



## ALPINE CITY PLANNING COMMISSION MEETING

**NOTICE** is hereby given that the **PLANNING COMMISSION** of Alpine City, UT will hold a **Regular Meeting** at **Alpine City Hall**, 20 North Main, Alpine, Utah on **Tuesday, February 5, 2019 at 7:00 pm** as follows:

### I. GENERAL BUSINESS

- A. Welcome and Roll Call: David Fotheringham
- B. Prayer/Opening Comments: John Mackay
- C. Pledge of Allegiance: By Invitation

### II. PUBLIC COMMENT

Any person wishing to comment on any item not on the agenda may address the Planning Commission at this point by stepping to the microphone and giving his or her name and address for the record.

### III. ACTION ITEMS

- A. Plat Amendment – Goeckeritz Plat C – Quinn Goeckeritz**  
Planning Commission will review plat and make recommendation to City Council.
- B. Major Subdivision Final Plat Review – North Point Plat D – Marcus Watkins**  
Planning Commission will review plat and make recommendation to City Council.
- C. Major Subdivision Final Plat Review – Conrad’s Landing Plat C – Steve McArthur**  
Planning Commission will review plat and make recommendation to City Council.

### IV. COMMUNICATIONS

### V. APPROVAL OF PLANNING COMMISSION MINUTES: January 15, 2019

### ADJOURN

Chairman David Fotheringham  
February 5, 2019

**THE PUBLIC IS INVITED TO ATTEND ALL PLANNING COMMISSION MEETINGS.** If you need a special accommodation to participate in the meeting, please call the City Recorder's Office at 801-756-6347 ext. 5.

**CERTIFICATION OF POSTING.** The undersigned duly appointed recorder does hereby certify that the above agenda notice was posted at Alpine City Hall, 20 North Main, Alpine, UT. It was also sent by e-mail to The Daily Herald located in Provo, UT a local newspaper circulated in Alpine, UT. This agenda is also available on the City's web site at [www.alpinecity.org](http://www.alpinecity.org) and on the Utah Public Meeting Notices website at [www.utah.gov/pmn/index.html](http://www.utah.gov/pmn/index.html).

# PUBLIC MEETING AND PUBLIC HEARING ETIQUETTE

Please remember all public meetings and public hearings are now recorded.

- All comments **must** be recognized by the Chairperson and addressed through the microphone.
- When speaking to the Planning Commission, please stand, speak slowly and clearly into the microphone, and state your name and address for the recorded record.
- Be respectful to others and refrain from disruptions during the meeting. Please refrain from conversation with others in the audience as the microphones are very sensitive and can pick up whispers in the back of the room.
- Keep comments constructive and not disruptive.
- Avoid verbal approval or dissatisfaction of the ongoing discussion (i.e., booing or applauding).
- Exhibits (photos, petitions, etc.) given to the City become the property of the City.
- Please silence all cellular phones, beepers, pagers or other noise making devices.
- Be considerate of others who wish to speak by limiting your comments to a reasonable length, and avoiding repetition of what has already been said. Individuals may be limited to two minutes and group representatives may be limited to five minutes.
- Refrain from congregating near the doors or in the lobby area outside the council room to talk as it can be very noisy and disruptive. If you must carry on conversation in this area, please be as quiet as possible. (The doors must remain open during a public meeting/hearing.)

## Public Hearing vs. Public Meeting

If the meeting is a **public hearing**, the public may participate during that time and may present opinions and evidence for the issue for which the hearing is being held. In a public hearing there may be some restrictions on participation such as time limits.

Anyone can observe a **public meeting**, but there is no right to speak or be heard there - the public participates in presenting opinions and evidence at the pleasure of the body conducting the meeting.

## **ALPINE PLANNING COMMISSION AGENDA**

**SUBJECT: Plat Amendment – Goeckertiz Plat C**

**FOR CONSIDERATION ON: 5 February 2019**

**PETITIONER: Quinn Goeckeritz**

**ACTION REQUESTED BY PETITIONER: Recommend Approval of Plat Amendment**

**APPLICABLE STATUTE OR ORDINANCE: Article 3.31**

### **BACKGROUND INFORMATION:**

The property owner has applied for a boundary line adjustment between two lots that they already own. Property is located at 289 S. High Bench Road, on approximately 2.45 acres, in the CR20-000 zone, with lots ranging in size from 0.46 acres to 1.97 acres. One of the lots is in a recorded subdivision and would require that the boundary line adjustment be done via plat amendment.

This boundary line adjustment/plat amendment is only coming to Planning Commission for recommendation because of the right-of-way dedication that must be approved by City Council. Otherwise it would have been approved at a Staff level as a minor subdivision.



**ALPINE CITY  
STAFF REPORT**  
January 29, 2019

**To:** Alpine City Planning Commission

**From:** Staff

**Prepared By:** Austin Roy, City Planner  
Planning & Zoning Department

Jed Muhlestein, City Engineer  
Engineering & Public Works Department

**Re: Goeckeritz Estates Plat C – Plat Amendment**

Applicant: Quinn Goeckeritz  
Project Location: 289 S. High Bench Road  
Zoning: CR-20,000 Zone  
Acreage: Approximately 2.45 Acres  
Lot Size: Lots range from 0.46 acres to 1.97 acres  
Request: Recommend approval of the plat amendment

**SUMMARY**

The property owner has applied for a boundary line adjustment between two lots that they already own. Property is located at 289 S. High Bench Road, on approximately 2.45 acres, in the CR20-000 zone, with lots ranging in size from 0.46 acres to 1.97 acres. One of the lots is in a recorded subdivision and would require that the boundary line adjustment be done via plat amendment.

This boundary line adjustment/plat amendment is only coming to Planning Commission for recommendation because of the right-of-way dedication that must be approved by City Council. Otherwise it would have been approved at a Staff level as a minor subdivision.

**BACKGROUND**

In 2001 Goeckeritz Estates Subdivision was created, a minor subdivision with two lots. In 2012, the plat was amended, Goeckertiz Estates Plat B, and the northern boundary line of Lot 1 was adjusted. Now the property owner would like to make further adjustments and dedicate a right-of-way to the City.

## **ANALYSIS**

### Lot Width and Area

Each lot meets the City's lot width/frontage requirements, plat does not show any lot with less than 110 feet of frontage on a public street.

Proposed lots also meet the City's area requirements for the zone, with the smallest lot at 0.46 acres or 20,001 square feet. Lots located in the CR-20,000 zone are required to be at least 20,000 square feet in size.

### Use

Single-unit detached dwellings, which is the proposed use for lots as shown on the plat amendment, are a permitted use in the zone. The developer has not proposed any other uses.

### Street System

Public right-of-way is being dedicated to the City, located on the northwest corner of the plat, which is consistent with the City's Street Master Plan.

### Sensitive Lands (Wildland Urban Interface)

Not applicable, not located in sensitive lands area.

### Trails

Not applicable, no trails in this area.

### General Plan

Proposal complies with the City General Plan.

## **REVIEWS**

### PLANNING AND ZONING DEPARTMENT REVIEW

The analysis section in the body of this report serves as the Planning and Zoning Department review.

### ENGINEERING AND PUBLIC WORKS DEPARTMENT REVIEW

#### Streets

The application shows the appropriate right of way dedication on High Bench Boulevard. Frontage improvements are required with any development, in this situation the improvements (curb, gutter, sidewalk, roadway) already exist.

#### Utilities

Lot 2 will need to be improved with service laterals for water, sewer, and pressurized irrigation.

#### Other

A bond would be required for the improvements of Lot 2. **The developer needs to submit an engineering cost estimate for the proposed improvements** so one can be created.

**The City water policy needs to be met prior to recordation of the plat.**

A Land Disturbance Permit would be required prior to construction which ensures a Storm Water Pollution Prevention Plan (SWPPP) is followed. All disturbed areas of the site are required to be revegetated after construction.

**There are minor redlines on plat that would need corrected prior to recordation.**

#### LONE PEAK FIRE DEPARTMENT REVIEW

See the attached review from the Lone Peak Fire Department.

#### NOTICING

Notice has been properly issued in the manner outlined in City and State Code

#### **STAFF RECOMMENDATION**

Review staff report and findings and make a recommendation to City Council to either approve or deny the proposed plat amendment. Findings are outlined below.

Findings for a Positive Motion:

- A. Lots comply with area, minimum frontage, use, and slope requirements for the CR-20,000 zone.

Findings for Negative Motion:

- A. None.

#### **MODEL MOTIONS**

##### **SAMPLE MOTION TO APPROVE**

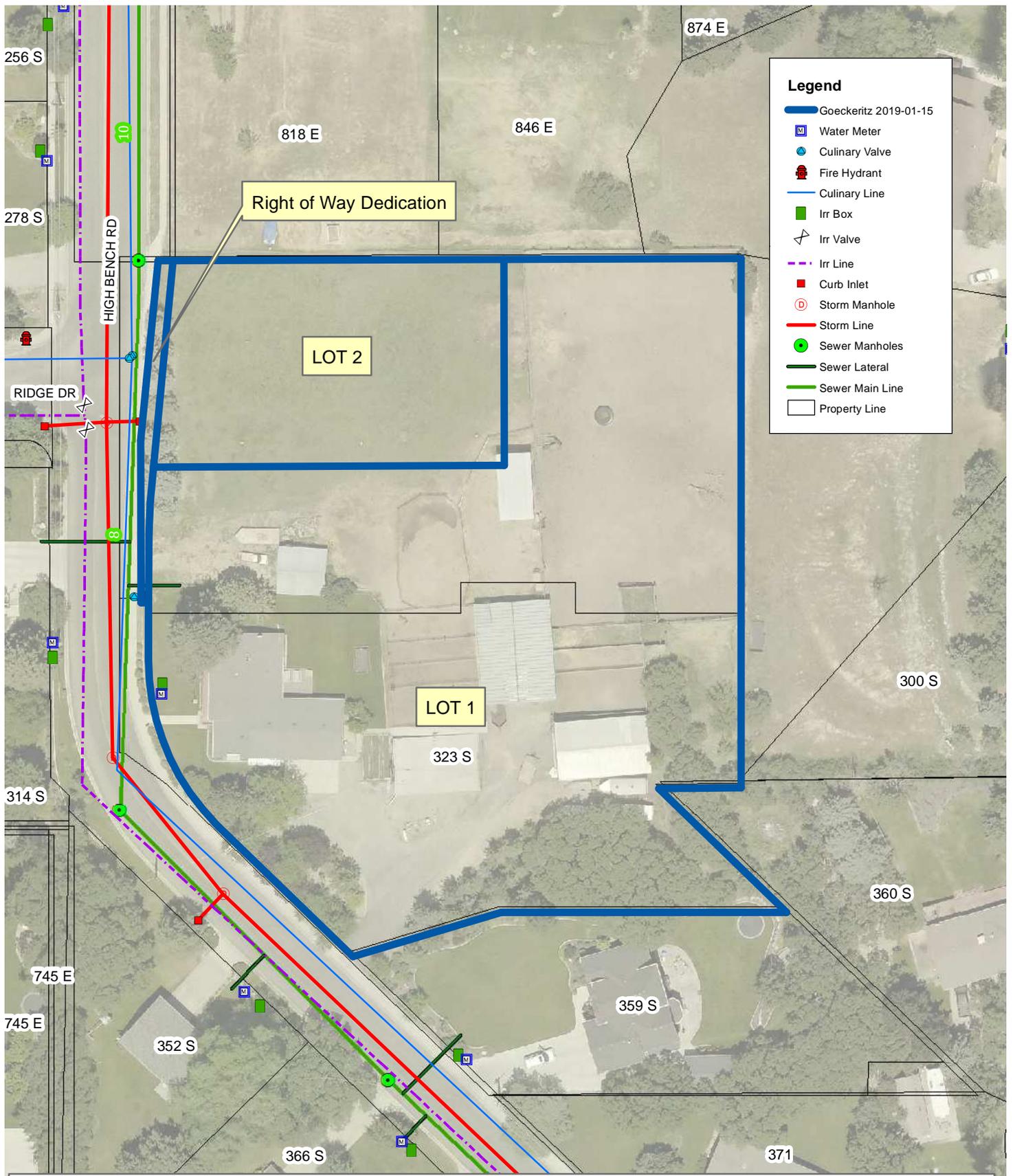
I motion to recommend approval of the proposed Summit Pointe Amended Plat “B” with the following conditions:

- The Developer provide and engineer’s cost estimate;
- The Developer address redlines on the plat and plans;
- The Developer meet the water policy.

##### **SAMPLE MOTION TO DENY**

I motion to recommend that the plat amendment Summit Pointe Amended Plat “B” be denied based on the following:

- \*\*\*Insert Finding\*\*\*



- Legend**
- █ Goeckeritz 2019-01-15
  - M Water Meter
  - ⊙ Culinary Valve
  - ⊙ Fire Hydrant
  - Culinary Line
  - Irr Box
  - ⊙ Irr Valve
  - - - Irr Line
  - Curb Inlet
  - ⊙ Storm Manhole
  - Storm Line
  - ⊙ Sewer Manholes
  - Sewer Lateral
  - Sewer Main Line
  - Property Line

NOTE: Alpine City does not keep records of phone, gas, power, or other utilities not owned/maintained by the city.

Property Boundaries and Utilities are shown for reference only. Though shown generally close, a survey and Blue Stake should be done to locate both accurately.

# Goeckeritz Plat C

1 inch = 70 feet





## **ALPINE PLANNING COMMISSION AGENDA**

**SUBJECT: Major Subdivision Final Plat Review – North Point Plat D**

**FOR CONSIDERATION ON: 5 February 2019**

**PETITIONER: Marcus Watkins**

**ACTION REQUESTED BY PETITIONER: Recommend Approval of the Final Plat**

**APPLICABLE STATUTE OR ORDINANCE: Article 4.06.030**

### **BACKGROUND INFORMATION:**

The developer is seeking approval for North Point View Plat D, which consists of 7 lots on 3.96 acres. Lots Range in size from 0.46 to 0.57 acres (20,0028 to 24,970 square feet). Plat D is located in the CR-20,000 zone.



**ALPINE CITY  
STAFF REPORT**  
January 24, 2019

**To:** Alpine City Planning Commission

**From:** Staff

**Prepared By:** Austin Roy, City Planner  
Planning & Zoning Department

Jed Muhlestein, City Engineer  
Engineering & Public Works Department

**Re: North Point View Plat D – Final**

Applicant: Marcus Watkins, representing Alpine Lower Field, LLC.  
Project Location: Approximately 1120 N. East View Lane.  
Zoning: CR-20,000 Zone.  
Acreage: Approximately 3.96 Acres.  
Lot Size: Lots range from 0.46 acres to 0.57 acres.  
Request: Recommend approval of the final plat.

**SUMMARY**

The developer is seeking approval for North Point View Plat D, which consists of 7 lots on 3.96 acres. Lots Range in size from 0.46 to 0.57 acres (20,0028 to 24,970 square feet). Plat D is located in the CR-20,000 zone.

**BACKGROUND**

The proposed North Point View PRD Subdivision consists of 33 lots on approximately 30.55 acres. The development is located at the north end of Main Street and nor of Eastview Plat E. The development is split between the CR-20,000 and CR-40,000 zones. The lots range in size from 20,006 to 32,241 square feet.

Preliminary approval occurred in 2004. The City granted no expiration date of Preliminary approval through a development agreement. North point Plat A was submitted for Final, approved, and built in 2007. Plat B was approved in 2016, built in 2017. Plat C was approved and built in 2018.

## **ANALYSIS**

### *Lot Width and Area*

North Point View Plat D is located with the CR-20,000 zone. The Development Code requires all lots within the zone to be at least 20,000 square feet in size. The smallest lot on the proposed plat is .46 acres or 20,0028 square feet, which meets the minimum requirement for the zone.

Each lot also meets the City's minimum width requirements. The plat does not show any lot with less than the minimum required width of 110 feet for standard lot and 80 feet for a cul-de-sac lot.

### *Use*

The developer is proposing that the lots be used for single-unit detached dwellings, which is consistent with the permitted uses for the CR-20,000 zone. The developer has not proposed any other uses.

### *Street System*

The proposal calls for a single cul-de-sac with 7 lots and complies with the City Street Master Plan.

### *Sensitive Lands (i.e. Wildland Urban Interface)*

The proposed phase of development is not located in the sensitive lands area. Requirement not applicable to this development.

### *Trails*

The City currently has no trails around this development, nor are there any anticipated.

### *General Plan*

The proposed final plat meets all criteria of the City General Plan.

### *Other*

There are existing buildings/structures onsite that may not meet setbacks if the development was recorded. **All buildings/structures either need removed or a bond provided for the removal of said buildings prior to recordation of the plat.**

## **REVIEWS**

### **PLANNING AND ZONING DEPARTMENT REVIEW**

The analysis section in the body of this report serves as the Planning and Zoning Department review.

### **ENGINEERING AND PUBLIC WORKS DEPARTMENT REVIEW**

#### *Streets*

The application shows the appropriate right of way dedication for the new cul-de-sac street. Frontage improvements are existing along East View Lane and are shown to be installed on the new cul-de-sac.

Utilities

Culinary water, pressurized irrigation, and sewer will all connect to the existing lines in East View Lane for service. New service laterals are shown for each proposed lot.

No storm drain improvements are required with this phase of construction as they were previously accounted for and built with the construction of Plat C. The detention pond falls within Lot 33 of this plat, and an easement is shown for such on the proposed Plat D.

The North Field Ditch, owned by the Alpine Irrigation Company, runs along the easterly side of the property. City ordinance 4.7.19 requires irrigation ditches to be piped when development occurs where they reside. The plans do not show the ditch or piping thereof and would be required to do so prior to recording. **As a condition of approval, the Council should require plans for a piped ditch system be submitted and approved by Engineering as well as a 20-foot wide easement be shown on the plat for the alignment of said pipe.**

Other

A small residential well exists on Lot 29. The well has rocks and garbage stuck in it at this time and is unusable. **It will be required that the well be sealed per state standards to protect the aquifer from potential contamination.**

**The City water policy needs to be met prior to recordation of the plat.**

A Land Disturbance Permit would be required prior to construction which ensures a Storm Water Pollution Prevention Plan (SWPPP) is followed. All disturbed areas of the site are required to be revegetated after construction.

**There are redlines on plat and plans that would need corrected prior to recordation and construction.**

LONE PEAK FIRE DEPARTMENT REVIEW

See the attached review from the Lone Peak Fire Department.

HORROCKS ENGINEERING REVIEW

See the attached review from Horrocks Engineers.

NOTICING

Notice has been properly issued in the manner outlined in City and State Code

**STAFF RECOMMENDATION**

Review staff report and findings and make a recommendation to City Council to either approve or deny the proposed subdivision. Findings are outlined below.

Findings for a Positive Motion:

- A. The plan aligns with previous approvals for North Point View.
- B. Proposed roadway construction appears to meet Alpine City design standards.
- C. Frontage improvements are shown throughout the development.

Findings for Negative Motion:

- A. The developer has not submitted plans to pipe the existing portion of North Field Ditch that runs through the property

**MODEL MOTIONS**

**SAMPLE MOTION TO APPROVE**

I motion to recommend approval of the proposed North Point View Plat D with the following conditions:

- The Developer submit plans for a piped ditch system, to be approved by Engineering, and show a corresponding 20-foot wide easement on the plat for the alignment of said pipe;
- The Developer seal the existing well on Lot 29 during construction;
- The Developer address redlines on the plat and plans;
- The Developer meet the water policy;
- The Developer remove all buildings that will conflict with future property lines (or provide a bond to do so prior to recording the plat.

**SAMPLE MOTION TO DENY**

I motion to recommend that the plat amendment North Point View Plat D be denied based on the following:

- The Developer did not submit plans to pipe the existing irrigation ditch.

**To:** Jed Muhlestein  
Alpine City

**From:** John E. Schiess, P.E.

**Date:** Jan 26, 2019

**Memorandum**

**Subject:** North Point D Hydraulic Modeling Results and Recommendations

---

Project consists of 7 residential lots located on East View Lane just north of Ease View Dr.

The development proposes 7 culinary ERC's, 2.2 irrigated acres, and 7 sanitary sewer ERU's. The current master plan anticipated 7 culinary ERC's, 2.6 irrigated acres, and 7 sanitary sewer ERU's. Proposed connections fall well within the current master plans.

The proposed culinary water improvements have been modeled in both the current and buildout models. The proposed improvements fit well within the City's culinary water master plan and modeling shows them to be adequate. The following comments and recommendations are noted for the proposed culinary water system.

The proposed pressurized irrigation improvements have been modeled in both the current and buildout models under both wet and dry year supply conditions. The proposed improvements fit well within the City's pressurized irrigation master plan and modeling shows them to be adequate. The following comments and recommendations are noted for the proposed pressurized irrigation system.

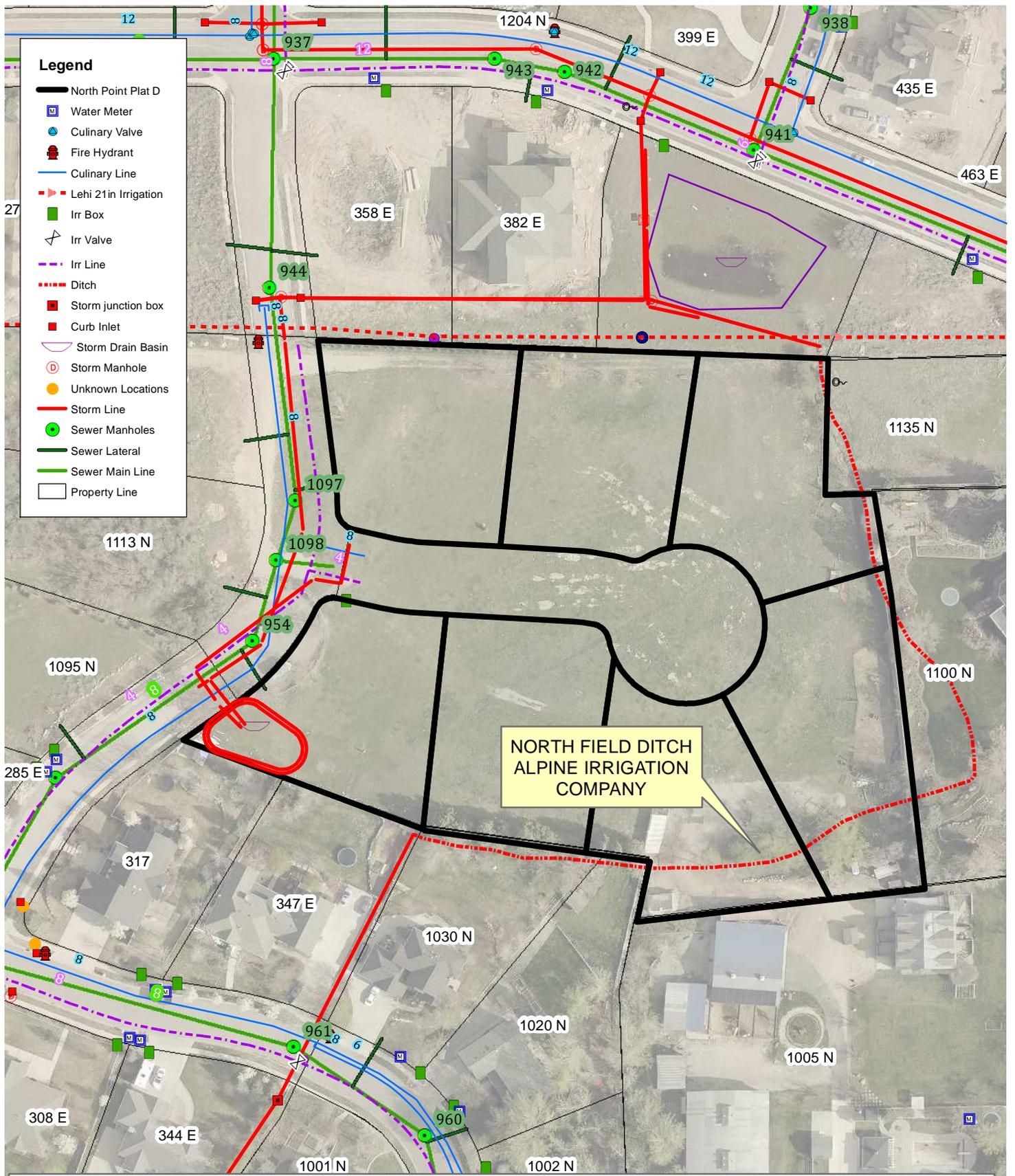
The proposed sanitary sewer improvements have been modeled in both the current and buildout models. The proposed improvements fit well within the City's sanitary sewer master plan and modeling shows them to be adequate. The following comments and recommendations are noted for the proposed sanitary sewer system.

**Recommendations:**

1. Culinary and PI mainlines do not need to connect to Heritage Hills Dr as this is a pressure zone boundary.

**Comments:**

2. Fire flow available in the area surrounding the proposed improvements should be over 3000 gallons per minute at 20 psi for the proposed lines.

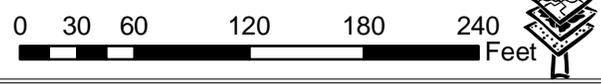


NOTE: Alpine City does not keep records of phone, gas, power, or other utilities not owned/maintained by the city.

Property Boundaries and Utilities are shown for reference only. Though shown generally close, a survey and Blue Stake should be done to locate both accurately.

# Alpine Utility Map

1 inch = 100 feet



## Jed Muhlestein

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**From:** Will Jones <willjonespinevalley@gmail.com>  
**Sent:** Friday, January 25, 2019 1:56 PM  
**To:** Jed Muhlestein  
**Subject:** Re: Irrigation Company Review of subdivision

I agree with the drawing, more direct and could give you a connection that is better than what you have, if you run a line over to the Eastview storm drain, that can be activated at a later date. Will

Sent from my iPhone

On Jan 25, 2019, at 12:08 PM, Jed Muhlestein <[jed@alpinecity.org](mailto:jed@alpinecity.org)> wrote:

Will,

I know you're out of the country helping folks. If you could look at the attached recommendation from Roger and just reply and let me know if you agree or not, that would be perfect. The ability to sign, scan, and email would be preferred, but I'm not sure that's available where you're at.

Jed











NO.	DESCRIPTION	DATE	APP'D

SCALE: 1"=30'  
 CHECKED BY: DMV  
 DESIGNED BY: DMV  
 DRAWN BY: DMV  
 SURVEY BY:  
 ORG. DATE: 3-1-18

**GATEWAY CONSULTING, INC.**  
 CIVIL ENGINEERING CONSULTING & LAND PLANNING  
 CONSTRUCTION MANAGEMENT  
 P.O. BOX 951005 SOUTH JORDAN, UT 84095  
 PH: (801) 964-5848 FAX: (801) 432-7050  
 pmu@gatewayconsulting.com

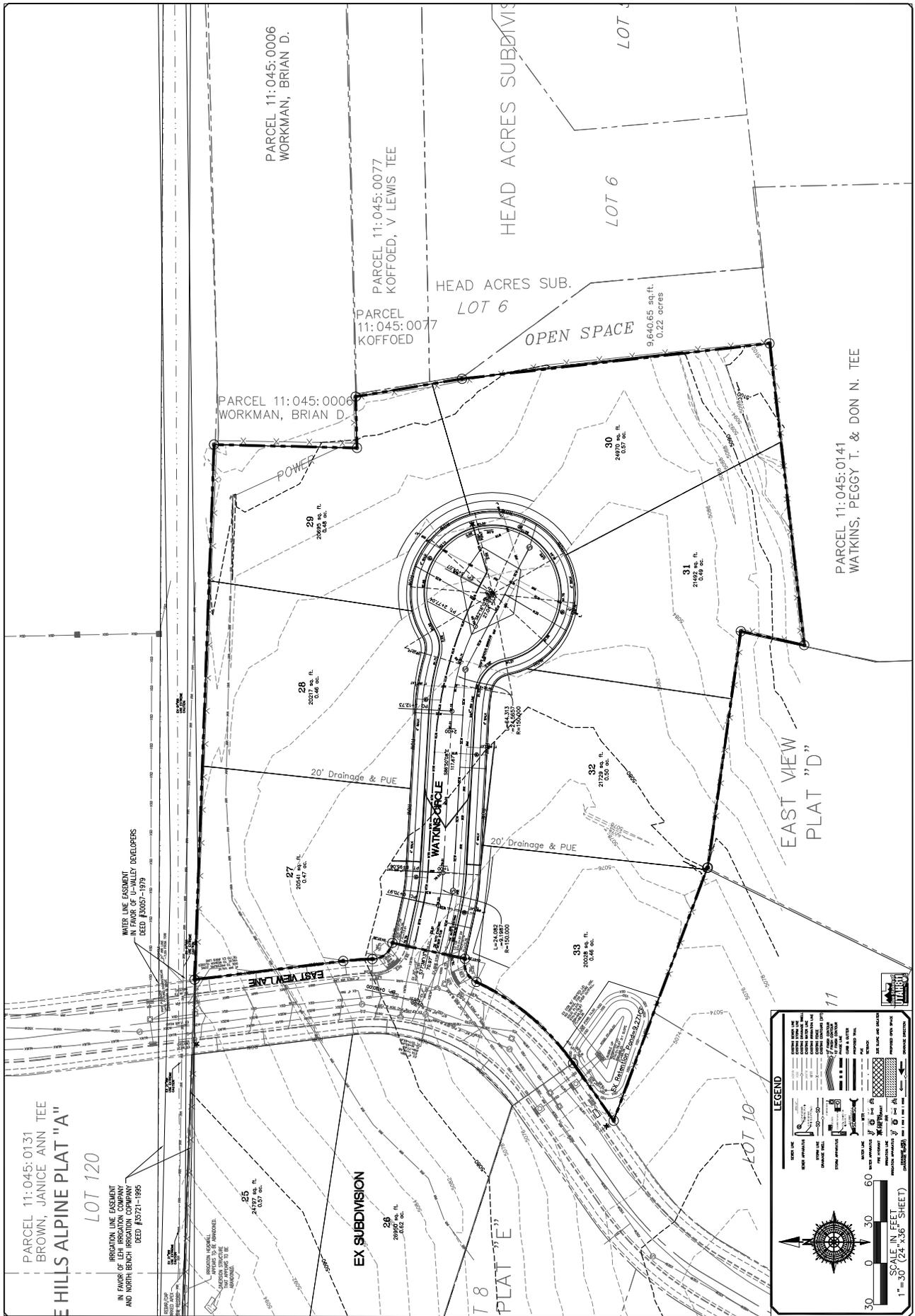


**NORTH POINT VIEW PLAT D**  
 SITE PLAN AND  
 GRADING AND DRAINAGE  
 1-2-19

ALPINE CITY

PRELIMINARY  
 NOT FOR  
 CONSTRUCTION

SHEET NO. 3



**LEGEND**

	20' DRAINAGE & PUE
	POWER
	EASEMENT
	PROPOSED ROAD
	EXISTING ROAD
	BOUNDARY
	SPOT ELEVATION
	CONTOUR
	PROPOSED STRUCTURE
	EXISTING STRUCTURE
	UTILITY
	SURVEY POINT
	NORTH ARROW

SCALE IN FEET  
 1"=30' (24"x36" SHEET)



NO.	DESCRIPTION	DATE	APP'D.

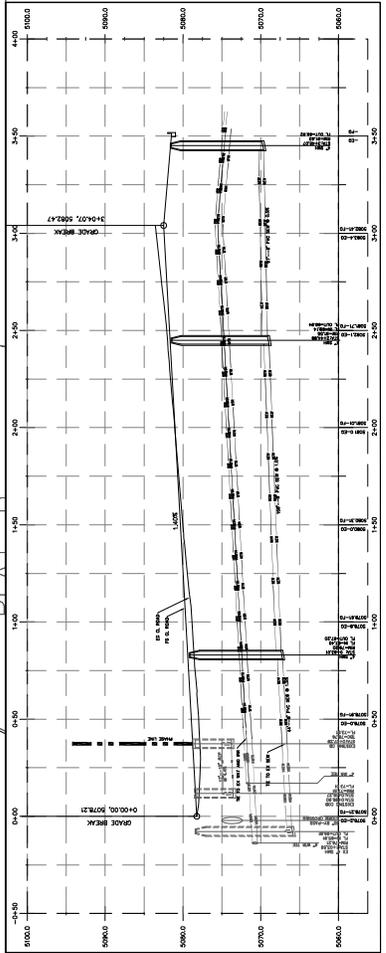
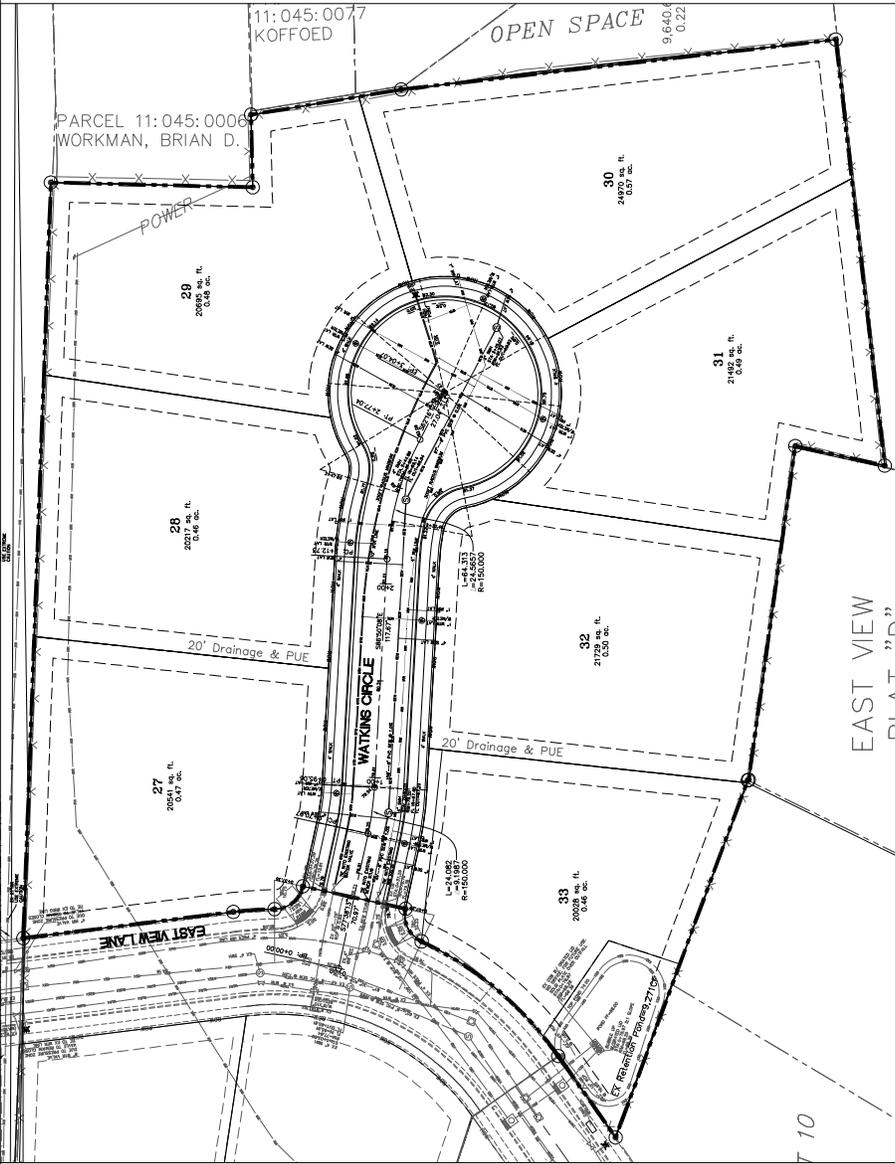
SCALE: 1"=30'  
 CHECKED BY: GP  
 DESIGNED BY: GP  
 DRAWN BY: GP  
 SURVEY BY: GP  
 GRIC. DATE: 3-1-18

CIVIL ENGINEERING CONSULTING (LAND PLANNING)  
 GATEWAY CONSULTING, Inc.  
 P.O. BOX 95-1065 SOUTH JORDAN UT 84095  
 PH: (801) 984-6546 FAX: (801) 425-7050  
 email@gatewayconsulting.com



NORTH POINT VIEW PLAT D  
 PLAN AND PROFILE  
 EAST VIEW LANE  
 1-2-19

ALPINE CITY  
 PRELIMINARY  
 NOT FOR CONSTRUCTION  
 SHEET NO. PP1



North arrow pointing North. Scale bar: 1"=7.5' VERTICAL. Legend for symbols and materials used in the drawing, including 'GRADE BREAK', 'DRAINAGE', 'POWER', and 'OPEN SPACE'.











ENGINEERING • ENVIRONMENTAL (ESA I & II)  
MATERIALS TESTING • SPECIAL INSPECTIONS  
ORGANIC CHEMISTRY

## GEOTECHNICAL ENGINEERING STUDY

# North Point

Eastview Lane,  
Alpine, Utah 84043

Prepared For:

Mr. Marcus Watkins  
Alpine Lower Field, LLC  
marcuswatkinsutah@gmail.com

CMT Project No. 11016  
March 21, 2018

# CMT ENGINEERING LABORATORIES

March 21, 2018

Mr. Marcus Watkins  
Alpine Lower Field, LLC  
marcuswatkinsutah@gmail.com

Subject: Geotechnical Engineering Study  
North Point  
Eastview Ln  
Alpine, Utah 84004  
CMT Project Number: 11016

Mr. Watkins

Submitted herewith is the report of our geotechnical engineering study for the subject site. This report contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project.

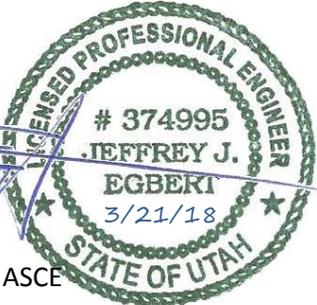
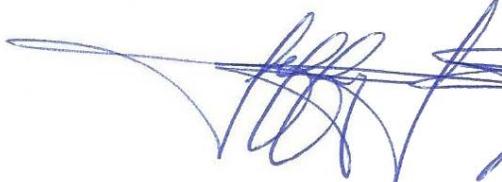
On Friday, March 9, 2018, a CMT Engineering Laboratories (CMT) engineer was on-site and supervised the excavation of 4 test pits extending to a depth of 7.5 feet below the existing ground surface. Soil samples were obtained during the field operations and subsequently transported to our laboratory for further testing and observation.

Conventional spread and/or continuous footings may be utilized to support the proposed residences, provided the recommendations in this report are followed. A detailed discussion of design and construction criteria is presented in this report.

We appreciate the opportunity to work with you at this stage of the project. CMT offers a full range of Geotechnical Engineering, Geological, Material Testing, Special Inspection services, and Phase I and II Environmental Site Assessments. With four offices throughout Northern Utah and three offices in Arizona, our staff is capable of efficiently serving your project needs. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132.

Sincerely,  
CMT Engineering Laboratories

Reviewed by:



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

Nathan D. Pack, P.E.,  
Geotechnical Engineer

**ENGINEERING • ENVIRONMENTAL (ESA I & II) • MATERIALS TESTING • SPECIAL INSPECTIONS • ORGANIC CHEMISTRY**

LOGAN OFFICE: 2005 NORTH 600 WEST, SUITE A, LOGAN, UTAH 84321 • TEL: (435) 753-6815 • FAX: (435) 787-4983  
OGDEN OFFICE: 707 24<sup>th</sup> STREET, SUITE 1A, OGDEN, UTAH 84401 • TEL: (801) 870-6730  
SALT LAKE CITY OFFICE: 2796 S. REDWOOD ROAD, SALT LAKE CITY, UTAH 84119 • TEL: (801) 908-5954 • FAX: (801) 972-9075  
UTAH COUNTY OFFICE: 496 EAST 1750 NORTH, SUITE B, VINEYARD, UTAH 84057 • TEL: (801) 492-4132  
ATL/ARIZONA OFFICE: 2921 NORTH 30<sup>th</sup> AVENUE, PHOENIX, ARIZONA 85017 • TEL: (602) 241-1097 • FAX: (602) 2771306  
EMAIL = cmt@cmtlaboratories.com

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### **APPENDIX**

**Figures 1:** Site Map

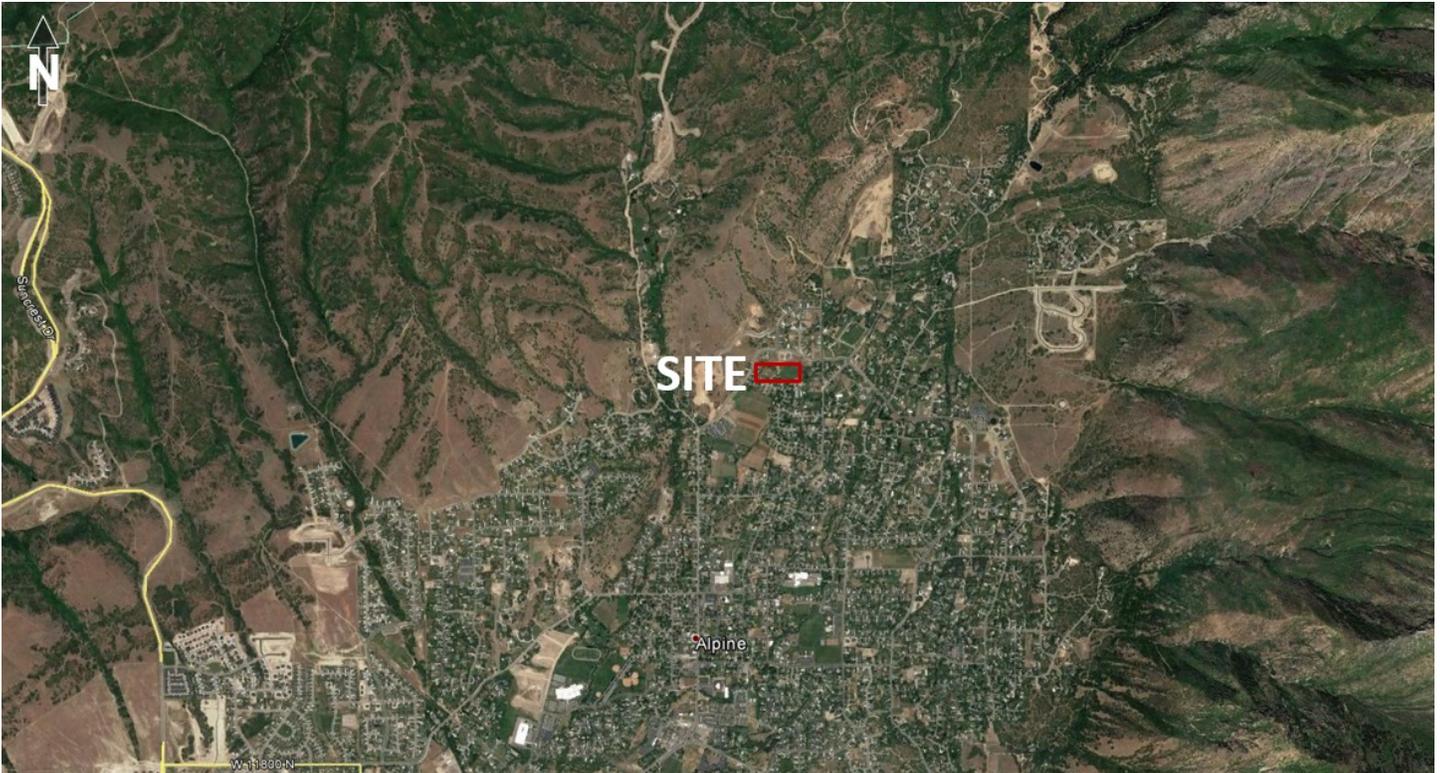
**Figures 2-5:** Test Pit Logs

**Figure 6:** Key to Symbols

## 1.0 INTRODUCTION

### 1.1 General

CMT Engineering Laboratories (CMT) was retained to conduct a geotechnical subsurface study for the proposed single family residential development. The parcel is situated off Eastview Lane, east of Alpine Boulevard, in Alpine, Utah, as shown in the vicinity map below.



**Vicinity Map**

### 1.2 Objectives, Scope and Authorization

The objectives and scope of our study were planned in discussions between Mr. Marcus Watkins of Alpine Lower LLC, and Mr. Nathan Pack of CMT Engineering Laboratories (CMT). In general, the objectives of this study were to define and evaluate the subsurface soil and groundwater conditions across the site, and provide appropriate foundation, earthwork, pavement and seismic recommendations to be utilized in the design and construction of the proposed subdivision.

In accomplishing these objectives, our scope of work has included performing field exploration, which consisted of the excavating/logging/sampling of 4 test pits, performing laboratory testing on representative samples, and conducting an office program, which consisted of correlating available data, performing engineering analyses,

and preparing this summary report. This scope of work was authorized by returning a signed copy of our proposal dated March 7, 2018.

### **1.3 Description of Proposed Construction**

We understand that the proposed structures will be single family residences which we project will have two levels of wood frame construction above grade, with a possible single level of reinforced concrete below grade (basement). We project that maximum loads for the residences will be on the order of 4,000 pounds per lineal foot for walls and 50,000 pounds for columns. Floor slab loads are anticipated to be relatively light, with an average uniform loading not exceeding 150 pounds per square foot. If the loading conditions are different than we have projected, please notify us so that any appropriate modifications to our conclusions and recommendations contained herein can be made.

We project that asphalt-paved residential streets will be constructed as part of the development. Traffic is projected to consist of a light volume of automobiles and pickup trucks, a few medium-weight delivery trucks, a weekly garbage truck, and an occasional fire truck.

Site development will require some earthwork in the form of minor cutting and filling. A site grading plan was not available at the time of this report, but we project that maximum cuts and fills may be on the order of 3 to 4 feet. If deeper cuts or fills are planned, CMT should be notified to provide additional recommendations, if needed.

### **1.4 Executive Summary**

The most significant geotechnical aspects regarding site development include the following:

1. Potentially collapsible soils are present within the upper 6 feet, which didn't visually contain pinholes, but was confirmed by consolidation/collapse tests that indicated these soils have a collapse potential of 4% to 5%.

Our evaluation indicates that the proposed residences can be supported upon conventional spread and continuous wall foundations established upon suitable, undisturbed, uniform, non-collapsible natural soils and/or upon structural fill extending to suitable natural soils. Foundations should not be placed on undocumented fill, topsoil, or potentially collapsible soils.

CMT must assess that topsoil, undocumented fills, and any debris, disturbed or unsuitable soils have been removed and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, or pavements.

In the following sections, detailed discussions pertaining to the site and subsurface descriptions, geologic/seismic setting, earthwork, foundations, lateral resistance, lateral pressure, floor slabs, and pavements are provided.

## 2.0 FIELD EXPLORATION

### 2.1 General

In order to define and evaluate the subsurface soil and groundwater conditions at the site, four test pits were excavated with a tractor excavator at the site to a machine maximum depth of 7.5 feet below the existing ground surface. Locations of the test pits are presented on **Figure 1** in the appendix.

The field exploration was performed under the supervision of an experienced member of our geotechnical staff. The subsurface soils encountered in the test pits were logged and described in general accordance with ASTM<sup>1</sup> D-2488. Samples of the subsurface soils encountered were collected from those brought up by the excavator bucket at various depths, and were classified in the field based upon visual and textural examination. These field classifications were supplemented by subsequent inspection and testing of select samples in our laboratory. Graphical representations of the subsurface conditions encountered are presented on each individual Test Pit Log, **Figures 2 through 5**, included in the Appendix. A Key to Symbols defining the terms and symbols used on the logs, is provided as **Figure 6** in the Appendix.

When backfilling the test pits, only minimal effort was made to compact the backfill and no compaction testing was performed. Thus, settlement of the backfill in the test pits over time should be anticipated.

### 2.2 Infiltration Testing

Infiltration tests were also performed as part of our field exploration by digging small holes using a shovel within test pit TP-3, at a depth of 3.0 feet below grade as indicated on the test pit logs. The testing consisted of filling the small hole with water, and measuring the rate of water drop within the small hole over a certain time period (i.e. 10 minutes). This process was repeated multiple times until subsequent readings were the same. The results of this test indicate that the silty sand soils at this site have an infiltration rate ranging from 1 to 1.66 minutes per inch. To account for potential siltation, we recommend designing using an infiltration rate of 1.66 minutes per inch.

## 3.0 LABORATORY TESTING

### 3.1 General

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. Dry Density, ASTM D-2937, Dry unit weight representing field conditions
3. Atterberg Limits, ASTM D-4318, Plasticity and workability

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<sup>1</sup>American Society for Testing and Materials

4. Gradation Analysis, ASTM D-1140/C-117, Grain Size Analysis
5. One Dimension Consolidation, ASTM D-2435, Consolidation properties

### **3.2 Lab Summary**

Laboratory test results are presented on the test pit logs (**Figures 2 through 5**) and in the Lab Summary table on the following page:

**Lab Summary Table**

Pit	(feet)	Class	Type	Content (%)	(pcf)	Grav	Sand	Fines	LL	PL	PI	Collapse (-)
TP-1	3	GP-GM	Grab Sample	6		56	38	6				
TP-2	6	SM	Grab Sample	9	103.5	9	68	23	0	0		4.5
TP-4	7	SP-SM	Grab Sample	7		7	72	21				

## **4.0 GEOLOGIC & SEISMIC CONDITIONS**

### **4.1 Geologic Setting**

The subject site is located in the northeastern portion of Utah Valley near the southern base of the Traverse Mountains in Alpine, Utah. The site sits at an elevation of between approximately 5,080 and 5,115 feet above sea level. The Traverse Mountains are a relatively small range trending in an east to west direction between the more prominent Wasatch Range to the east and the Oquirrh Range to the west. The Traverse Mountains form a structural and geographic barrier between the Utah Valley to the south and the Salt Lake Valley to the north. The mountain range and adjacent, deep, sediment-filled valley basins are part of the Basin and Range Physiographic Province. The Traverse Range and adjacent valleys were formed by extensional tectonic processes during the Tertiary and Quaternary geologic time periods. The subject site is located within the Intermountain Seismic Belt, a zone of active tectonism and seismic activity extending from southwestern Montana to southwestern Utah. The active (evidence of movement within the past 10,000 years) Wasatch Fault Zone is part of the Intermountain Seismic Belt and extends from southeastern Idaho to central Utah along the western base of the Wasatch Mountain Range. The eastern Traverse Mountains form a transition zone between the Salt Lake City segment of the Wasatch Fault Zone to the north and the Provo Segment of the fault zone to the south.

Much of northwestern Utah, including the Utah and Salt Lake Valleys, was also previously covered by the Pleistocene age Lake Bonneville. Utah Lake, which currently occupies much of the western portion of Utah valley, is a remnant of this ancient fresh water lake. Lake Bonneville reached a high-stand elevation of between approximately 5,100 and 5,200 feet above sea level at between 18,500 and 17,400 years ago. Approximately 17,400 years ago, the lake breached its basin in southeastern Idaho and dropped relatively fast, by almost 300 feet, as water drained into the Snake River. Following this catastrophic release, the lake level continued to drop slowly over time, primarily driven by drier climatic conditions, until reaching the current levels of Utah Lake and the larger Great Salt Lake to the north. Shoreline terraces formed at the high-stand elevation of the lake and

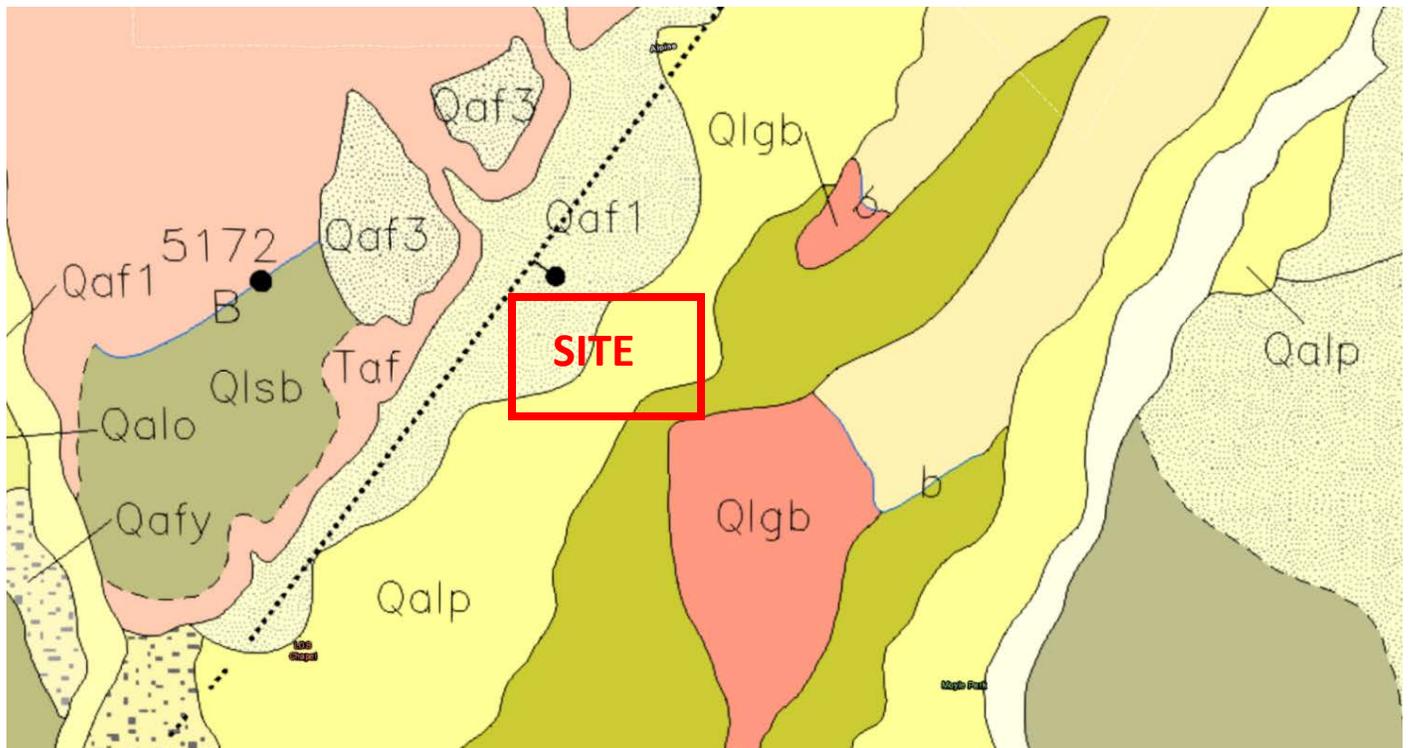
several subsequent lower lake levels are visible in places on the mountain slopes surrounding the valley. Much of the sediment within Utah Valley was deposited as lacustrine sediments during both the transgressive (rise) and regressive (fall) phases of Lake Bonneville.

The geology of the USGS 7.5 Lehi, Utah Quadrangle, including the location of the subject site, has been mapped by Biek<sup>2</sup>. The surficial geology on the western portion of the subject site is mapped as “Modern alluvial-fan deposits” (Map Unit Qaf<sub>1</sub>) dated to be Holocene. The geology on the central portion of the site is mapped as “Alluvial deposits related to the Provo phase of the Bonneville lake cycle” (Map Unit Qalp) dated to be upper Pleistocene. The geology on the southeast portion of the site is mapped as “Older alluvial deposits related to the Provo phase of the Bonneville lake cycle” (Map Unit Qalpo) dated to be upper Pleistocene. No fill has been mapped at the location of the site on the geologic map.

Unit Qaf<sub>1</sub> is described on the referenced map as “Poorly to moderately sorted, non-stratified, clay- to boulder-size sediment deposited principally by debris flows at the mouths of active drainages; upper parts typically characterized by abundant boulders and debris-flow levees that radiate away from the apex of the fan; equivalent to the younger part of Qaf<sub>y</sub>, but differentiated because they form smaller, isolated fans; generally less than 30 feet (9 m) thick.” Unit Qalp is described in the mapping as “Moderately to well-sorted sand, silt, and pebble gravel deposited principally in river channels; coarsens upgradient and includes boulder-size clasts in the upper reaches of Dry Creek; locally includes veneer of fine-grained eolian sand and silt, and may include loess veneer; large deposits in south-central part of quadrangle are mostly fluvial topset beds that grade into Provo-level deltaic deposits (Qldp) derived from American Fork and Dry Creek Canyons; generally 5 to 20 feet (2-6 m) thick.” Unit Qalpo is described as “Moderately to well-sorted sand, silt, and pebble to boulder gravel deposited in ancestral Dry Creek channel; forms terrace remnant north of Alpine that is about 30 feet (9 m) above adjacent Qalp deposits; may include loess veneer; exposed thickness about 30 feet (9 m).”

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<sup>2</sup>Biek, R.F., 2005, Geologic Map of the Lehi Quadrangle and Part of the Timpanogos Cave Quadrangle, Salt Lake and Utah Counties, Utah; Utah Geological Survey Map 210, Scale 1:24,000.



**Geologic Map**

## **4.2 Faulting**

The referenced geologic map shows a concealed fault following the general location of the east side of Heritage Hills Drive adjacent to the western boundary of the site. The map labels the fault as the Traverse Mountain South Fault. The referenced map indicates that this fault is a “Normal fault inferred principally from gravity data; very approximately located.” The map also includes a northwest to southeast cross section to the west of the subject site that crosses the location of this inferred fault. The cross section indicates that the fault does not extend to the surface and has not displaced surface and near-surface, Pleistocene age lacustrine deposits of the Bonneville lake cycle. Additionally, aerial photographs of the site and surrounding area readily available on the internet show no surface expression of the fault (scarps or other lineaments) along the mapped trend of the fault. It is our conclusion that this inferred fault, if it exists, has not ruptured to and displaced the ground surface during Holocene time (last 10,000 years) and, therefore, is not considered to be active. It is our conclusion that the inferred fault poses a relatively low risk to the proposed development at the site and a surface fault rupture hazard study is not warranted for the site at this time. No other faults are mapped crossing or projecting toward the subject site.

## **4.3 Seismicity**

### **4.3.1 Site Class**

Utah has adopted the International Building Code (IBC) 2015. IBC 2015 determines the seismic hazard for a site based upon 2008 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available

based on latitude and longitude coordinates (grid points). For site class definitions, IBC 2015 (Section 1613.3.2) refers to Chapter 20, Site Classification Procedure for Seismic Design, of ASCE<sup>3</sup> 7. Given the subsurface soils at the site, including our projection of soils within the upper 100 feet of the soil profile, it is our opinion the site best fits Site Class D – Stiff Soil Profile, which we recommend for seismic structural design.

### 4.3.2 Seismic Design Category

The 2008 USGS mapping utilized by the IBC provides values of peak ground, short period and long period accelerations for the Site Class B boundary and the Maximum Considered Earthquake (MCE). This Site Class B boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions. The Seismic Design Categories in the International Residential Code (IRC 2015) are based upon the Site Class as addressed in the previous section. For Site Class D at site grid coordinates of 40.4680 degrees north latitude and -111.7717 degrees west longitude,  $S_{DS}$  is 0.819, and the **Seismic Design Category** is D<sub>1</sub>.

### 4.3.3 Liquefaction

The site is located within an area designated by the Utah Geologic Survey<sup>4</sup> as having “Very Low” liquefaction potential. Liquefaction is defined as the condition when saturated, loose, sandy soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clayey soils, even if saturated, will generally not liquefy during a major seismic event.

A special liquefaction study was not performed for this site. We encountered unsaturated gravel and sand soils within the depths we explored. In our opinion, the subsurface conditions we encountered support the mapped low liquefaction potential designation.

## 4.4 Other Geologic Hazards

No landslide deposits or features, including lateral spread deposits, are mapped on or adjacent to the site. The site is not located within a known or mapped active alluvial fan (debris flow hazard), stream flooding, or rock fall hazard area.

## 5.0 SITE CONDITIONS

### 5.1 Surface Conditions

At the time the test pits were excavated the site consisted of an agricultural lot with vegetation and topsoil in the top 3 to 4 inches throughout. The site grade sloped gently downward to the south west with an overall

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<sup>3</sup> American Society of Civil Engineers

<sup>4</sup> Utah Geological Survey, "Liquefaction-Potential Map for a Part of Utah County, Utah," Utah Geological Survey Public Information Series 28, August 1994. <https://geology.utah.gov/hazards/earthquakes-faults/liquefaction/#tab-id-2>

gradient of about 2 to 3 feet. Based upon aerial photos readily available online dating back to 1993, the site has been used for agricultural purposes since that time. The site is bound on the north, south and east by the existing homes, and Alpine Boulevard on the west (see the **Vicinity Map** above).

## **5.2 Subsurface Soils**

At the locations of the test pits we encountered approximately 3 to 8 inches of dark brown vegetated sandy TOPSOIL on the surface. Directly below the topsoil in TP-1 we found moist and medium dense brown GRAVEL and COBBLES (GP) with sand. Below the topsoil in the other test pits we encountered slightly moist and medium dense light brown Silty SAND (SM) with gravel, and slightly moist and medium dense SAND (SP-SM) with silt, gravel and cobbles. Varying depths of these layers were found in the test pits down to the full depth explored of 7.5 feet.

For a more descriptive interpretation of subsurface conditions, please refer to the test pit logs, **Figures 2 through 5**, which graphically represent the subsurface conditions encountered. The lines designating the interface between soil types on the logs generally represent approximate boundaries - in situ, the transition between soil types may be gradual. A key to the symbols and terms on the logs is included as **Figure 6**.

## **5.3 Groundwater**

Groundwater was not encountered within the maximum depths penetrated, 7.5 feet, at the time of field exploration. Groundwater levels can fluctuate as much as 1.5 to 2 feet seasonally. Numerous other factors such as heavy precipitation, irrigation of neighboring land, and other unforeseen factors, may also influence ground water elevations at the site. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

## **5.4 Site Subsurface Variations**

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations.

Also, when logging and sampling of the test pits was completed, the test pits were backfilled with the excavated soils but minimal to no effort was made to compact these soils. Thus, settlement of the backfill in the test pits over time should be anticipated.

## 6.0 SITE PREPARATION AND GRADING

### 6.1 General

All deleterious materials should be stripped from the site prior to commencement of construction activities. This includes loose and disturbed soils, any undocumented fills, topsoil, vegetation, etc. Based upon the conditions observed in the test pits there is topsoil on the surface of the site which we estimated to be about 3 to 8 inches in thickness. When stripping and grubbing, topsoil should be distinguished by the apparent organic content and not solely by color; thus we estimate that topsoil stripping will need to include the upper 3 inches at least. However, given the potential past agricultural uses of the site, the upper 12 to 15 inches may have been disturbed during farming.

The potentially collapsible soils may remain if:

1. They are properly prepared/partially replaced as outlined below;
2. No more than 3 feet of subsequent overlying site grading fills are installed above any remaining sequence of potentially collapsible soils;
3. Any planned subsurface detention systems are installed well away and down gradient from nearby structures, and preferably below any remaining sequence of potentially collapsible soils; and
4. Adequate site drainage is maintained to reduce the potential for subsurface soil saturation.
5. The owner accepts the premise that some settlement of pavement and exterior concrete flatwork areas could occur if the underlying potentially collapsible soils become wetted.

Proper preparation shall consist of scarifying the upper 18 inches followed by moisture preparation and re-compaction of exposed soils to the requirements of structural fill. This will require the temporary removal of about 9 inches of soil, then scarifying, moisture conditioning, and re-compacting the underlying 9 inches, and replacing the removed soils in compacted lifts.

The site should be examined by a CMT geotechnical engineer to assess that suitable natural soils have been exposed and any undocumented fills, collapsible soils, deleterious materials, loose and/or disturbed soils have been properly prepared or removed, prior to placing site grading fills, footings, slabs, and pavements.

Fill placed over large areas to raise overall site grades can induce settlements in the underlying natural soils. If more than 4 feet of site grading fill is anticipated over the natural ground surface, we should be notified to assess potential settlements and provide additional recommendations as needed. These recommendations may include placement of the site grading fill far in advance to allow potential settlements to occur prior to construction.

### 6.2 Temporary Excavations

For cohesionless (sandy/gravelly) soils, temporary construction excavations not exceeding 4 feet in depth should be no steeper than one-half horizontal to one vertical (0.5H:1V). To reduce disturbance of the natural soils during excavation, we recommend that smooth edge buckets/blades be utilized.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated. All excavations should be made following OSHA safety guidelines.

### **6.3 Fill Material**

Following are our recommendations for the various fill types we anticipate will be used at this site:

Fill Material Type	Description/Recommended Specification
Structural Fill	Placed below structures, flatwork and pavement. Well-graded sand/gravel mixture, with maximum particle size of 4 inches, a minimum 70% passing 3/4-inch sieve, a maximum 20% passing the No. 200 sieve, and a maximum Plasticity Index of 10.
Site Grading Fill	Placed over larger areas to raise the site grade. Sandy to gravelly soil, with a maximum particle size of 6 inches, a minimum 70% passing 3/4-inch sieve, and a maximum 50% passing No. 200 sieve.
Non-Structural Fill	Placed below non-structural areas, such as landscaping. On-site soils or imported soils, with a maximum particle size of 8 inches, including silt/clay soils not containing excessive amounts of degradable/organic material (see discussion below).
Stabilization Fill	Placed to stabilize soft areas prior to placing structural fill and/or site grading fill. Coarse angular gravels and cobbles 1 inch to 8 inches in size. May also use 1.5- to 2.0-inch gravel placed on stabilization fabric, such as Mirafi RS280i or 600X, or equivalent (see <b>Section 6.6</b> ).

On-site cobbles and sandy soils aren't suitable for structural fill, but may be used as site grading fill.

All fill material should be approved by a CMT geotechnical engineer prior to placement.

### **6.4 Fill Placement and Compaction**

The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions, can achieve compaction at 8 to 12 inches. The full thickness of each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557 (or AASHTO<sup>5</sup> T-180) in accordance with the following recommendations:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 3 feet beyond the perimeter of structures, and below flatwork and pavement (applies to structural fill and site grading fill)	0 to 5	95
	5 to 8	98
Site grading fill outside area defined above	0 to 5	92
	5 to 8	95

<sup>5</sup> American Association of State Highway and Transportation Officials

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Utility trenches within structural areas	--	96
Roadbase and subbase	-	96
Non-structural fill	0 to 5	90
	5 to 8	92

Structural fills greater than 3 feet thick are not anticipated at the site. For best compaction results, we recommend that the moisture content for structural fill/backfill be within 2% of optimum. Field density tests should be performed on each lift as necessary to verify that proper compaction is being achieved.

## **6.5 Utility Trenches**

For the bedding zone around the utility, we recommend utilizing sand bedding fill material that meets current APWA<sup>6</sup> requirements.

Above the bedding zone, we recommend that utility trench backfill have a minimum 20% fines, to reduce permeability (refer to Section 6.3 above). In addition, utilities should be installed as close to the bottom of the potentially collapsible soils as reasonably possible.

Most utility companies and local governments are requiring Type A-1a or A-1b (AASHTO Designation) soils (sand/gravel soils with limited fines) be used as backfill over utilities within public rights of way, and the backfill be compacted over the full depth above the bedding zone to at least 96% of the maximum dry density as determined by AASHTO T-180 (ASTM D-1557). The natural sand and gravel soils at this site may meet these specifications.

Where the utility does not underlie structurally loaded facilities and public rights of way, on-site fill and natural soils may be utilized as trench backfill above the bedding layer, provided they are properly moisture conditioned and compacted to the minimum requirements stated above in **Section 6.4**.

## **7.0 FOUNDATION RECOMMENDATIONS**

The following recommendations have been developed on the basis of the previously described project characteristics, the subsurface conditions observed in the field and the laboratory test data, as well as common geotechnical engineering practice.

### **7.1 Foundation Recommendations**

Based on our geotechnical engineering analyses, the proposed residences may be supported upon conventional spread and/or continuous wall foundations placed on suitable, undisturbed non-collapsible natural sandy soils

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<sup>6</sup> American Public Works Association

and/or on structural fill extending to suitable natural sandy soils. Footings may be designed using a net bearing pressure of 2,000 psf if placed on suitable, undisturbed, natural sandy soils or on structural fill. The term “net bearing pressure” refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade, thus the weight of the footing and backfill to lowest adjacent final grade need not be considered. The allowable bearing pressure may be increased by 1/3 for temporary loads such as wind and seismic forces.

We also recommend the following:

1. Exterior footings subject to frost should be placed at least 30 inches below final grade.
2. Interior footings not subject to frost should be placed at least 16 inches below grade.
3. Continuous footing widths should be maintained at a minimum of 18 inches.
4. Spot footings should be a minimum of 24 inches wide.

## **7.2 Installation**

Foundations shall not be placed on topsoil with organics, or undocumented fill, nor should they be placed on the potentially collapsible sands encountered in the upper 3 to 6 feet in test pits TP-2 through TP-4. Foundations shall also not be placed on rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. If unsuitable soils are encountered, they must be completely removed and replaced with properly compacted structural fill.

Where footings would otherwise be placed on potentially collapsible natural soils we recommend that the upper 18 inches of the subgrade be scarified, followed by moisture preparation and re-compaction of exposed soils to the requirements of structural fill. This will require the temporary removal of about 9 inches of soil, then scarifying, moisture conditioning, and re-compacting the underlying 9 inches, and replacing the removed soils in compacted lifts. This will be most critical for shallower foundations. Basement excavations may extend below the potentially collapsible soils. Excavation bottoms should be examined by a CMT geotechnical engineer to confirm that suitable bearing materials soils have been exposed. Additional recommendations may be made at that time.

All structural fill should meet the requirements for such, and should be placed and compacted in accordance with **Section 6** above. The width of structural replacement fill below footings should be equal to the width of the footing plus 1 foot for each foot of fill thickness. For instance, if the footing width is 2 feet and the structural fill depth beneath the footing is 2 feet, the fill replacement width should be 4 feet, centered beneath the footing.

The minimum thickness of structural fill below footings should be equivalent to one-third the thickness of structural fill below any other portion of the foundations. For example, if footings will cross over an area where an old basement was backfilled, and the maximum depth of structural fill used for the backfill is 6 feet, all footings for the new structure should be underlain by a minimum 2 feet of structural fill.

### **7.3 Estimated Settlement**

Foundations designed and constructed in accordance with our recommendations could experience some settlement, but we anticipate that total settlements of footings founded as recommended above will not exceed 1 inch, with differential settlements on the order of 0.5 inches over a distance of 25 feet. We expect approximately 50% of the total settlement to initially take place during construction.

### **7.4 Lateral Resistance**

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the supporting soils. In determining frictional resistance, a coefficient of 0.35 for the natural sand soils or 0.40 for structural fill, may be utilized for design. Passive resistance provided by properly placed and compacted structural fill above the water table may be considered equivalent to a fluid with a density of 440 pcf. A combination of passive earth resistance and friction may be utilized if the friction component of the total is divided by 1.5.

## **8.0 LATERAL EARTH PRESSURES**

We project that basement walls up to 8 feet tall will be constructed for the residence. The lateral earth pressure values given below are for a backfill material that will consist of the natural sand soils. If other soil types will be used as backfill, we should be notified so that appropriate modifications to these values can be provided, as needed.

The lateral pressures imposed upon subgrade facilities will depend upon the relative rigidity and movement of the backfilled structure. For rigid subgrade (basement) walls that are not more than 10 inches thick, backfill may be considered equivalent to a fluid with a density of 55 pcf (psf/ft). This value assumes that the soil surface behind the wall is horizontal and that the backfill within 3 feet of the wall will be compacted with hand-operated compacting equipment.

For seismic loading of basement walls up to 8 feet tall, a uniform active pressure of 105 psf should be utilized.

## **9.0 FLOOR SLABS**

Floor slabs may be established upon suitable, undisturbed, non-collapsible natural sand soils or on structural fill extending to suitable natural sand soils (same as for foundations). Under no circumstances shall floor slabs be established directly on any topsoil, potentially collapsible soils, non-engineered fills, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. If potentially collapsible soils are present they should be prepared as recommended above for footings.

In order to facilitate curing of the concrete, we recommend that floor slabs be directly underlain by at least 4 inches of "free-draining" fill, such as "pea" gravel or 3/4-inch quarters to 1-inch minus, clean, gap-graded gravel. To help control normal shrinkage and stress cracking, the floor slabs should have the following features:

1. Adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints;
2. Frequent crack control joints; and
3. Non-rigid attachment of the slabs to foundation walls and bearing slabs.

## **10.0 DRAINAGE RECOMMENDATIONS**

### **10.1 Surface Drainage**

Some of the subsurface natural soils are moisture sensitive and could experience additional settlement (collapse) when wetted. It is important to the long-term performance of foundations and floor slabs that water not be allowed to collect near the foundation walls and infiltrate into the underlying soils. We recommend the following:

1. All areas around each residence should be sloped to provide drainage away from the foundations. We recommend a minimum slope of 6 inches in the first 10 feet away from the foundations. This slope should be maintained throughout the lifetime of the residences.
2. All roof drainage should be collected in rain gutters with downspouts designed to discharge at least 10 feet from the foundation walls or well beyond the backfill limits, whichever is greater.
3. Adequate compaction of the foundation backfill should be provided. We suggest a minimum of 90% of the maximum laboratory density as determined by ASTM D-1557. Water consolidation methods should not be used under any circumstances.
4. Landscape sprinklers should be aimed away, and kept at least 4 feet, from the foundation walls. The sprinkling systems should be designed with proper drainage and be well-maintained. Over watering should be avoided.
5. Other precautions that may become evident during construction.

## **11.0 PAVEMENTS**

We anticipate the natural gravel/sand soils will exhibit good pavement support characteristics when saturated or nearly saturated. Based on our laboratory testing experience with similar soils, our pavement design utilized a California Bearing Ratio (CBR) of 12 for the natural silty sand soils. As previously mentioned, settlement and distress to pavements and exterior concrete flatwork may occur if underlying, potentially collapsible soils become wetted. To reduce this potential, the subgrade can be prepared as recommended for footings and floor slabs.

All pavement areas must be prepared as discussed above in **Section 6.1**. Under no circumstances shall pavements be established over topsoil, non-engineered fills (if encountered), unprepared collapsible soils, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

Given the projected traffic as discussed above in **Section 1.3**, the following pavement sections are recommended for the given ESAL's (18-kip equivalent single-axle loads) per day:

Material	Pavement Section Thickness (inches)		
Asphalt	3	3	---
Concrete	---	---	5
Road-Base	8	4	4
Subbase	0	6	0
Total Thickness	11	13	9

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%. Material meeting our specification for structural fill can be used for subbase, including the existing sandy gravelly fill soils. Roadbase and subbase material should be compacted as recommended above in **Section 6.4**. Asphalt material generally should conform to APWA requirements, having a ½-inch maximum aggregate size, a 75-gyraton Superpave mix containing no more than 15% of recycled asphalt (RAP) and a PG58-28 binder.

## 12.0 QUALITY CONTROL

We recommend that CMT be retained to as part of a comprehensive quality control testing and observation program. With CMT onsite we can help facilitate implementation of our recommendations and address, in a timely manner, any subsurface conditions encountered which vary from those described in this report. Without such a program CMT cannot be responsible for application of our recommendations to subsurface conditions which may vary from those described herein. This program may include, but not necessarily be limited to, the following:

### 12.1 Field Observations

Observations should be completed during all phases of construction such as site preparation, foundation excavation, structural fill placement and concrete placement.

### 12.2 Fill Compaction

Compaction testing by CMT is required for all structural supporting fill materials. Maximum Dry Density (Modified Proctor, ASTM D-1557) tests should be requested by the contractor immediately after delivery of any fill materials. The maximum density information should then be used for field density tests on each lift as necessary to ensure that the required compaction is being achieved.

### **12.3 Excavations**

All excavation procedures and processes should be observed by a geotechnical engineer from CMT or their representative. In addition, for the recommendations in this report to be valid, all backfill and structural fill placed in trenches and all pavements should be density tested by CMT. We recommend that freshly mixed concrete be tested by CMT in accordance with ASTM designations.

### **12.4 Vibration Monitoring**

Construction activities, particularly site grading and fill placement, can induce vibrations in existing structures adjacent to the site. Such vibrations can cause damage to adjacent buildings, depending on the building composition and underlying soils. It can be prudent to monitor vibrations from construction activities to maintain records that vibrations did not exceed a pre-defined threshold known to potentially cause damage. CMT can provide this monitoring if desired.

## **13.0 LIMITATIONS**

The recommendations provided herein were developed by evaluating the information obtained from the subsurface explorations and soils encountered therein. The exploration logs reflect the subsurface conditions only at the specific location at the particular time designated on the logs. Soil and ground water conditions may differ from conditions encountered at the actual exploration locations. The nature and extent of any variation in the explorations may not become evident until during the course of construction. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132. To schedule materials testing, please call (801) 381-5141.

# Appendix



# North Point

Eastview Ln, Alpine, Utah

**CMT** ENGINEERING  
LABORATORIES

Site Map

Date: 9-Mar-18  
Job # 11016

Figure:

1

# North Point

# Test Pit Log

# TP-1

Eastview Lane, Alpine, Utah

Equipment: Rubber Tire Backhoe  
Surface Elev. (approx):

Total Depth: 7.5'  
Water Depth: (see Remarks)

Date: 3/9/18  
Job #: 11016

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density (pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		TOPSOIL, to 8"										
1		Brown Granite COBBLES (GP-GM) with sand, gravel, and trace fines moist, medium dense										
2												
3												
4												
5												
6												
7												
8		MACHINE REFUSAL AT 7.5'										
9												
10												
11												
12												
13												
14												

Remarks: Groundwater not encountered during drilling.

Figure:

# North Point

# Test Pit Log

# TP-2

Eastview Lane, Alpine, Utah

Equipment: Rubber Tire Backhoe  
Surface Elev. (approx):

Total Depth: 7.5'  
Water Depth: (see Remarks)

Date: 3/9/18  
Job #: 11016

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density (pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		TOPSOIL, to 6", dark brown silty sand (sm) with organics										
1		Light Brown Silty SAND (SM) with gravel slightly moist, medium dense										
2				3								
3												
4												
5												
6				4	8.9		9.3	68	22.7		0	0
7												
8		MACHINE REFUSAL AT 7.5'										
9												
10												
11												
12												
13												
14												

Remarks: Groundwater not encountered during drilling.

Figure:

# North Point

# Test Pit Log

# TP-3

Eastview Lane, Alpine, Utah

Equipment: Rubber Tire Backhoe  
Surface Elev. (approx):

Total Depth: 7.5'  
Water Depth: (see Remarks)

Date: 3/9/18  
Job #: 11016

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density (pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		TOPSOIL, to 6"										
1		Dark Brown Silty SAND (SM) with clay and trace gravel slightly moist, medium dense										
2												
3				5								
4		Light Brown SAND (SP-SM) layered coarseness slightly moist, medium dense										
5												
6												
7				6								
8		MACHINE REFUSAL AT 7.5'										
9												
10												
11												
12												
13												
14												

Remarks: A percolation test was performed at 3 ft below grade. A rate of 1.66 min/inch was found.

Figure:

# North Point

# Test Pit Log

# TP-4

Eastview Lane, Alpine, Utah

Equipment: Rubber Tire Backhoe  
Surface Elev. (approx):

Total Depth: 7.5'  
Water Depth: (see Remarks)

Date: 3/9/18  
Job #: 11016

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density (pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		TOPSOIL, to 3"										
1		Dark Brown Silty SAND (SM) with gravel and trace cobbles moist, medium dense										
2		Light Brown Silty SAND (SM) with cobbles up to 24" and gravel moist, medium dense		7								
3												
4												
5												
6		grades with no cobbles and gravel										
7				8	6.5		7	71.8	21.2			
8		MACHINE REFUSAL AT 7.5'										
9												
10												
11												
12												
13												
14												

Remarks: Groundwater not encountered during drilling.

Figure:

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI

### COLUMN DESCRIPTIONS

**Depth (ft.):** Depth (feet) below the ground surface (including groundwater depth - see water symbol below).

**Graphic Log:** Graphic depicting type of soil encountered (see below).

**Soil Description:** Description of soils encountered, including Unified Soil Classification Symbol (see below).

**Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below-right.

**Sample #:** Consecutive numbering of soil samples collected during field exploration.

**Moisture (%):** Water content of soil sample measured in laboratory (percentage of dry weight of sample).

**Dry Density (pcf):** The dry density of a soil measured in laboratory (pounds per cubic foot).

**Gradation:** Percentages of Gravel, Sand and Fines (Silt/Clay), obtained from lab test results of soil passing the No. 4 and No. 200 sieves.

**Atterberg:** Individual descriptions of Atterberg Tests are as follows:

**LL = Liquid Limit (%):** Water content at which a soil changes from plastic to liquid behavior.

**PL = Plastic Limit (%):** Water content at which a soil changes from liquid to plastic behavior.

**PI = Plasticity Index (%):** Range of water content at which a soil exhibits plastic properties (= Liquid Limit - Plastic Limit).

STRATIFICATION		MODIFIERS	MOISTURE CONTENT
<b>Description</b>	<b>Thickness</b>	<b>Trace</b>	<b>Dry:</b> Absence of moisture, dusty, dry to the touch.
Seam	Up to ½ inch	<5%	<b>Moist:</b> Damp / moist to the touch, but no visible water.
Lense	Up to 12 inches	<b>Some</b>	
Layer	Greater than 12 in.	5-12%	<b>Saturated:</b> Visible water, usually soil below groundwater.
Occasional	1 or less per foot	<b>With</b>	
Frequent	More than 1 per foot	> 12%	

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)	MAJOR DIVISIONS		USCS SYMBOLS	TYPICAL DESCRIPTIONS
	COARSE-GRAINED SOILS More than 50% of material is larger than No. 200 sieve size.	GRAVELS The coarse fraction retained on No. 4 sieve.	CLEAN GRAVELS ( < 5% fines)	GW
GRAVELS WITH FINES ( ≥ 12% fines)			GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GM	Silty Gravels, Gravel-Sand-Silt Mixtures
SANDS The coarse fraction passing through No. 4 sieve.			CLEAN SANDS ( < 5% fines)	GC
		SW		Well-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES ( ≥ 12% fines)	SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines
			SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
				ML
FINE-GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size.		SILTS AND CLAYS Liquid Limit less than 50%	CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
	OL		Organic Silts and Organic Silty Clays of Low Plasticity	
	MH		Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils	
	SILTS AND CLAYS Liquid Limit greater than 50%	CH	Inorganic Clays of High Plasticity, Fat Clays	
		OH	Organic Silts and Organic Clays of Medium to High Plasticity	
		PT	Peat, Soils with High Organic Contents	
HIGHLY ORGANIC SOILS				

### SAMPLER SYMBOLS

-  Block Sample
-  Bulk/Bag Sample
-  Modified California Sampler
-  3.5" OD, 2.42" ID D&M Sampler
-  Rock Core
-  Standard Penetration Split Spoon Sampler
-  Thin Wall (Shelby Tube)

### WATER SYMBOL

-  Encountered Water Level
  -  Measured Water Level
- (see Remarks on Logs)

Note: Dual Symbols are used to indicate borderline soil classifications (i.e. GP-GM, SC-SM, etc.).

- The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.
- The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.
- The information presented on each log is subject to the limitations, conclusions, and recommendations presented in this report.

Figure:

# 6

**NORTH POINT PHASE D**

**ENGINEERS OPINION OF PROBABLE COST**

by Gateway Consulting

PROJECT:

LOCATION:

PREPARED FOR:

DATE:

**NORTH POINT PHASE C**

**ALPINE CITY, UTAH**

3-Jan-19

WORK DESCRIPTION	QTY	UNIT	UNIT PRICE	COST	% to finish	% complete	cost \$ to finished	notes
<b>SWPP</b>								
Erosion Control	1	L.S.	\$5,000.00	\$5,000.00	100.00%	0.00%	\$5,000.00	
Silt Fence	710	L.F.	\$2.10	\$1,491.00	100.00%	0.00%	\$1,491.00	
Inlet Box protection	2	EA	\$100.00	\$200.00	100.00%	0.00%	\$200.00	
Stabilize const. entrance (tracking pad)		EA	\$750.00	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$6,691.00</b>				
<b>Site Work</b>								
Mobilization	1	L.S.	\$5,000.00	\$5,000.00	100.00%	0.00%	\$5,000.00	
Clearing & Grubbing (6")	29,800	S.F.	\$0.10	\$2,980.00	100.00%	0.00%	\$2,980.00	
Remove & Stock Topsoil (6in)	552	C.Y.	\$2.50	\$1,379.63	100.00%	0.00%	\$1,379.63	
Excavating and Grading (site subgrade cut/fill)	2,207	C.Y.	\$6.00	\$13,244.44	100.00%	0.00%	\$13,244.44	
Subgrade after Utilities	2,343	S.F.	\$0.15	\$351.38	100.00%	0.00%	\$351.38	
Subgrade Curb & Gutter	1,426	S.F.	\$0.15	\$213.90	100.00%	0.00%	\$213.90	
Subgrade Sidewalks	3,700	S.F.	\$0.20	\$740.00	100.00%	0.00%	\$740.00	
pond grading	0	L.S.	\$5,000.00	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$23,909.35</b>				
<b>Roadways</b>								
12" subbase structural fill (pit run)	705	YRD	\$9.20	\$6,489.07	100.00%	0.00%	\$6,489.07	
3" Asphalt w/ 8" base in roads	13,918	S.F.	\$2.75	\$38,274.50	100.00%	0.00%	\$38,274.50	
24" Curb & Gutter w/ Roadbase	713	L.F.	\$16.50	\$11,764.50	100.00%	0.00%	\$11,764.50	
4'-wide Sidewalks w/ Roadbase	740	L.F.	\$15.00	\$11,100.00	100.00%	0.00%	\$11,100.00	
ADA Compliant Ramps for sidewalks	0	Each	\$750.00	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$67,628.07</b>				
<b>Storm Drain</b>								
15" RCP N-12 Storm Drain Pipe	0	L.F.	\$28.00	\$0.00	100.00%	0.00%	\$0.00	
30" RCP N-12 Storm Drain Pipe	0	L.F.	\$75.00	\$0.00	100.00%	0.00%	\$0.00	
flared end section	0	Each	\$700.00	\$0.00	100.00%	0.00%	\$0.00	
Catch Basin w/ grate	0	Each	\$2,300.00	\$0.00	100.00%	0.00%	\$0.00	
Cleanout Box w/lid	0	Each	\$2,500.00	\$0.00	100.00%	0.00%	\$0.00	
Combo Box w/lid	0	Each	\$3,500.00	\$0.00	100.00%	0.00%	\$0.00	
Cap and End existing SD		Each	\$750.00	\$0.00	100.00%	0.00%	\$0.00	
Pond Grading		Each	\$20,000.00	\$0.00	100.00%	0.00%	\$0.00	
pipe headwalls		Each	\$2,500.00	\$0.00	100.00%	0.00%	\$0.00	
6' Spillway		Each	\$2,500.00	\$0.00	100.00%	0.00%	\$0.00	
Pond Riser		Each	\$5,000.00	\$0.00	100.00%	0.00%	\$0.00	
drainage channel upgrades		L.S.	\$75,000.00	\$0.00	100.00%	0.00%	\$0.00	
Oil Water separator		Each	\$3,500.00	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$0.00</b>				
<b>Sewer Collection System</b>								
Sewer Lines 8" SDR-35	299	L.F.	\$27.00	\$8,073.00	100.00%	0.00%	\$8,073.00	
Manholes 4'	3	Each	\$2,500.00	\$7,500.00	100.00%	0.00%	\$7,500.00	
Manholes 5'	0	Each	\$3,000.00	\$0.00	100.00%	0.00%	\$0.00	
4" Sewer Lateral	7	Each	\$750.00	\$5,250.00	100.00%	0.00%	\$5,250.00	
Tie into existing system	1	L.S.	\$2,500.00	\$2,500.00	100.00%	0.00%	\$2,500.00	
<b>TOTAL=</b>				<b>\$23,323.00</b>				
<b>Culinary Water System</b>								
<b>Waterlines (w/ bedding and fittings)</b>								
8" Culinary Waterline (pvc)		L.F.	\$30.00	\$0.00	100.00%	0.00%	\$0.00	
10" Culinary Waterline (pvc)	311	L.F.	\$34.00	\$10,574.00	100.00%	0.00%	\$10,574.00	
<b>Water tees and cross</b>								
8" Culinary Water Tees or Cross		Each	\$800.00	\$0.00	100.00%	0.00%	\$0.00	
10" Culinary Water Tees or Cross		Each	\$1,100.00	\$0.00	100.00%	0.00%	\$0.00	
Reducers Culinary Water		Each	\$600.00	\$0.00	100.00%	0.00%	\$0.00	
<b>Water Bends</b>								
Water bends	1	Each	\$350.00	\$350.00	100.00%	0.00%	\$350.00	
<b>Water Valves</b>								
8" Water Gate Valves		Each	\$1,200.00	\$0.00	100.00%	0.00%	\$0.00	
10" Water Gate Valves		Each	\$1,500.00	\$0.00	100.00%	0.00%	\$0.00	
<b>MISC</b>								
Fire Hydrant w/ Valve & Tee	1	Each	\$4,500.00	\$4,500.00	100.00%	0.00%	\$4,500.00	
3/4" Water Laterals w/ Single meter box 3/4" service	7	Each	\$950.00	\$6,650.00	100.00%	0.00%	\$6,650.00	
Connection to Main/ Existing	1	Each	\$3,500.00	\$3,500.00	100.00%	0.00%	\$3,500.00	
2" Combination Air Release Valve		Each	\$2,800.00	\$0.00	100.00%	0.00%	\$0.00	
Cap and End w/ 2" Water Blowoff		Each	\$950.00	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$25,574.00</b>				
<b>Irrigation Water System (purple pipe)</b>								
<b>Waterlines (w/ bedding and fittings)</b>								
4" Irrigation Waterline (purple pvc)	327	L.F.	\$26.00	\$8,502.00	100.00%	0.00%	\$8,502.00	
<b>Water tees and cross</b>								
4" Irrigation tee or Cross (purple pvc)		Each	\$500.00	\$0.00	100.00%	0.00%	\$0.00	
Reducers Irrigation Water		Each	\$400.00	\$0.00	100.00%	0.00%	\$0.00	
<b>Water Bends</b>								
Irrigation (purple pvc)	1	Each	\$350.00	\$350.00	100.00%	0.00%	\$350.00	
<b>Water Valves</b>								
4" Irrigation Valve (purple pvc)		Each	\$800.00	\$0.00	100.00%	0.00%	\$0.00	
<b>MISC</b>								
PRVs		Each	\$25,000.00	\$0.00	100.00%	0.00%	\$0.00	
2" Combination Air Release Valve		Each	\$3,000.00	\$0.00	100.00%	0.00%	\$0.00	
Cap and End w/2" Water Washout	1	Each	\$1,100.00	\$1,100.00	100.00%	0.00%	\$1,100.00	
1" Irr Laterals w/ single meter box 1" service	7	Each	\$900.00	\$6,300.00	100.00%	0.00%	\$6,300.00	
Connection to Main/Existing	1	Each	\$3,500.00	\$3,500.00	100.00%	0.00%	\$3,500.00	
System Drains in low points		Each	\$800.00	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$19,752.00</b>				
<b>Misc</b>								
dry utilities	7	Each	\$3,500.00	\$24,500.00	100.00%	0.00%	\$24,500.00	
Monuments		Each	\$350.00	\$0.00	100.00%	0.00%	\$0.00	
Streetlights		Each	\$2,700.00	\$0.00	100.00%	0.00%	\$0.00	
Street Signs/ADA prkng signs/stop/address	2	Each	\$400.00	\$800.00	100.00%	0.00%	\$800.00	
Engineering	7	LOT	\$2,500.00	\$17,500.00	100.00%	0.00%	\$17,500.00	
Surveying	7	LOT	\$400.00	\$2,800.00	100.00%	0.00%	\$2,800.00	
Inspection/testing	7	LOT	\$150.00	\$1,050.00	100.00%	0.00%	\$1,050.00	
Culinary water shares		AC FT	\$4,000.00	\$0.00	100.00%	0.00%	\$0.00	
Secondary water shares		AC FT	\$4,000.00	\$0.00	100.00%	0.00%	\$0.00	
fencing		L.F.	\$25.00	\$0.00	100.00%	0.00%	\$0.00	
asbuilts		L.S.	\$8,000.00	\$0.00	100.00%	0.00%	\$0.00	
Landscaping (non-irrigated area)		S.F.	\$0.50	\$0.00	100.00%	0.00%	\$0.00	
Landscaping (irrigated land, shrubs, trees, etc) - det pond 1		S.F.	\$2.50	\$0.00	100.00%	0.00%	\$0.00	
<b>TOTAL=</b>				<b>\$46,650.00</b>				
				<b>BASE TOTAL</b>			<b>\$213,527.42</b>	
10% contingency				0.10			\$21,352.74	10% contingency
<b>FINAL ESTIMATE</b>							<b>\$234,880.16</b>	overall total

does not include water rights  
 does not include Redwood road  
 does not include bonds, fees, etc

number of lots=	7
cost per lot =	\$33,554.31
lf road=	357
cost/lf road=	\$658.85
overall area (ac)	3.95
area of lots (ac)	0.49
average lot size (sf)	

## **ALPINE PLANNING COMMISSION AGENDA**

**SUBJECT: Major Subdivision Final Plat Review – Conrad’s Landing Plat C**

**FOR CONSIDERATION ON: 5 February 2019**

**PETITIONER: Steve McArthur**

**ACTION REQUESTED BY PETITIONER: Recommend Approval of the Final Plat**

**APPLICABLE STATUTE OR ORDINANCE: Article 4.06.030**

### **BACKGROUND INFORMATION:**

The developer is seeking final approval for Conrad’s Landing Plat C, which consists of 7 lots on 4.19 acres. Lots Range in size from 0.46 to 0.60 acres (20,0058 to 26,046 square feet). Plat C is located in the CR-20,000 zone.



**ALPINE CITY  
STAFF REPORT**  
January 25, 2019

**To:** Alpine City Planning Commission

**From:** Staff

**Prepared By:** Austin Roy, City Planner  
Planning & Zoning Department

Jed Muhlestein, City Engineer  
Engineering & Public Works Department

**Re: Conrad's Landing Plat C – Final**

**Applicant:** Steve McArthur, representing Shack Building and Development, LLC.  
**Project Location:** Approximately 267 W. Sunset Drive.  
**Zoning:** CR-20,000 Zone.  
**Acreage:** Approximately 4.19 Acres.  
**Lot Size:** Lots range from 0.46 acres to 0.60 acres.  
**Request:** Recommend approval of the final plat.

**SUMMARY**

The developer is seeking final approval for Conrad's Landing Plat C, which consists of 7 lots on 4.19 acres. Lots Range in size from 0.46 to 0.60 acres (20,0058 to 26,046 square feet). Plat C is located in the CR-20,000 zone.

**BACKGROUND**

The Conrad's Landing Subdivision consists of 14 lots on approximately 8.29 acres. The development is located on Sunset Drive, South Blue Moon Lane, West Braddock Lane, and South Braddock Lane, and lies within the CR-20,000 zone. Lots Range in size from 0.46 to 0.60 acres (20,0058 to 26,046 square feet).

Preliminary approval occurred in 2008. Conrad's Landing Plat A and Plat B were submitted for Final, approved, and built in 2008.

**ANALYSIS**

Lot Width and Area

Lot width requirements for the CR-20,000 zone are 110 feet for a standard lot, and 80 feet for a cul-de-sac lot located on a curve. All proposed lots meet the width requirement.

Lots in the CR-20,000 zone are required to be a minimum of 20,000 square feet in size. The smallest lot proposed on the plat is 0.46 acres or 20,0058 square feet, thus meeting the requirement.

Use

The developer is proposing that the lots be used for single-unit detached dwellings, which is consistent with the permitted uses for the CR-20,000 zone. The developer has not proposed any other uses.

Street System

The proposal calls for a single cul-de-sac with 7 lots and complies with the City Street Master Plan.

Sensitive Lands (i.e. Wildland Urban Interface)

The proposed phase of development is not located in the sensitive lands area. Requirement not applicable to this development.

Trails

The City currently has no trails around this development, nor are there any anticipated.

General Plan

The proposed final plat meets all criteria of the City General Plan.

Other

**Existing Structure(s):**

There are existing buildings/structures onsite that may not meet setbacks if the development was recorded. **All buildings/structures either need removed or a bond provided for the removal of said buildings prior to recordation of the plat.**

**Double Frontage Lot:**

The proposed plat shows a double frontage lot (Lot 304). Double frontage lots are prohibited unless recommended by the Planning Commission and approved by the City Council. Unless approved, **access shall be prohibited on the secondary frontage (back of property) and it shall be labeled accordingly on the plat.**

**The Development Code requires double frontage lots to be fully landscaped by the developer or property owner.** Full landscaping includes: grass, irrigation, street trees, decorative concrete, and irrigation. Landscaping should meet the requirements outlined in the City Tree Guide.

It should be noted that the back of Lot 304 is unique in that there is a storm drain pond and a fifty-foot easement. Both conditions may limit what type of landscaping can be done on the back

of Lot 304. **Staff would recommend the back of Lot 304 be landscaped where possible and as permitted given possible limitations due to the easement and storm drain pond.**

## **REVIEWS**

### PLANNING AND ZONING DEPARTMENT REVIEW

The analysis section in the body of this report serves as the Planning and Zoning Department review.

### ENGINEERING AND PUBLIC WORKS DEPARTMENT REVIEW

#### Streets

The application shows the appropriate right of way dedication for the new cul-de-sac street. Frontage improvements of curb, gutter, and sidewalk are shown to be completed along Alpine Highway, Sunset Drive, and the new proposed cul-de-sac, Conrad Court. The dedicated right of way, bulb of the cul-de-sac, and road grades all appear to meet code requirements.

#### Utilities

Culinary water and pressurized irrigation will connect to existing lines in Braddock Lane. New service laterals are shown for each lot.

The sewer is shown to connect to existing lines in Alpine Highway. New service laterals are shown for each proposed lot. The sewer connection to Alpine Highway enters Metropolitan Water District (MWD) property to make the connection. An inquiry with the MWD about the connection revealed that this connection would cost the City \$1700 every 25 years, plus land use fees. No amount was given regarding the land use fees but from past experience in other parts of town we know these fees can be substantial. **Approval of the plan as proposed would need to be conditioned that the City Council agrees to the fees associated with the connection.** The Developer may be seeking another option for connection but Staff has not seen that yet. Lot 307 will acquire its services from the existing utilities in Sunset Drive. Horrocks Engineers has modeled the proposed development and the correct line sizes are shown on the plans per the master planned models.

Storm drain improvements consist of a retention pond on the west side of lot 304. A storm drain report was submitted with the application, reviewed, and approved. The pond was sized for the 100yr-24hr event, which meets the City's code.

#### Other

A Land Disturbance Permit would be required prior to construction which ensures a Storm Water Pollution Prevention Plan (SWPPP) is followed. All disturbed areas of the site are required to be revegetated after construction.

**The City water policy needs to be met prior to recordation of the plat.**

**There are redlines on plat and plans that would need corrected prior to recordation and construction.**

**LONE PEAK FIRE DEPARTMENT REVIEW**

See the attached review from the Lone Peak Fire Department.

**HORROCKS ENGINEERING REVIEW**

See the attached review from Horrocks Engineers.

**NOTICING**

Notice has been properly issued in the manner outlined in City and State Code

**STAFF RECOMMENDATION**

Review staff report and findings and make a recommendation to City Council to either approve or deny the proposed subdivision. Findings are outlined below.

Findings for a Positive Motion:

- A. The plan aligns with previous approvals for Conrad’s Landing.
- B. Proposed roadway construction appears to meet Alpine City design standards.
- C. Frontage improvements are shown throughout the development.

Findings for Negative Motion:

- A. The sewer connection on Metropolitan Water District will cost the City money annually.

**MODEL MOTIONS**

**SAMPLE MOTION TO APPROVE**

I motion to recommend approval of the proposed Conrad’s Landing Plat C with the following conditions:

- The City Council agrees to charges incurred by a sewer connection on Metropolitan Water District property OR the Developer provide a design that does not cost the city annual charges;
- The Developer address redlines on the plat and plans;
- The Developer meet the water policy;
- The Developer remove all buildings that will conflict with future property lines (or provide a bond to do so prior to recording the plat);
- The back of Lot 304, a double frontage lot, be landscaped where possible and as permitted given possible limitations due to the easement and storm drain pond.

**SAMPLE MOTION TO DENY**

I motion to recommend that the plat amendment Conrad’s Landing Plat C be denied based on the following:

- The Planning Commission would like to see a sewer connection that does not cost the City money.

**To:** Jed Muhlestein  
Alpine City

**From:** John E. Schiess, P.E.

**Date:** May 3, 2018

**Memorandum**

**Subject:** Conrads Landing Phase 3 Hydraulic Modeling Results and Recommendations

---

The proposed Conrads Landing Phase 3 development consists of 7 residential lots located east of Alpine Highway south of Sunset Dr and west of Blue Lake Lane.

The proposed culinary water improvements have not been modeled at this time. The proposed improvements fit well within the City's culinary water master plan. The following comments and recommendations are noted for the proposed culinary water system.

The proposed pressurized irrigation improvements have not been modeled at this time. The proposed improvements fit well within the City's pressurized irrigation master plan. The following comments and recommendations are noted for the proposed pressurized irrigation system.

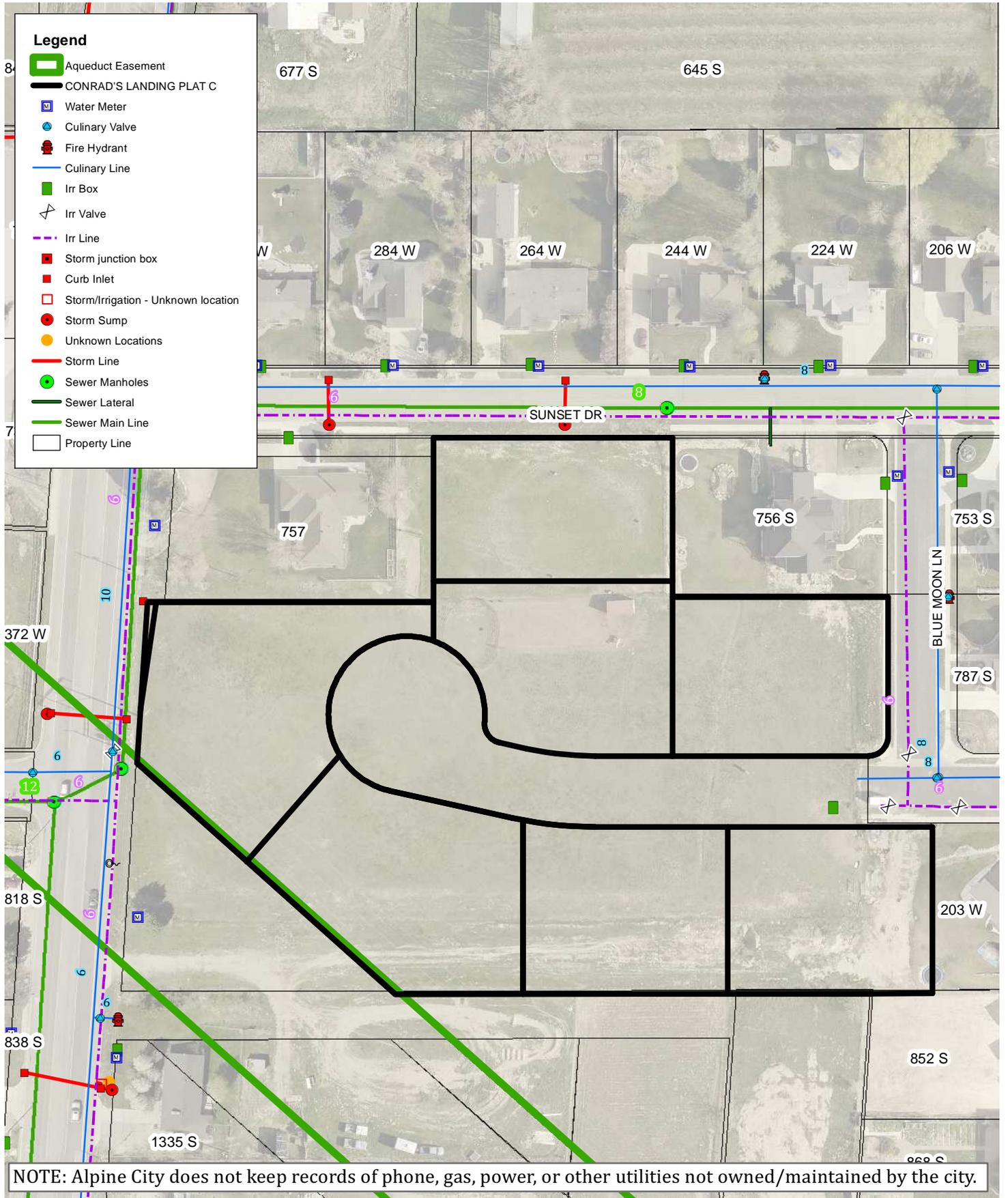
The proposed sanitary sewer improvements have not been modeled at this time. The proposed improvements fit well within the City's sanitary sewer master plan. The following comments and recommendations are noted for the proposed sanitary sewer system.

**Recommendations:**

1. The proposed pressurized irrigation mainline could be 4 inch at the City discretion.

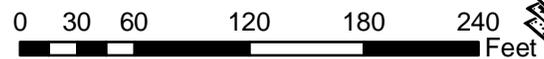
**Comments:**

2. Fire flow available in the area surrounding the proposed improvements should be over 3,000 gallons per minute at 20 psi for the proposed lines.



# Alpine Utility Map

1 inch = 100 feet

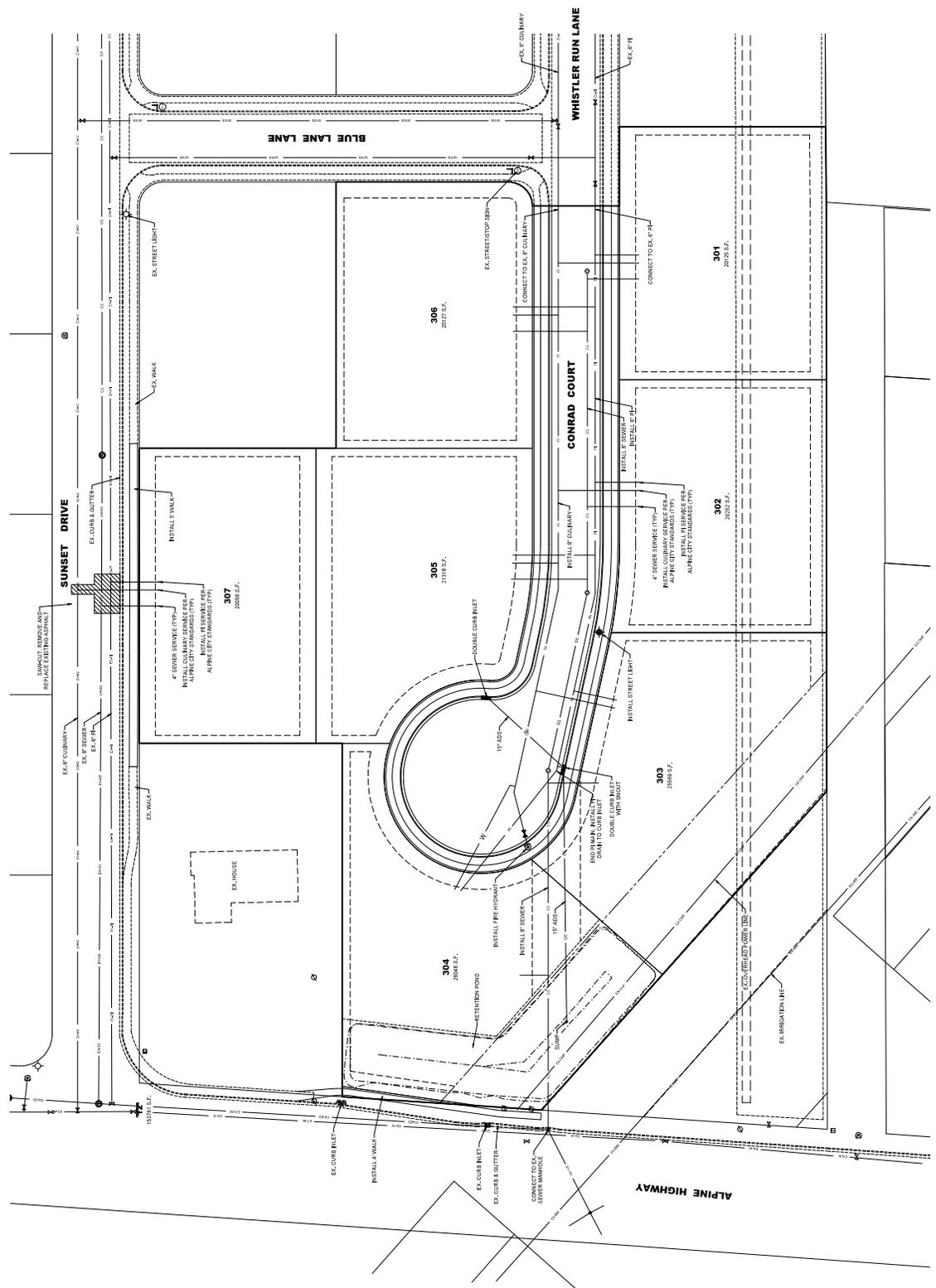
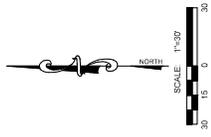






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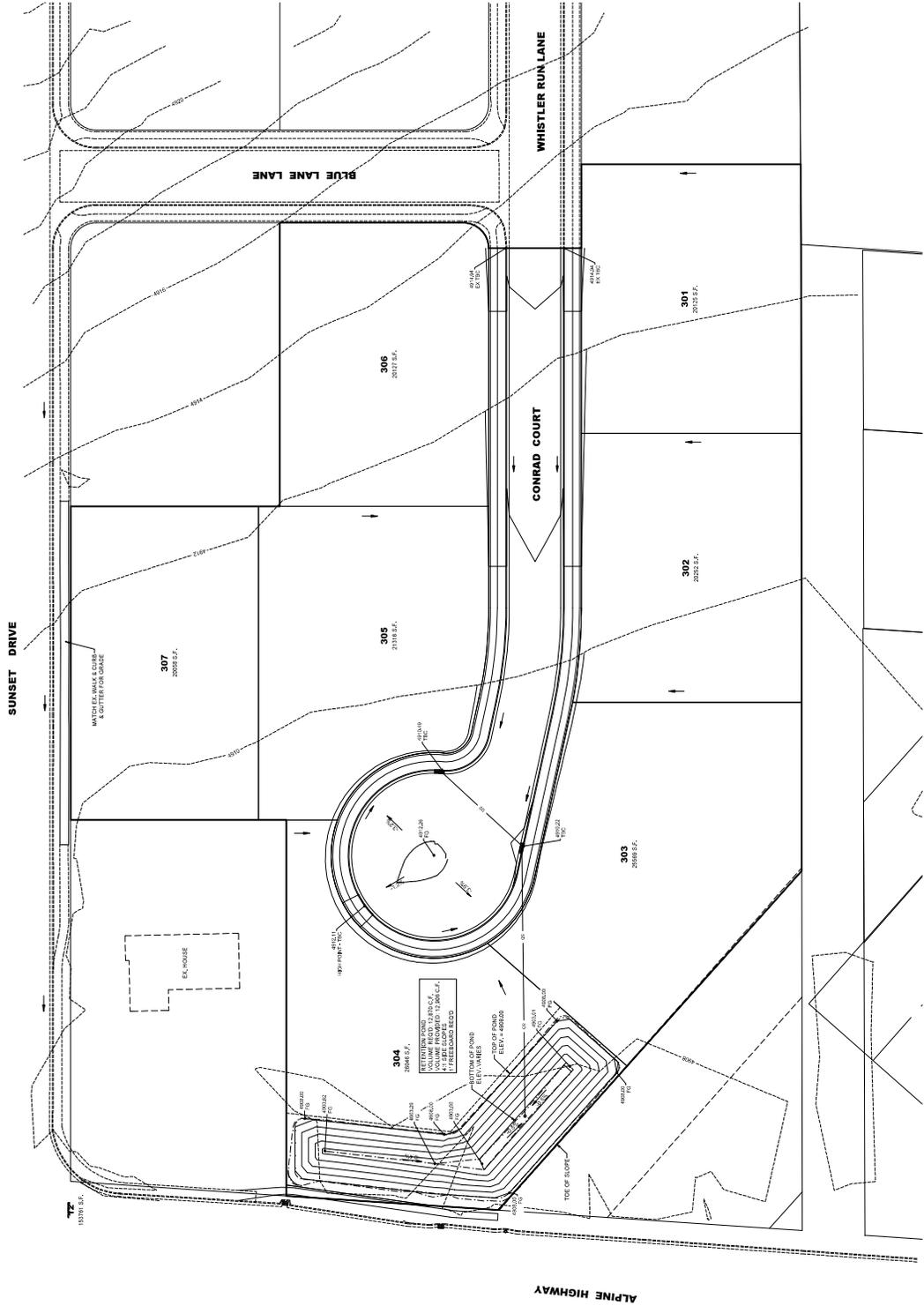
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DATE	11/11/07
DESIGNED BY	RWH
CHECKED BY	BTG
SCALE	AS SHOWN
DATE	11/11/07
PROJECT	000002018
SHEET	1

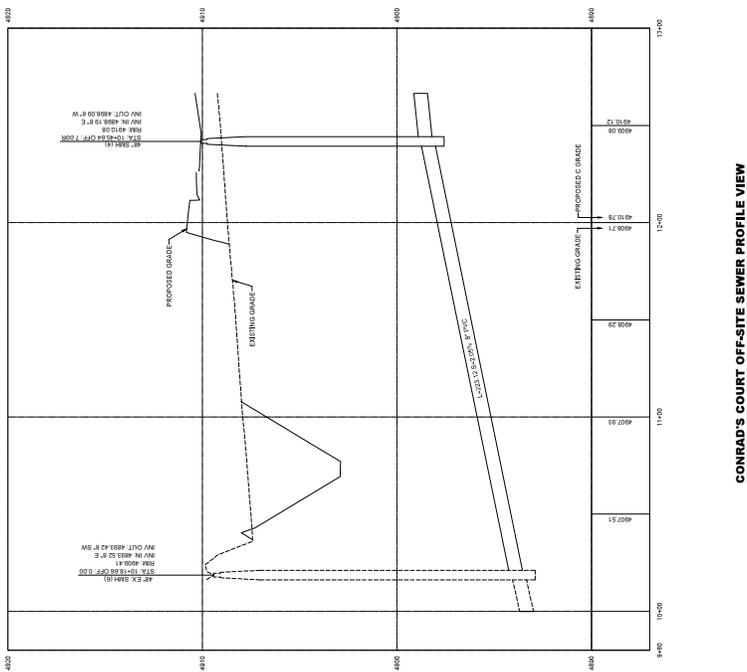
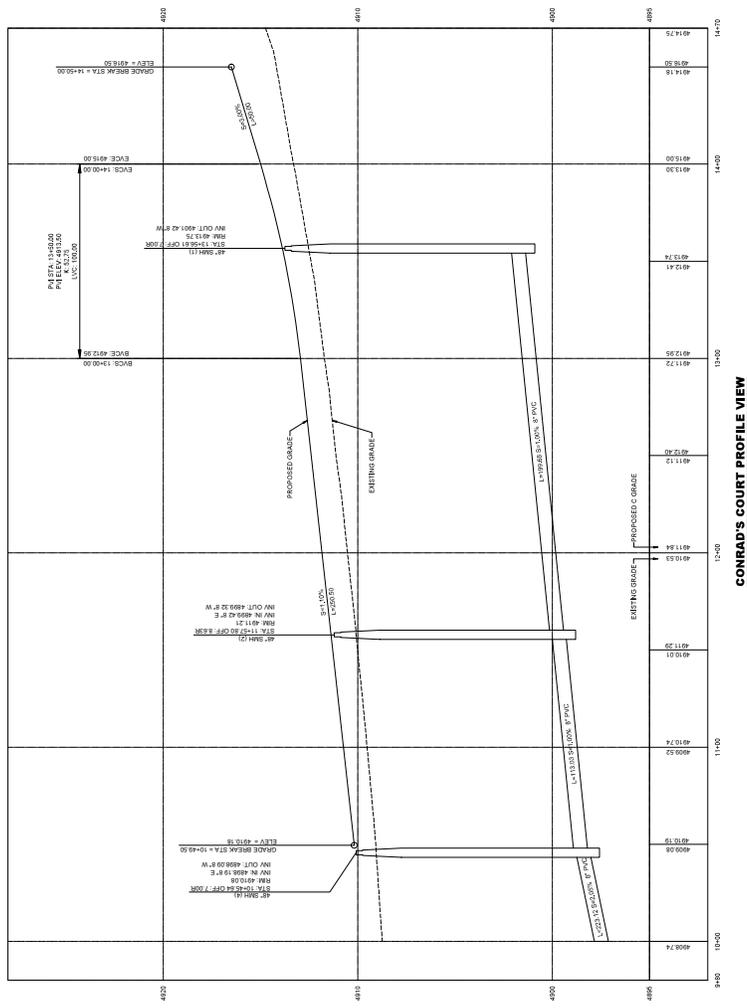
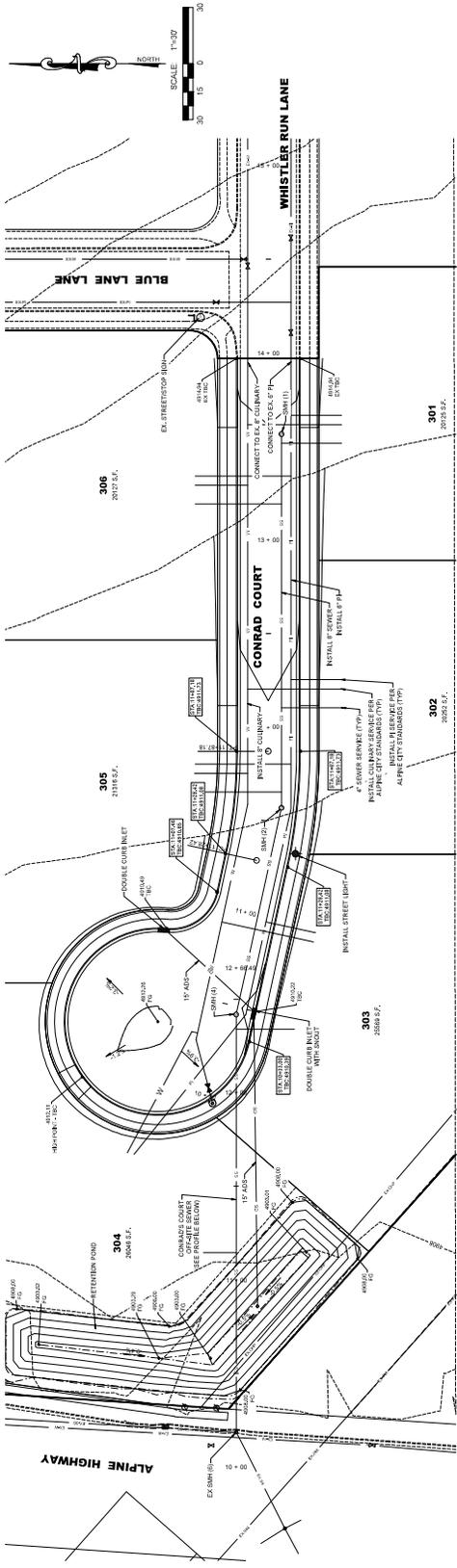


ALPINE HIGHWAY

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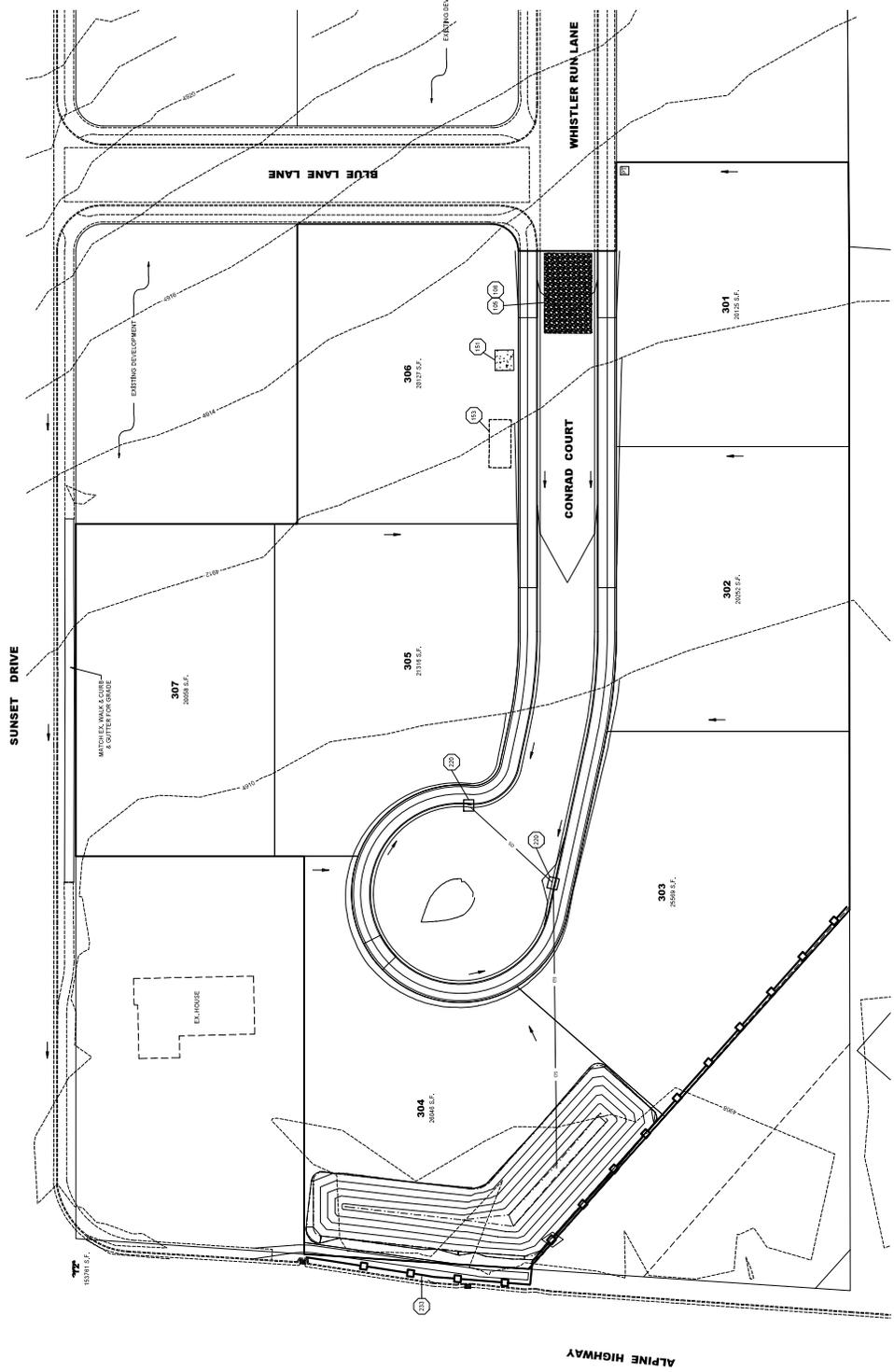
PROJECT NO.	2007-0793
DRAWN BY:	RWH
CHECKED BY:	BTG
SCALE:	AS SHOWN
DATE:	06/04/2018
SHEET:	2







CONSTRUCTION PHASE STORM WATER POLLUTION PROTECTION PLAN BEST MANAGEMENT PRACTICES (BMP)			
BMP SYMBOL	BMP TITLE	LOCATION	DURATION
C101	PERMANENT VEGETATION	PER CONTRACTOR	COMMENCEMENT OF GRADING THROUGH COMPLETION OF SITE IMPROVEMENTS
C102	STABILIZATION VEGETATION	AS SHOWN	THROUGH COMPLETION OF FINAL IMPROVEMENTS
C103	WHEEL WASH	AS SHOWN	AS NECESSARY
C104	GRADING PRACTICES	PER CONTRACTOR	COMMENCEMENT OF GRADING THROUGH COMPLETION OF SITE IMPROVEMENTS
C105	TEMPORARY AND PERMANENT SEEDING	PER CONTRACTOR	IMPLEMENT FIRST TO WATER FLOT BUNT UNDER ACTIVE CONSTRUCTION
C106	MULCHING	PER CONTRACTOR	AS NECESSARY
C107	SODDING	PER CONTRACTOR	AS NECESSARY
C108	DIRT CONTROL	PER CONTRACTOR	COMMENCEMENT OF GRADING THROUGH COMPLETION OF SITE IMPROVEMENTS
C109	CONCRETE WASTE MANAGEMENT	PER CONTRACTOR AS SHOWN	BEGINNING OF CONSTRUCTION THROUGH COMPLETION OF SITE IMPROVEMENTS
C110	MATERIAL STORAGE AREA	PER CONTRACTOR AS SHOWN	BEGINNING OF CONSTRUCTION THROUGH COMPLETION OF SITE IMPROVEMENTS
C111	PORTABLE TOILETS	PER CONTRACTOR AS SHOWN	BEGINNING OF CONSTRUCTION THROUGH COMPLETION OF SITE IMPROVEMENTS
C201	STORM DRAIN INLET PROTECTION	PER CONTRACTOR	COMMENCEMENT OF GRADING THROUGH COMPLETION OF SITE IMPROVEMENTS
C202	SILT FENCE	AS SHOWN	THROUGH COMPLETION OF SITE IMPROVEMENTS
C203	STRAW MATTE	AS SHOWN	THROUGH COMPLETION OF GRADING



- NOTES**
- SILT FENCE
  - STORMDRAIN CURB INLET
  - STORMDRAIN MANHOLE
  - PORTABLE TOILETS
  - INLET PROTECTION
  - ▨ CONCRETE WASTE MGMT. AREA
  - ▨ MATERIAL STORAGE AREA
  - ▨ STABILIZED CONSTRUCTION ENTRANCE
  - ▨ PRESERVATION OF EXISTING VEGETATION

**LPI**  
 ENGINEERS  
 SURVEYORS  
 PLANNERS

3302 N. Main Street  
 Spanish Fork, UT 84600  
 Phone: 801-798-9383  
 Fax: 801-798-9385  
 www.lpi-engineers.com

NOT FOR CONSTRUCTION

**CONRAD'S LANDING, PLAT C**  
 ALPINE, UTAH  
**EROSION CONTROL PLAN**

REVISIONS

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PROJECT #  
 2007-0793

DATE  
 01/11/07

DESIGNED BY  
 BTG

SCALE  
 AS SHOWN

DATE  
 01/11/07

PROJECT #  
 000002018

## **ALPINE PLANNING COMMISSION AGENDA**

**SUBJECT: Planning Commission Minutes January 15, 2019**

**FOR CONSIDERATION ON: 5 February 2019**

**PETITIONER: Staff**

**ACTION REQUESTED BY PETITIONER: Approve Minutes.**

**BACKGROUND INFORMATION:**

Minutes from the January 15, 2019 Planning Commission Meeting.

**STAFF RECOMMENDATION:**

Review and approve the Planning Commission Minutes.

**ALPINE CITY PLANNING COMMISSION MEETING**  
**Alpine City Hall, 20 North Main, Alpine, UT**  
**January 15, 2019**

**I. GENERAL BUSINESS**

**A. Welcome and Roll Call:** The meeting was called to order at 7:00 pm by Chairman David Fotheringham. The following were present and constituted a quorum:

Chairman: Dave Fotheringham

Commission Members: Bryce Higbee, Alan MacDonald, Jane Griener, John Gubler, Sylvia Christiansen

Excused: John MacKay

Staff: Austin Roy, Marla Fox, Jed Muhlestein

Others:

**B. Prayer/Opening Comments:** David Fotheringham

**C. Pledge of Allegiance:** John Gubler

**II. PUBLIC COMMENT**

There were no public comments.

**III. ACTION ITEMS**

**A. Site Plan Review – Bank of American Fork**

The Bank of American Fork proposed a new building to replace the existing structure. The existing building would be demolished, and the new building would be located at the same site as the current building. The site was located within the Business Commercial Zone and the Gateway Historic District. The proposed building was approximately 4,166 square feet on a parcel approximately 0.84 acres in size. There were 21 total off-street parking stalls being proposed. The developer was seeking a recommendation of approval for the proposed site plan.

Austin Roy said the Bank asked for an exception on setbacks and parking and that was previously approved by the City Council. The setbacks were approved to be within 10 feet of the northern street and 20 feet, 10 inches off of Main Street. The east side of the property would be changed by demolishing the building in that location. Four parking spaces were approved in the setback area within the easement. The proposal met all parking requirements; in total, the plans showed 19 regular parking stalls with two ADA parking stalls. The trees met the new guidelines. All design criteria had been met, including building height. The only thing that needed to be completed was screening the south end of the property with a solid barrier. Staff recommended approval with the condition that this screening be provided.

David Fotheringham stated that the Planning Commission had previously reviewed this application. Sylvia Christiansen noted that the Commission previously requested that the applicant move everything by about 10 feet in a particular direction. When asked if this had been done, Austin Roy explained that when this item went before the Mayor and Council, they

1 ended up approving the application based on where the current setbacks were located.  
2 Therefore, the Council did not go with Planning Commission's recommendation on the matter.

3  
4 Austin Roy stated that the property would need to meet the Gateway Historic requirements. One  
5 of the key features of these requirements was maintaining consistent architectural appearance in  
6 the downtown, Main Street area. It was important for this building to blend in with the other  
7 existing businesses. He then presented several artist renditions of the site configuration.  
8 Another key feature in this area was pitched roofs and based on the renderings, it appeared the  
9 applicant complied with this design requirement. He then presented a rendering of what the bank  
10 would look like from Main Street.

11  
12 **MOTION:** Sylvia Christiansen recommended approval of the proposed Bank of American Fork  
13 Site Plan with the following conditions:

- 14  
15 1. The Developer obtain a demolition and land disturbance permit prior to  
16 construction.  
17 2. Screening be added to the parking lot on the south property line.

18  
19 Alan MacDonald seconded. There were 6 Ayes and 0 Nays (recorded below). The motion  
20 passed.

21  
22 **Ayes:**

23 Bryce Higbee  
24 Alan MacDonald  
25 David Fotheringham  
26 Jane Griener  
27 John Gubler  
28 Sylvia Christiansen

29  
30 **Nays:**

31 None

32  
33 **B. Public Hearing – Plat Amendment – Summit Pointe Subdivision – Six Blue Bison  
34 LLC**

35 Austin Roy presented the staff report as well as an aerial map of the subject property. He  
36 explained that the developer, Six Blue Bison LLC, was seeking to amend the recorded plat for  
37 the Summit Pointe Subdivision. The property was located in the CR-40,000 zone, which was  
38 essentially a one-acre zone. In total, there were 32.94 acres on the subject property. The  
39 existing recorded plat was a four-lot subdivision with lots ranging in size from 3.96 acres to  
40 12.73 acres. The proposed plat amendment was for an eight-lot subdivision with lots ranging in  
41 size from 0.95 acres to 5.44 acres, which was consistent with the zone. Access to the existing  
42 lots on the recorded plat was through an approved, private shared driveway. The plat  
43 amendment sought to do away with the private shared driveway and proposed access to the  
44 eight-lots via a public street through an extension of Lakeview Drive (west end of Lakeview  
45 Drive). The proposed extension of Lakeview Drive would stub into the neighboring  
46 municipality of Draper.

47  
48 Austin Roy reviewed the history of the property, stating that Six Blue Bison originally brought in  
49 a proposal for 15 lots, but was now amending the proposal to eight lots. This area was located in

1 the Wildland Urban Interface which was in the fire zone. In this area, buildings had to be built  
2 with a certain material, required a certain vegetative clearance around each building, had to be  
3 sprinkled, and required a specific type of roof. Additionally, this development would be required  
4 to have two accesses. The applicant was proposing the accesses to be located off of Lakeview  
5 Drive and Draper Road. Austin Roy said all the lots met the minimum frontage requirements.  
6

7 Austin Roy said the Developer owned this land along with the land on the Draper side; therefore,  
8 the property was subject to the traffic that would come from Draper. The owner planned to  
9 develop on the Draper side. The subdivision would be called the Sequoia Subdivision and would  
10 have 415 homes with a mix of single homes and townhomes. Austin Roy said a traffic study was  
11 completed and it included future traffic projections. He noted that the applicant asked Staff what  
12 intersections they wanted studied, and the applicant complied with this request. When asked if  
13 other neighborhood roads could handle the additional traffic, Austin Roy said the projection was  
14 that even with the increased traffic flow this development would cause, Alpine's roads would  
15 still remain a Service Level A. The question was asked if the projections from the traffic study  
16 included the development of Sequoia's additional 415 homes; it was noted that these projections  
17 included Summit Pointe and the Sequoia Subdivision. Austin Roy said this was all contingent  
18 upon Draper City approving a through-street. If Draper did not allow the street, Alpine would  
19 have a stub street or be a long cul-de-sac and the proposal would not meet the ordinance.  
20

21 Austin Roy presented a map depicting where the eight lots would be located on the Alpine City  
22 side. On the map submitted by the applicant, it didn't show an easement for a trail and the City  
23 wanted to see that easement preserved for a future trail. He also explained that a connecting road  
24 into Draper City was not currently in Alpine's General Plan, and State Law required all new  
25 roads to comply with the General Plan. Therefore, the General Plan would need to be altered to  
26 allow this road. There was further review of the plat.  
27

28 Jed Muhlestein read part of the State Code pertaining to the General Plan. State Law 10-9A-406  
29 read: "After the Legislative body has adopted a General Plan, no street, park or other public way  
30 may be constructed or authorized as until and unless it can conform to the current General Plan."  
31

32 Jed Muhlestein summarized the engineering review included in the Council packet. He  
33 explained that the streets were operating at a Service Level A and would continue to operate at  
34 that level after development. Therefore, no improvements needed to be made to any street  
35 beyond what the developer showed on the plans. Frontage improvements like sidewalk, streets,  
36 curb and gutter were required. There was frontage along the road they were proposing and there  
37 was also frontage along Lot 2 on Hog Hollow. The plans did show sidewalk improvements in  
38 that section. Grading for the roads appeared to adhere to the ordinance which limited grading to  
39 50 feet beyond the right-of-way. To ensure that this occurred, the Developer also showed a  
40 retaining wall. The retaining walls appeared to meet the City's retaining wall ordinance as they  
41 were shorter than nine feet and the proposed material was ready rock. Prior to construction, they  
42 would be required to obtain a separate building permit for the retaining walls.  
43

44 Jed Muhlestein said in terms of culinary water and pressurized irrigation, the plans showed a  
45 connection of a 14-inch line for the development and a 12-inch line in Lakeview Drive. He  
46 mentioned a small section of eight-inch line in the bubble of Lakeview Drive that they would

1 have to remove and replace with a 14-inch line as part of the proposed development. The current  
2 recorded Summit Pointe subdivision showed a one-acre restriction of outside irrigation on each  
3 of the lots. These plans did not reflect that and staff recommend that they do. Staff also  
4 recommended that any kind of landscaping above the 5,350 elevation line be limited to xeriscape  
5 or drip irrigation due to pressures in the system. It also needed to be clear that drip irrigation was  
6 considered irrigable area and counted towards the one-acre restriction. The pressurized  
7 irrigation system showed a six-inch line that would also connect to Lakeview Drive to get  
8 service. Currently, Alpine was having pressure issues in the area of Lakeview Drive. For this  
9 proposed development, staff recommended that the lines be installed but they not be put in  
10 service until offsite improvements were completed.

11  
12 Jed Muhlestein said sewer would be installed in the main roadway of the development and would  
13 connect to the existing system in 600 North. This would provide gravity sewer for the  
14 development. The storm drain would be similar by collecting water along the roadway, bringing  
15 it to a low point in the road, and directing it down to the bottom east side of the development.  
16 The plan showed a culvert under Lakeview Drive where it crossed open space.

17  
18 The storm drain had seen some changes from the first time the Planning Commission reviewed  
19 this proposal. The storm drain report included with the application showed that the detention  
20 pond was sized for a 10-year storm and that did not meet City ordinance; it needed to be sized  
21 for a 100-year storm. Staff recommended that this be corrected prior to any kind of project  
22 approval.

23  
24 Since the subject property was located in a protected, sensitive land area, a Geological Hazard  
25 Report was required for reviewing slope stability, debris flow, flooding, etc.

26  
27 Jed Muhlestein said he read the reports and there were a few important items that he learned  
28 from the report. In terms of slope stability of the site, the Geologic Hazard Report specifically  
29 said that any slope cuts greater than 3 to 1 on or near the site needed to be evaluated. The  
30 detention pond in the plans showed a 2 to 1 cut or 80 feet up the hillside and that was not  
31 evaluated. This would need to be evaluated in the re-design of the pond and included as part of  
32 their resubmission. Additionally, the Geologic Hazard Report mentioned debris flows, and  
33 unfortunately Alpine City was well aware of debris flows due to a recent incident. The Geologic  
34 Hazard Report mentioned that debris flows should be accounted for within their storm drain  
35 analysis. The storm drain detention pond should be sized for whatever potential debris flows  
36 came off that hillside.

37  
38 A bond would be required immediately after plat recordation. Additionally, they would need to  
39 meet the City's water policy, and a land disturbance permit would be required prior to  
40 construction to ensure that the storm water pollution prevention plan would be followed  
41 according to State law. There were also several red lines on the plat that needed to be addressed.

42  
43 The Fire Department submitted a review letter which was included in the Council packet. Jed  
44 Muhlestein reviewed that letter, which mentioned the following:

- 45 • The property was located within the Urban Wildland area, which needed to be mentioned  
46 on both the plat and plans.

- 1 • Lot 4's buildable area was a long distance from its frontage (about 400 feet). The  
2 developer was required to design a driveway access for the Fire Department to the  
3 buildable area of that road. They were also required to show how this home would be  
4 protected with fire. Furthermore, the Fire Chief said they stubbed out a fire lane and a  
5 hydrant for Lot 4. This road needed to be an all-weather access road capable of  
6 sustaining weight limits of fire apparatuses required by International Fire Code, which  
7 means it could not be a dirt road.
- 8 • It was assumed the proposed westerly end on the plans would make a connection to a  
9 road in Draper City. In order to approve these lots, a road connection was required due to  
10 the length of the road with relationship to the existing length of Lakeview Drive.

11  
12 Jed Muhlestein clarified that on the pressurized irrigation system, Alpine had plans in place for  
13 alleviating pressures in the City. Staff was working on the approval of the ridge at Alpine, and  
14 they were going to be installing variable speed pumps at the mouth of Fork Canyon so as to push  
15 more water into the high pressure zone system. Staff was also looking at a potential new well to  
16 be placed in the high zone that would provide both water and pressure for the area. These  
17 installations would need to be done before the lines in the subdivision would be charged with  
18 water. Until that point, they would be doing all of their watering—both indoor and outdoor—  
19 with culinary.

20  
21 Alan MacDonald said he didn't think the Planning Commission could consider what the Fire  
22 Chief had said if he was basing his review off of a connection to Draper City. It was noted that a  
23 public hearing would take place in Draper the following night regarding this issue.

24  
25 Mayor Troy Stout said Alpine's Master Plan did not connect to Draper City and the City did not  
26 intend to connect to Draper City. Alpine had a couple of stub streets into Highland that still had  
27 not been connected. He said the City Council all signed an agreement.

28  
29 David Fotheringham opened the Public Hearing.

30  
31 Julie Yarbrough, 782 Lupine Drive in Alpine, said she and her neighbors opposed the Summit  
32 Pointe development as proposed: specifically, any potential road connecting to Alpine through to  
33 Draper. She asked everyone in the audience who opposed this item to please stand;  
34 approximately 20 people stood. She said she enjoyed the small town feel and dreaded the traffic  
35 coming down the roads through Alpine. The streets were not designed to be connector roads and  
36 there was already too much traffic on Main Street. She asked that the Council not alter the City  
37 significantly. Citizens purchased homes in Alpine assuming this was a bedroom community.  
38 She said Blue Bison's plan disregarded Alpine's General Plan and the interests of Alpine's  
39 citizens. The developer was only interested in money and it wasn't right for them to do this at  
40 the detriment of Alpine residents.

41  
42 Glen Simmons, 693 West Lakeview Drive, said he and his neighbors opposed this subdivision.  
43 He saw no need to sacrifice the quality of the area to benefit someone from a neighboring City.  
44 He did not want to see someone from another city profit at the expense of Alpine citizens. He  
45 added that he would like to see Lakeview Drive fixed soon.

1 Crystal Hauser, 184 West Fairview Circle, said she opposed this development because the  
2 schools were already overcrowded. To illustrate this point, she explained that her 8<sup>th</sup> grade  
3 daughter was unable to get into basic general education classes at her junior high because there  
4 were too many students.

5  
6 Sherman Myers, 554 Lakeview Drive, opposed the road connection to Draper. If the General  
7 Plan needed to be amended then it should be on the ballot for the citizens to decide, similar to  
8 what happened in Cottonwood Heights. He did not want to see construction trucks through his  
9 neighborhood. He said if this project did get approved, the City needed to have traffic calming  
10 devices on all roads leading down from the proposed development.

11  
12 Toms Williams, 453 Matterhorn Drive, said he noticed a lot of red flags in the traffic study. He  
13 said it did not treat all roads the same. He encouraged the City to review the study thoroughly,  
14 as it did not take into consideration roads with steep grades. He said these were 25 MPH roads;  
15 he was opposed to this plan and the impact it would have on Alpine.

16  
17 Marcus Sorensen, 721 Lakeview Drive, presented data from some research he had conducted on  
18 this issue. He said Blue Bison was relying on an easement to get to their lots. Easement roads  
19 were minor roads and not collector roads. He presented a map to show where the roads would be  
20 located and which routes would be faster. Google and Apple maps were always going to take a  
21 driver through the shortest way to a particular location.

22  
23 Ashley Carter, 502 North Matterhorn Drive, said she was concerned that Alpine would have to  
24 foot the bill for roads and schools. She implored the Commission not to wait for Draper to build  
25 that road right up against Alpine.

26  
27 Billie Paul, 11 South Matterhorn Drive, said 20 years ago a construction truck slammed into her  
28 car and almost killed her and her son. She did not want to see more construction equipment  
29 coming down Alpine roads.

30  
31 Julianne Rowley, 390 South Ponderosa Drive, said she moved from Seattle for the quiet and  
32 beautiful mountains. Utah was ruining its mountains and she was opposed to construction. She  
33 said she was an Alpine school teacher and the schools were already full; she said she wondered  
34 where these children would go to school. She wanted to keep Alpine quiet and beautiful.

35  
36 Dale Palsson, 322 North Matterhorn Drive, asked the Commission to consider ‘what was in it for  
37 Alpine.’ He said Draper would receive all the revenue from taxes and impact fees whereas  
38 Alpine would be stuck with all of the expenses.

39  
40 Darryl Stallings, 651 West Lakeview Drive, stated that Alpine was quiet. For this reason, he  
41 chose to retire here. The Master Plan was in place to keep Alpine small and quiet, and this  
42 development would change that. He opposed the road connection into Draper, and agreed  
43 Alpine would not get any value from this project.

44  
45 Tom Watkins, 734 North Summit Way, said this was a no-brainer. It was difficult to get up  
46 Summit when snow was present and he believed that this was not considered in the traffic study.

1  
2 David Walter, 313 East 280 South, asked if the developer knew that there would have to be a  
3 General Plan amendment. He said it felt like a pre-emptive strike to get the plat approved  
4 without first amending the General Plan.

5  
6 David Foderingham closed the Public Hearing.

7  
8 Paul (no last name given), Developer's Engineer, said he read the report and agreed with all the  
9 engineering requirements. They could accommodate the 100-year storm requirement. They  
10 could have the 2 to 1 cut slopes evaluated by a geotechnical engineer. Additionally, they would  
11 probably redesign the pond to upsize it anyway, which would also address debris overflow into  
12 Lots 1 and 2. He mentioned that the current Draper density was 1.03 lots per acre. A plan of  
13 430 lots per acre as submitted to Draper but did not have any traction with its city officials. He  
14 said developers tend to go for the highest density possible. He noted that the current approved  
15 density in Draper allowed for 115 homes. He pointed out that Lakeview Drive currently did not  
16 comply with Alpine's ordinance and this project would help bring that road into compliance. He  
17 said the Developer could mitigate the route construction workers used.

18  
19 When asked if Lot 1 accessed 600 North, the Developer's Engineer answered affirmatively.  
20 There was further review of an aerial map of the subject property. It was stated that Parcel A  
21 was too high for it to be serviced by the current infrastructure.

22  
23 Scott Johnson, Traffic Engineer, explained the scope of the traffic study and what they looked  
24 for when conducting them. They evaluated the traffic impact of the development on a typical day  
25 at three peak times. Additionally, they collected daily traffic data, which was not something they  
26 did for every traffic study but felt was necessary for this one. The question was asked if there  
27 were different qualifications in traffic studies for residential roads versus public collector roads,  
28 or were roads evaluated the same. Mr. Johnson said there were different calculations based on  
29 the type of intersection (for example, signaled versus not signaled) and not what area of town it  
30 was in. Once the existing Service Level threshold was established, they also projected into a  
31 future planning year. In this case, the Mountainland Association of Governments had a horizon  
32 year of 2024. As part of the study, they projected growth for the future into 2024. While delays  
33 would increase slightly, Alpine would maintain a Service Level A on its roads. As part of these  
34 estimates, they used the industry standard database compiled by the Institute of Transportation  
35 Engineers to estimate the number of trips caused by the proposed development. They did this  
36 using an independent variable, and in residential areas, the most accurate independent variable  
37 was the number of homes in the area. Mr. Johnson further explained how Service Level for  
38 projected growth was determined based on the data available.

39  
40 A member of the audience briefly spoke about the challenges posed by winter weather in the  
41 areas being discussed.

42  
43 Another member of the audience stated that there were mechanisms that could be put in place  
44 that would limit the routes that trucks could take in this area.

1 Sylvia Christiansen said some of Alpine’s land use goals were to preserve the quality of life and  
 2 the existing atmosphere of the City, as well as to preserve and protect critical areas.

3  
 4 Jane Griener said when people moved to Alpine, it was possible that they looked at the Master  
 5 Plan and based their decision on buying a home on that plan. The point of the Master Plan was  
 6 to allow people to invest in property and make decisions on which lot they wanted to buy. She  
 7 said she looked at collector roads when she bought her house. She said the State had a law that  
 8 changes could not be made without it being in the Master Plan. There were real reasons for  
 9 having a master plan, and that was to protect the citizens of the City. She supported the master  
 10 plan and said the Planning Commission had to follow it by law in order to plan. She said it was  
 11 helpful to hear the citizens’ input on these matters and to know what their concerns were. She  
 12 appreciated everyone showing up.

13  
 14 Alan Macdonald agreed. He said the City had no plans to amend the General Plan, a statement  
 15 that had been reinforced by the Mayor.

16  
 17 John Gubler said he moved from Draper because he felt like Draper “sold its soul” just to make  
 18 money. His biggest concerns pertained to the road connection. He said he would move again if  
 19 this project was approved.

20  
 21 Bryce Higbee asked if the Commission needed to list the findings in order to make a motion.

22  
 23 **MOTION:** Jane Griener moved to recommend that the proposed Plat Amendment – Summit  
 24 Pointe Subdivision be denied based on the following:

- 25  
 26 1. Alpine City’s General Plan does not show a connection to Draper  
 27 2. Only 1 access currently exists  
 28 3. Does not meet the Wildland Interface Ordinance  
 29 4. Debris flow doesn’t meet the 100 year flood  
 30 5. Potential flooding of Lot 1 and Falcon Ridge Lot 2 needs to be addressed  
 31 6. Developer address the issues mentioned in the Geological Hazard Report  
 32 regarding slope stability and debris flow

33  
 34 Sylvia Christiansen seconded the motion. There was discussion between the Planning  
 35 Commissioners regarding the above-listed conditions, and the motion was amended as written.  
 36 Alan MacDonald seconded the amended motion. There were 6 Ayes and 0 Nays (recorded  
 37 below). The motion passed.

38  
 39 **Ayes:**

40 Bryce Higbee  
 41 Alan MacDonald  
 42 David Fotheringham  
 43 Jane Griener  
 44 John Gubler  
 45 Sylvia Christiansen

39 **Nays:**

40 None

1           **C. Public Hearing – Amendment to Article 3.1.11 & 3.9.6 – Dwelling Clusters &**  
2           **Development Clusters**

3 Staff was proposing an amendment regarding development clusters/ dwelling clusters, which  
4 sought to define and clarify these sections of code.

5  
6 Austin Roy said Staff proposed a definition which stated: *A group of three or more lots whose*  
7 *Buildable Areas are located no more than 2 times the minimum distance of the closest two*  
8 *Buildable Areas, with a maximum distance of 100 feet for the furthest Buildable Area within the*  
9 *Dwelling Cluster.*

10  
11 Jed Muhlestein said typically in a one-acre development each lot usually had 200 feet of  
12 frontage. There was further discussion on the proposed language as read by Austin Roy. Austin  
13 Roy then reviewed the old language versus the new language and explained the reasons behind  
14 the proposed changes. He noted that there was another amendment to this same ordinance being  
15 proposed on tonight’s agenda, pertaining to private driveways. One of the proposed amendments  
16 addressed length limits on private driveways.

17  
18 David Fotheringham opened the Public Hearing.

19  
20 Will Jones stated that the Wadsworth Meadows project may come in with one-acre lots and he  
21 wanted to know how this ordinance would affect that development. He was concerned that this  
22 was a form of a taking.

23  
24 Jed Muhlestein pulled up the Development Code where it stated that it was up to the City’s sole  
25 discretion if a development was a PRD. Alan MacDonald said the developer first came to the  
26 City asking for the development to be a PRD. Bryce Higbee said a developer could still build;  
27 however, there were regulations on where they could build, and a PRD was usually developer  
28 driven.

29  
30 David Fotheringham closed the Public Hearing.

31  
32 David Fotheringham said the Commission needed to ask the City’s Attorney if a PRD was  
33 required in the Sensitive Lands. If it was mandated, then they needed to know if this new  
34 ordinance could be considered as a taking. After further deliberation, the Planning Commission  
35 determined that the best course of action was to table the issue to allow for additional review.

36  
37           **D. Public Hearing – Amendment to Article 3.1.11 Flag Lots, Private Driveways, &**  
38           **Shared Driveways**

39 Staff was proposing additional definitions for flag lots, private driveways, and shared driveways  
40 to the development code in order to regulate these types of uses within the City. Austin Roy  
41 explained that the language proposed by staff was adapted from what surrounding cities had  
42 adopted. Staff’s intent was to ensure that the language wasn’t too restrictive, particularly for  
43 unique pieces of land that were more difficult to develop.

44  
45 Austin Roy said the new proposed definition for a flag Lot was: *A lot with fewer frontages in the*  
46 *front part of the lot (flag pole) than required for the zone within which it is located, and the rear*

1 *portion of the lot (flag) is wider than the front portion. Also, any lot whose lot width at any point*  
2 *in the flag portion of the lot is less than 50 percent of the flag pole portion of the lot.*

3  
4 Austin Roy said the new proposed definition for a private driveway was: *Vehicular access point*  
5 *to an individual lot from a public street whose specifications meet those defined in Buildable*  
6 *Area.*

7  
8 Austin Roy said the new proposed definition for a shared driveway was: *A Private Driveway*  
9 *shared by two or more lots.* One of the reasons why this new definition was proposed was to  
10 ensure that there weren't any shared driveways in the mountains, scarring up the hillsides. In  
11 general, Austin Roy said he preferred to have "black and white" language in the City's  
12 ordinances.

13  
14 In Section 3.03.100 Special Provisions, it would have this language:

15 **Flag Lots**, Flag Lots as outlined in definition are prohibited in the CE-5 Zone

16 **Private Driveways**, Shall be no longer than 150 feet.

17 **Shared Driveway**, The installation of a shared access is prohibited.

18  
19 Jed Muhlestein said he felt like in areas such as Three Falls where they wanted to protect the  
20 hillsides, it might be better to have shared driveways that were still less than 150 feet, and then  
21 split off into the individual homes. Alan MacDonald said if there was a good reason for this,  
22 property owners could still come in and request a variance. Jed Muhlestein said it would be very  
23 hard to obtain a variance. Alan MacDonald agreed that variances should not be easily granted;  
24 but if developers could show a good reason for a variance, then there should still be a process in  
25 place for it. Jed Muhlestein said it was important for them as a City to draw the line in the sand  
26 and determine what they were and were not comfortable with. The comment was made that  
27 shared driveways created safety issues due to having multiple access points off of a driveway,  
28 which was exactly what they were trying to avoid. Jed Muhlestein stated that the width of the  
29 driveways could also be changed. The question was whether or not the City wanted to allow  
30 private driveways in the lower elevations to take people up to a higher elevation and build. The  
31 General Plan indicated that this was not desirable for the City.

32  
33 David Fotheringham opened the Public Hearing.

34  
35 Will Jones asked how someone like the Ansons would be able to build on their property. He said  
36 this action would cause more of an issue. He was concerned that the City would be forcing land  
37 owners to add a full-blown road that would scar up the hillside, which was exactly what they  
38 were trying to avoid. He suggested making slope the issue. Based on the proposed ordinance  
39 changes, the City was taking the ability of a land owner to put one home on their property and  
40 instead forcing them to develop a subdivision.

41  
42 The Planning Commission had a discussion based on the concerns raised by Mr. Jones. The  
43 Planning Commission decided to table this issue for further review.

44  
45 David Fotheringham closed the Public Hearing.

1 **IV. Communications**

2 David Fotheringham would like to see all basketball courts in Alpine lined for pickleball. Alan  
3 MacDonald would like more maintenance at Burgess Park.

4  
5 Sylvia Christiansen asked if anyone else was getting calls about a property on Main Street. Jed  
6 Muhlestein said Lonny Layton was interested in putting in a car dealership on Main Street. The  
7 City’s ordinance currently said commercial sales were permitted in that area; however, there  
8 were certain restrictions. An ordinance change would be required for the type of car lot  
9 suggested by Mr. Layton.

10  
11 **V. APPROVAL OF PLANNING COMMISSION MINUTES:** December 4, 2018

12  
13 **MOTION:** John Gubler moved to approve the minutes for December 4, 2018, with the change  
14 made by Bryce Higbee. Jane Griener seconded the motion. There were 6 Ayes and 0 Nays  
15 (recorded below). The motion passed.

16  
17 **Ayes:**

- 18 Bryce Higbee
- 19 Alan MacDonald
- 20 David Fotheringham
- 21 Jane Griener
- 22 John Gubler
- 23 Sylvia Christiansen

**Nays:**

None

24  
25 The meeting was adjourned at 9:50 pm.