Onsite Wastewater Treatment System

Installation Permit

Inspection Request Line: (719) 575-8699

Inspection requests must be received prior to 3:00p.m. on standard business days and 1:00p.m. the business day prior to a holiday. Construction installation requests are only accepted when made by the licensed installer or a homeowner having declared intent and been approved to install their own conventional system.

Permit Information			
Permit #: 139395	**Record Id:** ON0052303	**Issued:** June 4, 2026	**Expires:** June 4, 2027

System Information		
OWTS Location: 13635 Murphy Rd Elbert, CO 80106		
Owner: Paul and Lynn Carney	**Schedule:** 4205003008	**Permit Type:** New
Use: Residential	**No. Bedrooms:** 2	**Design Flow:** 300
Distribution: Pressure Distribution	**Treatment Level:** TL1PD	**Water Source:** Well

Permit Requirements		
Designer: ALL SERVICE Septic	**Document Id:** 26-021	**Document Date:** 04.05.2026
Profile Pit: 39 2'22"N, 104 34'42"W	**Profile Pit:** 39 2'22"N, 104 34'42"W	
Tank: 1000	**Add. Tank:** NA	**Pump Tank:** 500
STA: 375 (31 Q4/ 25 Arc 36)	**Media:** Chamber/Bed	**STA Depth:** Maximum 48”
Sand Filter: Yes	**Sand Depth:** 36”	**O&M Required:** Yes

Permit Comments

- An Engineered OWTS system to be installed on site due to high rock content soil, requiring a Tier II licensed installer.
- TIER II LICENSED INSTALLER MUST BE NAMED AND VERIFIED PRIOR TO FINAL APPROVAL OF SYSTEM.
- SAND GRADATION MUST BE WITHIN 30 DAYS OF SAND PLACEMENT AND VERIFIED BY ENGINEER AS PART OF FINAL CERTIFICATION OF SYSTEM. Imported media must comply with all applicable regulations including rock content.
- REQUIRED: Subsurface imported media placement will require an open excavation inspection conducted by EPCPH prior to sand placement.
- Changes to approved design document must be submitted to EPCPH and design engineer prior to installation of changes
- All horizontal setbacks must be maintained through system installation. In addition, system must remain completely uncovered, including the tank size, for final inspection.
- The well must be installed at time of final inspection, or final approval will not be given until well installation is verified. Must maintain 100' set back to all wells on property or neighboring property.
- Engineered systems require the as built drawing and certification letter from the engineer be submitted to Public Health prior to final approval and Regional Building sign off
- Ensure that all work is completed prior to contacting and requesting final line for inspection, otherwise additional fees may be incurred.
- Installation of an OWTS system utilizing pressure distribution or higher level treatment is subject to the requirements of Operation and Maintenance. This requires the submission of an O&M maintenance contract prior to final approval.
- REQUIRED: A residual head (squirt height) test is required prior to final approval. A full OWTS startup inspection must be completed within 60 days of installation approval. See EPCPH OWTS regulations section 8.14 for more details.
- REQUIRED: Control panel must be installed a minimum of 36” above grade as measured from grade to top of the panel.

- During excavation, if bedrock, groundwater, changes in soil type from that previously identified, or other notable soil changes are encountered, all excavation must cease and EPCPH is to be contacted for an evaluation to determine if additional tests are required
- Issuance of this permit allows construction of the system as proposed. It does not imply or guarantee final system installation approval. System design or construction changes may be required based upon changed or newly discovered site conditions.

Review Specialist: Joel D'Cristina **Contact:** joeld'cristina@elpasoco.com

This permit is issued in accordance with 25-10-106 Colorado Revised Statutes. Permit for construction EXPIRES upon completion/installation of the onsite wastewater treatment system (OWTS), or at the end of twelve (12) months from the date of issuance, whichever occurs first. This permit is revokable if all stated requirements are not met. The OWTS must be installed by an El Paso County licensed system contractor, or property owner.

The health officer shall assume no responsibility in case of failure or inadequacy of an OWTS, beyond consulting in good faith with the property owner or representative. Access to the property shall be authorized at a reasonable time for the purpose of making such inspections as are necessary to determine compliance with the requirements of this law (permit).

Onsite Wastewater Treatment System

Application Review: Engineered

Record ID: ON0052303	**Permit:** New	**Approval Date:** 05.12.2026	**Specialist:** Joel D'Cristina
System Permit Information			
OWTS Address: 13635 Murphy Rd Elbert, CO 80106			
Site Evaluation: 05.12.2026	**Use:** Residential		**Treatment Level:** TL1PD
DSD: 05.01.2026	**Floodplain:** No		**Outside of FP:** NA
Approved Permitted Design Document			
Soil Report			
Engineer: ALL SERVICE Septic	**Report Date:** 04.05.2026		**Report #:** 26-021
High Rock Content: R-0	**Type:** 2	**LTAR:** 0.8(TL3)	**Groundwater:** 87”	**Bedrock:** None
Design Document			
Engineer: ALL SERVICE Septic	**Report Date:** 04.05.2026	**Report #:** 26-021	**Design Flow:** 300
Multifamily: No	**Total No. Bedroom:** 2	**Structure 1 Bedroom:** 2	**Structure 2 Bedroom:** NA
Minimum bedroom design for new construction is 300gpd.			
Minimum OWTS Requirements			
Tank			
Main Tank (gal)**:** 1000	**Secondary Tank** (gal)**:** NA	**Other Type:** NA	**Other capacity:** NA
Advanced Treatment: NA		**Recirculation:** NA	
Pump Specifications			
Pump Tank (gal)**:** 500	**Pump Model:** Orenco PF3005		**Dose Type**: ☒ Demand ☐ Timed
Gal/Dose: 135	**Flow**(gpm)**:** 35.1		**TDH:** 13.9’
Run Time(min)**:** NA	**Off Time**(min)**:** NA		**Override**(min)**:** NA
Soil Treatment Area			
Distribution: Pressure Distribution			
Add. Component(s)	☐ **Distribution box** ☐ **Diverter Valve** ☐ **Other:** NA		
☒ **Standard**	**Sq Ft** (10-1): 375	**Sq Ft** (10-2): 375	**Sq Ft** (10-3): 375	**Sq Ft** (DV): NA
☐ **Mound**	**Imported LTAR:** NA	**Chamber Adj.:** NA	**Dist. Area:** NA	**Basal Area:** NA
	End Slope: NA	**Down Slope:** NA	**Up slope:** NA	**Greenbelt:** NA
☐ **NDDS**	**Sq Ft** (10-1): NA	**NDDS Factor:** NA	**Sq Ft** (NDDS Adj): NA
Media	**Type:** Chambers	**Configuration:** Bed	**Installation Depth:** MAX 48”
	Q4/Pro36 Cham.: 31	**Arc 36 Cham.:** 25	**Laterals:** NA	**Rings:** NA
Laterals	**Pipe Diameter:** 1.5” SCH40	**Orifice Size:** 3/16”	**Orifice Spacing:** 48” OC
Review Notes			
Maximum installation depth 48”. Groundwater encountered at 87”. Minimum 36” sand filter required due to R-0 soil			

ONSITE WASTEWATER TREATMENT SYSTEM
PERMIT APPLICATION

Property Information				
Applicant name	Zachary Skelton			
Property address	13635 Murphy Rd		City, State, Zip	Elbert, CO, 80106
Phone	(303) 547-0114	Email	hs.excavation25@gmail.com	
Legal description				
Tax schedule #	4205003008	Lot size		
Is the property gated?	■ Yes ☐ No Code:		Water supply	■ Well ☐ Cistern ☐ Municipal
Proposed use:	■ Residential ☐ Multifamily ☐ Commercial			
No. of potential bedrooms: 2		Commercial wastewater flow:		
Is there unfinished space?	☐ Yes ■ No Unfinished (sq ft):		Who will install the system? ☐ Homeowner ■ Licensed Installer	

Homeowners requesting to install their own system must complete and submit the Homeowner Installation Affidavit.
All engineered-design systems must be installed by a Tier II licensed installer

Owner Information			
Owner name	Paul and Lynn Carney	Phone	
Mailing address		City, State, Zip	
Owner email	paul.cairney@att.net		
General contractor	Gary Patterson	Phone/Email	7193211248 garyp1965@icloud.com
System installer	Zachary Skelton/HS Excavation	Phone/Email	3035470114 hs.excavation25@gmail.com

Permit Fees as Established by the El Paso County Board of Health
Permits expire one year from the date of issuance, unless otherwise noted.

Invoice, along with payment instructions, will be generated at time of application submission review. Payment is required prior to being assigned for review. Review time applicable after payment is verified.

■ New Permit	**$1131.00** includes $961.00 (EPCPH Charge) + $147.00 (EPC Planning Dept. Surcharge) + $23.00 (CDPHE Surcharge)
Permit fee includes: 1: Application design review, 1: design revision request, 1: site evaluation, 1: inspection and 1: re-inspection. Additional design revisions, site evaluations, or inspections incur additional fees.	
☐ Modification Permit	**$914.00** includes $891.00 (EPCPH Charge) + $23.00 (CDPHE Surcharge)
Permit fee includes: 1: Application design review, 1: design revision request, 1: site evaluation, and 1: inspection. Additional design revisions, site evaluations, or inspections incur additional fees.	
☐ Major Repair Permit	**$914.00** includes $891.00 (EPCPH Charge) + $23.00 (CDPHE Surcharge)
Permit fee includes: 1: Application design review, 1: design revision request, 1: site evaluation, and 1: inspection. Additional design revisions, site evaluations, or inspections incur additional fees.	
☐ Minor Repair Permit	**$577.00** includes $554.00 (EPCPH Charge) + $23.00 (CDPHE Surcharge)
Permit fee includes: 1: Application design review, 1: design revision request, and 1: inspection. Additional design revisions, site evaluations, or inspections incur additional fees.	

Required Additional Property Information	
System type (conventional/engineered)	Engineered - Pressure Distribution
Number of structure(s) to be connected	1

Written scope of work

Excavate from the ADU and install a 1,000-gallon, two-compartment septic tank along with a 500-gallon pump tank. From the pump tank, excavate and install a 2-inch Schedule 40 pressure line, sleeved beneath the driveway for protection, extending to a 34.5-foot by 12-foot Soil Treatment Area (STA).
Over-excavate the STA by 3 feet to allow for the installation of secondary sand. Install chamber units equipped with 1.5-inch suspended laterals, drilled with 3/16-inch orifices oriented upward, spaced on 4-foot centers. Place orifice shields over the two downward-facing holes to prevent scouring within the STA.

Please provide directions to the property from a main highway

1675 Garden of the Gods
Colorado Springs, CO 80907
Drive along Garden of the Gods Rd, I-25 N, Briargate Pkwy, N Union Blvd, ... and Murphy Rd

- **Property address or lot number must be clearly marked and visible from the road.**
- **Profile excavation test pit and/or soil profile holes must be clearly marked.**
- **Proposed and alternate soil treatment areas must be protected from compaction and disturbance.**
- **Locked gates require the gate code or lock combination be provided on front of application.**
- ***Failure to comply with the above information may result in an additional charge for a return trip.***

Required Application Documents
EPCPH will only accept submissions when all required components are included in submission.
Colorado Professional Engineer (P.E.) stamped soils report
Soils report: including at least 2 soil profile excavation pits, in accordance with section 8.5 A-F of OWTS regulations
Calculation/Design worksheet.
New permit applications require submission of the structure floor plan.
Minor repair applications require a clear site plan including proposed connections/components.
Clear legible 8.5'x11' design document
Design document must include, property lines, proposed and alternate locations, profile pit locations with respect to system layout, all setbacks to pertinent structures and features in table 7-1.

Submission of this application certifies that the information provided on this application is in compliance with the El Paso County Board of Health Chapter 8 Onsite Wastewater System (OWTS) Regulations. I also authorize the assigned representative of El Paso County Public Health to enter onto this property in order to obtain information necessary for the issuance of a permit.

allserviceseptic.com

April 5, 2026 Project No. 26-021

H&S Excavation
Attn: Zach Skelton
HS.Excavation25@gmail.com
303.547.0114

Onsite Wastewater Treatment System Soils and Engineering Design
Carney ADU
13635 Murphy Road
Elbert, El Paso County Colorado

Mr. Skelton,

ALL SERVICE septic, LLC performed a soils investigation and completed an onsite wastewater treatment system (OWTS) design for the subject residence. The property is located near Elbert in El Paso County, Colorado in an area where OWTSs are necessary. The property is served by an onsite water well located north of the planned ADU.

SITE CONDITIONS

A 3-bedroom residence with an OWTS exists on the property and will remain in use. A 1-bedroom ADU is planned to be constructed to the east of the residence in the location of an existing barn and will be connected to a separate OWTS. The vegetation in the area of the proposed STA consists of grasses. The slope at the proposed STA is 2% to the southeast.

LAND USE – No land use changes will affect the performance of the OWTS. This includes drainages, vegetation, and proximity to current wells. The proposed current land use for the STA is a native area with no landscaping. There is no planned construction on the STA after installation.

SUBSURFACE

The subsurface was investigated on April 3, 2026 by digging two soil profile test pit excavations (Test Pits). A visual and tactile analysis of the soils were performed at approximately 3 to 4 feet below grade.

The materials encountered in the Test Pit #1 consisted of 3 inches of dark brown, sandy, organic-rich topsoil/rootzone overlying brown, strong, granular, sandy loam (<10% >2mm) to a depth of 2 feet. Underlying the sandy loam, reddish-yellow, structureless, gravelly sand with approximately 40% >2mm to a depth of 7.5 feet. Underlying the sand, gray, moderate, granular sandy clay loam was encountered to the maximum depth explored of 8 feet. Evidence of redox was observed at 7.5 feet. No bedrock was observed.

The materials encountered in the Test Pit #2 consisted of 3 inches of dark brown, sandy, organic-rich topsoil/rootzone overlying brown, strong, granular, sandy loam (<10% >2mm) to a depth of 2 feet. Underlying the sandy loam, reddish-yellow, structureless, gravelly sand with approximately 40% >2mm to a depth of 7.25 feet. Underlying the sand, gray, moderate, granular sandy clay loam was encountered to the maximum depth explored of 8 feet. Evidence of redox was observed at 7.25 feet. No bedrock was observed.

A long term acceptance rate (LTAR) of 0.8 gallons per square foot, will be used to design the OWTS, in accordance with Soil Type R-0 outlined in El Paso County On-Site Wastewater Treatment System Regulations.

DESIGN SPECIFICATIONS

The ADU is planned to have a single bedroom but the OWTS design is based on the minimum 2-bedroom sizing and 300 gallons per day proposed.

Design Calculations
300 gallons/day

300 / LTAR 0.8 = 375 SF (TL1 treatment)
Pressurized Bed w/ Chambers = 375 SF

Type R-0 Soils
12 SF per Chamber = **32 chambers = 384 SF**

Proposed 32 chambers in a single bed consisting of 4 rows with 8 gravelless Infiltrator Quick-4 chambers per row in each bed at a maximum chamber depth of 3 feet below grade. Chambers must be placed on 3.0 feet (minimum) of secondary or preferred sand following the excavation and removal of the upper approximate 5 feet of native material. Native soil may be used to cover the chambers. A level manifold constructed of 2-inch diameter Schedule 40 PVC will serve the four laterals of the gravelless chamber bed.

A 1,000-gallon (minimum), 2-compartment, poly, septic tank with an effluent filter installed in the second compartment, followed by a 500-gallon, poly pump tank with an Orenco pump (PF3005) package with a 12" diameter filter cartridge. All tanks must be CDPHE-approved tanks with risers and lids to grade. The tanks must be approximately 1 foot below grade with a maximum of 3 feet. Pump must serve 35.1 GPM and 13.9 TDH. The tank and the STA should not be constructed in the driveway.

Float Settings:
On / Off Floats must have 12" separation. The high-water level alarm float should be 3" above top 'on' float. This setting will deliver a dose of approximately 135 gallons.

Pump calculations are attached. Effluent will be dosed to the STA through SCH-40 PVC piping that includes a 2" discharge pipe, to drain after each dose, and serve 1.5" diameter suspended laterals within the chambers. The laterals must have 3/16" holes on 4.0-foot centers facing up, with two holes down for drainage and equipped with orifice shields to prevent scour of the sand. Each lateral must end in a 90-degree elbow facing up with a ball valve for flushing in a valve box, accessible from grade. An observation port is required at each corner of the bed.

An S1 Orenco Control Panel with audible and visual alarm, elapsed time meter, and dose counter must accompany the specified P Series Orenco pump.

The component manufacturers are typical of applications used by contractors and engineers in this area. Alternatives may be considered or recommended by contacting our office. Construction must be to County Land Use Regulations, and On-Site Wastewater Treatment System Regulations, the OWTS Permit provided by the County, and this design.

REVEGETATION REQUIREMENTS

An adequate layer of good quality topsoil capable of supporting revegetation shall be placed over the entire disturbed area of the OWTS installation. A mixture of native grass seed that has good soil stabilizing characteristics (but without taproots), provides a maximum transpiration rate, and competes well with successional species. No trees or shrubs, or any vegetation requiring regular irrigation shall be placed over

the STA. Until vegetation is reestablished, erosion and sediment control measures shall be implemented and maintained on site. The owner of the OWTS shall be responsible for maintaining proper vegetation cover.

OPERATION INFORMATION AND MAINTENANCE

The property owner shall be responsible for the operation and maintenance of each OWTS servicing the property. The property owner is responsible for maintaining service contracts for manufactured units, alternating STAs, and any other components needing maintenance.

Geo-fabrics or plastics should not be used over the absorption area. No heavy equipment, machinery, or materials should be placed on backfilled STAs. Livestock should not graze on the STA. Plumbing fixtures should be checked to ensure that no additional water is being discharged to OWTS. For example, a running toilet or leaky faucet can discharge hundreds of gallons of water a day and harm a STA.

The homeowner should pump the septic tank every two years, or as needed gauged by measurement of solids in the tank. Garbage disposal use should be minimized, and non-biodegradable materials should not be placed into the OWTS. Grease should not be placed in household drains. Loading from a water softener should not be discharged into the OWTS. Hazardous waste should not be directed into the OWTS. Mechanical room drains should not discharge into the OWTS. The OWTS is engineered for domestic waste only.

ADDITIONAL CONSTRUCTION NOTES

If design includes a pump, air release valves and weep holes must be installed to allow pump lines to drain to minimize risk of freezing. The pump shall have an audible and visual alarm notification in the event of excessively high-water conditions and shall be connected to a control breaker separate from the high water alarm breaker and from any other control system circuits. The pump system shall have a switch so the pump can be manually operated. If bedrock is encountered our office should be contacted.

Excavation equipment must not drive in excavation of the STA due to the potential to compact soil. Extensions should be placed on all septic tank components to allow access to them from existing grade. Backfill over the STA must be uniform and granular with no material greater than minus 3-inch.

INSTALLATION OBSERVATIONS

ALL SERVICE septic, LLC must view the OWTS during construction. The OWTS observation should be performed before backfill, after placement of OWTS components. Septic tanks, distribution devices, pumps, dosing siphons, and other plumbing, as applicable, must also be observed. ALL SERVICE septic, LLC should be notified 48 hours in advance to observe the installation.

LIMITS:

The design is based on information submitted. If soil conditions encountered are different from conditions described in report, ALL SERVICE septic, LLC should be notified. All OWTS construction must be according to the county regulations. Requirements not specified in this report must follow applicable county regulations. The contractor should have documented and demonstrated knowledge of the requirements and regulations of the county in which they are working. Licensing of Systems Contractors may be required by county regulation.

Sincerely,
ALL SERVICE septic, LLC

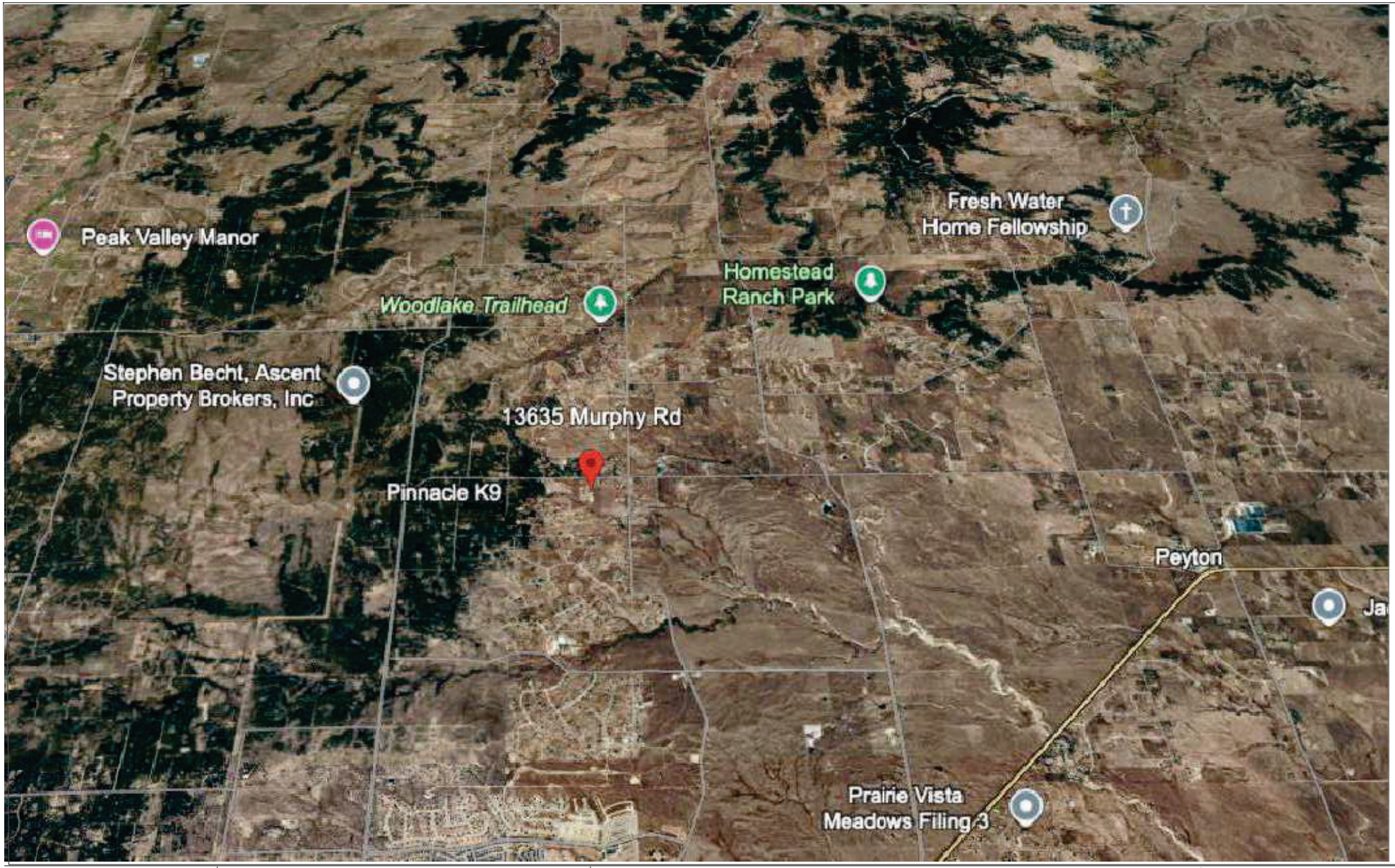
C Steven Compton, PG

Reviewed By:

Richard H. Petz, PE

COLORADO LICENSED
RICHARD HERBERT PETZ
38662
PROFESSIONAL ENGINEER

4/5/2026



ALL SERVICE septic

www.allserviceseptic.com
Phone: 720.236.9383

13635 MURPHY ROAD
Paul & Lynn Carney ADU
El Paso County, Colorado
26-021

Site Plan

El Paso County, CO Public Health

SOIL PROFILE TEST PIT LOG

(A SEPARATE LOG SHALL BE COMPLETED FOR EACH SOIL PROFILE TEST PIT)

Property Address: **13635 Murphy Road, Elbert**

Test Pit Number: **TP - 1**

Date of Logging: **4/3/2026**

Range of Depth of Soil Horizon, Relative to Ground Surface	USDA Soil Texture	USDA Soil Structure - Type	Soil Structure-Grade	Soil Type (Table 10 or "R" Soils in Table 11)	Redoximorphic Features Present? (Y/N)
0 - 3"	Topsoil/Rootzone	--	--	--	N
3" - 2'	Sandy Loam	Granular	Strong	2	N
2' - 7.5'	Gravelly Sand		Structureless	R-0	N
7.5' - 8.0'	Sandy Clay Loam	Granular	Moderate	3	Y

Notes:

Redox observed in the sandy clay at 7.5 feet below grade. No bedrock observed.

Is there a limiting layer as defined in Regulation? ☑ Yes ☐ No

If yes, design document must explain how the limiting condition is addressed.

Is Dawson Arkose (DA) or Cemented Sand (CS) present? ☐ Yes ☑ No

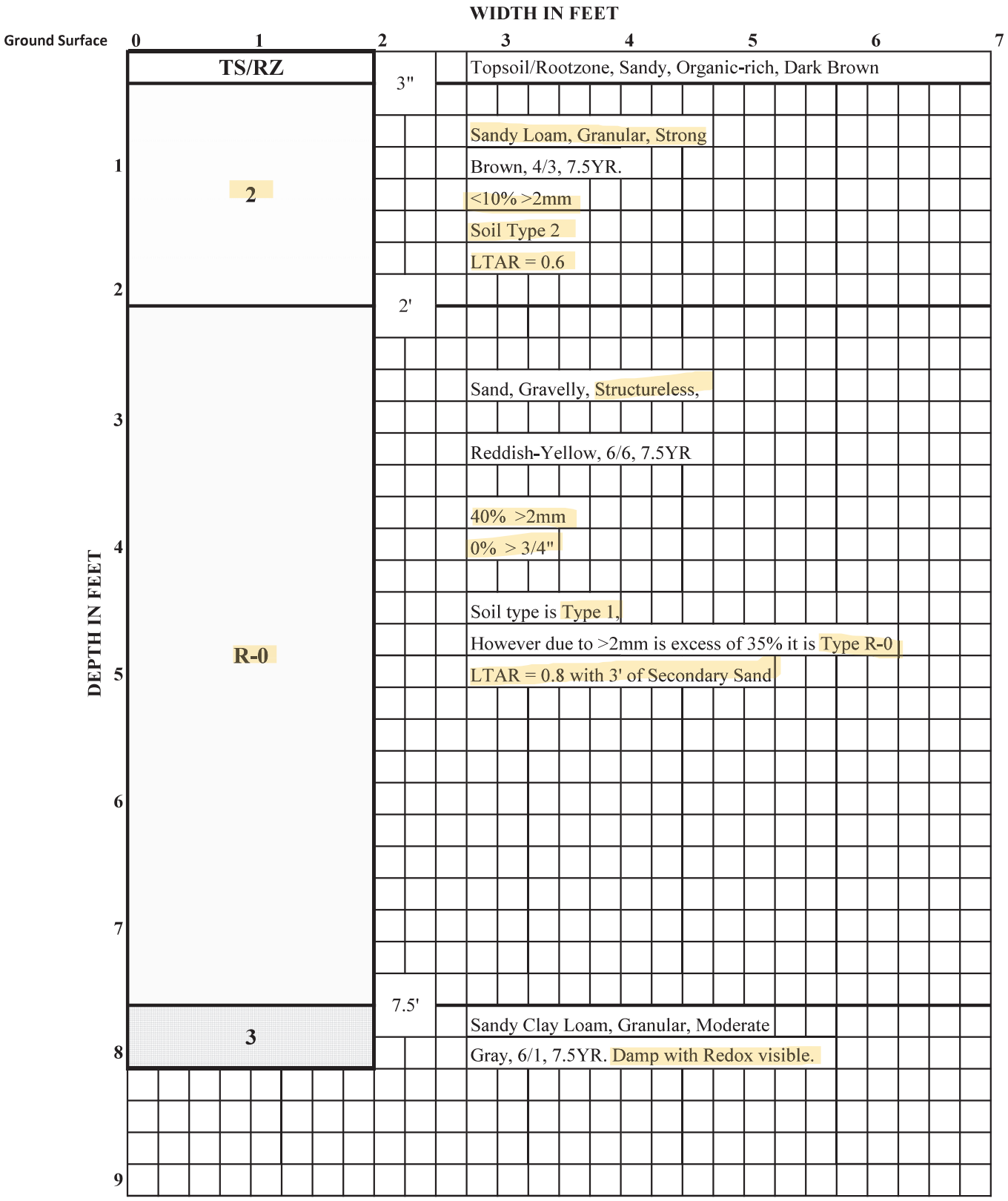
If yes, please answer the following:

Is material fractured and/or jointed? ☐ Yes ☐ No

What is the cementation class? _____

Is the Dawson Arkose or Cemented Sand a limiting layer per section 8.7B.2? ☐ Yes ☐ No

Soil Profile Test Pit Graphic Log Number: TP - 1



El Paso County, CO Public Health

SOIL PROFILE TEST PIT LOG

(A SEPARATE LOG SHALL BE COMPLETED FOR EACH SOIL PROFILE TEST PIT)

Property Address: **13635 Murphy Road, Elbert**

Test Pit Number: **TP - 2**

Date of Logging: **4/3/2026**

Range of Depth of Soil Horizon, Relative to Ground Surface	USDA Soil Texture	USDA Soil Structure - Type	Soil Structure-Grade	Soil Type (Table 10 or "R" Soils in Table 11)	Redoximorphic Features Present? (Y/N)
0 - 3"	Topsoil/Rootzone	--	--	--	N
3" - 2'	Sandy Loam	Granular	Strong	2	N
2' - 7.25'	Gravelly Sand		Structureless	R-0	N
7.25' - 8.0'	Sandy Clay Loam	Granular	Moderate	3	Y

Notes:

Redox observed in the sandy clay at 7.25 feet below grade. No bedrock observed.

Is there a limiting layer as defined in Regulation? ☑ Yes ☐ No

If yes, design document must explain how the limiting condition is addressed.

Is Dawson Arkose (DA) or Cemented Sand (CS) present? ☐ Yes ☑ No

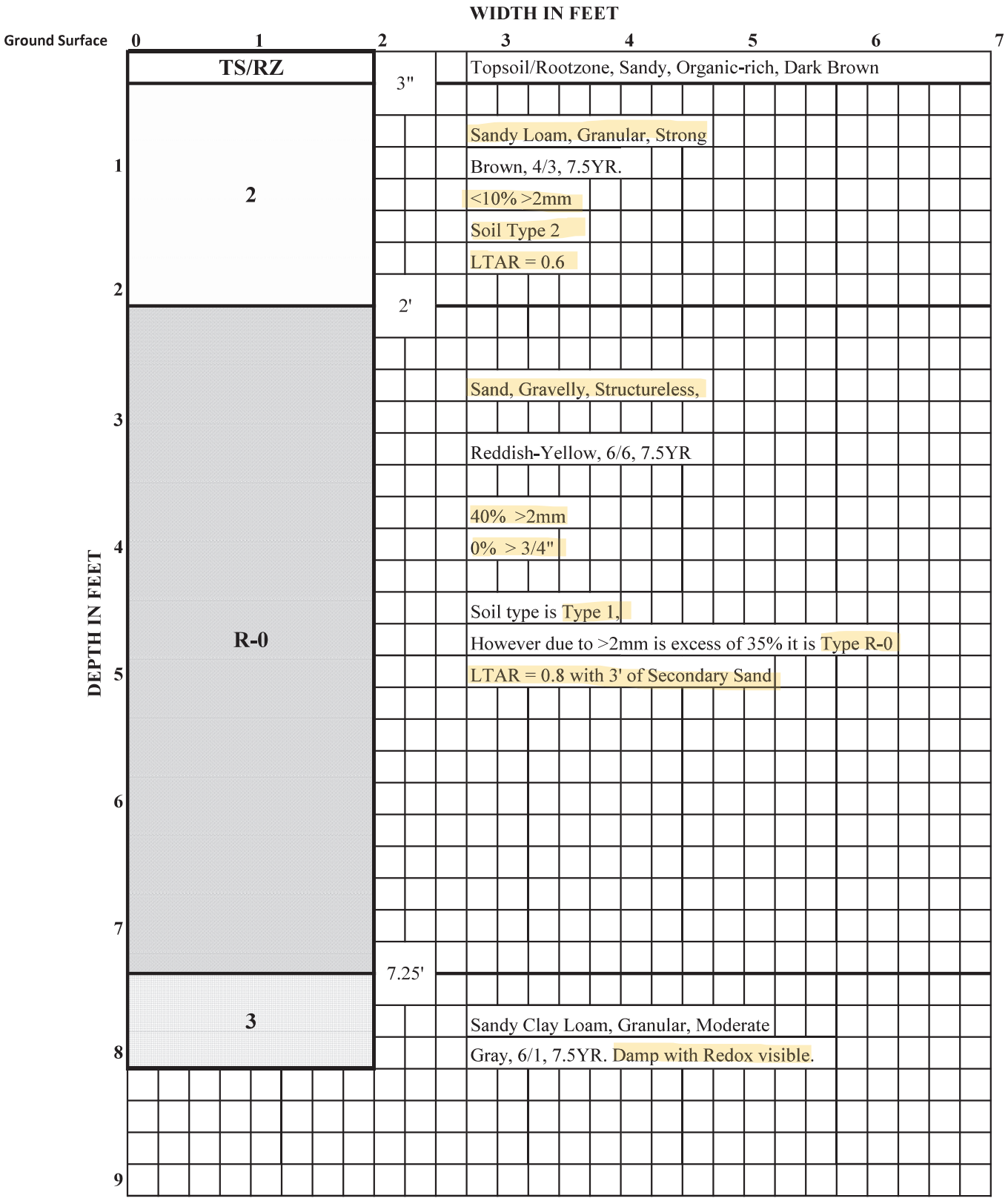
If yes, please answer the following:

Is material fractured and/or jointed? ☐ Yes ☐ No

What is the cementation class? _____

Is the Dawson Arkose or Cemented Sand a limiting layer per section 8.7B.2? ☐ Yes ☐ No

Soil Profile Test Pit Graphic Log Number: TP - 2



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 El Paso County Area, Colorado

April 3, 2026

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

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

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 Scale: 1:3,110 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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: El Paso County Area, Colorado
Survey Area Data: Version 23, Aug 29, 2025

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

Date(s) aerial images were photographed: Jul 23, 2024—Aug 4, 2024

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
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	6.5	26.5%
71	Pring coarse sandy loam, 3 to 8 percent slopes	18.1	73.5%
Totals for Area of Interest		**24.7**	**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.

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fans, Fan terraces, Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

71—Pring coarse sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369k
Landscape: Uplands
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Pring

Setting

Landscape: Uplands
Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

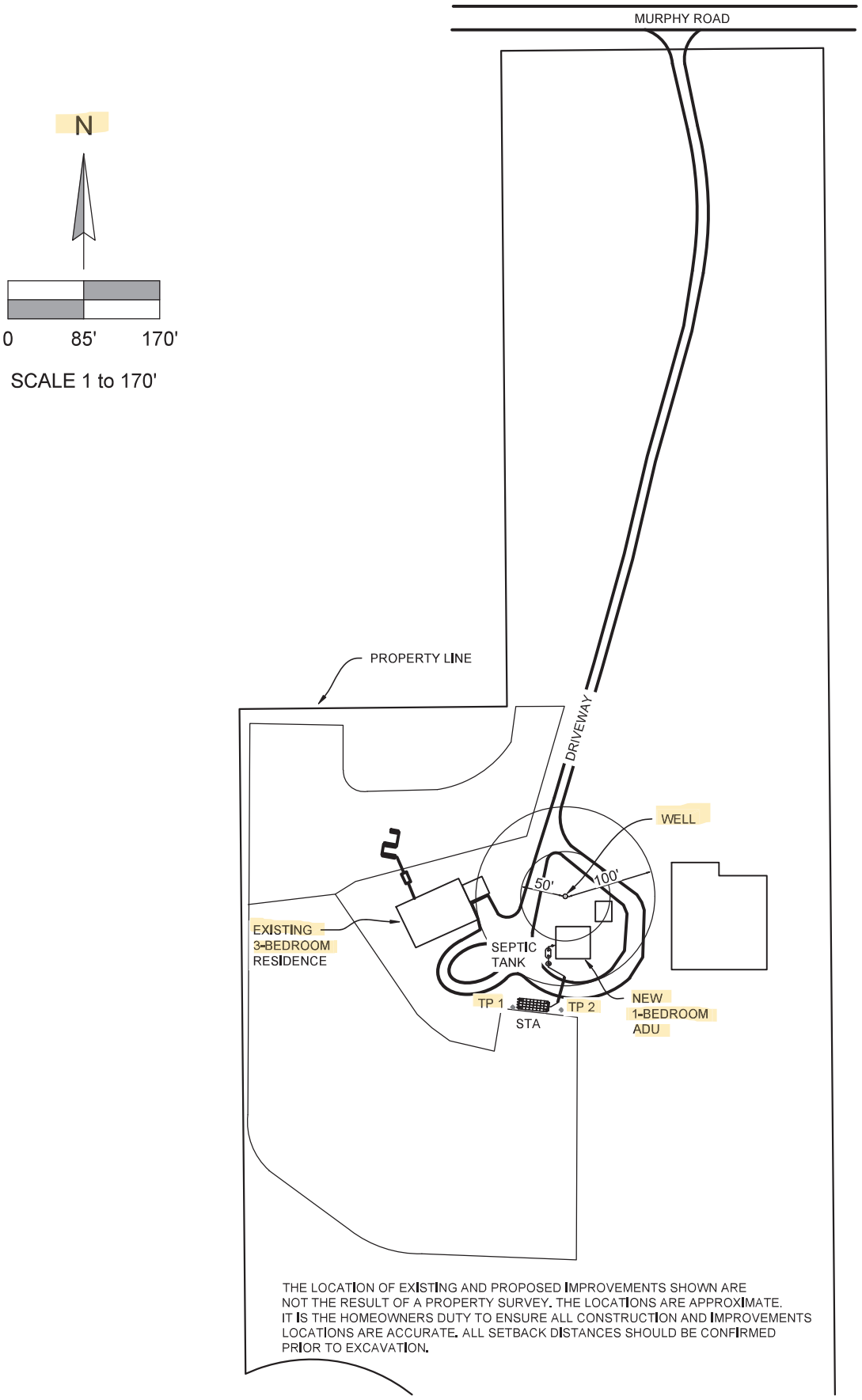
Minor Components

Other soils

Percent of map unit: 10 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes



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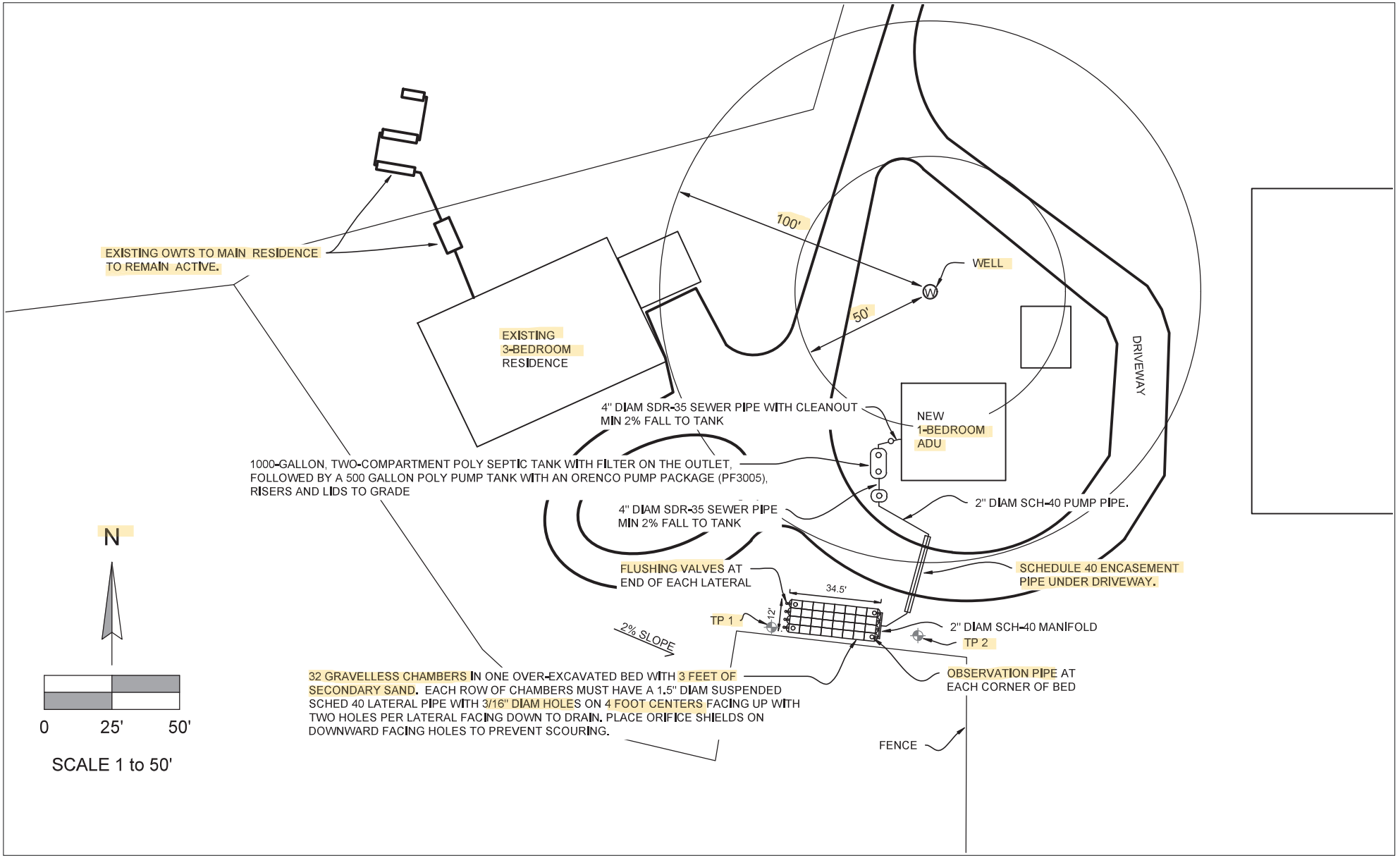
W1



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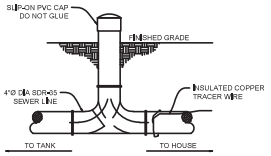
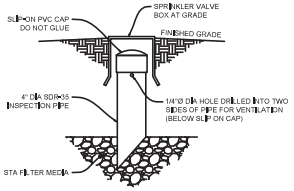
W2

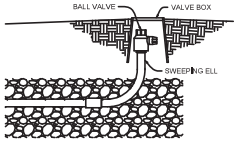


CLEANOUT DETAIL
NTS

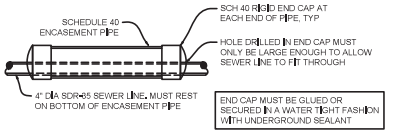


INSPECTION PORT
NTS

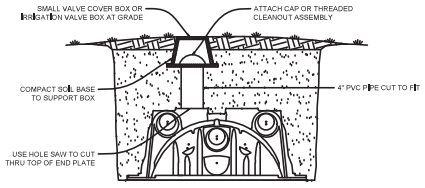
BENCHMARKS	
NUMBER	LOCATON
100'	WELL
97'	PUMP OUTLET
99'	MANIFOLD
98'	BOTTOM OF STA



FLUSHING VALVE
NTS

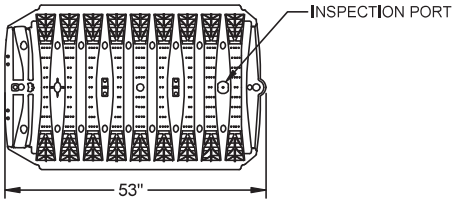


PIPE ENCASEMENT DETAIL
NTS

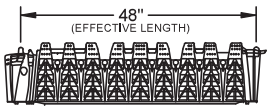


CHAMBER DETAILS W/ COVER BOX
NTS

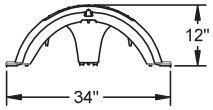
TOP VIEW



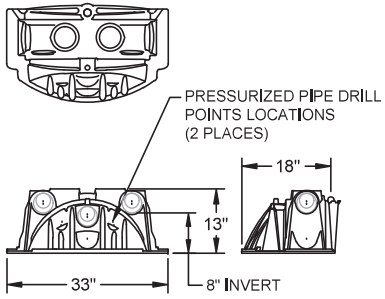
SIDE VIEW



END VIEW



QUICK4 PLUS ALL-IN-ONE 12 END CAP



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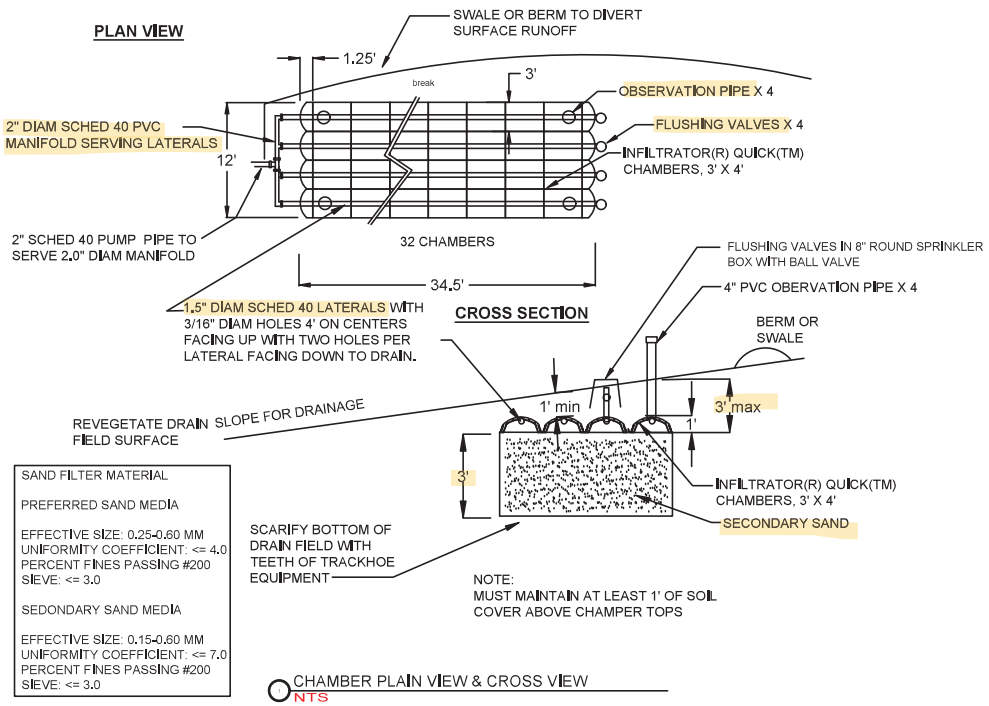
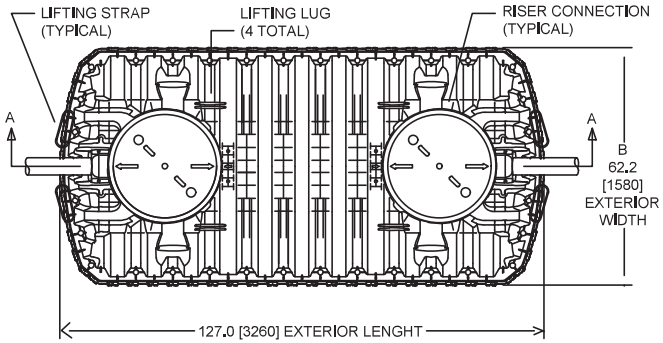
W3

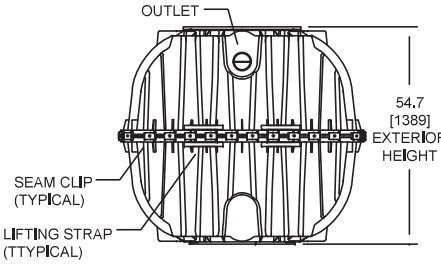


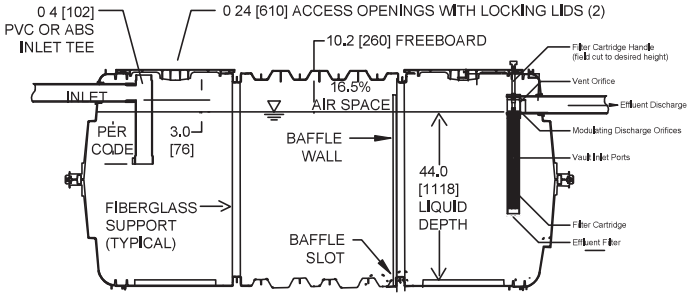
CALCULATIONS

BEDROOMS	2
GALS/PER/DAY	300
TREATMENT LEVEL	TL1
APPLICATION RATE	0.8
SQUARE FOOT AREA	300 / 0.8 = 375 SF
CHAMBERS	
NUMBER OF ROWS	4
NUMBER OF CHAMBERS / ROW	8
TOTAL CHAMBERS	32
TOTAL PROPOSED AREA	32 X 12 = 384 SF
SOIL TYPE	R-0
SOIL DESCRIPTION	GRAVELLY SAND, STRUCTURELESS
SECONDARY SAND FILTER	3.0'

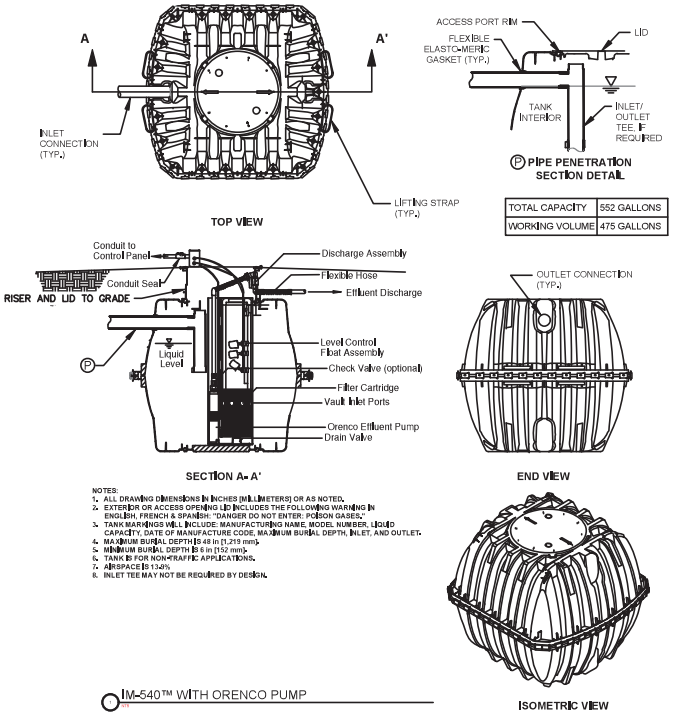
TEST PITS:
The subsurface was investigated on April 3, 2026 by digging two soil profile test pits with a mini-excavator. A visual and tactile analysis of the soil were performed at approximately 3-4 feet below grade.







1000-Gallon Two-Comp Poly Septic Tank with Effluent Filter



Float Settings:
On / Off Floats must have 12” separation. The high water level alarm float should be 3” above top ‘on’ float. This setting will deliver a dose of approximately 134 gallons.

Drainback:
16 gallons per 100 feet of 2” pipe. Drainback will be to the tank at 11 gallons per dose.

The "pump-off" float must be above the top of the pump. An air relief valve must be present in the pump line.

A Control Panel with audible and visual alarm, elapsed time meter, and dose counter must accompany the specified pump. The pumping system requires a 10 amp dedicated circuit for the control panel, and a 20 amp circuit for the pump.

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Pump Selection for a Pressurized System - Single Family Residence Project

26-021 - 13635 Murphy Rd_Elbert

Parameters

Discharge Assembly Size	2.00	inches
Transport Length	65	feet
Transport Pipe Class	40	
Transport Line Size	2.00	inches
Distributing Valve Model	None	
Max Elevation Lift	5	feet
Manifold Length	9	feet
Manifold Pipe Class	40	
Manifold Pipe Size	2.00	inches
Number of Laterals per Cell	4	
Lateral Length	32	feet
Lateral Pipe Class	40	
Lateral Pipe Size	1.50	inches
Orifice Size	3/16	inches
Orifice Spacing	4	feet
Residual Head	5	feet
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations

Minimum Flow Rate per Orifice	0.97	gpm
Number of Orifices per Zone	36	
Total Flow Rate per Zone	35.1	gpm
Number of Laterals per Zone	4	
% Flow Differential 1st/Last Orifice	0.6	%
Transport Velocity	3.4	fps

Frictional Head Losses

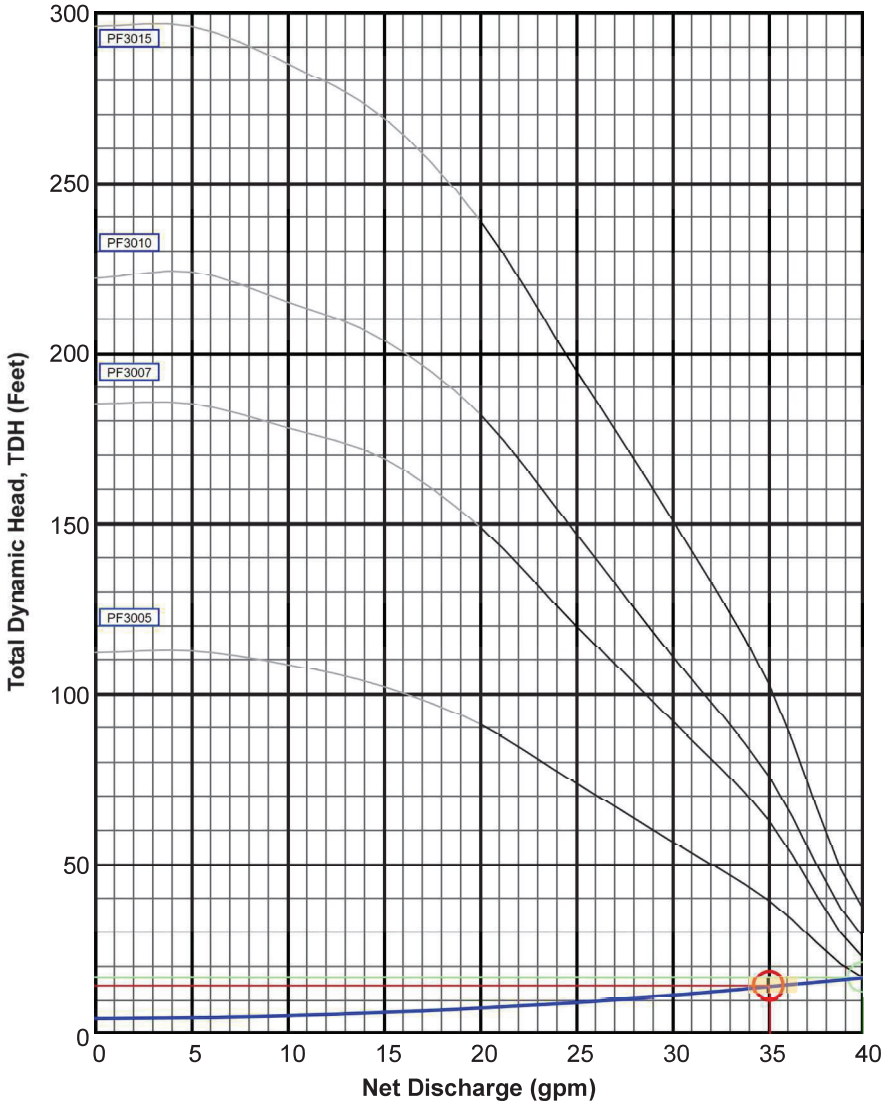
Loss through Discharge	2.5	feet
Loss in Transport	1.3	feet
Loss through Valve	0.0	feet
Loss in Manifold	0.1	feet
Loss in Laterals	0.1	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes

Vol of Transport Line	11.3	gals
Vol of Manifold	1.6	gals
Vol of Laterals per Zone	13.5	gals
Total Volume	26.4	gals

Minimum Pump Requirements

Design Flow Rate	35.1	gpm
Total Dynamic Head	13.9	feet



PumpData

PF3005 High Head Effluent Pump
30 GPM, 1/2HP
115/230V 1Ø 60Hz, 200V 3Ø 60Hz

PF3007 High Head Effluent Pump
30 GPM, 3/4HP
230V 1Ø 60Hz, 200/460V 3Ø 60Hz

PF3010 High Head Effluent Pump
30 GPM, 1HP
230V 1Ø 60Hz, 200/460V 3Ø 60Hz

PF3015 High Head Effluent Pump
30 GPM, 1-1/2HP
230V 1Ø 60Hz, 200/230/460V 3Ø 60Hz

Legend

System Curve:
Pump Curve:
Pump Optimal Range:
Operating Point:
Design Point:

Orenco SYSTEMS
PROTECTING THE WORLD'S WATER

Do Your Part, Be SepticSmart:

The Do's and Don'ts of Your Septic System

Learn these simple steps to protect your home, health, environment and property value:

septicsmart
U.S. Environmental Protection Agency

Protect It and Inspect It:

Do:

- Have your system inspected (in general) every three years by a licensed contractor and have the tank pumped, when necessary, generally every three to five years.

Think at the Sink:

Don't:

- Pour cooking grease or oil down the sink or toilet.
- Rinse coffee grounds into the sink.
- Pour household chemicals down the sink or flush them.

Do:

- Eliminate or limit the use of a garbage disposal.
- Properly dispose of coffee grounds & food.
- Put grease in a container to harden before discarding in the trash.

Don't Overload the Commode:

Don't:

- Flush non-degradable products or chemicals, such as feminine hygiene products, condoms, dental floss, diapers, cigarette butts, cat litter, paper towels, pharmaceuticals.

Do:

- Dispose of these items in the trash can!

Shield Your Field:

Don't:

- Park or drive on your drainfield. The weight can damage the drain lines.
- Plant trees or shrubs too close to your drainfield, roots can grow into your system and clog it.

Do:

- Consult a septic service professional to advise you of the proper distance for planting trees and shrubs, depending on your septic tank location.

Don't Strain Your Drain:

Don't

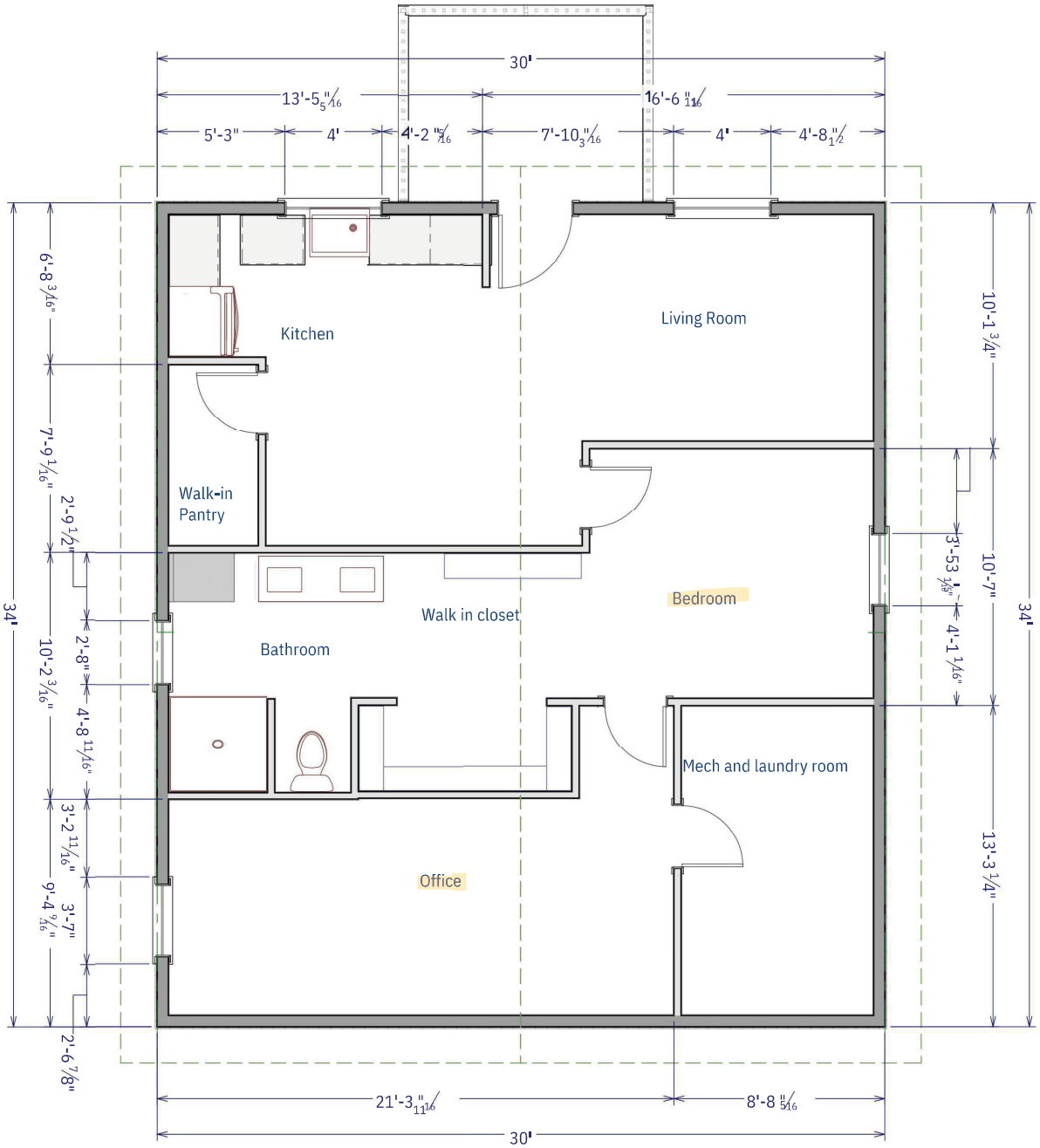
- Concentrate your water use by using your dishwasher, shower, washing machine, and toilet at the same time. All that extra water can really strain your septic system.

Do:

- Stagger the use of water-generating appliances. This can be helpful especially if your system has not been pumped in a long time.
- Become more water efficient by fixing plumbing leaks and consider installing bathroom and kitchen faucet aerators and water-efficient products.

For more SepticSmart tips, visit: **www.epa.gov/septicsmart**

EPA 832-R-13-002 • September 2013



1ST FLOOR

SHEET:	SCALE:	DATE:	DRAWINGS PROVIDED BY:	PROJECT DESCRIPTION:	SHEET TITLE:	NO.	DESCRIPTION	BY
A-1	5/16		DESIGNER: Arise Building and Restoration	PROJECT: Paul and Lynn Carney	FLOOR PLAN			