



Staff Report to the Weber County Planning Division

Weber County Planning Division

Synopsis

Application Information

Application Request: Consideration and action on a request for preliminary plat approval of Arrow Leaf Subdivision, a nine-lot subdivision.
Agenda Date: Wednesday, January 17, 2024
Applicant: Emilee Roche, on behalf of David Chugg
File Number: UVA101323

Property Information

Approximate Address: approximately 4700 N 2900 E, Liberty
Project Area: 65.64 Acres
Zoning: Forest Valley 3 (FV-3)
Existing Land Use: Vacant
Proposed Land Use: Residential
Parcel ID: 22-008-0067 and 22-008-0084
Township, Range, Section: Section 18, T7N, R1E

Adjacent Land Use

North: Forest	South: Forest
East: Residential	West: Forest

Staff Information

Report Presenter: Bill Cobabe
bcobabe@webercountyutah.gov
801-399-8772
Report Reviewer: RG

Applicable Land Use Codes

- Title 101 (General Provisions) Chapter 1 (Definitions)
- Title 104 (Zones) Chapter 14 (Forest Valley, FV-3)
- Title 106 (Subdivisions) Chapter 1 (General Provisions) Section 8 (Final Plat Requirements)
- Title 108 (Standards) Chapter 18 (Drinking Water Source Protection)
- Title 108 (Standards) Chapter 22 (Natural Hazard Areas)

Development History

On October 13, 2023, the Planning Division accepted the application for Arrow Leaf Subdivision.

Background and Summary

The applicant is requesting approval of a nine-lot subdivision that will gain sole access from 2900 E in Liberty. 2900 E is built and maintained as a public road. The proposed future private lane will slope up from 2900 E on the west side and extend approximately 1800', providing access and frontage for all nine lots. An additional (see the Area Map on page 4). The appropriate 66' area for the 2900 E will need to be dedicated; provision is made for that on the preliminary plat.

The Arrow Leaf Subdivision will be served with an individual well and septic systems. This proposal is located at approximately 4731 N. 2900 E.

As part of the approval process, the proposal has been reviewed against the current Weber County Land Use Code (LUC), and the standards of the FV-3 zone found in LUC §104-14. The following section is a brief analysis of this project against current land use regulations.

Analysis

General Plan: This proposal conforms with Ogden Valley General Plan (OVGP) by encouraging low-density development that preserves open space (see page 21 of the OVGP).

Zoning: The property is within the FV-3 Zone. The purpose of this zone is stated in the LUC §104-14-1.

“The purpose of the Forest Valley Zone, FV-3 is to provide an area for residential development in a forest setting at a low density, as well as to protect as much as possible the naturalistic environment of the development.”

Small Subdivision: “The Planning Director is delegated administrative authority to approve small subdivisions if in his discretion there are no conditions which warrant its submittal to the planning commission LUC §106-1-8 (f).” This proposal qualifies as a small subdivision consisting of three or fewer lots for which no new streets are being created or realigned.

This review is for Preliminary Plat only – a separate application will be made for Final Plat approval.

Drinking-Water Source Protection Zone: This proposal is not located within a Drinking Water Source Protection Zone.

Natural Hazards: This property is located within a FEMA flood zone area classified as Zone X, which is outside of the 500-year flood risk.

This subdivision proposal includes a geologic study performed by CMT Technical Services dated December 4, 2023, addresses some of the geotechnical concerns related to the feasibility of a roadway. The report includes several recommendations, all of which will be evaluated by the Engineering Staff in connection with construction documents that will be submitted prior to final plat approval. Additional geotechnical and geologic hazards reports may be required in connection with final plat submittal/review.

Upon recording the final subdivision Mylar a separate “Natural Hazards Disclosure” document will be required to be recorded to provide adequate notice of the geotechnical and geological recommendations to future property owners. A condition of approval has been added to staff’s recommendations to ensure that adequate notification is provided for future property owners regarding further development is noted on the subdivision Mylar. The “Suggested Buildable Areas” will also be shown on the plat.

Irrigation and Domestic Water: The owner has secured a well permit from the Weber-Morgan Health Department. Proof of water rights will need to be submitted to the County prior to final pla recordation. The well will provide water for culinary and secondary uses.

An amendment to the improvements required for all subdivisions codified on 5-25-2021, states that the private well must be drilled, tested for a minimum of 48 hrs, and analyzed by the Weber-Morgan Health Department before final plat recording. This test has been submitted to and approved by the Weber Morgan Health Department.

Sanitary System: Weber-Morgan Health Department has provided feasibility letters stating that the percolation rates fall within the range of acceptability for the placement of a mound treatment system or a packed bed media system followed by a drip irrigation absorption area (see Exhibit D).

Review Agencies: The Weber County Fire District has posted a review and approval for this proposed preliminary plat, noting that home suppression will be required, along with an approved water tank, turnarounds, a snow removal plan, and hydrant location. Weber County Planning, Engineering, and Surveying have submitted review comments that will be addressed by a revised final subdivision plat.

Staff Recommendation

Staff recommends preliminary plat approval of Arrow Leaf Subdivision, consisting of 2 lots. This recommendation is based on the following conditions:

1. Before submitting for final plat and prior to final plat recordation, all applicable Weber County reviewing agency requirements shall be met.
2. Proof of all applicable water rights shall be submitted.
3. A “Natural Hazard Disclosure” shall be recorded with the final plat.
4. That a buildable area be created on each lot in the conjunction with the County’s buildable area requirements and the recommendations of the geologist.
5. That secondary or irrigation water follow the requirements and covenants on the subdivision ordinance.
6. That the well protection area be completely within the property boundary.

The following findings are the basis for the staff’s recommendation:

1. The proposed subdivision preliminary plat conforms to the Ogden Valley General Plan.
2. The proposed subdivision preliminary plat complies with the applicable County codes.

Administrative Approval

Administrative preliminary plat of Arrow Leaf Subdivision, consisting of 9 lots, is hereby granted based upon its compliance with the Weber County Land Use Code. This approval is subject to the requirements of applicable review agencies and the conditions of approval listed in this staff report.

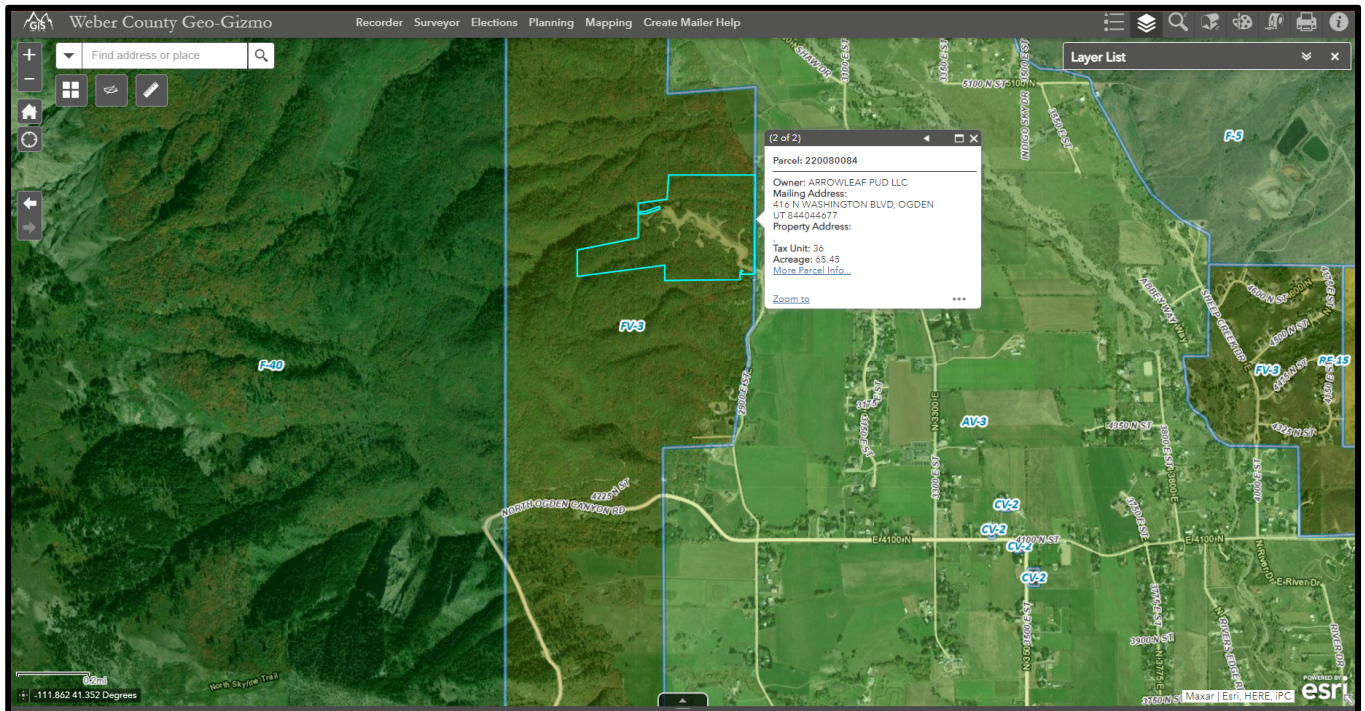
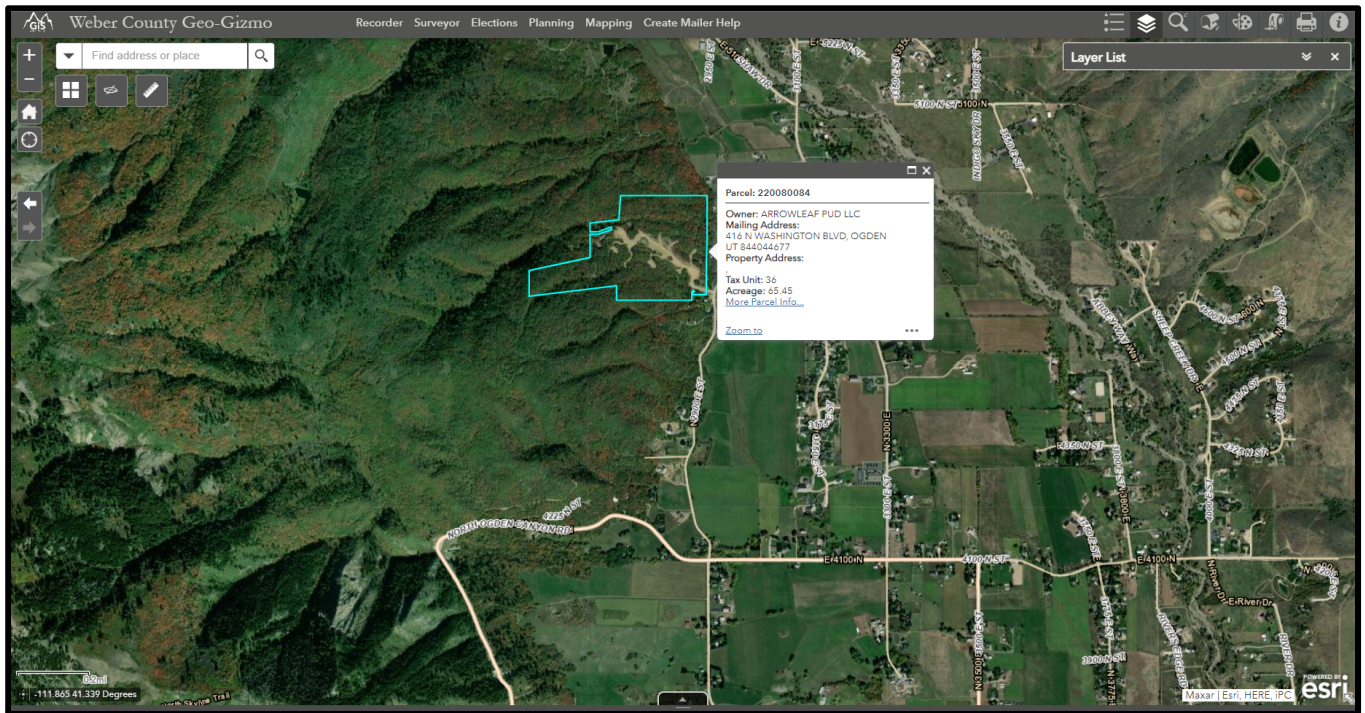
Date of Administrative Approval: _____

Rick Grover
Weber County Planning Director

Exhibits

- A. Arrow Leaf Subdivision Plat
- B. Current Recorders Plat
- C. Health Department Feasibility Letters
- D. State Water Exchange Report
- E. CMT Technical Services Report (Pages 1-6)

Area Map / Zoning Map



SECTION 18, T.7N., R.1E., S.L.B. & M.

IN WEBER COUNTY

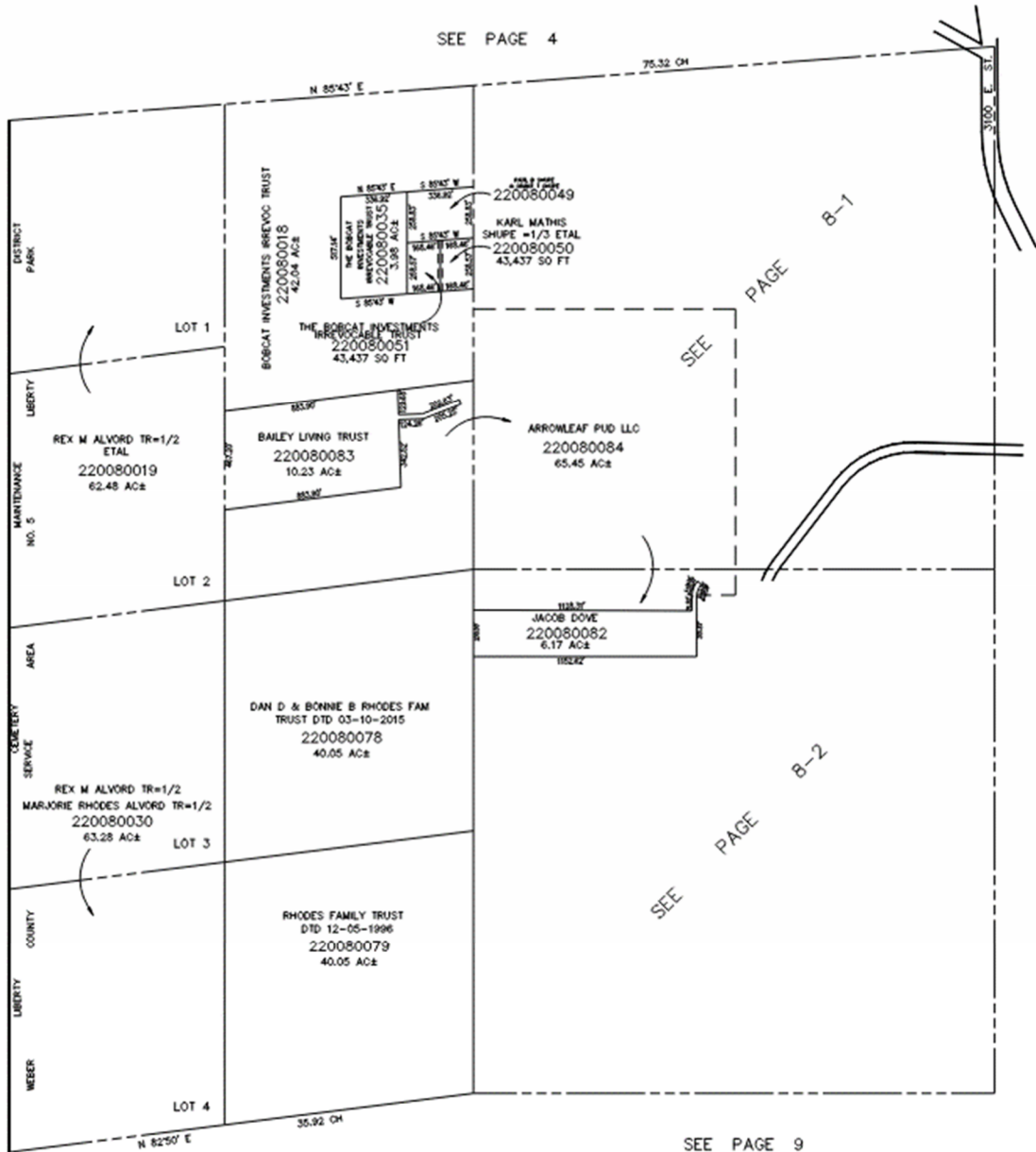
SCALE 1" = 400'

TAXING UNIT: 36

SEE PAGE 4

SEE BOOK 16, PAGE 6

SEE PAGE 7



BRIAN COWAN, MPH, LEHS
Health Officer/Executive Director

September 8, 2023



Jeff Beckstead
416 N Washington Blvd
Ogden, Utah 84404

RE: Wastewater Site and Soils Evaluation #15431
4702 N 2900 E Liberty, UT
Parcel # 22-008-0013

An evaluation of the site and soils at the above-referenced address was completed by staff of this office on September 5, 2023. The exploration pit(s) is located at the referenced GPS coordinate and datum. The soil texture and structure, as classified using the USDA system, are as follows:

mislabeled 5A (LOT 5, second pit)

- Exploration Pit #1 (4A) (UTM Zone 12 Nad 83 426421 E 4577388 N)
 - 0-15" Loam, Granular Structure
 - 15-28" Loam (near sandy loam), Blocky Structure
 - 28-49" Loam (near sandy loam), Massive Structure
 - 49-80" Gravelly Sandy Loam, Massive Structure, 50% Gravel & <5% cobble

- Exploration Pit #2 (5A) (UTM Zone 12 Nad 83 426489 E 4577382 N)
 - 0-12" Clay Loam, Granular Structure
 - 12-36" Sandy Clay Loam (near silty clay), Massive Structure, 5% Gravel, Few Red Mottling at 28-30"
 - 36-72" Silty Clay (near clay), Massive Structure, 5% Gravel

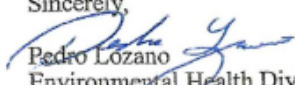
Soil properties for this exploration pit are infeasible at 36" for onsite wastewater treatment system. An alternative option is to perform additional site and soil evaluations in another area of the property to find suitable soils for an onsite wastewater treatment system. Please note that multiple test pits may be required to prove that a large enough area of suitable soils exist to accommodate an onsite wastewater treatment system and a replacement area of equal size.

Exploration pits should be backfilled immediately upon completion to prevent a hazardous environment that may cause death or injury to people or animals.

Monitoring of the maximum ground water table is required in the location of the above listed exploration pits. Please complete the enclosed application for maximum ground water table monitoring and return it along with the appropriate fees. The wells should be constructed in accordance with the enclosed diagram in order to provide the most accurate water table readings possible.

Provide evidence that 20,000 ft² of contiguous buildable area with a slope of less than 25 % is available. Also, indicate that it will be possible to place the onsite wastewater disposal system and replacement area at least 50 feet from slopes exceeding 35%.

If you have any further questions, contact this office at your convenience.

Sincerely,

Pedro Lozano
Environmental Health Division
801-399-7160

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October 16, 2023



Weber County Planning Commission
2380 Washington Blvd.
Ogden, UT 84401

RE: Preliminary Subdivision **Determination**
Arrowleaf Subdivision, 9 lots
Parcel #22-008-0013 & 22-008-0067
Soil log #15431

The soil and percolation information for the above-referenced lot have been reviewed. Culinary water will be provided by a private well. **The placement of the well is critical so as to provide the required 100 foot protection zone.** The well will need to be dug, tested and the water supply approved prior to issuance of a wastewater disposal permit.

DESIGN REQUIREMENTS

Lot 1, 5, 8 & 9: Documented ground water tables not to exceeding 12 inches, fall within the range of acceptability for the utilization of a Wisconsin Mound Treatment System or a Packed Bed Media System followed by an At-Grade or Drip Irrigation absorption area, as a means of wastewater disposal. Maximum absorption area depth is limited to 0 inches. As defined in the Utah Administrative Code R317-4 Table 6 the absorption area is to be designed using a maximum loading rate of 0.22 gal/sq. ft./day for a Wisconsin Mound absorption area, or 0.45 gal/sq. ft./day for the Packed Bed Media absorption area as required for the sandy loam-loam, massive structure soil horizon.

Lot 2 Documented ground water tables not to exceeding 24 inches, fall within the range of acceptability for the utilization of a Packed Bed Media System followed by an Absorption Trench or Drip Irrigation absorption area, as a means of wastewater disposal. Maximum absorption area depth is limited to 12 inches. The absorption system is to be designed using a maximum loading rate of 0.35 gal/sq. ft. /day as required for a clay loam, blocky structure soil horizon with a documented percolation rate of 120 minutes per inch.

Lot 3, 6 & 7: Documented ground water tables not to exceeding 12 inches, fall within the range of acceptability for the utilization of a Wisconsin Mound Treatment System or a Packed Bed Media System followed by an At-Grade or Drip Irrigation absorption area, as a means of wastewater disposal. Maximum absorption area depth is limited to 0 inches. As defined in the Utah Administrative Code R317-4 Table 6 the absorption area is to be designed using a maximum loading rate of 0.25 gal/sq. ft./day for a Wisconsin Mound absorption area, or 0.5 gal/sq. ft./day for the Packed Bed Media absorption area as required for the sandy loam, blocky-massive structure soil horizon.

Lot 4: Documented ground water tables not to exceeding 24 inches, fall within the range of acceptability for the utilization of a Packed Bed Media System followed by an Absorption Trench or Drip Irrigation absorption area, as a means of wastewater disposal. Maximum absorption area depth is limited to 12 inches. The absorption system is to be designed using a maximum loading rate of 0.35 gal/sq. ft. /day as required for a sandy clay loam, granular structure soil horizon with a documented percolation rate of 120 minutes per inch. **Please be aware that the location of the soil exploration TP4B which the feasibility of this lot is based upon is located across the drainage from the proposed building pad.** The future property owner may want to do additional site and soil work so that engineering of the system may be simplified

HOA Open Space Lot: This lot is identified as open space possibly a park. It has not been evaluated for the installation of an onsite wastewater treatment system or its ability to meet the minimum subdivision standards established in the Utah Administrative Code R317-4 or the Weber-Morgan health Department Onsite Wastewater Treatment System Regulation.

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ENGINEERING CONSIDERATION:

The cost of a mound system is greatly increased when designed to go on to a sloping property (exceeding 10%). This is based on the quantity of C33 sand required in the construction of a mound on a sloping site. It is recommended that you discuss this with your certified onsite wastewater designer and receive a cost comparison of both a mound and a packed bed media onsite wastewater treatment system.

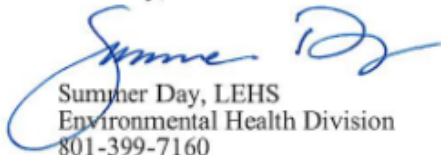
Plans for the construction of any wastewater disposal system are to be prepared by a Utah State certified individual and submitted to this office for review prior to the issuance of a Wastewater Disposal permit.

The following items are required for a formal subdivision review; application, receipt of the appropriate fee, and a full sized copy of the subdivision plats showing the location of exploration pits and percolation tests as well as the documented soil horizons and percolation rates. A subdivision review will not occur until all items are submitted. Mylars submitted for signature without this information will be returned

Each on-site individual wastewater disposal system must be installed in accordance with R317-4, Utah Administrative Code, Individual Wastewater Disposal Systems and Weber-Morgan District Health Department Rules. Final approval will be given only after an on-site inspection of the completed project and prior to the accomplishment of any backfilling.

Please be advised that the conditions of this letter are valid for a period of 18 months. At that time the site will be re-evaluated in relation to rules in effect at that time.

Sincerely,



Summer Day, LEHS
Environmental Health Division
801-399-7160

June 29, 2023

Jeff Beckstead
416 N Washington Blvd
Ogden, Utah 84404

RE: Wastewater Site and Soils Evaluation #15431
4702 N 2900 E Liberty, UT
Parcel # 22-008-0013

An evaluation of the site and soils at the above-referenced address was completed by staff of this office on June 26, 2023. The exploration pit(s) is located at the referenced GPS coordinate and datum. The soil texture and structure, as classified using the USDA system, are as follows:

Exploration Pit #1 (UTM Zone 12 Nad 83 426470 E 4577534 N)

0-11" Loam, Granular Structure
11-28" Sandy Clay Loam, Blocky Structure
28-40" Clay Loam, Massive Structure, 5% Gravel
40-65" Sandy Clay Loam, Massive Structure, 10% Gravel, Common Red/Gray Mottling
65-115" Gravelly Sandy Clay Loam, Massive Structure, 40% Gravel

Conduct the required percolation test so that the bottom of the percolation test hole is at 23 & 38 inches deep from the original grade.

Exploration Pit #2 (UTM Zone 12 Nad 83 426401 E 4577573 N)

0-18" Sandy Loam, Granular Structure
18-64" Clay Loam, Blocky Structure, Common Red Mottling
64-95" Sandy Clay Loam, Massive Structure, 2-5% Cobble-Stone, Many Red Mottles

Conduct the required percolation test so that the bottom of the percolation test hole is at 30 inches deep from the original grade.

Exploration Pit #3 (UTM Zone 12 Nad 83 426320 E 4577610 N)

0-18" Loam, Granular Structure, <5% Gravel
18-44" Sandy Loam, Granular Structure, <5% Cobble
44-85" Sandy Loam, Massive Structure

Exploration Pit #4 (UTM Zone 12 Nad 83 426275 E 4577533 N)

0-16" Loam, Granular Structure, 10% Gravel
16-40" Sandy Clay Loam, Massive Structure
40-90" Silty Clay, Massive Structure

Conduct the required percolation test so that the bottom of the percolation test hole is at 28 inches deep from the original grade.

Exploration Pit #5 (UTM Zone 12 Nad 83 426465 E 4577405 N)

0-28" Loam, Massive Structure, 10% Gravel, Common Red Mottling
28-126" Clay Loam, Massive Structure, 5% Gravel

Conduct the required percolation test so that the bottom of the percolation test hole is at 40 inches deep from the original grade.

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Exploration Pit #6 (UTM Zone 12 Nad 83 426194 E 4577463 N)
0-19" Gravelly Loam, Granular Structure, 15-20% Cobble-Stone
19-55" Sandy Loam, Blocky Structure, 10-15% Gravel, Common Red Mottling @36" and Below
55-109" Clay Loam, Massive Structure, Many Red/Gray Mottles
Groundwater Encountered At 109"

Exploration Pit #7 (UTM Zone 12 Nad 83 426120 E 4577518 N)
0-17" Sandy Loam, Granular Structure
17-36" Gravelly Sandy Loam, Blocky Structure, 40-50% Gravel
36-64" Clay Loam, Massive Structure, Common Red Mottling
64-100" Sandy Clay Loam, Massive Structure, 5-10% Gravel, Common Red Mottling

Exploration Pit #8 (UTM Zone 12 Nad 83 426211 E 4577641 N)
0-20" Gravelly Sandy Loam, Granular Structure, 15% Gravel
21-123" Gravelly Sandy Loam, Massive Structure, 45% Gravel-Cobble

Exploration Pit #9 (UTM Zone 12 Nad 83 426073 E 4577608 N)
0-30" Fine Sandy Loam, Granular Structure, 5% Gravel
31-126" Gravelly Fine Sandy Loam, Massive Structure, 25% Gravel-Cobble

Exploration pits should be backfilled immediately upon completion to prevent a hazardous environment that may cause death or injury to people or animals.

Due to the soil types existing on this property, the final readings of the **percolation tests will need to be witnessed by a representative from the Health Department**. Please make the percolation tester aware of the requirement so that arrangements can be made. Test results will not be accepted if this requirement is not met.

Percolation tests may be completed by any individual on the enclosed list. The stabilized percolation test results are to be submitted to this office for review prior to the recommendation for further development to the appropriate planning agency or prior to the issuance of a wastewater disposal permit.

Monitoring of the maximum ground water table is required in the location of the above listed exploration pits. Please complete the enclosed application for maximum ground water table monitoring and return it along with the appropriate fees. The wells should be constructed in accordance with the enclosed diagram in order to provide the most accurate water table readings possible.

Provide evidence that 20,000 ft² of contiguous buildable area with a slope of less than 25 % is available. Also, indicate that it will be possible to place the onsite wastewater disposal system and replacement area at least 50 feet from slopes exceeding 35%.

If you have any further questions, contact this office at your convenience.

Sincerely,



Ryan Klinge
Environmental Health Division
801-399-7160



October 4, 2023

Willards C Store, LLC-lot 1 ARROWHEAD
416 N Washington Blvd.
Ogden, Ut 84404

RE: **Private Well Approval at:**
(approx) 4665 N 2900 E
Eden, UT 84310
Parcel #22-008-0084

The application for approval of the above referenced well has been submitted for review to determine conformance to the Weber-Morgan District Health Department Regulations for Installation and Approval of Nonpublic Water System Serving 1-14 Connections.

The following have been submitted:

1. The Water Right Number: E6424 (35-14219)
2. Well driller license #527
3. The well is 320 feet deep with a "Bentonite Chip 3/8" seal to a depth of 33 feet.
4. The well yields 15 GPM with a stabilized pumping level of 135-foot in 48 hrs.
5. The water samples for the partial inorganic analysis were submitted to Chemtech-Ford Laboratories on July 20, 2023. The water analysis was satisfactory.
6. A bacteriological water sample was collected by staff of this department on July 20, 2023. The water analysis was satisfactory.
7. As required in the Weber County Code Part II Land Use Code Chapter 106 Section 106-4.2.1.(d)(2) a 48 hour pump test has been performed and the well was found to meet the minimum quantity and storage requirements established in the Weber-Morgan Health Department Regulation for Installation and Approval of Nonpublic Water Systems and Private Water Production Wells section 11.1 & 11.2
8. This is a shared well. This and one other well will provide both culinary water and irrigation water for the 9 lot Arrowleaf Subdivision. Shared well agreements and any required easement documents will need to be signed and recorded prior to the signat.

The required 100-foot protection zone around the well must be kept free from any septic tank absorption systems, garbage dumps, hazardous and toxic material storage or disposal sites, feedlots and other concentrated sources of pollution. We would recommend that a bacteriological sample be collected and submitted for analysis on an annual basis.

Based on compliance with the above requirements, the Health Department considers this an approved well for culinary purposes.

Please contact our office at (801) 399-7160 if you have further questions.

Sincerely,


Summer Day, LEHS III, Program Manager
Division of Environmental Health

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October 4, 2023

Willards C Store LLC-hoa ARROWHEAD
416 N Washington Blvd.
Ogden, UT 84405

RE: **Private Well Approval at:**
4665 N 2900 E
Eden, UT 84310
Parcel #22-008-0084

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The following have been submitted:

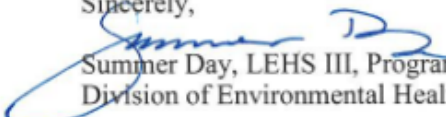
1. The Water Right Number: E6424 (35-14219)
2. Well driller license #527
3. The well is 500 feet deep with a "Bentonite chips 3/8"" seal to a depth of 35 feet.
4. The well yields 20 GPM with a stabilized pumping level of 147-foot in 48 hrs.
5. The water samples for the partial inorganic analysis were submitted to Chemtech-Ford Laboratories on July 17, 2023. The water analysis was satisfactory.
6. A bacteriological water sample was collected by staff of this department on July 17, 2023. The water analysis was satisfactory.
7. As required in the Weber County Code Part II Land Use Code Chapter 106 Section 106-4.2.1.(d)(2) a 48 hour pump test has been performed and the well was found to meet the minimum quantity and storage requirements established in the Weber-Morgan Health Department Regulation for Installation and Approval of Nonpublic Water Systems and Private Water Production Wells section 11.1 & 11.2
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Sincerely,


Summer Day, LEHS III, Program Manager
Division of Environmental Health



SPENCER J. COX
Governor
DEIDRE M. HENDERSON
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
Division of Water Rights

JOEL FERRY
Executive Director

TERESA WILHELMSSEN
State Engineer/Division Director

OFFICIAL RECEIPT No. 22-03920 **Date: July 14, 2022**

RECEIVED FROM:

DAVID CHUGG
416 N WASHINGTON BLVD
OGDEN, UT 84404

NATURE OF SERVICE:

Pending		\$	150.00
Application for Exchange of Water			
For Willards C Store LLC			
	TOTAL:	\$	<u>150.00</u>

METHOD OF PAYMENT: CC-MSCD 046610

RECEIVED BY: GHAYES

CMT TECHNICAL SERVICES

December 4, 2023

Mr David Chugg
16487 Farr West Drive
Ogden, Utah 84404

Re: Arrow Leaf Pavement Design
About 4700 North 2900 East
Eden, Utah
CMT Project Number 21356

INTRODUCTION

We understand that a private roadway has been cut to subgrade and is ready to be paved. The roadway is roughly a quarter mile long and will be paved with asphalt concrete. Anticipated traffic will consist of light automobiles and trucks with occasional medium weight trucks and fire trucks. It is our understanding that a pavement section design/review is required by the county. The roadway is located at about 4700 North 2900 East in Eden, Utah, as shown on the **Vicinity Map** below. To generally define the existing subgrade, CMT has performed the requested Dynamic Cone Penetrometer (DCP) testing at 8 locations along the referenced length of road (see attached "**Site Plan**" for test locations). In addition, samples at each location were collected by hand augur or shovel.



Vicinity Map

FIELD WORK

A total of 8 DCP tests were conducted along the planned roadway. Hand auguring was attempted at each test location and extended to depths of about 2 to 24 inches below the existing grade. DCP testing was completed either at surface grade or within the augured hole at each location. Soil samples were obtained and transported back to our laboratory for further evaluation.

The subsurface soils encountered were classified in the field based upon visual and textural examination, logged and described in general accordance with ASTM¹ D-2488.

3.0 LABORATORY TESTING

Selected samples of the subsurface soils were subjected to various laboratory tests to assess pertinent engineering properties, as follows:

1. Moisture Content, ASTM D-2216, Percent moisture representative of field conditions
2. Atterberg Limits, ASTM D-4318, Plasticity and workability
3. Gradation Analysis, ASTM D-1140/C-117, Grain Size Analysis

Laboratory test results are presented in the following Lab Summary table:

LAB SUMMARY TABLE 1

TEST LOCATION	DEPTH (inches)	SOIL CLASS	SAMPLE TYPE	MOISTURE CONTENT(%)	GRADATION			ATTERBERG LIMITS		
					GRAV.	SAND	FINES	LL	PL	PI
DCP-2	12	CL	Bag	19	3	12	85			
DCP-5	0	SC	Bag	12	26	32	42	28	18	10
DCP-8	2	SC	Bag	7	31	44	25			

SUBSURFACE SOIL DESCRIPTION

The following table describes the soils encountered at each test location.

¹American Society for Testing and Materials

TEST LOCATION	MAXIMUM AUGERED DEPTH (inches)	SOIL DESCRIPTION
DCP-1	6	Brown Gravelly CLAY with sand and small cobbles
DCP-2	12	Sandy CLAY with trace gravel/cobble
DCP-3	2	Brown CLAY with some Gravel
DCP-4	2	Brown Gravelly CLAY
DCP-5	4	Surface coated in 1" minus gravel. Brown Clayey SAND with gravel
DCP-6	24	Surface coated in 1" minus gravel. Brown Clayey SAND with gravel
DCP-7	2	Surface coated in 1" minus gravel. Brown CLAY with trace sand and gravel
DCP-8	6	Surface coated in 1" minus gravel. FILL-Brown Clayey Sand with Gravel

DYNAMIC CONE PENETROMETER (DCP) TESTING

DCP testing was completed at 8 locations along the roadway alignment. The following table provides estimated CBR correlations.

Field DCP Testing

Test Location	Estimated Soil	Penetration Depth (inches)*	Est. Field Correlated CBR	**AASHTO Corrected CBR
1	Gravelly CLAY	0 to 15	20	11
2	Sandy CLAY	18 to 21	20	11
3	CLAY with some Gravel	1 to 23	8	5
4	Gravelly CLAY	1 to 35	10	6
5	Clayey SAND with Gravel	4 to 18	15	10
6	Clayey SAND with Gravel	24 to 33	15	10
7	CLAY with Trace Sand, Gravel, Cobbles	2 to 30	8	5
8	Fill, Clayey Sand with Gravel	6 to 14	25	17

** AASHTO correction factor for high moisture seasonal periods.

PAVEMENT SECTION REVIEW/RECOMMENDATIONS

We understand that the planned roadway will service up to six single family residential properties. Further we anticipate daily 18-kip ESAL's up to about 4. Based on the in-situ,

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corrected CBR values obtained through field DCP testing, we have utilized a design CBR of 5 percent. The following minimum pavement sections are recommended:

MATERIAL	PAVEMENT SECTION THICKNESS (inches)	
Asphalt	3	3
Aggregate Base	10	4
Aggregate-subbase	0	8
Total Thickness	13	15

Imported untreated base course (UTBC) should conform to city specifications, or to 1-inch-minus UDOT specifications for A-1-a/NP, and have a minimum CBR value of 70%. Subbase shall consist of a low plastic, granular fill soil with a minimum CBR value of 40%. Asphalt material generally should conform to APWA requirements, having a ½-inch maximum aggregate size, mix containing no more than 15% of recycled asphalt (RAP) and a PG64-34 binder.

The life of the pavement will be prolonged with proper, timely maintenance such as rubberized sealing of cracks, and slurry seal coating of the surface. Inversely, without proper maintenance the longevity of the pavement will be reduced.

Subgrade preparation shall consist of the removal of all deleterious material and topsoil, if/where remains. The exposed subgrade must then be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or loose soils are encountered, they must be removed (up to a maximum depth of 2 feet) and replaced with additional aggregate subbase.

We recommend that the aggregate base/subbase be compacted to a minimum 96 percent of the Modified Proctor Density (ASTM D1557) and not be installed over frozen subgrade.

CLOSURE

The conclusions and recommendations presented in this letter are based on the information provided, the soil conditions observed, and our experience with similar conditions. It is possible that soil conditions other than those observed during our visit or the study may exist, which could potentially be problematic. We cannot assume responsibility for conditions of which we are not aware or have not observed. No other warranty or representation, either expressed or implied, is intended in our proposals, contracts or reports.

If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 590-0394.


Sincerely,
CMT Technical Services



Bryan N. Roberts, P.E.
Senior Geotechnical Engineer



Reviewed by:



Jeffrey J. Egbert, P.E., LEED A.P., M. ASCE
Senior Geotechnical Engineer

Attachments: Figure 1 Site Map
 DCP Test Data



CMT TECHNICAL SERVICES

Arrow Leaf Pavement
About 4700 North 2900 East, Eden, Utah

SITE PLAN

Date:	21-Nov-2023
CMT No.:	21351

Figure:
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