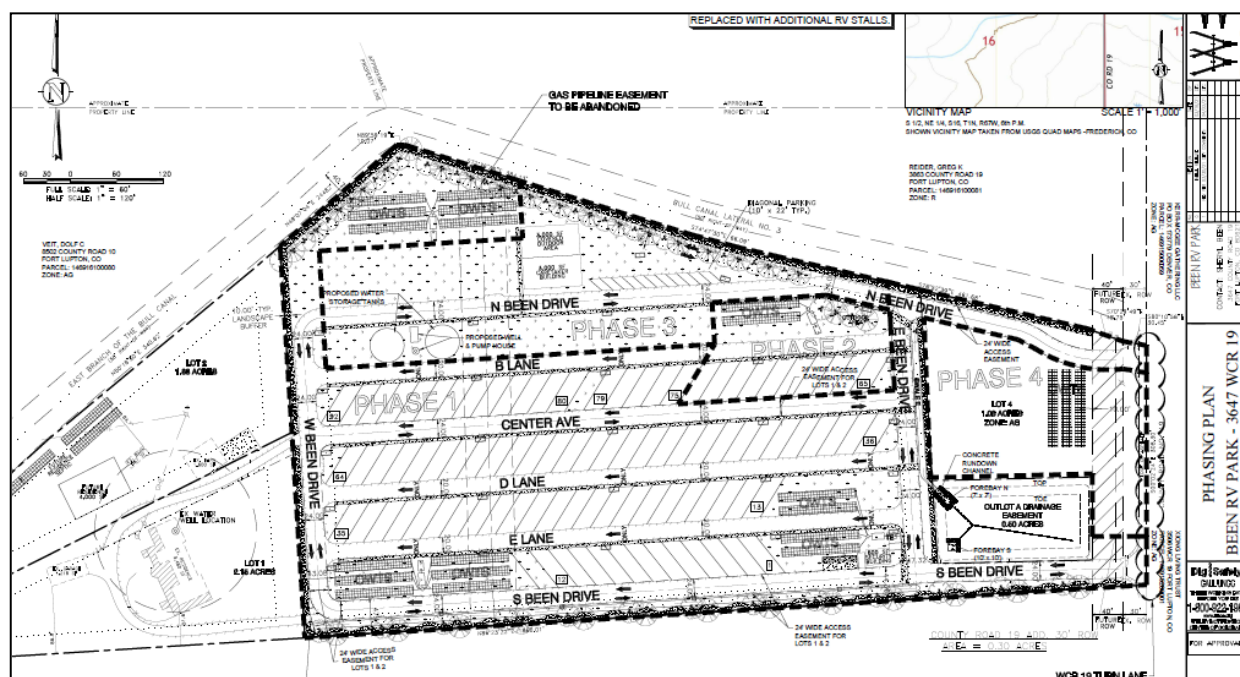


Fig 1

LOT 3 RV STALL TABLE		
PHASE	QUANTITY	ACCUMULATIVE
PHASE 1	75	75
PHASE 2	15	90
FUTURE	59	141

LANDSCAPE:

All disturbed areas that do become hardscape for access will be native seeded.

SPECIAL USE PERMIT CHECKLIST

- | | |
|--|-----------------------------|
| 1. Complete Land Use Application | Enclosed |
| 2. Site Plan | Enclosed |
| 3. Detailed Project Description | This document |
| 4. Drainage Report | Enclosed |
| 5. Traffic Memorandum | Enclosed |
| 6. A completed screening and landscaping plan | See sheets 50 and 51 of CDs |
| 7. Photometric plan | See sheets 54 and 55 of CDs |
| 8. Mineral Estate Owners/ Lessees Report | Enclosed |
| 9. Word format document with the legal description | Enclosed |

CLOSING

The Applicant is excited to bring this project to the City of Fort Lupton!

The desired schedule is to achieve approvals and begin Construction within 60 days after receiving said approvals late 2021.

Please contact me with any questions or comments you may have on this Project Narrative.

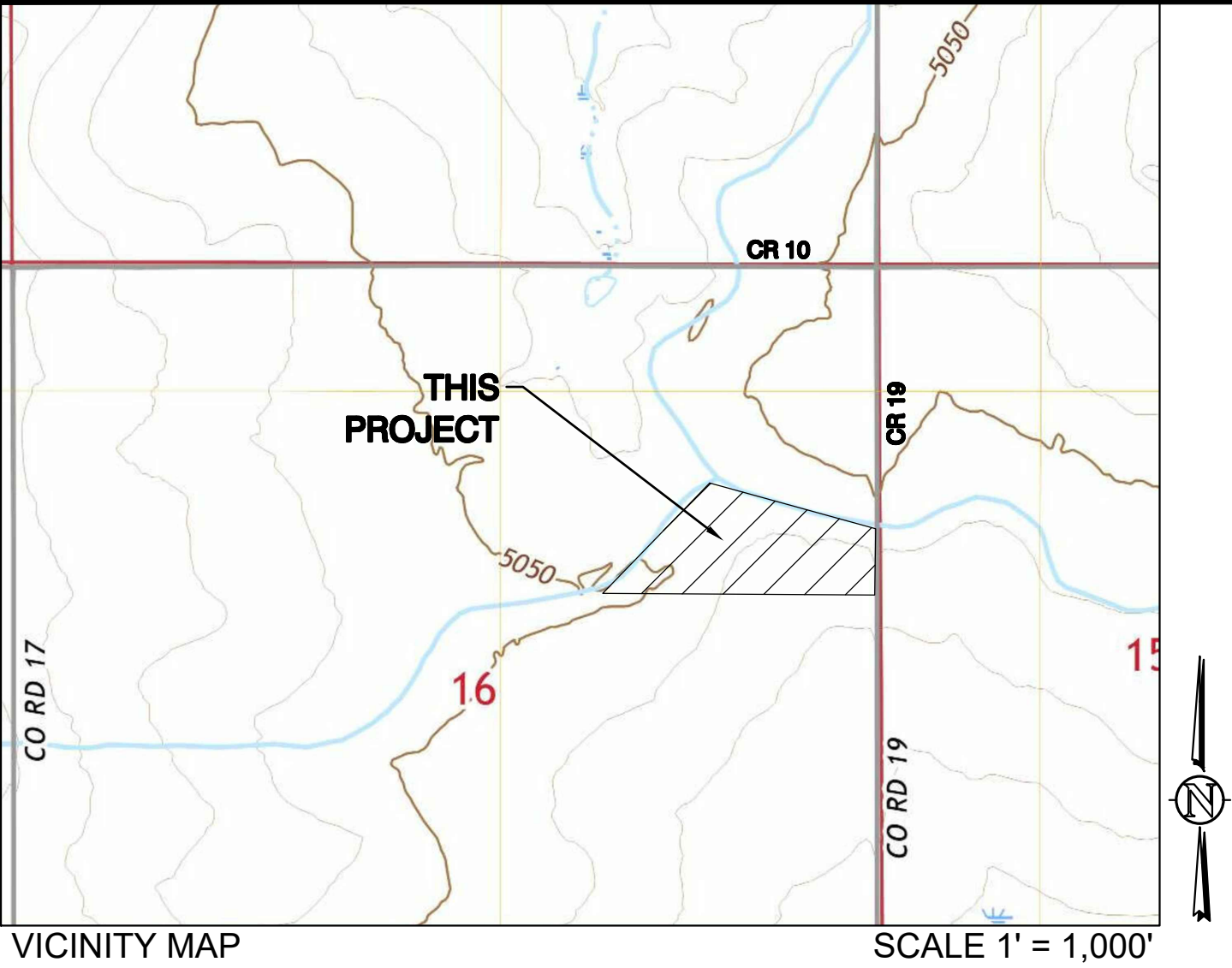
Sincerely,



Western Engineering Consultants inc., LLC
Chadwin F. Cox, P.E.
Senior Project Manager

Encl. Special Use Checklist Submittal Documents

\\WEC\SERVER\1\Share\0342_001_00-BEEN RV PARK\DWG\CDs\0342-002-WEC-CDs.dwg, 01-COVER, 6/16/2021 5:30:41 PM, DWG To PDF, pcd3, WEC-24*36, WEC-24*36



VICINITY MAP
S 1/2, NE 1/4, S16, T1N, R67W, 6th P.M.
SHOWN VICINITY MAP TAKEN FROM USGS QUAD MAPS -FREDERICK, CO
SCALE 1" = 1,000'

LEGAL DESCRIPTION

LOT A OF RECORDED EXEMPTION NO. 1469-16-1 RE-4223, RECORDED NOVEMBER 23, 2005 AT RECEPTION NO. 3342371.

PART OF THE SOUTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST, OF THE 9TH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO.

BASIS OF BEARING & BENCHMARK

BASIS OF BEARINGS: THE EAST LINE OF THE NORTHEAST 1/4 OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE 9TH P.M. IN WELD COUNTY, COLORADO, TO BEAR NORTH 00°02'24" WEST, BEING MONUMENTED ON THE NORTH AND SOUTH END BY A 3/4" REBAR WITH 3 1/4" ALUMINUM CAP, PLS 38285 IN MONUMENT BOX, AND WITH ALL BEARINGS SHOWN HEREON RELATIVE THERETO.

PROJECT INFORMATION:

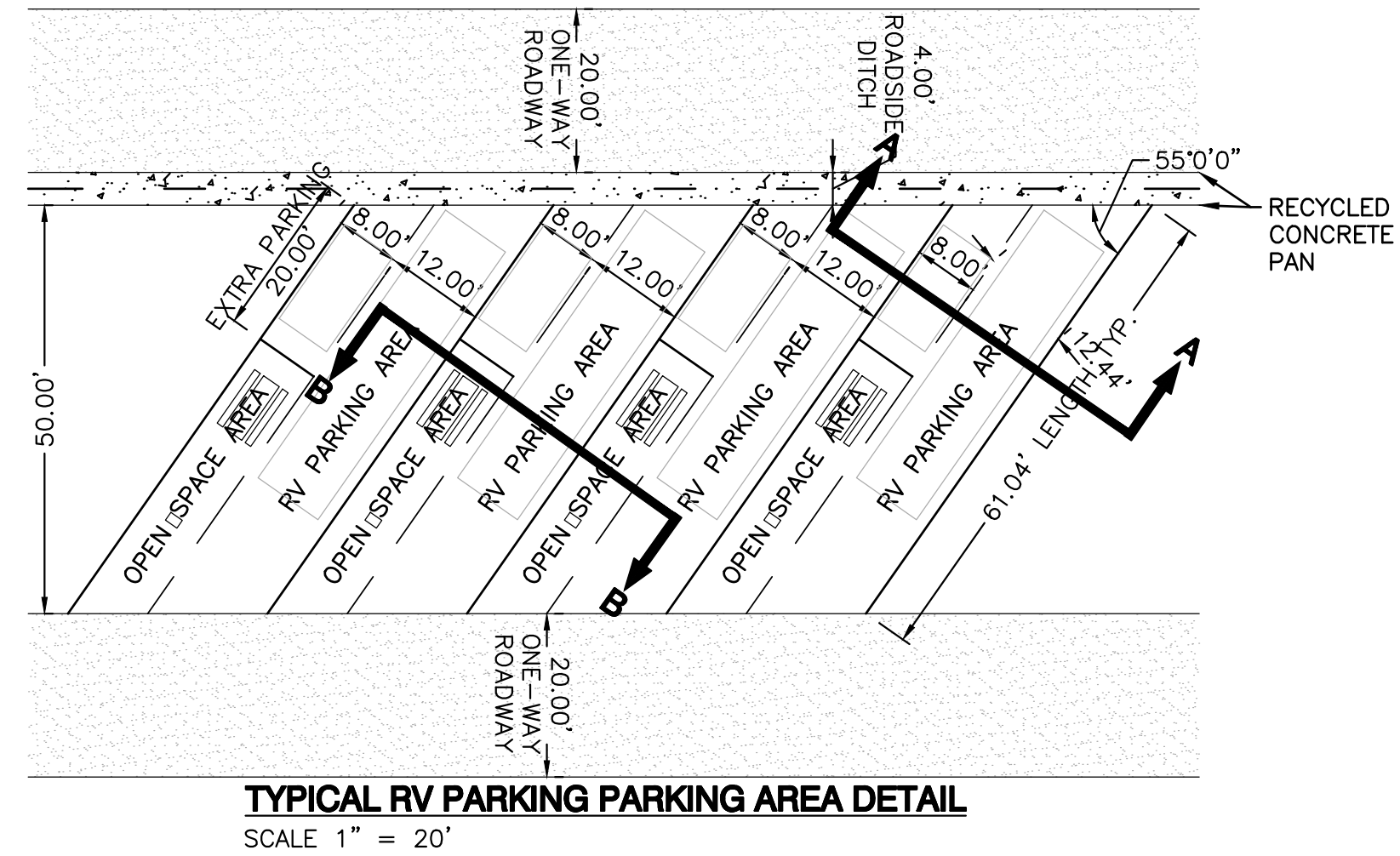
ADDRESS: 3467 WCR 19
FORT LUPTON, CO 80601
PARCEL ID: 146916100006
NUMBER OF LOTS: 4
PROJECT TYPE: AGRICULTURAL
PHASE: 2
IMPERVIOUS AREA:
SUBDIVISION: X

PROJECT TEAM:

OWNER/DEVELOPER
SHERYL BEEN
(303) 902-9262

CIVIL ENGINEER
CHADWIN F. COX, P.E.
WESTERN ENGINEERING CONSULTANTS, INC.
127 SOUTH DENVER AVE.
FORT LUPTON, CO 80621
303-913-7341

REVISIONS	SHEET	INDEX:
0 1	1	COVER SHEET
0 1	2	SITE PLAN



CONSTRUCTION DOCUMENTS FOR:
BEEN RV PARK
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621
WELD COUNTY , COLORADO

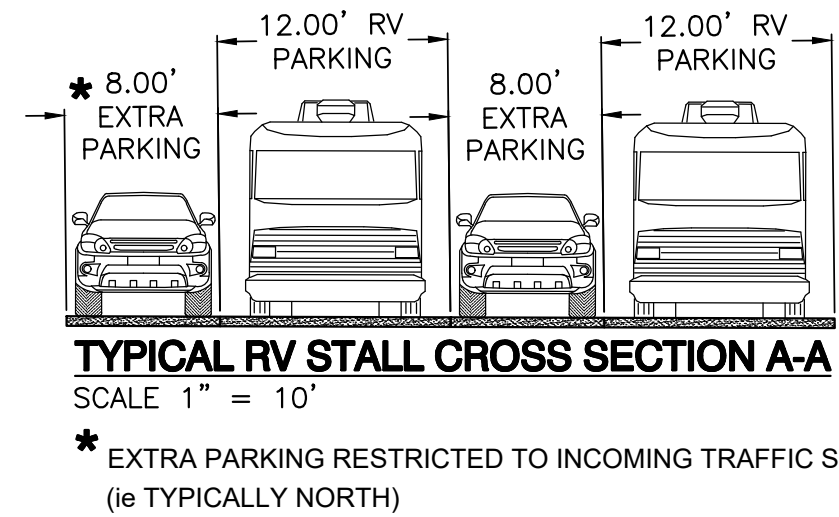
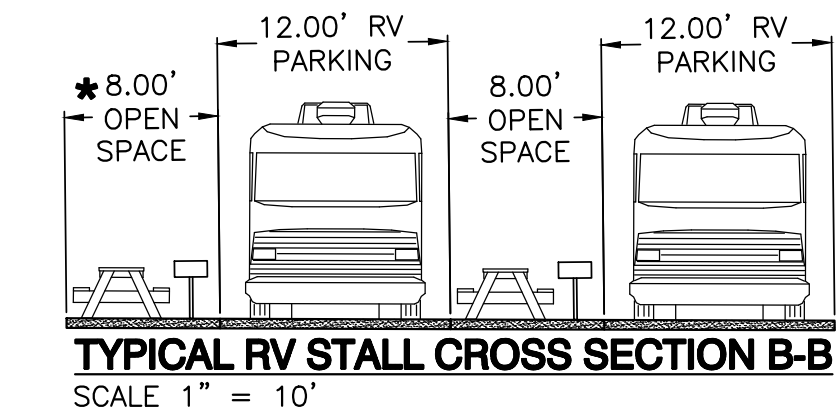
PREPARED FOR:
SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621
PHONE (303) 902-9262

APPROVED BY:

BEEN RV PARK
SHERYL BEEN
DATE

WESTERN ENGINEERING CONSULTANTS, INC.
CHADWIN F. COX, P.E.
DATE

0	INITIAL RELEASE:	MARCH 10, 2021
1	REV PER 03/30/21 CITY COMMENTS:	APRIL 22, 2021
2	GAS WELL REVISION	JUNE 16, 2021



PREPARED BY:

Western Engineering Consultants, inc LLC
127 SOUTH DENVER AVE.
FT. LUPTON, CO 80621
www.westerneci.com
email@westerneci.com
(720)685-9951
FAX (720) 294-1330

PROJECT NO: 01-0342.001.00
INITIAL PLAN RELEASE: March 10, 2021
CURRENT PLAN RELEASE: April 22, 2021
TOTAL SHEETS: 2
SHEET: **1 of 2**

Dig Safely.
CALL UNCC
THREE WORKING DAYS
BEFORE YOU DIG
1-800-922-1987
www.uncc.org
UTILITY NOTIFICATION
CENTER OF COLORADO

NOTES

THIS PLAN IS INTENDED AS THE SITE PLAN FOR BEEN RV PARK.

ALL IMPROVEMENTS ARE PROPOSED UNLESS NOTED AS EXISTING.

IT IS THE OWNER AND/OR THE CONTRACTOR'S RESPONSIBILITY TO ATTAIN ALL APPROPRIATE PERMITS AND REVIEW APPROVALS FROM THE STATE OF COLORADO AND WELD COUNTY RESPECTIVELY.

SEE "BEEN ANNEXATION NO. 1, 2, 3, & 4 TO THE CITY OF FORT LUPTON" COMPLETED BY AMERICAN WEST LAND SURVEYING CO. - DATED AUGUST 26, 2019 FOR WCR 19 R.O.W. INFORMATION

SEE COVER SHEET FOR LEGAL DESCRIPTION.

SEE COVER SHEET FOR BASIS OF BEARING & BENCHMARK.

ANY REFERENCE TO EASEMENTS, SURVEY POINTS, OR EXISTING UTILITIES AND FEATURES ARE BASED SOLELY FROM INFORMATION PROVIDED BY CES CONSULTANTS, LLC, DATED JUNE 29, 2020.

NOT ALL UNCC UTILITY LOCATES HAVE BEEN PERFORMED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UTILITIES ARE LOCATED AND SURVEY PROVIDED TO THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION DRAWING RELEASE.

SYMBOL LEGEND

MK MAIL KIOSK

TE TRASH ENCLOSURE

EXISTING CONC

PROPOSED GRAVEL

EXISTING ASPHALT

PROPOSED CONC

CWTS ON-SITE WASTEWATER TREATMENT SYSTEM
ROAD CROSS SECTION DETAIL

AB PROPOSED LIGHT POLES
SEE PHOTOMETRIC SHEETS 53-54 FOR DETAILS

LINETYPE LEGEND

LOT / PROPERTY / SECTION LINE
RIGHT OF WAY LINE
EASEMENT
SETBACK
EXISTING BUILDING, CURB
EDGE OF ASPHALT OR GRAVEL RD
WIRE FENCE
6" SCREENED CHAINLINK FENCE
3" SPLIT RAIL FENCE
POND WQ W/S
SWALE
EXISTING OVERHEAD ELEC

SA PROPOSED SANITARY LINE
SS PROPOSED SANITARY SERVICE
ST PROPOSED STORM LINE
WA PROPOSED WATER LINE
WAS PROPOSED WATER SERVICE
GA PROPOSED GAS LINE
EL PROPOSED ELECTRIC LINE

PARKING LEGEND

100 OWTS CAMPSITES

136 CITY SEPTIC CAMPSITES

LOT 1 DATA TABLE

DESCRIPTION	AREA	ACRES	%
ZONING	AG		
LOT	93,781 SF	2.15 AC	100.00 %
EXISTING BUILDING	4,678 SF	0.11 AC	4.99 %
EXISTING GRAVEL	12,649 SF	0.29 AC	13.49 %
EXISTING CONCRETE	3,566 SF	0.08 AC	3.80 %
PROPOSED LANDSCAPE AREA	72,888 SF	1.67 AC	77.72 %

LOT 2 DATA TABLE

DESCRIPTION	AREA	ACRES	%
ZONING	AG		
LOT	79,879 SF	1.83 AC	100.00 %
EXISTING BUILDING	1,967 SF	0.05 AC	2.46 %
FUTURE BUILDING	4,000 SF	0.09 AC	5.01 %
PROPOSED LANDSCAPE AREA	73,912 SF	1.70 AC	92.53 %

LOT 3 DATA TABLE

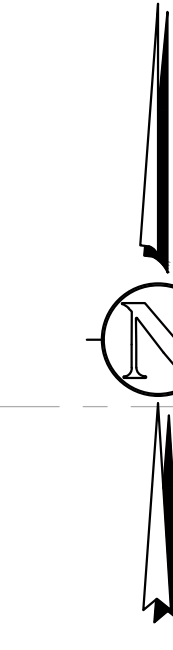
DESCRIPTION	AREA	ACRES	%
ZONING	AG		
LOT	453,895 SF	10.42 AC	100.00 %
PROPOSED GRAVEL	330,718 SF	7.59 AC	72.86 %
PROPOSED CONCRETE	19,203 SF	0.44 AC	4.23 %
PROPOSED LANDSCAPE AREA	103,974 SF	2.39 AC	22.91 %

LOT 4 DATA TABLE

DESCRIPTION	AREA	ACRES	%
ZONING	AG		
LOT	47,045 SF	1.08 AC	100.00 %
PROPOSED GRAVEL	5,766 SF	0.13 AC	12.26 %
PROPOSED LANDSCAPE AREA	41,279 SF	0.95 AC	87.74 %

SETBACK TABLE

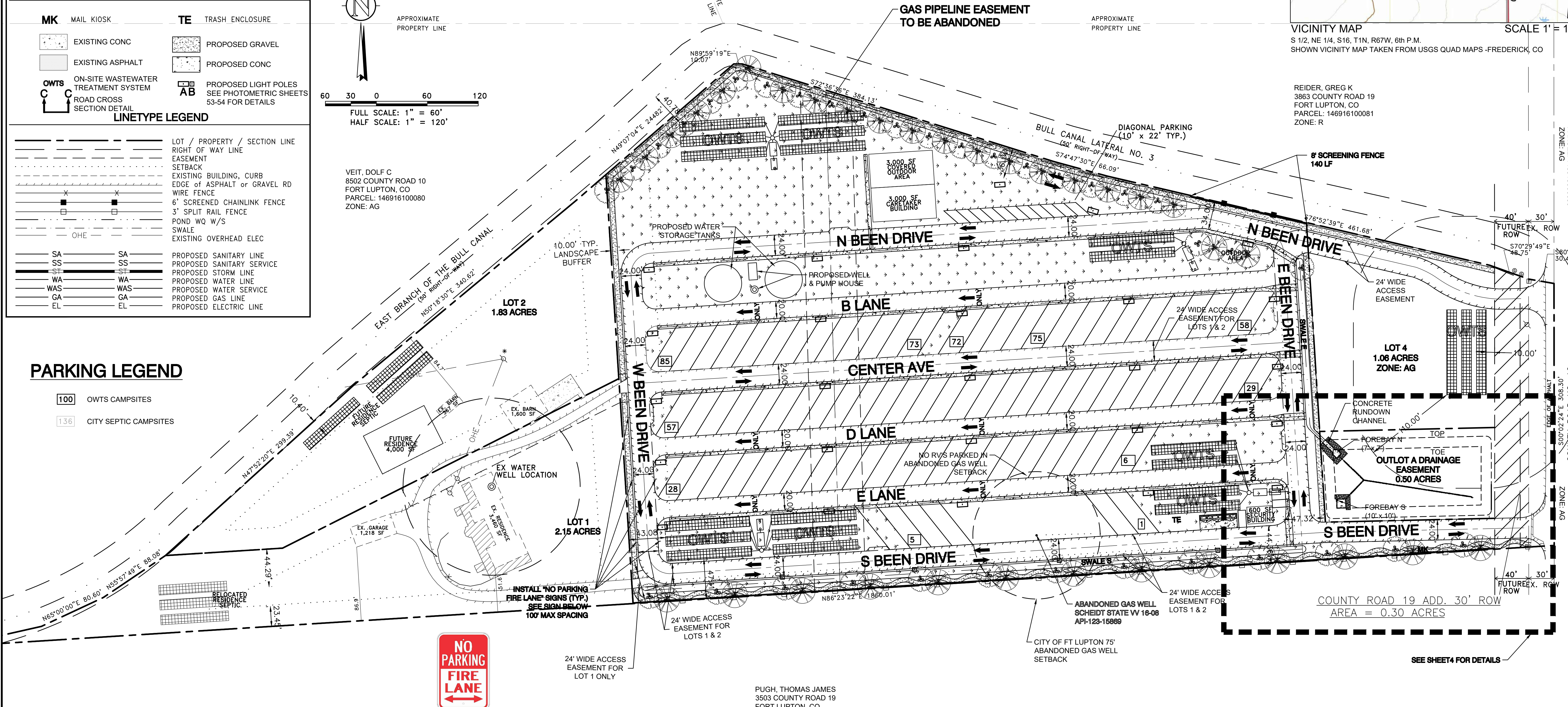
AGRICULTURE ZONE	
FRONT	35'
SIDE	25'
REAR	50'
MAX BLDG HEIGHT	35' OR TWO STORIES



APPROXIMATE PROPERTY LINE

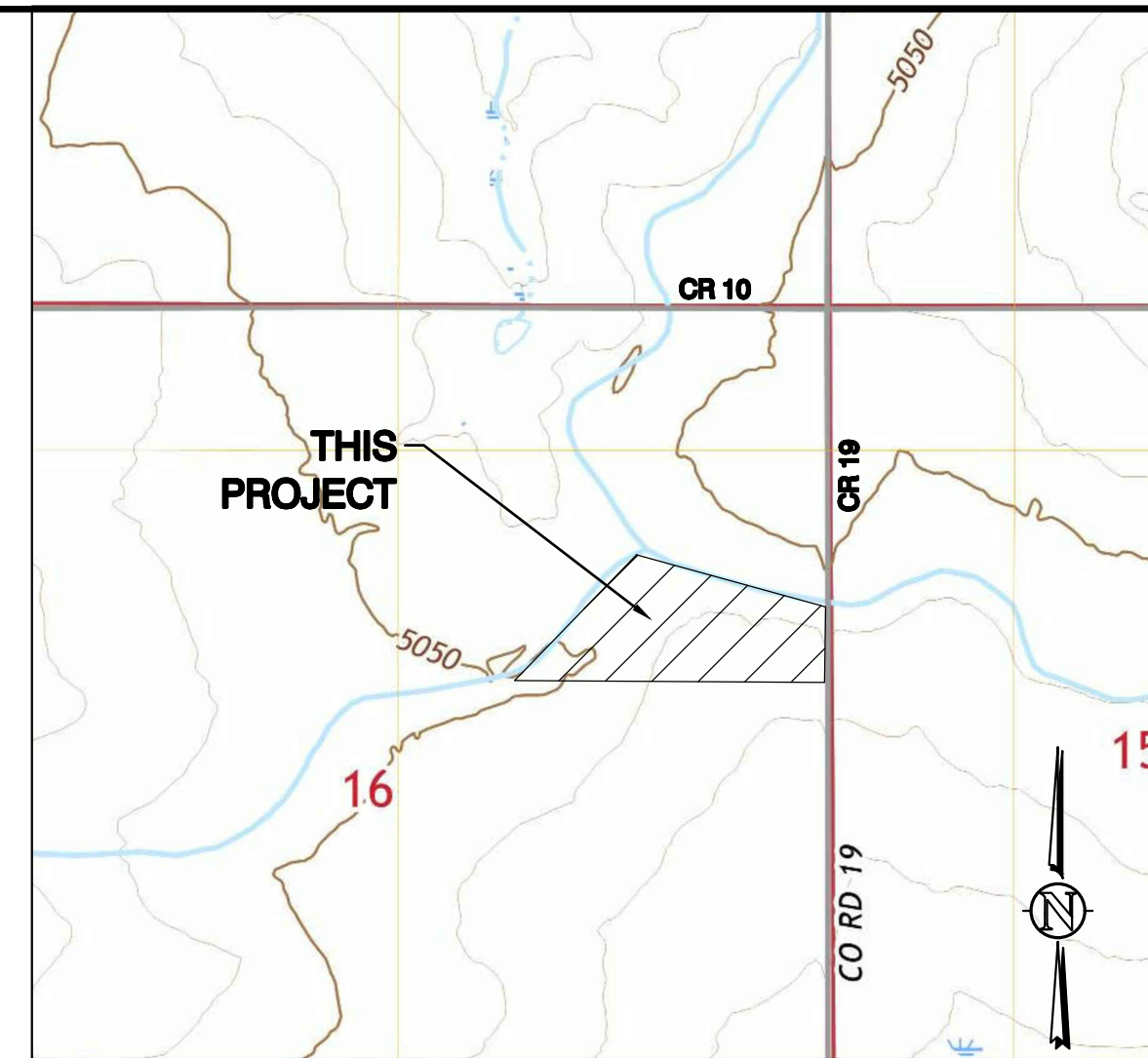
FULL SCALE: 1" = 60'
HALF SCALE: 1" = 120'

VEIT, DOLF C
8502 COUNTY ROAD 10
FORT LUPTON, CO
PARCEL: 146916100080
ZONE: AG



PHASE	QUANTITY	ACCUMULATIVE
PHASE 1	75	75
PHASE 2	15	90
FUTURE	59	141

PUGH, THOMAS JAMES
3503 COUNTY ROAD 19
FORT LUPTON, CO
PARCEL: 146916100007
ZONE: AG



VICINITY MAP
S 1/2, NE 1/4, S16, T1N, R67W, 6th P.M.
SHOWN VICINITY MAP TAKEN FROM USGS QUAD MAPS -FREDERICK, CO

REIDER, GREG K
3863 COUNTY ROAD 19
FORT LUPTON, CO
PARCEL: 146916100081
ZONE: R

KERRA JOSE CATHRINE, LLC
PO BOX 173778 DENVER, CO
PARCEL: 14691500059
ZONE: AG

XONG LIVING TRUST
3506 WCR 19 FORT LUPTON, CO
PARCEL: 14691520001
ZONE: AG

127 S. DENVER AVE
FT. LUPTON, CO 80621
www.westerneci.com
email@westerneci.com
(720) 685-9951
FAX (720) 294-1330
Western Engineering Consultants, Inc LLC

NO.	REVISION	DATE	BY	CHK	DATE	BY	CHK
0	INITIAL RELEASE	03/10/21	CFC		03/10/21	CFC	
1	REV FOR COMMENTS	06/16/21	CFC		06/16/21	CFC	
2	REV FOR COMMENTS	06/16/21	CFC		06/16/21	CFC	

CONTACT: SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621
MOBILE: (303) 902-9262

SITE PLAN
BEEN RV PARK - 3647 WCR 19
WELD COUNTY, COLORADO

Dig Safely.
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BEFORE YOU DIG
1-800-922-1987
www.uncc.org
UTILITY NOTIFICATION
CENTER OF COLORADO

FOR APPROVAL

ONLY VALID FOR CONSTRUCTION
IF SEAL & ORIGINAL SIGNATURE
ARE ON EACH SHEET

INITIAL PLAN
RELEASE: 03/10/21
DESIGNED BY: CFC
DRAWN BY: CFC
CHECKED BY: CFC
PROJECT NO.
01-0342.001.00
DOC CON #
0002-SITE
SHEET
2 OF 2



Sustainable Traffic Solutions

Joseph L. Henderson PE, PTOE
Traffic Engineer / Principal

August 10, 2020

Mr. Chadwin F. Cox, PE
Western Engineering Consultants
127 South Denver Avenue
Fort Lupton, CO 80735

RE: Trip Generation Estimate for the Been RV Park in Fort Lupton

Dear Chad,

This letter contains a trip generation estimate for the Been RV Park in Fort Lupton. Figure 1 contains a vicinity map that shows the location of the project on the west side of WCR 19 between WCR 10 and WCR 8. A site plan is contained in Figure 2 that shows the site access on WCR 19 and the configuration of the lots. The development will include 123 to 155 recreational vehicle spaces, a light industrial building, and a single-family dwelling unit. A pipeline runs through the middle of the site. If the pipeline is abandoned, 155 spaces will be developed, otherwise only 123 spaces will be developed if the pipeline is not abandoned.

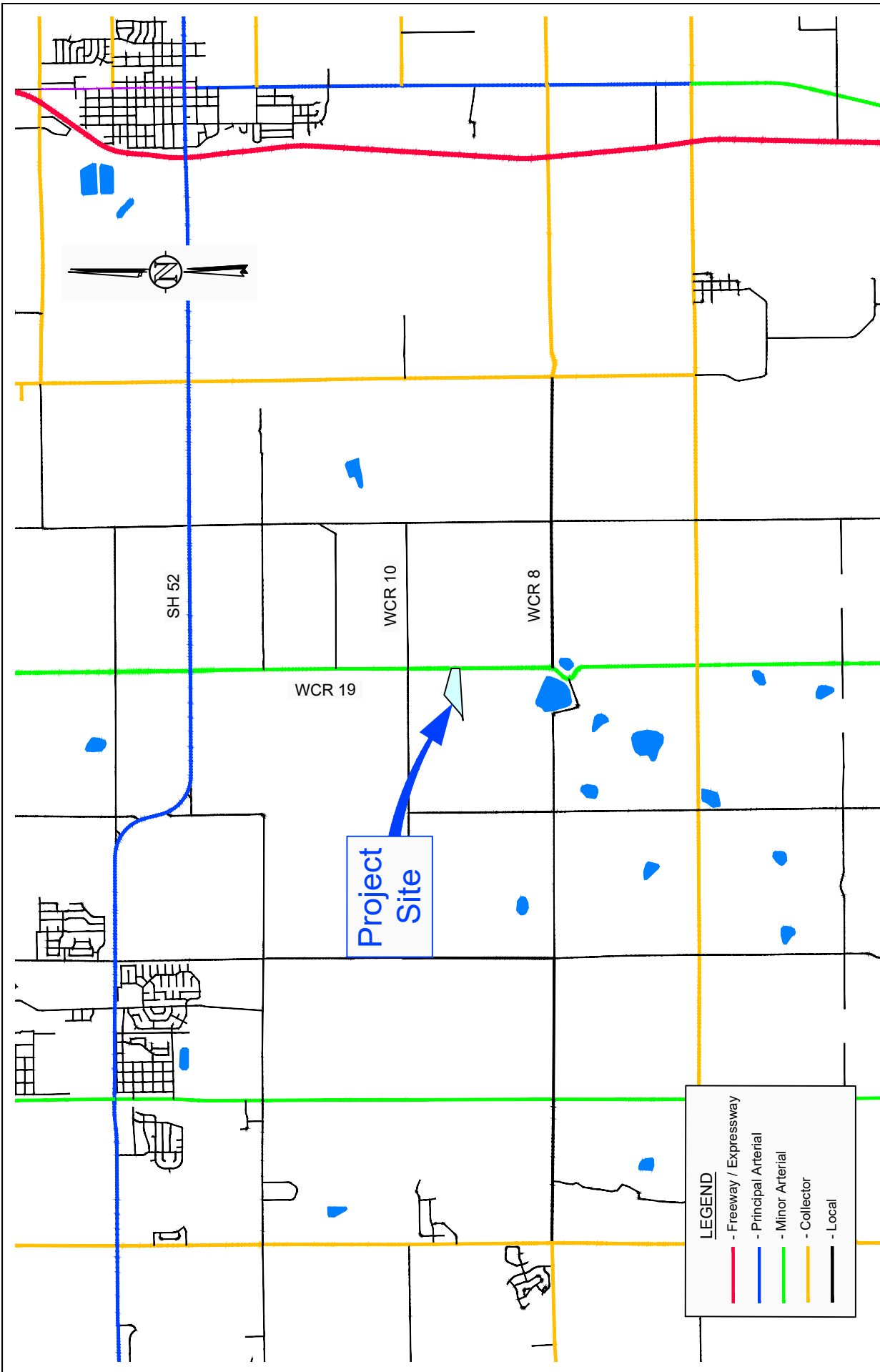
The trip generation for the development was estimated using rates that are contained in the Institute of Transportation Engineers (ITE) Trip Generation¹ manual. The development is expected to generate approximately 689 trips on an average weekday, 68 trips during the morning peak hour, and 127 trips during the evening peak hour (see Table 1).

Feel free to contact me to discuss the contents of this report.

Sincerely,

Joseph L. Henderson, PE, PTOE
Project Manager / Principal
Been RV Park Trip Generation Letter

¹ Trip Generation, 10th Edition. Institute of Transportation Engineers. September 2017.



Been RV Park Trip Generation Letter VICINITY MAP



Scale 1" = 5,000'

Date

August 10, 2020

Drawn by

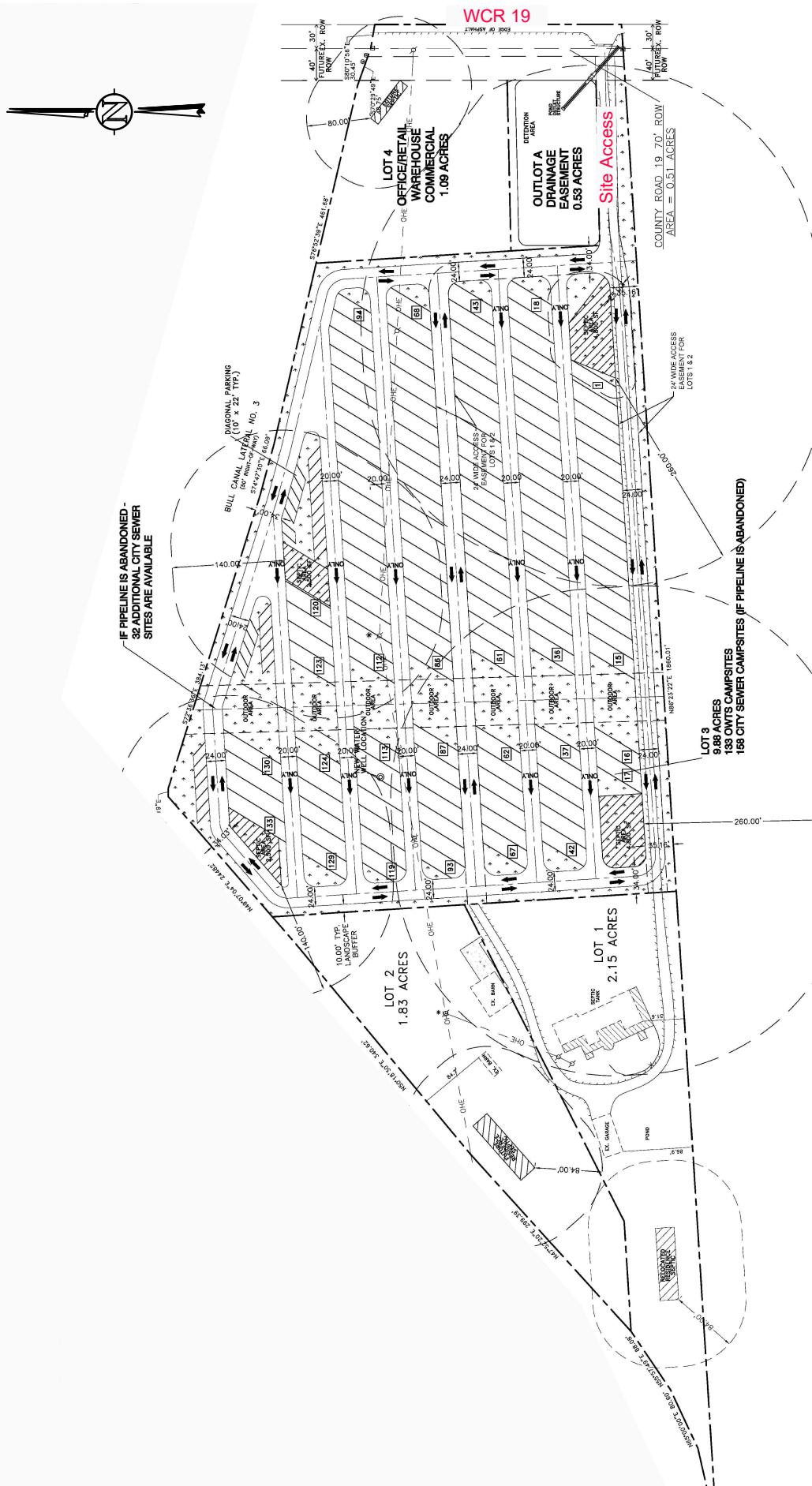
JLH

Job #

Western Engineering

Figure

1



Been RV Park Trip Generation Letter

SITE PLAN

Scale	NTS	Date	August 10, 2020	Drawn by	JLH	Job #	Western Engineering	Figure	2
-------	-----	------	-----------------	----------	-----	-------	---------------------	--------	---

Table 1. Trip Generation Estimate

Land Use ^{1,2}	ITE Code	Size	Unit	Average Daily Trips				Morning Peak Hour Trips				Evening Peak Hour Trips			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Campground / RV Park ^{3,4,5}	416	93	Occupied Camp Sites	3.47	323	161	161	0.48	45	19	26	0.98	91	63	28
Mobile Home Park ^{4,5}	240	62	Dwelling Units	5.00	310	155	155	0.26	16	5	11	0.46	29	18	11
General Light Industrial ⁶	110	10	1,000 ft ² GLA	4.96	50	25	25	0.70	7	6	1	0.63	6	1	5
Single Family Detached Housing	210	1	Dwelling Units	9.44	9	5	5	0.74	1	0	1	0.99	1	1	0
Total			---	---	692	346	346	---	69	30	38	---	127	82	45

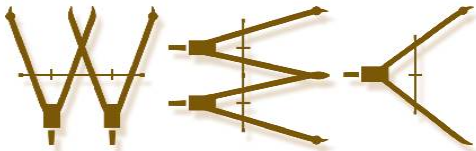
Notes:

1. Trip generation estimates are based on rates contained in Trip Generation, 10th Edition (Institute of Transportation Engineers, 2017).
2. Land use estimates are based on the site plan.
3. Trip Generation doesn't have a daily trip rate for an RV park, therefore, STS assumed the daily rate for a recreational home (land use code 260).
4. 60% of the spaces are assumed to be occupied by short term users and 40% by long term residents.
5. The total number of spaces includes 32 spaces that will be developed if a pipeline is abandoned.
6. The commercial parcel is assumed to have a 10,000 sf² building that will occupy approximately 20% of the site.

**FINAL DRAINAGE REPORT
FOR
BEEN RV PARK
PART OF THE S ½ OF THE NE ¼ SEC 16,
T1N, R67W
FORT LUPTON, COLORADO
WELD COUNTY**

CASE NO.

**SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621**



*Western Engineering Consultants Inc LLC
127 South Denver Avenue
Fort Lupton, CO 80621*

Original: October 19, 2020
Revised: March 09, 2021

FINAL DRAINAGE REPORT
FOR
BEEN RV PARK
PART OF THE S ½ OF THE NE ¼ SEC 16, T1N, R67W
FORT LUPTON, COLORADO

Prepared For:

BEEN RV PARK
Contact: Sheryl Been - Owner
3647 County Road 19
Fort Lupton, CO 80621
303-902-9262

Prepared By:

WESTERN ENGINEERING CONSULTANTS inc LLC
127 South Denver Avenue
Fort Lupton, CO 80621
(720) 685-9951
Contact: Chadwin F. Cox, P.E.

Original: October 19, 2020
Revised: March 09, 2021

CERTIFICATIONS

I hereby certify that this report and plan for the drainage design of City of Fort Lupton Been RV Park was prepared by me, or under my direct supervision, for the owners thereof, in accordance with the provisions of Colorado Floodplain and Stormwater Criteria Manual, and Urban Drainage and Flood Control District Design and Technical Criteria, and approved variances and exceptions hereto. I understand that City of Fort Lupton does not and will not assume liability for drainage facilities designed by others.

Chadwin F. Cox, P.E.
Registered Professional Engineer
State of Colorado No. 33802

Sheryl Been hereby certifies that the drainage facilities for Been RV Park design shall be constructed according to the design presented in this report. I understand that City of Fort Lupton does not and will not assume liability for the drainage facilities designed and/or certified by my engineer, and that City of Fort Lupton reviews drainage plans pursuant to Colorado revised Statutes Title 30, Article 28, but cannot, on behalf of Been RV Park, guarantee that final drainage design review will absolve Been RV Park and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat, Final Development Plan, and/or Subdivision Development Plan does not imply approval of my engineer's drainage design.

Been RV Park
Sheryl Been or Owner's Representative

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APPENDICES

APPENDIX A

- Vicinity Map (USGS)
- Key Map (Google Earth)
- FEMA Firmette
- Legal Description
- Soil Survey Map & Soil Legend
- Geotechnical Study

APPENDIX B

- NOAA Atlas 14 Rainfall - Point Precipitation Frequency
- WEC Rational Method Runoff Calculations

APPENDIX C

- Detention Pond Design
- Forebay Design
- Pipe, Inlet, and Channel Capacities

APPENDIX D

- Drainage Plan – (full size – 24 x 36)

INTRODUCTION

This study provides the final drainage design for the construction of Been RV Park. The overall site is an approximate 15.79 acre property as defined by the Minor Subdivision Plat prepared by American West Land Surveying Co. dated October 07, 2020.

The proposed Been RV Park site is proposed on a predominantly undeveloped site. The existing site includes an existing residence, garage, two barns, and a gravel driveway, while the remainder of the site is undeveloped.

The project shall include approximately four (4) Lots. Lots 1 & 2 will be residential lots, with Lot 1 containing the existing residence. Lot 3 will contain the proposed RV Park, and Lot 4 will remain an agricultural lot. A series of gravel roads throughout the RV Park will also serve as access for Lots 1 & 2.

Been RV Park lies approximately 4 miles southwest of the City of Fort Lupton. County Road 19 is the east border, and County Road 10 lies approximately 1,850 feet to the north of the site.

The entire Been RV Park site and all adjacent and surrounding properties are historically tributary to the South Platte River which lies approximately 4 miles northeast of the site.

Based on the initial coordination with the City, no Final Drainage Studies for any adjacent properties were known to exist.

Been RV Park does not lie within a Master Flood or Drainage Planned Study. The entire property is within Zone X "Area of Minimal Flood Hazard" and not within the 100 year floodplain per FEMA FIRM 08123C2100E – effective January 20, 2016.

I. GENERAL LOCATION AND DESCRIPTION

A. Site Location

The property lies in the South $\frac{1}{2}$ of the Northeast $\frac{1}{4}$ of Section 16, Township 1 North, Range 67 West of the 6th P.M.

The overall property nets 15.79 acres +/- . County Road 19 lies along the eastern border.

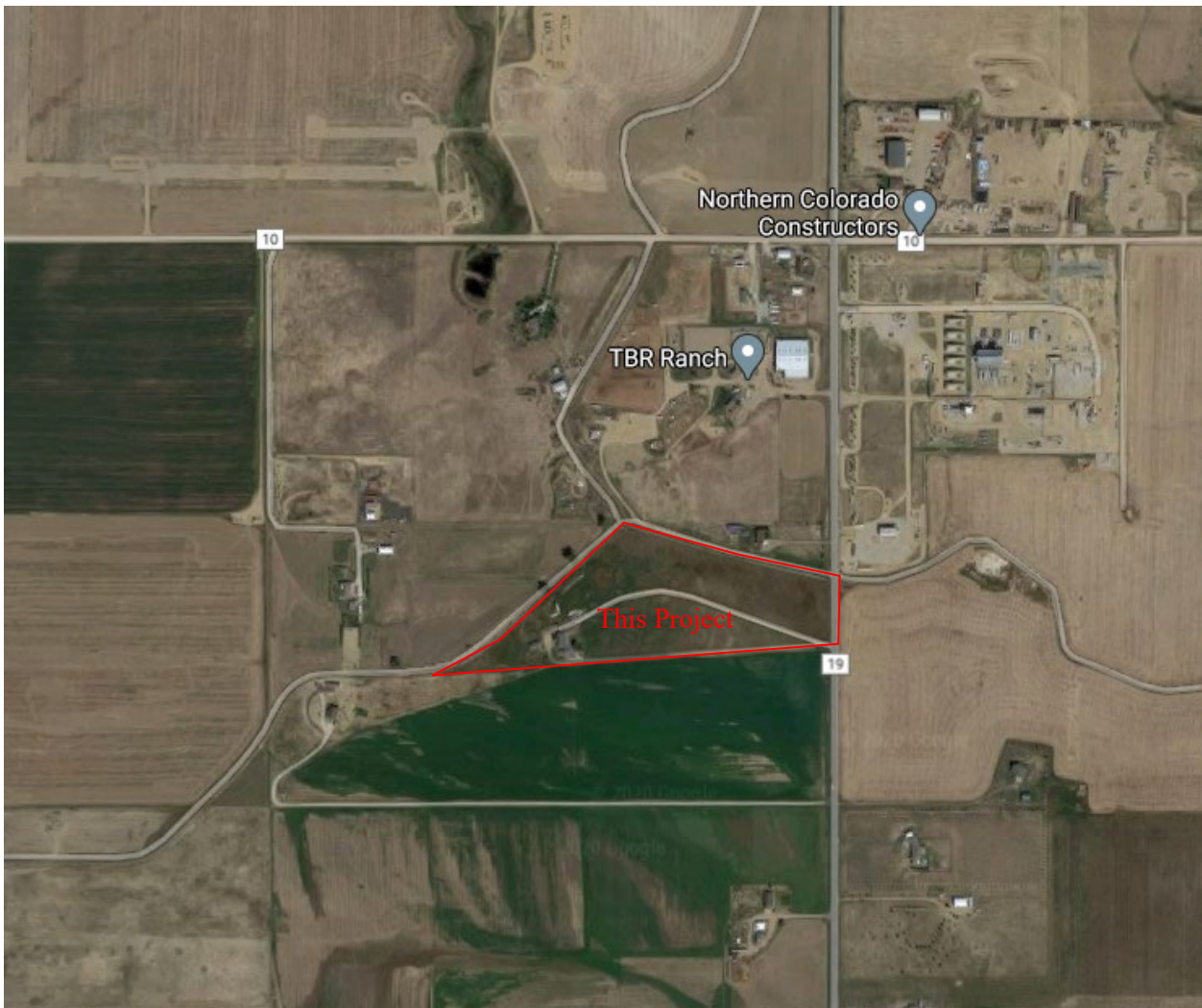
A vicinity and key map of the site are included in Appendix A of this study as well as on the following page.

The scales below are not accurate since the maps included herein are for exhibit purposes only.

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

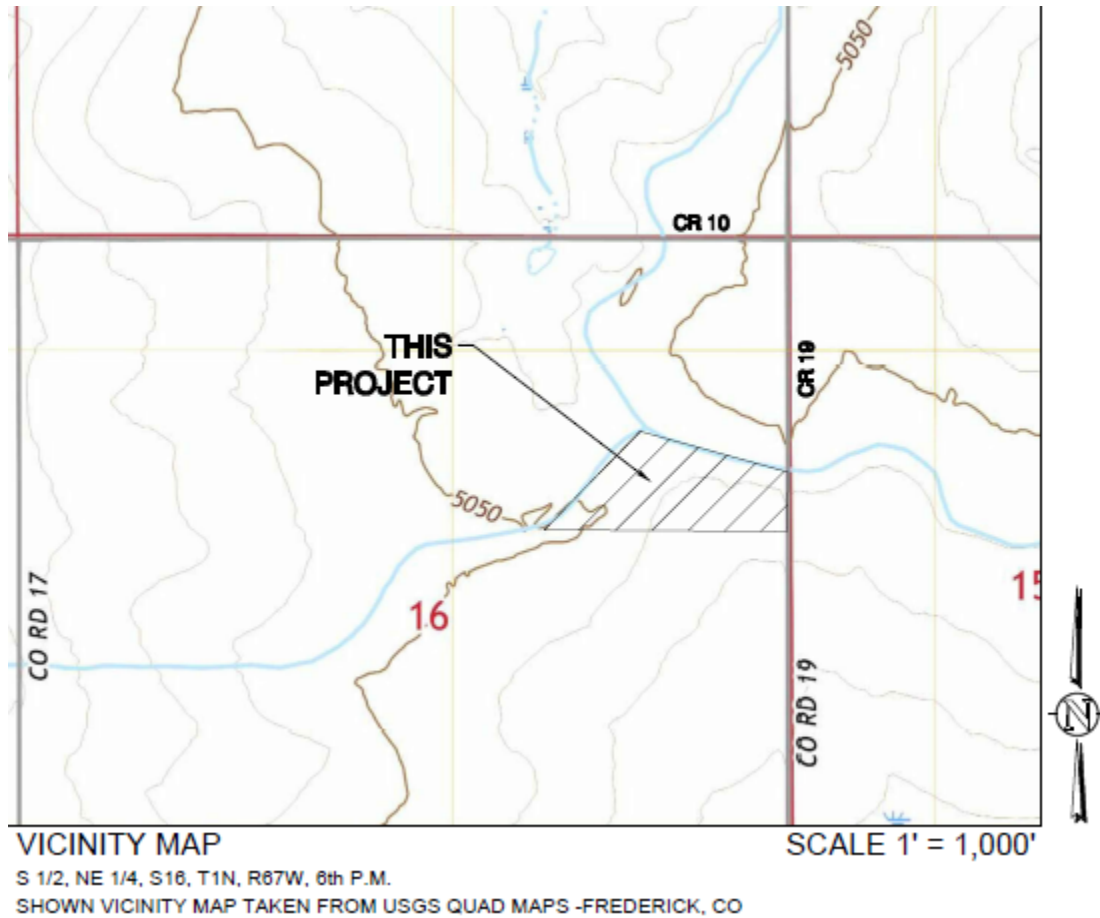
March 09, 2021

Page 1 of 13



The project is located south of Weld County Road 10, and immediately west of Weld County Road 19.

The Google Earth Exhibit above shows the site and the adjacent properties west of the City of Fort Lupton.



The USGS Exhibit above details the adjacent Weld County Roads and historic topography of the surrounding area.

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

March 09, 2021

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B. Description of Property

The metes and bounds legal description for the property is included in Appendix A.

Currently this parcel has slight to moderate topographical relief – 15 feet from the southwest corner (5052 elevation) to the southeast corner (5035 elevation). Ultimately the site does slope generally in one direction – to the existing low point just south of the access point with WCR 19 at the southeast corner of the site. The undeveloped lot is nearly bare with moderate weeds and shrub vegetation. Existing slopes average range from 0.5% to 1.7%. The historic slopes appear to be 1.4% based on the USGS Quad from northwest to southeast.

The existing grades in general match the historical direction per USGS Quad maps, but not at consistent slope due to the developed portion of the site.

The approximate grade at the four corners of the property are as follows – 5051.39 SW corner, 5044.19 N corner, 5044.16 NE corner, and 5035.16 SE corner of Been RV Park.

The property is made up of entirely 82 (Wiley-Colby complex), NRCS classified B soils. The soil type is noted as well drained. Soil classifications were taken from Hydrologic Soil Type Map (Appendix A) USDA Soil Survey.

II. DRAINAGE BASINS AND SUB-BASINS

A. Major Drainage Basins

The Been RV Park site is solely located in the South Platte River basin and all existing and developed drainage is ultimately tributary to the South Platte River. The historic and existing basins are shown on sheet 22 of the Construction Drawings.

HISTORIC

Basin H (15.79 ac) includes the entire property up to the existing WCR 398 ROW. As noted above, the historic grades (1.4%) drained off-site to the southeast. As noted previously, the entirety of the site and this basin is (100%) NRCS Soil Type B.

All runoff values presented herein have been prepared with the recently updated method of check for time of concentration – the UDFCD 2017 equation of: $(26-17i) + [L_{\text{travel}} / (60 * (14i + 9) * (S_o)^{.5})]$. All values provided in this study are as determined by the 2017 time of concentration check.

The Historic effective imperviousness value used was 2.0%. The minor (5yr) storm runoff is approximately 0.20 cfs, and the major storm runoff is approx. 20.54 cfs at Design Point H.

EXISTING

Basin E (15.79 ac) includes the entire property up to the existing WCR 398 ROW. As noted previously the topography slightly changes from 0.5% to 1.7% throughout the basin. This parcel currently drains to the existing low point just south of the access point with WCR 19 at the southeast corner of the site. The entirety of the site and this basin is (100%) NRCS Soil Type B.

The existing effective imperviousness value used was modeled at 4.06% since the overall basin (primarily undeveloped) includes the existing residence, accessory buildings, and gravel access road. The minor (5yr) storm runoff is approximately 0.57 cfs, and the major storm runoff is approximately 22.24 cfs at Design Point E1.

OFFSITE BASINS

Based on existing (USDA) topography, no runoff from offsite basins will contribute to the runoff of this site. Runoff from adjacent properties to the north will be captured by the East Branch of the Bull Canal before reaching this site, and existing topography suggests that runoff from the adjacent property to the south will flow south away from this site.

B. Minor Developed Drainage Basins

The Developed sub-basins related to this project are shown on sheet 23 of the Construction Drawings.

This study provides the final developed drainage characteristics for the ~ 15.79 acre site.

The developed basins for the Been RV Park site are defined as Basins Lot 1, Lot 2, Lot 3, and Lot 4. Basin Lot 3 includes the designed Subdivision Detention Pond.

The weighted average imperviousness for the entire site (All Basins including 100yr water surface is 29.43%). The overall imperviousness of the site with a dry pond bottom is 26.36%.

Each minor storm event referred to below is the 5 year event and each major storm event referred to below is the 100 year event. The 10 year event has also been calculated.

Calculations are carried out to the hundredths for consistency purposes only.

1. Basin Lot 1 (2.15 acres)

Basin Lot 1 is the developed lot in the southwest corner of the site. This basin contains the existing residence, garage, and a portion of the existing gravel access road. No improvements are proposed on this Lot with this development.

Runoff from Basin Lot 1 begins as roof runoff and then will be directed overland south and east towards southeast corner of Lot 1. Runoff will then enter Swale S and will be conveyed east and ultimately north to Forebay S in the proposed Detention Pond. The release from Basin Lot 1 occurs at Design Point 1 at the southeast corner of the lot where runoff will leave the basin.

The effective imperviousness value calculated for Basin Lot 1 is 15.24% and the Rational runoff calculations were based on said existing conditions. NRCS Soil Type for this basin is solely Type B. The minor (5yr) storm runoff is approximately 0.53 cfs, and the major storm runoff approximately 5.10 cfs.

2. Basin Lot 2 (1.83 acres)

Basin Lot 2 is located in the northwest corner of the site, directly north of Lot 1. This basin contains the two existing barns and has been modeled to receive a 4,000 square foot residence in the future.

Runoff from Basin Lot 2 begins as roof runoff and is directed overland towards southeast corner of Lot 2. Runoff will then enter the roadside pan of Center Ave and will be conveyed east to Swale E and ultimately south to Forebay N in the proposed Detention Pond. The release from Basin Lot 2 occurs at Design Point 2 where runoff will leave the basin.

The developed effective imperviousness value calculated for Basin Lot 2 is 8.57%. NRCS Soil Type for this basin is solely Type B. The minor storm runoff is 0.23 cfs, and the major storm runoff is 3.92 cfs. Calculations were carried out to the hundredths for consistency purposes only.

3. Basin Lot 3 (10.42 acres)

Basin Lot 3 is the center lot of the site. Although this Basin is primarily undeveloped ground, it has been modeled to receive the proposed RV stalls, a series of gravel roads with concrete roadside pans, and the proposed Detention Pond.

Runoff from Basin Lot 3 will flow overland southeast and be captured the roadside pans on the north side of each proposed road. Runoff will then be conveyed east to Swale E and ultimately south to Forebay N in the proposed Detention Pond. The release from Basin Lot 3 occurs at Design Point 3 where the proposed outlet structure will release the detained flow offsite.

The developed effective imperviousness value calculated for Basin Lot 3 is 38.40%. NRCS Soil Type for this basin is solely Type B. The minor storm runoff is 5.95 cfs, and the major storm runoff is 27.24 cfs. Calculations were carried out to the hundredths for consistency purposes only.

4. Basin Lot 4 (1.08 acres)

Basin Lot 4 is located in the northeast corner of the site. Although this Basin is currently undeveloped ground, it has been modeled to receive the proposed second gravel access road off WCR 19.

Runoff from Basin Lot 4 begins in the northwest corner of the basin and is directed overland south to the south lot line of Lot 4. Runoff will then be conveyed west to Swale E and ultimately south to Forebay N in the proposed Detention Pond. The release from Basin Lot 4 occurs at Design Point 4 where the runoff will leave the basin.

The developed effective imperviousness value calculated for Basin Lot 4 is 6.64%. NRCS Soil Type for this basin is solely Type B. The minor storm runoff is 0.11 cfs, and the major storm runoff is 2.55 cfs. Calculations were carried out to the hundredths for consistency purposes only.

III. DRAINAGE DESIGN CRITERIA

A. Regulations

The calculations provided in this letter report have been prepared in conformance with the City of Fort Lupton Development Standards and Regulations, the Colorado Water Conservation Board and Colorado Department of Natural Resources “*Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2*” (Ref 1), and “*Urban Drainage Flood Control District (UDFCD) Urban Storm Drainage Criteria Manual, Volumes I thru III*” (Ref 2), latest release unless otherwise noted.

All design elements outlined in this report, and illustrated in the construction plans, are proposed as final conditions (as directed, assumed, or otherwise prepared) in order to complete the development of this Project.

B. Drainage Studies, Outfall Systems Plans, Site Constraints

No apparent Final Drainage Study appears to have been prepared as part of this property or any adjacent properties in the past. The City of Fort Lupton falls just outside of the Urban Drainage boundary.

Coordination with Town staff confirmed no Final Drainage Report is known to exist for this property or any adjacent properties.

No significant constraint was identified as part of the design of this project beyond the flat nature of the area and the proximity of the East Branch of the Bull Canal to the north.

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

C. Hydrology

The rainfall intensity information was obtained from the NOAA Atlas 14 using 1 hour rainfall depths as taken from UDSDC Manual Vol 1 (Ref 2).

City of Fort Lupton adopted the Colorado Water Conservation Board and Colorado Department of Natural Resources “*Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2*” (Ref 1), and “*Urban Drainage Flood Control District (UDFCD) Urban Storm Drainage Criteria Manual, Volumes I thru III*” (Ref 2), latest release unless otherwise noted were utilized for confirmation of 100 year and 10 year event storm rainfall data.

Upon review of the aforementioned references, the NOAA Atlas 14 was referenced and data derived for 1 hour rainfall depths at 2, 5, 10, and 100 year events are as follows:

DESIGN STORM	WEC Derived from USDCM NOAA Atlas 14
	1-hr Event (inches)
2	0.83
5	1.11
10	1.38
100	2.62

The precipitation depth derived from the NOAA Atlas 14 by WEC for the 1-hour design storm was 2.62 inches rainfall depth for the 100-year storm, 1.38 inches rainfall depth for the 10-year storm, and 1.11 inches rainfall depth for the 5 year storm.

The Rational Method for storm-water runoff calculations, using the Equations as described in the UDFCD (Reference 2) Criteria Manual Chapter 5 Runoff was used to calculate stormwater flows within this study. The run-off coefficient ‘C’ values were obtained from the UDFCD (Reference 2) Criteria Manual as well based on the predominate NRCS Soil Type.

It appears no on site water quality or detention has been provided or maintained for any of the adjacent or neighboring properties (currently primarily agricultural/residential lots).

The use of weighted runoff coefficients is to accurately portray the proposed final conditions of the maximum build out (maximum lot coverage) for this project based on the best available information at this time. Sole use of Table RO-5 is applicable for Master Plan Drainage analysis including projects of this type – however calculation of proposed final conditions using weighted runoff coefficients provides a more thorough and accurate analysis.

The site has been modeled based on the current expected build out conditions. However, should additional paving occur the Swale conveyances have been sized to handle added runoff.

The proposed pond has been sized to capture all of the developed runoff from this site (at an expected build-out effective imperviousness of 40%).

*Been RV Park – Final Drainage Report
City of Fort Lupton Case # xxx*

No other offsite basins have been modeled for Pond A sizing since the adjacent surveyed topography indicated adjacent runoff is not directed onto this property (nor is runoff directed from this property due to the generally flat perimeter and proposed drainage swales).

It is the expectation of this study that any development or improvements to the adjacent properties will require them to provide appropriate stormwater design(s).

This project will not negatively affect the adjacent property and will provide modern stormwater control that does not currently exist. In short, this project will be an enormous improvement to the area.

D. Hydraulics

The conveyance of onsite site stormwater occurs primarily overland across pavements and then through landscape and into swales and roadside pans that will ultimately convey runoff to the proposed Detention Pond. Please see Appendix C for all related pipe and swale capacities.

Hydraulic grade lines have been calculated for the pond outlet pipe based on the 100 year restricted release rate (1.72 cfs) into the WCR 19 roadside ditch.

It is WEC's opinion the modeled and calculated (routed peak runoffs) are likely higher than the expected final developed conditions (final lot development not expected to meet buildout imperviousness modeled). The runoff rates presented in this report are based on the modeled imperviousness of the site (roughly 30%). It is likely that a portion of the developed runoff will be captured by landscape areas while being routed to the pond, and therefore result in a lower total runoff than what is presented in this report.

There are no major drainage ways on this site or immediately adjacent. The East Branch of the Bull Canal lies just north of this site but does not serve this site.

E. Water Quality Enhancement

Water quality will be provided by overland runoff (gravel or vegetated native grasses) and also by the proposed forebays and landscaped pond bottom. Additional grass swales may be incorporated by the future lots.

F. Groundwater

A Project Geotechnical Report was completed by Earth Engineering Consultants, LLC on December 04, 2020.

Groundwater was encountered at a depth of 10-11 feet in five of the test borings.

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City of Fort Lupton Case # xxx*

Developed runoff is not anticipated to increase groundwater levels but will be infiltrated into the subsurface soils.

Should groundwater levels surface (above the design bottom) at any time for more than 24 hours the Engineer of Record should be contacted and plans to mitigate said groundwater be undertaken (i.e. cleaning of outlet structure and/or raising of Pond bottom above groundwater).

IV. STORMWATER MANAGEMENT FACILITY DESIGN

A. Stormwater Conveyance Facilities

Runoff analysis for stormwater management has been included and presented in this report.

No Master study exists for this area.

Capacity calculations for concrete pans, the proposed storm pipes, and the proposed Swales are included in Appendix C.

B. Stormwater Storage Facilities

Traditional stormwater storage and attenuation (water quality and detention) is currently proposed since this site has a source of formal outfall. A Detention Pond has been designed with an outlet structure and is located in the southeast corner of the site.

UDFCD Criteria Volumes (Ref 2) and Weld County Drainage Criteria (Ref 3) were referenced for determining necessary storage volumes.

Four independent volumes were calculated – (1) WQCV, (2) Required 10 yr, (3) required 100 yr, (4) Available volume @ Emergency Overflow. UDFCD UD spreadsheet version 4.00 was utilized to calculate said volumes; (1) 8,519 cubic feet, (2) 20,842 cubic feet, (3) 39,427 cubic feet, and (4) 45,443 cubic feet.

The current Been RV Park Detention Pond storage/grading design provides volume for the residential Lots 1 & 2, the proposed RV Park (Lot 3), and the future Lot 4.

All calculations are included in Appendix C.

C. Water Quality BMP's

Overland runoff will provide some water quality. Detention Pond Forebays will treat all routed runoff. Additional BMP's in accordance with current UDFCD Volume III criteria (Ref 2) may be added in the future.

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D. Floodplain

This project does not lie within a floodplain. The entire subdivision is within Zone X “Area of Minimal Flood Hazard” per FEMA FIRM 08123C2100E – effective January 20, 2016. See also the FIRMETTE map included Appendix A.

E. Groundwater

Typical Lot runoff is expected to moderately infiltrate the seeded grasses and gravel covered site under most minor events. Under multiple minor events or major events runoff is expected to sheet flow to adjacent swales and be routed to the Detention Pond as designed. Minimal effect to the groundwater is expected.

Typical commercial geotechnical reports recommend the building design to incorporate foundation drains and sump pumps for protection against groundwater.

F. Additional permitting

No additional permitting is anticipated.

G. Storm System Maintenance

This section defines the maintenance responsibilities for Been RV Park Site:

- Swales – including but not limited to mowing, weed control, cleaning and removing debris, removing accumulated sediment, adding erosion control, and replacement of any damaged or failing improvements. Improvements for Swales include the concrete pan and adjacent grades and vegetation.
- Drainage Basins – including but not limited to mowing, weed control, cleaning and removing debris, removing accumulated sediment, adding erosion control, and replacement of any damaged or failing improvements. Improvements for each Basin beyond all Swales include the on site grading, on site native grass, and proposed concrete curb adjacent to all proposed Buildings, parking, and access.
- Storm Infrastructure (inlets and piping) – including but not limited to trash and sediment capture and removal, adding erosion control, and replacement of any damaged or failing improvements. Upstream street sweeping will also provide protection against sediment accumulation.
- Detention Pond – including but not limited to mowing, weed control, cleaning and removing debris, removing accumulated sediment, adding erosion control, and replacement of any damaged or failing improvements. Improvements for the Detention Pond includes side slopes, forebays, trickle pan, pond bottom, and the outlet structure located on the east edge.

Frequency of inspections and maintenance are as follows:

- Swales, Basins, Storm Infrastructure, and Detention Pond should be inspected monthly or within 24 hours of each measureable precipitation event.
- Any damaged or lost material (riprap) should be replaced immediately
- Mowing should occur monthly or more often depending upon growth.
- Weed control should occur a minimum of two times per spring/summer/fall season
- Cleaning beyond inspections noted above should occur at a minimum of annually

V. CONCLUSIONS

A. Compliance with standards

This Drainage Study for the Been RV Park site was prepared in conformance with the City of Fort Lupton Development Standards and Regulations, Colorado Water Conservation Board and Colorado Department of Natural Resources “*Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2*” (Ref 1), and the Urban Drainage Flood Control District Storm Drainage Design and Technical Criteria (Reference 2).

This drainage design and concept quantifies the requirements to manage stormwater runoff.

B. Variances

No variance is proposed or requested.

C. Drainage concept

The intent of this design is to provide the drainage analysis necessary for capture, routing, and detention of the runoff generated by the Been RV Park property.

D. Additional Items

No additional items were considered at this time.

VI. REFERENCES

1. Colorado Water Conservation Board and Colorado Department of Natural Resources “Colorado Floodplain and Stormwater Criteria Manual Volumes 1 and 2”
2. Urban Storm Drainage Criteria Manual, Volumes I-III, Denver Regional Council of Governments, 2016, Revised 2017 & 2018, and all subsequent updates
3. Weld County Storm Drainage Design Manual “Weld County Engineering and Construction Criteria – Chapter 8: Storm Drainage Criteria” Revised 2019.

\\WECSERVER1\Share\0342_001_00-BEEN RV PARK\Docs\08 Reports\Drainage\20201019 FDR\20210305 Been FDR.docx

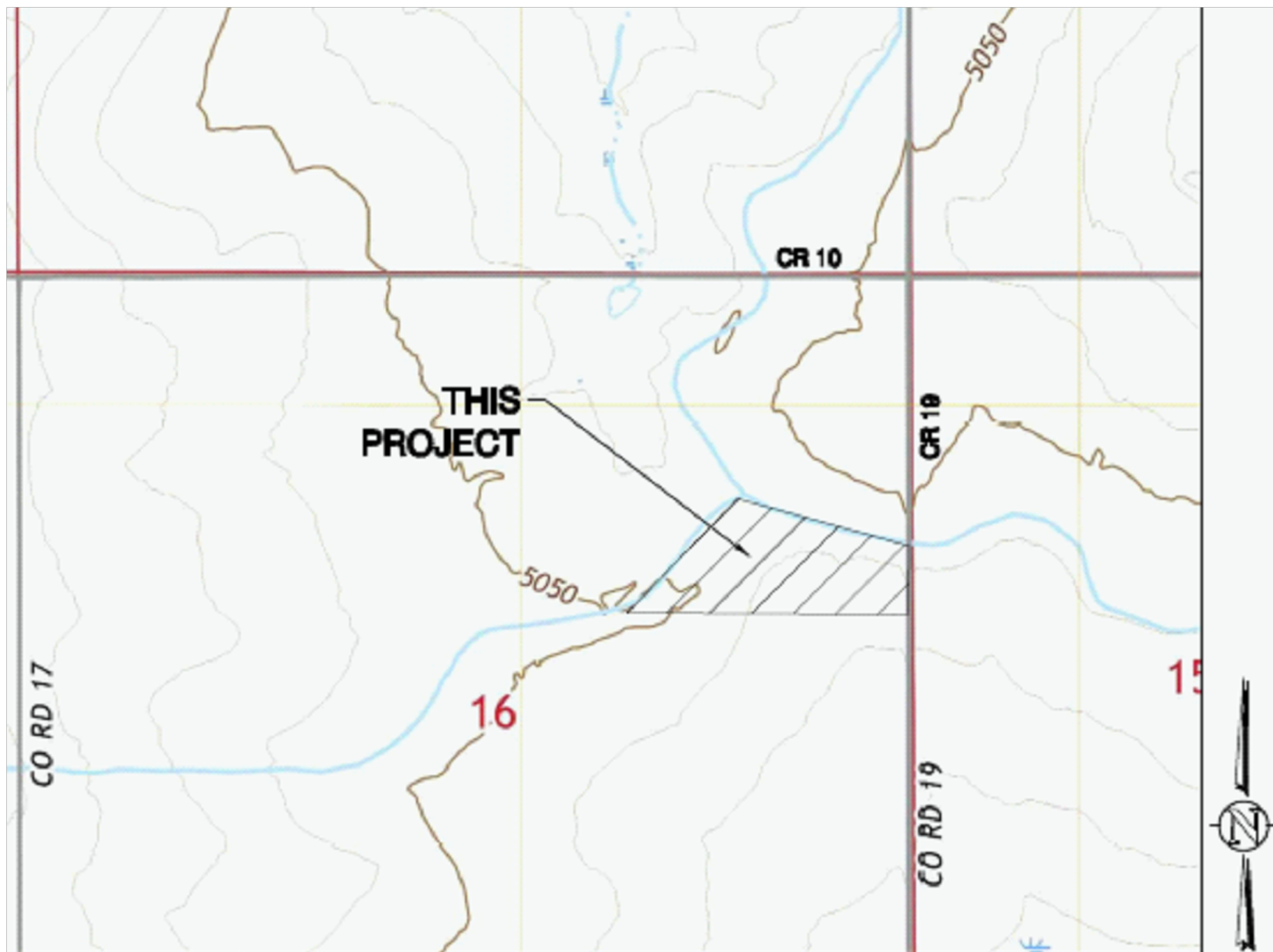
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March 09, 2021

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APPENDIX A

**Vicinity Map (USGS) / Key Map / FEMA Flood Insurance Rate Map (FIRM),
Legal Description, Soil Survey Map and Soil Legend, Geotechnical Report**



VICINITY MAP

S 1/2, NE 1/4, S16, T1N, R67W, 6th P.M.

SHOWN VICINITY MAP TAKEN FROM USGS QUAD MAPS -FREDERICK, CO

SCALE 1' = 1,000'



Sheryl Been
Write a description for your map.

Legend

 3647 Co Rd 19



National Flood Hazard Layer FIRMette



104°53'46"W 40°3'25"N



USGS The National Map: Orthoimagery. Data refreshed April 2020

0 250 500 1,000 1,500 2,000 Feet

1:6,000

104°53'8"W 40°2'57"N

Been RV

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/9/2020 at 1:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



United States
Department of
Agriculture

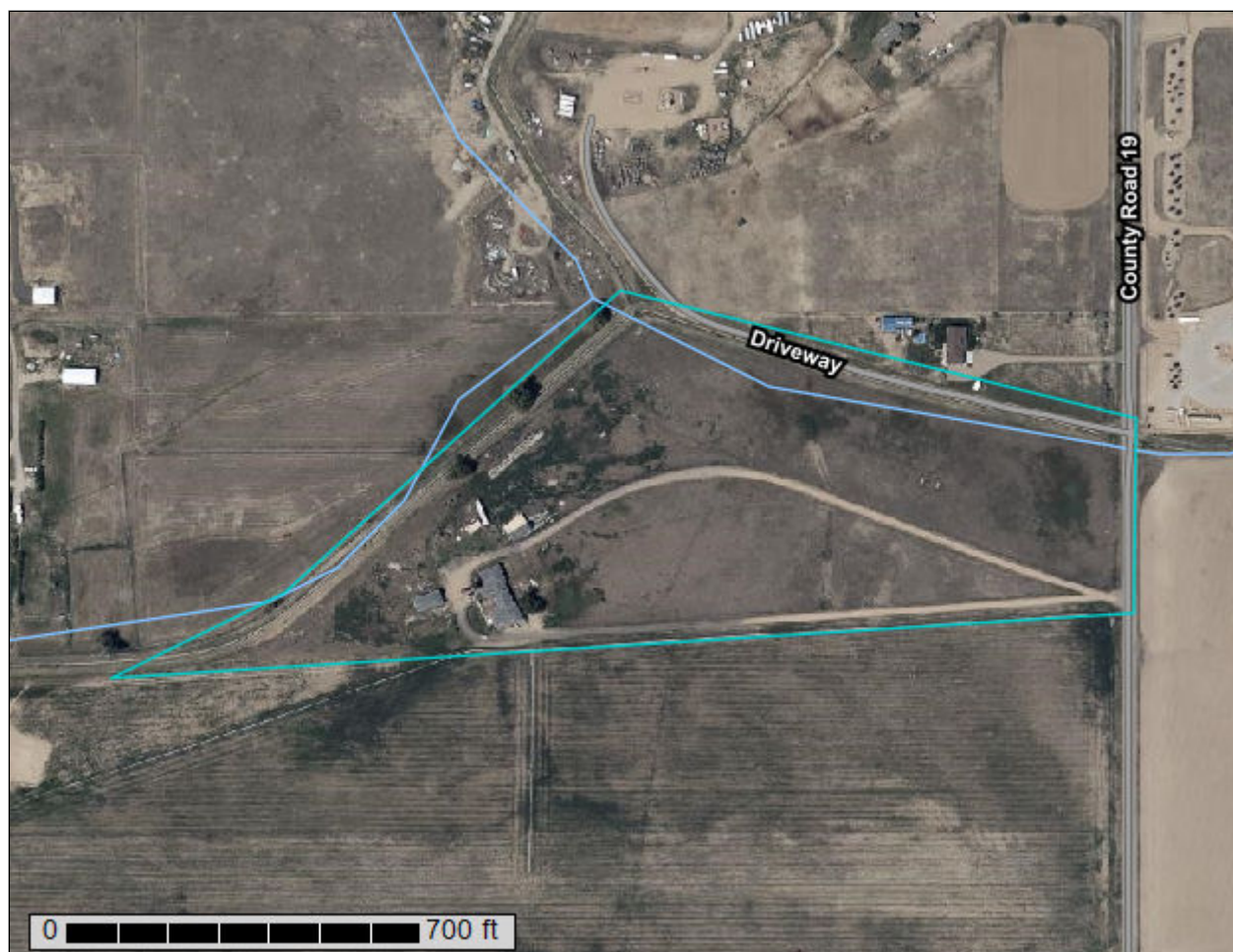
NRCS

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 **Weld County, Colorado, Southern Part**

Been RV



Preface

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).

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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82—Wiley-Colby complex, 1 to 3 percent slopes.....	13
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How Soil Surveys Are Made

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

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

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)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

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: Weld County, Colorado, Southern Part
Survey Area Data: Version 19, Jun 5, 2020

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

Date(s) aerial images were photographed: Jul 19, 2018—Aug 10, 2018

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
82	Wiley-Colby complex, 1 to 3 percent slopes	19.9	100.0%
Totals for Area of Interest		19.9	100.0%

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 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.

Weld County, Colorado, Southern Part

82—Wiley-Colby complex, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3643
Elevation: 4,850 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Wiley and similar soils: 60 percent
Colby and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiley

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 60 inches: silty clay loam
H3 - 60 to 64 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Loamy Plains (R067BY002CO)
Hydric soil rating: No

Description of Colby

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Loamy Plains (R067BY002CO)
Hydric soil rating: No

Minor Components

Weld

Percent of map unit: 4 percent
Hydric soil rating: No

Heldt

Percent of map unit: 4 percent
Hydric soil rating: No

Keith

Percent of map unit: 2 percent
Hydric soil rating: No

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**GEOTECHNICAL ENGINEERING REPORT
BEEN RV PARK
3647 ROAD 19, WELD COUNTY, COLORADO
EEC PROJECT NO. 1202083**

Prepared for:

Western Engineering Consultants
127 South Denver Avenue
Fort Lupton, Colorado 80621

Prepared by:

Earth Engineering Consultants, LLC
4396 Greenfield Drive
Windsor, Colorado 80550





December 4, 2020

Western Engineering Consultants
127 South Denver Avenue
Fort Lupton, Colorado 80621

Attn: Mr. Chadwin Cox (chadwin.cox@westerneci.com)

Re: Geotechnical Engineering Report
Been RV Park
3647 Road 19, Weld County, Colorado
EEC Project No. 1202083

Mr. Cox:

Enclosed, herewith, are the results of the subsurface exploration completed by Earth Engineering Consultants, LLC (EEC) for the referenced project. For this exploration, seven (7) test borings were advanced to depths of approximately 20 to 30 feet below existing site grades. This subsurface exploration was carried out in general accordance with our proposal dated October 13, 2020.

In summary, the subsurface conditions encountered in the test borings generally consisted of lean clay underlain by bedrock at depths of about 4 to 9 feet below ground surface. At current moisture and density conditions, the subgrades/bedrock exhibited moderate to very high swell potential. Groundwater was encountered at depths as shallow as 10 feet below ground surface.

The expansive soils encountered present a risk of post-construction heaving of site improvements should those subgrades become wet subsequent to construction. Due to the presence of expansion soils, it is our opinion that building foundations and structural floor slabs should be supported on drilled pier foundations. As an alternative, post-tension slab foundations could be considered, however, over excavation and replacement of a zone of subgrades beneath the foundations/floor slab should be anticipated with an expectation of higher risk of heave potential/movement of site structure. We anticipate that site roadways and associated flatwork

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could be supported on a shallow zone of over excavated and backfilled material with the understanding of a higher risk of movement. Geotechnical recommendations concerning design and construction of foundations and support of floor slabs and pavements are presented in the text of the attached report.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the enclosed report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,
Earth Engineering Consultants, LLC



Ethan P. Wiechert, P.E.
Senior Project Engineer

Reviewed by: David A. Richer, P.E.
Senior Geotechnical Engineer

**GEOTECHNICAL ENGINEERING REPORT
BEEN RV PARK
3647 ROAD 19, WELD COUNTY, COLORADO
EEC PROJECT NO. 1202083**

December 4, 2020

INTRODUCTION

The geotechnical subsurface exploration for the proposed Been RV Park planned for construction at 3647 Road 19 in Weld County, Colorado has been completed. To develop subsurface information in the proposed development area, seven (7) test borings were drilled to depths of approximately 20 to 30 feet below existing site grades. Individual boring logs and a diagram indicating the approximate boring locations are included with this report.

We understand the planned development would include an RV Park with approximately 133 campsites and associated roadways. The development would also include an approximate 10,000 square-foot commercial building on the east side of the site and a residence on the west side of the site. Numerous onsite wastewater treatment systems are anticipated for the campsites, residence, and commercial structure. Subsurface exploration and geotechnical engineering for the residence and the onsite wastewater treatment systems are outside the scope of our services and provided by others.

The commercial building would likely be a one- or two-story, wood/steel framed structure constructed at-grade (no basement). We estimate foundation loads for the planned building would be relatively light with continuous wall loads less than 3 kips-per-foot and individual column loads less than 50 kips. Floor loads are expected to be relatively light, consistent with commercial/retail use. We anticipate roadways would be utilized by low volumes of light passenger vehicles with areas designated for low volumes of light truck traffic. Based on areal imagery of the site, we anticipate cuts and fill to develop site grades would be less than 2 feet (+/-).

The purpose of this report is to describe the subsurface conditions encountered in the test borings, analyze and evaluate the field and laboratory test data, and provide geotechnical recommendations concerning design and construction of the commercial building's foundations and floor slabs, and support of site flatwork and pavements. Recommended pavement sections, which are based on assumed traffic conditions, are also included.

EXPLORATION AND TESTING PROCEDURES

The test boring locations were selected and established in the field by EEC personnel by pacing and estimating angles from identifiable site features. The approximate locations of the borings are shown on the attached boring location diagram. The boring locations should be considered accurate only to the degree implied by the methods used to make the field measurements.

The test borings were advanced using a truck mounted, CME-55 drill rig equipped with a hydraulic head employed in drilling and sampling operations. The boreholes were advanced using 4-inch nominal diameter continuous flight augers. Samples of the subsurface materials encountered were obtained using split-barrel and California barrel sampling procedures in general accordance with ASTM Specifications D1586 and D3550, respectively.

In the split-barrel and California barrel sampling procedures, standard sampling spoons are advanced into the ground by means of a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the split-barrel and California barrel samplers is recorded and is used to estimate the in-situ relative density of cohesionless soils and, to a lesser degree of accuracy, the consistency of cohesive soils. In the California barrel sampling procedure, relatively intact samples are obtained in removable brass liners. All samples obtained in the field were sealed and returned to our laboratory for further examination, classification and testing.

Laboratory testing on each of the recovered samples included moisture content tests with unconfined compressive strength of appropriate samples estimated using a calibrated hand penetrometer. Atterberg limits and washed sieve analysis tests were completed on select samples to evaluate the quantity and plasticity of fines in the subgrades. Swell/consolidation tests were performed on select samples to evaluate the potential for the subgrade materials to change volume with variation in moisture content and load. The quantity of water-soluble sulfates was determined on numerous samples to evaluate the potential for sulfate attack on site concrete and for selection of appropriate soils stabilization materials if needed. Results of the outlined tests are indicated on the attached boring logs and summary sheets.

As part of the testing program, all samples were examined in the laboratory and classified in general accordance with the attached General Notes and the Unified Soil Classification System, based on the soil's texture and plasticity. The estimated group symbol for the Unified Soil Classification System is indicated on the boring logs and a brief description of that classification system is included with this report.

SITE AND SUBSURFACE CONDITIONS

The proposed campsite and commercial building area (development property) is located on the west side of Road 19, about a ¼-mile south of Road 10. The development property is about 15 acres in size with about 11 acres planned for the campsites and commercial building. At the time of our site visit, with exception of an existing unsurfaced driveway through the property, the development property was vacant and covered with a thin mantle of topsoil and sparse vegetation. The ground surface in this area was relatively flat with approximately 5 feet of fall from the north to the south. On the development property, evidence of prior building construction was not observed by EEC personnel. Site photos taken at the time of our drilling operations are included with this report.

EEC field personnel were on site during drilling to evaluate the subsurface conditions encountered and direct the drilling activities. Field logs prepared by EEC site personnel were based on visual and tactual observation of disturbed samples and auger cuttings. The final boring logs included with this report may contain modifications to the field logs based on results of laboratory testing and evaluation. Based on results of the field borings and laboratory testing, subsurface conditions can be generalized as follows.

From the ground surface, the topsoil and vegetation was underlain by brown lean clay which extended to depths of approximately 4 to 9 feet below ground surface. The clay soils were relatively dry, dense, very stiff and exhibited high potential to swell with increase in moisture content at current moisture and density conditions. The lean clay soils were underlain by bedrock which extended to the bottom of the completed test borings. The bedrock generally consist of claystone with intermittent sandstone, which transitioned to claystone with depth. The bedrock, particularly the claystone, was moderately hard and exhibited a moderate swell potential.

The stratification boundaries indicated on the boring logs represent the approximate location of changes in soil types; in-situ, the transition of materials may be gradual and indistinct.

GROUNDWATER CONDITIONS

Observations were made while drilling and after completion of the borings to detect the presence and depth to hydrostatic groundwater. At the time of drilling, free water was observed in five of the test borings while drilling at depths of about 12 to 15 feet below ground surface, and in test borings B-1 and B-6 at depths of approximately 10 to 11 feet after drilling. Free water was not observed in test borings B-4 and B-7, generally located on the south side of the site. The borings were backfilled upon completion of the drilling operations; therefore, subsequent groundwater measurements were not obtained. The groundwater level observations are included on the attached boring logs.

Fluctuations in groundwater levels can occur over time depending on variations in hydrologic conditions, and other conditions not apparent at the time of this report. We anticipate the irrigation canal boarding the north side of the site may impact groundwater levels at this site. Longer term monitoring of water levels in cased wells, which are sealed from the influence of surface water, would be required to more accurately evaluate fluctuations in groundwater levels at the site. We have typically noted deepest groundwater levels in late winter and shallowest groundwater levels in mid to late summer.

ANALYSIS AND RECOMMENDATIONS

General

The subgrades encountered in the test borings generally consisted of moderately to highly plastic clay, which was relatively dry, dense, and very stiff, underlain at relatively shallow depth by bedrock. At current moisture and density conditions, the subgrades/bedrock exhibited a moderate to very high potential to swell. Movement of foundations, pavements and other at-grade improvements placed directly on expansive materials would be expected if the moisture content of those materials increases subsequent to construction.

Due to the expansive soils encountered at this site, care will be needed to see that site preparation and designs of site improvements include measures to mitigate the potential of heaving of the site improvements to an acceptable level. Outlined herein are recommendations for development of this site; however, the client should recognize that building on expansive soils is risky, even when

mitigation plans are followed. Mitigation plans outlined herein would reduce the risk of heaving of site improvements, but that risk cannot be eliminated.

Site Preparation

Prior to placement of any fill and/or improvements, we recommend any existing topsoil, vegetation, and any unsuitable materials be removed from the planned improvement areas. After stripping the site and after making all cuts and prior to placing any fill, we recommend over excavating the subgrades beneath pavements and exterior flatwork (sidewalks, curb-and-gutter, etc.). The over excavations should extend to a depth of at least 3 feet below ground surface. The over excavations should extend laterally 8 inches for every 12 inches of over excavation depth. Note, recommendations for preparation in the building areas is included in the section titled *Building Foundations*.

The over excavation depths recommended should reduce the amount of heaving of site flatwork and promote a more even risk of heaving; even though that risk is reduced, it is not eliminated. If those subgrades become substantially wet subsequent to construction, heaving upwards of 6 inches or more could be possible. If that is not acceptable, greater over excavation depths up to 10 feet below ground surface would be necessary to significantly reduce that risk. EEC should be contacted to provide alternative recommendations if that is desirable.

After completing the over excavations, the exposed soils should be scarified to a depth of 9 inches, adjusted in moisture content and compacted to at least 95% of the material's standard Proctor maximum dry density as determined in accordance with ASTM Specification D698. The moisture content should be adjusted to within -1 to +3%.

Fill soils should consist of approved materials which are free from organic matter and debris. In our opinion, the over excavated clay soils or similar soils could be used. The fill soils should be placed in loose lifts not to exceed 9 inches in thickness, adjusted in moisture content and compacted as recommended for the scarified soils. Care will be needed to maintain the recommended moisture content prior to and during construction of overlying improvements. Care should be taken after preparation of the subgrades to avoid disturbing the subgrade materials. Materials which are loosened or disturbed should be reworked prior to placement of foundations/flatwork.

Foundations/Floor Slabs**Drilled Piers**

Based on the materials encountered in the completed test borings, we recommend the commercial building foundations and floor slabs (structural floor) are supported on deep foundations (drilled piers) extending to bear in competent bedrock.

We recommend drilled piers extend to bear at least 20 feet into firm competent bedrock and have a minimum length of at least 30 feet. Both minimum length and minimum penetration into the underlying bedrock should be met. For design of drilled piers, we recommend using a total end bearing pressure not to exceed 15,000 psf. In addition, a skin friction value of 1,500 psf could be used for that portion of the drilled piers extending into competent bedrock. Lower values may be appropriate for pier groups depending on pier diameter and spacing. Exterior foundation grade beams, or foundations in unheated areas should be located a minimum of 30 inches below adjacent exterior grade to provide frost protection. The use of at least 18 inches of void form beneath grade beams and floor slabs is recommended.

When the lateral capacity of drilled piers is evaluated by the LPILE program, we recommend that internally generated load-deformation (P-Y) curves be used. Table 1 below includes recommended soil parameters for design of drilled piers using LPILE.

Table 1. Soil parameters for design of drilled piers using LPILE program.

Parameters	Native Overburden	Bedrock
Unit Weight of Soil (pcf)	130 ⁽¹⁾	130 ⁽¹⁾
Undrained Shear Strength (psf)	2,000	3,000
Angle of Internal Friction, ϕ (degrees)	25	20
Strain Corresponding to $\frac{1}{2}$ Max. Principal Stress Difference, ϵ_{50}	0.01	0.005

All piers should be reinforced full depth for the applied axial, lateral, and uplift stresses imposed. The amount of reinforcing steel for expansion should be determined by the tensile force created by the uplift force on each pier with allowance for dead load. Unit weights in Table 1 should be adjusted for buoyant conditions as appropriate.

Drilling caissons to design depth should be possible with conventional heavy-duty single flight power augers equipped with rock teeth; however, areas of well-cemented bedrock lenses may be encountered throughout the site at various depths where specialized drilling equipment and/or rock excavating equipment may be required.

Cohesive subgrades were encountered overlying the bedrock stratum. Groundwater was also encountered at a depth as shallow as approximately 10 feet below existing site grades. We anticipate temporary casing could be necessary for the portion of the drilled shaft above the bedrock at the time of construction.

Due to the presence of groundwater on the site, we expect some water may infiltrate the drilled shaft borehole. A maximum 3-inch depth of groundwater is acceptable in each pier prior to concrete placement. If pier concrete cannot be placed in relatively dry conditions, a tremie should be used for concrete placement. Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes. Pier concrete with slumps in the range of 6 to 8 inches is recommended. If casing is used for the pier construction, it should be withdrawn in a slow and continuous manner maintaining a sufficient head of concrete to prevent influx of water and/or the creation of voids in the pier concrete.

The foundation pier excavations should be observed by the geotechnical engineer. A representative of the geotechnical engineer should inspect the bearing surface and pier configuration. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations could be required.

We estimate the long-term settlement of drilled pier foundations designed and constructed as outlined above would be less than 1 inch.

Post-Tension Slab

As an alternative to deep foundations, it is our opinion the site commercial building could be supported on a post-tension slab foundation bearing on a zone of over excavated and replaced subgrades. Post-tensioned slab foundations consist of a combined floor slab and foundation system joined together with post-tensioning cables. The post-tensioned system moves as a single unit

significantly reducing the amount of differential movement across the building area and between foundation/floor slab elements. Total movement of the overall system should still be expected.

To develop the building areas for a post tension slab foundation system, prior to completing any cuts, fills and/or site improvements, we recommend all existing surficial vegetation and topsoil be stripped from the site. Once the site is stripped, we recommend any additional cuts be completed. Following stripping of the site and after making all cuts, we recommend over excavating a zone of soil beneath the building footprints (foundations and floor slabs) and replacing those soils with moisture conditioned and compaction-controlled material. The over excavations should extend to a minimum depth of at least 6 feet below ground surface and extend laterally 8 inches for every 12 inches of over excavation depth. After the completing the over excavations, the exposed soils should be scarified to a minimum depth of 9 inches, adjusted to within -1 to +3% of standard Proctor optimum moisture content and compacted to at least 95% of the material's standard Proctor maximum dry density as determined in accordance with ASTM Specification D698.

Fill soils to replace the over excavated soils should consist of approved materials, which are free from organic matter and debris. It is our opinion, the over excavated soils or similar could be used as fill in these areas. We recommend the fill soils be placed in loose lifts not to exceed 9 inches thickness, adjusted in moisture content and compacted as recommended for the scarified soils.

Care will be needed to maintain the recommended moisture content within the fill prior to and during construction of overlying improvements. Materials which are allowed to dry excessively or materials which are over compacted by subsequent construction traffic may require removal and replacement or reworking in-place prior to construction of overlying improvements.

Outlined in Table 2 are recommended post-tension slab design criteria based on the subsurface conditions encountered and the above recommendations for subgrade preparation below the site structures. The criteria in Table 2 is developed in general accordance with the 3rd Edition of the Post-Tensioning Institute design manual. Post-tension slab foundations should be designed and constructed in accordance with the appropriate design criteria below.

Table 2. Recommended post-tension slab design criteria.

Maximum Allowable Bearing Pressure		2,000 psf
Edge Moisture Variation Distance, e_m	Center Lift Condition	7.0 ft
	Edge Lift Condition	3.8 ft
Differential Soil Movement, y_m	Center Lift Condition	0.6 in
	Edge Lift Condition	2.1 in
Slab-Subgrade friction coefficient, μ	on polyethylene sheeting	0.75
	on cohesionless soils (sands)	1.0
	on cohesive soils (clays)	2.0

Exterior foundation grade beams, or foundations in unheated areas should be located a minimum of 30 inches below adjacent exterior grade to provide frost protection.

Care should be taken to include flexible connections where utilities enter the building to allow for overall structural movement. Care would be needed to allow for some differential movement between the structure and adjacent exterior flatwork. We estimate total heave of post-tension slab foundations following an over excavation and replacement as outlined above could be 4 inches. Greater over excavation depths could be considered to reduce the total heave potential.

Foundation Wall and Utility Backfill

Backfill needed to develop site grades following installation of foundations and site utilities should consist of low volume change materials which are free of organic matter and debris. In our opinion the site lean clay soils could be used. Backfill soils should be placed in loose lifts not to exceed 9 inches thickness, adjusted in moisture content and compacted to at least 95% of the material's maximum dry density as determined by the standard Proctor procedure, ASTM D698. The moisture content should be adjusted to with -1 to +3% of optimum moisture content.

Seismic

The site soil conditions consist of very stiff lean clay overlying moderately hard bedrock to the depths explored. For those site conditions, the International Building Code indicates a Seismic Site Classification of D. Evaluating borings to a greater depth could reveal an alternative site classification.

Corrosion Potential for Site Concrete

Results of water-soluble sulfate testing on three (3) select subgrade samples indicate sulfate (SO_4) contents ranging from 0.16 to 1.95%. ACI 318, Section 4.2 indicates the site soils have a severe risk of sulfate attack on Portland cement concrete and indicates site concrete should be designed using a sulfate exposure of S2. Note that concrete mixtures with a severe sulfate exposure may require sulfate resistant cements and/or pozzolans in the mixtures; refer to ACI 318 Section 4.3 for mixture design.

Pavements

Pavement subgrades should be prepared as outlined in the section *Site Preparation*. Once the subgrades are prepared as recommended and prior to surfacing with aggregate base, we recommend proof rolling the pavement subgrades to identify any soft, wet and yielding areas. Yielding and/or soft areas in the subgrades should be reworked and/or replaced prior to placement of aggregate base materials. Note that laboratory testing indicated the subgrades contain appreciable amounts of water-soluble sulfates, as such, stabilizing the soil with calcium-based materials (i.e. Class C fly ash, lime, cement) is not recommended.

We anticipate the site pavements would include areas designated for low volumes of light weight passenger vehicles (Light Duty) and areas of low volumes of light trucks (Heavy Duty). Equivalent daily load application (EDLA) values of 15 and 5 were assumed for the Heavy Duty and Light Duty areas, respectively. Based on the subsurface conditions encountered at the site, an assumed R-value of 5 was used in design of the pavement sections.

Recommended minimum pavement sections are provided below in Table 3. Hot bituminous pavement (HBP) sections may show rutting/distress in truck loading and drive areas; therefore, concrete pavements should be considered in those areas. The recommended pavement sections are considered minimum; thus, periodic maintenance should be expected.

Table 3. Recommended minimum pavement sections for estimated traffic loads.

Design Information	Heavy Duty	Light Duty
EDLA	15	5
Reliability (%)	80	80
Resilient Modulus (psi)	3025	3025
Serviceability Loss (psi)	2.2	2.2
Design Structure Number	3.05	2.57
Option 1: Composite		
HBP	5"	4"
Aggregate Base	8"	8"
Option 2: PCC (Non-reinforced)	6.5"	5.5"

We recommend aggregate base meet CDOT Class 5 or Class 6 aggregate base. Aggregate base should be adjusted in moisture content and compacted to achieve a minimum of 95% of standard Proctor maximum dry density.

HBP should be graded as S or SX and prepared with 75 gyrations using a Superpave gyratory compactor in accordance with CDOT standards. Grading SX is recommended for surface course of the pavement. The HBP should consist of PG 58-28 or PG 64-22 asphalt binder; however, if the mix contains reclaimed asphalt pavement (RAP) material, we recommend using PG 58-28 binder. HBP should be compacted to achieve 92 to 96% of the mix's theoretical maximum specific gravity (Rice Value).

Portland cement concrete should be an approved exterior pavement mix with a minimum 28-day compressive strength of 4,500 psi and should be air entrained. Based on appreciable amounts of water-soluble sulfate contents in the subgrades, concrete pavement should be designed using a severe sulfate exposure of S2. Wire mesh or fiber could be considered to reduce shrinkage cracking.

Longitudinal and transverse joints should be provided as needed in concrete pavements for expansion/contraction and isolation. The location and extent of joints should be based upon the final pavement geometry. Sawed joints should be cut in general accordance with ACI recommendations. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

Other Considerations

Positive drainage should be developed away from the structures and pavement areas with a minimum slope of 1 inch per foot for the first 10 feet away from the improvements in landscape areas. Care should be taken in planning of landscaping adjacent to the buildings to avoid features which would pond water adjacent to the foundations or stemwalls. Placement of plants which require irrigation systems or could result in fluctuations of the moisture content of the subgrade material should be avoided adjacent to site improvements. Irrigation systems should not be placed within 5 feet of the perimeter of the buildings and parking areas. Spray heads should be designed not to spray water on or immediately adjacent to the structures or site pavements. Roof drains should be designed to discharge at least 5 feet away from the structures and away from the pavement areas.

The individual contractor(s) should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

GENERAL COMMENTS

The analysis and recommendations presented in this report are based upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations, which may occur between borings or across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observations during earthwork phases to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of Western Engineering Consultants for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is made. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the geotechnical engineer.

DRILLING AND EXPLORATION

DRILLING & SAMPLING SYMBOLS:

SS: Split Spoon - 13/8" I.D., 2" O.D., unless otherwise noted
 ST: Thin-Walled Tube - 2" O.D., unless otherwise noted
 R: Ring Barrel Sampler - 2.42" I.D., 3" O.D. unless otherwise noted
 PA: Power Auger
 HA: Hand Auger
 DB: Diamond Bit = 4", N, B
 AS: Auger Sample
 HS: Hollow Stem Auger

PS: Piston Sample
 WS: Wash Sample
 FT: Fish Tail Bit
 RB: Rock Bit
 BS: Bulk Sample
 PM: Pressure Meter
 WB: Wash Bore

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL : Water Level
 WCI: Wet Cave in
 DCI: Dry Cave in
 AB : After Boring

WS : While Sampling
 WD : While Drilling
 BCR: Before Casing Removal
 ACR: After Casting Removal

Water levels indicated on the boring logs are the levels measured in the borings at the time indicated. In pervious soils, the indicated levels may reflect the location of ground water. In low permeability soils, the accurate determination of ground water levels is not possible with only short term observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil Classification is based on the Unified Soil Classification system and the ASTM Designations D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive
 Strength, Qu, psf

Consistency

< 500	Very Soft
500 - 1,000	Soft
1,001 - 2,000	Medium
2,001 - 4,000	Stiff
4,001 - 8,000	Very Stiff
8,001 - 16,000	Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense
80 +	Extremely Dense

PHYSICAL PROPERTIES OF BEDROCK

DEGREE OF WEATHERING:

Slight	Slight decomposition of parent material on joints. May be color change.
Moderate	Some decomposition and color change throughout.
High	Rock highly decomposed, may be extremely broken.

HARDNESS AND DEGREE OF CEMENTATION:

Limestone and Dolomite:

Hard	Difficult to scratch with knife.
Moderately	Can be scratched easily with knife.
Hard	Cannot be scratched with fingernail.
Soft	Can be scratched with fingernail.

Shale, Siltstone and Claystone:

Hard	Can be scratched easily with knife, cannot be scratched with fingernail.
Moderately	Can be scratched with fingernail.
Hard	
Soft	Can be easily dented but not molded with fingers.

Sandstone and Conglomerate:

Well Cemented	Capable of scratching a knife blade.
Cemented	Can be scratched with knife.
Poorly Cemented	Can be broken apart easily with fingers.



UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests				Soil Classification	
				Group Symbol	Group Name
Coarse - Grained Soils more than 50% retained on No. 200 sieve	Gravels more than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines	$Cu \geq 4$ and $1 < Cc \leq 3^E$	GW	Well-graded gravel ^F
			$Cu < 4$ and/or $1 > Cc > 3^E$	GP	Poorly-graded gravel ^F
		Gravels with Fines more than 12% fines	Fines classify as ML or MH	GM	Silty gravel ^{G,H}
			Fines Classify as CL or CH	GC	Clayey Gravel ^{F,G,H}
	Sands 50% or more coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	$Cu \geq 6$ and $1 < Cc \leq 3^E$	SW	Well-graded sand ^I
			$Cu < 6$ and/or $1 > Cc > 3^E$	SP	Poorly-graded sand ^I
		Sands with Fines more than 12% fines	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silt and Clays Liquid Limit less than 50	inorganic	$PI > 7$ and plots on or above "A" Line	CL	Lean clay ^{K,L,M}
			$PI < 4$ or plots below "A" Line	ML	Silt ^{K,L,M}
		organic	Liquid Limit - oven dried < 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid Limit - not dried		Organic silt ^{K,L,M,O}
	Silt and Clays Liquid Limit 50 or more	inorganic	PI plots on or above "A" Line	CH	Fat clay ^{K,L,M}
			PI plots below "A" Line	MH	Elastic Silt ^{K,L,M}
		organic	Liquid Limit - oven dried < 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid Limit - not dried		Organic silt ^{K,L,M,O}
		Highly organic soils			PT Peat
		Primarily organic matter, dark in color, and organic odor			

^ABased on the material passing the 3-in. (75-mm) sieve

^BIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^CGravels with 5 to 12% fines required dual symbols:

GW-GM well graded gravel with silt

GW-GC well-graded gravel with clay

GP-GM poorly-graded gravel with silt

GP-GC poorly-graded gravel with clay

^DSands with 5 to 12% fines require dual symbols:

SW-SM well-graded sand with silt

SW-SC well-graded sand with clay

SP-SM poorly graded sand with silt

SP-SC poorly graded sand with clay

$$^E C_u = D_{60} / D_{10} \quad C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^FIf soil contains $\geq 15\%$ sand, add "with sand" to

^GIf fines classify as CL-ML, use dual symbol GC-CM, or SC-SM.

^HIf fines are organic, add "with organic fines" to group name

^IIf soil contains $> 15\%$ gravel, add "with gravel" to group name

^JIf Atterberg limits plots shaded area, soil is a CL-ML, Silty clay

^KIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel", whichever is predominant.

^LIf soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

^MIf soil contains $\geq 30\%$ plus No. 200 predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI \leq 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.

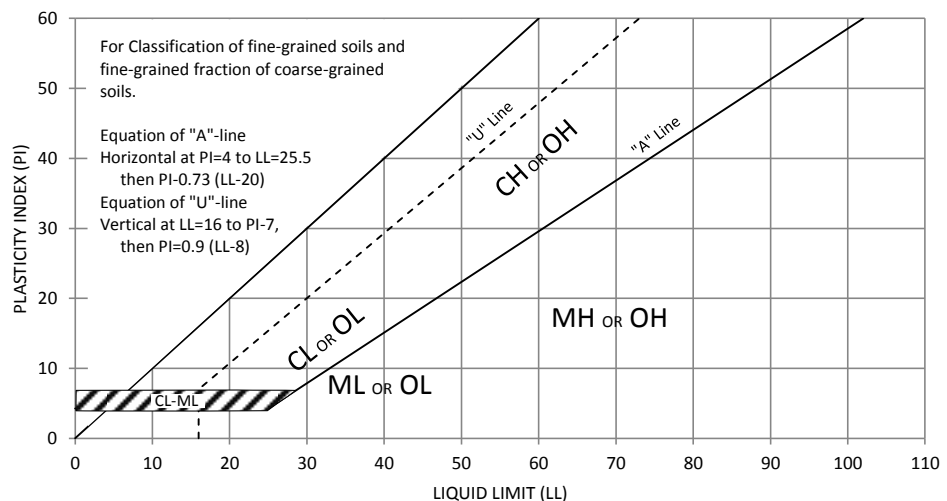






PHOTO # 1



PHOTO # 2

BEEN RV PARK
WELD COUNTY, COLORADO
EEC PROJECT NO. 1202083
NOVEMBER 2020



BEEN RV PARK											
3647 ROAD 19, WELD COUNTY, COLORADO											
PROJECT NO: 1202083		LOG OF BORING B-1 SHEET 1 OF 2					DATE: NOVEMBER 2020				
RIG TYPE: CME55							WATER DEPTH				
FOREMAN: DG		START DATE		11/11/2020		WHILE DRILLING		12'			
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020		AFTER DRILLING		10'			
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A							
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL	
	TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF
VEGETATION AND TOPSOIL		1									
		2									
LEAN CLAY (CL) brown very stiff		3	7	6500	11.4						
		4									
CLAYSTONE/SANDSTONE brown/gray/rust moderately hard / poorly cemented		5	19	3000	6.7	130.6	26	12	43.1	6000 PSF	3.9%
		6									
		7									
		8									
		9									
		10	50/8"	1500	19.0						
		11									
		12									
CLAYSTONE gray moderately hard		13									
		14									
		15	50/8"	9000+	13.3	121.6					
		16									
		17									
		18									
		19									
		20	28	6000	21.9						
		21									
		22									
		23									
		24									
		25	43	9000+	21.3	106.0	83	60	99.6	~10,000 PSF	11.7%
Continued on Sheet 2 of 2											

BEEN RV PARK											
3647 ROAD 19, WELD COUNTY, COLORADO											
PROJECT NO: 1202083		LOG OF BORING B-1					DATE: NOVEMBER 2020				
RIG TYPE: CME55		SHEET 2 OF 2					WATER DEPTH				
FOREMAN: DG		START DATE		11/11/2020			WHILE DRILLING		12'		
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020			AFTER DRILLING		10'		
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A							
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL	
TYPE		(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF
Continued from Sheet 1 of 2		26									
		--									
		27									
		--									
		28									
CLAYSTONE gray moderately hard		--									
		29									
		--									
		30	46	9000+	20.8						
		--									
BOTTOM OF BORING DEPTH 30.5'		31									
		--									
		32									
		--									
		33									
		--									
		34									
		--									
		35									
		--									
		36									
		--									
		37									
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3647 ROAD 19, WELD COUNTY, COLORADO

Earth Engineering Consultants, LLC

BEEN RV PARK													
3647 ROAD 19, WELD COUNTY, COLORADO													
PROJECT NO: 1202083			LOG OF BORING B-3					DATE: NOVEMBER 2020					
RIG TYPE: CME55			SHEET 1 OF 1					WATER DEPTH					
FOREMAN: DG			START DATE		11/11/2020		WHILE DRILLING		14'				
AUGER TYPE: 4" CFA			FINISH DATE		11/11/2020		AFTER DRILLING						
SPT HAMMER: AUTOMATIC			SURFACE ELEV		N/A								
SOIL DESCRIPTION			D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
			TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF
VEGETATION AND TOPSOIL			--										
			1										
			--										
			2										
LEAN CLAY (CL)			--	water soluble sulfate content = 0.69%									(@ 150 PSF)
brown			CS	3	21	9000+	10.6	129.0	47	32	89.6	~10000 PSF	14.0%
very stiff			--	4									
			--										
			SS	5	10	8000	13.4						
			--	6									
			--	7									
CLAYSTONE/SANDSTONE			--	8									
brown/gray/rust			--	9									
moderately hard / poorly cemented			--										
			CS	10	50/6"	2500	13.3	111.2					
			--	11									
			--	12									
			--	13									
			--	14									
			SS	15	50/2"	2500	3.5						
			--	16									
			--	17									
			--	18									
			--	19									
			CS	20	50/3"								
BOTTOM OF BORING DEPTH 20'			--	21									
			--	22									
			--	23									
			--	24									
			--	25									
			--										

Earth Engineering Consultants, LLC

BEEN RV PARK												
3647 ROAD 19, WELD COUNTY, COLORADO												
PROJECT NO: 1202083		LOG OF BORING B-4					DATE: NOVEMBER 2020					
RIG TYPE: CME55		SHEET 1 OF 1					WATER DEPTH					
FOREMAN: DG		START DATE		11/11/2020			WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020			AFTER DRILLING					
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A								
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
TYPE		(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL		--										
		1										
		--										
		2										
		SS	--									
			3	34	9000+	10.8						
		--										
		4										
CS	--											
	5	37	9000+	9.8	126.3					12.1%		
CLAYSTONE gray moderately hard with gypsum crystals		--										
		6										
		--										
		7										
		--										
		8										
		--										
		9										
		SS	--									
			10	36	8500	14.3						
		--										
		11										
		--										
		12										
		--										
		13										
--												
14												
CS	--											
	15	26	9000+	22.4	104.7							
BOTTOM OF BORING DEPTH 20.5'		--										
		16										
		--										
		17										
		--										
		18										
		--										
		19										
		SS	--									
			20	28	9000	19.8						
		--										
		21										
		--										
		22										
		--										
		23										
		--										
		24										
		--										
		25										
		--										
		26										

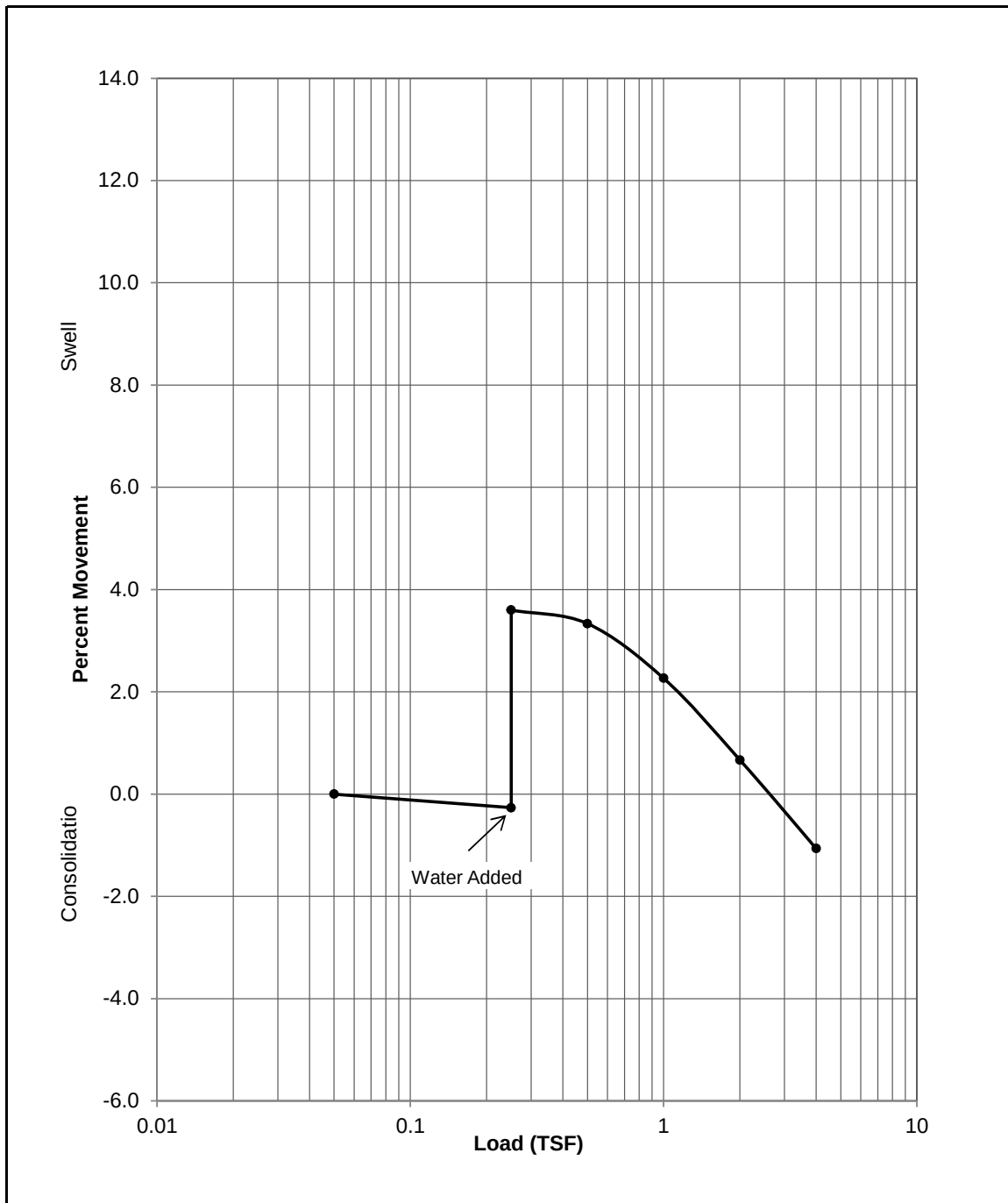
BEEN RV PARK															
3647 ROAD 19, WELD COUNTY, COLORADO															
PROJECT NO: 1202083			LOG OF BORING B-5 SHEET 1 OF 1					DATE: NOVEMBER 2020							
RIG TYPE: CME55								WATER DEPTH							
FOREMAN: DG			START DATE		11/11/2020		WHILE DRILLING		14.5'						
AUGER TYPE: 4" CFA			FINISH DATE		11/11/2020		AFTER DRILLING								
SPT HAMMER: AUTOMATIC			SURFACE ELEV		N/A										
SOIL DESCRIPTION			D	N	QU	MC	DD	A-LIMITS		-200	SWELL				
			TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF		
VEGETATION AND TOPSOIL			1												
			2												
			LEAN CLAY (CL) brown very stiff	CS	3	50	9000+	9.4	124.9						(@ 150 PSF) 18.5%
					4										
			SS	5	27	9000+	11.5								
				6											
			7												
			8												
			9												
			CLAYSTONE gray moderately hard with gypsum crystals	CS	10	44	9000+	12.8	119.8						11.6%
11															
12															
13															
14															
SS	15	33		9000+	16.6										
	16														
17															
18															
19															
BOTTOM OF BORING DEPTH 20'	CS	20	42	9000+	18.8	109.7									
		21													
	22														
	23														
	24														
	25														

BEEN RV PARK												
3647 ROAD 19, WELD COUNTY, COLORADO												
PROJECT NO: 1202083		LOG OF BORING B-6					DATE: NOVEMBER 2020					
RIG TYPE: CME55		SHEET 1 OF 1					WATER DEPTH					
FOREMAN: DG		START DATE		11/11/2020			WHILE DRILLING		14'			
AUGER TYPE: 4" CFA		FINISH DATE		11/11/2020			AFTER DRILLING		11'			
SPT HAMMER: AUTOMATIC		SURFACE ELEV		N/A								
SOIL DESCRIPTION		D	N	QU	MC	DD	A-LIMITS		-200	SWELL		
TYPE		(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL		--										
		1										
		--										
		2										
		SS	3	10	7000	20.8						
		--										
		4										
		CS	5	11	8500	14.6	112.0	40	17	90.8	3000 PSF	3.1%
CLAYSTONE/SANDSTONE brown/gray/rust moderately hard / poorly cemented		--										
		6										
		--										
		7										
		--										
		8										
		--										
		9										
		SS	10	50	7000	14.1						
		--										
		11										
		--										
		12										
		--										
		13										
		--										
14												
CS	15	50/8"	7500	12.9	120.1							
BOTTOM OF BORING DEPTH 20.5'		--										
		16										
		--										
		17										
		--										
		18										
		--										
		19										
		SS	20	50/2"		21.0						
		--										
		21										
		--										
		22										
		--										
		23										
		--										
		24										
		--										
		25										
		--										

BEEN RV PARK														
3647 ROAD 19, WELD COUNTY, COLORADO														
PROJECT NO: 1202083			LOG OF BORING B-7 SHEET 1 OF 1					DATE: NOVEMBER 2020						
RIG TYPE: CME55								WATER DEPTH						
FOREMAN: DG			START DATE		11/11/2020		WHILE DRILLING		None					
AUGER TYPE: 4" CFA			FINISH DATE		11/11/2020		AFTER DRILLING							
SPT HAMMER: AUTOMATIC			SURFACE ELEV		N/A									
SOIL DESCRIPTION			D	N	QU	MC	DD	A-LIMITS		-200	SWELL			
			TYPE	(FEET)	(BLOWS/FT)	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE	% @ 500 PSF	
VEGETATION AND TOPSOIL			--											
			1											
			--											
			2											
			SS	3	15	8500	17.4							
				4										
			CS	5	15	9000+	11.4							
				6										
CLAYSTONE gray soft to moderately hard with gypsum crystals			--											
			9											
			SS	10	18	7500	17.6							
				11										
			--											
			12											
			--											
			13											
			--											
			14											
			CS	15	50	9000+	16.6	115.3						
				16										
			--											
			17											
			--											
			18											
--														
19														
with sandstone lenses			SS	20	34	9000+	17.3							
				21										
			BOTTOM OF BORING DEPTH 20.5'			--								
						22								
--														
23														
			--											
			24											
			--											
			25											
			--											

SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone/Sandstone		
Sample Location: Boring 1, Sample 2, Depth 4'		
Liquid Limit: 26	Plasticity Index: 12	% Passing #200: 43.1%
Beginning Moisture: 6.7%	Dry Density: 130.6 pcf	Ending Moisture: 14.2%
Swell Pressure: 6000 psf		% Swell @ 500: 3.9%

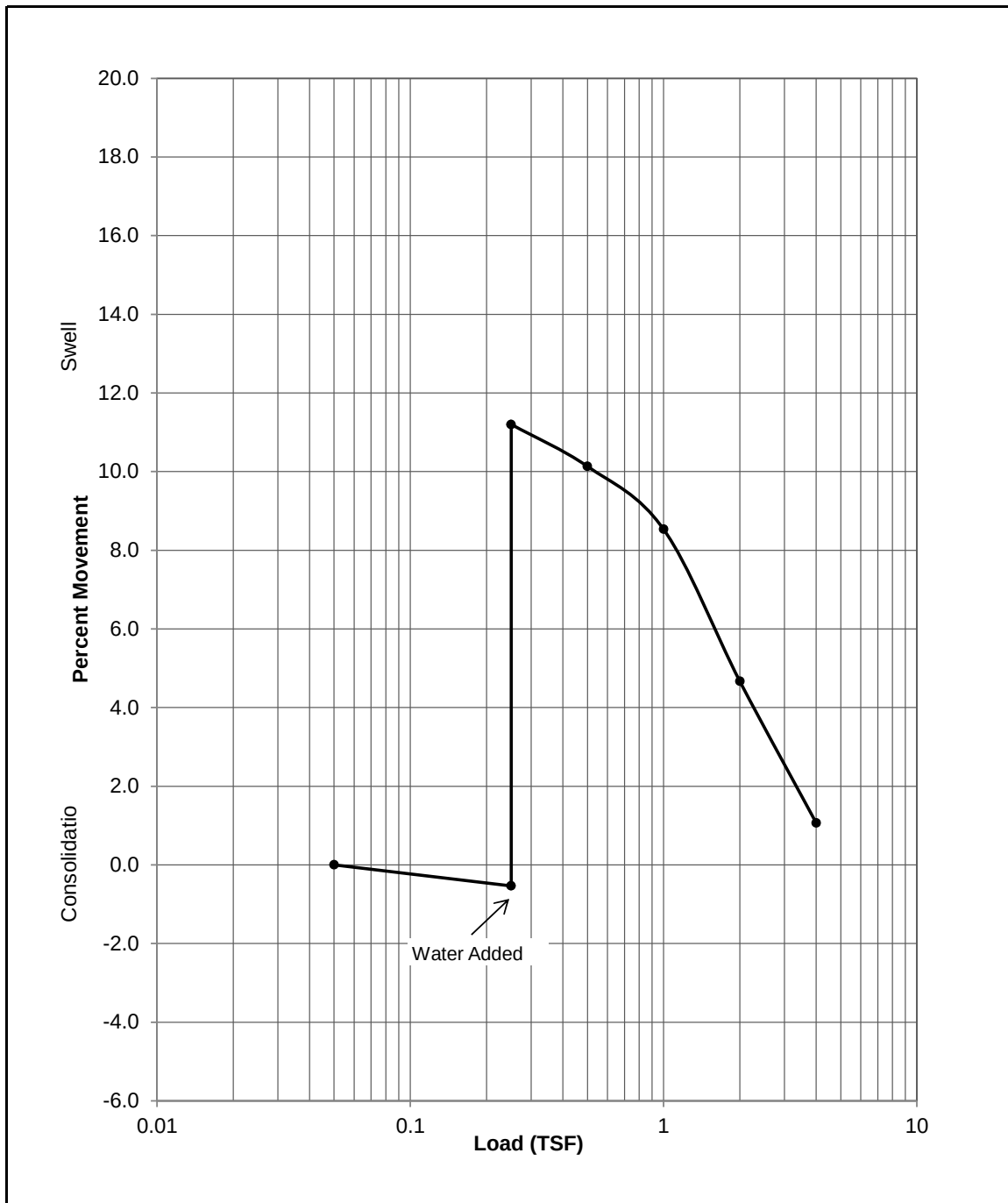


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone		
Sample Location: Boring 1, Sample 6, Depth 24'		
Liquid Limit: 83	Plasticity Index: 60	% Passing #200: 99.6%
Beginning Moisture: 21.3%	Dry Density: 107.5 pcf	Ending Moisture: 25.6%
Swell Pressure: ~10,000 psf		% Swell @ 500: 11.7%

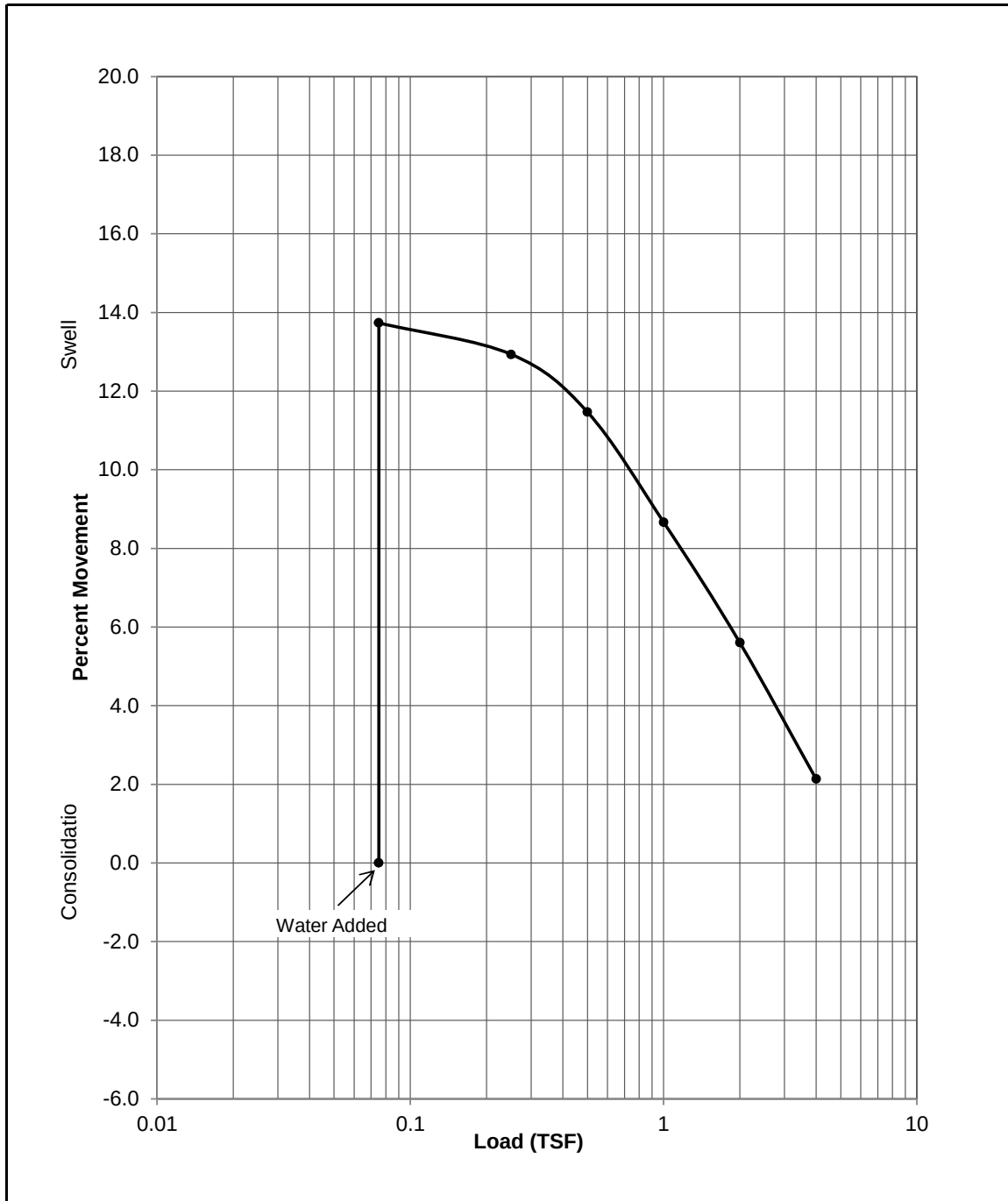


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
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SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 2, Sample 1, Depth 2'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 9.2%	Dry Density: 122.9 pcf	Ending Moisture: 15.8%
Swell Pressure: ~12,000 psf		% Swell @ 150: 13.7%

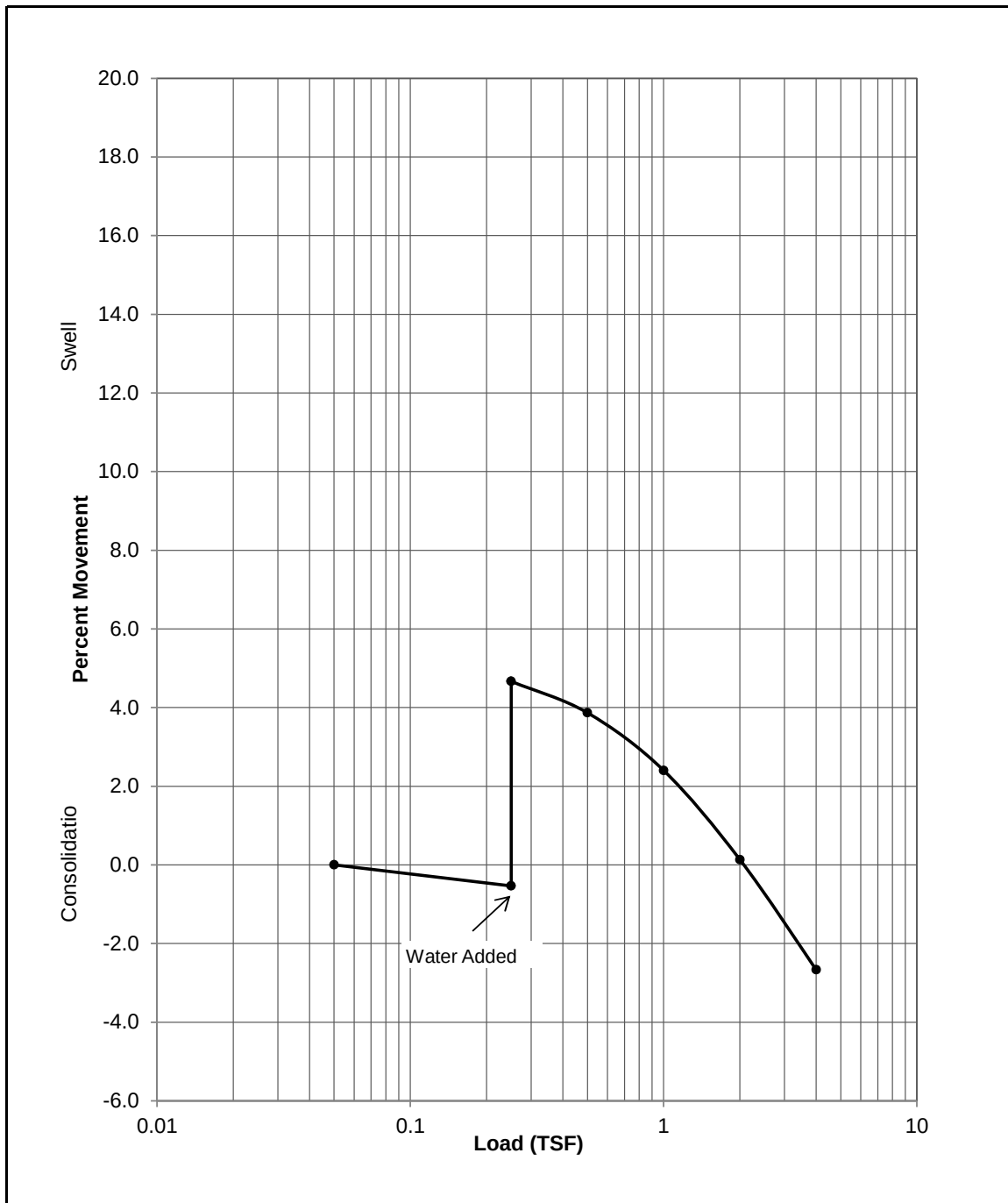


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone		
Sample Location: Boring 2, Sample 5, Depth 19'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 16.6%	Dry Density: 116.1 pcf	Ending Moisture: 18.2%
Swell Pressure: 4800 psf		% Swell @ 500: 5.2%

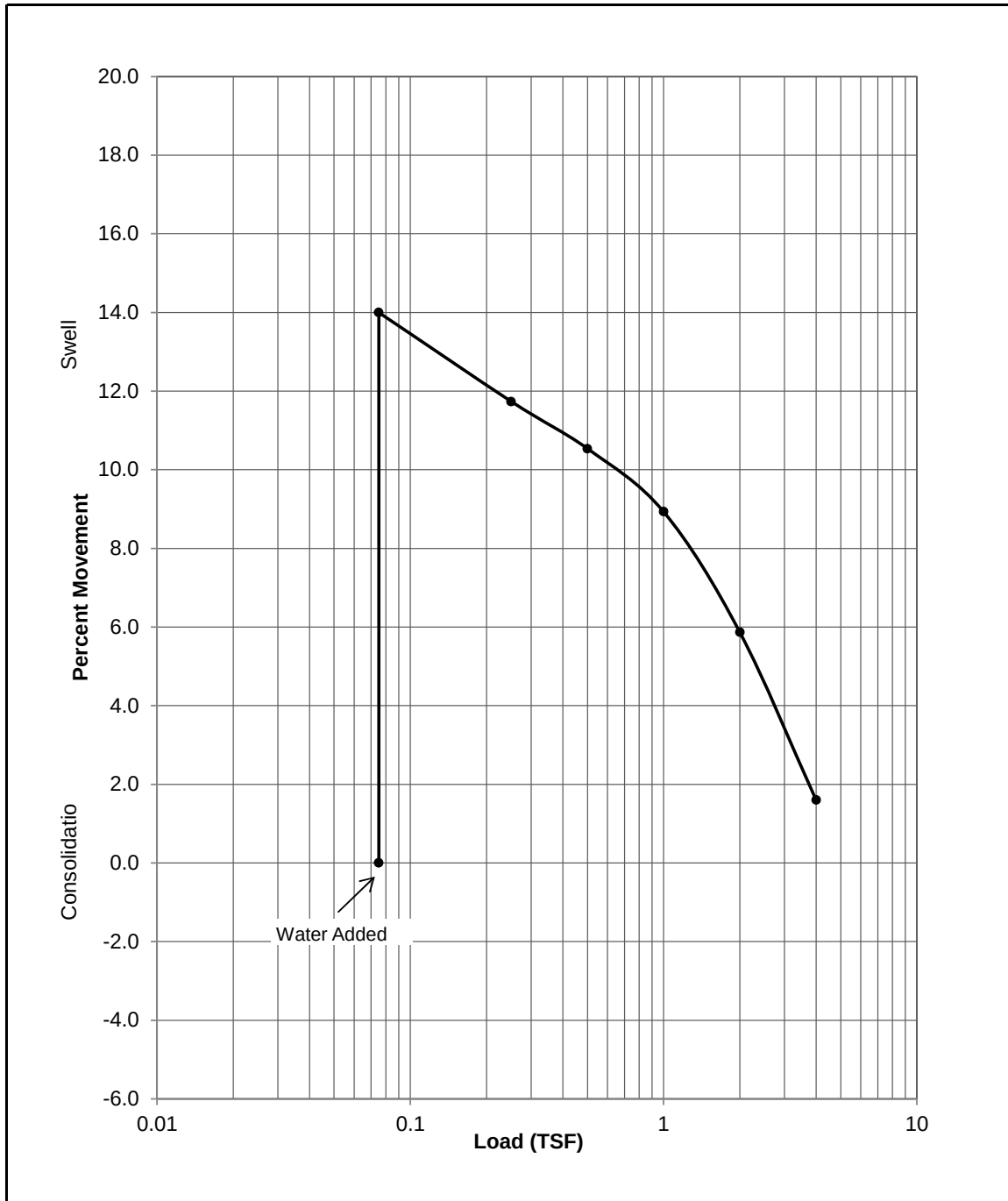


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 3, Sample 1, Depth 2'		
Liquid Limit: 47	Plasticity Index: 32	% Passing #200: 89.6%
Beginning Moisture: 10.6%	Dry Density: 129 pcf	Ending Moisture: 16.5%
Swell Pressure: ~10,000 psf		% Swell @ 150: 14.0%

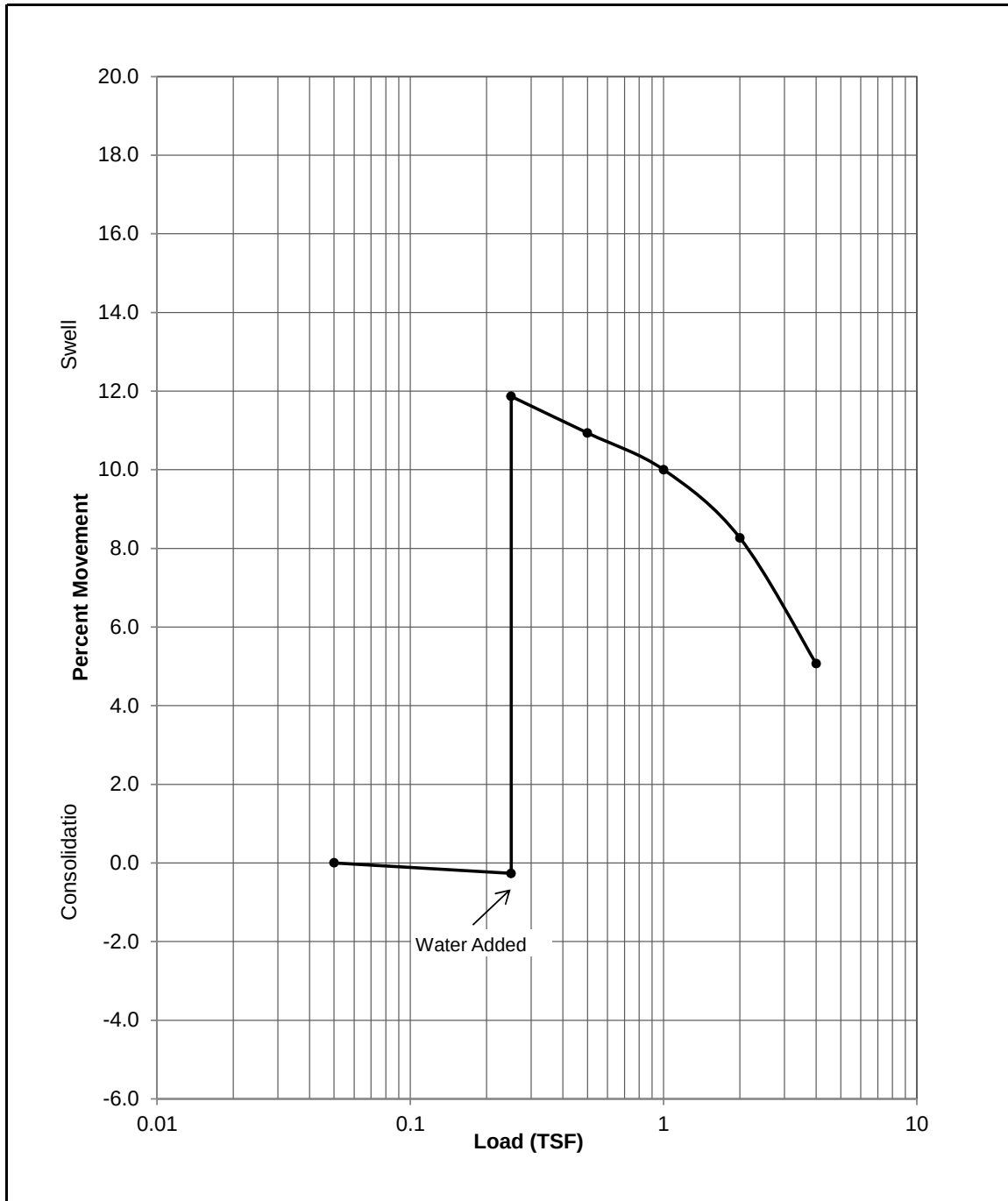


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 4, Sample 2, Depth 4'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 9.8%	Dry Density: 126.3 pcf	Ending Moisture: 16.1%
Swell Pressure:		% Swell @ 500: 12.1%

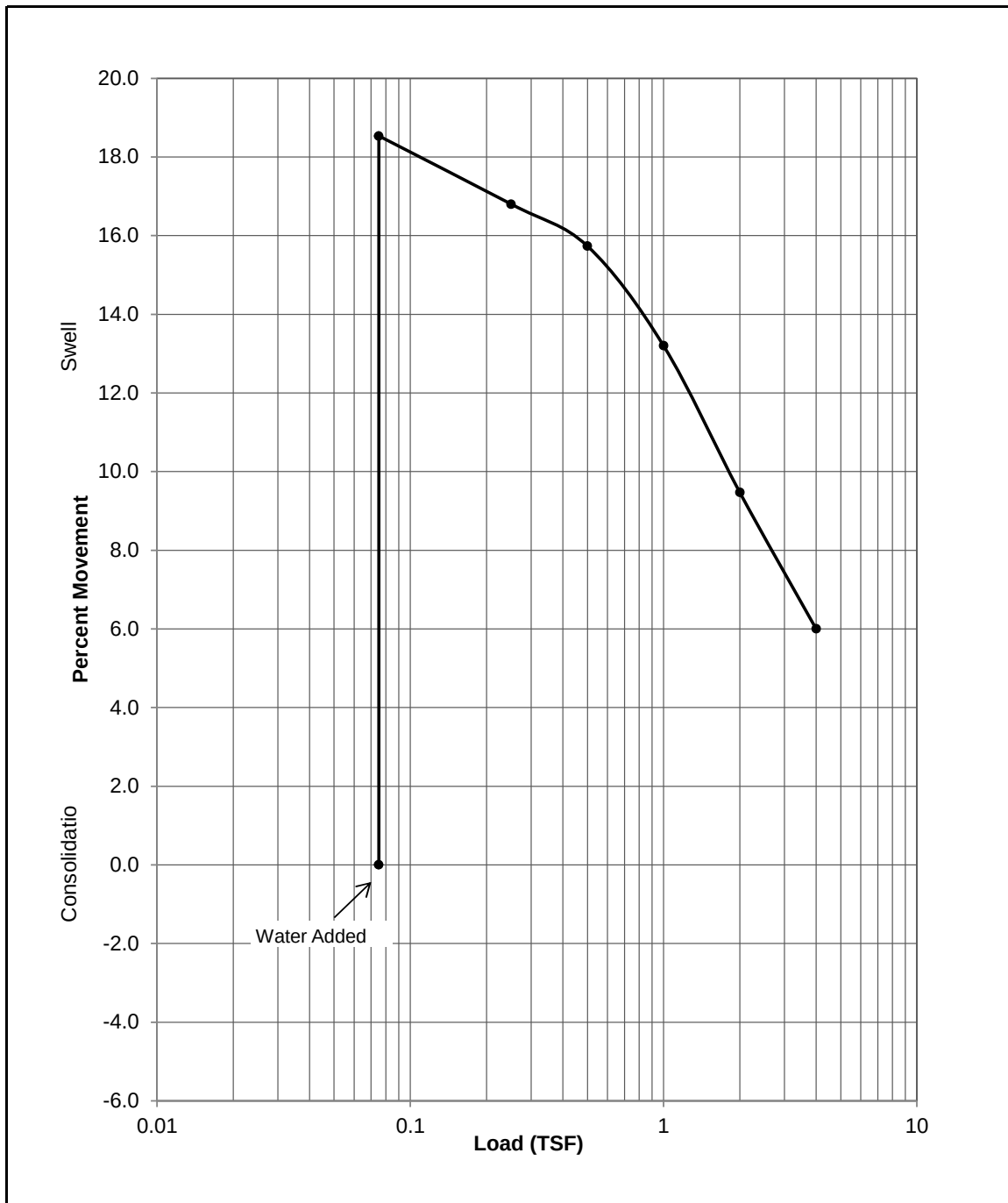


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Sandy Clay		
Sample Location: Boring 5, Sample 1, Depth 2'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 9.4%	Dry Density: 128.8 pcf	Ending Moisture: 19.0%
Swell Pressure:		% Swell @ 150: 18.5%

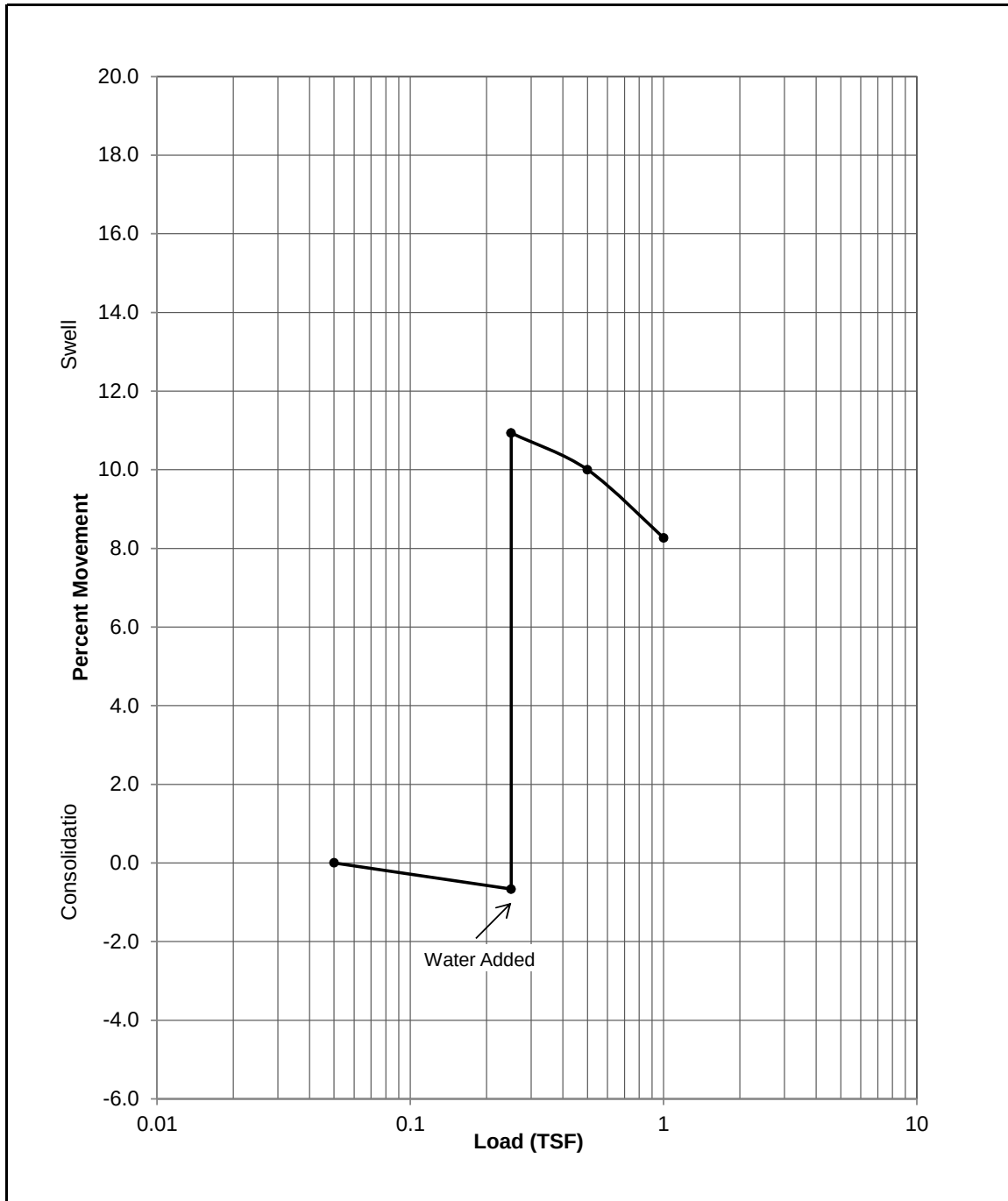


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Claystone		
Sample Location: Boring 5, Sample 3, Depth 9'		
Liquid Limit: - -	Plasticity Index: - -	% Passing #200: - -
Beginning Moisture: 12.8%	Dry Density: 120.4 pcf	Ending Moisture: 21.9%
Swell Pressure:		% Swell @ 500: 11.6%

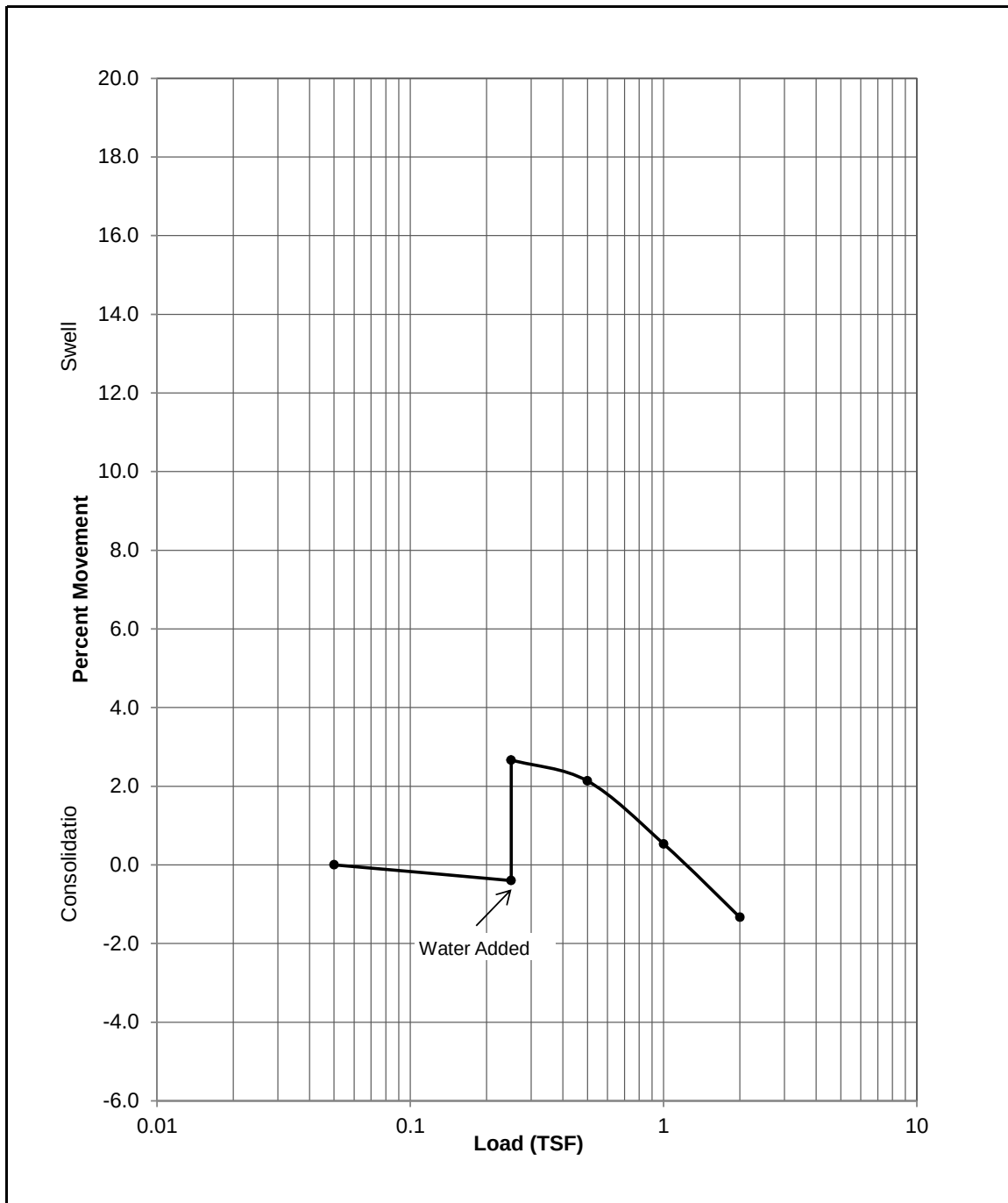


Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Brown Lean Clay		
Sample Location: Boring 6, Sample 2, Depth 4'		
Liquid Limit: 40	Plasticity Index: 17	% Passing #200: 90.8%
Beginning Moisture: 14.6%	Dry Density: 112 pcf	Ending Moisture: 21.2%
Swell Pressure: 3000 psf		% Swell @ 500: 3.1%



Project: Been RV Park
 Location: Weld County, Colorado
 Project #: 1202083
 Date: November 2020



APPENDIX B

NOAA Atlas Rainfall / WEC Rational Method Runoff Calculations



NOAA Atlas 14, Volume 8, Version 2
Location name: Fort Lupton, Colorado, USA*
Latitude: 40.0537°, Longitude: -104.8887°
Elevation: 5039.15 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, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

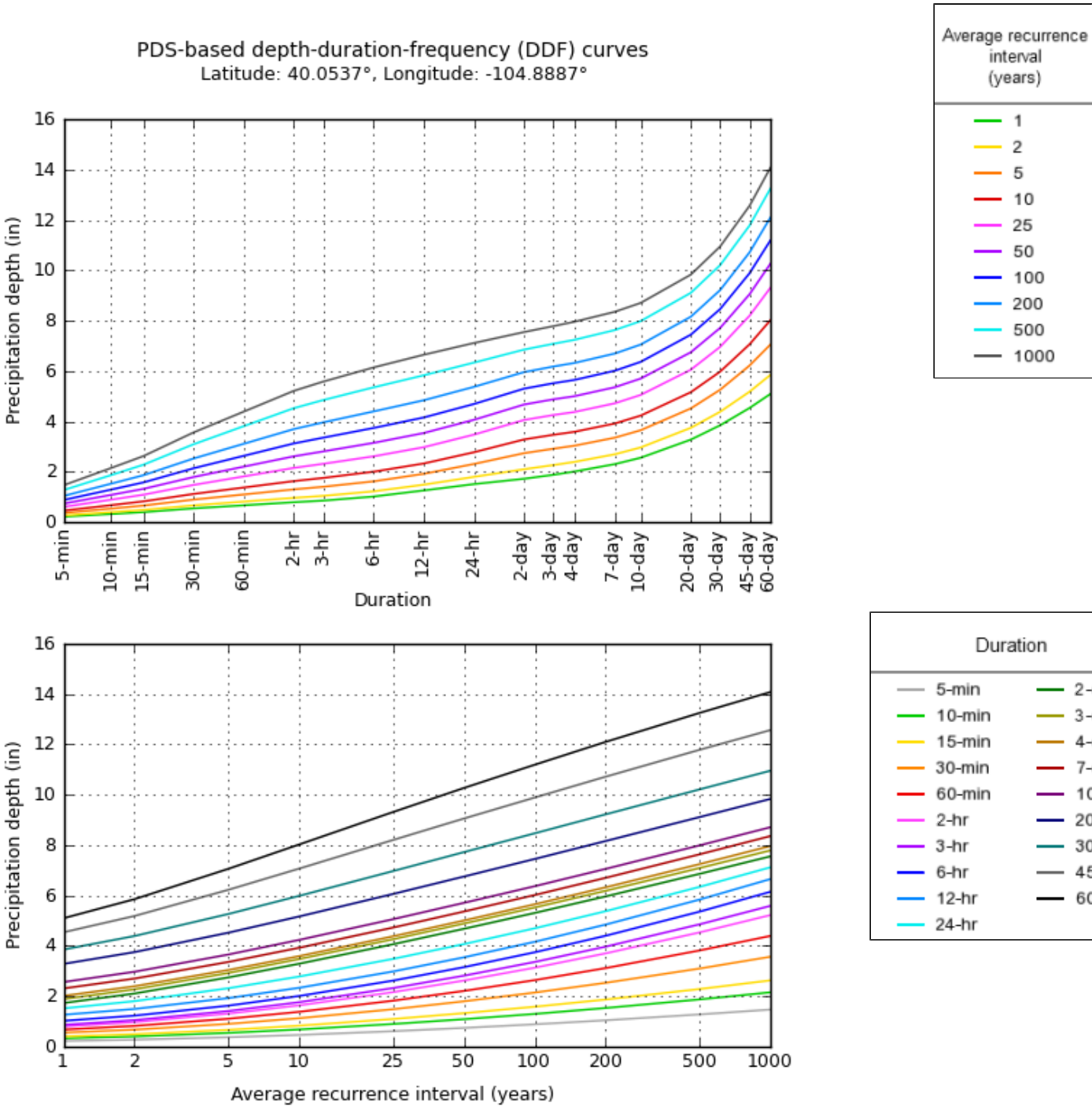
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.227 (0.175-0.295)	0.277 (0.213-0.361)	0.373 (0.286-0.487)	0.466 (0.355-0.612)	0.614 (0.463-0.862)	0.744 (0.544-1.05)	0.888 (0.627-1.28)	1.05 (0.711-1.56)	1.28 (0.837-1.95)	1.47 (0.932-2.25)
10-min	0.333 (0.256-0.433)	0.406 (0.312-0.528)	0.547 (0.418-0.714)	0.683 (0.520-0.896)	0.900 (0.678-1.26)	1.09 (0.797-1.54)	1.30 (0.919-1.88)	1.53 (1.04-2.28)	1.87 (1.23-2.86)	2.16 (1.36-3.30)
15-min	0.406 (0.312-0.528)	0.495 (0.380-0.644)	0.667 (0.510-0.870)	0.833 (0.634-1.09)	1.10 (0.826-1.54)	1.33 (0.971-1.88)	1.59 (1.12-2.29)	1.87 (1.27-2.78)	2.29 (1.49-3.49)	2.63 (1.66-4.02)
30-min	0.556 (0.427-0.723)	0.675 (0.518-0.879)	0.904 (0.692-1.18)	1.13 (0.859-1.48)	1.49 (1.12-2.08)	1.80 (1.32-2.54)	2.15 (1.52-3.11)	2.53 (1.72-3.77)	3.10 (2.03-4.73)	3.57 (2.26-5.46)
60-min	0.678 (0.521-0.881)	0.824 (0.633-1.07)	1.11 (0.848-1.45)	1.38 (1.05-1.81)	1.82 (1.37-2.56)	2.21 (1.62-3.12)	2.64 (1.87-3.82)	3.12 (2.12-4.63)	3.82 (2.50-5.82)	4.39 (2.78-6.72)
2-hr	0.800 (0.621-1.03)	0.974 (0.756-1.25)	1.31 (1.01-1.69)	1.64 (1.26-2.12)	2.16 (1.65-3.00)	2.62 (1.94-3.66)	3.13 (2.24-4.48)	3.70 (2.54-5.43)	4.53 (3.00-6.82)	5.22 (3.34-7.88)
3-hr	0.864 (0.676-1.10)	1.05 (0.821-1.34)	1.41 (1.10-1.81)	1.76 (1.37-2.27)	2.32 (1.78-3.20)	2.82 (2.09-3.90)	3.36 (2.42-4.76)	3.97 (2.74-5.77)	4.85 (3.23-7.25)	5.59 (3.60-8.36)
6-hr	1.02 (0.810-1.29)	1.23 (0.972-1.56)	1.63 (1.28-2.06)	2.01 (1.57-2.56)	2.62 (2.03-3.55)	3.15 (2.37-4.31)	3.75 (2.72-5.23)	4.40 (3.07-6.31)	5.36 (3.60-7.88)	6.15 (4.00-9.07)
12-hr	1.27 (1.01-1.58)	1.50 (1.19-1.87)	1.93 (1.53-2.41)	2.34 (1.85-2.94)	2.98 (2.33-3.97)	3.54 (2.69-4.76)	4.16 (3.05-5.72)	4.84 (3.42-6.84)	5.84 (3.96-8.45)	6.65 (4.37-9.67)
24-hr	1.52 (1.23-1.87)	1.81 (1.46-2.23)	2.32 (1.86-2.86)	2.78 (2.23-3.45)	3.48 (2.73-4.54)	4.07 (3.11-5.36)	4.70 (3.47-6.33)	5.38 (3.82-7.44)	6.34 (4.34-9.01)	7.12 (4.73-10.2)
2-day	1.73 (1.41-2.11)	2.11 (1.72-2.57)	2.75 (2.23-3.35)	3.29 (2.66-4.03)	4.06 (3.19-5.17)	4.68 (3.59-6.02)	5.31 (3.95-7.00)	5.96 (4.26-8.08)	6.86 (4.73-9.55)	7.55 (5.08-10.7)
3-day	1.89 (1.55-2.28)	2.27 (1.87-2.75)	2.92 (2.39-3.54)	3.48 (2.83-4.23)	4.26 (3.37-5.37)	4.88 (3.77-6.24)	5.52 (4.13-7.23)	6.18 (4.45-8.31)	7.09 (4.92-9.79)	7.79 (5.27-10.9)
4-day	2.02 (1.67-2.42)	2.40 (1.98-2.88)	3.04 (2.50-3.67)	3.59 (2.94-4.35)	4.38 (3.48-5.49)	5.01 (3.89-6.36)	5.65 (4.25-7.35)	6.32 (4.57-8.45)	7.24 (5.05-9.94)	7.96 (5.41-11.1)
7-day	2.31 (1.93-2.75)	2.70 (2.25-3.22)	3.36 (2.79-4.01)	3.92 (3.24-4.70)	4.72 (3.79-5.86)	5.36 (4.20-6.73)	6.02 (4.57-7.74)	6.70 (4.89-8.84)	7.63 (5.37-10.3)	8.36 (5.73-11.5)
10-day	2.56 (2.15-3.03)	2.97 (2.49-3.51)	3.66 (3.05-4.33)	4.24 (3.52-5.04)	5.06 (4.08-6.22)	5.71 (4.50-7.11)	6.37 (4.86-8.12)	7.05 (5.18-9.23)	7.99 (5.65-10.7)	8.71 (6.01-11.9)
20-day	3.28 (2.79-3.83)	3.75 (3.18-4.38)	4.52 (3.82-5.29)	5.17 (4.34-6.07)	6.06 (4.93-7.32)	6.75 (5.38-8.27)	7.45 (5.75-9.34)	8.16 (6.05-10.5)	9.11 (6.51-12.0)	9.83 (6.86-13.2)
30-day	3.85 (3.29-4.46)	4.39 (3.75-5.09)	5.26 (4.48-6.11)	5.98 (5.06-6.98)	6.97 (5.70-8.33)	7.72 (6.19-9.36)	8.47 (6.57-10.5)	9.22 (6.88-11.7)	10.2 (7.34-13.3)	10.9 (7.69-14.6)
45-day	4.54 (3.95-5.21)	5.18 (4.46-5.96)	6.22 (5.33-7.17)	7.06 (6.02-8.17)	8.20 (6.75-9.71)	9.05 (7.30-10.9)	9.88 (7.72-12.1)	10.7 (8.04-13.5)	11.8 (8.52-15.2)	12.6 (8.89-16.5)
60-day	5.10 (4.41-5.82)	5.85 (5.05-6.69)	7.05 (6.07-8.08)	8.02 (6.87-9.23)	9.31 (7.69-10.9)	10.3 (8.31-12.2)	11.2 (8.77-13.6)	12.1 (9.11-15.1)	13.2 (9.62-17.0)	14.1 (10.0-18.4)

¹ 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.

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PF graphical



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Maps & aerials

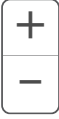
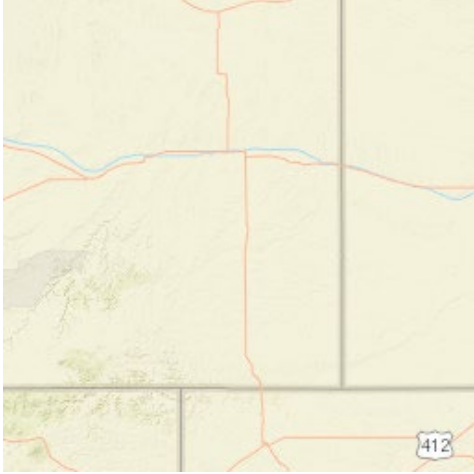
Small scale terrain



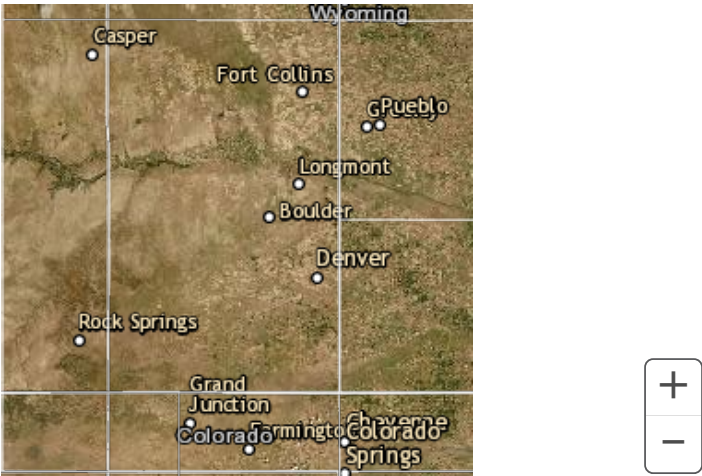
Large scale terrain



Large scale map



Large scale aerial



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Historic Runoff Table - Been RV Park							
BASIN	Impervious	C-YR	I	A	CIA(YR-historic)	Flow	DESIGN POINT
H							
C₂ (UDFCD 2018)	2.00	0.01	0.94	15.79	0.15	cfs	H
C₅	2.00	0.01	1.25	15.79	0.20	cfs	
C₁₀	2.00	0.07	1.56	15.79	1.72	cfs	
C₁₀₀	2.00	0.44	2.96	15.79	20.54	cfs	

Been RV Park - Historic Runoff Calcs

10/19/2020

for soils - C₂ C₅ C₁₀ C₁₀₀ --> from Table RO-5

$Ti = (.395 * (1.1 - C_{yr}) * (L^{.5})) / (S)^{.333}$
From UDFCD 2018, Equation 6-3

**for Ti calculations - only C₅ is used

	2	5	10	100
1-Hour Point Rainf	0.829	1.11	1.38	2.62

H	Historic - 2, 5, 10, 100 yr NRCS Types 100% B	C _{yr} - see frequency left	15.786 acres Ti**	Velocity	Tt	Tc	Use Tc	I	A	CIA ₅ existing	0.15 cfs
2yr		0.01	39.89	1.18	10.92	50.81	50.81	0.94	15.79		
	Length Slope										
	initial 500 0.014										
5yr	travel 775 0.014	0.01	39.89	1.18	10.92	50.81	50.81	1.25	15.79	CIA ₁₀ existing	0.20 cfs
	1275										
10yr	Overland flow	0.07	39.89	1.18	10.92	50.81	50.81	1.56	15.79	CIA ₁₀ existing	1.72 cfs
	300 ft max for urban, 500 ft max for rural										
	Remainder carried as travel										
100yr	Cv= 10	0.44	39.89	1.18	10.92	50.81	50.81	2.96	15.79	CIA ₁₀₀ existing	20.54 cfs

H	Undeveloped	Gravel	Building	Concrete	Water/Aphalt	EFFECTIVE
NRCS Types 100% B						
Imperviousness %	2	40.00	90.00	100.00	100.00	2.00
C2	0.01	0.29	0.74	0.84	0.84	0.01
C5	0.01	0.32	0.76	0.86	0.86	0.01
C10	0.07	0.38	0.78	0.86	0.86	0.07
C100	0.44	0.61	0.84	0.89	0.89	0.44
AREA	15.786	0.00	0.00	0.00	0.00	15.79

H2	Undeveloped	Gravel	Building	Concrete	Water/Aphalt	EFFECTIVE
NRCS Types 100% B						
Imperviousness %	2	40.00	90.00	100.00	100.00	#DIV/0!
C2	0.01	0.29	0.74	0.84	0.84	#DIV/0!
C5	0.01	0.32	0.76	0.86	0.86	#DIV/0!
C10	0.07	0.38	0.78	0.86	0.86	#DIV/0!
C100	0.44	0.61	0.84	0.89	0.89	#DIV/0!
AREA	0.000	0.00	0.00	0.00	0.00	0.00

TABLE RO-2 (taken from UDFCD Manual - Vol. I)	
Type of Land Surface	Conveyance coefficient,
Heavy Meadow	2.5
Tillage/field	5
Short pasture/Lawns	7
Nearly Bare Ground	10.00
Grassed Waterway	15.00
Paved areas and shallow paved swales	20.00

Existing Runoff Table - Been RV Park							
BASIN	Impervious	C-YR	I	A	CIA(YR-existing)	Flow	DESIGN POINT
E							
C₂ (UDFCD 2018)	4.06	0.03	0.99	15.79	0.42	cfs	E1
C₅	4.06	0.03	1.33	15.79	0.57	cfs	
C₁₀	4.06	0.09	1.65	15.79	2.26	cfs	
C₁₀₀	4.06	0.45	3.14	15.79	22.24	cfs	

Been RV Park - Existing Runoff Calcs

10/19/2020

for soils - C2 C5 C10 C100 = from Table RO-5

**for Ti calculations - only C5 is used

$Ti = (.395 * (1.1 - C_{yr}) * (L^{\wedge} .5)) / (S)^{\wedge} .333$
From UDFCD 2018, Equation 6-3

	2	5	10	100
1-Hour Point Rainfall	0.829	1.11	1.38	2.62

2018 UDFCD >>> Tc Check = (26-17i) + [Ltravel / (60*(14i + 9)(So)^{.5})]

E		Existing - 2, 5, 10, 100 yr				15.786 acres							
		NRCS Types 100% B		C _{yr} - see frequency left		Ti**		Velocity		Ti		Tc	
2yr				0.03		41.32		1.05		16.18		57.50	
												check	
												Use Tc	
												I	
												A CIA5 existing	
												15.79	
												0.42 cfs	

Developed Runoff Table - Been RV Park							
BASIN	Impervious	C-YR	I	A	CIA(YR-DEVELOPED)	cfs	DESIGN POINT
LOT 1							
C₂ (UDFCD 2018)	15.24	0.12	1.50	2.15	0.37	cfs	1
C₅	15.24	0.12	2.01	2.15	0.53	cfs	
C₁₀	15.24	0.18	2.49	2.15	0.95	cfs	
C₁₀₀	15.24	0.50	4.74	2.15	5.10	cfs	
LOT 2							
C₂ (UDFCD 2018)	8.57	0.06	1.44	1.83	0.17	cfs	2
C₅	8.57	0.07	1.93	1.83	0.23	cfs	
C₁₀	8.57	0.12	2.39	1.83	0.54	cfs	
C₁₀₀	8.57	0.47	4.54	1.83	3.92	cfs	
LOT 3							
C₂ (UDFCD 2018)	38.40	0.29	1.37	10.42	4.11	cfs	3
C₅	38.40	0.31	1.83	10.42	5.95	cfs	
C₁₀	38.40	0.37	2.28	10.42	8.70	cfs	
C₁₀₀	38.40	0.60	4.33	10.42	27.24	cfs	
LOT 4							
C₂ (UDFCD 2018)	6.64	0.04	1.62	1.08	0.08	cfs	4
C₅	6.64	0.05	2.17	1.08	0.11	cfs	
C₁₀	6.64	0.11	2.69	1.08	0.31	cfs	
C₁₀₀	6.64	0.46	5.11	1.08	2.55	cfs	

TOTAL AREA		2.153 acres		Water/Asphalt		EFFECTIVE
LOT 1	Landscaping	Gravel	Building	Concrete		
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	15.24
C2	0.01	0.29	0.74	0.84	0.84	0.12
C5	0.01	0.32	0.76	0.86	0.86	0.12
C10	0.07	0.38	0.78	0.86	0.86	0.18
C100	0.44	0.61	0.84	0.89	0.89	0.50
AREA	1.67	0.29	0.11	0.08	0.00	2.153

TOTAL AREA		10.418 acres		Water/Asphalt		EFFECTIVE
LOT 3	Landscaping	Gravel	Building	Concrete		
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	38.40
C2	0.01	0.29	0.74	0.84	0.84	0.29
C5	0.01	0.32	0.76	0.86	0.86	0.31
C10	0.07	0.38	0.78	0.86	0.86	0.37
C100	0.44	0.61	0.84	0.89	0.89	0.60
AREA	1.89	7.59	0.07	0.44	0.42	10.418

TOTAL AREA		1.834 acres		Water/		EFFECTIVE
LOT 2	Landscaping	Gravel	Building	Concrete	Asphalt	
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	8.57
C2	0.01	0.29	0.74	0.84	0.84	0.06
C5	0.01	0.32	0.76	0.86	0.86	0.07
C10	0.07	0.38	0.78	0.86	0.86	0.12
C100	0.44	0.61	0.84	0.89	0.89	0.47
AREA	1.70	0.00	0.14	0.00	0.00	1.834

TOTAL AREA		1.085 acres		Water/		EFFECTIVE
LOT 4	Landscaping	Gravel	Building	Concrete	Asphalt	
NRCS Types 100% B						
I	2	40.00	90.00	100.00	100.00	6.64
C2	0.01	0.29	0.74	0.84	0.84	0.04
C5	0.01	0.32	0.76	0.86	0.86	0.05
C10	0.07	0.38	0.78	0.86	0.86	0.11
C100	0.44	0.61	0.84	0.89	0.89	0.46
AREA	0.95	0.13	0.00	0.00	0.00	1.085

TABLE RO-2 (taken from UDFCD Manual - Vol. I)	
Type of Land Surface	Conveyance coefficient, Cv
Heavy Meadow	2.5
Tillage/field	5
Short pasture/Lawns	7
Nearly Bare Ground	10.00
Grassed Waterway	15.00
Paved areas and shallow paved swales	20.00

APPENDIX C

**Empirical Detention Calculations / Design Pond Volume / MHFD Detention
Calculations / Forebay Design / Pipe & Channel Capacities**

REQUIRED DETENTION (FULL SPECTRUM EMPIRICAL for COMPARISON)

UDFCD 2018 VOL 1 thru 3

IN ACCORDANCE WITH UDFCD, THE EFFECTIVE IMPERVIOUSNESS OF THE TOTAL AREA IS USED TO CALCULATE WQCV, EURV, & 100YR VOL IN LIEU OF THE SUMMATION OF EACH BASIN
(CORRECT VALUE INDICATED BY AN ARROW)

WATER QUALITY CALCULATIONS

from Figure EDB-2, 40 hr drain @ I, WQCV= noted below

BASIN	Actual I	Used Herein I	A acres	WQCV (in/watershed)	WQCV DEPTH in (FIG 3-1)	WQCV OTHER (in/watershed)	WQCV acre ft
LOT 1	15.24	16.00	2.15	0.10	0.43	0.10	0.018
LOT 2	8.57	9.00	1.83	0.06	0.43	0.06	0.009
LOT 3	38.40	39.00	10.42	0.18	0.43	0.18	0.154
LOT 4	6.64	7.00	1.08	0.05	0.43	0.05	0.004
TOTAL	29.43	30.01	15.49	0.39	0.43	0.39	0.185
				0.15	0.43	0.15	0.196

WQCV (ZONE 1) ←

EXCESS URBAN RUNOFF VOLUME (EURV)

BASIN	Actual I	Used Herein I	A acres	NCS SOIL TYPE %	EURV _A (in/watershed)	EURV _B (in/watershed)	EURV _C (in/watershed)	WEIGHTED AVE. EURV (in/watershed)	EURV** acre ft
LOT 1	15.24	16.00	2.15	100% B	0.16	0.19	0.17	0.19	0.034
LOT 2	8.57	9.00	1.83	100% B	0.08	0.10	0.09	0.10	0.015
LOT 3	38.40	39.00	10.42	100% B	0.50	0.49	0.43	0.49	0.427
LOT 4	6.64	7.00	1.08	100% B	0.06	0.08	0.07	0.08	0.007
TOTAL	29.43	30.01	15.49	100% B	0.80	0.86	0.76	0.86	0.483
					0.36	0.37	0.33	0.37	0.478
									0.283

→ EURV
→ ZONE 2

100YR VOLUME

BASIN	Actual I	Used Herein I	A acres	1hr Rainfall Depth in	NCS SOIL TYPE %	V ₁₀₀ (in/watershed)	V ₁₀₀ acre ft
LOT 1	15.24	16.00	2.15	2.62	100% B	0.58	0.104
LOT 2	8.57	9.00	1.83	2.62	100% B	0.44	0.067
LOT 3	38.40	39.00	10.42	2.62	100% B	0.98	0.853
LOT 4	6.64	7.00	1.08	2.62	100% B	0.39	0.035
TOTAL	29.43	30.01	15.49	2.62	100% B	2.39	1.059
						0.70	0.905
							0.427

← 100YR VOL
← ZONE 3

FOREBAY CALCS

FOREBAY	BASINS	A acres	WQCV cubic feet	Min Req'd Vol % of WQCV	Min Req'd Vol cubic feet	Max Depth (in)	Forebay Dimensions	Forebay Volume (ft ³)	Release Rate 2% of Dev Q (cfs)	Weir Width (in)
S	L1, 2/3L3	9.13	5,255.6	2%	105.1	12	10' * 10'	100	0.48	3.8"
N	L2, 1/3L3, L4	6.36	2,811.9	2%	56.2	12	8' * 9'	72	0.32	3.2"
TOTAL		15.49	8,067.55		161.35			172.00	0.80	

DETENTION POND - LOT BUILDOUT Imp = 40.0 %
100 YEAR DETENTION VOLUME - WATER SURFACE
ESTIMATED POND (TYPICAL) VOLUME vs ELEVATION

MODELED IMPERVIOUSNESS	40.0%	
POND OUTLET INVERT		5008.70 ELEVATION
WQCV:	8,518.3 ft^3	5034.65 ELEVATION
REQUIRED EURV:	20,841.5 ft^3	5035.52 ELEVATION
REQUIRED 100 yr per EURV:	39,426.3 ft^3	5036.65 ELEVATION
Avail Vol @ Emer Overflow:	45,442.4 ft^3	5037.00 ELEVATION
DESIGN 100 yr RELEASE POND A		1.79 CFS

43560

<u>ELEV</u>	<u>AREA</u>	<u>t</u>	<u>VOL</u>	<u>ACCUM</u>	<u>ACUM (ac-ft)</u>
5,034.00	12,038.5				
		1.00	13,032.2	13,032.2	0.30
5,035.00	14,051.8				
		1.00	15,109.9	28,142.0	0.65
5,036.00	16,193.2				
		1.00	17,300.4	45,442.4	1.04
5,037.00	18,431.7				

MHFD-Detention, Version 4.03 (May 2020)

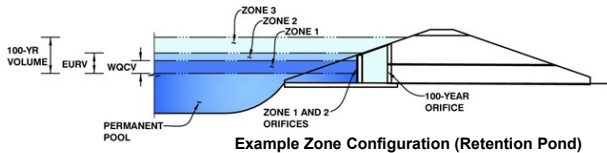
Basin ID: DETENTION POND A



DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.03 (May 2020)

Project: **BEEN RV PARK**
Basin ID: **DETENTION POND A**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.33	0.232	Orifice Plate
Zone 2 (EURV)	2.63	0.419	Rectangular Orifice
Zone 3 (100-year)	3.73	0.419	Weir&Pipe (Restrict)
Total (all zones)		1.070	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth = ft (distance below the filtration media surface)
Underdrain Orifice Diameter = inches

Calculated Parameters for Underdrain

Underdrain Orifice Area = ft²
Underdrain Orifice Centroid = feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Calculated Parameters for Plate

Invert of Lowest Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate = ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing = inches
Orifice Plate: Orifice Area per Row = sq. inches (diameter = 1-7/16 inches)

WQ Orifice Area per Row = ft²
Elliptical Half-Width = feet
Elliptical Slot Centroid = feet
Elliptical Slot Area = ft²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.50	1.00					
Orifice Area (sq. inches)	1.60	1.60	1.60					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

Calculated Parameters for Vertical Orifice

Invert of Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Height = inches
Vertical Orifice Width = inches

Zone 2 Rectangular Not Selected
Vertical Orifice Area = ft²
Vertical Orifice Centroid = feet

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe)

Calculated Parameters for Overflow Weir

Overflow Weir Front Edge Height, H_o = ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length = feet
Overflow Weir Grate Slope = H:V
Horiz. Length of Weir Sides = feet
Overflow Grate Open Area % = %
Debris Clogging % = %

Zone 3 Weir Not Selected
Height of Grate Upper Edge, H_u = feet
Overflow Weir Slope Length = feet
Grate Open Area / 100-yr Orifice Area = N/A
Overflow Grate Open Area w/o Debris = ft²
Overflow Grate Open Area w/ Debris = ft²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

Depth to Invert of Outlet Pipe = ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter = inches
Restrictor Plate Height Above Pipe Invert = inches

Zone 3 Restrictor Not Selected
Outlet Orifice Area = ft²
Outlet Orifice Centroid = feet
Half-Central Angle of Restrictor Plate on Pipe = radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Calculated Parameters for Spillway

Spillway Invert Stage = ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length = feet
Spillway End Slopes = H:V
Freeboard above Max Water Surface = feet

Spillway Design Flow Depth = feet
Stage at Top of Freeboard = feet
Basin Area at Top of Freeboard = acres
Basin Volume at Top of Freeboard = acre-ft

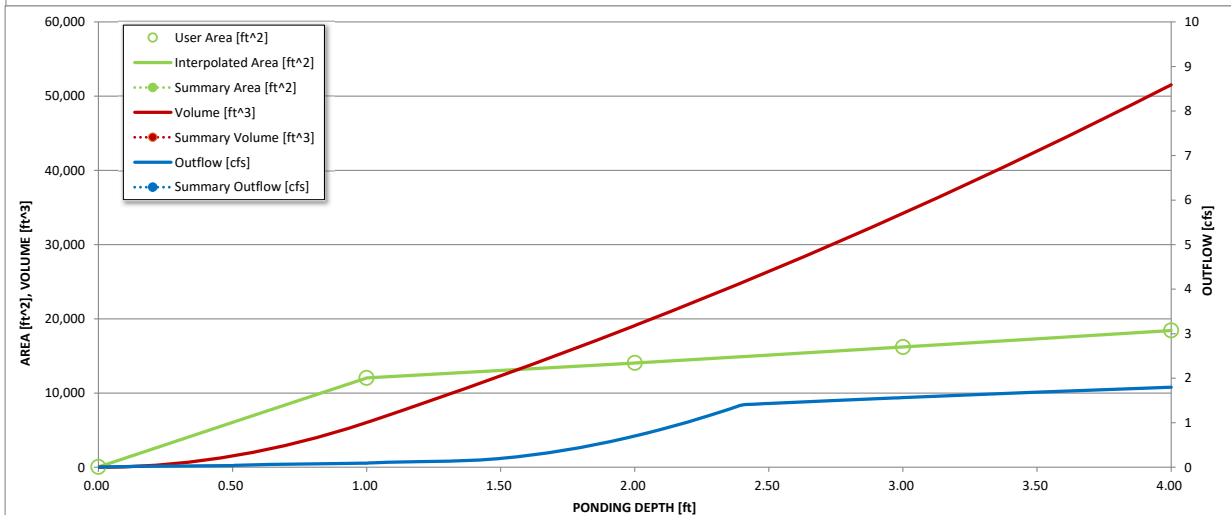
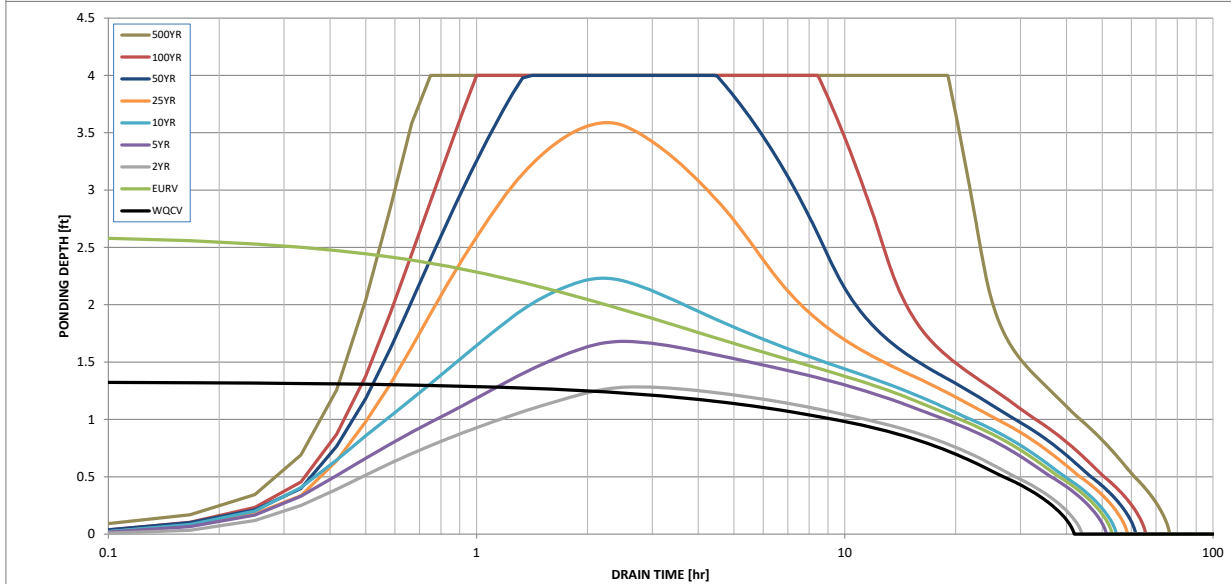
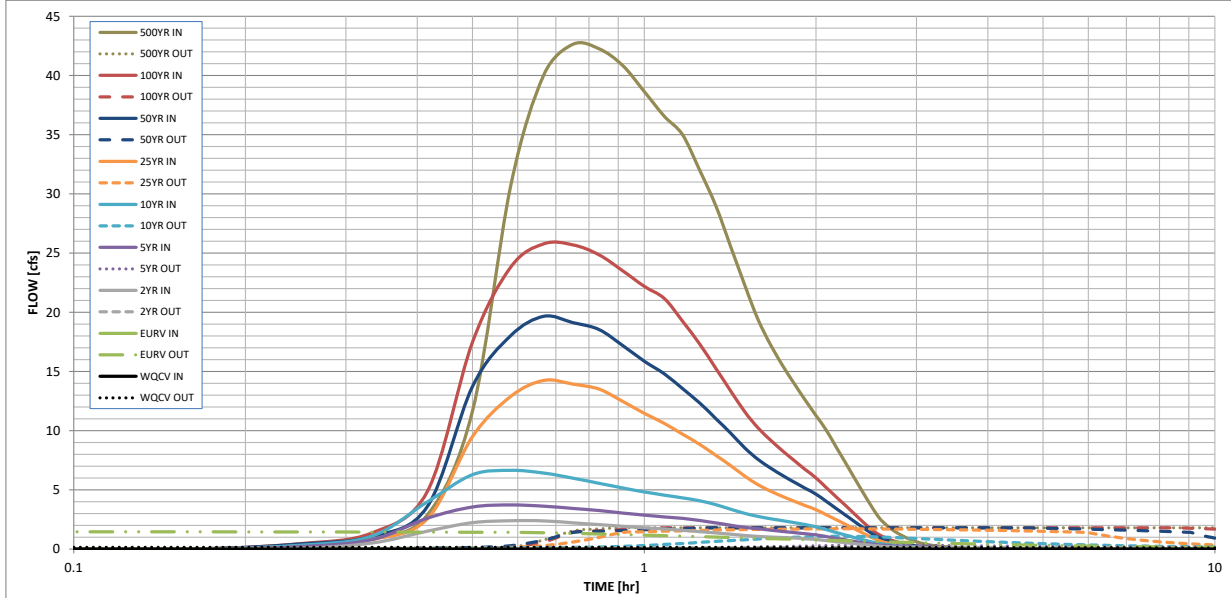
Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =	N/A	N/A	0.83	1.11	1.38	1.82	2.21	2.62	3.82
One-Hour Rainfall Depth (in) =	N/A	N/A	0.83	1.11	1.38	1.82	2.21	2.62	3.82
CUHP Runoff Volume (acre-ft) =	0.232	0.651	0.245	0.382	0.635	1.254	1.744	2.347	3.939
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.245	0.382	0.635	1.254	1.744	2.347	3.939
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.1	0.2	2.5	8.9	13.2	18.6	32.4
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.01	0.01	0.16	0.57	0.85	1.20	2.09
Peak Inflow Q (cfs) =	N/A	N/A	2.4	3.7	6.6	14.2	19.7	25.8	42.6
Peak Outflow Q (cfs) =	0.14	1.46	0.14	0.33	1.08	1.71	1.80	1.80	1.80
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	1.6	0.4	0.2	0.1	0.1	0.1
Structure Controlling Flow =	Plate	Outlet Plate 1	Plate	Vertical Orifice 1	Vertical Orifice 1	Outlet Plate 1	N/A	N/A	N/A
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	-0.1	-0.1	-0.1	-0.1
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	44	39	45	45	43	43	43	46
Time to Drain 99% of Inflow Volume (hours) =	40	49	42	49	50	52	53	55	60
Maximum Ponding Depth (ft) =	1.33	2.63	1.28	1.68	2.23	3.59	4.00	4.00	4.00
Area at Maximum Ponding Depth (acres) =	0.29	0.35	0.29	0.31	0.33	0.40	0.42	0.42	0.42
Maximum Volume Stored (acre-ft) =	0.232	0.651	0.218	0.337	0.514	1.010	1.183	1.183	1.183

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.00 (December 2019)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

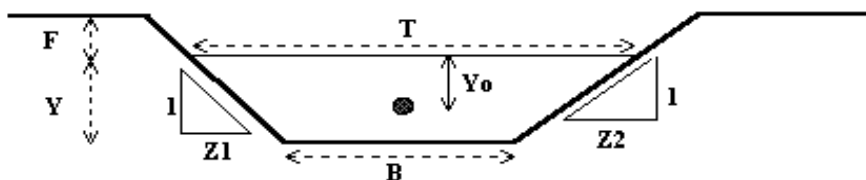
Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

Time Interval	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.20
	0:15:00	0.00	0.00	0.06	0.21	0.32	0.28	0.42	0.46	0.85
	0:20:00	0.00	0.00	0.51	0.79	1.09	0.80	1.06	1.37	2.87
	0:25:00	0.00	0.00	1.50	2.60	3.99	2.55	3.59	4.86	11.64
	0:30:00	0.00	0.00	2.23	3.55	6.28	9.50	13.72	17.47	30.70
	0:35:00	0.00	0.00	2.39	3.72	6.65	12.89	18.03	23.82	40.05
	0:40:00	0.00	0.00	2.38	3.62	6.41	14.25	19.66	25.78	42.64
	0:45:00	0.00	0.00	2.22	3.42	5.99	13.92	19.13	25.69	42.26
	0:50:00	0.00	0.00	2.06	3.25	5.55	13.51	18.55	24.86	40.85
	0:55:00	0.00	0.00	1.92	3.04	5.16	12.47	17.19	23.51	38.64
	1:00:00	0.00	0.00	1.79	2.86	4.82	11.46	15.87	22.18	36.57
	1:05:00	0.00	0.00	1.69	2.72	4.56	10.62	14.80	21.18	35.00
	1:10:00	0.00	0.00	1.58	2.58	4.32	9.71	13.55	19.25	32.02
	1:15:00	0.00	0.00	1.47	2.41	4.08	8.85	12.35	17.34	29.05
	1:20:00	0.00	0.00	1.36	2.21	3.75	7.93	11.04	15.29	25.57
	1:25:00	0.00	0.00	1.25	2.01	3.36	7.05	9.79	13.37	22.29
	1:30:00	0.00	0.00	1.15	1.83	3.01	6.16	8.54	11.59	19.37
	1:35:00	0.00	0.00	1.07	1.71	2.75	5.43	7.57	10.23	17.20
	1:40:00	0.00	0.00	1.01	1.59	2.56	4.88	6.82	9.17	15.46
	1:45:00	0.00	0.00	0.97	1.48	2.38	4.43	6.19	8.26	13.93
	1:50:00	0.00	0.00	0.93	1.38	2.22	4.03	5.63	7.45	12.55
	1:55:00	0.00	0.00	0.87	1.29	2.06	3.66	5.12	6.71	11.27
	2:00:00	0.00	0.00	0.80	1.19	1.88	3.32	4.64	6.00	10.06
	2:05:00	0.00	0.00	0.71	1.05	1.64	2.90	4.03	5.20	8.65
	2:10:00	0.00	0.00	0.62	0.91	1.40	2.49	3.45	4.43	7.32
	2:15:00	0.00	0.00	0.54	0.77	1.18	2.09	2.88	3.69	6.02
	2:20:00	0.00	0.00	0.46	0.65	0.97	1.71	2.34	2.98	4.79
	2:25:00	0.00	0.00	0.39	0.53	0.78	1.35	1.82	2.30	3.61
	2:30:00	0.00	0.00	0.32	0.42	0.61	1.00	1.34	1.66	2.61
	2:35:00	0.00	0.00	0.25	0.33	0.47	0.70	0.96	1.19	1.95
	2:40:00	0.00	0.00	0.20	0.27	0.38	0.52	0.72	0.88	1.48
	2:45:00	0.00	0.00	0.16	0.22	0.31	0.39	0.55	0.66	1.12
	2:50:00	0.00	0.00	0.13	0.18	0.26	0.30	0.43	0.49	0.83
	2:55:00	0.00	0.00	0.11	0.15	0.21	0.23	0.33	0.36	0.62
	3:00:00	0.00	0.00	0.09	0.12	0.17	0.18	0.26	0.26	0.45
	3:05:00	0.00	0.00	0.08	0.10	0.14	0.14	0.20	0.19	0.34
	3:10:00	0.00	0.00	0.07	0.08	0.11	0.11	0.16	0.15	0.27
	3:15:00	0.00	0.00	0.05	0.07	0.09	0.09	0.12	0.12	0.21
	3:20:00	0.00	0.00	0.05	0.05	0.07	0.07	0.10	0.10	0.17
	3:25:00	0.00	0.00	0.04	0.04	0.05	0.05	0.08	0.07	0.13
	3:30:00	0.00	0.00	0.03	0.03	0.04	0.04	0.06	0.06	0.10
	3:35:00	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.07
	3:40:00	0.00	0.00	0.02	0.02	0.02	0.02	0.03	0.03	0.05
	3:45:00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03
	3:50:00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	3:55:00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Normal Flow Analysis - Trapezoidal Channel

Project: **Been RV Park**
Channel ID: **Swale S**



Design Information (Input)

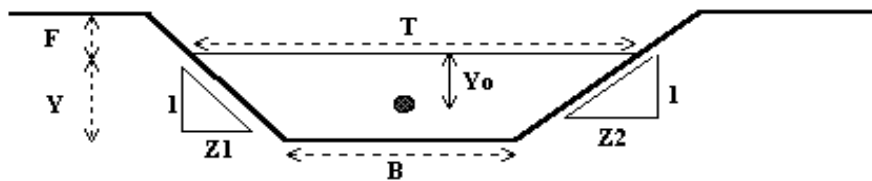
Channel Invert Slope	$S_o =$ 0.0100 ft/ft
Manning's n	$n =$ 0.020
Bottom Width	$B =$ 1.00 ft
Left Side Slope	$Z_1 =$ 4.00 ft/ft
Right Side Slope	$Z_2 =$ 4.00 ft/ft
Freeboard Height	$F =$ 0.00 ft
Design Water Depth	$Y =$ 1.00 ft

Normal Flow Condition (Calculated)

Discharge	$Q =$ 24.72 cfs
Froude Number	$Fr =$ 1.17
Flow Velocity	$V =$ 4.94 fps
Flow Area	$A =$ 5.00 sq ft
Top Width	$T =$ 9.00 ft
Wetted Perimeter	$P =$ 9.25 ft
Hydraulic Radius	$R =$ 0.54 ft
Hydraulic Depth	$D =$ 0.56 ft
Specific Energy	$E_s =$ 1.38 ft
Centroid of Flow Area	$Y_o =$ 0.36 ft
Specific Force	$F_s =$ 0.35 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **Been RV Park**
Channel ID: **Swale E**



Design Information (Input)

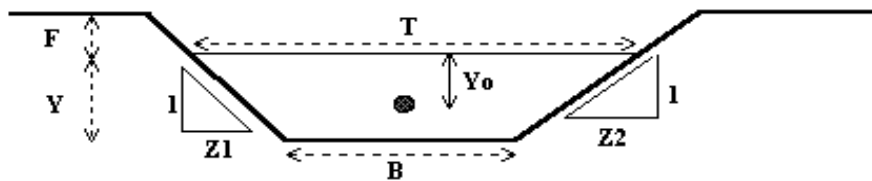
Channel Invert Slope	$S_o =$	<u>0.0100</u> ft/ft
Manning's n	$n =$	<u>0.020</u>
Bottom Width	$B =$	<u>1.00</u> ft
Left Side Slope	$Z_1 =$	<u>4.00</u> ft/ft
Right Side Slope	$Z_2 =$	<u>4.00</u> ft/ft
Freeboard Height	$F =$	<u>0.00</u> ft
Design Water Depth	$Y =$	<u>0.90</u> ft

Normal Flow Condition (Calculated)

Discharge	$Q =$	<u>19.21</u> cfs
Froude Number	$Fr =$	<u>1.15</u>
Flow Velocity	$V =$	<u>4.64</u> fps
Flow Area	$A =$	<u>4.14</u> sq ft
Top Width	$T =$	<u>8.20</u> ft
Wetted Perimeter	$P =$	<u>8.42</u> ft
Hydraulic Radius	$R =$	<u>0.49</u> ft
Hydraulic Depth	$D =$	<u>0.50</u> ft
Specific Energy	$E_s =$	<u>1.23</u> ft
Centroid of Flow Area	$Y_o =$	<u>0.33</u> ft
Specific Force	$F_s =$	<u>0.26</u> kip

Normal Flow Analysis - Trapezoidal Channel

Project: **Been RV Park**
Channel ID: **Roadside Pans**



Design Information (Input)

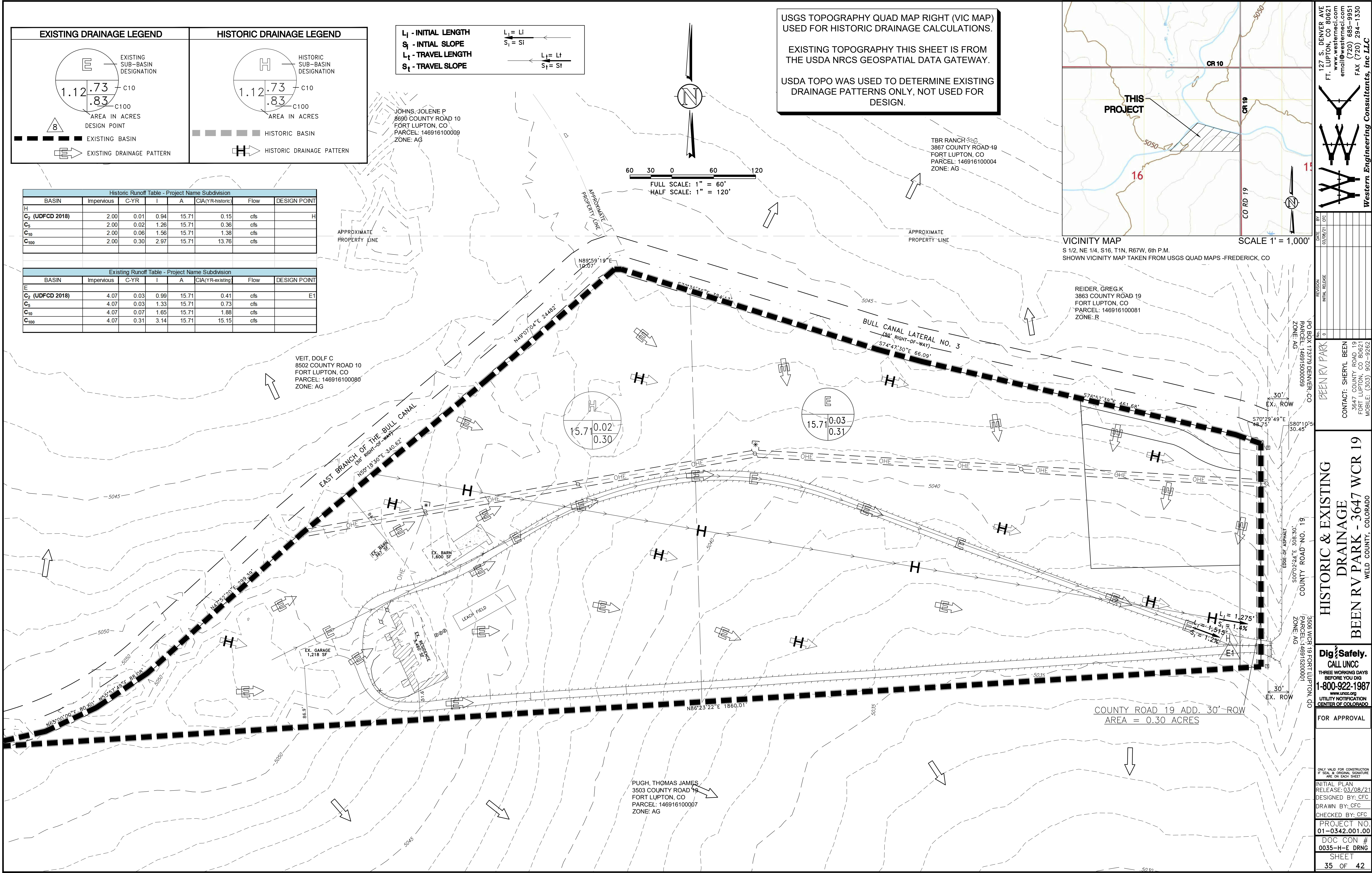
Channel Invert Slope	$S_o =$ <u>0.0060</u> ft/ft
Manning's n	$n =$ <u>0.013</u>
Bottom Width	$B =$ <u>2.00</u> ft
Left Side Slope	$Z_1 =$ <u>6.00</u> ft/ft
Right Side Slope	$Z_2 =$ <u>6.00</u> ft/ft
Freeboard Height	$F =$ <u>0.00</u> ft
Design Water Depth	$Y =$ <u>0.33</u> ft

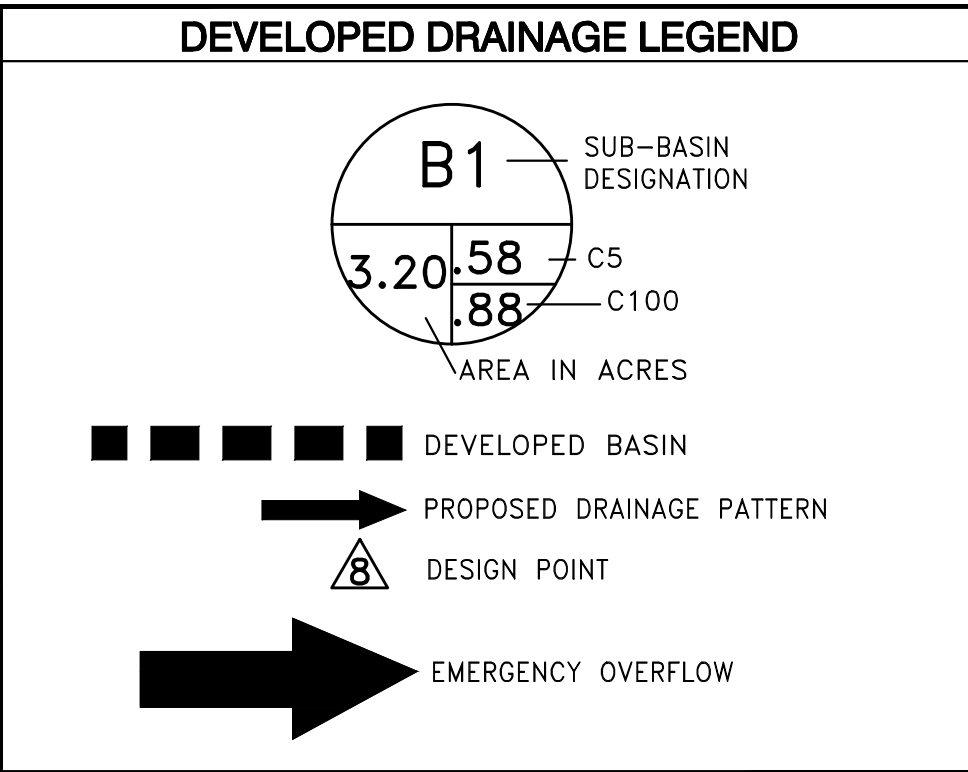
Normal Flow Condition (Calculated)

Discharge	$Q =$ <u>4.23</u> cfs
Froude Number	$Fr =$ <u>1.21</u>
Flow Velocity	$V =$ <u>3.22</u> fps
Flow Area	$A =$ <u>1.31</u> sq ft
Top Width	$T =$ <u>5.96</u> ft
Wetted Perimeter	$P =$ <u>6.01</u> ft
Hydraulic Radius	$R =$ <u>0.22</u> ft
Hydraulic Depth	$D =$ <u>0.22</u> ft
Specific Energy	$E_s =$ <u>0.49</u> ft
Centroid of Flow Area	$Y_o =$ <u>0.14</u> ft
Specific Force	$F_s =$ <u>0.04</u> kip

APPENDIX D

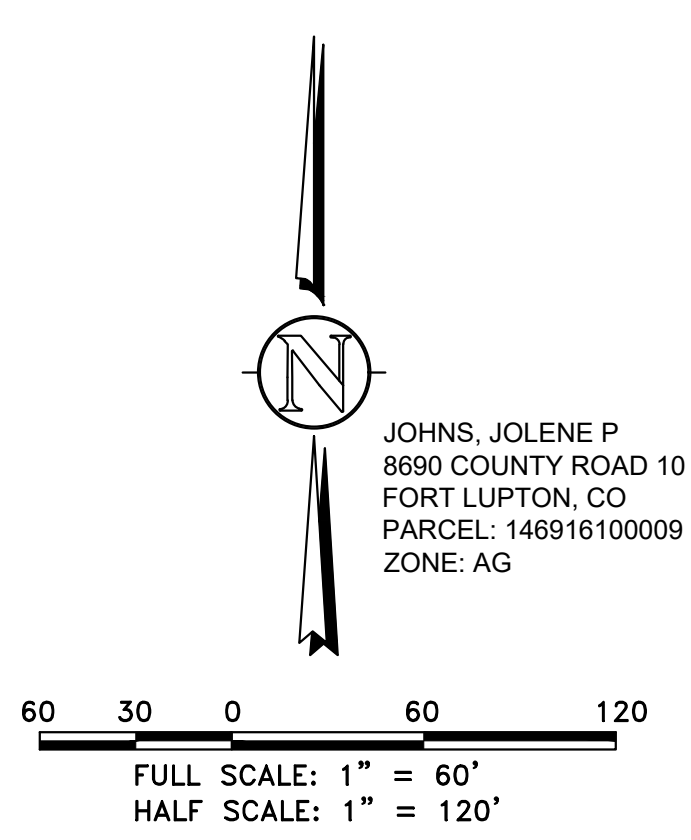
Drainage Plans





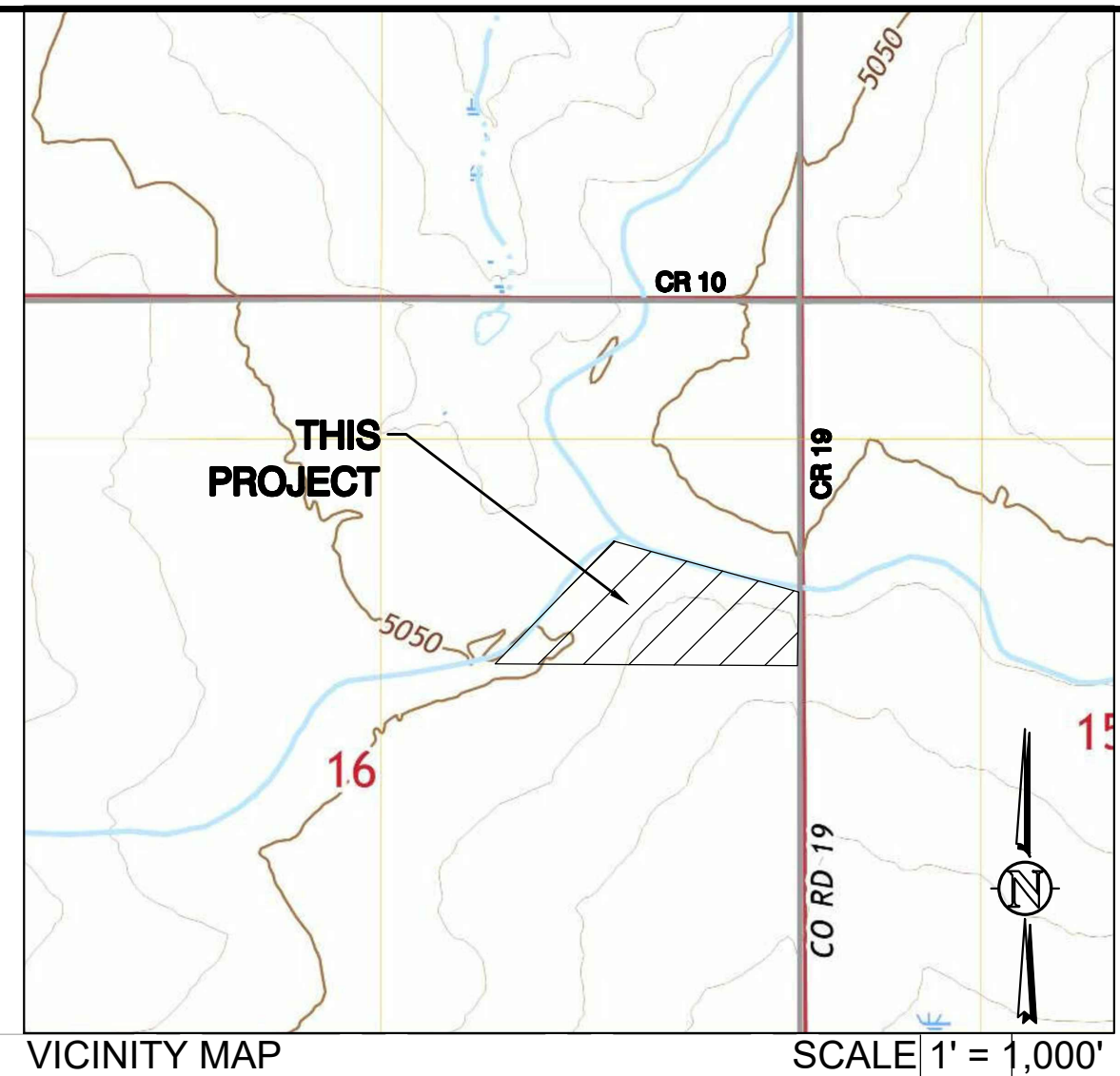
L_i - INITIAL LENGTH
 S_i - INITIAL SLOPE
 L_t - TRAVEL LENGTH
 S_t - TRAVEL SLOPE

$L_i = L_t$
 $S_i = S_t$



APPROXIMATE
PROPERTY LINE

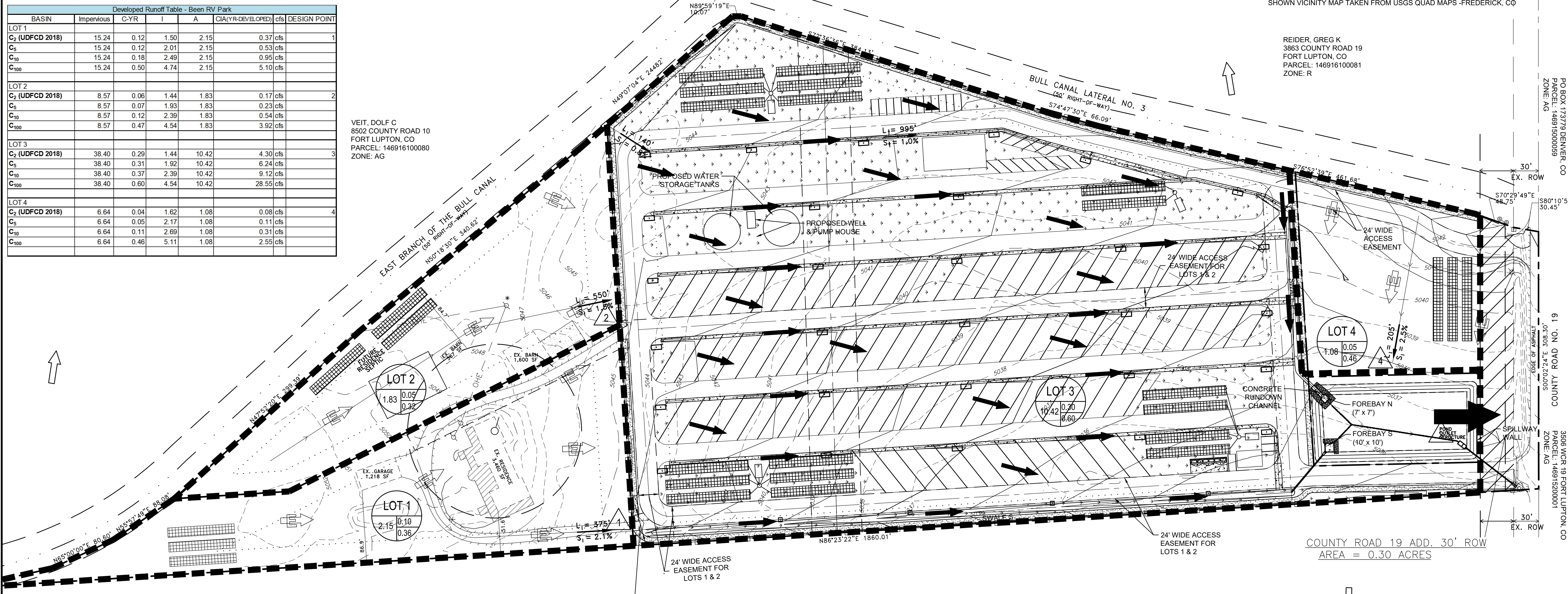
EXISTING TOPOGRAPHY THIS SHEET IS FROM
SURVEY DATA RECEIVED FROM
CES CONSULTANTS, LLC
DATED JUNE 29, 2020.



REIDER, GREG K
3983 COUNTY ROAD 19
FORT LUPTON, CO
PARCEL: 146916100081
ZONE: R

Developed Runoff Table - Been RV Park						
BASIN	Impervious	C-YR	I	A	CIA(YR-DEVELOPED) cfs	DESIGN POINT
LOT 1						
C ₂ (UDFCD 2018)	15.24	0.12	1.50	2.15	0.37 cfs	1
C ₅	15.24	0.12	2.01	2.15	0.53 cfs	
C ₁₀	15.24	0.18	2.49	2.15	0.95 cfs	
C ₁₀₀	15.24	0.50	4.74	2.15	5.10 cfs	
LOT 2						
C ₂ (UDFCD 2018)	8.57	0.06	1.44	1.83	0.17 cfs	2
C ₅	8.57	0.07	1.93	1.83	0.23 cfs	
C ₁₀	8.57	0.12	2.39	1.83	0.54 cfs	
C ₁₀₀	8.57	0.47	4.54	1.83	3.92 cfs	
LOT 3						
C ₂ (UDFCD 2018)	38.40	0.29	1.44	10.42	4.30 cfs	3
C ₅	38.40	0.31	1.92	10.42	6.24 cfs	
C ₁₀	38.40	0.37	2.39	10.42	9.12 cfs	
C ₁₀₀	38.40	0.60	4.54	10.42	28.55 cfs	
LOT 4						
C ₂ (UDFCD 2018)	6.64	0.04	1.62	1.08	0.08 cfs	4
C ₅	6.64	0.05	2.17	1.08	0.11 cfs	
C ₁₀	6.64	0.11	2.69	1.08	0.31 cfs	
C ₁₀₀	6.64	0.46	5.11	1.08	2.55 cfs	

VEIT, DOLF C
8502 COUNTY ROAD 10
FORT LUPTON, CO
PARCEL: 146916100080
ZONE: AG



PUGH, THOMAS JAMES
3503 COUNTY ROAD 19
FORT LUPTON, CO
PARCEL: 146916100007
ZONE: AG

COUNTY ROAD 19 ADD. 30' ROW
AREA = 0.30 ACRES

POND WATER SURFACE TABLE		
DESCRIPTION	ELEVATION	VOLUME (cft)
WQCV	5034.65	8.519
100yr	5036.65	39.427
OVERFLOW	4937.00	45.443

127 S. DENVER AVE
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(720) 685-9951
FAX (720) 294-1330

Western Engineering Consultants, Inc LLC

DATE	BY	REVISION
10/10/21	CFC	INITIAL RELEASE

PO BOX 17379 DENVER CO
PARCEL: 146916000089
ZONE: AG

CONTACT: SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621
MOBILE: (303) 902-9262

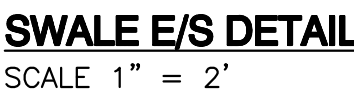
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DESIGNED BY: CFC
DRAWN BY: CFC
CHECKED BY: CFC

PROJECT NO.
01-0342.001.00
DOC CON #
0036-DEV DRNG
SHEET
36 OF 53

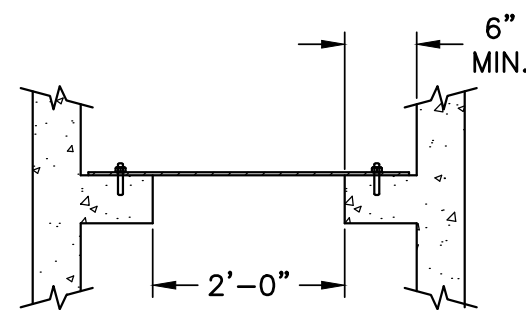


* May substitute one 12-inch layer of type II bedding. The substitution of one layer of type II bedding shall not be permitted at drop structures. The use of a combination of filter fabric and Type II bedding at drop structures is acceptable.

SOIL RIPRAP
70%-75% RIPRAP
25%-30% SOIL

POND WATER SURFACE TABLE		
DESCRIPTION	ELEVATION	VOLUME (cft)
WQCV	5034.65	8,519
100yr	5036.65	39,427
OVERFLOW	4937.00	45,443

PROJECT NO.
01-0342.001.00
DOC CON #
0037-DRNG DTLS
SHEET
37 OF 42



4 1/2" TYP.
 2'-9"
 10yr WEIR (4.0" WIDE X 0.87" HIGH)
 3 - 1-7/16" DIA WATER QUALITY HOLES 5.5" ON CENTER
 8" TYP.
 2'-0"
 2'-0"
 1" (

36"

1" (TYP)

2.9"

2.0"

18" RCP

The diagram illustrates a cross-section of a stormwater management structure. Key features include:

- Trickle Channel:** Located at the top left, with an invert elevation of 5034.00.
- Micro Pools:** Two pools are shown. The upper one has an elevation of 5033.67, and the lower one has a bottom elevation of 5031.17. They are separated by a 4-inch surcharge.
- Trash Racks:** Three racks labeled 'A', 'B', and 'C' are shown, each with a specific detail view indicated.
- Structural Components:** A 3/8" galvanized steel plate with water quality holes (labeled D) is shown, along with a 3/8" galvanized steel plate with a 100-year orifice plate. The structure is supported by 12" thick 3/4" rock.
- Dimensions and Slopes:** Various dimensions are provided, including a 4'-6" width, a 2'-0" height, and slopes of 5'-10" and 1'-1/2".
- Elevations:** Several elevations are noted, such as 5036.65, 5035.52, 5034.65, 5033.67, 5033.60, and 5031.17.
- Section Label:** The section is identified as SECTION A-A with a scale of 1" = 2'.

Technical drawing of a trash rack structure, showing a top view and a side section view.

Top View (Plan):

- Overall dimensions: 4'-6" x 4'-6".
- Grid pattern: 2" x 2" x 1/4" ANGLE (typical) forming a grid.
- Material: 2" x 2" x 1/4" SQUARE TUBING (typical).
- Expansion Anchors: DRILL (6) 5/8" DIA. HOLES THROUGH SQUARE CHANNEL EACH SIDE FOR 1/4" x 5" GALVANIZED STEEL EXPANSION ANCHORS.
- Seal End: SEAL END (TYP) at the bottom right corner.
- Drill Through: DRILL THROUGH EACH at the bottom right corner.

Side View (Section E-E):

- Overall height: 4'-6".
- Channel width: 2'-0".
- Side section width: 1'-6" (on each side).
- Trickle Channel: TRICKLE CHANNEL INV. = 5009.10.
- Scale: SCALE 1" = 2'.

Labels:

- SECTION E-E
- TRASH RACK 'A'

2" x 2" x 1/4" ANGLE

2" x 2" x 1/4" FLAT
@ 4" O.C.

2" x 1/4" FLAT
@ 12" O.C.

1/4" FLAT
O.C.

2" x 2" x 1/4" SQUARE TUBING

1/4" (TYP.)

1" (TYP.)

4" (TYP.)

15'-10"

4'-6"

DRILL (10) 5/8" DIA. HOLES THROUGH SQUARE CHANNEL EACH SIDE FOR 1/4" x 5" GALVANIZED STEEL EXPANSION ANCHORS

SEAL END (TYP.)

DRILL THROU EACH

TRASH RACK 'C'

SCALE 1" = 2'

127 S. DENVER AVE FT. LUPTON, CO 80621 www.westerneci.com email@westerneci.com (720) 685-9951 FAX (720) 294-1330				Western Engineering Consultants, Inc LLC	
NO.	0	REGION		DATE	03/08/21
BY		INITIAL RELEASE			

BEEN RV PARK

CONTACT: SHERYL BEEN
3647 COUNTY ROAD 19
FORT LUPTON, CO 80621
MOBILE: (303) 902-9262

DRAINAGE DETAILS

BEEN RV PARK - 3647 WCR 19

WELD COUNTY, COLORADO

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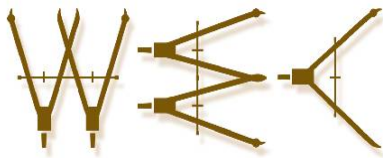
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PROJECT NO.
01-0342-001,00

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0038-DRNG DTLS

SHEET
38 OF 42



WESTERN ENGINEERING CONSULTANTS,
127 S Denver Ave. Fort Lupton, CO 80621
2501 Mill Street, Brush, CO 80723
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Cell. 303-913-7341, Fax 720-294-1330
Email: chadwin.cox@westerneci.com
Inc LLC

March 10, 2021

City of Fort Lupton
130 South McKinley Ave.
Ft. Lupton, CO 80621

RE: BEEN RV PARK WATER SERVICE NARRATIVE

City Design Review Committee:

Western Engineering Consultants Inc. LLC (WEC) has prepared this narrative letter to briefly summarize the Been RV Park water demands and proof of service.

Attached to this letter are the following:

- WEC Preliminary Water Demand Study
- Been RV Park Well Permit and supporting documents
- Wild Country RV Park 2020 Consumption Report
- Water Usage Affidavit
- CWCWD Will Serve Letter, Fire Flow Study, and water study receipt

A preliminary water study has been completed by WEC dated August 20, 2020 to estimate the demand and to size the future water meter for the calculated peak flow. The study was broken into phasing, with phases 1 & 2 consisting of 80 RV stalls, phase 3 adding 40 additional stalls, and phase 4 adding the final 40 stalls.

The interim RV Park (75 total RV stalls) will be serviced for consumptive use by the proposed well (Permit #84713-F) located within Lot 3. The approved well permit allows the property to withdraw 4.92 acre-feet annually from the Laramie-Fox Hills aquifer. At a usage rate for each RV stall of 50 gallons per day, the use of this well would provide water for 87 units (only 75 proposed as Phase 1 at this time). 75 RV stalls is the threshold above which traffic improvements will be required.

The attached Wild Country RV Park 2020 consumption report details the annual water usage (in gallons) of a larger RV Park located in Keenesburg, CO (180 total RV stalls). The average daily usage of the 180 stall RV Park (domestic and irrigation) was 55 gpd per RV stall, resulting in a yearly water usage of approximately 10.88 acre-feet.

The applicant has completed the Affidavit of historic water use and has applied for inclusion to the Northern Colorado Water Conservancy District. WEC has coordinated with and the Applicant has funded the Central Weld County Water District water demand and supply study. Currently CWCWD water main exists 1,850 feet +/- north of the site. The CWCWD water main will be extended for fire suppression unless the applicant receives alternative methods and means approval by the Fort Lupton Fire Protection District.

A will serve letter from CWCWD has been received, and a water study is currently underway. A Fire Flow study was performed by NOCO Engineering Company dated September 18, 2020 recommending approval of the requested fire flow tap at a flow rate of 800 gpm.

CLOSING

The Applicant is excited to bring this project to the City of Fort Lupton!

Please contact me with any questions or comments you may have on this Project Narrative.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cox', with a stylized flourish extending from the top left.

Western Engineering Consultants inc., LLC
Chadwin F. Cox, P.E.
Senior Project Manager



WESTERN ENGINEERING CONSULTANTS INC LLC

Preliminary Draft

**BEEN RV PARK
3647 WCR 19, Ft Lupton, 80603
Weld County, CO**

WATER AND SANITARY SEWER STUDY

August 20, 2020
(WECI # 0342.001.00)

PROJECT DESCRIPTION

A 161-unit RV park is proposed in Ft Lupton, on WCR 19, south of WCR 10. Phases 1 and 2 will be constructed initially. A one-acre commercial lot is also proposed. One existing and one proposed residence are located on the western portion of the site.

PHASE	RV Units		Shower/Laundry in Commercial Building
1 and 2	80	--	1
3	40	--	1
4	41	--	1
TOTAL	161	--	3

Water service will be provided by the North Weld County Water District. The owner is in discussions with the district regarding service. The District's nearest line is currently about 1,900 feet from the site. The on-site 8-inch water lines will provide water to fire hydrants as well as to the RV units. A master water meter near the eastern entrance will meter the domestic use.

Wastewater will be collected near the site's low points and treated on site (designed by others). Please refer to the WEC site. Future sewer service by the City of Ft Lupton is anticipated.

DOMESTIC WATER

Attached are the calculations for estimating the demand and sizing the water meter for calculated peak flow using the IPC (International Plumbing Code). It was assumed that an RV unit will have a shower, lavatory sink, kitchen sink and water closet. Meter capacity is based on Denver Water standards using 80% off AWWA C700 capacities.

The private on-site 8-inch water lines will provide water to fire hydrants as well as to the RV units. A master water meter will meter the domestic use. A PRV (pressure regulating valve) on a meter bypass line will open during extreme pressure drop, such as high demand during firefighting or line flushing. [?? A second connection to the District water line will be made and will have a PRV only.]

For this preliminary report, the Design Pressure is assumed to be 60 psi at the connection to the District system at the site. This is for preliminary design only and has not been verified.

The IPC demand method results in the following estimated cumulative peak demands (also the design demand for this report) by phase. Meter capacity is based on the Denver Water recommendation (80% of AWWA C700 meter standards), which is commonly used in the area.

PHASE	Cumulative Design Demand, gpm	Meter Diameter, inches	Meter Capacity, gpm
1 and 2	119	2	128
3	163	3	250
4	202	3	250

The friction losses due to the length of the internal lines are mitigated by using the 8-inch domestic/fire lines for distribution. For example, the loss at 202 gpm for 5,000 feet of 8-inch is 3 psi.

For each pair of RV's served, a 1-inch tap and service will be installed on the main line in the street. Friction loss would be too high if ¾-inch services were used with the proposed line lengths.

IRRIGATION WATER

Irrigation is assumed to be minimal.

FIRE PROTECTION

To be determined.

[from keenesburg project:

16 fire hydrants are proposed on the site for fire protection and line flushing. An 6-inch PRV on a bypass at the meter will open when pressure is low enough to open it during high demand when the hydrants are operated. The PRV and domestic meter will be in a precast vault. A second connection with a PRV also will serve the site.

It appears that 750 gpm could be delivered to the site with the 8-inch main extension, assuming the Town's system has the capacity. 525 gpm fireflow plus domestic demand of 222 gpm for a total 750 gpm. This flow rate in the 5,300 off-site line extension results in 32 psi loss for the pipe.]

SANITARY SEWER SERVICES

On-site mains are gravity flow with manholes for maintenance. Minimum pipe size hydraulically is 4 and 6-inch (see attached calculations); however, 8-inch could provide more efficient system maintenance.

Each pair of RV's should be served by a 4-inch PVC service connection. 4-inch, with a clean out at the pad allows for adequate service line maintenance.

Wastewater demand (2009 IPC) and sewer size for two RV's is:

18 DFU	Use 1 x 4-inch PVC @ 2%
The IPC allows:	Up to 216 DFUs are allowed on a 4-inch line @ 2%.
	Up to 180 DFUs are allowed on a 4-inch line @ 1%.

SANITARY SEWER SITE

Build out average demand is estimated to be 11,500 gallons per day (calculated), or 11 gpm. Using 50 gallons per day per RV unit (travel trailer excluding laundry facilities, Table 6-2, Colorado Regulation 43):

<u>PHASE</u>	<u>Average Daily Estimated Flow, gpd</u>	<u>Cumulative Average Daily Estimated Flow, gpd (gpm)</u>
1 and 2	5,150	5,150 (3.6)
3	3,150	8,300 (5.8)
4	<u>3,200</u>	11,500 (8.0)
TOTAL	11,500	

Revision Draft 202X

Revision 1 202x xxxx

--End of Text

2012 INTERNATIONAL PLUMBING CODE ----- TABLE E103.3(3)
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSHOMETER VALVES		
Load	Demand		Load	Demand	
(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)	(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)
1	3.0	0.04104			
2	5.0	0.0684			
3	6.5	0.86892			
4	8.0	1.06944			
5	9.4	1.256592	5	15.0	2.0052
6	10.7	1.430376	6	17.4	2.326032
7	11.8	1.577424	7	19.8	2.646364
8	12.8	1.711104	8	22.2	2.967696
9	13.7		9	24.6	3.288528
10	14.6	1.951728	10	27.0	3.60936
11	15.4	2.058672	11	27.8	3.716304
12	16.0	2.13888	12	28.6	3.823248
13	16.5	2.20572	13	29.4	3.930192
14	17.0	2.27256	14	30.2	4.037136
15	17.5	2.3394	15	31.0	4.14408
16	18.0	2.90624	16	31.8	4.241024
17	18.4	2.459712	17	32.6	4.357968
18	18.8	2.513184	18	33.4	4.464912
19	19.2	2.566656	19	34.2	4.571856
20	19.6	2.620128	20	35.0	4.6788
25	21.5	2.87412	25	38.0	5.07984
30	23.3	3.114744	30	42.0	5.61356
35	24.9	3.328632	35	44.0	5.88192
40	26.3	3.515784	40	46.0	6.14928
45	27.7	3.702936	45	48.0	
50	29.1	3.890088	50	50.0	6.684
60	32.0	4.27776	60	54.0	7.21872
70	35.0	4.6788	70	58.0	7.75344
80	38.0	5.07984	80	61.2	8.181216
90	41.0	5.48088	90	64.3	8.595624
100	43.5	5.81508	100	67.5	9.0234
120	48.0		120	73.0	9.75864
140	52.5	7.0182	140	77.0	10.29336
160	57.0	7.61976	160	81.0	10.82808
180	61.0	8.15448	180	85.5	11.42964
200	65.0	8.6892	200	90.0	12.0312
225	70.0	9.3576	225	95.5	12.76644
250	75.0	10.026	250	101.0	13.50168

(continued)

E103.3(3)-continued
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSHOMETER VALVES		
Load	Demand		Load	Demand	
(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)	(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)
275	80.0	10.6944	275	104.5	13.96956
300	85.0	11.3628	300	108.0	14.43744
400	105.0	14.0364	400	127.0	16.97736
472	119				
500	124.0	16.57632	500	143.0	19.11624
713	163				
750	170.0	22.7256	750	177.0	23.66136
959	202				
1,000	208.0	27.80544	1,000	208.0	27.80544
1,250	239.0	31.94952	1,250	239.0	31.94952
1,500	269.0	35.95992	1,500	269.0	35.95992
1,750	297.0	39.70296	1,750	297.0	39.70296
2,000	325.0	43.446	2,000	325.0	43.446
2,500	380.0	50.7984	2,500	380.0	50.7984
3,000	433.0	57.88344	3,000	433.0	57.88344
4,000	525.0	70.182	4,000	525.0	70.182
5,000	593.0	79.27224	5,000	593.0	79.27224

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m, 1 cubic foot per minute 0.28 m³ per minute.

August 18, 2020

Been RV Park, refer to report.

August 20, 2020

Revision 0

Askeland

WATER METER AND SERVICE LINE SIZE

BEEN RV PARK

3647 WCR 19, Ft Lupton, Colorado

Preliminary Draft

A. ESTIMATE FIXTURE COUNT AND PEAK FLOW RATE (IPC 2012) AND METER SIZE

Showers (public) per phase	1	1	1	
Washing Machines (public) per phase	1	1	1	Check column
RV Units each Phase	80	40	41	161

FIXTURE	FIXTURE UNITS per FIXTURE WSFU	PHASES 1 AND 2		PHASE 3		PHASE 4	
		Q	WSFU	Q	WSFU	Q	WSFU
Bathtub or Shower (private)	1.4	80	112	40	56	41	57
Bathtub or Shower (public) - combo	4.0	1	4	1	4	1	4
Dishwasher (private)	1.4	0	0	0	0	0	0
Dishwasher (public, estimated WSFU)	4.0	0	0	0	0	0	0
Drinking Fountain (offices, etc.) - COM BLD	0.25	1	0.25	0	0	0	0
Hose Bib - COM BLD	2.5	1	2.5	0	0	0	0
Hose Bib, each additional misc.	1.0	1	1	1	1	1	1
Lavatory (private)	0.7	80	56	40	28	41	29
Lavatory (public) - COM BLD	2.0	1	2	1	2	1	2
Sink, Bar (public)	2.0	0	0	0	0	0	0
Sink, Kitchen (private)	1.4	80	112	40	56	41	57
Sink, Kitchen (hotel, restaurant, etc.)	4.0	0	0	0	0	0	0
Sink, Service (offices, etc.) COM BLD laundry	3.0	1	3	1	3	1	3
Urinal (public, 3/4" flush valve)	5.0	0	0	0	0	0	0
Urinal (public, 3/4" flush tank)	3.0	0	0	0	0	0	0
Washing Machine, 8 lb (private)	1.4	0	0	0	0	0	0
Washing Machine, 8lb (public)- COM BLD	3.0	1	3	1	3	1	3
Washing Machine, 15lb (public)	4.0	0	0	0	0	0	0
Water Closet, tank (private)	2.2	80	176	40	88	41	90
Water Closet, flushometer valve (private)	6.0	0	0	0	0	0	0
Water Closet, tank (public)	5.0	0	0	0	0	0	0
Water Closet, flushometer valve (public)	10.0	0	0	0	0	0	0
Water Closet, flushometer tank valve (public)	2.0	0	0	0	0	0	0
TOTAL FIXTURES		327		165		169	661
TOTAL WSFU per Phase			472		241		247
% of Buildout			49%		25%		26%
CUMULATIVE TOTAL WSFU			472		713		959
For use in Table E103.3(3)							
CUMULATIVE PEAK FLOW RATE, gpm			119		163		202
IPC, Table E103.3(3)			gpm		gpm		gpm
USED AS DESIGN FLOW RATE							
Site METER SIZE MINIMUM, INCHES			2		3		3
meter capacity, gpm (See note 6 below)			128		250		250
Peak Flow Rate, gpm (prorated by phase at build out)			99		51		52
							202

NOTES:

1. Fixture type and quantity are estimates.
2. Tank water closets. Used IPC Table E103.3.3.column for predominantly flush tanks (attached).
3. Use is "private" since use is restricted to employees and guests, except as noted public.
4. Final design should confirm fixture types and quantities.
5. IPC (International Plumbing Code) rate is "Peak Flow Rate" and is used as the Design Flow Rate in other calculations.
- 5.b. WSFU = Water Supply Fixture Unit. COM BLD = Commercial Building/Warehouse.
- 6.a. Meter design capacity recommended by the Denver Water (80% of AWWA C700 meter standards):
- 6.b. 3/4" - 16 gpm, 1" - 40 gpm, 1 1/2" - 80 gpm, 2" - 128 gpm, 3" - 250 gpm, 4" - 400gpm, 6" - 800 gpm.
7. Phases 1 and 2 combined constitute the initial development phase.

Revision x 2020 xxxx

---- END OF PAGE -----

August 20, 2020

Revision 0

Askeland

SANITARY SEWER DEMANDS

BEEN RV PARK

3647 WCR 19, Ft Lupton, Colorado

Preliminary Draft

C.1. SEWER DEMAND ESTIMATE

Showers (public) per phase	1						
Washing Machines (public) per phase	1						Check column
RV Units each Phase		80		40		41	161
XXXXX		0		0		0	0
TOTAL		80		40		41	161

UNIT OR FIXTURE	DEMAND gpd	PHASES 1 AND 2		PHASE 3		PHASE 4		
		Q	gpd	Q	gpd	Q	gpd	
Travel Trailer (demand per unit, see note 4)	50 per unit	80	4,000	40	2,000	41	2,050	8,050
Shower, public park, 100 gpd per fixture per hour assume 6 hours operation per day	600 per fixture	1	600	1	600	1	600	1,800
Washing Machine, public, per machine	400 per fixture	1	400	1	400	1	400	1,200
Sink, public, 15 gpd per hour - Laundry assume 10 hours operation per day	150 per fixture	1	150	1	150	1	150	450
								11,500
TOTAL Estimate gpd, per Phase			5,150		3,150		3,200	11,500
CUMULATIVE ESTIMATED TOTAL BY PHASE, gpd			5,150		8,300		11,500	
Average Day Rate			3.6		5.8		8.0	gpm
								57,500
BY INDIVIDUAL PHASE (for pipe)								
PEAK DAY RATE ESTIMATE, gpd Peaking F =	5	phase 1	25,750	phase 2	15,750	phase 3	16,000	57,500
LINE SIZE MINIMUM, INCHES (See note 6)			4		4		4	Total Site
gravity pipe capacity, gpd (half full, s=0.005, n=0.013)			43,000		43,000		43,000	6
								181,000

NOTES:

1. Fixture type and quantity are estimates.
2. Use is "private" since use is restricted to employees and guests, except as noted "public".
3. Final design should confirm fixture types and quantities.
- 4.a. Colorado Dept of Public Health, Regulation #43, On-Site WW Treatment System Reg, TABLE 6-2 Estimate of Average Daily Wastewater Flow
- 4.b. Travel Trailer demand is gpd per Unit, Shower (public park) demand is 100 gpd per fixture per hour operation.
- 4.c. Laundries self serve demand is 400 gpd per machine.
5. Phases 1 and 2 combined constitute the initial phase.
- 6.a. Minimum pipe size is only for reference. Other factors impact minimum pipe size, such as type of waste and maintenance methods.

Revision XX 2020 XXXX

---- END OF PAGE -----



COLORADO
Division of Water Resources
Department of Natural Resources

WELL PERMIT NUMBER 84713-F
RECEIPT NUMBER 10005293

ORIGINAL PERMIT APPLICANT(S)

SHERYL A BEEN

APPROVED WELL LOCATION

Water Division: 1 Water District: 2
Designated Basin: N/A
Management District: N/A
County: WELD
Parcel Name: RECORDED EXEMPTION NO. 1469-16-1
RE-4223

AUTHORIZED AGENT

STEVEN JANSSEN

Lot: A Block: Filing:
Physical Address: 3647 WCR 19 FORT LUPTON, CO 80621
SE 1/4 NE 1/4 Section 16 Township 1.0 N Range 67.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 509408.8 Northing: 4433691.5

PERMIT TO CONSTRUCT A NEW WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

- 1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- 2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-90-137(4) and the findings of the State Engineer dated September 16, 2020.
- 4) The use of groundwater from this well is limited to domestic, livestock watering, industrial, irrigation and commercial.
- 5) Production is limited to the Laramie-Fox Hills aquifer which is located approximately 445 feet below ground surface and extends to a depth of approximately 770 feet. In accordance with Rule 10.4.8 of the Water Well Construction Rules, plain steel casing must be installed and grouted from the top of the permitted production zone up to at least ten feet above the base of the surface casing, or to the depth required by Rule 10.5.2.1, if no surface casing is installed. (NOTE: If coals and/or carbonaceous shales are encountered in the borehole, plain casing and grout should be installed through these intervals to exclude poor quality water from entering the well.)
- 6) The pumping rate of this well shall not exceed 50 GPM (as requested).
- 7) The average annual amount of groundwater to be withdrawn shall not exceed 4.92 acre-feet and the total volume of groundwater to be withdrawn shall not exceed 492 acre-feet.
- 8) The entire length of the hole shall be geophysically logged as required by Rule 9 of the Statewide Nontributary Ground Water Rules prior to installing casing.
- 9) The owner shall mark the well in a conspicuous location with well permit number(s), name of the aquifer, and court case number(s) as appropriate. The owner shall take necessary means and precautions to preserve these markings.
- 10) A totalizing flow meter must be installed on this well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (recorded at least annually) and submitted to the Division Engineer upon request.
- 11) This well shall be constructed more than 600 feet from any existing well, completed in the same aquifer, that is not owned by the applicant.
- 12) This well shall be constructed not more than 200 feet from the location specified on this permit.
- 13) Pursuant to CRS 37-90-137(9)(b) and the Denver Basin Rules, no more than 98% of the nontributary groundwater withdrawn annually shall be consumed and the well owner shall demonstrate to the reasonable satisfaction of the State Engineer that no more than 98% of the water withdrawn will be consumed.
- 14) This well is subject to administration by the Division Engineer in accordance with applicable decrees, statutes, rules, and regulations.

- 15) ADVANCE NOTICE REQUIRED - Pursuant to Construction Rule 6.2.2.1 (2 CCR 402-2), licensed or private drillers and pump installers must provide advance notification to the State Engineer prior to each of the following for this well: the start of well construction, the initial installation of the first permanent pump, and the initial installation of a cistern connected to the water well supply system. Any change in the date of construction/installation must be re-noticed prior to the activity. Information regarding the notification process and a link to the electronic notification form can be found on the Division of Water Resources website.

NOTE: This well is withdrawing water from a non-renewable aquifer. While the withdrawals from this aquifer are administered based on a 100 year aquifer life, water level declines may prevent this well from diverting the permitted amounts for that 100 years.

NOTE: To ensure a maximum productive life of this well, perforated casing should be set through the entire producing interval of the approved zone or aquifer indicated above.

NOTE: This permit will expire on the expiration date unless the well is constructed and a pump is installed by that date. A Well Construction and Yield Estimate Report (GWS-31) and Pump Installation and Production Equipment Test Report (GWS-32) must be submitted to the Division of Water Resources to verify the well has been constructed and the pump has been installed. A one-time extension of the expiration date may be available. Contact the DWR for additional information or refer to the extension request form (GWS-64) available at: <http://Colorado.gov/water>

NOTE: A hydrogeologic aquifer evaluation has been completed for this permit and the details of the evaluation can be viewed in the hydrogeologic aquifer evaluation imaged document and the original permit file.



Issued By IOANA COMANICIU

Date Issued: 9/16/2020

Expiration Date: 9/16/2021

FINDINGS OF THE STATE ENGINEER

IN THE MATTER OF AN APPLICATION FOR A PERMIT TO CONSTRUCT A WELL IN WATER DIVISION NO. 1,
WELD COUNTY, COLORADO

APPLICANT: SHERYL A. BEEN

AQUIFER: LARAMIE-FOX HILLS

PERMIT NO.: 84713-F

In compliance with C.R.S. 37-90-137(1) and the Statewide Nontributary Ground Water Rules, Sheryl A. Been, (hereinafter "applicant") submitted an application for a permit to construct a well. Based on information provided by the applicant and records of the Division of Water Resources, the State Engineer finds as follows:

1. The application was received complete by the State Engineer on August 7, 2020.
2. The applicant proposes to construct the well in the SE1/4 of the NE1/4 of Section 16, Township 1 North, Range 67 West, 6th Principal Meridian.
3. The proposed well is located outside the boundaries of a designated ground water basin.
4. The applicant proposes to apply the water withdrawn from the well to the following beneficial uses: domestic, livestock watering, industrial, irrigation, and commercial.
5. The proposed maximum pumping rate of the well is 50 gallons per minute, and the requested average annual amount of ground water to be withdrawn is 5.40 acre-feet.
6. The applicant is the owner of the land on which the well will be constructed.
7. The proposed well would withdraw ground water from the Laramie-Fox Hills Aquifer (hereinafter "aquifer"), which, based on site specific information, is located approximately 445 feet to 770 feet below land surface.
8. The location of the proposed well is more than 600 feet from any existing well completed in the aquifer.
9. According to a sworn statement, the applicant owns, or has consent to withdraw ground water underlying 16 acres of land as further described in said statement, which is attached hereto as Exhibit A.
10. Withdrawal of ground water from the aquifer underlying the land claimed by the applicant will not, within one hundred years of continuous withdrawal, deplete the flow of a natural stream at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and therefore the ground water is nontributary ground water as defined in C.R.S. 37-90-103(10.5).
11. In considering whether the requested permit shall be approved the provisions of C.R.S. 37-90-137(4) and the Denver Basin Rules shall apply. Withdrawals shall be allowed on the basis of an aquifer's life of 100 years, C.R.S. 37-90-137(4)(b)(I).

12. The quantity of water in the aquifer, exclusive of artificial recharge, underlying the 16 acres of land described in Exhibit A is 492 acre-feet. This determination was based on the following as specified in the Denver Basin Rules and site specific information:
- a. The average specific yield of the saturated aquifer materials underlying the land under consideration is 15 percent.
 - b. The average thickness of the saturated aquifer materials underlying the land under consideration is 205 feet.

Based on the above, the State Engineer finds that there is water available for withdrawal by the proposed well and no material injury to vested water rights would result from the issuance of the requested permit subject to the following conditions:

- c. The allowed average annual amount of water to be withdrawn from the aquifer by the well shall not exceed 4.92 acre-feet (the quantity of water which is considered available divided by the 100 year aquifer life).
- d. The total volume of water that may be withdrawn from the aquifer by the well shall not exceed 492 acre-feet.
- e. The well shall be constructed no more than 200 feet from the location specified on the permit application.
- f. The applicant shall submit geophysical and lithologic logs after the construction of the well. The geophysical logs shall be obtained from the hole before the casings are installed.
- g. The maximum pumping rate of the well shall not exceed 50 gallons per minute.
- h. A totalizing flow meter must be installed on the well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (recorded at least annually) and submitted to the Division Engineer upon request.
- i. Production is limited to the Laramie-Fox Hills Aquifer. The well must be constructed with plain, non-perforated casing properly grouted so as to prevent intermingling of water between aquifers.
- j. Pursuant to C.R.S. 37-90-137(9)(b) and the Denver Basin Rules, no more than 98% of the nontributary ground water withdrawn annually shall be consumed and the applicant shall demonstrate to the reasonable satisfaction of the State Engineer that no more than 98% of the water withdrawn will be consumed.
- k. The owner shall mark the well in a conspicuous place with appropriate well permit numbers, name of the aquifer, and court case numbers. He shall take necessary means and precautions to preserve these markings.

Applicant: Sheryl A. Been
Aquifer: Laramie-Fox Hills
Permit No.: 84713-F

Page 3

Dated this 16th day of September, 2020.



Kevin G. Rein, P.E.
Director/State Engineer

By: 

Ioana Comaniciu
Water Resource Engineer

Prepared by: idc

RCVD DWR
08/07/2020

Form no. **DIVISION OF WATER RESOURCES**
GWS-1 **DEPARTMENT OF NATURAL RESOURCES**
(1/2020) **1313 Sherman St, Room 821, Denver, CO 80203**
(303) 866-3581, www.colorado.gov/water, dwrpermitsonline@state.co.us

NONTRIBUTARY GROUNDWATER LANDOWNERSHIP STATEMENT

This form is to be submitted with applications for the following, when the applicant is the owner of the overlying land.

- 1) A well permit to withdraw groundwater from the Dawson, Denver, Arapahoe or Laramie-Fox Hills aquifers, or other aquifer the applicant claims contains nontributary groundwater, outside of a Designated Groundwater Basin subject to section 37-90-137(4), C.R.S., except when the right to withdraw the groundwater has been determined by a valid decree; OR
- 2) A determination of water right in the Dawson, Denver, Arapahoe or Laramie-Fox Hills aquifers, or a well permit to withdraw groundwater from those aquifers that are subject to Designated Basin Rule 5.4, within a Designated Groundwater Basin.

NOTE: Form submittal instructions can be found on our website Colorado.gov/water. See instructions on the reverse of this form.
Type or print in black or blue ink.

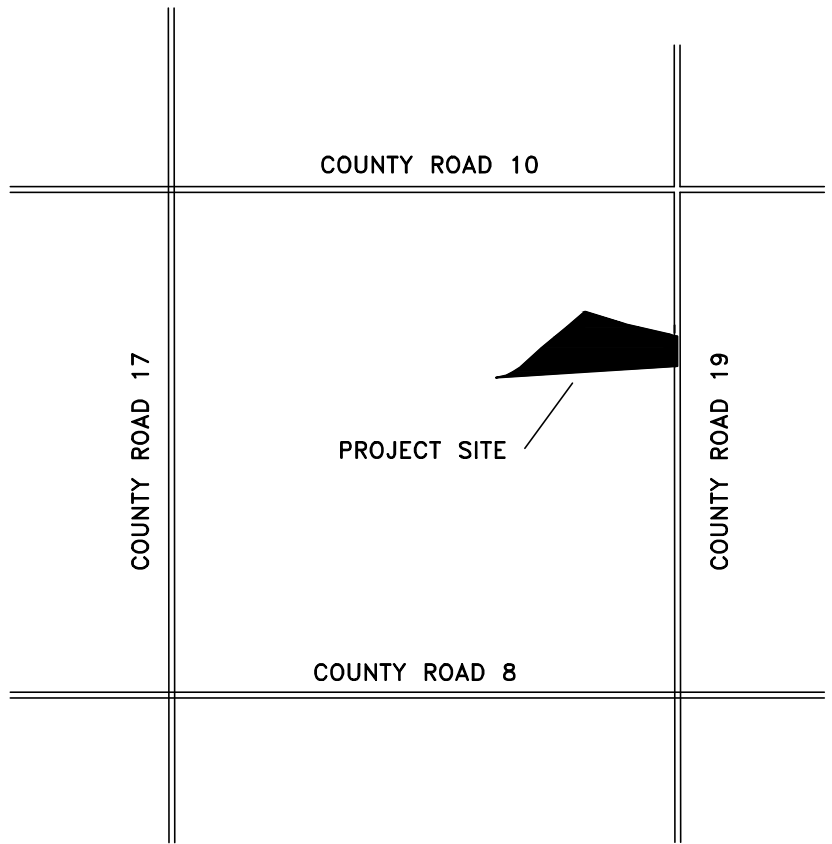
1. APPLICANT INFORMATION			
Name of Applicant Sheryl A. Been			
Mailing Address P. O. Box 375	City Fort Lupton	State CO	Zip Code 80621
Telephone Number (include area code) (303) 902-9262		Email wereafrog@yahoo.com	
2. AQUIFER Laramie-Fox Hills			
3. CLAIM OF OWNERSHIP – I hereby claim that I am the owner of the following described property, as evidenced by the attached copy of a deed recorded in the county in which the property is located. Number of acres: <u>16</u> in the county of: <u>Weld</u> described as follows (insert legal description). <u>Lot A, Recorded Exemption No. 1469-16-1 RE-4223, recorded November 23, 2005 at</u> <u>reception no. 3342371, being a part of the South Half of the Northeast Quarter of</u> <u>Section 16, Township 1 North, Range 67 West of the 6th P.M., Weld County, State of Colorado</u> _____ _____ - I further claim that the right to withdraw the groundwater in the aquifer underlying the above described property has not been reserved by another, nor has consent been given to another for the right to its withdrawal.			
4. THE APPLICANT MUST PROVIDE – a Verification of Notice of Application (form no. GWS-43) (see instructions for exceptions).			
5. SIGNATURE – Sign or enter name(s) of applicant(s) or authorized agent. The making of false statements herein constitutes perjury in the second degree, which is punishable as a class 1 misdemeanor pursuant to C.R.S. 24-4-104(13)(a). I have read the statements herein, know the contents thereof, and state that they are true to my knowledge. Signature:  Date: July 28, 2020 Print name and title: Steven L. Janssen, Authorized Agent and Attorney for Sheryl A. Been			

Form No. GWS-11 08/2016	COLORADO DIVISION OF WATER RESOURCES DEPARTMENT OF NATURAL RESOURCES 1313 Sherman St., Ste 821, Denver CO 80203 (303) 866-3581 dwrpermitsonline@state.co.us	For Office Use Only RCVD DWR 08/07/2020
CHANGE IN OWNER NAME/MAILING ADDRESS		
PRIOR TO COMPLETING THIS FORM, SEE INSTRUCTIONS ON REVERSE SIDE INCOMPLETE, POOR QUALITY, OR ILLEGIBLE FORMS CANNOT BE PROCESSED AND WILL BE RETURNED		
Name, address and phone number of person claiming ownership of the well permit:		
Name(s): <u>Sheryl A. Been</u>		
Mailing Address: <u>P. O. Box 375</u>		
City, St. Zip: <u>Fort Lupton, CO 80621</u>		
Phone: (<u>303</u>) <u>902</u> - <u>9262</u> Email: <u>wereafrog@yahoo.com</u>		
Well Permit Number: <u>9930</u> Receipt Number: <u>9060225</u> Case Number (optional): _____		
WELL LOCATION: County: <u>Weld</u> Well Name or # (optional): _____		
<u>2647 County Road 19</u> Street Address at Well Location	<u>Fort Lupton</u> City	<u>CO</u> <u>80621</u> State Zip
☐ Check if well address is same as owner's mailing address		
<u>SE</u> 1/4 of the <u>NE</u> 1/4, Sec. <u>16</u> , Township <u>1.0</u> ☒ N. or ☐ S., Range <u>67.0</u> ☐ E. or ☒ W., <u>6th</u> _____ P.M.		
Distance from Section Lines: <u>1740</u> Ft. from ☒ N. or ☐ S. Line, <u>1200</u> Ft. from ☒ E. or ☐ W. Line.		
Subdivision Name (if applicable): _____ , Lot _____ , Block _____ , Filing/Unit _____		
NOTE: If changing/correcting the permitted location of a well, use Form No. GWS-42.		
I (we) claim and say that I am (we are) the owner(s) of the well permit described above, know the contents of the statements made herein, and state that they are true to my (our) knowledge. This filing is made pursuant to C.R.S. 37-90-143.		
Signature(s) of the New Owner 	Please print the Signer's Name & Title <u>Sheryl A. Been, by Steven L. Janssen, Attorney & Authorized Agent</u>	Date <u>August 6, 2020</u>
It is the responsibility of the new owner of this well permit to complete and sign this form. If an agent is signing or entering information, please see instructions. Please allow 4 to 6 weeks for processing of this form. Thereafter, you can view or print the accepted document at: https://www.dwr.state.co.us/Tools/WellPermits		
Signature of DWR staff indicates acceptance as a Change in Owner Name and/or Mailing Address.		
For Staff Use Only		
		<u>09/14/2020</u> Date

SHERRY BEEN PROPE
NEW WATER WELL LOCATION MAP

LOT A, RECORDED EXEMPTION NO. 1469-16-1 RE-4223
3641 WELD COUNTY ROAD 19
FT. LUPTON, CO 80621

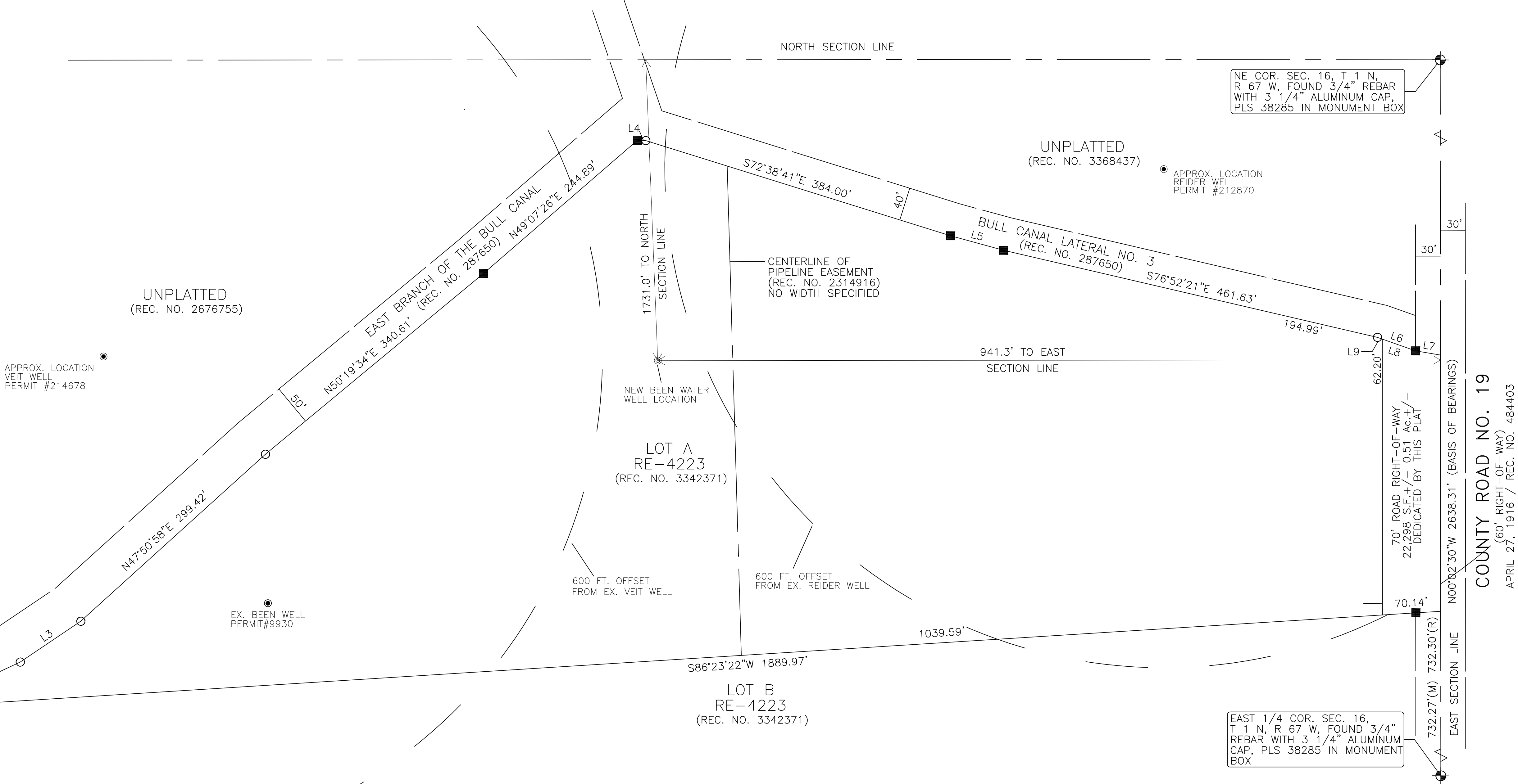
PART OF THE SOUTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 16, TOWNSHIP 1 NORTH,
RANGE 67 WEST OF THE 6TH P.M. COUNTY OF WELD, STATE OF COLORADO.



VICINITY MAP

SCALE: 1" = 2000'
(FOR 24"x36')

LINE	BEARING	DISTANCE
L1	N77°19'47"E	107.46'
L2	N64°53'14"E	80.89'
L3	N55°59'32"E	87.83'
L4	S88°13'30"E	10.12'
L5	S74°44'39"E	66.09'
L6	S70°36'14"E	48.76'
L7	S80°22'33"E	30.26'
L8	N70°36'14"W	42.60'
L9	N70°36'14"W	6.16'



LOCATION OF NEW WELL:

LATITUDE & LONGITUDE (DECIMAL DEGREES):
LAT: 40.055381°
LONG: -104.89416°

LATITUDE & LONGITUDE (DMS):
LAT: 40°03'19"
LONG: -104°53'39"

UMT COORDINATES (ZONE 13T):
4433909.4 NORTH
509027.5 EAST

LEGEND:

- ⊕ = ALIQUOT MONUMENT, AS NOTED.
- = FOUND 5/8" REBAR WITH ORANGE PLASTIC CAP, PLS 25937.
- = FOUND 5/8" REBAR.
- = EXISTING WATER WELLS
- ⊙ = NEW BEEN WATER WELL

CES
CONSULTANTS, LLC
121 4th STREET, SUITE 1
FT. LUPTON, CO. 80621
PH. (970) 373-4480

BEEN PROPERTY
WATER WELL LOCATION MAP
LOT A - RE NO. 1469-16-1 RE-4223
3641 WELD COUNTY ROAD 19
FT. LUPTON, CO 80621

DRAWING INFO.
DESIGNER: KR/CD
DRAWN BY: KR/CD
APPROV. BY: KR/CD
SCALE: 1" = 60'
DATE: 8/5/20
JOB NO.: 11-0035-001
SHEET NO.: 1 OF 1

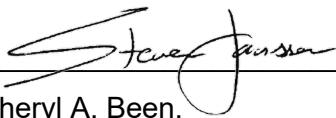
I (we) Sheryl A. Been state as follows:

1. I (we) own real property described as Lot A, Recorded Exemption No. 1469-16-1
RE-4223, Weld County, Colorado in
 the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 16, Township 1N, Range 67W,
6th P.M., Weld County, Colorado. We own the right and
 easement to the following well:

Permit #	1/4	1/4	Sec.	Twp.	Rng.	Actual Distance from N/S Sec. Line	Actual Distance from E/W Sec. Line
<u>9930</u>	<u>SE</u>	<u>NE</u>	<u>16</u>	<u>1N</u>	<u>67</u>	<u>1740</u> ft.	<u>1200</u> ft.

2. I (we) have been apprised that Sheryl A. Been, the
 present owners of a parcel of land in the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 16,
 Township 1N, Range 67W, 6th P.M., desire to drill a new well or
 extend the use of an existing well. I (we) also understand that the purpose of such
 well is set forth in the well permit application, and that I (we) have reviewed the
 application that was submitted to the State Engineer and receipted by him under
 receipt no. _____.
3. The proposed location for the subject well will be 600 feet or less from my (our)
 well.
4. By this statement I (we) am (are) specifically waiving any objection to the issuance
 of a well permit for the subject well, as set forth in the referenced application, and
 would request that permit issuance not be postponed or denied because of any
 concerns by the Division or others that the proposed well will materially affect my
 (our) well or water right. I (we) am (are) also specifically waiving my (our) right I
 (we) may have to participate in a hearing before the State Engineer pursuant to
 Section 37-90-137(2), C.R.S.

Dated this 6th day of August, 2020



 Sheryl A. Been,
 by Steven L. Janssen, Attorney & Authorized Agent

WILD COUNTRY RV PARK, 29521 WCR 398 KEENESBURG, COLORADO

Usage Period	BillDate	ChargeType	Consumption
1/2/2020-2/4/2020	43865	2" Tap Water Services	365,324
2/4/2020-3/3/2020	43893	2" Tap Water Services	340,693
3/3/2020-4/1/2020	43922	2" Tap Water Services	344,024
4/1/2020-5/1/2020	43952	2" Tap Water Services	307,904
5/1/2020-6/2/2020	43984	2" Tap Water Services	220,228
6/2/2020-6/30/2020	44012	2" Tap Water Services	257,373
6/30/2020-8/3/2020	44046	2" Tap Water Services	292,410
8/3/2020-9/1/2020	44075	2" Tap Water Services	264,700
9/1/2020-10/1/2020	44105	2" Tap Water Services	246,233
10/1/2020-11/2/2020	44137	2" Tap Water Services	243,690
11/2/2020-12/1/2020	44166	2" Tap Water Services	318,131
12/1/2020-12/29/2020	44194	2" Tap Water Services	347,267
		2020 TOTAL	3,547,977

AFFIDAVIT RE: WATER USAGE

STATE OF Florida,
COUNTY OF Palm Beach) ss:

I, Sheryl A. Been, being first duly sworn upon my Oath, depose and say as follows:

1. I am the owner of Lot A of Recorded Exemption No. 1469-16-1 RE-4223, recorded November 23, 2005 at Reception No. 3342371, being a part of the Northeast Quarter of Section 16, Township 1 North, Range 67 West of the 6th P.M., County of Weld, State of Colorado, also known as: 3647 County Road 19, Fort Lupton, CO 80621.

2. I purchased the Subject Property, along with my late Mother, Marleen Rosensweig, on November 29, 2005 and I am personally familiar with Water Usage upon the Subject Property.

3. The Subject Property is comprised of 16 acres of land, one 3,400 square foot residence, an 800 square foot utility building and a 300 square foot animal shelter.

4. The Subject Property includes a tributary exempt well producing 10 gallons per minute, which well was approved by the State of Colorado, Division of Water Resources, as Well Permit #9930 on October 9, 1961 and which well has been continuously used since that date.

5. I have used Well Permit #9930 for all indoor domestic water demands, outdoor irrigation of one-half acre of lawn/garden and watering of six goats and one horse.

6. Based upon my personal knowledge of the use of Well Permit #9930, one to two acre feet of water per year have been used during my ownership of the Subject Property.

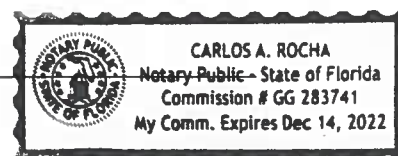
7. I also received non-tributary Well Permit #84713-F from the State of Colorado, Division of Water Resources on September 16, 2020, which well has yet to be drilled, but which well is permitted to withdraw 4.92 acre feet per year from the Laramie-Fox Hills aquifer and may be used for all domestic, livestock watering, industrial, irrigation and commercial purposes.

8. Further I sayeth naught.

Sheryl A. Been
Sheryl A. Been

SUBSCRIBED AND SWORN to before me, a Notary Public, by Sheryl A. Been this 13th day of October, 2020.

Witness my hand and official seal:





CENTRAL WELD COUNTY WATER DISTRICT

August 18, 2020

Sheryl A. Been
3647 CR 19
Fort Lupton, CO 80621

RE: Can Serve

Dear Ms. Been,

This letter is in response to a request for water service to serve the following property described as follows:

PTS2NE4 16 1 67 LOT A REC EXEMPT RE 4223 Parcel #146916100006

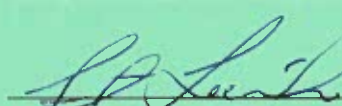
Water service can be made available to the above described property, located on CR 19 between CR 8 and CR 10, with a line extension and new tap purchase, provided all requirements of Central Weld County Water District, Northern Colorado Water Conservancy District, Subdistrict, and U. S. Bureau of Reclamation are satisfied. Central Weld County Water District will require that a Tap Agreement be consummated prior to the setting of a tap or this letter shall become null and void unless extended in writing by the District. Subdivisions requiring 10 or more taps will be required to purchase and transfer raw water prior to District approval. *Please note that it is your responsibility to contact Northern Colorado Water Conservancy District at 800-369-7246 for petitioning confirmation into the Northern Colorado Water Conservancy District and Subdistrict. Central Weld cannot issue a tap until all requirements are satisfied. This is in accordance with the Rules and Regulations of Northern Colorado Water Conservancy District.* A review of the District's system in this water service area must be completed prior to water taps being sold. **A water tap installation is for a specific parcel of property and a customer will not be permitted to extend a service line from one parcel or property to another parcel to provide additional water service.**

Due to the rapid cost increase of raw water, existing tap fees may not apply for water service to this property. The District will **not** notify, by separate letter, any prospective landowners or land purchasers of tap fee or line extension cost increases. The cost of a tap fee and/or line extension must be paid in advance to the District, by the prospective customer, in accordance with District policy within one (1) year from the date of this letter

It is your responsibility to confirm with your local Fire Protection Authority if fire flow water capacity is required for your project.

Sincerely,

CENTRAL WELD COUNTY WATER DISTRICT



Stan Linker, District Manager
SL/kn

Merchant: Central Weld County Water District

2235 2nd Avenue
Greeley, CO 80631
US

(970) 352-1284

Order Information

Description: Been RV Park Study

Order Number:

P.O. Number:

Customer ID: 30120

Invoice Number: 30120

Billing Information

Sheryl Been

Shipping Information

Shipping: 0.00

Tax: 0.00

Total: USD 1,550.00

Payment Information

Date/Time: 17-Aug-2020 08:08:41 MDT

Transaction ID: 42177890006

Transaction Type: Authorization w/ Auto Capture

Transaction Status: Captured/Pending Settlement

Authorization Code: 16053Z

Payment Method: MasterCard XXXX2446



March 8, 2021

Western Engineering Consultants Inc., LLC
127 South Denver Avenue
Fort Lupton, Colorado 80621

Attn: Mr. Chadwin Cox (chadwin.cox@westerneci.com)

Re: OWTS Test Pit Observation Results and OWTS Schematic
Proposed Been RV Park
3647 Weld County Road 19
Weld County, Colorado
EEC Project No. 20-01-185

Mr. Cox:

As requested, Earth Engineering Company, Inc. (EEC) personnel completed the test pit observations at 3647 Weld County Road 19 for the above referenced project. To complete the site observations, EEC personnel observed two (2) excavated soil profile test pits to a depth of approximately 8 feet below present site grades at each of the four (4) proposed On-site Wastewater Treatment System (OWTS) sites to serve the proposed RV park. The logs of the 8 feet deep test pits are included with this report.

The referenced parcel is located at 3647 Weld County Road 19 in an area west of Fort Lupton in Weld County, Colorado. According to the information made available to EEC, there are no utilities or easements in conflict with the presented locations of the system components.

The purpose of this letter is to provide the results of the test pits observations completed at the site and to provide general OWTS sizing calculations and a schematic layout of the proposed OWTS systems to service the proposed RV park.

Test Pit Observations

Two (2) 8-feet deep test pits were completed in the identified area of each of the proposed on-site wastewater treatment systems. The materials encountered in the profile test pits at the OWTS sites generally consisted of brown sandy clay soils (Soil Type 4) underlain by brown sandy clay soils (Soil Type 4A) at a depth of approximately 2 to 3 feet below present site grades. The sandy clay soils (Soil Type 4A) were underlain by grey/tan and rust

sandstone/claystone and grey/rust claystone bedrock (Soil Type 5) at a depth of approximately 6 to 7½ feet below present site grades which extended to the bottom of the test pits at a depth of approximately 8 feet below present site grades. Groundwater was not observed in the test pits at the time of our observations.

Based upon the visual soil classification, the near surface site soils classify as sandy clay (Soil Type 4A) which corresponds to a percolation rate of 91 to 120 minutes per inch. Soil Type 4A classification could be used in the design along with a percolation rate of 91 to 120 minutes per inch. Weld County guidelines also require that neither groundwater nor bedrock be encountered within 4 feet of the base of the infiltrative at the location of an absorption field. The test pits completed indicates the near surface site soils do meet the separation from bedrock and groundwater criteria provided the base of the absorption beds are placed no deeper than 2 feet below present site grades. Based on the results as outlined above, it appears engineered septic absorption systems would be required for the RV park. When constructing the absorption fields, Weld County criteria concerning proximity to property lines, drainage ways and other site features should be addressed.

Wastewater Strength

We expect the wastewater disposed through the OWTS for this RV site will be within the range of properties for strong residential applications as shown in the following table:

Table 8: Typical Composition of Untreated Domestic Wastewater

Composition	Units	Concentration		
		Weak	Average	Strong
Total Suspended Solids	Mg/L	100	220	350
BOD ₅ at 20°C	Mg/L	110	220	400
Nitrogen (total as N)	Mg/L	20	40	85
Phosphorus (total as P)	Mg/L	4	8	15
Fats, Oil & Grease (FOG)	Mg/L	50	100	150
Total Coliform	Mg/L	10 ⁶ -10 ⁷	10 ⁷ -10 ⁸	10 ⁸ -10 ⁹

Source: Table 8, Typical Composition of Untreated Domestic Wastewater from Wastewater Engineering, Treatment, Disposal and Reuse, Metcalf & Eddy, 1991

Assumptions

It is our understanding the RV Park will accommodate a total of 90 RV sites with full hookups which will be served by the proposed OWTS systems. Based on water use records for similar sites in eastern Colorado, a design flow rate of 50 gallons per RV stall per day is assumed. The total design flow for the site is therefore 4,500 gallons per day; however, the design flow will be divided between four (4) separate OWTS. This will result in design flows of 1,500 gpd for two of the systems and 1,000 gpd for one of the systems and 500 gpd for the final system.

A Long Term Absorption Rate (LTAR) of 0.15 gpd/ft² was determined from Table 30-10-1 utilizing the Soil Type 4A classification. Size calculation summaries for all four (4) proposed OWTS to serve the RV park are provided below in the summary table. The calculations include size adjustment factors for pressure dosed bed systems (1.0) and use of chambers (0.7), yielding the below outlined design areas. In addition, the equivalent area for Quick4 Infiltrators of 12 ft² per chamber for a bed system was applied for each system.

<i>OWTS Designation</i>	<i>Design Flow Rate (gpd)</i>	<i>LTAR</i>	<i>Size Adjustment Factors</i>	<i>Required Area</i>	<i>Min. Number of Quick4 Infiltrators</i>	<i>Number of Q4 Chambers in design</i>
<i>North</i>	1,500	0.15	1.0 & 0.7	7,000ft ²	584	600
<i>Northeast</i>	500	0.15	1.0 & 0.7	2,333ft ²	195	200
<i>Southeast</i>	1,000	0.15	1.0 & 0.7	4,667ft ²	389	400
<i>Southwest</i>	1,500	0.15	1.0 & 0.7	7,000ft ²	584	600

The prepared design schematic includes the outlined number of chambers with each system broken up into separate beds of 100 chambers per bed, as shown on the attached exhibit.

System Component Specifications

Due to the 'strong' wastewater strength as expected from the RV hookups, each of the four (4) separate systems is intended to utilize its own pre-treatment system. The pre-treatment systems should consist of Orenco AdvanTex AX100 pre-treatment systems in order to

bring the effluent to TL2 or better prior to discharge into each absorption bed system. Each Orenco AdvanTex AX100 system shall be sized with the recommended number of treatment pods corresponding to each system's design flow rate. We expect a single Orenco AdvanTex AX100 pod would be sufficient for each system. In addition, each system is intended to be constructed with sufficient septic tank capacity to provide at least 48 hours of septic tank effluent detention prior to discharge into the absorption fields. The septic tanks shall comply with the structural design criteria of ASTM C1227-12 (Standard Specification for Precast Septic Tanks). 30" risers may be needed to facilitate required bury depth based on pipe elevations. Shop drawings and specifications should be furnished by the installer once a tank supplier is selected. Groundwater was not observed in the test pits at the site, therefore anchoring of the septic tanks does not appear necessary.

Installation Procedures

It appears the system could be installed using conventional excavation equipment (i.e. rubber tire backhoe or track hoe). All system components shall be installed using current state-of-practice technology by a licensed installer approved by the Weld County Department of Health and Environment.

GENERAL COMMENTS

The analysis and recommendations presented in this report are based upon the data obtained from the soil test pits performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations which may occur across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observations during earthwork and foundation construction phases to help determine that the design requirements are fulfilled.

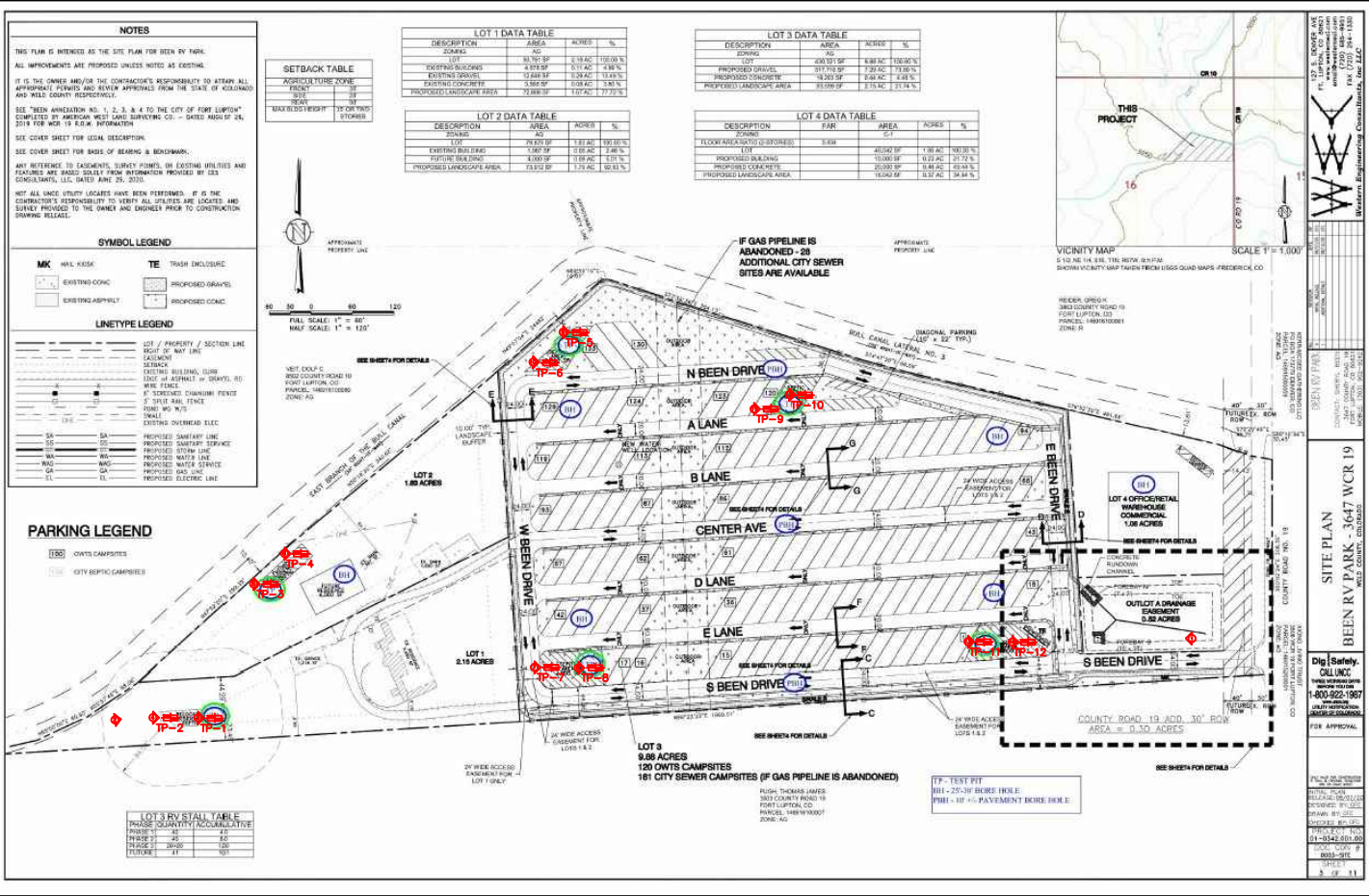
This report has been prepared for the exclusive use of Western Engineering Consultants, Inc., LLC for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the geotechnical engineer.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

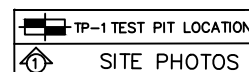
Very truly yours,
Earth Engineering Company, Inc.



Michael J. Coley, P.E.
Principal Engineer



LEGEND



PHOTOS TAKEN FROM APPROXIMATE SYMBOL LOCATION IN DIRECTION OF ARROW

PHOT

TEST PIT LOCATION DIAGRAM
3647 WELD COUNTY ROAD 19
WELD COUNTY, COLORADO
PROJECT NUMBER: 20-01-185 DATE: NOVEMBER 2020



3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020





3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



PHOTO # 5



PHOTO # 6

3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



PHOTO # 11



PHOTO # 12

3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020



PHOTO # 13



PHOTO # 14

3647 WELD COUNTY RD. 19
WELD COUNTY, CO
EEC PROJECT No. 20-01-185
NOVEMBER 2020

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO												
PROJECT NO: 20-01-185			LOG OF TEST PIT #1 (LEACHFIELD SITE #1)				DATE: NOVEMBER 2020					
RIG TYPE: BACKHOE			SHEET 1 OF 1				WATER DEPTH					
FOREMAN: SM			START DATE		11/12/2020		WHILE EXCAVATING		NONE			
AUGER TYPE: N/A			FINISH DATE		11/12/2020		AFTER EXCAVATING		NONE			
SPT HAMMER: N/A			SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION		TYPE	D (FEET)	DC (BLOWS/.5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
								LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION			--									
			1									
			--									
SANDY CLAY (SOIL TYPE 4) brown moderate strong		BS	2									
			--	--	--	9.9		36	22	88.8		
			3									
SANDY CLAY (SOIL TYPE 4A) brown structureless		BS	--									
			4									
			--	--	--	21.5						
grey/brown/rust			5									
			--									
			6									
SANDSTONE/CLAYSTONE (SOIL TYPE 5) grey/tan/rust platy		BS	--	--	--	11.8						
			7									
			--									
8' BOTTOM OF TEST PIT			8									
			--									
			9									
			--									
			10									
			--									
			11									
			--									
			12									
			--									
			13									
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24												
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25												

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #2 (LEACHFIELD SITE #1)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
TYPE	D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
						LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION	--									
	1									
	--									
SANDY CLAY (SOIL TYPE 4) brown moderate strong	2									
	BS	--	--	12.4						
	3									
SANDY CLAY (SOIL TYPE 4A) brown structureless	4									
	BS	--	--	9.9						
	5									
grey/brown/rust	--									
	6									
	--									
SANDSTONE/CLAYSTONE (SOIL TYPE 5) grey/tan/rust platy	7	--	--	16.1						
	BS									
	8									
8' BOTTOM OF TEST PIT	--									
	9									
	--									
	10									
	--									
	11									
	--									
	12									
	--									
	13									
	--									
	14									
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	24									
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	25									

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #3 (LEACHFIELD SITE #2)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D	DC	QU	MC	DD	
					(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown to grey/brown/rust										
structureless										
					5					
SANDSTONE/CLAYSTONE (SOIL TYPE 5)					6					
grey/tan/rust										
platy										
with cemented sandstone lense @ 5' to 5.5'										
8' BOTTOM OF TEST PIT					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

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3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #4 (LEACHFIELD SITE #2)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown to grey/brown/rust										
structureless										
					5					
					6					
SANDSTONE/CLAYSTONE (SOIL TYPE 5)					7					
grey/tan/rust										
platy										
with cemented sandstone lenses										
					8					
8' BOTTOM OF TEST PIT					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

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3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #5 (LEACHFIELD SITE #3)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
					4					
SANDY CLAY (SOIL TYPE 4A)										
brown										
structureless										
					5					
					6					
CLAYSTONE (SOIL TYPE 5)										
grey/rust										
platy										
					7					
					8					
8' BOTTOM OF TEST PIT					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

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3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #6 (LEACHFIELD SITE #3)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					WATER DEPTH					
AUGER TYPE: N/A					WHILE EXCAVATING					NONE
SPT HAMMER: N/A					AFTER EXCAVATING					NONE
					24 HOUR					N/A
SOIL DESCRIPTION		D	DC	QU	MC	DD	A-LIMITS		-200	SWELL
	TYPE	(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	LL	PI	(%)	PRESSURE % @ 500 PSF
6" TOPSOIL AND VEGETATION SANDY CLAY (SOIL TYPE 4) brown moderate strong		--								
		1								
SANDY CLAY (SOIL TYPE 4A) brown structureless		--								
		2								
	BS	--	--	20.4						
		3								
		4								
	BS	--	--	20.9						
grey/brown/rust		5								
		6								
CLAYSTONE (SOIL TYPE 5)	BS	--	--	19.7						
grey/rust platy		7								
		8								
8' BOTTOM OF TEST PIT		9								
		10								
		11								
		12								
		13								
		14								
		15								
		16								
		17								
		18								
		19								
		20								
		21								
		22								
		23								
		24								
		25								

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3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #7 (LEACHFIELD SITE #4)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
TYPE	D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
						LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION	--									
	1									
	--									
SANDY CLAY (SOIL TYPE 4) brown moderate strong	2									
	BS	--	--	12.2						
	3									
SANDY CLAY (SOIL TYPE 4A) brown structureless	4									
	BS	--	--	18.7						
	5									
grey/brown/rust	--									
	6									
	BS	--	--	16.1		41	29	93.1		
CLAYSTONE (SOIL TYPE 5) grey/brown/rust platy	7									
	--									
	8									
8' BOTTOM OF TEST PIT	9									
	--									
	10									
	--									
	11									
	--									
	12									
	--									
	13									
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	25									

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3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #8 (LEACHFIELD SITE #4)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D	DC	QU	MC	DD	
					(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong						--	--	11.1		
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown						--	--	17.4		
structureless					5					
grey/brown/rust					6					
CLAYSTONE (SOIL TYPE 5)					7	--	--	22.8		
grey/brown/rust					8					
platy					9					
8' BOTTOM OF TEST PIT					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #9 (LEACHFIELD SITE #5)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			-200		
					LL			PI		
								SWELL		
								PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D	DC	QU	MC	DD	
					(FEET)	(BLOWS/5')	(PSF)	(%)	(PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
SANDY CLAY (SOIL TYPE 4A)					4					
brown to brown/light brown										
structureless										
					5					
					6					
SANDSTONE/CLAYSTONE (SOIL TYPE 5)					7					
grey/tan/rust										
platy										
8' BOTTOM OF TEST PIT					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #10 (LEACHFIELD SITE #5)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
TYPE	D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
						LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION SANDY CLAY (SOIL TYPE 4) brown moderate strong	1									
	2									
	BS	--	--	11.2						
	3									
SANDY CLAY (SOIL TYPE 4A) brown structureless	4									
	BS	--	--	15.3						
	5									
	6									
SANDSTONE/CLAYSTONE (SOIL TYPE 5) 8' BOTTOM OF TEST PIT	BS	--	--	14.0						
	7									
	8									
	9									
	10									
	11									
	12									
	13									
	14									
	15									
	16									
	17									
	18									
	19									
	20									
	21									
	22									
	23									
	24									
	25									

Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #11 (LEACHFIELD SITE #6)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
TYPE	D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
						LL	PI		PRESSURE	% @ 500 PSF
6" TOPSOIL AND VEGETATION	--									
	1									
	--									
SANDY CLAY (SOIL TYPE 4) brown moderate strong	2									
	BS	--	--	11.0		43	31	94.6		
	3									
SANDY CLAY (SOIL TYPE 4A) brown structureless calcareous deposits grey/brown/rust	4									
	BS	--	--	17.3						
	5									
CLAYSTONE (SOIL TYPE 5) grey/brown/rust platy	6									
	BS	--	--	24.7						
	7									
8' BOTTOM OF TEST PIT	--									
	8									
	--									
	9									
	--									
	10									
	--									
	11									
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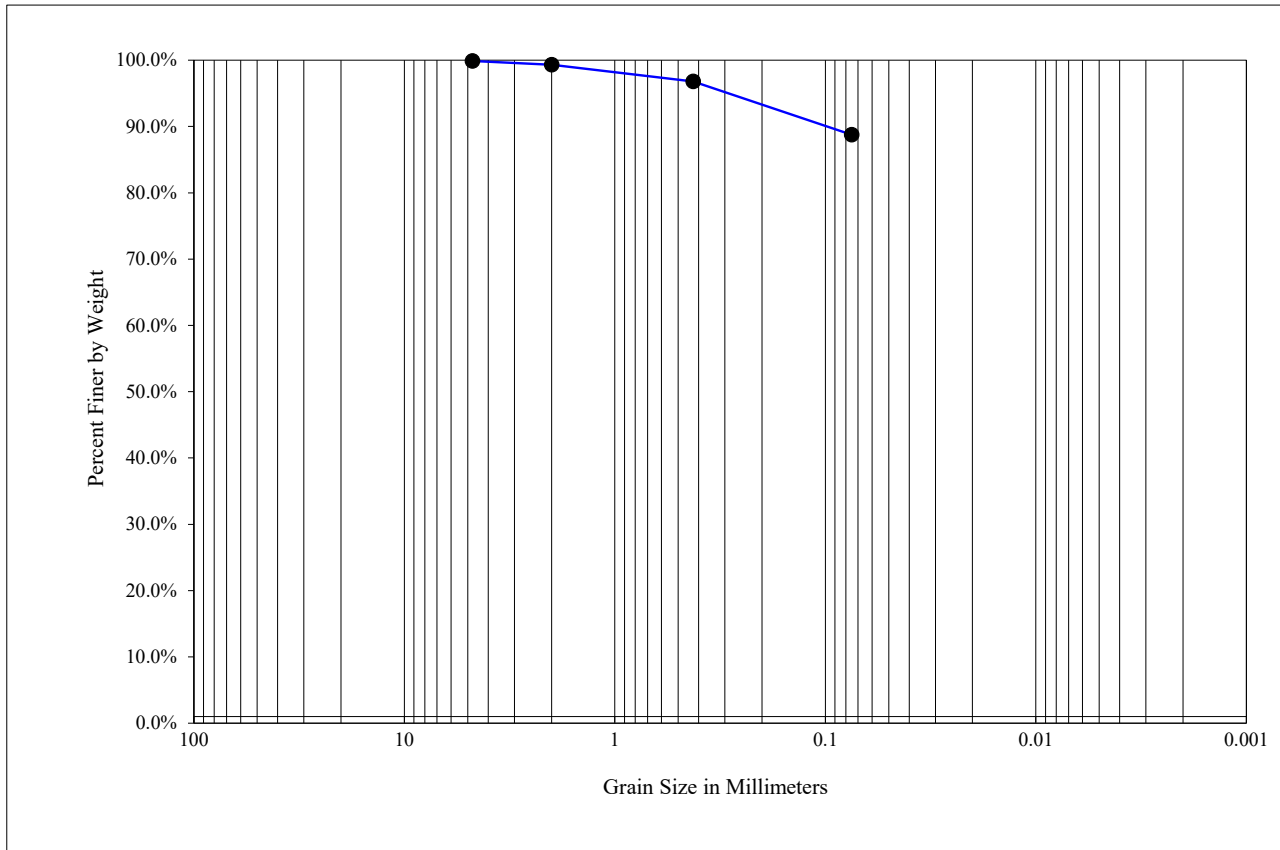
Earth Engineering Company

3647 WELD COUNTY ROAD 19 WELD COUNTY, COLORADO										
PROJECT NO: 20-01-185					DATE: NOVEMBER 2020					
LOG OF TEST PIT #12 (LEACHFIELD SITE #6)										
RIG TYPE: BACKHOE					SHEET 1 OF 1					
FOREMAN: SM					START DATE			11/12/2020		
AUGER TYPE: N/A					FINISH DATE			11/12/2020		
SPT HAMMER: N/A					SURFACE ELEV			N/A		
SOIL DESCRIPTION					WATER DEPTH					
					WHILE EXCAVATING			NONE		
					AFTER EXCAVATING			NONE		
					24 HOUR			N/A		
					A-LIMITS			SWELL		
					LL			PI		
					-200			PRESSURE		
								% @ 500 PSF		
6" TOPSOIL AND VEGETATION					D (FEET)	DC (BLOWS/5')	QU (PSF)	MC (%)	DD (PCF)	
					1					
SANDY CLAY (SOIL TYPE 4)					2					
brown										
moderate strong										
					3					
					4					
SANDY CLAY (SOIL TYPE 4A)										
brown										
structureless										
calcareous deposits										
grey/brown/rust										
					5					
					6					
CLAYSTONE (SOIL TYPE 5)										
grey/brown/rust										
platy										
					7					
					8					
8' BOTTOM OF TEST PIT					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					

Earth Engineering Company

Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	99%
No. 40	97%
No. 200	89%

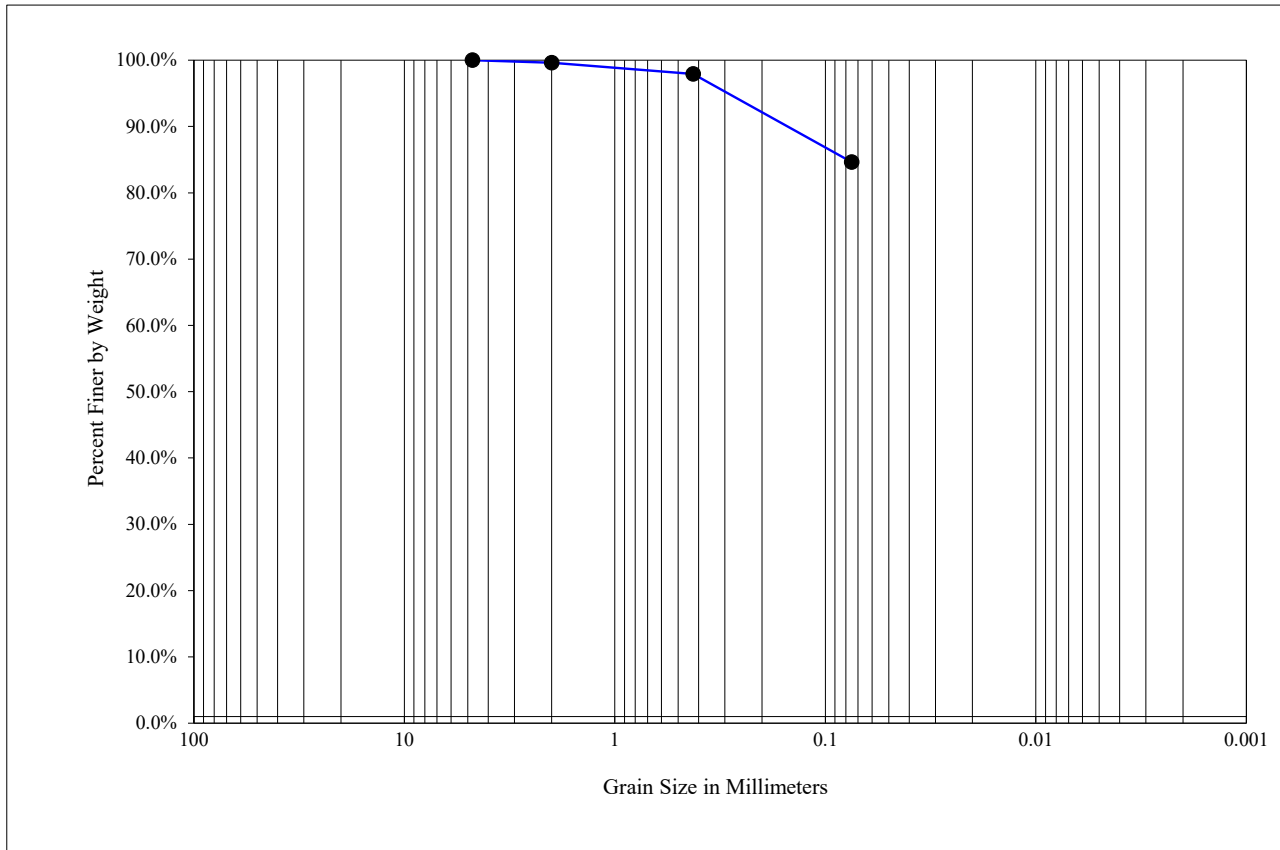
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-1, S-1 @ 2'
Description: Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	98%
No. 200	85%

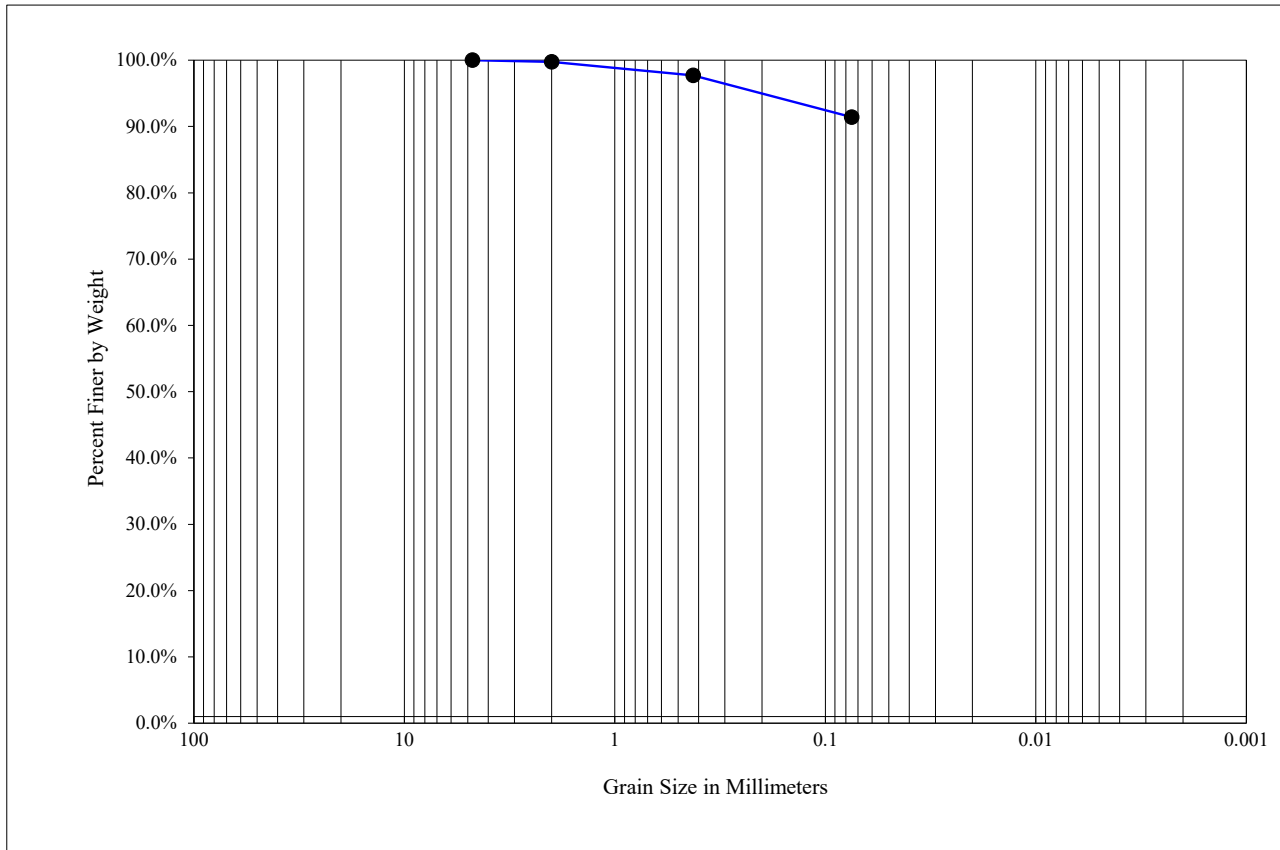
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-3, S-2 @ 4'
Description: Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	98%
No. 200	91%

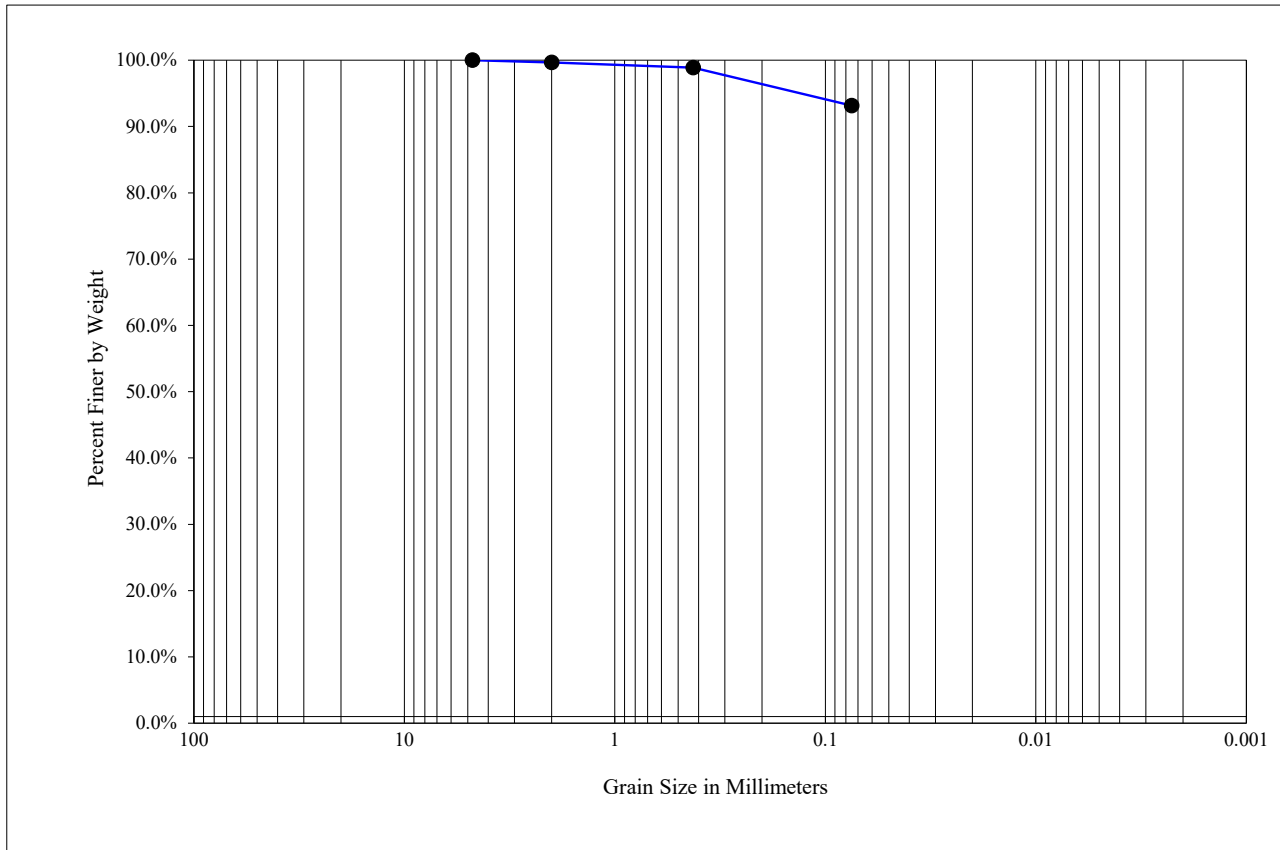
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-5, S-1 @ 2'
Description: Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	99%
No. 200	93%

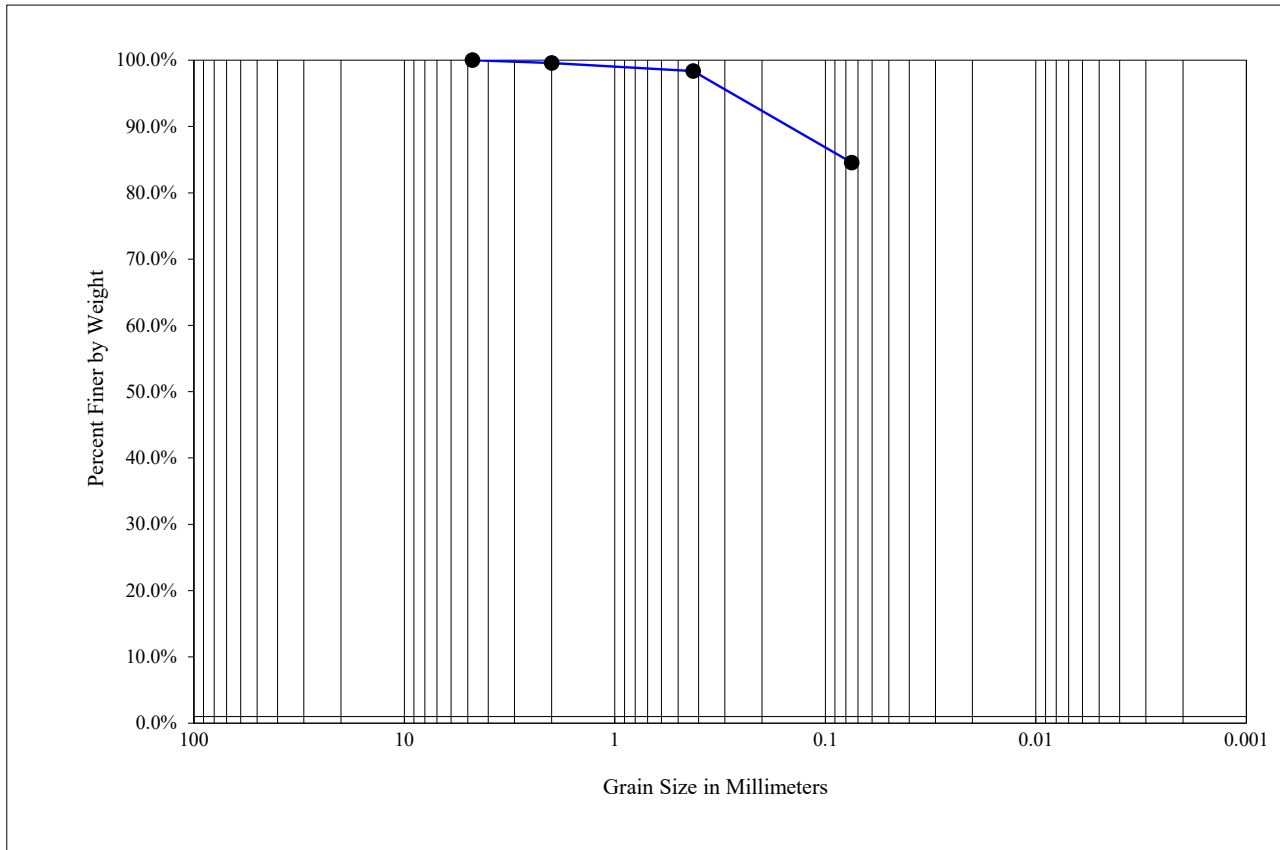
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-7, S-3 @ 6'
Description: Grey/Brown/Rust Claystone



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test



Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	98%
No. 200	85%

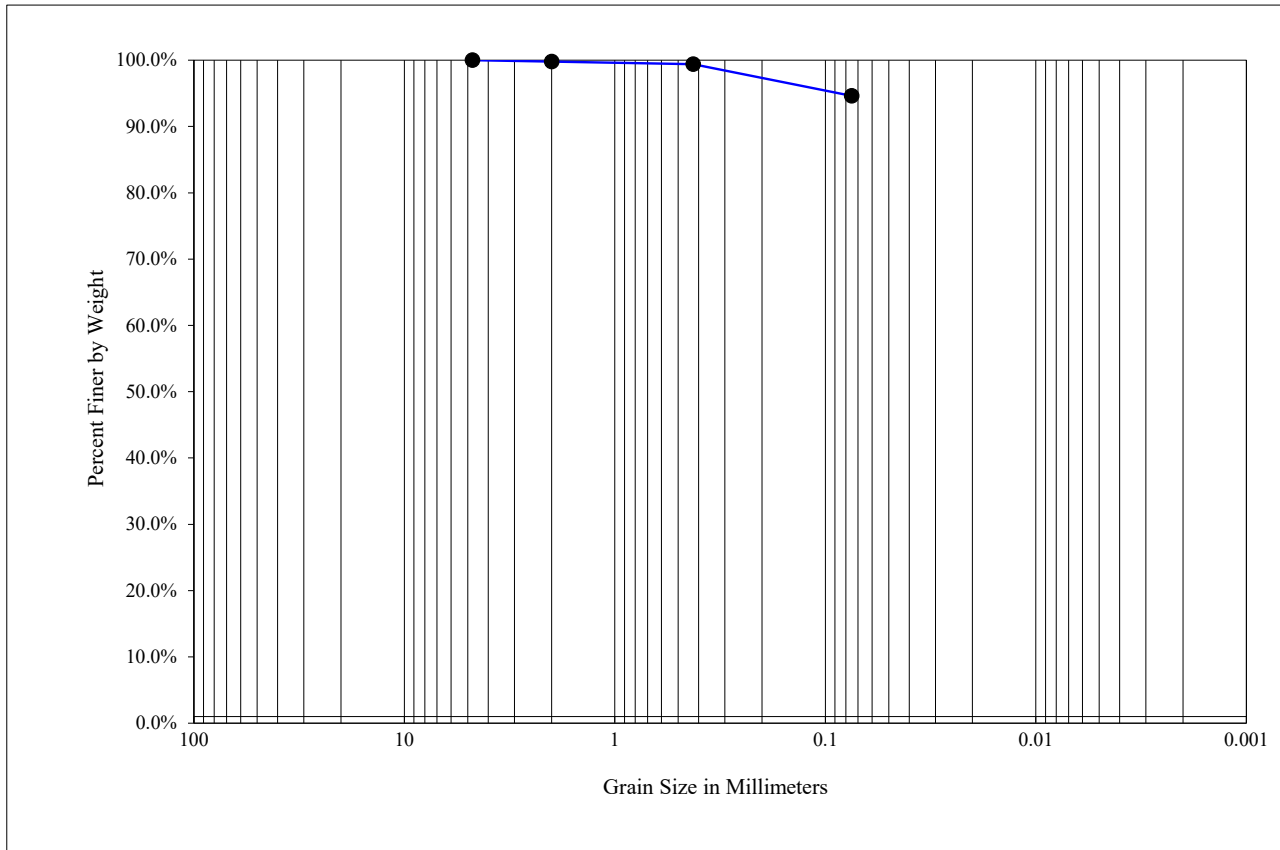
Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-9, S-2 @ 4'
Description: Brown/Light Brown Sandy Clay



Earth Engineering Company, Inc.

Summary of Laboratory Gradation Test

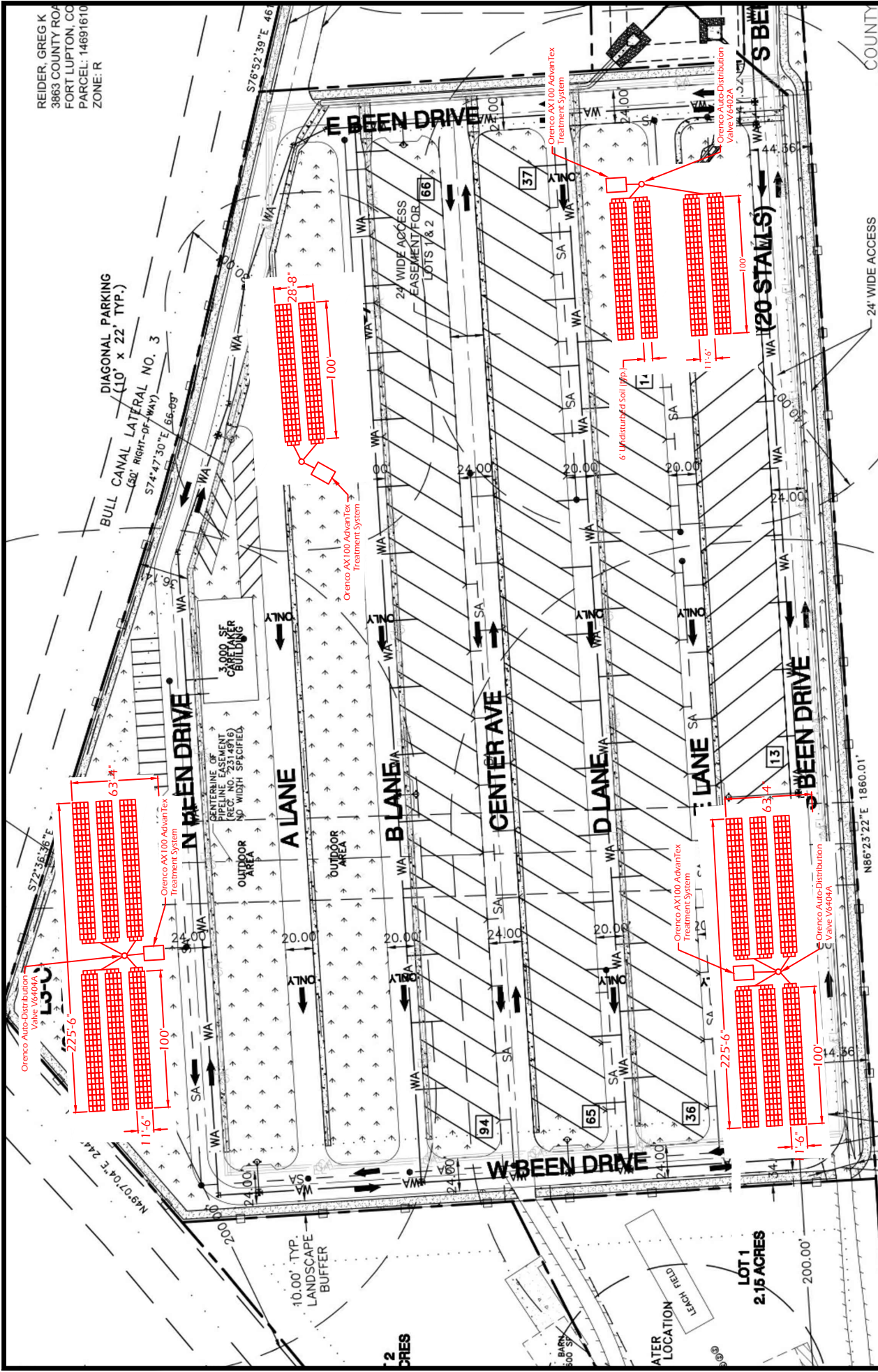


Sieve Size	Percent Passing
No. 4	100%
No. 10	100%
No. 40	99%
No. 200	95%

Project: 3647 Weld County Road 19
City Location: Weld County, Colorado
Project Number: 20-01-185
Date: November 2020

Sample Location: TP-11, S-1 @ 2'
Description: Brown Sandy Clay





OWTS Location Exhibit - Been RV Park
3647 Weld County Road 19
Weld County, Colorado
Project No.: 20-01-185 Date: March 2021

North
N/S



CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 8th day of June, 2021, a true and correct copy of the foregoing Notice of Public Hearings and project maps for the Been Minor Subdivision & Special Use Permit was sent via U.S. Mail, postage pre-paid, to the following addresses:

ATTN: APC PROPERTY TAX
KERR MC-GEE GATHERING LLC
PO BOX 173779
DENVER, CO 80217

VEGA HECTOR MARIO MADRID
3506 COUNTY ROAD 19
FORT LUPTON, CO 80621

TBR RANCH LLC
3474 HANCOCK LN
CHEYENNE, WY 82007

MELESINA PUGH
THOMAS JAMES PUGH
3503 COUNTY ROAD 19
FORT LUPTON, CO 80621

JOLENE P JOHNS
HLII JOHNS
8690 COUNTRY ROAD 10
FORT LUPTON, CO 80621

SUSAN A VEIT
DOLF C VEIT
8502 COUNTY ROAD 10
FORT LUPTON, CO 80621

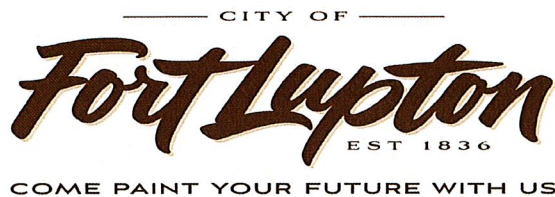
GREG K REIDER
3863 COUNTY ROAD 10
FORT LUPTON, CO 80621

ATTN: DJ SURFACE LAND DEPT.
CRESTONE PEAK RESOURCES HOLDINGS LLC
1801 CALIFORNIA ST
STE 2500
DENVER, CO 80202

ATTN: WATTENBERG LAND DEPT.
NOBLE ENERGY INC
1625 BROADWAY ST
STE 2000
DENVER, CO 80202



City Official



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortluptonco.gov

CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application submitted by Sheryl Been for a minor subdivision and special use permit for proposed RV park at a property located west and adjacent to County Road 19 and approximately 0.29 miles south from County Road 10 in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on Thursday, June 24, 2021, at 6:00 P.M., and before the City Council on Tuesday, July 20, 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that the City Hall remains closed at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

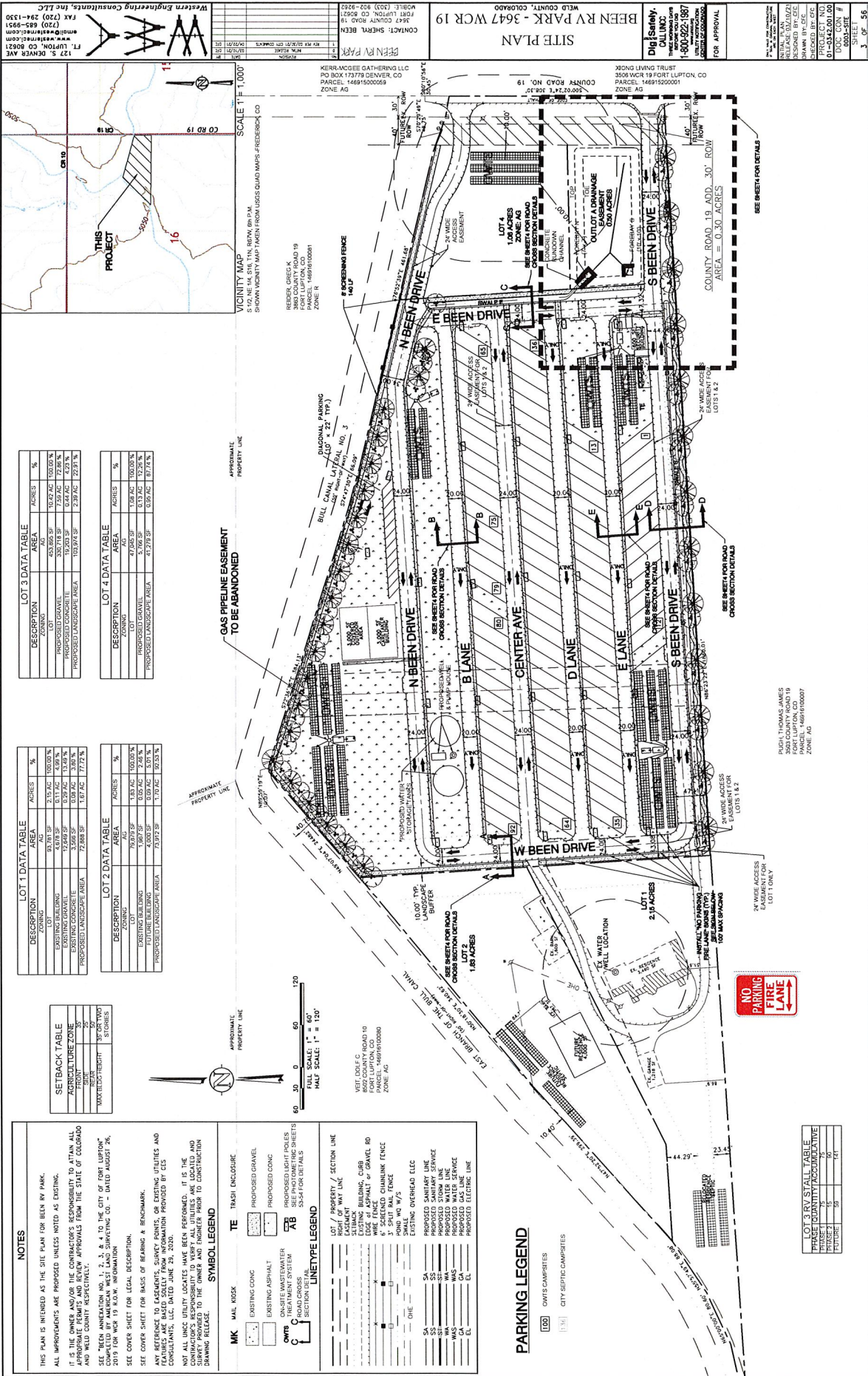
**ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT
BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: BEEN MINOR
SUBDIVISION & SPECIAL USE PERMIT**

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

LOT A OF RECORDED EXEMPTION NO. 1469-16-1 RE-4223, ACCORDING TO THE MAP RECORDED NOVEMBER 23, 2005 AT RECEPTION NO. 3342371, BEING A PART OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 687,638 SQUARE FEET OR 15.786 ACRES MORE OR LESS



Colorado Community Media
750 W. Hampden Ave. Suite 225
Englewood, CO 80110

City of Ft Lupton Legals(mw)
130 S McKinley Avenue
Fort Lupton CO 80621

Description: FLP222319 Pub Hear Proposed RV Park

AFFIDAVIT OF PUBLICATION

State of Colorado }
County of Weld } ss

This Affidavit of Publication for the Fort Lupton Press, a weekly newspaper, printed and published for the County of Weld, State of Colorado, hereby certifies that the attached legal notice was published in said newspaper once in each week, for 1 successive week(s), the last of which publication was made 6/9/2021, and that copies of each number of said paper in which said Public Notice was published were delivered by carriers or transmitted by mail to each of the subscribers of said paper, according to their accustomed mode of business in this office.



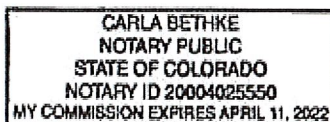
For the Fort Lupton Press

State of Colorado }
County of Weld } ss

The above Affidavit and Certificate of Publication was subscribed and sworn to before by the above named Gerard Healey, publisher of said newspaper, who is personally known to me to be the identical person in the above certificate on 6/9/2021. Gerard Healey has verified to me that he has adopted an electronic signature to function as his signature on this document.

20004025550-000871

Carla Bethke
Notary Public
My commission ends April 11, 2022



CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application submitted by Sheryl Been for a minor subdivision and special use permit for proposed RV park at a property located west and adjacent to County Road 19 and approximately 0.29 miles south from County Road 10 in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on Thursday, June 24, 2021, at 6:00 P.M., and before the City Council on Tuesday, July 20, 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held in the City Hall, 130 South McKinley Avenue, Fort Lupton, Colorado, or at such other time or place in the event this hearing is adjourned. In the event that City Hall is closed to the public at the time of the hearings due to COVID-19, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning & Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND

LEGAL DESCRIPTION

LOT A OF RECORDED EXEMPTION NO. 1469-16-1 RE-4223, ACCORDING TO THE MAP RECORDED NOVEMBER 23, 2005 AT RECEPTION NO. 3342371, BEING A PART OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 687,638 SQUARE FEET OR 15.786 ACRES MORE OR LESS

Legal Ad No.: FLP222319
First Publication: June 9, 2021
Last Publication: June 9, 2021
Published In: Fort Lupton Press

Fort Lupton

EST 18 Planning & Building

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130 S. McKinley Avenue
Fort Lupton, CO 80621

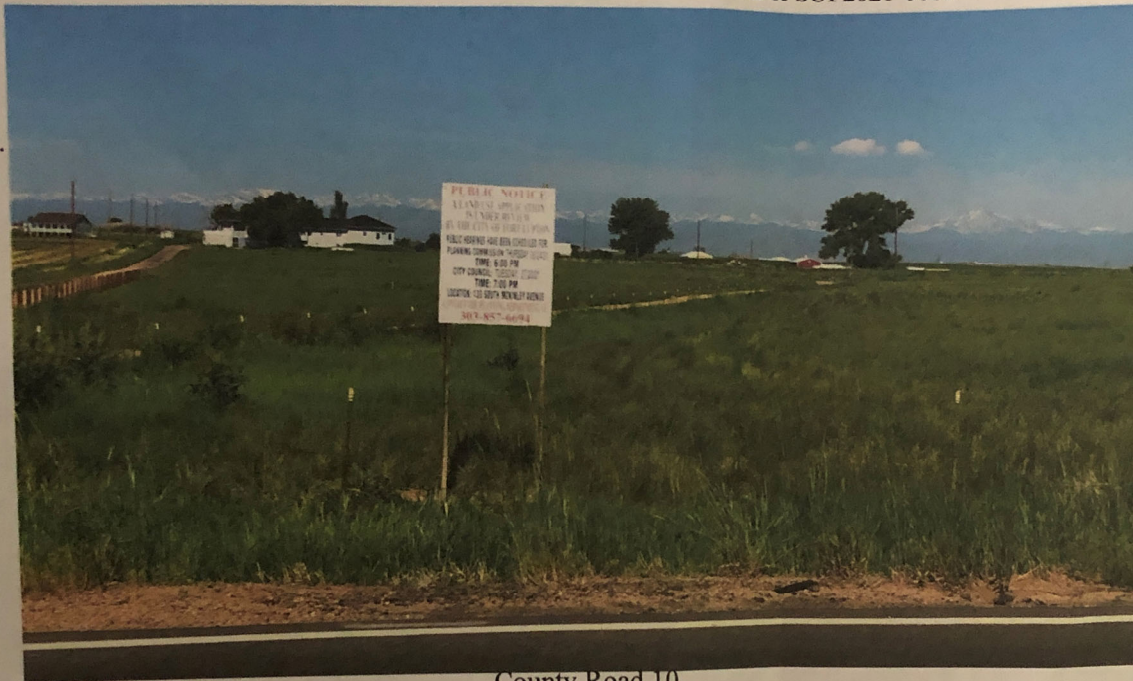
www.fortluptonco.gov

Phone: 303.857.6694
Fax: 303.857.0351

Sign Posting Affidavit

Been Minor Subdivision & Special Use Permit

Project No. LUP2021-0013 / Plan No. MSD2021-0002 & SUP2021-0002



County Road 10

I, Sheryl Ann Been
aforementioned property was
City Codes. Said public hearing
on the 8th day of
June, 2021.

Sheryl Ann Been
Signature of Owner or Owner's

hereby acknowledge that the
posted in accordance with
notice was posted on this

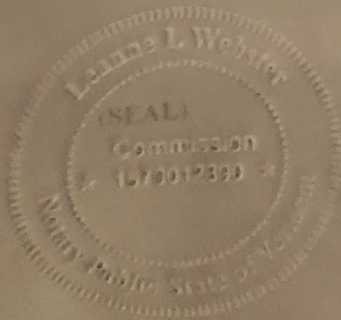
Representative

The foregoing instrument was acknowledged before me by Sheryl Ann Been, this 8th
day of June, 2021. Witness my hand and seal.

My commission expires 1/31/2023

Leanne L Webster
Notary Public

Leanne L Webster
Notary Public • State of Vermont
My Commission Expires 1/31/2023



Magaly Morales-Tejada

From: Jonathan Gesick
Sent: Thursday, May 20, 2021 4:11 PM
To: Magaly Morales-Tejada
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)
Attachments: Minimum submittal requirements commercial-industrial.pdf

Hi Magaly.

Please see the attached minimal submittal requirements for the construction of the new proposed structures that can be passed on to the applicant.

Thank you.

Jonathan Gesick

Certified Building Official

(970) 305-3161

www.procodeinc.net



Confidentiality Notice: This electronic transmission and any attached documents or other writings are intended only for the person or entity to which it is addressed and may contain information that is privileged, confidential or otherwise protected from disclosure. If you have received this communication in error, please immediately notify sender by return e-mail and destroy the communication. Any disclosure, copying, distribution or the taking of any action concerning the contents of this communication or any attachments by anyone other than the named recipient is strictly prohibited.

From: Magaly Morales-Tejada
Sent: Thursday, May 20, 2021 3:00 PM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for a minor subdivision and special use permit being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link:

<https://www.fortluptonco.gov/DocumentCenter/Index/595>

Any comments you consider relevant to this request would be appreciated. Please reply by **June 10, 2021** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 20, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada

Planning assistant

130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111



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Please be cautious

This email was sent outside of your organization

MINIMUM STANDARDS FOR CODE

SUBMISSIONS

Construction documents for most projects consist of drawings, specifications and appropriate calculations. All elements shall complement each other. Completeness and coordination of all necessary information are the responsibility of the registered architect or professional engineer. Construction documents submitted to the building official must be of sufficient nature to clearly show the project in its entirety with emphasis on the following:

1. Life safety
2. Means of egress
3. Barrier free accessibility
4. Structural integrity
5. Building code compliance
6. Definition of scope of work

The required construction documents will depend upon the size, nature and complexity of the project. The following is a suggested standard of the minimum required construction documents for review by building officials.

Cover Sheet

1. Project identification
2. Project address and a location map
3. All licensed architects and engineers identified
4. The licensed architect or engineer in responsible control (the professional responsible for project co-ordination) shall be identified. All communications should be directed through this individual.
5. Design Criteria list:
 - I. Occupancy group
 - II. Type Construction classification
 - III. Location of property



- IV. Seismic risk
- V. Design loads
- VI. Structural systems
- VII. Square Footage/Allowable floor area
- VIII. Fire sprinkler systems
- IX. Height and number of stories
- X. Occupant load
- XI. Land use zone

Site Plan

Show proposed new building or structure and any existing buildings or structures, all property lines with dimensions, all streets, easements and setbacks. Show all water, sewer, communication services, natural gas, telephone, and cable TV. Electrical points of connection, proposed utility service routes and existing utilities on the site. Show all required parking, drainage and grading information. Indicate drainage inflow and outflow locations and specify areas required to be maintained for drainage purposes. A topographical survey should be provided with a benchmark elevation. Show north arrow. Show dimensions for the location and size of components delineated on the site plan.

Geotechnical Report

Provide a geotechnical report for the proposed structure at that site.

Exterior Elevations

Show each view. Show vertical dimensions and heights. Show openings and identify materials and show lateral bracing system, where applicable. Show dimensions and schedules.

Foundation Plan

Show all foundations and footings. Indicate size, locations, thickness, materials and strengths, and reinforcing. Show all imbedded anchoring such as anchor bolts, hold-downs, post bases, etc. Show dimensions for the location and size of all components delineated on the foundation plan.



Floor Plans

Show all floors including basements. Show all rooms, with their use, overall dimensions and locations of all structural elements and openings. Show all doors and windows. Provide door and window schedules. All fire resistance rated assemblies, areas of refuge, occupancy separations, fire blocking and draft stopping shall be shown. Show dimensions for the size of all rooms and the locations of other components delineated on the floor plans.

Framing Plans and Roof Framing Plans

Show all structural members, their size, methods and details of attachment, connections, location and materials for floors and roofs. Show roof plan. Show dimensions for the location and size of all components delineated on the roof plan.

Schedules

Room finishes, doors, hardware, windows, plumbing, mechanical, electrical and structural.

Addenda and Changes

It shall be the responsibility of the individual identified on the cover sheet as the licensed architect or engineer in responsible control to notify the building official of any and all changes throughout the project and provide revised construction documents, calculations or other appropriate documentation prior to commencement of that portion of the construction.

Revisions

The party submitting changes shall be identified at the beginning of the approval process. For clarity, all re-visions should be identified and clouded on the construction drawings and appropriately marked in the project manual or resubmitted as a new set of construction documents.

Completeness of Documents

Construction Documents for most projects consist of drawings, specifications and appropriate calculations. All elements shall complement each other. Completeness and coordination of all necessary information is the responsibility of the registered design professional(s).



Building Sections Wall Sections

Show materials of construction, non-rated and fire resistance rated assemblies, and fire resistance rated penetrations. Show dimensions.

Mechanical System

Show the mechanical system. Include all units, their sizes, mounting details, all ductwork and duct sizes. Indicate all fire dampers where required. Provide equipment schedules. Submit energy conservation calculations. Show dimensions.

Plumbing System

Show all fixtures, piping, slopes, materials and sizes. Show point of connections to utilities, septic tanks, pre-treatment sewer systems and water wells. Show dimensions.

Electrical system

Show all electrical fixtures (interior, exterior and site), wiring sizes and circuiting, grounding, panel schedules, single line diagrams, load calculations and fixture schedules. Provide fault-current calculations for entire system. Show point of connection to utility. Show dimensions.

Structural Systems

Show foundation, structural members and where required provide structural calculations for the structural systems of the project. Include calculations indicating compliance with seismic, wind, snow and other design loads. Completeness of the necessary calculations is the responsibility of the registered design professional.

Specifications

Prepare specifications to further define the construction components, the quality of the materials, delineation of the materials and methods of construction, wall, floor and ceiling finishes, exterior finishes, and descriptions of all pertinent equipment. Schedules may be incorporated into the project manual in lieu of being delineated on the construction drawings.





June 15, 2021

Alyssa Knutson
City of Fort Lupton
Transmitted via email:
aknutson@fortluptonco.gov

RE: Been Minor Subdivision and Special Use Permit
Project no. LUP2021-0013
Part of S ½ of the NE ¼, Sec. 16, T1N, R67W, 6th P.M.
Lot A, Recorded Exemption No. 1469-16-1 RE-4223
Water Division 1, Water District 2

Dear Ms. Knutson:

We have reviewed the information received by this office on May 20, 2021 regarding the above referenced referrals. The Applicant is proposing to subdivide 15.97 acres into four lots being two residential lots (Lots 1 and 2), a Recreational Vehicle Park lot (Lot 3) and a 1.06 acre AG lot (Lot 4); and a special use permit for an RV Park on the proposed Lot 3.

Pursuant to Section 30-28-136, C.R.S. the State Engineer's office will provide an opinion on water supply plans for new subdivisions regarding material injury to existing water rights or the adequacy of the proposed plan if a referral is submitted to this office by the board of county commissioners. This referral was submitted to this office from the City of Fort Lupton ("City") therefore, pursuant to the State Engineer's March 4, 2005 and March 11, 2011 memorandums to the county planning directors, this office will only perform a cursory review of the referral information and provide comments. The comments do not address the adequacy of the water supply plan for this project or the ability of the water supply plan to satisfy any County regulations or requirements.

The proposed water supply is a future water taps with Central Weld County Water District. Our office has no comments on Central Weld County Water District's ability to supply the proposed four lot subdivision and RV Park. The referral material also includes reference to well permit 84713-F, which has not been constructed, for use in the RV Park until water taps from Central Weld County Water District can be brought to the subdivision.

A review of our records found well permit no. 9930 located in the subject property. Permit no. 9930 was issued on October 9, 1961 for domestic use. Section 37-92-602(3)(b)(III), C.R.S., requires that the cumulative effect of all wells in a subdivision be considered when evaluating material injury to decreed water rights. **Prior to further evaluation of the water supply plan the applicant must clarify, if the well will be used within the subdivision or if the well will be plugged and abandoned. If well will be used within the subdivision, the proposed uses must be specified and the applicant must demonstrate that a court approved augmentation plan has been obtained for the well prior to subdivision approval.**

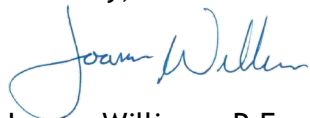


Well permit no. 84713-F was issued on September 16, 2020 pursuant to section 37-90-137(4) C.R.S., and the Findings of the State Engineer to construct a well in the Laramie-Fox Hills aquifer underlying 16 acres (subject property). The well permit allows for the average annual withdrawal of 4.92 acre-feet per year from the nontributary Laramie-Fox Hills aquifer to be used for domestic, livestock watering, industrial, irrigation and commercial. This office has not received information that a well under permit no. 84713-F has been constructed. Well permit no. 84713-F will expire on September 16, 2021 unless this office receives information that the well was constructed and a pump was installed before the permit expired or the applicant applies for a one time one year expiration extension. Should the well be constructed, this office has no comments regarding the well being used for an RV Park; however, the well permit claims all the groundwater underlying the complete 15.97 acres of the subdivision, this can affect the issuance of well permits in the Laramie-Fox Hills aquifer on the other proposed lots of the subdivision.

The applicant should be aware that any proposed detention pond for this project, must meet the requirements of a "storm water detention and infiltration facility" as defined in section 37-92-602(8), Colorado Revised Statutes, otherwise the structure may be subject to administration by this office. The applicant should review DWR's [Administrative Statement Regarding the Management of Storm Water Detention Facilities and Post-Wildland Fire Facilities in Colorado](#) to ensure that the notification, construction and operation of the proposed structure meets statutory and administrative requirements. The applicant is encouraged to use Colorado Stormwater Detention and Infiltration Facility Notification Portal, located at <https://maperture.digitaldataservices.com/gvh/?viewer=cswdif>, to meet the notification requirements.

Should you or the applicant have any questions, please contact Ailis Thyne at (303) 866-3581 x8216.

Sincerely,

A handwritten signature in blue ink that reads "Joanna Williams". The signature is fluid and cursive, with the first name "Joanna" and last name "Williams" clearly distinguishable.

Joanna Williams, P.E.
Water Resource Engineer

Ec: Subdivision File #27751
File for Permit Nos. 9930 & 84713-F

Magaly Morales-Tejada

From: Maureen Welsh
Sent: Friday, May 21, 2021 1:39 PM
To: PlanningDept
Subject: LUP2021-0013 Referral Response

Good afternoon,

The Town of Frederick has no issues with this application.

Thank you,

Maureen Welsh | Planner I
Town of Frederick | 720-382-5654
MWelsh@FrederickCO.gov | FrederickCO.gov

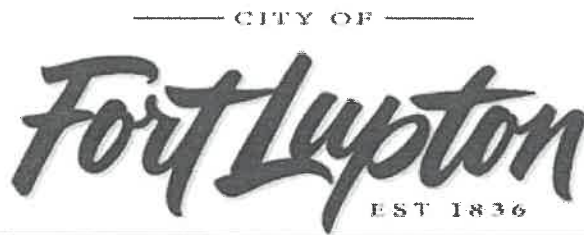


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FROM: Alyssa Knutson
DATE: 05/20/21
PROJECT: Been Minor Subdivision & Special Use Permit
Project No. LUP2021-0013; Plan Nos. MSD2021-0002 & SUP2021-0002

INTERNAL DISTRIBUTION:

☐ Buildings/Grounds Manager	☒ City Attorney	☒ Police Chief
☐ City Administrator	☐ City Clerk	☒ Public Works Director
☒ Building Inspector	☐ Recreation Manager	☐ Golf Course Manager
☒ OMI	☒ GIS Specialist	☐ Finance Director

OUTSIDE DISTRIBUTION:

☒ Fort Lupton Fire Protection District	☒ Weld County Dept. of Public Health & Env.
☒ CDOT	☒ Weld County Public Works
☒ Colorado DRMS	☒ Weld County School District RE-8
☒ Colorado Parks and Wildlife	☒ NCWCD
☒ Division of Water Resources	☐ Fulton Ditch Company
☐ Army Corp of Engineers	☐ Platteville Ditch Company
☒ United Power	☐ City of Brighton
☒ Comcast	☒ Town of Frederick
☒ CenturyLink	☐ Town of Platteville
☒ Xcel Energy	☒ City of Dacono
☒ Postmaster	☐ Town of Firestone
☒ Weld County Department of Planning	☒ Other: Bull Canal

If you have comments, please respond by: 06/10/21

Comments may be sent via mail, faxed to 303.857.0351 or emailed to planningdept@fortluptonco.gov. A non-response to this referral may be considered a favorable response.

COMMENTS:

Property owner has filed Petitions for Inclusion with Northern Colorado Water Conservancy District & the Municipal Subdistrict, which ARE IN process.

Magaly Morales-Tejada

From: John Fryar
Sent: Thursday, May 20, 2021 3:05 PM
To: Magaly Morales-Tejada
Subject: RE: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

No LE concerns other than distance from normal patrol areas.



Chief John Fryar

From: Magaly Morales-Tejada
Sent: Thursday, May 20, 2021 3:00 PM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for a minor subdivision and special use permit being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link:

<https://www.fortluptonco.gov/DocumentCenter/Index/595>

Any comments you consider relevant to this request would be appreciated. Please reply by **June 10, 2021** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 20, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada
Planning assistant
130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111





Public Works

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694

Fax: 303.857.0351

www.fortluptonco.gov

MEMO

To: Todd Hodges
Alyssa Knutson
CC: Chadwin Cox (WEA)
From: Roy Vestal
Date: May 28, 2021
Subject: Been Minor Subdivision and Special Use Permit (LUP2021-0013)
Public Works Review

Public Works has reviewed the submitted documents for the above referenced development project with the following comments for inclusion with the Final Plat and Site Plan submittal. There may be additional concerns as this design develops.

1. Utilities

a. Water - Chapter 3

- i. Water supply is intended to be by well with future connection potential to Central Weld Water District.

b. Sanitary Sewer - Chapter 4

- i. Sanitary service with on-site OWTS permitting through the county.

2. Plat

- a. ROW dedication cannot be done with the Minor Subdivision Plat. ROW dedication needs to be by separate document (see attached template). Annotate ROW on MSP with recording information.

3. Site Plan

- a. The water line will require an easement dedication, 20' wide.
- b. Site Plan A-1 – Please move the gate from 14th Street entry to the property line. Need to leave adequate room for truck to park out of the street to open gate.

4. Drainage

- a. Final Drainage Study is approved.
- b. Detention facility will be privately owned and maintained.
- c. As-built documentation of volumes and elevations will be required following construction.

5. Transportation

- a. Additional ROW dedications are acceptable.

6. Landscape / Grading - *Chapter 2 Design Standards*

- a. A SWMP and Stormwater Discharge permit must be acquired from CDPH&E. Please submit proof of prior to receiving construction permits. Please provide copy of permit from CDPH&E.
- b. Review proposed landscape plans at street locations and evaluate for sight triangle conflicts.

7. Roadway - Chapter 6

- a. Both access drives will require an improved apron at CR 19.

8. Traffic Control - Chapter 8

- a. The Traffic letter as submitted is acceptable.



June 10, 2021

Fort Lupton Planning Department
130 S. McKinley Avenue
Fort Lupton, CO 80621
www.fortlupton.org

Re: Been Minor Subdivision & Special Use Permit Project No. LUP2021-0013; Plan Nos. MSD2021-0002 & SUP2021-0002

Dear Mr. Hodges and Ms. Knutson:

On behalf of United Power, Inc., thank you for inviting us to review and comment on the Been Minor Subdivision & Special Use Permit Project No. LUP2021-0013; Plan Nos. MSD2021-0002 & SUP2021-0002. After review of the information, we have the following comments:

- **Perimeter Lot Distribution** – United Power requires continuous dry utility easements for reliable electric facility installation. This allows us to install electric facilities in a continuous manner for our loop feed which provides reliability. We prefer the separation of gas and electric. We will need 8' to 10' wide dry utility easements around the perimeter of all lots.
- **Streetlights** – When streetlight locations are identified, we need a 5' wide dry utility easement along one side of the lot closest to the streetlight location. All streetlight locations must be approved and signed off by the city/town, etc. Please note, if we do not get these through the platting process, we will have to get individual ones during the design which will slow United Power's ability to start construction significantly.

Please note, the property owner/developer/contractor must submit an application along with CAD data for new electric service via <https://www.unitedpower.com/construction>. United Power would like to work with these persons early in the construction process on getting an electric design prepared so that we can request any additional easements needed and hopefully have those easements dedicated on the plat rather than obtaining separate document(s). Obtaining easements via a separate document can be time consuming and could cause delays.

As a Reminder: No permanent structures are acceptable within the dry utility easement(s); such as, window wells, wing walls, retaining walls, basement walls, roof overhang, anything affixed to the house like decks, etc. United Power considers any structure that impedes the access, maintenance, and safety of our facilities a permanent structure. No exceptions will be allowed, and any encroachments could result in penalties.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested. We look forward to safely and efficiently providing reliable electric power and outstanding service.

Thank you,

Amber Mendoza

Amber Mendoza, RWA
ROW Agent
720.249.9315 | platreferral@unitedpower.com

Magaly Morales-Tejada

From: Lauren Light
Sent: Thursday, May 27, 2021 1:27 PM
To: Magaly Morales-Tejada
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

If this was one parcel the septic systems would qualify to be reviewed by the State. However, since they all will be on separate parcels the review will be completed by Weld County Environmental Health.

Lauren Light, M.B.S.
Program Manager/Environmental Planner, Environmental Health Services
Weld County Department of Public Health & Environment
1555 N. 17th Ave.
Greeley, CO 80631
llight@weldgov.com
970-400-2211 (office)



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From: Magaly Morales-Tejada
Sent: Thursday, May 20, 2021 3:00 PM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Been Minor Subdivision and Special Use Permit (LUP2021-0013)

Caution: This email originated from outside of Weld County Government. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for a minor subdivision and special use permit being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link:

<https://www.fortluptonco.gov/DocumentCenter/Index/595>

Any comments you consider relevant to this request would be appreciated. Please reply by **June 10, 2021** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 20, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada

Planning assistant

130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111



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Right of Way & Permits
1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303.571.3284
donna.l.george@xcelenergy.com

June 10, 2021

City of Fort Lupton Planning Department
130 South McKinley Avenue
Fort Lupton, CO 80621

Attn: Alyssa Knutson and Todd Hodges

Re: Been Minor Subdivision and Special Use Permit, Case # LUP2021-0013

Public Service Company of Colorado's Right of Way & Permits Referral Desk has reviewed the documentation for **Been Minor Subdivision and Special Use Permit** and has no apparent conflict. No resubmittals necessary.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

RESOLUTION NO. P2021-019

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF A CHANGE OF ZONE KNOWN AS THE FORT LUPTON EAST CHANGE OF ZONE ON A PROPERTY LOCATED IN A PORTION OF SECTION 2 AND SECTION 3 OF TOWNSHIP 1 NORTH, RANGE 66 WEST AND A PORTION OF THE SOUTHEAST QUARTER OF SECTION 35 OF TOWNSHIP 2 NORTH RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing June 24, 2021 for the purpose of reviewing a change of zone known as the Fort Lupton East Change of Zone to the A Agricultural Zone District on a property legally described under Exhibit A to this Resolution, and

WHEREAS, after review of the application and supporting information, the Planning Commission finds that the Fort Lupton East Change of Zone application conforms to Colorado Revised Statutes and City codes and policies therein, and

WHEREAS, all legal requirements for the public hearing have been met, including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within 100 feet, and post notice of the public hearings on the site.

NOW THEREFORE BE IT RESOLVED, the Planning Commission has taken into consideration all referral comments and citizen testimony in response to this application. Based upon the facts presented on this date the Planning Commission hereby recommends approval of the Fort Lupton East Change of Zone to the A Agricultural Zone District.

DONE THIS 24TH DAY OF JUNE, 2021, BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Chairman

ATTEST:

Planning Director

EXHIBIT A

LEGAL DESCRIPTION

A PARCEL OF LAND BEING PORTIONS OF SECTION TWO (2) AND SECTION THREE (3) OF TOWNSHIP ONE NORTH (T.1N.), RANGE SIXTY-SIX WEST (R.66W.) AND A PORTION OF THE SOUTHEAST QUARTER OF SE1/4) OF SECTION THIRTY-FIVE (35) OF TOWNSHIP TWO NORTH (T.2N.), RANGE SIXTY-SIX WEST (R.66W.) OF THE SIXTH PRINCIPAL MERIDIAN (6TH P.M.), COUNTY OF WELD, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 2 AND ASSUMING THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 2, MONUMENTED ON THE WEST END BY A #6 REBAR WITH A 3.25 ALUMINUM CAP L.S. 27269 AND ON THE EAST END BY A #6 REBAR WITH A 2.5" ILLEGIBLE ALUMINUM CAP, AS BEARING NORTH 89°03'33" EAST BEING A GRID BEARING OF THE COLORADO STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM 1983, A DISTANCE OF 2643.85 FEET WITH ALL OTHER BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;

THE LINEAL DIMENSIONS AS CONTAINED HEREIN ARE BASED UPON THE U.S. SURVEY FOOT.

THENCE SOUTH 00°28'49" EAST ALONG THE EAST LINE OF THE NE1/4 OF SAID SECTION 2 A DISTANCE OF 2572.75 FEET TO THE EAST QUARTER CORNER OF SAID SECTION 2;

THENCE SOUTH 00°24'23" EAST ALONG THE EAST LINE OF THE SE1/4 OF SAID SECTION 2 A DISTANCE OF 50.00 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF HIGHWAY 52;

THENCE ALONG THE SOUTH-RIGHT-OF-WAY LINE OF SAID HIGHWAY 52 THE FOLLOWING THREE (3) COURSES AND DISTANCES:

THENCE SOUTH 89°29'11" WEST A DISTANCE OF 2643.06 FEET;

THENCE SOUTH 89°29'28" WEST A DISTANCE OF 2624.45 FEET;

THENCE SOUTH 89°19'51" WEST A DISTANCE OF 237.05 FEET TO THE EAST LINE OF PATTERSON ANNEXATION TO THE CITY OF FORT LUPTON RECORDED ON OCTOBER 10, 2017 AT RECEPTION NUMBER 4343163 WITHIN THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER;

THENCE NORTH 00°56'53" WEST ALONG THE EAST LINE OF SAID PATTERSON ANNEXATION A DISTANCE OF 100.00 FEET TO THE NORTH RIGHT-OF-WAY OF HIGHWAY 52;

THENCE ALONG THE NORTH RIGHT-OF-WAY LINE OF SAID HIGHWAY 52 THE FOLLOWING TWO (2) COURSES AND DISTANCES;

THENCE NORTH 89°19'51" EAST A DISTANCE OF 237.67 FEET;

THENCE NORTH 89°29'28" EAST A DISTANCE OF 2624.60 FEET TO THE WEST LINE OF THE NE1/4 A DISTANCE OF 2503.04 FEET TO THE NORTH QUARTER CORNER OF SAID SECTION 2;

THENCE NORTH 00°29'38" WEST ALONG THE NORTHERLY PROLONGATION OF SAID WEST LINE A DISTANCE OF 30.00 FEET TO THE NORTH RIGHT-OF-WAY LINE OF COUNTY ROAD 14;

THENCE NORTH 89°03'33" EAST ALONG THE NORTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 14 A DISTANCE OF 2643.85 FEET TO IT'S INTERSECTION WITH THE NORTHERLY PROLONGATION OF THE EAST LINE OF THE NE1/4 OF SAID SECTION 2; THENCE SOUTH 00°28'49" EAST ALONG SAID NORTHERLY PROLONGATION A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING

SAID PARCEL OF LAND CONTAINS 166.96 ACRES OR 7,272,560 SQ. FT., MORE OR LESS (+/-), AND IS SUBJECT TO ANY RIGHTS-OF-WAY OR OTHER EASEMENTS OF RECORD AS NOW EXISTING ON SAID DESCRIBED PARCEL OF LAND.



FORT LUPTON EAST CHANGE OF ZONE STAFF REPORT
PROJECT NO. LUP2021-0016/ PLAN NO. COZ2021-0003

PROJECT DESCRIPTION

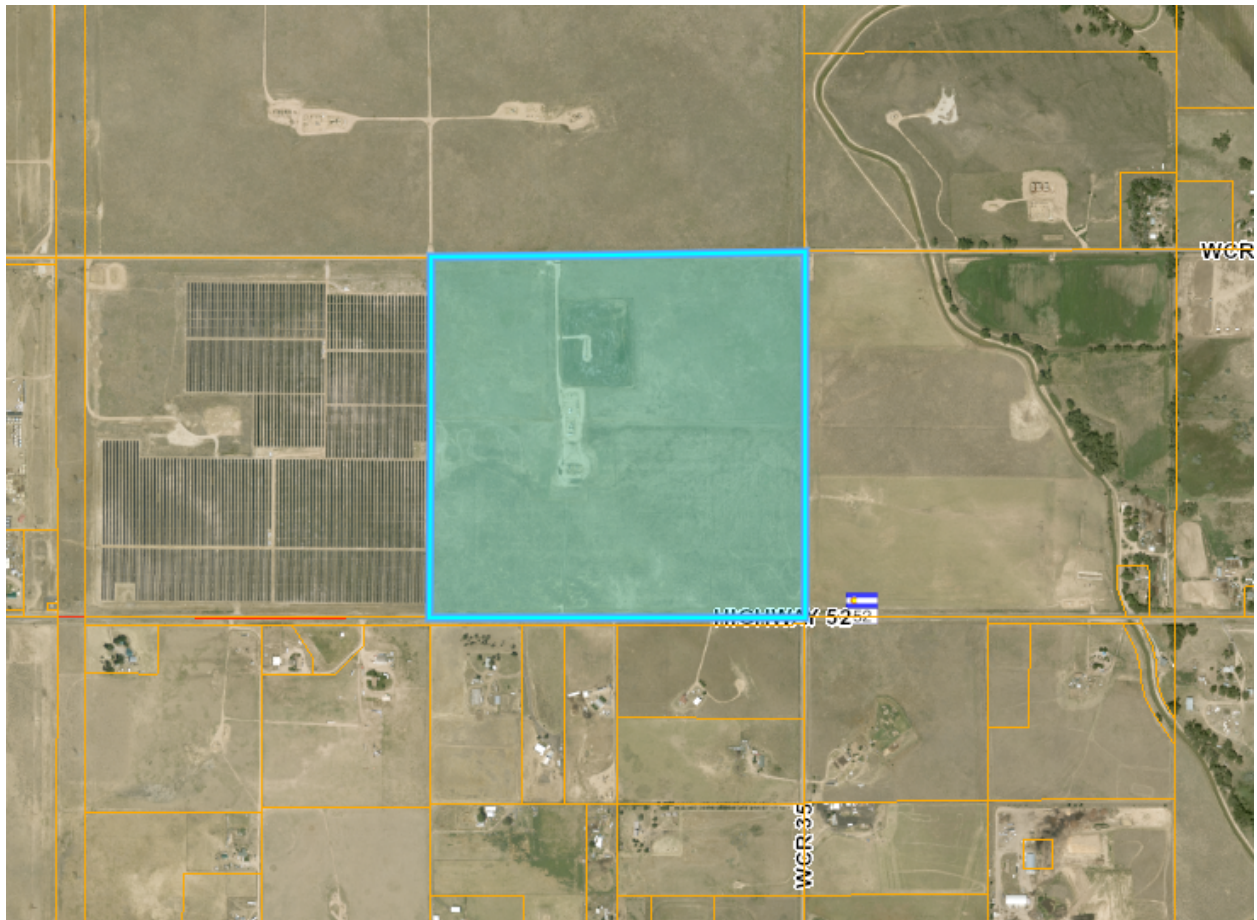
Project No.: LUP2021-0016 / Plan No. COZ2021-0003

Project name: Fort Lupton East Change of Zone

Owner's Name: City of Fort Lupton

Location of Request:

The site is located at the northwest corner of the intersection of Highway 52 and County Road 35 (Parcel No. 147102000064) (the Property). The Property is located in a portion of Section 2 and Section 3 of Township 1 North, Range 66 West and a portion of the Southeast Quarter of Section 35 of Township 2 North Range 66 West of the Sixth Principal Meridian, County of Weld, State of Colorado.



Nature of Request:

The applicant is requesting a change of zone from Weld County's Agricultural Zone District to the City of Fort Lupton's Agricultural Zone District.

The Property associated with this request is owned by the City of Fort Lupton. The City is in the process of annexing this parcel and right-of-way as indicated on the map within the Hearing packet. Annexation of municipally owned land can be done by ordinance and does not need to go through the public hearing process as is required in typical annexations. However, all zoning changes must be reviewed by Planning Commission and City Council at a public hearing, including the initial zoning of municipally owned land.

Site Size: The Property is 166.96 acres, more or less.

Current Zone District: 'A' Agricultural (Weld County).

Proposed Zone District: 'A' Agricultural (Fort Lupton).

Proposed Use: There is no proposed development at this time.

Existing Use: Vacant/Agricultural with active and inactive oil and gas wells on site.

Hearing Dates: Planning Commission – June 24, 2021 at 6:00 PM; and
City Council – July 6 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado.

Staff Recommendation: Approval.

SUMMARY OF PREVIOUS APPLICATIONS

To staff's knowledge, there are no prior applications for this property through the City of Fort Lupton.

APPLICATION PROCESS

The Applicant is requesting approval of initial zoning to the 'A' Agricultural Zone District.

A change of zone is processed under [Section 16-9](#) of the Fort Lupton Municipal Code ("Code"). After required public notice of the change of zone, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the change of zone. The Planning Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the change of zone, referral agency comments, Planning Commission recommendation and any public testimony, and shall approve, conditionally approve, continue for additional information or for further study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

NOTIFICATION REQUIREMENTS

The Zoning Regulations require published notice of the hearings at least fifteen (15) days prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton Press on June 9, 2021.

Notice of the public hearings were posted on the Property pursuant to the Zoning Regulations at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbors within one-hundred (100) feet of the Property on June 9, 2021.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The annexation of unincorporated municipally owned land is subject to C.R.S. 31-12-106(3) which provides the ability for said land to be annexed via ordinance without notice or hearing. Although the annexation of this property does not need a public hearing, the initial zoning is governed by [Section 16-9](#) of the Fort Lupton Municipal Code.

The Applicant is proposing initial zoning to the 'A' Agricultural Zone District, governed by [Section 16-32](#) of the Code. The intent of the Agricultural District is to apply in areas which economically have value for agricultural uses and are not yet ready for development into urban usage. The Agricultural District is also appropriate as a temporary zoning district for newly annexed land that has not been subdivided.

All required documents have been submitted.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Fort Lupton Comprehensive Plan designates the majority of this property for agricultural and rural residential land uses. The southern portion of the property is designated for commercial transitional land uses.

The agricultural and rural residential designation allows for agricultural and related uses as well as low density residential on the periphery of the planning area, intended to preserve a generally rural character. This also includes a variety of miscellaneous uses, such as isolated industrial businesses and semi-rural properties located under Estate Zoning.

The commercial transition designation identifies potential growth areas for commercial development outside the municipal boundaries or primary commercial districts of Fort Lupton. These areas should support gradual, long-term commercial investment outward from the City's urban core, including incremental transitioning of agricultural uses to commercial development.

The proposed zoning conforms to the agricultural and rural residential land use designation. A change of zone for the property or a portion of the property would be evaluated when the site is developed.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

Buildings/Grounds Manager	City Administrator	City Attorney
GIS Specialist	Police Chief	Public Works Director
Finance Director	Fort Lupton Fire Protection District	CDOT
Colorado Parks and Wildlife	Weld County Department of Planning	Weld County Public Works

STAFF RECOMMENDATION

Staff recommendation approval of the Fort Lupton East Change of Zone.

***For more information on this development, please refer to the Planning Commission packet provided.
Additional documents are available for review at the Fort Lupton City Hall.***



CITY OF

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621Phone: 303.857.6694
Fax: 303.857.0351www.fortluptonco.gov

Project No. _____

Land Use Application Form

A. CONTACT INFORMATION

1) Property Owner Name: City of Fort Lupton

Company: _____

Phone: (303) 857-6694 Email: ccross@fortluptonco.govAddress: 130 S. McKinley Avenue

Preferred method of contact? Email: _____ Phone: _____ Mail: _____

2) Representative Name: Chris Cross, City AdministratorCompany: City of Fort LuptonPhone: (303) 857-6694 Email: ccross@fortluptonco.govAddress: 130 S. McKinley Avenue

Preferred method of contact? Email: _____ Phone: _____ Mail: _____

3) Billing Contact (where invoices should be directed to): N/A

Billing Company: _____

Phone: _____ Email: _____

Address: _____

B. SITE DESCRIPTION

Site Address: _____

Parcel Number: 147102000064Existing Zone Classification: Ag (Weld County) Proposed Zone Classification: Ag (City of Fort Lupton)

Water Type: _____ Name: _____

Sewage Type: _____ District Name or Location Hauled to: _____

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

Sketch Plat

Administrative Site Plan

PUD Plan (Preliminary & Final)

Preliminary Plat

Special Use Permit

Variance

Final Plat

Oil & Gas Permit

Administrative Variance

Minor Subdivision

Annexation & Initial Zone

Appeal

Amended Plat

Change of Zone

Other: _____

Site Plan

Comp Plan Amendment

D. PROJECT DESCRIPTION

Project Name: Fort Lupton East Annexation and Initial Zoning

Please provide a short description of the proposed project in the space provided below:

This property will be annexed to the City of Fort Lupton with initial zoning to the 'A' Agricultural Zone District. There is no proposed development with this application.

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

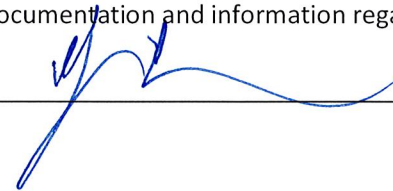
Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative:  Date: 5/27/21

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner:  Date: 5/27/21

For Office Use Only

Received Date: _____

If the application is not complete, state reasons why it is incomplete:

Deemed Complete Date: _____

Fees Submitted: _____ Escrow Submitted: _____

Project Description

The City of Fort Lupton is the owner of a property located at the northwest corner of the intersection of Highway 52 and County Road 35. The City intends to annex this property as well as right of way as indicated on the annexation map.

The City is requesting initial zoning to the 'A' Agricultural Zone District. The property is currently zoned Agriculture in Weld County. There is no proposed development for the property with this application.

FORT LUPTON EAST ANNEXATION

-To the City of Fort Lupton-

Portions of Sections 2 & 3, Township 1 North, Range 66 West and a Portion of the Southeast Quarter of Section 35, Township 2 North, Range 66 West of the 6th P.M., County of Weld, State of Colorado

Plan No. ANX2021-002 & COZ2021-0003

Project No. LUP2021-0016

PROPERTY DESCRIPTION

A parcel of land being portions of Section Two (2) and Section Three (3) of Township One North (T.1N.), Range Sixty-six West (R.66W.) and a portion of the Southeast Quarter (SE1/4) of Section Thirty-five (35) of Township Two North (T.2N.), Range Sixty-six West (R.66W.) of the Sixth Principal Meridian (6th P.M.), County of Weld, State of Colorado, being more particularly described as follows:

BEGINNING at the Northeast corner of said Section 2 and assuming the North line of the Northeast Quarter of said Section 2, monumented on the West end by a #6 rebar with a 3.25" aluminum cap L.S. 27269 and on the East end by a #6 rebar with a 2.5" illegible aluminum cap, as bearing North 89°03'33" East being a grid bearing of the Colorado State Plane Coordinate System, North Zone, North American Datum 1983, a distance of 2643.85 feet with all other bearings contained herein being relative thereto;

The lineal dimensions as contained herein are based upon the U.S. Survey Foot.

THENCE South 00°28'49" East along the East line of the NE1/4 of said Section 2 a distance of 2572.75 feet to the East Quarter corner of said Section 2;

THENCE South 00°24'23" East along the East line of the SE1/4 of said Section 2 a distance of 50.00 feet to the South right-of-way line of Highway 52;

Thence along the South right-of-way line of said Highway 52 the following Three (3) courses and distances:
THENCE South 89°29'11" West a distance of 2643.06 feet;
THENCE South 89°29'28" West a distance of 2624.45 feet;
THENCE South 89°19'51" West a distance of 237.05 feet to the East line of Patterson Annexation to the City of Fort Lupton recorded on October 10, 2017 at Reception No. 4343163 within the records of the Weld County Clerk and Recorder;
THENCE North 00°56'53" West along the East line of said Patterson Annexation a distance of 100.00 feet to the North right-of-way line of Highway 52;

Thence along the North right-of-way line of said Highway 52 the following Two (2) courses and distances:
THENCE North 89°19'51" East a distance of 237.67 feet;
THENCE North 89°29'28" East a distance of 2624.60 feet to the West line of the NE1/4 of said Section 2;
THENCE North 00°29'38" West along the West line of said NE1/4 a distance of 2503.04 feet to the North Quarter corner of said Section 2;
THENCE North 00°29'38" West along the Northerly prolongation of said West line a distance of 30.00 feet to the North right-of-way line of County Road 14;
THENCE North 89°03'33" East along the North right-of-way line of said County Road 14 a distance of 2643.85 feet to it's intersection with the Northerly prolongation of the East line of the NE1/4 of said Section 2;
THENCE South 00°28'49" East along said Northerly prolongation a distance of 30.00 feet to the **POINT OF BEGINNING**

Said parcel of land contains **166.96 Acres** or 7,272,560 sq. ft., more or less (+/-), and is subject to any rights-of-way or other easements of record as now existing on said described parcel of land.

TITLE COMMITMENT NOTE

This survey does not constitute a title search by Lat40, Inc. to determine ownership or easements of record. For all information regarding easements, rights-of-way and title of record, Lat40, Inc. relied upon ALTA Commitment Order Number J0025179943, having an effective date of **September 11, 2020 at 5:00 P.M.** as prepared by **Old Republic National Title Insurance Company** to delineate the aforesaid information.

SURVEYOR'S STATEMENT

I hereby state that this annexation map accurately represents the results of a survey made by me or under my direct supervision.

I further state that not less than one-sixth of the perimeter of the area proposed to be annexed is contiguous to the boundary line of the City of Fort Lupton, County of Weld, State of Colorado.

Sheet 1 of 2

Jason S. Allee—On behalf of Lat40°, Inc.
Colorado Licensed Professional
Land Surveyor No. 38479

BASIS OF BEARINGS AND LINEAL UNIT DEFINITION

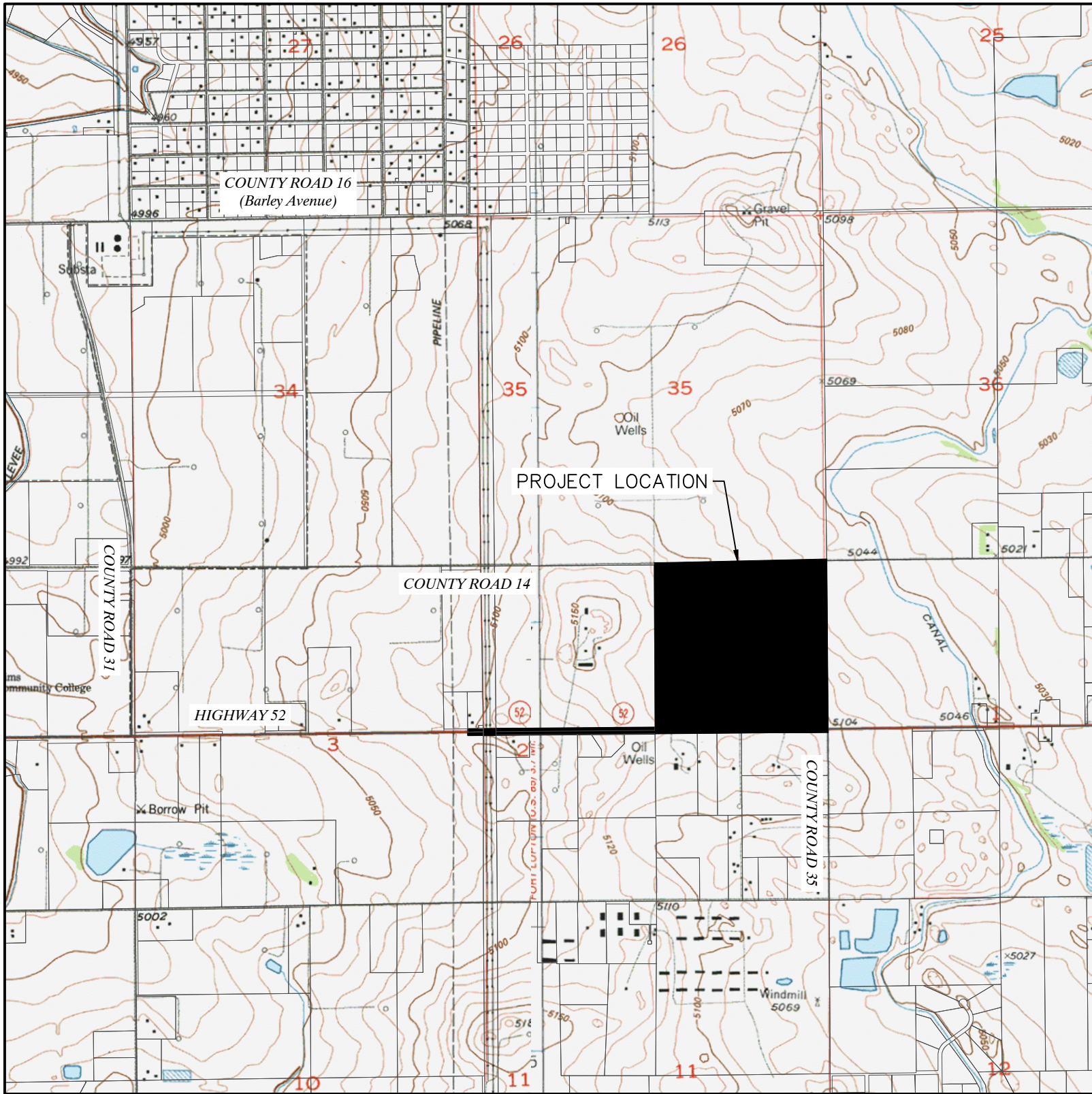
Assuming the North line of the Northeast Quarter of Section 2, T.1N., R.66W. monumented as shown hereon, as bearing North 89°03'33" East being a Grid Bearing of the Colorado State Plane Coordinate System, North Zone, North American Datum 1983, a distance of 2643.85 feet with all other bearings contained herein relative thereto.

The lineal dimensions as contained herein are based upon the "U.S. Survey Foot."

SURVEYOR'S NOTES

1. According to Colorado law, you must commence any legal action based upon any defect in this survey within three years after you discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years after the date of the certificate shown hereon. (13–80–105 C.R.S.)

2. Blanket type easements, leases, agreements and other recorded documentation may/do exist, affect the subject property and are not delineated hereon.



VICINITY MAP
SCALE - 1"=2000'

ANNEXATION TABLE	
CONTIGUOUS BOUNDARY (L.F.)	5047.87
TOTAL BOUNDARY PERIMETER (L.F.)	16296.47
1/6 OF PERIMETER (L.F.)	2716.08
ANNEXATION RATIO (1 to X)	3.228
TOTAL LAND AREA (Acres)	166.96

OWNER'S APPROVAL

Know all men by these presents, that I/we, The City of Fort Lupton, being the sole owner(s) of the land described herein, have caused said land to be annexed under the name of **FORT LUPTON EAST ANNEXATION**.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20____.

By: _____ As: _____

NOTARIAL CERTIFICATE

STATE OF _____
COUNTY OF _____ }SS

The foregoing instrument was acknowledged before me by _____
this _____ day of _____, 20____. Witness my hand and seal.

My commission expires _____ Notary Public

PLANNING COMMISSION RECOMMENDATION

This is to certify that the annexation map of the above described property was recommended to the Fort Lupton City Council by way of Resolution No. _____

Recommended this _____ day of _____, 20____.

Chairperson Fort Lupton
Planning Commission

MAYOR'S CERTIFICATE

This is to certify that a plat of the above described property was approved by Ordinance No. _____ of the City Council of Fort Lupton approved and adopted on the _____ day of _____, 20____ A.D..

and that the Mayor of the City of Fort Lupton, as authorized by said resolution on behalf of the City of Fort Lupton, hereby acknowledges and adopts the said plat upon which this certification is endorsed for all purposes indicated thereon.

Mayor Seal _____ Attest: _____



Lat40°, Inc.
Professional Land Surveyors
6250 W. 10th Street, Unit 2
Greeley, CO 80634
O: 970-515-5294

DATE: 4/22/2021	FILE NAME: 2020359ANX	DRAWN BY: JSA	CHECKED BY: JA	SCALE: AS NOTED	PROJECT #: 2020359
REVISIONS:	DATE:	FORT LUPTON EAST ANNEX FOR CITY OF FORT LUPTON 130 SOUTH MCKINLEY AVENUE FORT LUPTON, COLORADO 80621			1 SHEET 1 OF 2

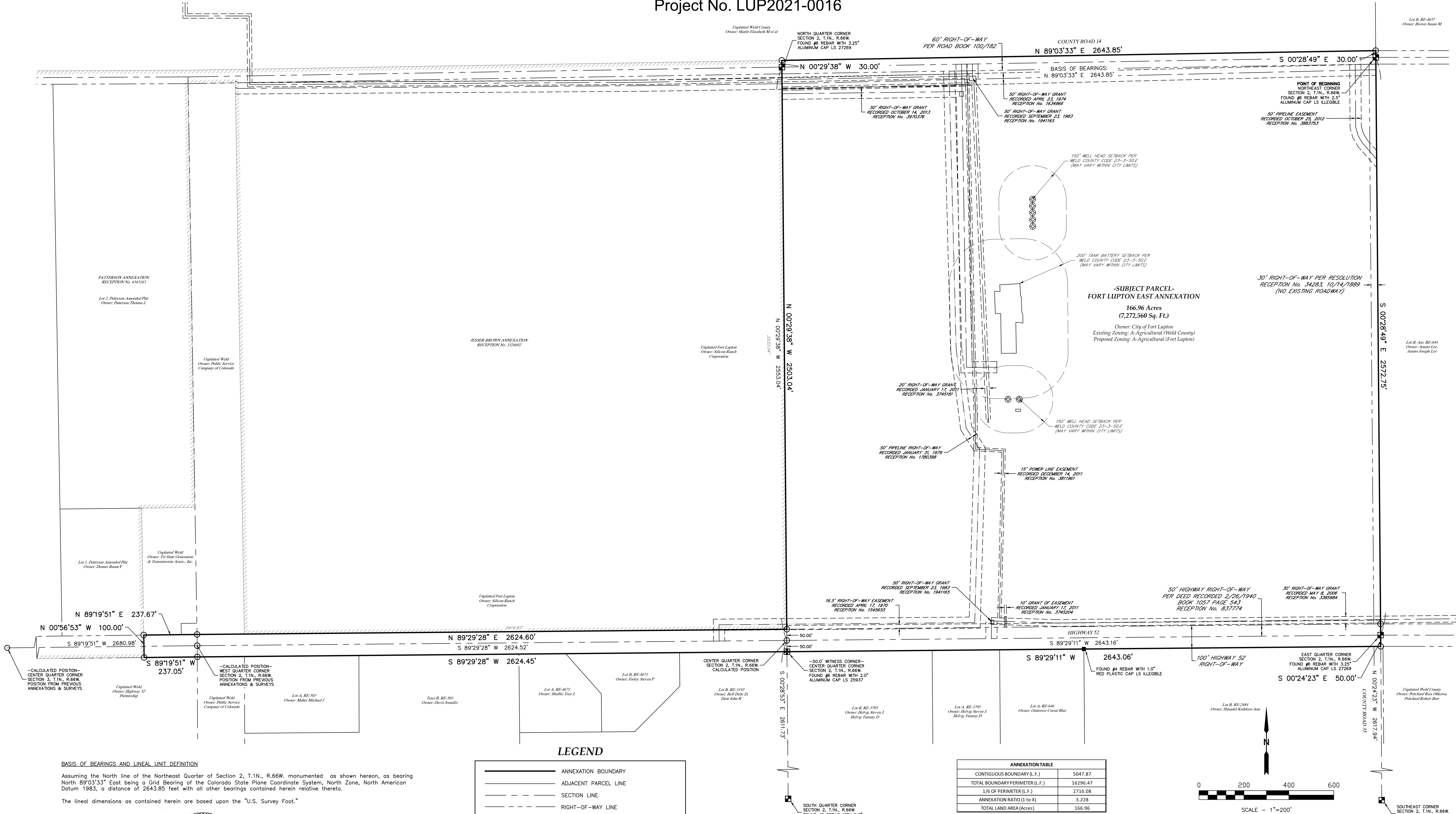
FORT LUPTON EAST ANNEXATION

-To the City of Fort Lupton-

Portions of Sections 2 & 3, Township 1 North, Range 66 West and a Portion of the Southeast Quarter of Section 35, Township 2 North, Range 66 West of the 6th P.M., County of Weld, State of Colorado

Plan No. ANX2021-002 & COZ2021-0003

Project No. LUP2021-0016

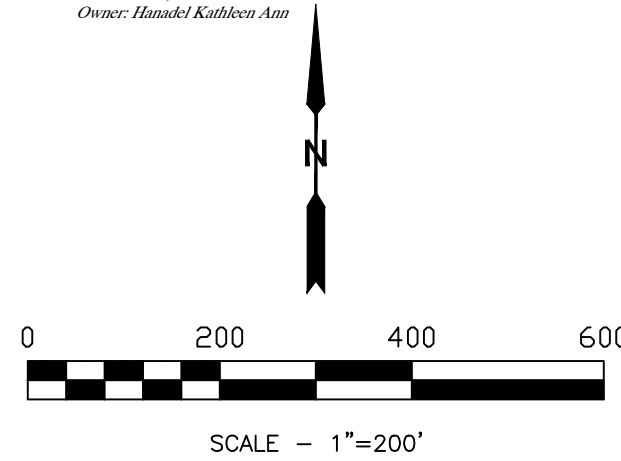


BASIS OF BEARINGS AND LINEAL UNIT DEFINITION
Assuming the North line of the Northeast Quarter of Section 2, T.1N., R.66W. monumented as shown hereon, as bearing North 89°03'33\"/>

The lineal dimensions as contained herein are based upon the \"U.S. Survey Foot.\"

LEGEND	
	ANNEXATION BOUNDARY
	ADJACENT PARCEL LINE
	SECTION LINE
	RIGHT-OF-WAY LINE
	EASEMENT LINE
	CENTER LINE
	EXISTING CITY LIMITS
	FOUND ALIQUOT CORNER AS DESCRIBED
	FOUND ALIQUOT WITNESS CORNER AS DESCRIBED
	FOUND MONUMENT AS DESCRIBED
	CALCULATED POSITION

ANNEXATION TABLE	
CONTIGUOUS BOUNDARY (L.F.)	5047.87
TOTAL BOUNDARY PERIMETER (L.F.)	16296.47
1/6 OF PERIMETER (L.F.)	2716.08
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TOTAL LAND AREA (Acres)	166.96



Sheet 2 of 2

Jason S. Allee—On behalf of Lat40°, Inc.
Colorado Licensed Professional
Land Surveyor No. 38479



Lat40°, Inc.
Professional Land Surveyors
6250 W. 10th Street, Unit 2
Greeley, CO 80634
O: 970-515-5294

DATE: 4/22/2021	FILE NAME: 2020359ANX	DRAWN BY: JSA	CHECKED BY: JA	SCALE: 1\"/>
REVISIONS:	DATE:	FORT LUPTON EAST ANNEX FOR CITY OF FORT LUPTON 130 SOUTH MCKINLEY AVENUE FORT LUPTON, COLORADO 80621		
		2		
PROJECT #: 2020359				SHEET 2 OF 2

**CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING**

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a change of zone referred to as the Fort Lupton East Change of Zone, located at the northwest corner of the intersection of Highway 52 and County Road 35 in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on June 24, 2021, at 6:00 P.M., and before the City Council on July 6 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that the City Hall remains closed at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

A PARCEL OF LAND BEING PORTIONS OF SECTION TWO (2) AND SECTION THREE (3) OF TOWNSHIP ONE NORTH (T.1N.), RANGE SIXTY-SIX WEST (R.66W.) AND A PORTION OF THE SOUTHEAST QUARTER OF SE1/4) OF SECTION THIRTY-FIVE (35) OF TOWNSHIP TWO NORTH (T.2N.), RANGE SIXTY-SIX WEST (R.66W.) OF THE SIXTH PRINCIPAL MERIDIAN (6TH P.M.), COUNTY OF WELD, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 2 AND ASSUMING THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 2, MONUMENTED ON THE WEST END BY A #6 REBAR WITH A 3.25 ALUMINUM CAP L.S. 27269 AND ON THE EAST END BY A #6 REBAR WITH A 2.5" ILLEGIBLE ALUMINUM CAP, AS BEARING NORTH 89°03'33" EAST BEING A GRID BEARING OF THE COLORADO STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM 1983, A DISTANCE OF 2643.85 FEET WITH ALL OTHER BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;

THE LINEAL DIMENSIONS AS CONTAINED HEREIN ARE BASED UPON THE U.S. SURVEY FOOT.

THENCE SOUTH 00°28'49" EAST ALONG THE EAST LINE OF THE NE1/4 OF SAID SECTION 2 A DISTANCE OF 2572.75 FEET TO THE EAST QUARTER CORNER OF SAID SECTION 2;

THENCE SOUTH 00°24'23" EAST ALONG THE EAST LINE OF THE SE1/4 OF SAID SECTION 2 A DISTANCE OF 50.00 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF HIGHWAY 52;

THENCE ALONG THE SOUTH-RIGHT-OF-WAY LINE OF SAID HIGHWAY 52 THE FOLLOWING THREE (3) COURSES AND DISTANCES:

THENCE SOUTH 89°29'11" WEST A DISTANCE OF 2643.06 FEET;

THENCE SOUTH 89°29'28" WEST A DISTANCE OF 2624.45 FEET;

THENCE SOUTH 89°19'51" WEST A DISTANCE OF 237.05 FEET TO THE EAST LINE OF PATTERSON ANNEXATION TO THE CITY OF FORT LUPTON RECORDED ON OCTOBER 10, 2017 AT RECEPTION NUMBER 4343163 WITHIN THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER;

THENCE NORTH 00°56'53" WEST ALONG THE EAST LINE OF SAID PATTERSON ANNEXATION A DISTANCE OF 100.00 FEET

TO THE NORTH RIGHT-OF-WAY OF
HIGHWAY 52;

THENCE ALONG THE NORTH
RIGHT-OF-WAY LINE OF SAID HIGHWAY 52
THE FOLLOWING TWO (2) COURSES AND
DISTANCES;

THENCE NORTH 89°19'51" EAST A
DISTANCE OF 237.67 FEET;

THENCE NORTH 89°29'28" EAST A
DISTANCE OF 2624.60 FEET TO THE WEST
LINE OF THE NE1/4 A DISTANCE OF 2503.04
FEET TO THE NORTH QUARTER CORNER
OF SAID SECTION 2;

THENCE NORTH 00°29'38" WEST ALONG
THE NORTHERLY PROLONGATION OF SAID
WEST LINE A DISTANCE OF 30.00 FEET TO
THE NORTH RIGHT-OF-WAY LINE OF
COUNTY ROAD 14;

THENCE NORTH 89°03'33" EAST ALONG THE
NORTH RIGHT-OF-WAY LINE OF SAID
COUNTY ROAD 14 A DISTANCE OF 2643.85
FEET TO ITS INTERSECTION WITH THE
NORTHERLY PROLONGATION OF THE EAST
LINE OF THE NE1/4 OF SAID SECTION 2;

THENCE SOUTH 00°28'49" EAST ALONG
SAID NORTHERLY PROLONGATION A
DISTANCE OF 30.00 FEET TO THE POINT OF
BEGINNING

SAID PARCEL OF LAND CONTAINS 166.96
ACRES OR 7,272,560 SQ. FT., MORE OR
LESS (+/-), AND IS SUBJECT TO ANY
RIGHTS-OF-WAY OR OTHER EASEMENTS
OF RECORD AS NOW EXISTING ON SAID
DESCRIBED PARCEL OF LAND.

Legal Ad No.: FLP222320

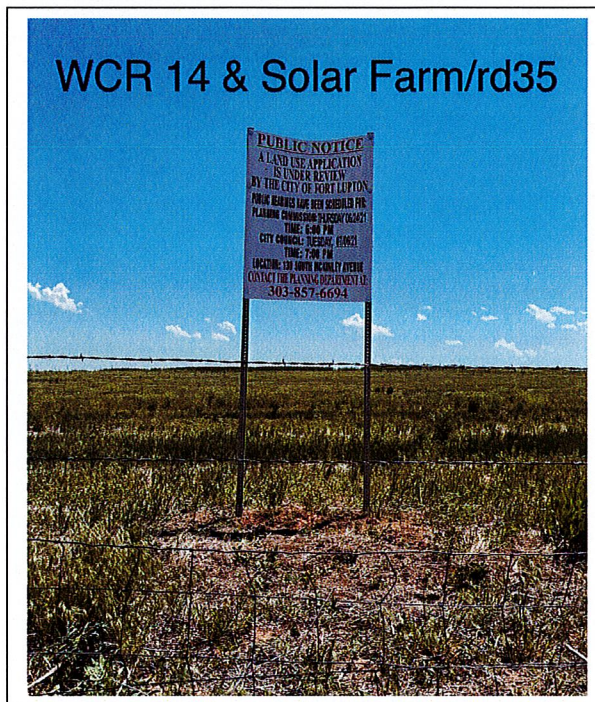
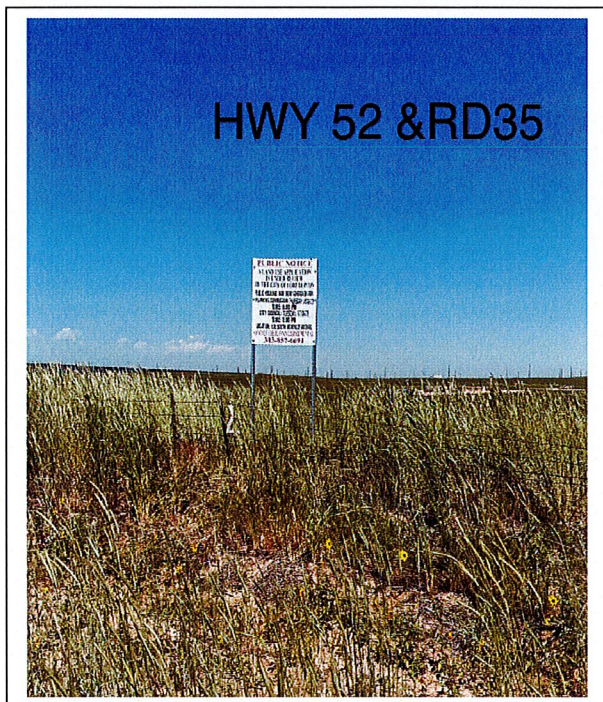
First Publication: June 9, 2021

Last Publication: June 9, 2021

Published In: Fort Lupton Press

Sign Posting Affidavit

Fort Lupton East Annexation and Change of Zone
Project No. LUP2021-0016 / Plan No. ANX2021-0002 & COZ2021-0003



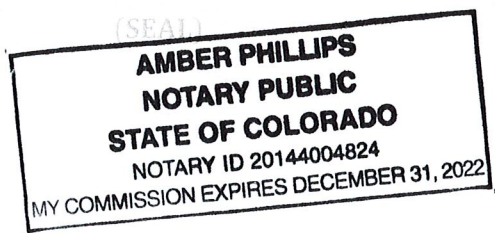
I, Roy Vestal hereby acknowledge that the aforementioned property was posted in accordance with City Codes. Said public hearing notice was posted on this 8th day of JUNE, 2021.

Roy Vestal, PW D-15
Signature of Owner or Owner's Representative

The foregoing instrument was acknowledged before me by Roy Vestal, this 8 day of June, 2021. Witness my hand and seal.

My commission expires 12-31-2022.

Amber Phillips
Notary Public



CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 9th day of June, 2021, a true and correct copy of the foregoing Notice of Public Hearings for the Fort Lupton East Annexation and Change of Zone was sent via United States Mail, postage pre-paid, to the following addresses:

ELIZABETH METAL SHAFER
7450 COUNTY ROAD 35
FORT LUPTON, CO 80621

SUSAN M BROWN
3307 68TH AVE
GREELEY, CO 80634

ROBERT BARR PRITCHARD
RISA OHKAWA PRITCHARD
5276 COUNTY ROAD 35
FORT LUPTON, CO 80621

SILICON RANCH CORPORATION
222 S. 2ND AVE
STE 1900
NASHVILLE, TN 37201

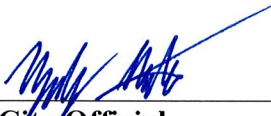
BLAZ GUTIERREZ-CORRAL
16734 HWY 52
FORT LUPTON, CO 80621

KATHLEEN ANN HANADEL
5119 COUNTY ROAD 35
FORT LUPTON, CO 80621

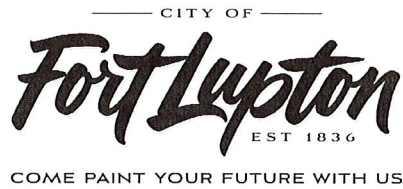
TOMMY D HELVIG
STEVEN J HELVIG
16590 HWY 52
FORT LUPTON, CO 80621

DEBE D BELL
JOHN R DENT
16230 HWY 52
FORT LUPTON, CO 80621

JOSEPH LEE AMATO
17447 HWY 52
FORT LUPTON, CO 80621



City Official



CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 10th day of June, 2021, a true and correct copy of the foregoing Notice of Public Hearings for the Fort Lupton East Annexation and Change of Zone was sent via United States Mail, postage pre-paid, to the following addresses:

OCCIDENTAL PETROLEUM CORP.
1099 18TH ST.
STE 1800
DENVER, CO 80202



City Official

**CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING**

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a change of zone referred to as the Fort Lupton East Change of Zone, located at the northwest corner of the intersection of Highway 52 and County Road 35 in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

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Further information is available through the City Planning and Building Department at (303) 857-6694.

**ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT
BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: FORT LUPTON
EAST CHANGE OF ZONE**

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

A PARCEL OF LAND BEING PORTIONS OF SECTION TWO (2) AND SECTION THREE (3) OF TOWNSHIP ONE NORTH (T.1N.), RANGE SIXTY-SIX WEST (R.66W.) AND A PORTION OF THE SOUTHEAST QUARTER OF SE1/4) OF SECTION THIRTY-FIVE (35) OF TOWNSHIP TWO NORTH (T.2N.), RANGE SIXTY-SIX WEST (R.66W.) OF THE SIXTH PRINCIPAL MERIDIAN (6TH P.M.), COUNTY OF WELD, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM 1983, A DISTANCE OF 2643.85 FEET WITH ALL OTHER BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;

THE LINEAL DIMENSIONS AS CONTAINED HEREIN ARE BASED UPON THE U.S. SURVEY FOOT.

THENCE SOUTH 00°28'49" EAST ALONG THE EAST LINE OF THE NE1/4 OF SAID SECTION 2 A DISTANCE OF 2572.75 FEET TO THE EAST QUARTER CORNER OF SAID SECTION 2; THENCE SOUTH 00°24'23" EAST ALONG THE EAST LINE OF THE SE1/4 OF SAID SECTION 2 A DISTANCE OF 50.00 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF HIGHWAY 52;

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THENCE SOUTH 89°19'51" WEST A DISTANCE OF 237.05 FEET TO THE EAST LINE OF PATTERSON ANNEXATION TO THE CITY OF FORT LUPTON RECORDED ON OCTOBER 10, 2017 AT RECEPTION NUMBER 4343163 WITHIN THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER;

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THENCE NORTH 00°29'38" WEST ALONG THE NORTHERLY PROLONGATION OF SAID WEST LINE A DISTANCE OF 30.00 FEET TO THE NORTH RIGHT-OF-WAY LINE OF COUNTY ROAD 14;

THENCE NORTH 89°03'33" EAST ALONG THE NORTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 14 A DISTANCE OF 2643.85 FEET TO IT'S INTERSECTION WITH THE NORTHERLY PROLONGATION OF THE EAST LINE OF THE NE1/4 OF SAID SECTION 2; THENCE SOUTH 00°28'49" EAST ALONG SAID NORTHERLY PROLONGATION A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING

SAID PARCEL OF LAND CONTAINS 166.96 ACRES OR 7,272,560 SQ. FT., MORE OR LESS (+/-), AND IS SUBJECT TO ANY RIGHTS-OF-WAY OR OTHER EASEMENTS OF RECORD AS NOW EXISTING ON SAID DESCRIBED PARCEL OF LAND.

-To the City of Fort Lupton-

Portions of Sections 2 & 3, Township 1 North, Range 66 West and a Portion of the Southeast Quarter of Section 35, Township 2 North, Range 66 West of the 6th P.M., County of Weld, State of Colorado
Plan No. ANX2021-002 & COZ2021-0003
Project No. LUP2021-0016



BASES OF BEARINGS AND LINEAL UNIT DEFINITION

Assuming the North line of the Northeast Quarter of Section 2, T.1N., R.66W., monumented as shown herein, on bearing North $89^{\circ}03'33''$ East being a Grid (bearing of the Colorado State Plane Coordinate System, North Zone, North American Datum 1983), a distance of 2643.05 feet with all other bearings contained herein relative thereto.

The lineal dimensions on consistent herein are based upon the "U.S. Survey Foot".*

ANNEALING TABLE	
CONTIGUOUS BOUNDARY (L)	5047.87
TOTAL BOUNDARY PERIMETER (L)	16796.47
1% OF PERIMETER (L)	2715.08
ANNEALING RATIO (1/99.3)	3.278

LEGEND

- _____ ANTIQUATION BOUNDARY
 _____ ADJACENT PARCEL LINE
 _____ SECTION LINE
 _____ RIGHT-OF-WAY LINE
 _____ EXISTENCE LINE
 _____ CENTER LINE
 ~~~~~ EXISTING CITY LIMITS  
 [X] [X] FOUND ADJUTANT CORNER AS DESCRIBED  
 [X] [X] FOUND ADJUTANT WITNESS CORNER AS DESCRIBED  
 [X] FOUND MONUMENT AS DESCRIBED



Lat40<sup>+</sup>, Inc.  
Professional Land Surveyors  
6250 W. 10th Street, Unit 2  
Greeley, CO 80634  
O: 970-515-5294

|            |           |            |            |
|------------|-----------|------------|------------|
| DATE:      | 4/22/2021 | FILE NAME: | 2020359ANX |
| REVISIONS: |           | DATE:      |            |
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|            |                   |                   |
|------------|-------------------|-------------------|
| BY:<br>JSA | CHECKED BY:<br>JA | SCALE:<br>1"=200' |
|------------|-------------------|-------------------|

**FORT LUPTON EAST ANNE**  
FOR  
CITY OF FORT LUPTON  
130 SOUTH MCKINLEY AVENUE  
FORT LUPTON, COLORADO 80621

359

2

SHEET 2 OF 2

## Magaly Morales-Tejada

---

**From:** John Fryar  
**Sent:** Friday, May 28, 2021 12:07 PM  
**To:** Magaly Morales-Tejada  
**Subject:** RE: Referral Response Request: Fort Lupton East Annexation and Change of Zone (LUP2021-0016)

No LE concerns.



Chief John Fryar

---

**From:** Magaly Morales-Tejada  
**Sent:** Thursday, May 27, 2021 4:27 PM  
**Cc:** Maria Lancto; Todd Hodges; Alyssa Knutson  
**Subject:** Referral Response Request: Fort Lupton East Annexation and Change of Zone (LUP2021-0016)

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for an annexation and initial zoning being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: <https://www.fortlupton.org/DocumentCenter/Index/603>.

Any comments you consider relevant to this request would be appreciated. Please reply by **June 17, 2021**, so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, June 24, 2021 at 6:00 PM; and
- City Council: Tuesday, July 6, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

**Magaly Morales-Tejada**

**Planning assistant**

130 S. McKinley Ave.  
Fort Lupton, CO 80621  
Direct: 720-466-6111





## Magaly Morales-Tejada

---

**From:** Jake Freier  
**Sent:** Thursday, June 3, 2021 8:22 AM  
**To:** Magaly Morales-Tejada  
**Subject:** RE: Referral Response Request: Fort Lupton East Annexation and Change of Zone (LUP2021-0016)

I've been working with the surveyors on this one and everything from a drawing and legal description standpoint look good. We'll just need to make sure the signature blocks are correct and then it should be good to go.

Cheers,  
Jake



---

**From:** Magaly Morales-Tejada  
**Sent:** Thursday, May 27, 2021 4:27 PM  
**Cc:** Maria Lanctoo; Todd Hodges; Alyssa Knutson  
**Subject:** Referral Response Request: Fort Lupton East Annexation and Change of Zone (LUP2021-0016)

Good Afternoon,

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Your time in this matter is greatly appreciated!

**Magaly Morales-Tejada**  
Planning assistant  
130 S. McKinley Ave.  
Fort Lupton, CO 80621  
Direct: 720-466-6111



## Magaly Morales-Tejada

---

**From:** Mettenbrink - DNR, Chris  
**Sent:** Saturday, June 12, 2021 4:19 PM  
**To:** Magaly Morales-Tejada  
**Subject:** Re: Referral Response Request: Fort Lupton East Annexation and Change of Zone (LUP2021-0016)

Magaly,

Colorado Parks and Wildlife has no issues with this annexation.

Thank you.

Chris

On Thu, May 27, 2021 at 4:26 PM Magaly Morales-Tejada wrote:

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for an annexation and initial zoning being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: <https://www.fortlupton.org/DocumentCenter/Index/603>.

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Your time in this matter is greatly appreciated!

## Magaly Morales-Tejada

### Planning assistant

130 S. McKinley Ave.

Fort Lupton, CO 80621

Direct: 720-466-6111



*The information transmitted is intended only for the person or entity to which it is addressed and may contain CONFIDENTIAL material. If you receive this information in error, please delete or destroy the information.*

--

**Chris Mettenbrink**

**District Wildlife Manager- Wildlife Officer**

Area 2- Fort Lupton



**LIVE LIFE  
OUTSIDE**

P 970.472.4405 | C 303.906.1979

4207 W. CR 16E, Loveland, CO 80537

[Chris.Mettenbrink@state.co.us](mailto:Chris.Mettenbrink@state.co.us) | [www.cpw.state.co.us](http://www.cpw.state.co.us)

