

MEMBERS

S. William Abel
John Hamill
Peter N. Lindquist,
Vice-Chair
Gene Muir
David Myers
Toby Reading
Michael P. West, Chair



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COLUSA COUNTY Airport Advisory Committee AGENDA

March 6, 2023

Board Chambers
546 Jay Street, Suite 108
Colusa, CA 95932

Welcome to a meeting of the Colusa County Airport Advisory Committee. If you are scheduled to address the Committee, please state your full name for the record. Regularly numbered items may be considered at any time during the meeting. All items are listed in accordance with the Ralph M. Brown act. We invite all members of the public to attend.

You can listen to the meeting by dialing one of the teleconference numbers below:

Phone: 1-916-246-0723
Toll-Free: 1-800-356-8278
Conference Code: 401978 **(This line is for listening in only)**

1:30 p.m. CALL TO ORDER
• Pledge of Allegiance

I. PERIOD OF PUBLIC COMMENT

II. ADMINISTRATION

1. Nomination and election of the 2023 Airport Advisory Committee Chair.
2. Nomination and election of the 2023 Airport Advisory Committee Vice-Chair.
3. Approve the 2023 Airport Advisory Committee Meeting Schedule.

III. APPROVAL OF MINUTES

1. Airport Advisory Committee - Regular Session – November 11, 2022.

IV. REPORTS

1. Director
2. Members

-
- V. SITTING AS THE AIRPORT ADVISORY COMMITTEE
1. Consider administrative process to facilitate hangar construction at the Colusa Airport
- VI. SITTING AS THE AIRPORT LAND USE COMMISSION
1. Receive an informational update report on the Laurel Ag and Water project.

ADJOURN

THE NEXT REGULAR MEETING OF THE COLUSA COUNTY AIRPORT ADVISORY COMMITTEE IS SCHEDULED FOR MAY 1, 2023.

PERIOD OF PUBLIC COMMENT: Any person may speak about any subject of concern, provided it is within the jurisdiction of the Colusa County Airport Advisory Committee and is not already on today's agenda. The total amount of time allotted for receiving such public communication shall be limited to a total of 15 minutes per issue and each individual or group will be limited to no more than 5 minutes each within the 15 minutes allocated per issue. **Note:** No action shall be taken on comments made under this comment period.

ADA COMPLIANCE: Upon request, Agendas will be made available in alternative formats to accommodate persons with disabilities. In addition, any person with a disability who requires a modification or accommodation to participate or attend this meeting may request necessary accommodation. Please make your request to the County Board Clerk, specifying your disability, the format in which you would like to receive this Agenda, and any other accommodation required no later than 24 hours prior to the start of the meeting.

All supporting documentation is available for public inspection and review in the office of the Board Clerk, 547 Market Street, Suite 102, Colusa, CA 95932 during regular business hours 8:30 a.m. to 5:00 p.m., Monday through Friday.
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Request For Airport Advisory Committee

MEETING DATE: March 6, 2023

DEPARTMENT: Airport Advisory Committee

FROM: Melissa Kitts

SUBJECT: Election of Airport Advisory Committee Chair for 2023

Nomination and election of the 2023 Airport Advisory Committee Chair.

Detailed Description/Background of request

Per the Bylaws, the Committee elects a new Chair at the first meeting of the year.

Prior Board Action

The Committee appointed Committee Member West as Chair On March 7, 2022.

Fiscal Impact/Funding Source

None.

Action for the Clerk

Update meeting materials and Minutetraq.



Request For Airport Advisory Committee

MEETING DATE: March 6, 2023

DEPARTMENT: Airport Advisory Committee

FROM: Melissa Kitts

SUBJECT: Election of Airport Advisory Committee Vice-Chair for 2023

Nomination and election of the 2023 Airport Advisory Committee Vice-Chair.

Detailed Description/Background of request

Per the Bylaws, the Committee elects a new Vice-Chair at the first meeting of the year.

Prior Board Action

The Committee appointed Committee Member Lindquist as Vice-Chair on March 7, 2022.

Fiscal Impact/Funding Source

None.

Action for the Clerk

Update meeting materials and Minutetraq.



Request For Airport Advisory Committee

MEETING DATE: March 6, 2023

DEPARTMENT: Board of Supervisors

FROM: Melissa Kitts

SUBJECT: Airport Advisory Committee Meeting Schedule for 2023

Approve the 2023 Airport Advisory Committee Meeting Schedule.

Detailed Description/Background of request

Approve the Airport Advisory Committee Meeting Schedule for Calendar Year 2023. Staff notes that the July meeting is scheduled for July 3rd. Staff requests, if possible at this time, that confirmation be given that a quorum would be present given the 4th of July holiday the following day.

Prior Board Action

None.

Fiscal Impact/Funding Source

None.

Action for the Clerk

Enter into Minutetraq and website calendar.

ATTACHMENTS:

- 2023 Airport Advisory Committee Meeting Calendar (PDF)

**2023 MEETING SCHEDULE
AIRPORT ADVISORY COMMITTEE**

Note:

These cut off dates are for
internal use only

 HOLIDAY

 MEETING DATE

 CUT OFF DATE

2023 CALENDAR YEAR

JANUARY						
S	M	T	W	Th	F	S
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<u>Cut off Date</u>	<u>Meeting Date</u>
22 DECEMBER	9 JANUARY
17 FEBRUARY	6 MARCH
14 APRIL	1 MAY
16 JUNE	3 JULY
25 AUGUST	11 SEPTEMBER
20 OCTOBER	6 NOVEMBER
22 DECEMBER	8 JANUARY (Tentative)

Attachment: 2023 Airport Advisory Committee Meeting Calendar (8724 : Airport Advisory Committee Meeting Schedule for 2023)

MEMBERS

S. William Abel
 John Hamill
 Peter N. Lindquist,
 Vice-Chair
 Gene Muir
 David Myers
 Toby Reading
 Michael P. West, Chair

**Department of Public Works**

Mike Azevedo, Secretary to the
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COLUSA COUNTY AIRPORT ADVISORY COMMITTEE MINUTES May 2, 2022

Board Chambers
 546 Jay Street, Suite 108
 Colusa, CA 95932

The Colusa County Airport Advisory Committee meets in Regular Session this 2nd day of May 2022 at the hour of 1:30 p.m. Present: Committee Members Toby Reading, Gene Muir, John Hamill, S. William Abel, David Myers, and Peter N. Lindquist. Absent: Committee Member Michael P. West.

Pledge of Allegiance

I. PUBLIC COMMENT

Mr. Kley states that he does not feel that locking the gates to access Farinon Road at 3:00 p.m. is acceptable. He further requests the Committee discuss the obstacle feasibility analysis that was mentioned in the letter received by the FAA. He further requests the Committee provide an official response to a lease violation that occurred at the Airport.

Mr. Ruff from Simplot states that locking the gates at 3:00 p.m. creates safety issues for staff and visitors and he would like alternatives to be considered.

Mr. Hulbert states that locking the gates at 3:00 p.m. is unreasonable and he would like alternatives to be considered as well.

II. APPROVAL OF MINUTES

1. Airport Advisory Committee - Regular Session - March 7, 2022.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Hamill
SECONDER:	Myers
AYES:	Reading, Muir, Hamill, Myers, Lindquist
ABSENT:	Abel, West

Minutes Acceptance: Minutes of May 2, 2022 1:30 PM (APPROVAL OF MINUTES)

Vice-Chair Lindquist recesses as the Airport Advisory Committee at 1:43 p.m. and states they are now sitting as the Airport Land Use Commission with all Commissioners present except Chair West.

III. SITTING AS THE AIRPORT LAND USE COMMISSION

Vice-Chair Lindquist makes time to review the proposed Hunny Pot Farms development for consistency with the County's Airport Land Use Compatibility Plan and provide direction to staff on preparing a resolution based on the Commission's consistency determination.

Comments received by Mr. Plucker, Mr. Davis, Mr. Kley, Mr. Sankey, Mr. Hulbert and Mr. Stout.

Find the proposed Hunny Pot Farms Development is consistent with the County's Airport Land Use Compatibility Plan contingent upon staff confirming that the findings from the FAA are that all 9 buildings are not a hazard to air navigation and direct staff to draft a Resolution based on the Commission's consistency determination.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Myers
SECONDER:	Muir
AYES:	Reading, Muir, Hamill, Abel, Myers, Lindquist
ABSENT:	West

IV. REPORTS

1. Staff Comments/Reports

Mr. Azevedo states the fuel delivery at the Airport was delayed but will be delivered tomorrow. He further states that the DWR Survey Helicopter has been working from the Airport this past week to do measurements of the local topography and geological formations.

2. Member Comments/Reports

Commissioner Myers states that information, such as the fuel pump closure, needs to be better communicated to aviators and suggests utilizing NOTAM and email for notifications.

Mr. Azevedo states that they will begin communicating using those methods and will provide updates on the website.

3. Ad Hoc Committee Report

Mr. Azevedo states that the FAA is looking for the Airport to guarantee the access prohibition of Farinon Road before they make any changes to the approach restrictions.

Commissioner Abel states they have done a review of the Airport to identify obstructions and are working on a report to bring to the Committee.

Mr. Kley states that there are CIP buildings on the obstruction list that are now properly lit, and provides a list to Commissioner Abel. **(Document on file in the Clerk's Office)**

Vice-Chair Lindquist adjourned the meeting at 3:00 p.m. to reconvene in Regular Session on July 11, 2022 at the hour of 1:30 p.m.

Peter Lindquist, Vice-Chair

Attest: Wendy G. Tyler,
Clerk to the Board of Supervisors

BY _____
Melissa Kitts, Deputy Clerk

Minutes Acceptance: Minutes of May 2, 2022 1:30 PM (APPROVAL OF MINUTES)



Request For Airport Advisory Committee

MEETING DATE: March 6, 2023

DEPARTMENT: Airport Advisory Committee

FROM: Michael Azevedo

SUBJECT: Private Party Hangar Construction

Consider administrative process to facilitate hangar construction at the Colusa Airport

Detailed Description/Background of request

Per Committee request of November 7, 2022, the following is a staff recommendation for private party initiation of hangar construction on Colusa County airport property.

Under this recommendation, the interested private party would be responsible for the cost of foundation preparation in advance of hangar placement. Additionally, as this activity is considered a 'public works' project and would be occurring on County property it must be administered by the County. A letter of interest would be requested from private party identifying project specifics (proposed size, desired location etc). Staff would evaluate request for consistency with current ALP and draft a preliminary foundation construction estimate based on the recommendations of the Shannon & Wilson Geotechnical Design Report for Taxiway and Hangar improvements, dated September 23, 2016. The draft construction estimate would be reviewed with private party and should they chose to continue, staff would finalize foundation estimate/design, compile bid documents and issue solicitation for bids to perform the foundation work. Once bids are received, staff would analyze for completeness and industry conformity and recommend award to lowest responsive bidder for construction. Once foundation improvements had been completed and accepted by the County, site control would be turned over to the private party by way of a "Hangar Ground Lease Agreement" for hangar construction.

Prior Board Action

None.

Fiscal Impact/Funding Source

Unknown

Action for the Clerk

None.

ATTACHMENTS:

- 52-1-00543 R1 GeotechnicalDesignReport (PDF)
- Geotech Investigation Exhibit (PDF)
- master ground lease (DOCX)

September 23, 20



Excellence. Innovation. Service. Value.
Since 1954.

Submitted by:
Mr. Michael Azevedo
County of Colusa
1215 Market Street
Colusa, California 95956

Shannon & Wilson,
1722 3rd Street, Suite 100
Sacramento, California 95811

52-1-00543

Attachment: 52-1-00543 R1 Geotechnical Design Report (8970 : Private Party Hangar Construction Colusa Airport)

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- 1 Vicinity Map
- 2 Site and Exploration Plan

APPENDICES

- A Subsurface Explorations
- B Previous Subsurface Explorations and Laboratory Testing
- C Geotechnical Laboratory Testing Procedures and Results
- D Important Information About Your Geotechnical/Environmental Report

**GEOTECHNICAL DESIGN REPORT
COLUSA COUNTY AIRPORT
TAXIWAY AND HANGAR IMPROVEMENTS
COLUSA COUNTY, CALIFORNIA**

1.0 INTRODUCTION

1.1 General

This report presents our geotechnical design recommendations for the proposed taxiway and hangar improvements at the Colusa County Airport located about 3 miles south of Colusa, California. The project location is shown on Figure 1, Vicinity Map. The project consists of constructing new hangars, a taxiway and taxiway aprons to access the hangars.

The purpose of our study is to provide geotechnical engineering data and recommendations for the foundation design, project site preparation, and earthwork. Our scope of services includes subsurface explorations, laboratory testing, engineering analysis to develop geotechnical recommendations, and preparation of this report.

1.2 Project Description

The proposed project includes site preparation and construction of new hangars, taxiway, and taxiway apron to access the hangars. We understand that the hangars will not house any emergency equipment, and are considered unoccupied structures. The 160,000 square foot (sq. ft.) proposed improvement area is located on the northeast side of the existing Colusa County Airport runway and immediately south of the existing hangars as shown on Figure 2, Site and Exploration Plan. The area is currently undeveloped.

The proposed improvements will occupy a portion of the total 160,000 sq. ft. area based on the draft preliminary layout provided to us by the County of Colusa (County) and the geometry of the existing hangars and apron. Five hangar structures of approximate 60 foot by 40 foot plan dimensions and maximum 20 foot height covering 12,000 sq. ft. are currently proposed. The proposed hangars are likely single-story structures with steel frame construction, and slab-on-grade floors similar to existing hangars on site. We understand that the hangar structures will be supported on continuous strip footings and/or isolated spread footings. The maximum anticipated vertical column loads is about 9 kips.

The project will also include construction of concrete aprons around the hangars and taxiway improvements to access to the hangars. We estimate the paved areas will be similar to the area around the existing hangars and cover 90,000 sq. ft. Single engine, privately-owned airplanes and crop-dusters weighing less than 30,000 pounds are the typical aircraft using the airport facility. We have not been provided a formal set of plans for the project. We received a hand sketch of the preliminary hangar layout from Colusa County on May 10, 2016. Footing elevations, finished grades, and final hangar layout are unknown.

1.3 Scope of Services

The Shannon & Wilson proposal dated April 13, 2016 details our scope of services, which was developed based on discussions with the County of Colusa and consists of the following:

- Document review;
- Field exploration preparation including site reconnaissance and notifying Underground Service Alert;
- Field exploration consisting of excavating four test pits;
- Geotechnical laboratory testing;
- Geologic hazards review and mitigation recommendations; and
- Engineering analyses and report preparation.

1.4 Design Guidelines

The following design guidelines/documents were utilized for the project:

- California Building Standards Commission, 2013, California Building Code.
- Federal Aviation Administration (FAA), 2009, Airport Pavement Design and Evaluation.
- U.S. Geological Survey (USGS), 2014, United States Seismic Design Maps.
- Moore & Taber 1965 study consisting of boring logs and laboratory tests.
- Taber Consultants 2013 Feasibility Study.

2.0 SITE DESCRIPTION

The proposed project site is located within the Colusa County Airport. The project area is bounded by State Route 20/45 to the east, a staging area for crop-dusting to the south, the existing taxiway to the west, and a taxiway apron where existing hangars are located to the north.

The proposed site is generally unimproved and unoccupied by any structures or taxiway/runway facilities. Topographically, the airport area is relatively flat with existing taxiways, runways, and appurtenant hangar and parking areas for both cars and planes located around the proposed development site. Unpaved areas are covered with low-lying grasses. Hangar areas are typically paved around the existing structures.

Our site reconnaissance, field explorations and Underground Service Alert notifications did not indicate the presence of any utilities at the proposed project site. However, utilities may exist at the project site and may require abandonment, relocation, or replacement prior to construction.

3.0 FIELD EXPLORATIONS AND LABORATORY TESTING

3.1 Test Pits

We performed four test pit excavations to characterize subsurface conditions in the project area. Test pit designations are TP-3 through TP-6 (test pits TP-1 and TP-2 were designated in a previous consultant's study and are shown on our Site Exploration Plan). Test pit depths ranged from 7 to 11 feet below existing ground surface. Our field representative logged soils encountered in the test pits and obtained samples for laboratory testing. We include descriptions of test pit excavation and sampling procedures in Appendix A, Subsurface Explorations, along with the logs of the test pits.

3.2 Previous Explorations and Laboratory Testing

In addition to excavating four test pits, we used the information from prior explorations performed by other consultants from previous geotechnical studies and reports to help characterize subsurface conditions at the site. Previous explorations consisted of borings and test pits with depths ranging from 5 to 9¹/₂ feet below existing ground surface. We also used results of geotechnical testing from previous studies.

Logs of explorations and laboratory testing previously performed by others (within the airport property) and used in our analyses are included in Appendix B, Previous Subsurface Explorations and Laboratory Testing.

3.3 Geotechnical Laboratory Testing

We performed geotechnical laboratory tests on select soil samples collected from the test pits for this study. Laboratory tests included: visual classification, natural moisture content, grain size analysis, Atterberg Limits, expansion index, consolidation, soil-lime percentage, maximum dry

density, California bearing ratio (CBR), organic content, and soil corrosivity. Descriptions of laboratory test procedures and test results are presented in Appendix C, Geotechnical Laboratory Testing Procedures and Results. The natural moisture content test results are incorporated into the test pit logs provided in Appendix A.

4.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

4.1 Site Geology

California Division of Mines and Geology (CDMG) published geologic map (“Geologic Map of the Chico Quadrangle,” scale 1:250,000, 1992) indicates native soil deposits at the site are recent Holocene age Basin Deposits.

U.S. Department of Agriculture (USDA), “Colusa County Soil Survey” report indicates the project site is underlain by Colusa Loam. Within the project area, this unit has clay percentages greater than 60 percent. According to the soil survey report, Colusa Loam has the Uniform Soil Classification System (USCS) group name/symbol of Lean Clay/CL, is indicated to have a liquid limit between 25 to 35, and is considered potentially medium expansive per ASTM D 4829.

4.2 Subsurface Conditions

We evaluated subsurface conditions at the project site based on laboratory test results and subsurface data collected for our current study and from previous studies by others. Based on this data and our observations, the encountered soils are generally consistent with descriptions in published geologic maps, the USDA Soil Survey report and previous consultant studies. Soils encountered generally consisted of soft to stiff, brown to dark brown clay to the maximum depth of exploration of 11 feet below ground surface. Results of pocket penetrometer tests performed on soils encountered in the upper 4 feet of our test pits indicate unconfined compressive strength from about 2.3 to greater than 4.5 tons per square foot (tsf). Details of subsurface conditions at specific exploration locations are shown in our test pit logs and other consultant borings included in Appendices A and B.

4.3 Groundwater

We observed and measured groundwater in test pit TP-4 at approximately 10.5 feet below the existing ground surface at the time of excavation. We did not observe groundwater or seepage in the other three test pits excavated for this study. The depth to groundwater is anticipated to fluctuate seasonally, with local water usage, during rainfall events or as a result of drought.

Previous studies by others and information provided by the County indicate that groundwater can rise to within a few feet of ground surface in this area.

5.0 GEOLOGIC AND SEISMIC HAZARDS

This section identifies potential geologic and seismic hazards at the site, adverse impacts of these hazards, and recommended measures to mitigate these impacts, where required.

5.1 Surface Fault Rupture

By general definition, an active fault is one that has ruptured within Holocene geologic time (about the last 11,700 years). No mapped active (Holocene) or Quaternary age faults cross the site (U.S. Geological Survey, 2006), and the project site is not located within an Alquist-Priolo Earthquake Fault Zone.

The potential for surface fault rupture to impact the project is low. The nearest mapped active fault is the Dunnigan Hills Fault approximately 20 miles southwest of the project site. Quaternary faults mapped at the Sutter Buttes are not considered active nor contributing to the seismic hazard.

5.2 Seismic Ground Shaking

The site will experience low to moderate ground shaking during future earthquake events occurring on faults in the region. The effects of ground shaking can be mitigated by proper engineering design and construction in conformance with current building codes and engineering practices. We provide design seismic parameters in Section 8.3.

5.3 Liquefaction

Soil liquefaction is a phenomenon in which pore pressure in loose, saturated, granular soil increases during ground shaking to a level near the initial effective stress, resulting in a reduction of shear strength of the soil. Liquefaction may generate ground settlement, lateral spreading (ground movement on gentle slopes and towards open faces), bearing capacity failure, and/or landslides on slopes. Liquefaction potential is greatest where loose granular soil (sand and non-plastic silt) is present below groundwater.

Liquefaction was not specifically evaluated as part of this study because the hangars are not designated for emergency equipment storage or use and are considered unoccupied structures. If

this is an important consideration for this project, further study is required for liquefaction evaluation including drilled borings to a depth of at least 50 feet.

5.4 Flooding and Inundation

According to ArcGIS maps prepared by Federal Emergency Management Agency (FEMA), the site is located outside of a FEMA 100-year flood zone. We consider the potential for flooding and inundation at the site is low.

6.0 GEOTECHNICAL HAZARDS

6.1 Settlement

Settlement in soil has three basic components: elastic compression, primary consolidation, and secondary consolidation. When a saturated compressible clay layer is subjected to a stress increase (e.g., footing loads, embankment fill, etc.), elastic settlement will occur immediately. Since the coefficient of permeability of clay is low, the excess pore water pressure generated by loading gradually dissipates over a long period of time. Thus, the associated volume change or consolidation in the clay may continue long after the elastic settlement. At the end of primary consolidation (after complete dissipation of excess pore water pressure), some additional settlement is observed because of the plastic adjustment of soil fabrics. This latter stage of consolidation is called secondary consolidation. We estimated the primary consolidation settlement due to maximum footing loads on the upper clay strata to be between approximately $\frac{1}{2}$ to $1\frac{1}{2}$ inches.

6.2 Expansive Soil

Expansive soils consist of clay particles of certain mineralogy which undergo volume change when interacting with water. Expansive soil will swell with increasing moisture content and contract when dried. This phenomenon generally decreases in magnitude with increasing confining pressure at depth. These volume changes may damage spread footings, shallow piers, floor slabs, and other shallow improvements.

The soils encountered at the site consist of lean to fat clay. Based on expansion index testing, the near-surface clay has a medium expansion potential according to ASTM D 4829 (expansion index = 81). Previous studies report similar results. We include expansive soil mitigation measures in the recommendations section.

6.3 Soil Corrosion Potential

Sunland Analytical tested selected soil samples for pH, resistivity, and chloride and sulfate concentrations to evaluate corrosion potential to metal and concrete and to evaluate suitability of subgrade soils for lime treatment. We include corrosion testing results in Appendix C, Geotechnical Laboratory Testing Procedures and Results.

The California Department of Transportation (Caltrans) considers a site to be corrosive if the soil and/or water contains a chloride concentration of more than 500 parts per million (ppm), a sulfate concentration more than 2,000 ppm, or a pH of less than 5.5 (Caltrans, 2012).

One sample yielded sulfate concentrations greater than 2,000 ppm indicating a corrosive soil based on the sulfate concentration. However, five other test results did not indicate a corrosive environment. According to Caltrans guidelines, the on-site soil may be potentially corrosive to certain metals and concrete within isolated areas across the site. We recommend consulting with a qualified corrosion engineer for additional evaluation and specific corrosion protection methods if this is a concern for the project.

7.0 DISCUSSION AND CONCLUSIONS

Based on site review, subsurface exploration, and engineering analyses, it is our opinion that the proposed project site is suitable for construction provided the recommendations in this report are incorporated into the design. Geotechnical hazards previously described that will affect design of the project include consolidation settlement, and expansive and potentially corrosive soil. Subsequent sections present more detailed recommendations and preliminary construction considerations.

Two options for subgrade preparation are presented in our recommendations. The first option includes removal of native soil and full depth replacement of the native soil with engineered fill consisting of select granular non-expansive fill. The second option includes chemically treating the native soil in-place. Each option will provide the required support for the proposed taxiway/apron improvements and for the proposed hangar structures. Each method has different costs, quality control requirements, and benefits.

Both options will include removal of the vegetation and top soil present at the project site. Full depth replacement will include: disposal of the excavated native materials and import of a similar amount of select fill, testing import materials to meet specifications and compaction testing of placed fill. Chemically treated soil will include: treating the native soil in-place with lime

without excavation and removal, testing the treated soil to meet specifications, importing and testing of aggregate base material, importing a smaller amount of aggregate and compaction testing. Both options are feasible and will provide support for the proposed improvements but, in our opinion, the chemically treated soil will likely provide better long-term performance and less maintenance for pavements, if constructed properly.

A soil-lime proportion test shows that a minimum 5% lime by weight is required to stabilize the soil at the project site. When sulfates in the treated soils are above 3,000 ppm, special considerations are required for lime treatment. At high sulfate contents (greater than 3,000 ppm) ettringite formation can occur. Ettringite is an expansive hydrous calcium aluminum sulfate mineral that is formed when high sulfate concentrations are present in the soil during lime treatment. Based on our test results the maximum sulfate content was 2,345 ppm. Because the soil conditions are favorable, lime treatment of subgrade soil appears feasible for this project.

Spread footings constructed on either engineered fill or chemically stabilized subgrade soil appear suitable for structure support. We recommend that new hangar foundations be supported on improved ground as described in the next sections.

Pavement section options for either removal of native soils and replacement with engineered fill or engineered fill supported on lime stabilized subgrade are presented. The engineered fill option is presented in Section 8.1 and the lime treated stabilized subgrade is included in Section 8.2. Which method is used will likely depend on cost of construction, local contractor experience and preference of Colusa County.

8.0 ENGINEERING RECOMMENDATIONS

8.1 Earthwork

8.1.1 General

The applicability of the foundation and pavement design parameters recommended depends on the quality of construction practices. In our opinion, earthwork operations can be accomplished with conventional earthwork equipment. Two options are presented in this section for the proposed improvements that include full depth replacement with imported granular engineered fill or on lime stabilized subgrade soil. Use the following recommendations for this project.

8.1.1.1 Clearing and Grubbing

All vegetation and other debris should be removed from the area to be treated and/or filled. The area to receive fill should be free of all roots and other organic material. Underground structures should be removed or otherwise abandoned in accordance with public agency requirements and as determined by the Soils Engineer. The fill foundation shall be stripped to a depth of at least 6 inches exposing firm foundation material capable of achieving specified compaction.

Debris or materials generated from clearing and grubbing should not be used as fill within the proposed pavement or building structure areas. This material may be used in landscape areas, provided the materials are moisture conditioned, placed away from any building pads and outside the pavement areas or other surface improvements and compacted to 90% relative compaction (ASTM 1557).

8.1.1.2 Suitability of On-Site Soils

On-site soils are not suitable for use as engineered fill.

8.1.2 Engineered Granular Import Fill

8.1.2.1 Subgrade Preparation

Overexcavate to three feet below the depth of spread footing bottom elevation. Soil exposed at subgrade should be compacted to 95 percent relative compaction at 2 to 4 percent over optimum moisture content (ASTM D 1557) where new pavement and buildings are proposed. This will prepare the subgrade as a foundation for the imported engineered fill.

Prior to subgrade compaction, Shannon & Wilson's field representative should observe the exposed subgrade and confirm materials and conditions. If the exposed subgrade is still considered soft/loose it should be over-excavated to 12 inches depth. If the newly exposed surface after over-excavation meets the approval of Shannon & Wilson, scarify the soil to a depth of 12 inches, moisture-condition the soil to 2 to 4 percent over optimum moisture content, and uniformly compact to at least 95 percent relative compaction (ASTM D 1557). The over-excavated soil should be disposed of properly.

8.1.2.2 Engineered Fill – Hangars

Import fill is required to provide a firm uniform base for the proposed improvements and the help reduce potential heave and settlement from expansive/compressive clay soil. We recommend using select, granular, import material. Granular engineered backfill should be used beneath buildings, pavements, walkways, or areas where settlement should be minimized. Engineered fill should consist of a well-graded mixture of imported granular soil that is free of organics, contaminants, debris, expansive clay, and rock fragments larger than 3 inches. Use either a well-graded sand or gravel, or a non-plastic silty sand or gravel with a Unified Soil Classification System symbol of SW, GW, SM, or GM. This material should have non-plastic fines ($PI < 15$) and the following gradation:

TABLE 1
IMPORT FILL GRADATION

Sieve Size	Percentage Passing Range
No. 4	50 to 100 %
No. 30	25 to 50 %
No. 200	10 to 25 %

8.1.2.3 Engineered Fill – Airport Apron/Taxiway Pavement

For taxiway and apron improvements, imported aggregate should meet the criteria in Federal Aviation Administration (FAA) Airport Construction Standards (AC 150/5370-10) Part 3, Flexible Base Courses. The base course should consist of P-209 Crushed Aggregate per FAA specifications and have the following gradation.

TABLE 2
P-209 CRUSHED AGGREGATE GRADATION

Sieve Size	Percent Passing Range
2 inch (50 mm)	100
1-1/2 inch (38 mm)	95-100
1 inch (25 mm)	70-95
3/4 inch (19 mm)	55-85
No. 4 (4.75 mm)	30-60
No. 40 (0.45 mm)	10-30
No. 200 (0.075 mm)	0-8

Aggregate subbase should use the same gradation indicated in Section 8.1.2.2.

8.1.2.4 Placement

Engineered fill should be placed in uniform lifts and compacted to at least 95 percent of the Modified Proctor maximum dry density (ASTM D 1557) beneath structures and pavement and within a minimum 36 inches of finished grade. Place engineered fill in uniform, horizontal layers not exceeding 8 inches in loose thickness for heavy compactors, or 4 inches for hand-operated mechanical compactors. The appropriate lift thickness would depend on the Contractor's equipment and the moisture content and quality of the fill material. The engineer should approve any imported materials used for fill.

The engineered fill should extend to a minimum 5 feet beyond hangar structures and concrete flatwork and should be a minimum 3 feet below the base of the hangar footings and finished pavement grade.

If subgrade or placed engineered fill soils become loose or disturbed during grading, the affected soils should be excavated to expose competent, undisturbed soils and replaced with properly compacted engineered fill. We recommend that a representative from our firm be present during engineered fill placement to observe the work and perform in-place density tests to evaluate whether or not the specified compaction is achieved.

If a period of time passes due to construction delays or otherwise and the site is left exposed, the contractor, upon restarting construction, should recondition and re-compact the soil to depths necessary to meet the project specifications.

8.2 Lime Treated Subgrade

We recommend using a minimum 5% lime (by weight) to stabilize the subgrade soils. If lime treatment is used for subgrade stabilization, a quality control program should be established for the lime treatment and mixing to verify adequate lime content by weight, compressive strengths and resulting CBR values for the treated soils. A minimum 18 inch treatment depth is recommended.

The quality control program should include conducting unconfined compressive strength tests (UCS, per CTM 373 or ASTM D 5102) on the lime treated soils during construction. A minimum of 300 psi strength should be achieved with a 5% by weight lime mix design. Lime treated CBR tests should be conducted during construction and should achieve a minimum CBR

of 60. Clay soils should be mixed thoroughly with the lime to avoid isolated oversize clay “chunks” within the treated subgrade and/or creating pockets of unmixed lime within the soil. After initial mixing, the treated soils should be allowed to cure/mellow for a minimum 24 hours prior to conducting the secondary mixing and compaction operations. Quality control testing should be performed on the initial mixed soils.

An engineered fill layer consisting of import granular material should be placed over the lime-treated subgrade where supporting the floor slab and concrete footings. This engineered fill will provide flexibility for the grading contractor, allow lime-treated soil to fully cure without drawing moisture away from footing concrete and provide a firm level base for constructing footings and slabs. A minimum 3 inch compacted thickness should be used below structure footings and floor slabs above the lime-treated soil and should extend a minimum five feet beyond the perimeter of the structure footings. Allowable bearing capacity for hangar engineered fill established on lime-treated subgrade is indicated in Section 8.4.

8.3 Seismic Design Criteria

Based on the subsurface explorations, knowledge of local subsurface conditions and a review of the local geology, we recommend Site Class D be used for seismic design of the new hangars in accordance with the California Building Code (California Building Standards Commission, 2013).

Seismic design parameters corresponding to Site Class D are given in Table 3. We used the USGS (2013) Probabilistic Seismic Hazard Analysis to determine S_s and S_1 for this site and other parameters necessary for the seismic design.

TABLE 3
SEISMIC DESIGN PARAMETERS (SITE CLASS D)

Spectral Response Acceleration (SRA) and Site Coefficients	Short Period	1-Second Period
Mapped SRA	$S_s = 0.80g$	$S_1 = 0.33g$
Site Coefficients	$F_a = 1.18$	$F_v = 1.74$
Maximum Considered Earthquake SRA	$S_{MS} = 0.94g$	$S_{M1} = 0.58g$
Design SRA	$S_{DS} = 0.63g$	$S_{D1} = 0.38g$

8.4 Shallow Foundations

We anticipate the concrete column and perimeter walls for the hangars will be supported on spread footings established on engineered fill or lime-treated chemically stabilized soil.

We recommend an allowable soil bearing pressure of 2,000 psf for footings established on engineered fill founded on native soil and 3,500 psf for spread footings established on engineered fill founded on lime-stabilized subgrade soil. A one-third increase in the allowable soil bearing pressure may be used for seismic or wind load. The recommended allowable bearing pressure is contingent upon the following considerations:

- Continuous perimeter footings should have a minimum width of 24 inches and column footings should have a minimum width of 36 inches.
- All footings should be embedded at least 12 inches below the lowest adjacent grade. For footings that support structures that require a dry interior space, the lowest adjacent soil grade is defined as either the grade upon which the capillary break material is placed or the exterior soil grade, whichever is lower. If adjacent individual footings are located at different elevations, we recommend that the horizontal distance between them be at least 1.5 times the elevation difference.
- If utilities are placed near the footings, they should be outside a downward projected 1:1 plane from the outside footing bottom.

A representative from our firm should be on site to observe the subgrade preparation and confirm suitable bearing at each footing excavation/location. The subgrade observation should be accomplished prior to the placement of steel or concrete. The recommended bearing pressures presented in this report require careful preparation of the footing/slab subgrade. Footing excavations should be cleaned of all loose soil, leveled, and protected from water infiltration after construction.

We estimate that total settlement is less than 1-inch for either option. Differential settlement is expected to be half the total settlement.

Resistance to lateral forces caused by wind, earthquake, unbalanced earth pressures, and/or other forces can be provided by frictional resistance against the base of footings. We recommend a coefficient of friction of 0.45 (ultimate) be used between cast-in-place concrete and engineered fill for calculating the resistance to sliding at the base of the footings.

8.5 Floor Slabs and Flatwork

We recommend placing a capillary break consisting of a minimum 4-inch layer of washed pea gravel ($\frac{3}{8}$ -inch to No. 8 sieve size), or $\frac{5}{8}$ -inch minus crushed rock. A capillary break should be founded on either engineered fill or on stabilized subgrade and beneath the floor slabs. For floor slabs where moisture is critical, a vapor barrier consisting of polyethylene sheeting should be placed over the pea gravel or crushed rock. We recommend a soil modulus of subgrade reaction of 60 pounds per cubic inch for slab design.

The slab foundation design recommendations presented are for the subgrade support of the concrete slab and surrounding flatwork. The slab designer should note that several non-geotechnical factors could result in poor slab performance including, but not limited to: thickness and loading requirements, concrete shrinkage, type and placement of steel reinforcement, placement of crack control joints, isolation and expansion joints, and exposure during concrete curing. The floor slab design is the responsibility of the structural designer.

Flat work and graded areas surrounding the hangars should have a positive two percent slope away from the hangars. All drainage should be positive away from the hangars and any gutters, downspouts or drainage collection systems should outlet away from the hangar perimeter footings and flatwork.

8.6 Pavement Design

8.6.1 General

The pavement design for the new taxiway depends on traffic loads, load repetitions, and climatic conditions. Number of traffic passes per year and gross aircraft weights used in our analyses are based on estimates provided by Colusa County based on County of Colusa flight logs/data. We followed the guidelines provided in Advisory Circular (AC) 150/5320-6E Airport Pavement Design and Evaluation (2009) and used the FAA Rigid and Flexible Iterative Elastic Layer Design (FAARFIELD) version 1.305 (2010) software program retrieved from the FAA website to perform our analyses for the proposed taxiway. Our pavement design analyses assumes:

- A 20-year design life.
- Traffic will consist of a single wheel landing gear configuration with a maximum gross taxi weight of 30,000 pounds, 400 annual departures, and zero percent annual growth.

- Flexible pavement is comprised of hot mix asphalt (HMA) surfacing, base course, subbase, and prepared subgrade.
- Frost susceptibility is not likely at the project site and was not included in our design.
- Subgrade is prepared in accordance with our recommendations previously described.

8.6.2 Flexible Pavement

For flexible AC pavements, we used FAARFIELD (2010) software (published by the FAA) to develop the pavement design parameters for the taxiway shown in Table 4 below. We used an untreated CBR value of 3 based on laboratory testing, and we computed an equivalent existing subgrade resilient modulus (E) value of 4,500 pounds per square inch (psi) using FAARFIELD and the equation $E=1,500 \times \text{CBR}$. For lime-treated subgrade, we assumed a 300 psi final unconfined strength and used the equation $M_r=0.124(q_u) + 9.98$ to determine the stabilized subgrade resilient modulus M_r in kips per square inch (ksi).

TABLE 4
ASPHALT CONCRETE DESIGN PARAMETERS

Design Parameter	Design Value
Item P-401/P-403 HMA Surface Modulus	200,000 psi
Item P-401/P-403 Stabilized Base (flexible) Modulus (base)	400,000 psi
Item P-209 Crushed Aggregate Base Course Modulus (subbase)	17,300 psi
Lime Treated Subgrade Modulus (assumes 300 psi strength)	50,000 psi
Native Soil Subgrade Modulus (CBR = 3)	4,500 psi

Notes:

Item P-209 = Crushed Aggregate Base Course

Item P-401 = Plant Mix Bituminous Pavement

Item P-403 = Plant Mix Bituminous Pavement (Base, Leveling or Surface Course)

HMA = hot mix asphalt

psi = pounds per square inch

Using the design parameters in Table 4 and the design recommendations in AC 150/5320-6E, Table 5 below provides the flexible pavement design using compacted native subgrade without lime treatment.

TABLE 5
RECOMMENDED PAVEMENT SECTIONS – UNTREATED SOIL

HMA (in)	Base (in)	Subbase (in)
4	9	10

Using the design parameters in Table 3 and the design recommendations in AC 150/5320-6E, Table 6 below provides the flexible pavement design using compacted native subgrade with lime treatment. This pavement section is based on a CBR value of 60 and assumes lime-treated native materials.

TABLE 6
RECOMMENDED PAVEMENT SECTIONS – TREATED SOIL

HMA (in)	Base (in)
4	6

The above thicknesses assumes that the subgrade soils are lime treated to a minimum 18 inches depth.

HMA should meet specifications set forth in the FAA Airport Construction Standards (AC 150/5370-10), Parts 5 and 7 and have a minimum 4 inch thickness.

8.6.3 Underground Utilities

We recommend a minimum 2 foot cover over utilities from the pipe/conduit crown to the top of the pavement subgrade. This could vary depending on the utility type, size, and depth and should be evaluated by the design engineers. Catch basins, utility vaults, and other structures installed flush with the pavement should be designed and constructed to transfer wheel loads to the base of the structure.

9.0 CONSTRUCTION CONSIDERATIONS

9.1 Conventional Flexible Pavement

It can be expected that “soft” spots will be revealed during grading. It should be expected that areas of deeper excavation will be required to remove unsuitable subgrade materials. The depth and volume of removals cannot be determined based on the limited subsurface information acquired in this study.

Seasonally, materials exposed at subgrade or fill foundation levels may be wet/saturated at some locations; such areas may require aeration, reworking and/or over-excavation and replacement with engineered fill. Similarly, original ground may degrade under repeated heavy wheel

loading and care will be required in selecting earthwork equipment, particularly during the wet season.

There may be areas of underground utilities within the right-of-way. These may require specific consideration/protection with respect to project construction, sequencing, and earthwork.

9.2 Lime-treated Subgrade

Lime treatment operations should not be conducted in the rain or if rain is forecast during or within 2 to 3 days of scheduled treatment. Control and direct surface runoff, if present, away from sensitive areas. Runoff control is likely not a concern during summer construction season, but, the contractor should be aware of these conditions and take precautions during soil-lime mixing and compaction of the lime treated materials. The contractor should also take precautions during windy days to prevent mobilization and migration of the lime and is responsible for site safety during construction.

Once lime treatment and initial mixing is complete, the soil should be allowed to cure/mellow for a minimum period of 24 hours depending on field conditions. Curing/mellowing is critical to allow any remnant sulfate concentrations to react within the soil prior to re-mix. The contractor should maintain the moisture conditions during the mellowing period.

Heavy vehicles (water trucks, graders, etc.) should not be allowed on the road surface during the curing process. The lime treatment curing/mellowing process is critical to the long-term performance of the stabilized subgrade and the pavement section structure.

10.0 ADDITIONAL SERVICES

We recommend that Shannon & Wilson, Inc. be retained to review the geotechnical aspects of plans and specifications to determine that they are consistent with our recommendations. In addition, we should be retained to observe the geotechnical aspects of construction. Our observations will allow us to evaluate the subsurface conditions as they are exposed during construction and to determine that the work is accomplished in accordance with our recommendations and the project specifications. If construction observation is performed by others, they should review this report and either accept the conclusions and recommendations herein as their own or provide alternative recommendations.

11.0 LIMITATIONS

The analyses, conclusions, and recommendations contained in this report are based on site conditions as they presently exist, and further assume that the explorations are representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by the explorations. If subsurface conditions different from those encountered in the explorations are encountered or appear to be present during construction, we should be advised at once so that we can review these conditions and reconsider our recommendations, where necessary. If there is a substantial lapse of time between the submission of this report and the start of construction at the site, or if conditions have changed because of natural forces or construction operations at or adjacent to the site, we recommend that we review our report to determine the applicability of the conclusions and recommendations.

Within the limitations of scope, schedule, and budget, the analyses, conclusions, and recommendations presented in this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice in this area at the time this report was prepared. We make no other warranty, either express or implied. These conclusions and recommendations were based on our understanding of the project as described in this report and the site conditions as observed at the time of our explorations.

Unanticipated soil conditions are commonly encountered and cannot be fully determined by merely taking soil samples from test borings. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

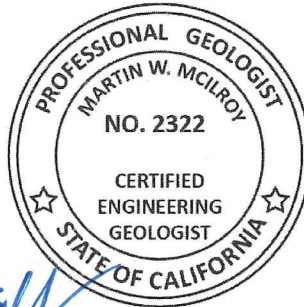
This report was prepared for the exclusive use of the County of Colusa in the design of the subject facility improvements. The data and report should be provided to the contractors for their information, but our report, conclusions, and interpretations should not be construed as a warranty of subsurface conditions included in this report.

The scope of our present services did not include environmental assessments or evaluations regarding the presence or absence of wetlands, or hazardous or toxic substances in the soil, surface water, groundwater, or air, on or below or around this site, or for the evaluation or disposal of contaminated soils or groundwater should any be encountered.

SHANNON & WILSON, INC.

Shannon & Wilson, Inc. prepared and includes in Appendix D, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our report.

SHANNON & WILSON, INC.



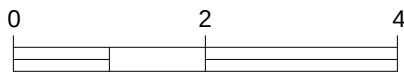
Martin W. McIlroy, C.E.G, P.E.
Associate

MWM:DXC/mwm

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)

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Approximate Scale in Miles

NOTE

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth™ Mapping Service.

Colusa County Airport
Taxiway and Hangar Improvements
Colusa County, California

VICINITY MAP

July 2016

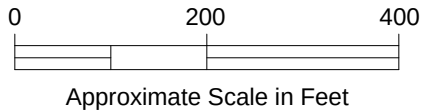
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FIG. 1

Packet Pg. 35

Filename: J:\521\00543\52-1-00543-001 Fig 2 - Plan.dwg Layout: Sheet 1 Landscape Date: 06-26-2016 Login: SAC



LEGEND

- TP-3 ■ Test Pit Designation and Approximate Location (Current Study)
- TP-1 ✕ Test Pit Designation and Approximate Location (Previous Study by Others)

NOTE

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Colusa County Airport
Taxiway and Hangar Improvements
Colusa County, California

SITE AND EXPLORATION PLAN

September 201652-1-00543-001

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FIG. 2

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APPENDIX A
SUBSURFACE EXPLORATIONS

Attachment: 52-1-00543 R1 Geotechnical Design Report (8970 : Private Party Hangar Construction Colusa Airport)

APPENDIX A

SUBSURFACE EXPLORATIONS

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A-3	Log of Boring TP-4
A-4	Log of Boring TP-5
A-5	Log of Boring TP-6

APPENDIX A

SUBSURFACE EXPLORATIONS

A.1 GENERAL

The subsurface exploration program for the proposed taxiway and hangar improvements at the Colusa County Airport included the excavating and sampling of 4 test pits (TP-3 through TP-6). Previous explorations, consisting of two test pits (TP-1 and TP-2) by another consultant in the vicinity of the proposed improvements were also utilized in our evaluation of subsurface conditions. Pertinent boring and test pit logs of these explorations are included in Appendix B, Previous Subsurface Explorations. Figure 2 shows the locations of the test pits excavated as part of the new taxiway and hangar improvements subsurface exploration, along with other relevant prior explorations.

A representative from Shannon & Wilson was present throughout the field explorations to observe excavation operations, retrieve representative soil samples for laboratory testing, and prepare descriptive field logs for the test pits. Soils were classified in general accordance with the American Society for Testing and Materials (ASTM) International Designation: D 2488, Standard Recommended Practice for Description of Soils (Visual-Manual Procedure). Figure A-1 presents the key to our classification of the materials encountered.

The logs of Shannon & Wilson test pits are presented in Figures A-2 through A-5. All depths presented on the test pit logs are relative to the existing ground surface at the time of the explorations.

A.2 TEST PITS

Four test pits (TP-3 through TP-6) were excavated to a maximum depth of 11 feet below the existing surface grades using a rubber tire backhoe provided and operated by Tor Broadcasting Corp. out of Colusa, California. The test pits were excavated on May 17, 2016.

The backhoe used a 24-inch-wide bucket to excavate the test pits. After completion of the test pits, the excavations were backfilled with excavated spoils by placing the material in about 1- to 2-foot lifts and tamping with the bucket of the backhoe. Our field representative collected grab samples from the test pits at select depth intervals, typically at changes in lithology. We also collected 2.5-inch ring samples by hydraulically pushing the rings into the soil using the backhoe bucket in the test pit excavation. After visually classifying and logging the samples, our field

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representative sealed them in labeled plastic bags and jars to preserve the moisture in the soil samples.

Groundwater was encountered in one of the four test pits (TP-4) at a depth of about 10¹/₂ feet.

A.3 REFERENCES

ASTM International (ASTM), 2013, Annual book of standards-construction, v. 4.08, soil and rock, (I): D 420 – D 5611: West Conshohocken, PA.

Taber Consultants, 2013, Feasibility report, Colusa County airport hangar improvements: Report prepared by Taber Consultants, West Sacramento, CA, job no. 2013-0039, for County of Colusa Department of Public Works, June, 18 p.

Shannon & Wilson, Inc. (S&W), uses a soil identification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following pages. Soil descriptions are based on visual-manual procedures (ASTM D2488) and laboratory testing procedures (ASTM D2487), if performed.

S&W INORGANIC SOIL CONSTITUENT DEFINITIONS

CONSTITUENT ²	FINE-GRAINED SOILS (50% or more fines) ¹	COARSE-GRAINED SOILS (less than 50% fines) ¹
Major	Silt, Lean Clay, Elastic Silt,³ or Fat Clay⁴	Sand or Gravel⁴
Modifying (Secondary) Precedes major constituent	30% or more coarse-grained: Sandy or Gravelly⁴	More than 12% fine-grained: Silty or Clayey³
Minor Follows major constituent	15% to 30% coarse-grained: with Sand or with Gravel⁴ 30% or more total coarse-grained and lesser coarse-grained constituent is 15% or more: with Sand or with Gravel⁵	5% to 12% fine-grained: with Silt or with Clay³ 15% or more of a second coarse-grained constituent: with Sand or with Gravel⁵

¹All percentages are by weight of total specimen passing a 3-inch sieve.

²The order of terms is: *Modifying Major with Minor*.

³Determined based on behavior.

⁴Determined based on which constituent comprises a larger percentage.

⁵Whichever is the lesser constituent.

MOISTURE CONTENT TERMS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

STANDARD PENETRATION TEST (SPT) SPECIFICATIONS

Hammer: 140 pounds with a 30-inch free fall.
Rope on 6- to 10-inch-diam. cathead
2-1/4 rope turns, > 100 rpm

NOTE: If automatic hammers are used, blow counts shown on boring logs should be adjusted to account for efficiency of hammer.

Sampler: 10 to 30 inches long
Shoe I.D. = 1.375 inches
Barrel I.D. = 1.5 inches
Barrel O.D. = 2 inches

N-Value: Sum blow counts for second and third 6-inch increments.
Refusal: 50 blows for 6 inches or less; 10 blows for 0 inches.

NOTE: Penetration resistances (N-values) shown on boring logs are as recorded in the field and have not been corrected for hammer efficiency, overburden, or other factors.

PARTICLE SIZE DEFINITIONS

DESCRIPTION	SIEVE NUMBER AND/OR APPROXIMATE SIZE
FINES	< #200 (0.075 mm = 0.003 in.)
SAND Fine Medium Coarse	#200 to #40 (0.075 to 0.4 mm; 0.003 to 0.02 in.) #40 to #10 (0.4 to 2 mm; 0.02 to 0.08 in.) #10 to #4 (2 to 4.75 mm; 0.08 to 0.187 in.)
GRAVEL Fine Coarse	#4 to 3/4 in. (4.75 to 19 mm; 0.187 to 0.75 in.) 3/4 to 3 in. (19 to 76 mm)
COBBLES	3 to 12 in. (76 to 305 mm)
BOULDERS	> 12 in. (305 mm)

RELATIVE DENSITY / CONSISTENCY

COHESIONLESS SOILS		COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
< 4	Very loose	< 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
> 50	Very dense	15 - 30	Very stiff
		> 30	Hard

WELL AND BACKFILL SYMBOLS

	Bentonite Cement Grout		Surface Cement Seal
	Bentonite Grout		Asphalt or Cap
	Bentonite Chips		Slough
	Silica Sand		Inclinometer or Non-perforated Casing
	Perforated or Screened Casing		Vibrating Wire Piezometer

PERCENTAGES TERMS^{1,2}

Trace	< 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

¹Gravel, sand, and fines estimated by mass. Other constituents, such as organics, cobbles, and boulders, estimated by volume.

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Colusa County Airport
Taxiway and Hangar Improvements
Colusa County, California

SOIL DESCRIPTION AND LOG KEY

June 2016

52-1-00543-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 1 of 3

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(Modified From USACE Tech Memo 3-357, ASTM D2487, and ASTM D2488)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL	TYPICAL IDENTIFICATIONS
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve)	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Gravel (less than 5% fines)	GW	Well-Graded Gravel; Well-Graded Gravel with Sand
			GP	Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Silty or Clayey Gravel (more than 12% fines)	GM	Silty Gravel; Silty Gravel with Sand
			GC	Clayey Gravel; Clayey Gravel with Sand
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Sand (less than 5% fines)	SW	Well-Graded Sand; Well-Graded Sand with Gravel
			SP	Poorly Graded Sand; Poorly Graded Sand with Gravel
		Silty or Clayey Sand (more than 12% fines)	SM	Silty Sand; Silty Sand with Gravel
			SC	Clayey Sand; Clayey Sand with Gravel
FINE-GRAINED SOILS (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML	Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
			CL	Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
		Organic	OL	Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
	Silts and Clays (liquid limit 50 or more)	Inorganic	MH	Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
			CH	Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
		Organic	OH	Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT	Peat or other highly organic soils (see ASTM D4427)

NOTE: No. 4 size = 4.75 mm = 0.187 in.; No. 200 size = 0.075 mm = 0.003 in.

NOTES

- Dual symbols (symbols separated by a hyphen, i.e., SP-SM, Sand with Silt) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart. Graphics shown on the logs for these soil types are a combination of the two graphic symbols (e.g., SP and SM).
- Borderline symbols (symbols separated by a slash, i.e., CL/ML, Lean Clay to Silt; SP-SM/SM, Sand with Silt to Silty Sand) indicate that the soil properties are close to the defining boundary between two groups.

Colusa County Airport
Taxiway and Hangar Improvements
Colusa County, California

**SOIL DESCRIPTION
AND LOG KEY**

June 2016

52-1-00543-001

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FIG. A-1
Sheet 2 of 3

GRADATION TERMS

Poorly Graded	Narrow range of grain sizes present or, within the range of grain sizes present, one or more sizes are missing (Gap Graded). Meets criteria in ASTM D2487, if tested.
Well-Graded	Full range and even distribution of grain sizes present. Meets criteria in ASTM D2487, if tested.

CEMENTATION TERMS¹

Weak	Crumbles or breaks with handling or slight finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

PLASTICITY²

DESCRIPTION	VISUAL-MANUAL CRITERIA	APPROX. PLASTICITY INDEX RANGE
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.	< 4
Low	A thread can barely be rolled and a lump cannot be formed when drier than the plastic limit.	4 to 10
Medium	A thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. A lump crumbles when drier than the plastic limit.	10 to 20
High	It takes considerable time rolling and kneading to reach the plastic limit. A thread can be rerolled several times after reaching the plastic limit. A lump can be formed without crumbling when drier than the plastic limit.	> 20

ADDITIONAL TERMS

Mottled	Irregular patches of different colors.
Bioturbated	Soil disturbance or mixing by plants or animals.
Diamict	Nonsorted sediment; sand and gravel in silt and/or clay matrix.
Cuttings	Material brought to surface by drilling.
Slough	Material that caved from sides of borehole.
Sheared	Disturbed texture, mix of strengths.

PARTICLE ANGULARITY AND SHAPE TERMS¹

Angular	Sharp edges and unpolished planar surfaces.
Subangular	Similar to angular, but with rounded edges.
Subrounded	Nearly planar sides with well-rounded edges.
Rounded	Smoothly curved sides with no edges.
Flat	Width/thickness ratio > 3.
Elongated	Length/width ratio > 3.

ACRONYMS AND ABBREVIATIONS

ATD	At Time of Drilling
Diam.	Diameter
Elev.	Elevation
ft.	Feet
FeO	Iron Oxide
gal.	Gallons
Horiz.	Horizontal
HSA	Hollow Stem Auger
I.D.	Inside Diameter
in.	Inches
lbs.	Pounds
MgO	Magnesium Oxide
mm	Millimeter
MnO	Manganese Oxide
NA	Not Applicable or Not Available
NP	Nonplastic
O.D.	Outside Diameter
OW	Observation Well
pcf	Pounds per Cubic Foot
PID	Photo-Ionization Detector
PMT	Pressuremeter Test
ppm	Parts per Million
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
rpm	Rotations per Minute
SPT	Standard Penetration Test
USCS	Unified Soil Classification System
q _u	Unconfined Compressive Strength
VWP	Vibrating Wire Piezometer
Vert.	Vertical
WOH	Weight of Hammer
WOR	Weight of Rods
Wt.	Weight

STRUCTURE TERMS¹

Interbedded	Alternating layers of varying material or color with layers at least 1/4-inch thick; singular: bed.
Laminated	Alternating layers of varying material or color with layers less than 1/4-inch thick; singular: lamination.
Fissured	Breaks along definite planes or fractures with little resistance.
Slickensided	Fracture planes appear polished or glossy; sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps that resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

Colusa County Airport
Taxiway and Hangar Improvements
Colusa County, California

**SOIL DESCRIPTION
AND LOG KEY**

June 2016

52-1-00543-001

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FIG. A-1
Sheet 3 of 3

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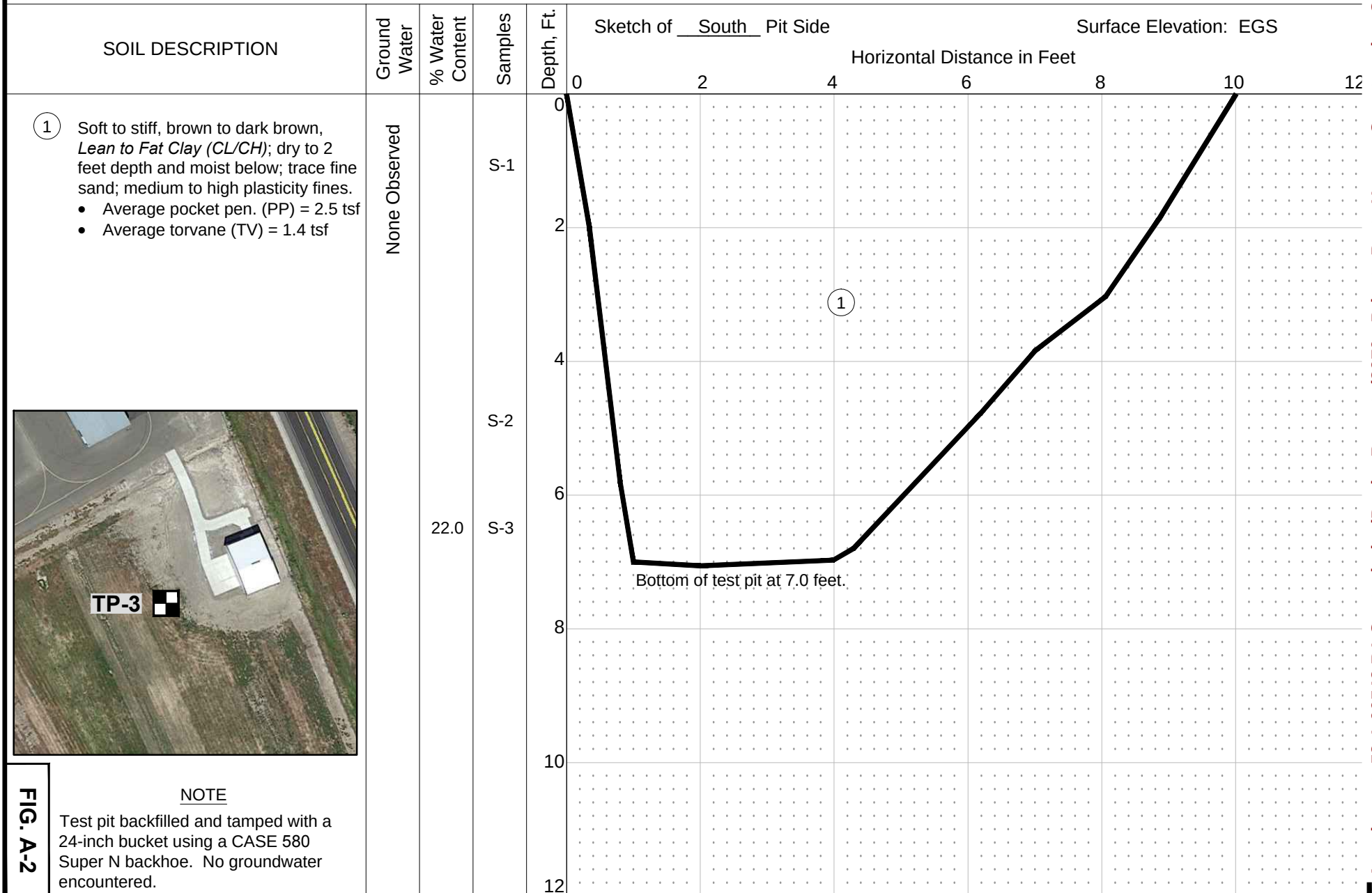
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SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
LOG OF TEST PIT TP-3

JOB NO: 52-1-00543-001 DATE: 5-17-16

LOCATION: 39.1800, -121.9925
(Based on Google Earth Pro)

PROJECT: Colusa County Airport Taxiway and Hangar Improvements

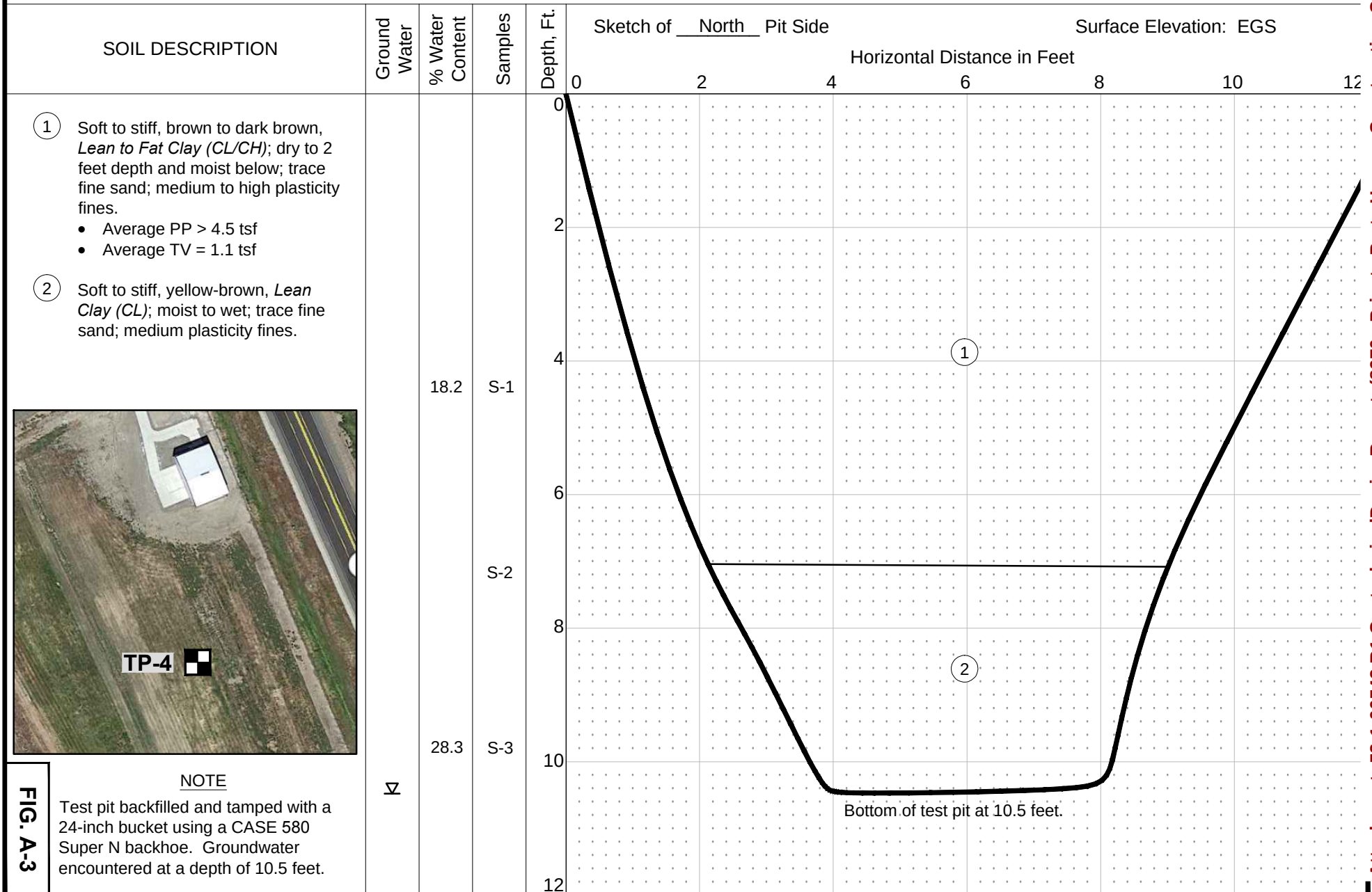


SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
LOG OF TEST PIT TP-4

JOB NO: 52-1-00543-001 DATE: 5-17-16

LOCATION: 39.1794, -121.9919
(Based on Google Earth Pro)

PROJECT: Colusa County Airport Taxiway and Hangar Improvements

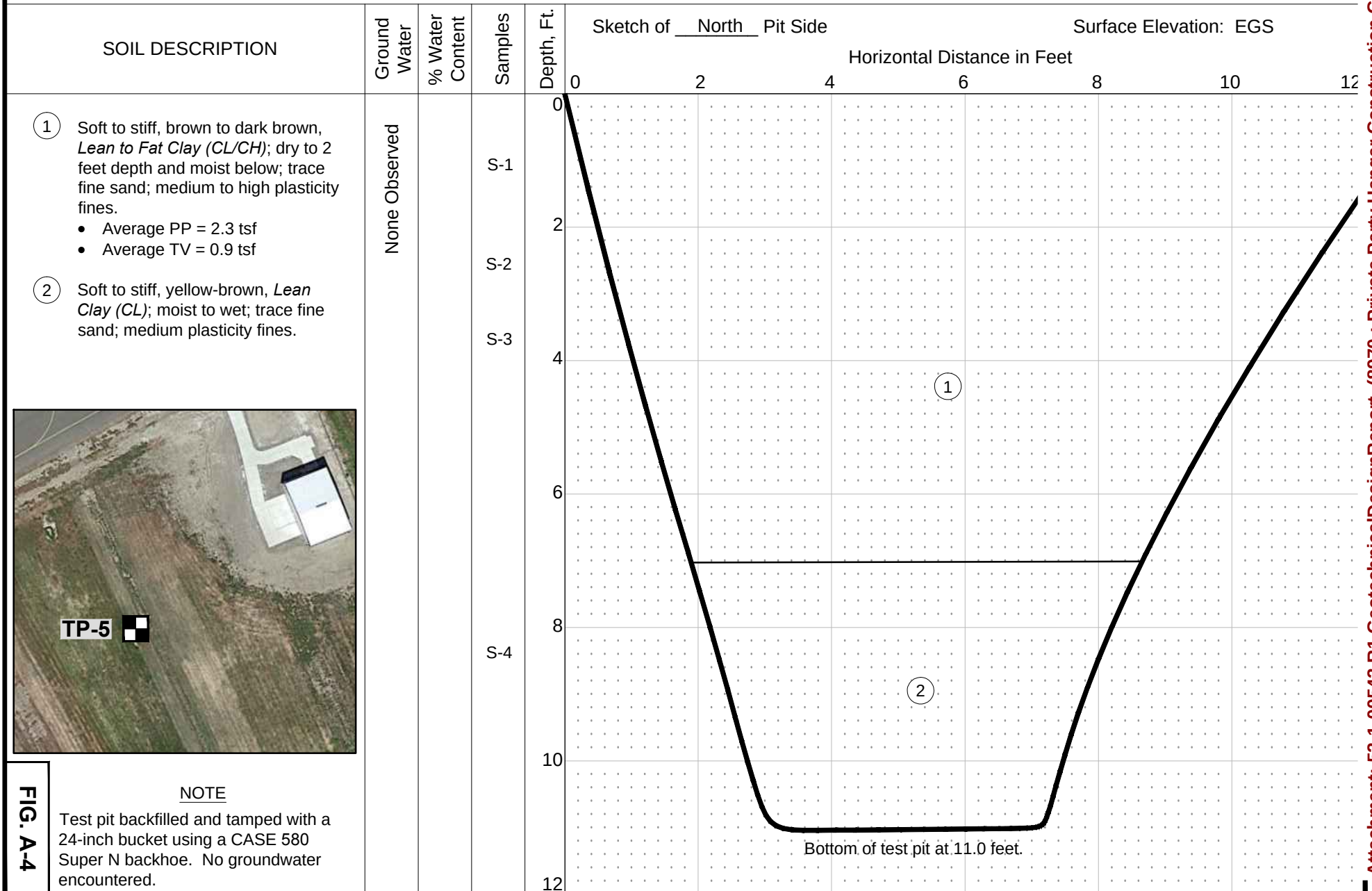


SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
LOG OF TEST PIT TP-5

JOB NO: 52-1-00543-001 DATE: 5-17-16

LOCATION: 39.1797, -121.9925
(Based on Google Earth Pro)

PROJECT: Colusa County Airport Taxiway and Hangar Improvements

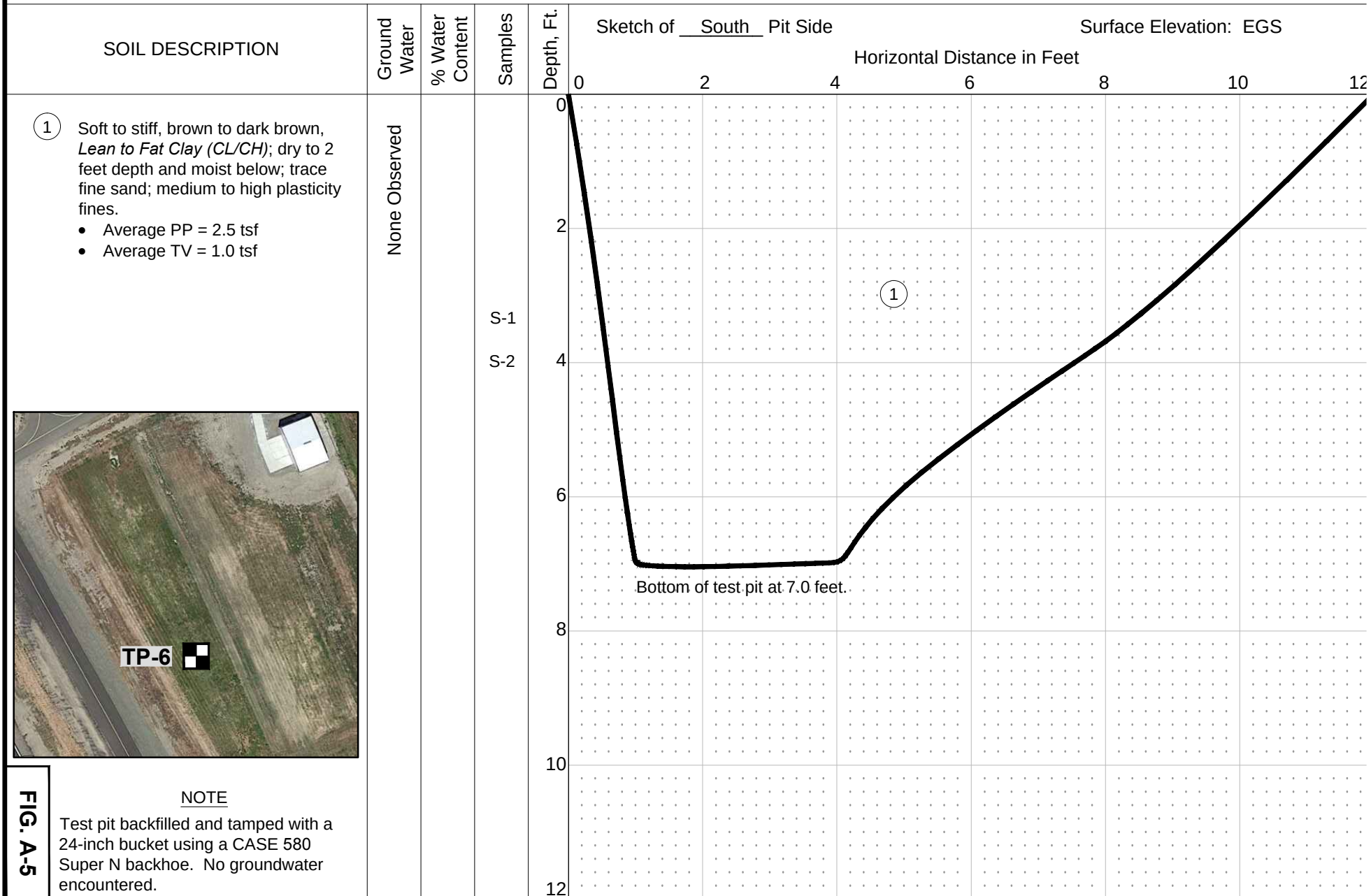


SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
LOG OF TEST PIT TP-6

JOB NO: 52-1-00543-001 DATE: 5-17-16

LOCATION: 39.1794, -121.9925
(Based on Google Earth Pro)

PROJECT: Colusa County Airport Taxiway and Hangar Improvements



SHANNON & WILSON, INC.

APPENDIX B

PREVIOUS SUBSURFACE EXPLORATIONS AND LABORATORY TESTING

Attachment: 52-1-00543 R1 Geotechnical Design Report (8970 : Private Party Hangar Construction Colusa Airport)

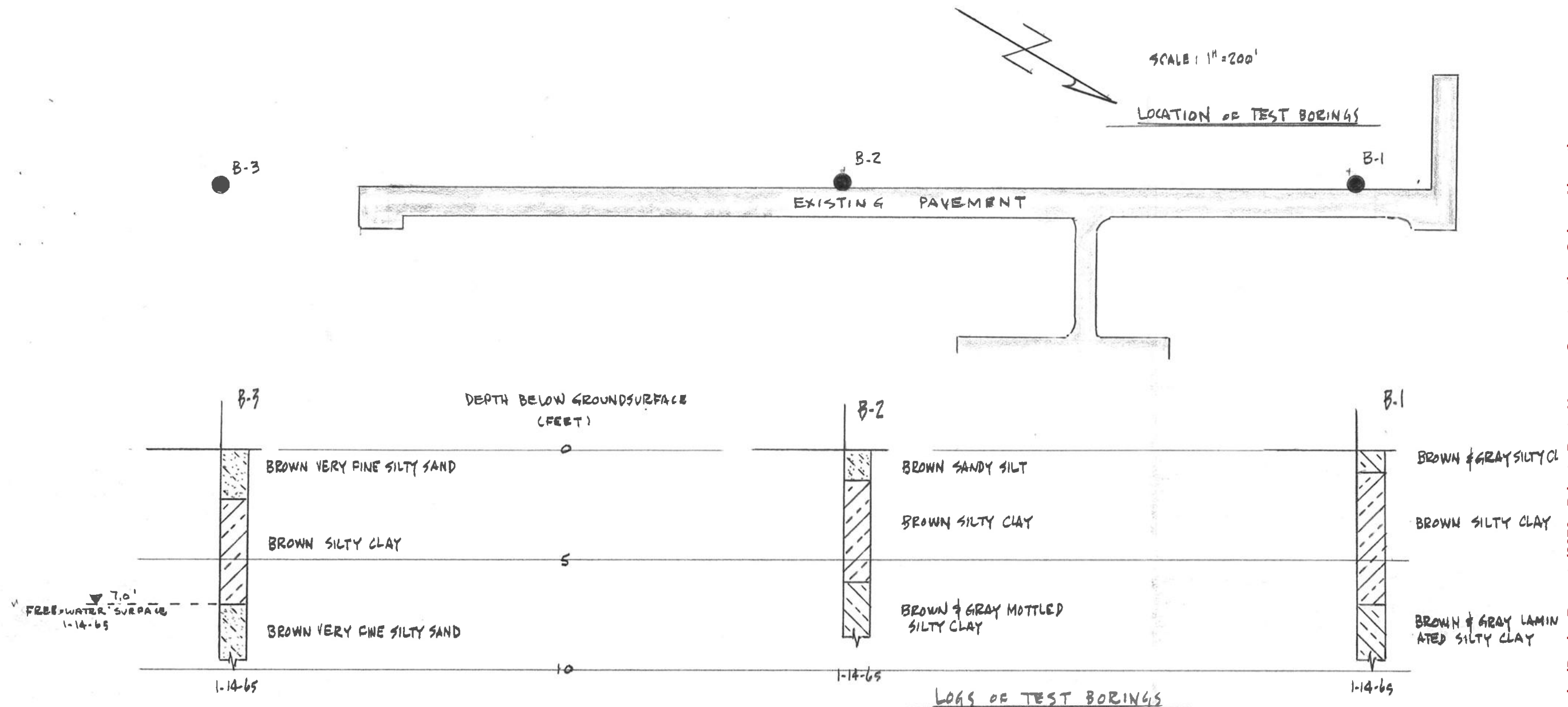
APPENDIX B**PREVIOUS SUBSURFACE EXPLORATIONS AND LABORATORY TESTING****TABLE OF CONTENTS****FIGURES**

B-1	Moore and Taber Boring Logs B-1, B-2 and B-3
B-2	Taber Consultants Feasibility Study Report Test Pit Logs (TP-1 and TP-2) and Lab Tests (5 sheets)

B.1 GENERAL

Moore and Taber performed a geotechnical study in January 1965 at the airport location. The plan of borings, boring logs and lab test results are included as attachment B-1.

A second feasibility study was completed by Taber Consultants in June 2013 to evaluate the geotechnical feasibility for hangar and taxiway apron improvements. Test pits logs and laboratory test results from this study are included as attachment B-2.



SUMMARY OF TESTS

BORING	SOIL LAYER	DEPTH (FEET)	RETAINED #10 SIEVE (%)	PASSING #10 SIEVE				LIQUID LIMIT	PLASTIC INDEX	A.A.S.H.O. TEST 7-99 METHOD-A		IN-PLACE		C.A.A. CLASS
				RETAINED #60 (%)	PASSING #60 RETAINED #200	% SILT	% CLAY			MAX. DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	DENSITY (PCF)	MOISTURE (%)	
1	A	0 - 1.0	0	2	11	53	34	36	18			93.3	25.2	E7
1	B	1.0 - 7.0	0	4	12	46	38	41	21	109.0	10.7			E7
1	C	7.0 - 9.5	0	3	2			58	35					E8
2	A	0 - 1.4	0	2	24	47	27	29	10			96.3	23.4	E6
2	B	1.4 - 6.0	0	4	22	42	32	35	18	110.5	18.0			E7
2	C	6.0 - 8.5	0	1	2			47	24					E7
3	A	0 - 2.2	0	3	30	38	24	33	9	99.8	19.1	85.3	23.4	E6
3	B	2.2 - 7.0	0	6	26	32	36	41	22					E7
3	C	7.0 - 9.5	0	(+)	54			29	N.P.					E5

* CLAY = MINUS 0.005MM.

JAN. 1965

34143A

MOORE AND TABER

COLUSA COUNTY
AIRPORT
SOILS EXPLORATION

TEST PIT LOG

Colusa County Airport Hangar Improvements

TYPE: Backhoe 24-in Bucket

LOCATION: Lat:39.1805, Long:-121.9922

Job No. 2013-0039

ELEVATION: EGS

TEST PIT NO TP-1

	S	106	17		Bag	A	5	(Soft to stiff) brownish black to black CLAY, moist (Very Soft) clay seam at 2-ft depth	
							10	Bottom of test pit at 5.0 feet. Test Pit backfilled and wheel rolled on 4-11-2013. No groundwater encountered.	5.0

TYPE: Backhoe 24-in Bucket

LOCATION: Lat:39.1797, Long:-121.9922

ELEVATION: EGS

TEST PIT NO TP-2

	S, E	102	16	Bag	B	5	(Soft to stiff) black to brownish black CLAY, moist
						10	
							CL
							Bottom of test pit at 5.0 feet.
							Test Pit backfilled and wheel rolled on 4-11-2013. No groundwater encountered.

THE TEST PIT LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

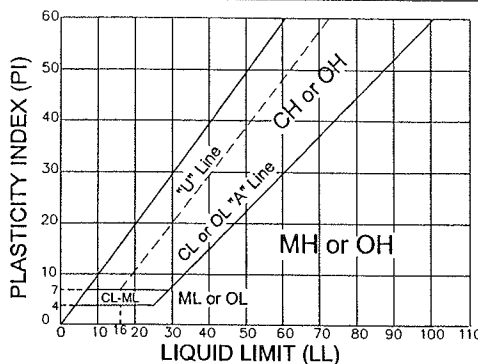
LOGGED BY: MWM

DATE: 04-11-2013

UNIFIED SOIL CLASSIFICATION SUMMARY

(ASTM D 2489--00)

Pt	OH	CH	MH	OL	CL	ML	SC	SM	SP	SW	GC	GM	GP	GW
Highly organic soils	Silts and clays Liquid limit 50 or more			Silts and clays Liquid limit less than 50			Sands with fines >15% fines		Clean sands ≤ 5% fines		Gravels with fines > 15% fines		Clean gravels ≤ 5% fines	
							Sands—50% or more of coarse fraction is smaller than No. 4. Sieve				Gravels—more than 50% of coarse fraction is larger than No. 4 sieve			
Fine grained soils (50% or more is smaller than No. 200 sieve)							Coarse grained soils (More than 50% is larger than No. 200 sieve)							



LABORATORY CLASSIFICATION CRITERIA

GW and SW — $C_u \geq 4$ for GW and 6 FOR SW; $1 \leq C_c \leq 3$
GP and SP—Clean gravel or sand not meeting requirements for GW and SW.
GM and SM—Atterberg limits of fines below "A" line or P.I. less than 4.
GC and SC—Atterberg limits of fines above "A" line with P.I. greater than 7.

Fines (silt or clay)	Sand			Gravel		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		
Sieve sizes	200	40	10	4	3/4"	3"	10"

Classification of earth materials shown on the test boring logs is based on field inspection and should not be construed to imply laboratory analysis unless so stated.

MATERIAL SYMBOLS

	Gravel		Silty clay or clayey silt
	Sand		Peat and/or organic matter
	Silt		Fill material
	Clay		Igneous rock
	Sandy clay or clayey sand		Sedimentary rock
	Sandy silt or silty sand		Metamorphic rock

CONSISTENCY CLASSIFICATION FOR SOILS

Standard Penetration "N"-Value*	Granular	Cohesive
0-5	Very loose	Very soft
6-10	Loose	Soft
11-20	Semicompact	Stiff
21-35	Compact	Very stiff
36-70	Dense	Hard
> 70	Very dense	Very hard

* According to the Standard Penetration Test (ASTM D 1586)

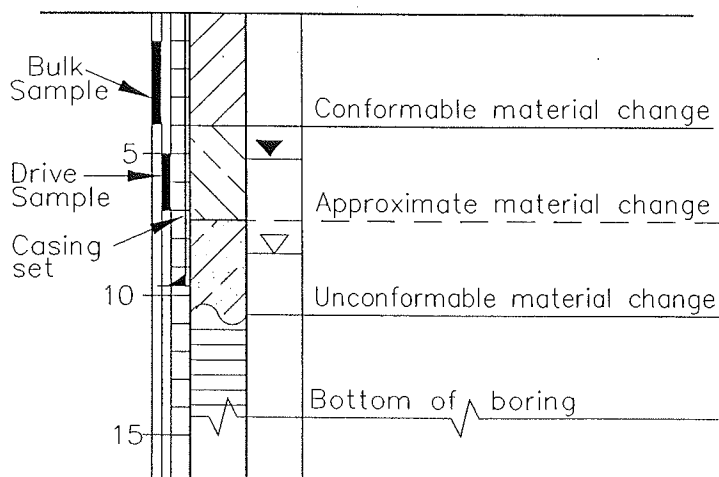
Blow count of 50/0.5 indicates 50 blows for 0.5 feet.

Where standard penetration test has not been performed, consistencies shown (in parenthesis) on logs are estimated.

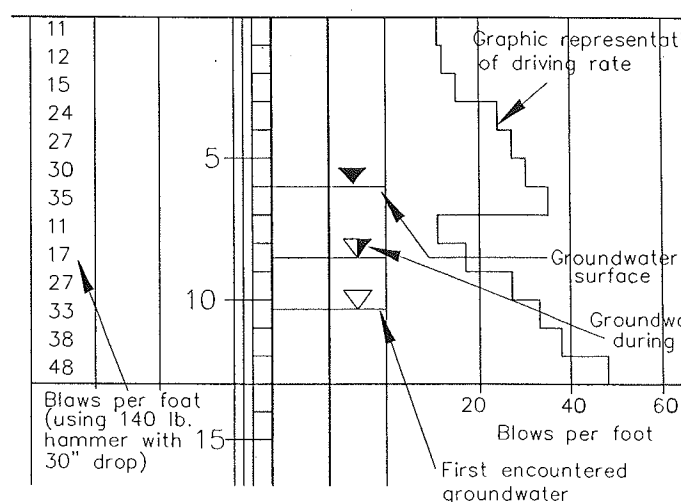
KEY TO "OTHER TESTS" LABORATORY

- A — Atterberg Limits
- C — Consolidation
- CR — Corrosivity
- E — Expansion Index
- G — Gradation
- H — Hydrometer
- M — Maximum Dry Density
- P — Permeability
- R — Resistance Value
- S — Direct Shear
- SE — Sand Equivalent
- SG — Specific Gravity
- T — Triaxial Shear

LEGEND OF BORING



LEGEND OF PENETRATION TEST



Colusa County Airport Hangars
2013-0039

LABORATORY TEST RESULTS

EXPANSION INDEX TEST - ASTM D4829

4" dia x 1" thick remolded specimen, 144 psf surcharge, 24 hr. saturation

<u>Boring/ Sample #</u>	<u>Dry Density (pcf)</u>	<u>Initial Moisture Content (%)</u>	<u>Final Moisture Content (%)</u>	<u>Expansion Index</u>
TP-2/B	100.6	13.3	28.0	66

Attachment: 52-1-00543 R1 Geotechnical Design Report (8970 : Private Party Hangar Construction Colusa Airport)

Colusa County Airport Hangars
2013-0039

SUMMARY OF REMOLDED DIRECT SHEAR TESTS

(2.49" x 1.0" specimens)

Boring/ Sample No.	Test Condition	Normal Stress (psf)	Peak Values		Ultimate Values	
			Shear Stress (psf)	Displacement (inches)	Shear Stress (psf)	Displacement (inches)
TP-1/A	3-4	1000	1459	.190	1399	.250
"	"	2000	2003	.200	1947	.250
"	"	3000	2328	.250	2328	.250
TP-2/B	3-4	1000	1417	.250	1417	.250
"	"	2000	1837	.250	1837	.250
"	"	3000	2201	.250	2201	.250

All samples sheared – specimen test condition as noted – in standard circular shear box under strain control = 0.025 inches per minute.

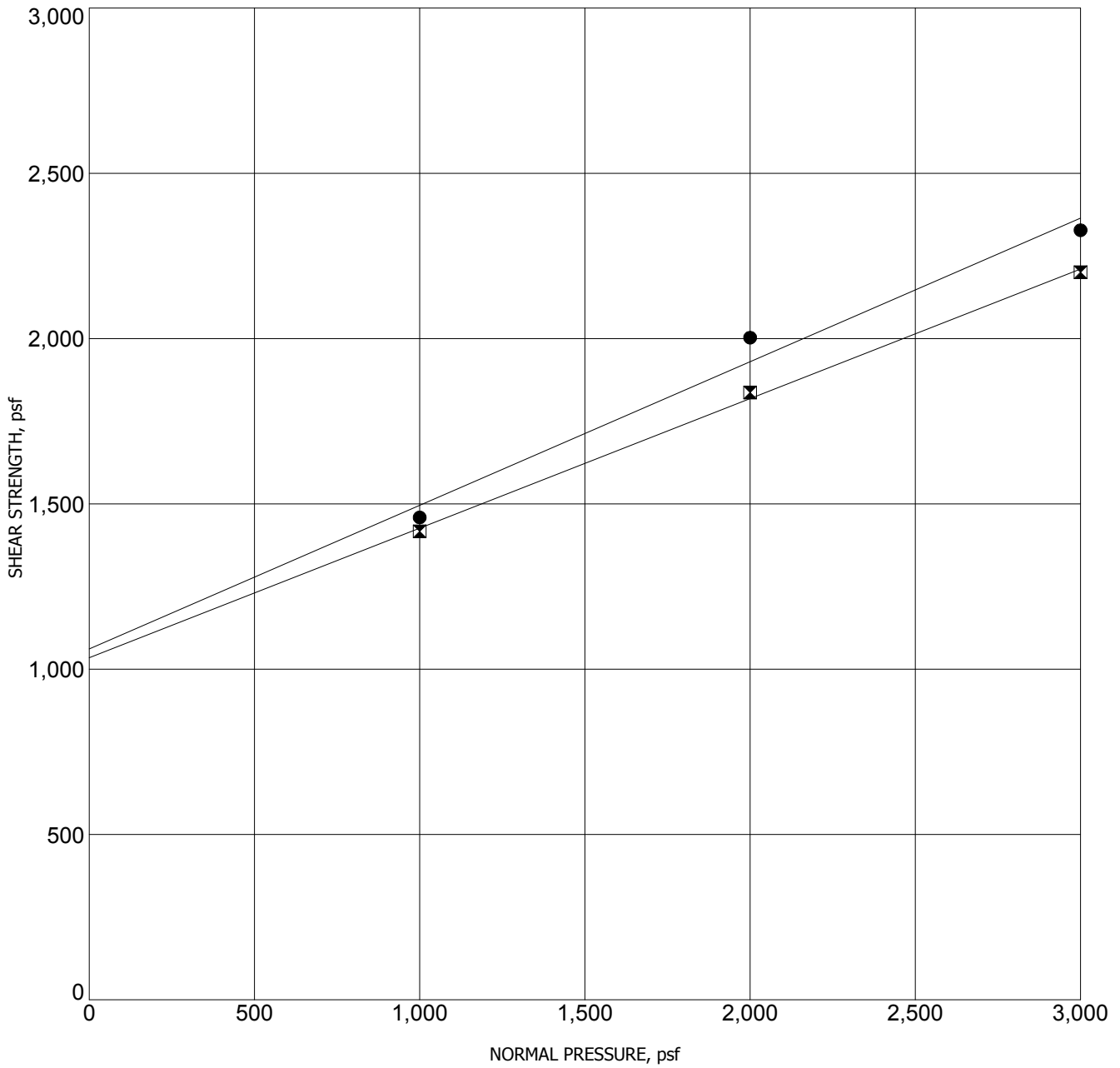
Test Condition Notation

1. Natural Moisture Content, Unconsolidated
2. Submerged, Unconsolidated
3. Saturated, Consolidated at Test Load
4. Remolded to 95%± Relative Compaction (ASTM D1557)

SURCHARGE VOLUME CHANGE TESTS

(1" Thick Specimen, 24-hr Saturation at Indicated Surcharge)

Boring/ Sample No.	Surcharge (psf)	INITIAL VALUES		Final Moisture (%)	Compression (–) Expansion (+) (%)
		Dry Density (pcf)	Moisture (%)		
TP-1/A	1000	106.3	17.1	22.2	(+) 2.0
"	2000	105.4	"	22.0	(–) 0.3
"	3000	105.7	"	21.5	(–) 0.0
TP-2/B	1000	102.2	15.6	23.2	(+) 1.8
"	2000	102.7	"	21.5	(–) 1.0
"	3000	101.0	"	23.2	(–) 1.6



Boring/Sample	Depth	Description	γ_d	MC%	c	ϕ
● TP-1 / A	0.0				1061	23
⊠ TP-2 / B	0.0				1034	21

DIRECT SHEAR TEST

Mr. Ben Carter
Colusa County Airport Hangar Improvements
Colusa County, California

Project No.
2013-0039

APPENDIX C

GEOTECHNICAL LABORATORY TESTING PROCEDURES AND RESULTS

APPENDIX C

GEOTECHNICAL LABORATORY TESTING PROCEDURES AND RESULTS

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-----	-------------------------------

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C-2	Consolidation Results

REPORTS

- C-1 Lab Test Results – Gulf Shore Construction Services, Inc. (4 sheets)
- C-2 Soil Corrosion Results – Sunland Analytical Laboratories (6 sheets)
- C-3 Soil-Lime Percentage Test Result – Cooper Testing Laboratory

APPENDIX C

GEOTECHNICAL LABORATORY TESTING PROCEDURES AND RESULTS

C.1 GENERAL

Appendix C presents descriptions of the procedures and results of geotechnical laboratory tests performed for our study of the proposed taxiway and hangar improvements to be constructed at the Colusa County Airport. Samples recovered from test pits were tested to evaluate the basic index and engineering properties of the subsurface soils. Geotechnical laboratory testing included visual classification, natural water content determination, grain size analysis, Atterberg Limits, expansion index, consolidation, soil-lime percentage, maximum dry density, California bearing ratio, and organic content. All geotechnical laboratory tests were performed in accordance with ASTM International (ASTM, 2013) standard test procedures. Corrosion testing was performed on select soil samples using applicable California Department of Transportation (Caltrans, 2012) and ASTM test methods. Shannon & Wilson, Inc. conducted the majority of the geotechnical laboratory testing in Sacramento, California. The California bearing ratio and organic content tests were performed by Gulf Shore Construction Services, Inc. in Rancho Cordova. The corrosion testing was conducted at Sunland Analytical Laboratories in Rancho Cordova, California.

C.2 WATER CONTENT DETERMINATION

The natural water contents of select soil samples recovered from our test pits were tested in accordance with ASTM D 2216, Standard Method of Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures. Comparison of natural water content of a soil with its index properties can be useful in characterizing soil unit weight, consistency, compressibility, and strength. Water content test results are included with percent passing test results presented in Table C-1, and on the test pit logs presented in Appendix A.

C.3 GRAIN SIZE ANALYSIS

The grain size distributions of select samples were tested in accordance with ASTM D 1140, Standard Test Methods for Determining the Amount of Material Finer than 75- μ m (No. 200) Sieve in Soils by Washing. Results of these analyses are presented in Table C-1 along with the Unified Soil Classification System (USCS) group symbol, sample description and water content. Soil classifications were done in general accordance with ASTM Designation: D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification

System), and D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).

C.4 ATTERBERG LIMITS

Soil plasticity was tested by performing Atterberg Limits tests on select fine-grained samples. The tests were performed in accordance with ASTM D 4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils. The Atterberg Limits results include Liquid Limit (LL), Plastic Limit (PL), and Plasticity Index ($PI=LL-PL$). These limits are generally used to classify soil, to indicate soil consistency (when compared to natural water content) and to provide correlation to soil properties including compressibility and strength. The LL, PL, and PI values are shown on the plasticity chart in Figure C-1 along with the USCS group symbol, sample description, sample depth, and natural water content.

C.5 EXPANSION INDEX

Expansion potential was tested by performing expansion index tests on select samples of near-surface soil. The tests were performed in accordance with ASTM D 4829, Standard Test Method for Expansion Index of Soils. The expansion index provides an indication of the swelling potential of a soil. An increase in expansion index relates to an increase in potential swelling. An expansion index less than 50 generally indicates low swelling potential, while an expansion index greater than 90 indicates high swelling potential. The expansion index test performed for this study yielded an expansion index of 81 at a depth of 4.5 feet in test pit TP-4, indicating medium expansion potential.

C.6 CONSOLIDATION TESTING

A consolidation test was performed on a select sample of fine-grained soil to help characterize the magnitude and rate of both differential and total settlement of proposed structures and areas of fill. The test was performed in accordance with ASTM D 2435, Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading. Consolidation test results are shown in Figure C-2 in this appendix.

C.7 SOIL-LIME PERCENTAGE

One soil-lime percentage test was performed by Cooper Testing Laboratory using ASTM 6276 Standard Test Method for Using pH to Estimate the Soil-Lime Proportion Requirement for Soil Stabilization. This test method provides a means for estimating the soil-lime proportion requirement for stabilization of a soil. This test method is performed on soil passing the $-425\text{-}\mu\text{m}$

(No. 40) sieve. The sample at 3.25 foot depth in test pit TP-6 was tested. The test result is included in this appendix.

C.8 MAXIMUM DRY DENSITY

Soil compaction was tested by performing modified Proctor tests on select samples to determine maximum dry density and optimum moisture content. The tests were performed in accordance with ASTM D 1557, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort. Compaction test results are included in this appendix.

C.9 CALIFORNIA BEARING RATIO

A select, composite sample near-surface soils from test pits TP-5 and TP-6 was submitted to Gulf Shore Construction Services for California bearing ratio testing to characterize the load carrying capacity of the subgrade soils at the site. The test was completed using ASTM D 1883, Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils. The CBR test results are presented in the reports included in this appendix.

C.10 ORGANIC CONTENT

A select sample of near-surface soil was submitted to Gulf Shore Construction Services for organic content testing. The tests were performed in accordance with ASTM D 2974, Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils. Organic content test results are presented in the reports included in this appendix.

C.11 CORROSION TESTING

A select sample of near-surface soil was submitted to Sunland Analytical, for corrosion testing, including pH, minimum resistivity, chloride, sulfate, and sulfate reducing bacteria. A copy of the corrosion test report is provided in this appendix. The corrosion testing was performed using California Department of Transportation (Caltrans) test methods (Caltrans, 2012). The following parameters were tested:

- **pH:** Soil pH is an indication of the acidity or alkalinity of soil and is measured in pH units. Soil pH is defined as the negative logarithm of the hydrogen ion concentration. The pH scale goes from 0 to 14 with a pH of 7 as the neutral point. As the amount of hydrogen ions in the soil increases, the soil pH decreases, thus becoming more acidic. From a pH of 7 to 0, the soil is increasingly acidic; from a pH of 7 to 14, the soil is increasingly alkaline or basic. Soils commonly have a pH range of about 5 to 8. Caltrans defines a “corrosive area” as an area with soil and/or water with a pH of 5.5,

- or less. The pH test method used included the Caltrans test method 643 (Modified small cell).
- **Resistivity:** Soil resistivity is a measure of the tendency for electrical currents produced during the corrosion process to flow freely through the electrolyte. A decrease in resistivity relates to an increase in potential corrosion activity. In general, for gravelly soils with little fine matrix, typical resistivity values range from about 50,000 to 100,000 ohm centimeters (Ω -cm). For soils that are silty or clayey, typical resistivity values range from about 1,000 to 20,000 Ω -cm. A minimum resistivity of less than 1,000 Ω -cm indicates the presence of high quantities of soluble salts and a higher propensity for corrosion. Soil and/or water that has a minimum resistivity of less than 1,000 Ω -cm should be subjected to additional testing for the presence of sulfates and chlorides. The soil resistivity was tested using Caltrans test method 643 (Modified small cell).
 - **Sulfate and Chloride Concentration:** Sulfate is an ion that can lead to damage of metallic and concrete structures. Chloride is an ion that converts to hydrochloric acid, which can cause corrosion of metals. Also, its presence tends to decrease the soil resistivity. Chlorides may be found naturally in soils as a result of brackish groundwater and historical geological sea beds, evaporitic basins, or the presence of pollutants. Caltrans defines a “corrosive area” as an area with soil and/or water with a sulfate concentration of 2,000 ppm or greater, or with a chloride concentration of 500 parts per million (ppm) or greater. The sulfate and chloride concentrations were tested using Caltrans test methods 417 and 422, respectively.

C.12 REFERENCES

ASTM International, 2013, Annual book of standards, construction, v. 4.08, soil and rock (I): D420 - D5876: West Conshohocken, Penn., ASTM International, 1 v.

California Department of Transportation, 2012, Corrosion Guidelines, v2.0: Sacramento, CA, November, 44 p.

**TABLE C-1
SUMMARY OF LABORATORY RESULTS**

Sample Data			Water Content (%)	Grain Size Analysis			Atterberg Limits		USCS Symbol	Soil Description	Soil Corrosion Test Results				CBR	MDD	
Test Pit	No.	Depth (ft)		Percent Sand (%)	Percent Fines (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)			pH	Resistivity Ohm-cm (x1000)	Chloride (ppm)	Sulfate (ppm)		Dry Density	Moisture
TP-3	S-1	1.0	---	---	---	---	---	---	CH	Fat Clay	8.03	0.96	107.3	151.2			
TP-3	S-2	5.5	---	---	---	---	---	---	CH	Fat Clay	9.30	0.19	870.3	2345.3			
TP-3	S-3	6.5	22.0	---	93.3	49	20	29	CL	Lean Clay							
TP-4	S-1	4.5	18.2	---	95.9	53	21	32	CH	Fat Clay							
TP-4	S-2	7.5	---	---	---	---	---	---	CL	Lean Clay	8.24	1.1	20.2	26.9			
TP-4	S-3	9.5	28.3	---	95.4	36	22	14	CL	Lean Clay	8.31	1.18	24.8	29.9			
TP-5	S-1	1.0	---	---	---	---	---	---	CH	Fat Clay	8.34	0.70	163.9	350.1			
TP-5	S-2	2.5	---	---	---	---	---	---	CH	Fat Clay							
TP-5	S-3	3.8	---	---	---	---	---	---	CH	Fat Clay							
TP-5	S-4	8.5	---	---	---	---	---	---	CL	Lean Clay	8.15	0.72	106.3	165.1			
TP-6	S-1	3.3	---	---	---	---	---	---	CH	Fat Clay							
TP-6	S-2	3.5	---	---	---	---	---	---	CH	Fat Clay							
TP-5/6	S-2/S-2	2 to 4*							CH	Fat Clay					3	108.8	15.0

Notes:

% = percent

* = Combined Sample

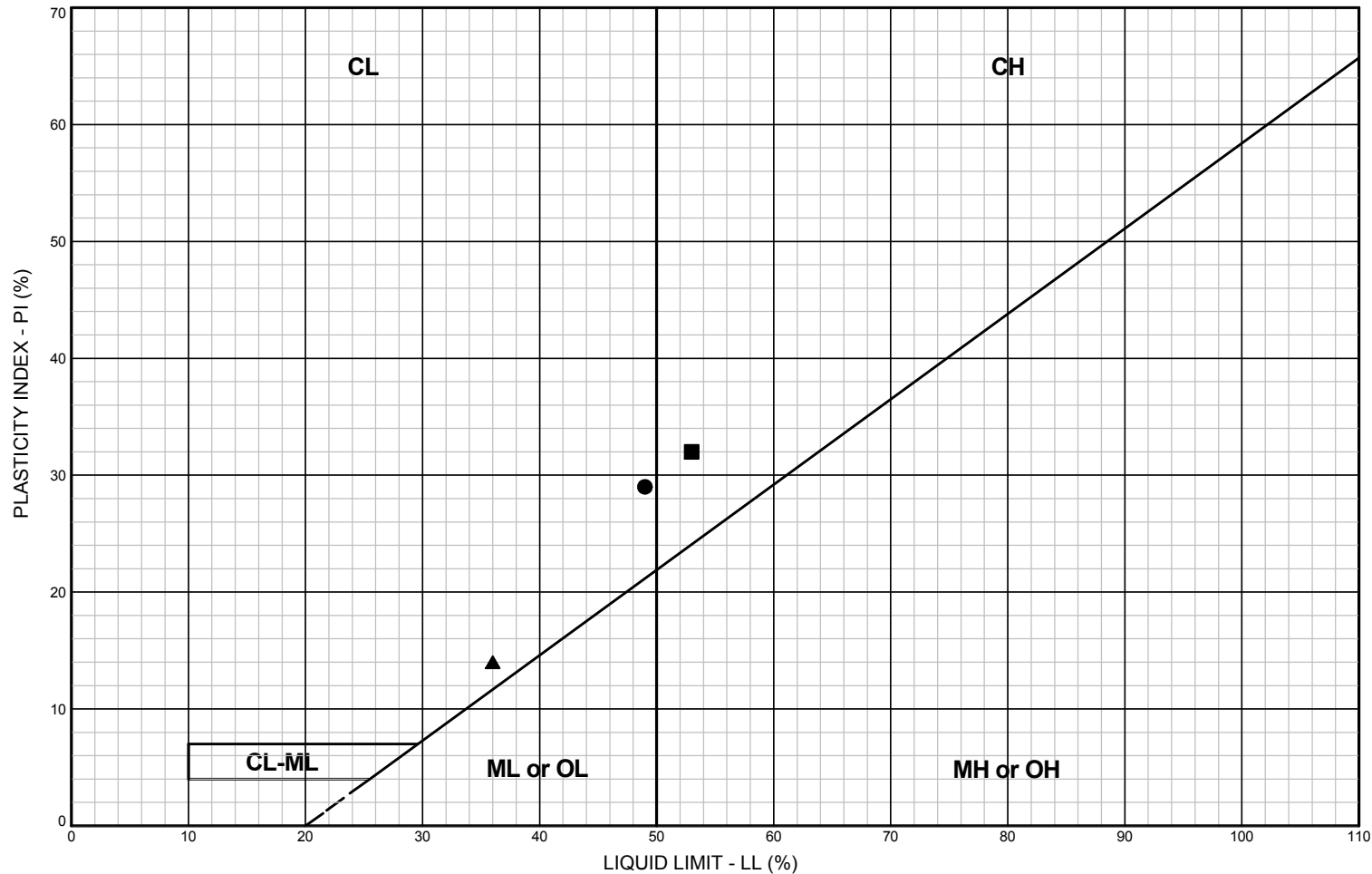
CBR = California Bearing Ratio

ft = feet below existing site grades

MDD = Maximum Dry Density

ppm = parts per million

USCS = Unified Soil Classification System

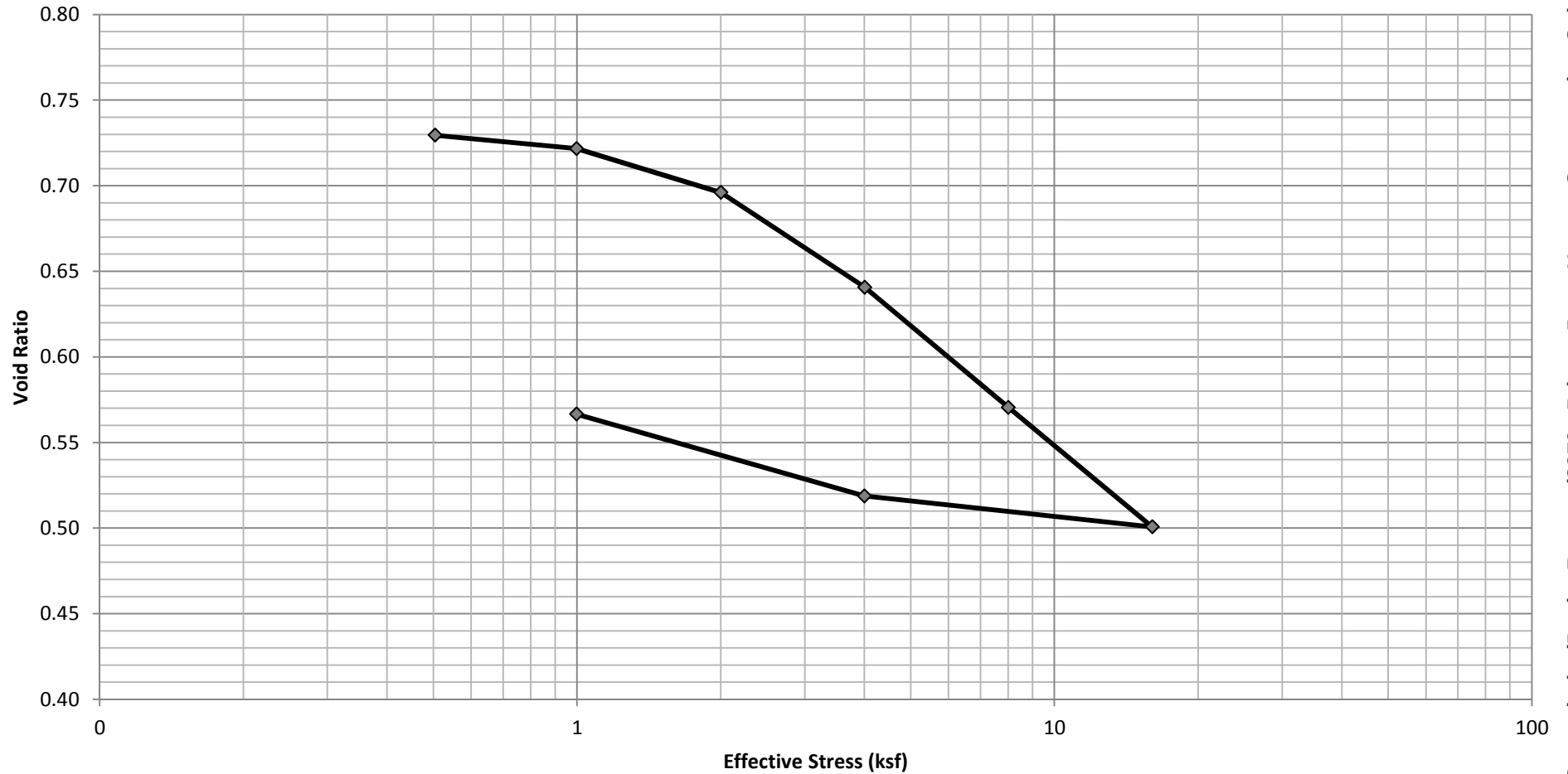


LEGEND

- CL**: Low plasticity inorganic clays; sandy and silty clays
- CH**: High plasticity inorganic clays
- ML or OL**: Inorganic and organic silts and clayey silts of low plasticity
- MH or OH**: Inorganic and organic silts and clayey silts of high plasticity
- CL-ML**: Silty clays and clayey silts

BORING AND SAMPLE NO.	DEPTH (feet)	U.S.C.S. SYMBOL	SOIL CLASSIFICATION	LL %	PL %	PI %	NAT. W.C. %	PASS. #200, %	Colusa County Airport Taxiway and Hangar Improvements Colusa County, California	
● TP-3	6.5	CL	Lean Clay	49	20	29	22.0	93.3		
■ TP-4	4.5	CH	Fat Clay	53	21	32	18.2	95.9	PLASTICITY CHART	
▲ TP-4	9.5	CL	Lean Clay	36	22	14	28.3	95.4		
									June 2016	52-1-00543-001
									SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. C-1

Consolidation Results



Notes

1. Tested in general accordance with ASTM D2435-11.
2. A specific gravity of 2.7 was used in analysis.
3. Estimated sample USCS type was Lean Clay (CL)
4. γ_d = Dry Density
WC = Water Content
e = Void Ratio
S = Saturation
BGS = Below Ground Surface

FIG. C-2

Test Data

Start of Test		End of Test	
γ_d (pcf):	97.5	γ_d (pcf):	105.1
WC:	21.5%	WC:	24.4%
e:	0.73	e:	0.57
S:	80%	S:	103%

Colusa County Airport
Taxiway and Hangar Improvements
Colusa County, California

CONSOLIDATION RESULTS SAMPLE TP-6, S-1 3.25 FEET BGS

June 2016

52-1-00543-00

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C-2



June 24, 2016

Attn: Chase Temple
Shannon and Wilson, Inc.
1722 3rd Street, Suite 100
Sacramento, CA 95811-6208

Project Name: Folsom Ready Mix – General Testing
GS project #16-131

RE: Invoice #1621

Dear Mr. Temple:

As requested, Gulf Shore Construction Services, Inc performed testing on the following sample set(s) of material from the subject site. The following sample(s) were received on 5/20/16 and identified as:

Test Pits – Composite Sample

The following test(s) were performed:

Modified Proctor Compaction (ASTM D1557)

California Bearing Ratio (ASTM D1883)

Organic Content (ASTM D2974)

The results of the referenced testing are presented within the attached reports.

We appreciate the opportunity to be of service to you on this project and look forward to providing additional service, as needed, in the future. Should you have any questions or require additional information, please contact our office at your convenience.

Respectfully submitted,

Stuart Hornsby
Laboratory Manager

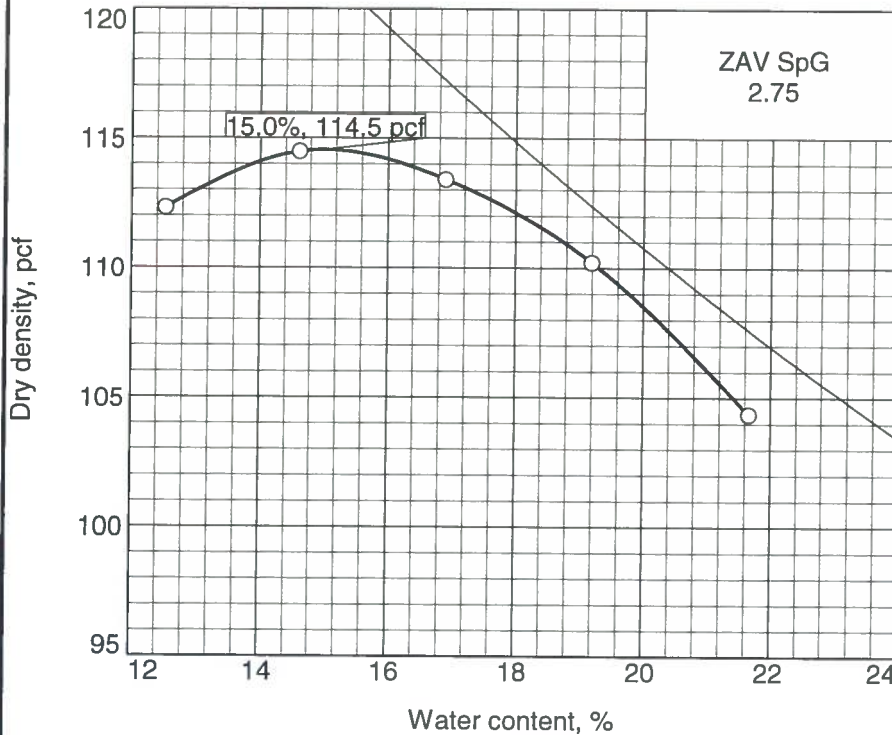
Gulf Shore Construction Services, Inc.

New Orleans 3508 Tulane Avenue, Suite 200 • New Orleans, Louisiana 70119 • 504.482.1824 Telephone • 504.482.1860 Facsimile
Sacramento 3383 Fitzgerald Road, Suite A • Rancho Cordova, California 95742 • 916.939.4117 Telephone • 916.635.4215 Facsimile

www.gulfshoreservices.com

COMPACTION TEST REPORT

Curve No. 17904



Preparation Method	Moist	
Rammer: Wt.	10 lb.	Drop 18 in.
Type	Manual	
Layers: No.	five	Blows per 25
Mold Size	0.03333 cu. ft.	
Test Performed on Material		
Passing	3/8 in.	Sieve
%>3/8 in.		%<No.200
Atterberg (D 4318): LL		PI
NM (D 2216)		Sp.G. (D 854)
USCS (D 2487)		
AASHTO (M 145)		
Date: Sampled	5/17/16	
Received	5/20/16	
Tested	5/23/16	
Tested By	MW	

COMPACTION TESTING DATA ASTM D 1557-12 Method B Modified

	1	2	3	4	5	6
WM + WS	4022.0	3955.5	4040.2	4019.8	3946.7	
WM	2036.0	2036.0	2036.0	2036.0	2036.0	
WW + T #1	410.5	372.2	463.1	493.9	482.4	
WD + T #1	351.5	314.0	402.4	436.7	433.7	
TARE #1	44.1	45.3	43.2	45.5	45.0	
WW + T #2						
WD + T #2						
TARE #2						
MOIST.	19.2	21.7	16.9	14.6	12.5	
DRY DENS.	110.2	104.4	113.4	114.5	112.3	

SIEVE TEST RESULTS

Opening Size	% Passing	Specs.

TEST RESULTS

Maximum dry density = 114.5 pcf

Optimum moisture = 15.0 %

Project No. 16-131 Client: Shannon & Wilson, Inc.

Project: Colusa County Airport

Loc.: Test Pits 5 & 6 - Composite Sample

Sample No.: 17904

GS GULF SHORE

Material Description

Remarks: Reviewed By:

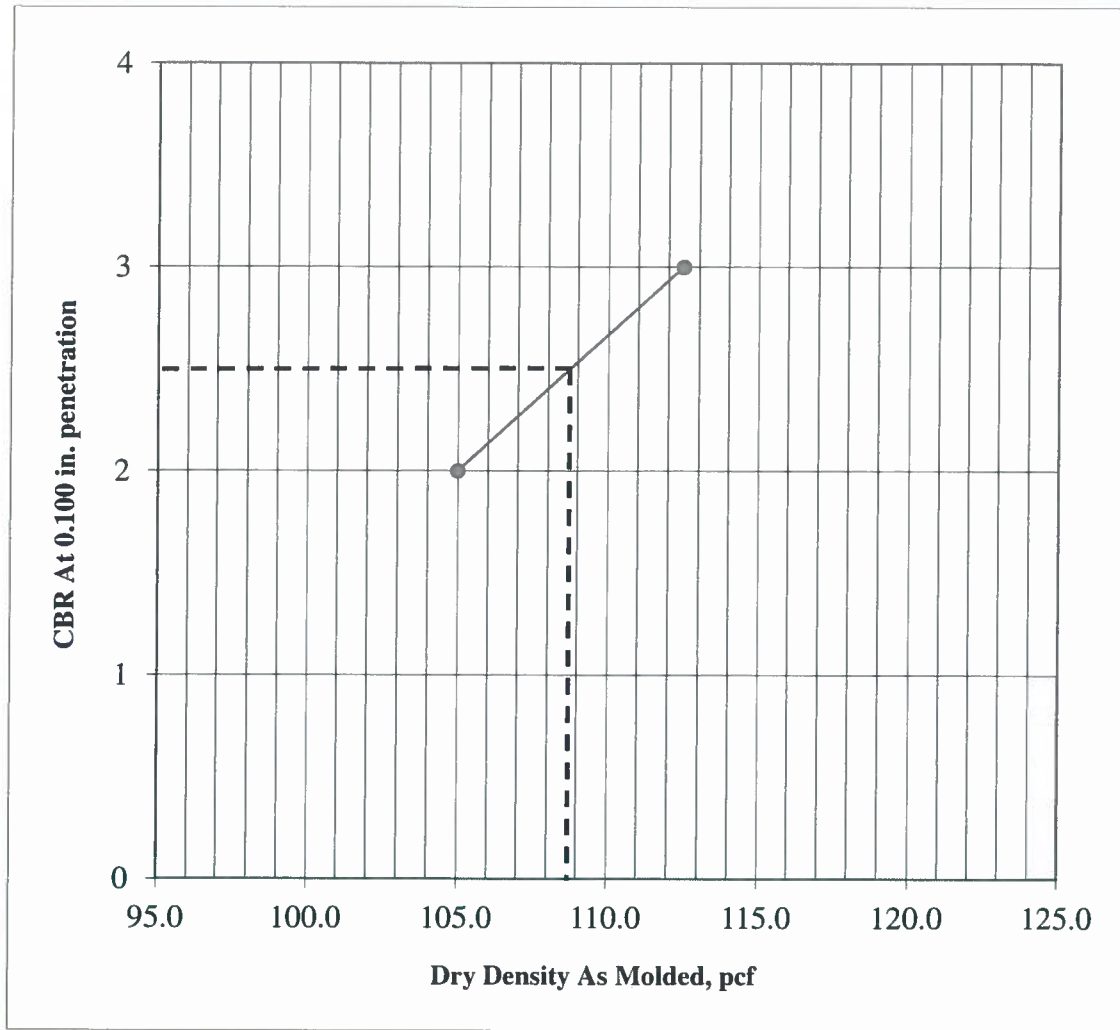
Stuart Hornsby, Lab Manager

Checked by: SH

Title: PM

Figure

CALIFORNIA BEARING RATIO



CBR At 0.1" Penetration At 95% Compaction

3

Reviewed By:

Stuart Morrisby
Stuart Morrisby, Lab Manager

Test Method: ASTM D1883

SAMPLE IDENTIFICATION: Composite TP Sample

SAMPLE DESCRIPTION: Test Pit 5 & 6, 2'-4', Sampled 5/17/16

REMARKS: 96 Hour Soak, CBR evaluated at 95% Compaction (108.8 pcf @ 15.0%)

PROJECT NUMBER: 16-131

May 20, 2016



3383 Fitzgerald Rd. Suite A, Rancho Cordova, CA 95742

Colusa County Airport
Shannon & Wilson Inc.

MOISTURE AND ORGANIC CONTENT TEST RESULTS

<u>Sample Identification</u>	<u>Depth, ft.</u>	<u>Organic Content, %</u>	<u>Moisture Content, %</u>
GS#17904	TP 5&6	2.7	18.8

Test Method: ASTM D2974

PROJECT NUMBER: 16-045 May 24, 2016

SIERRA TESTING LABORATORIES, INC.
GEOTECHNICAL AND MATERIALS TESTING SERVICES

485 Pierroz Rd, Unit D, Placerville, CA 95667
 Ph 530-622-1101 Fax 530-622-1191

Colusa County Airport

16-131

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 07/08/2016

Date Submitted 07/05/2016

To: Martin Mcilroy
Shannon & Wilson, Inc.
1722 3rd St, Ste#100
Sacramento, CA 95811-6208

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : TP-3 Site ID : S-1.
Thank you for your business.

* For future reference to this analysis please use SUN # 72282-150915.

EVALUATION FOR SOIL CORROSION

Soil pH	8.03		
Minimum Resistivity	0.96	ohm-cm (x1000)	
Chloride	107.3 ppm	00.01073	%
Sulfate	151.2 ppm	00.01512	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 05/25/2016
Date Submitted 05/19/2016

To: Chase Temple
Shannon & Wilson, Inc.
1722 3rd St, Ste#100
Sacramento, CA 95811-6208

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 52-1-00543 Site ID : TP-3, S-2, 5-6.
Thank you for your business.

* For future reference to this analysis please use SUN # 71918-150080.

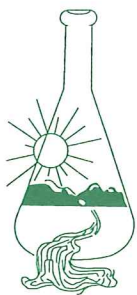
EVALUATION FOR SOIL CORROSION

Soil pH	9.30		
Minimum Resistivity	0.19	ohm-cm (x1000)	
Chloride	870.3 ppm	00.08703	%
Sulfate	2345.3 ppm	00.23453	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 07/08/2016

Date Submitted 07/05/2016

To: Martin Mcilroy
Shannon & Wilson, Inc.
1722 3rd St, Ste#100
Sacramento, CA 95811-6208

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : TP-4 Site ID : S-2.
Thank you for your business.

* For future reference to this analysis please use SUN # 72282-150916.

EVALUATION FOR SOIL CORROSION

Soil pH	8.24		
Minimum Resistivity	1.10	ohm-cm (x1000)	
Chloride	20.2 ppm	00.00202	%
Sulfate	26.9 ppm	00.00269	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 07/08/2016
Date Submitted 07/05/2016

To: Martin Mcilroy
Shannon & Wilson, Inc.
1722 3rd St, Ste#100
Sacramento, CA 95811-6208

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : TP-4 Site ID : S-3.
Thank you for your business.

* For future reference to this analysis please use SUN # 72282-150917.

EVALUATION FOR SOIL CORROSION

Soil pH	8.31		
Minimum Resistivity	1.18	ohm-cm (x1000)	
Chloride	24.8 ppm	00.00248	%
Sulfate	29.9 ppm	00.00299	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

5.1.a

Date Reported 07/08/2016
Date Submitted 07/05/2016

To: Martin Mcilroy
Shannon & Wilson, Inc.
1722 3rd St, Ste#100
Sacramento, CA 95811-6208

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : TP-5 Site ID : S-1.
Thank you for your business.

* For future reference to this analysis please use SUN # 72282-150918.

EVALUATION FOR SOIL CORROSION

Soil pH	8.34		
Minimum Resistivity	0.70	ohm-cm (x1000)	
Chloride	163.9 ppm	00.01639	%
Sulfate	350.1 ppm	00.03501	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

5.1.a

Date Reported 07/08/2016
Date Submitted 07/05/2016

To: Martin Mcilroy
Shannon & Wilson, Inc.
1722 3rd St, Ste#100
Sacramento, CA 95811-6208

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : TP-5 Site ID : S-4.
Thank you for your business.

* For future reference to this analysis please use SUN # 72282-150919.

EVALUATION FOR SOIL CORROSION

Soil pH	8.15		
Minimum Resistivity	0.72	ohm-cm (x1000)	
Chloride	106.3 ppm	00.01063	%
Sulfate	165.1 ppm	00.01651	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

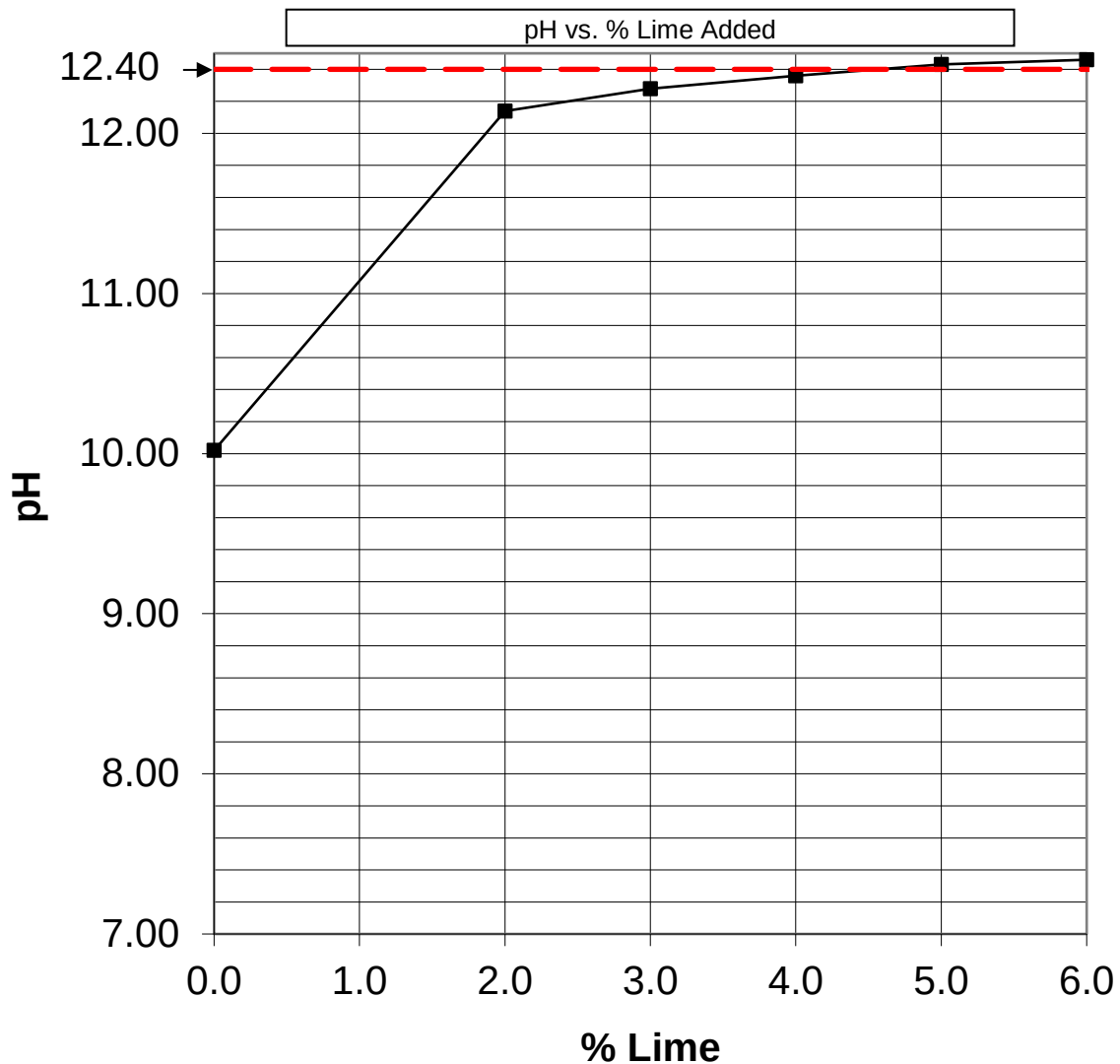
Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



SOIL-LIME PROPORTION REQUIREMENT FOR SOIL STABILIZATION ASTM D6276

Job No.: 645-035 **Boring:** TP-6 **Date:** 7/1/2016
Client: Shannon & Wilson, Inc. **Sample:** **By:** PJ
Project Name: Colusa County Airport **Depth:** 3.25 **Checked:** PJ
Project No.: 52-1-00543-001
Visual Description:
Type of Lime: Quicklime
Source of Lime: Shannon & Wilson, Inc.
Remarks: Lime was coarse and was sieved over the # 10 sieve for testing.
 Used the saturated lime sample as a pH buffer.

% Lime:	0	2	3	4	5	6	Saturated
Measured pH:	10.02	12.14	12.28	12.36	12.43	12.46	12.47



APPENDIX D

**IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL/ENVIRONMENTAL REPORT**

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 52-1-00543-001

Date: September 23, 2016
To: Mr. Michael Azevedo
County of Colusa

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

Attachment: 52-1-00543 R1 GeotechnicalDesignReport (8970 : Private Party Hangar Construction Colusa Airport)

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland



Hangar Ground Lease Agreement

This Hangar Ground Lease Agreement (“Lease”) is between the County of Colusa, a political subdivision of the State of California (“County”), and _____ (“Lessee”).

Background

- A. The County owns and operates an airport approximately 1.5 miles southeast of the City of Colusa on Highway 20, known as the Colusa County Airport (“Airport”).
- B. **Lessee** had a prior lease agreement with the County for a site in the Colusa County Airport where he erected a hangar and made improvements to the site.
- C. Lessee wants to enter into a new ground lease with the County for the same site.

Terms and Conditions

County and Lessee agree to the following:

1. **Lease of Premises.** County leases to Lessee the Premises described below under the terms and conditions in this Lease.
2. **Premises.** The Premises is County real property referred to as Area ? on the Colusa County Airport’s Federal Aviation Administration Approved Airport Layout Plan, also referred to as Hangar ???. The Premises is further depicted in Exhibit A to this Agreement.
3. **Term.** The term of this Lease shall be _____, 2021 to _____, 2036 (15 years).
 - A. **Term Extension.** Lessee will have a one-time automatic renewal extending this Lease for an additional 15 year term. Unless Lessee provides 90 days advance written notice to terminate, the Lease shall automatically renew for the extended term as set forth herein Notwithstanding this provision, the Lease will not automatically renew if Lessee is not in full compliance with all the terms and obligations in this Lease. County will provide Lessee with advance notice of any pending renewals or lease expiration.
 - B. **Right of First Refusal.** At least sixty (60) days prior to the end of the total lease term, including the automatic renewal (total 30 years), if the County intends to continuing leasing the Premises or otherwise use the Premises with any existing fixtures for its own use, subject to Lessee’s option to remove fixtures under Section 13 below, it will provide Lessee a right of first refusal or opportunity to enter into a new lease with the County for the Premises before the County offers

the lease opportunity to anyone else or utilizes the Premises for its own purposes. This opportunity of first refusal is contingent on Lessee's compliance with the terms and conditions of the Lease at the time the offer to lease is made to Lessee.

4. **Rent.** Starting on _____, 202?, Lessee shall pay County rent in annual installments, as follows:
 - A. **Rent Amount.** The Rent shall be \$???? per year. County will invoice Lessee for due rent.
 - B. **Rent Adjustments.** Beginning on the fifth annual anniversary of _____, 202? (_____, 202?) and on every additional 5 year anniversary date (Adjustment Anniversary) the Rent shall increase by the total 4 year percentage change published for the month of August preceding the Adjustment Anniversary, of the Consumer Price Index for all Urban Consumers for the San Francisco-Oakland-Hayward, California metropolitan area, not seasonally adjusted, (CPI-U), as determined by the U.S. Department of Labor, Bureau of Labor Statistics. In no event will the Rent adjustment be less than zero percent. Should the CPI-U be discontinued, the index used for comparison shall be a comparable index as designated by the Bureau. County shall provide Lessee notice of the Rent Adjustment at least 30 days prior to the adjustment date.
 - C. **Late Rent Payments.** Lessee acknowledges that the County incurs collection and administrative costs associated with pursuing delinquent Rent payments. Lessee agrees that it will pay the County a \$100.00 late charge in addition to any Rent due if the Rent is not paid in full within 30 days following its due date. The payment or acceptance of a late charge does not act as a waiver of any right the County may have to claim a breach of the Lease or any other remedy available to the County.
 - D. **Location of Rent Payments.** Lessee agrees to make rent payments to:

Colusa County Airport Manager
Colusa County Department of Public Works
1215 Market Street
Colusa, CA 95932
5. **Possessory Interest Tax.** Lessee understands that it has a possessory interest in the Premises, and any related fixtures, Site Improvements, or other structures. Notice is given under California Revenue and Taxation Code Section 107.6 that Lessee may be subject to the payment of property taxes levied on such interest. The imposition of a possessory interest tax shall be a tax liability of Lessee solely and shall be paid by Lessee; and any tax payment shall not reduce any Rent due Lessor. Lessee shall also pay all interest and penalties that any government entity, including the County, assesses for late payment of any possessory interest taxes.

6. **Personal Property Taxes.** Lessee shall pay and discharge all personal property taxes relating to any personal property stored at, used in the operation of, or otherwise related to the Premises, before delinquency. Lessee shall also pay all interest and penalties any governmental agency, including the County, assesses for late payment of any such personal property tax.
7. **Use of Premises.** Lessee shall only use the Premises for conducting registered aircraft storage, operations, and maintenance, of Lessee's aircraft. Lessee shall maintain owned or operated aircraft in good operating order free from known mechanical defects. Lessee is prohibited from conducting any other use, activity or operation in, on, or about the Premises. Lessee shall not: store any item other than aircraft or ancillary aircraft equipment; conduct commercial activity of any nature; store any vehicle except that of Lessee or guest while aircraft is being used; use the Premises for any form of residential use.
8. **Utilities.** Lessee shall pay for all utilities furnished to the Premises, including electricity, gas, water, or telecommunications services to the extent they exist. The County however is not required to provide or maintain any existing utilities or utilities that may exist in the future to the extent those utilities and connections if any were not originally installed or connected to the Premises by the County. Any new utility service connection to the Premises shall be subject to County approval through the Director of Airport Operations prior to connection or installation.
9. **Hazardous Materials.** Lessee will comply with all laws and regulations pertaining to the proper storage and disposal of hazardous materials. Hazardous materials other than what is required for operation and service of registered aircraft will not be stored within the Premises.
10. **Compliance with Law and FAA Regulations.** Lessee shall comply with all federal, state and local laws, ordinances, orders and regulations affecting the Premises including any applicable regulations of the Federal Aviation Administration, and any rules or policies existing or enacted by the County governing the airport.
11. **Use of Airport Facilities.** Lessee is allowed to use all Airport facilities and improvements of a public nature. County reserves the right to take action for protection of Airport against obstruction of the Airport facilities that would limit the usefulness of Airport or constitute a hazard to aircraft.
12. **Billboards, Signs, Awnings.** Lessee will not construct, place, or permit to be constructed or placed, signs, awnings, marquees or other structures, or writings, attached to or projecting from any hanger, structure, fence or barrier on the Premises without County's prior written consent. Further, and in any case, Lessee shall not be permitted to place any sign or similar material on or about the Premises that does not conform to the County Code. Any such signs or similar material that is allowed by the County shall be limited to providing identifying information for Lessee, associated trademarks, service

marks, Lessee's address, contact information, or information legally mandated to be provided. Lessee agrees to remove signs, displays, advertisements or decorations it has placed, or permitted to be placed, which in County's sole discretion it deems offensive or does not otherwise comply with this section.

13. **Delivery, Acceptance, and Surrender of Premises.** Lessee takes the Premises "AS IS", acknowledges that it had an adequate opportunity to inspect the Premises, and agrees to accept the Premises as being in a good state of repair and in sanitary condition. Lessee shall surrender the Premises including any fixtures, Site Improvements and structures, to County at the end of the Lease. Alternatively, Lessee at its option, may remove and retain the hanger structure, not including the concrete pad, so long as any such removal is completed in a reasonable workmanlike manner by the end of the lease term and following at least 90 days prior written notice to the County of any such intended removal.
14. **Site Improvements, Fixtures, Hangers or Structures.** At Lessee's sole cost and expense, Lessee shall maintain, repair, and keep in good order, condition, and appearance, the Premises, Site Improvements and any related fixtures, and structures, in a safe, clean and sanitary condition. Lessee is prohibited from materially altering the Site Improvements including the hanger, floor, walls, exterior or adjoining common use areas, or constructing any structure or facility within the hanger without the express written consent of the County through its Airport Director. Material alteration is defined as any alteration requiring the issuance of a permit from the County or that which significantly alters the appearance, character, or composition of the hanger or any of its structural components, including removal in whole or in part. Further, with the exception of a hanger removal near the termination of the lease as provided for in section 13 above, Lessee will not excavate, grade, add or remove soil, gravel or rock to or from the Premises or any part of the Airport without the express, written consent of the County.
15. **Insurance.** Lessee, at its own cost, agrees to maintain, for the duration of this Lease, the following insurance policies:
 - A. **Aircraft or General Liability Coverage:** Aircraft or general liability insurance against liability for financial loss resulting from bodily injury, including death or personal injury, and damage to property caused by the ownership, operation, storage, or use of aircraft arising from or related to this Lease. The policy shall provide limits of no less than \$1,000,000 per occurrence and include coverage for fire damage legal liability at the full \$1,000,000 policy limit.
 - B. **Property, Fire and Extended Insurance Coverage:** Lessee shall maintain property, fire and extended insurance coverage in an amount equal to 100% of the full replacement value of the hanger, and any structure, fixtures, contents, and any improvements to the Premises.
 - C. **Deductibles and Self-Insured Retentions.** Any deductibles or self-insured retentions in excess of \$1,000 must be declared to and approved by the County.

At the option of the County, either (a) the insurer shall reduce or eliminate such deductible or self-insured retention; or (b) Lessee shall provide financial guarantee satisfactory to the County guaranteeing payment of any amounts which would be subject to the deductible.

D. Policy Endorsements: All insurance shall include an endorsement or an amendment to the policy of insurance:

1. Naming County, its elected officials, officers, employees, agents and volunteers as additional named insureds;
2. Providing the policy of insurance shall act for each insured and additional insureds as though a separate policy had been written for each, except with respect to the limits of liability of the insuring company;
3. Providing that the insurer waives all rights of subrogation against County;
4. Providing any failure to comply with the reporting provisions of the policy of insurance shall not affect coverage provided to County;
5. Providing broad-form contractual liability coverage insuring Lessee's indemnity obligations under this contract; and
6. Providing that coverage under the policy shall not be suspended, voided, reduced or cancelled in coverage or in limits without 30 days written notice certain to County.

16. **Proof of Coverage:** At the time of execution of this Lease, Lessee shall furnish County with copies of its insurance policies and endorsements affecting coverage required by this Lease.
17. **Damage or Destruction of Premises, Site Improvements, Fixtures, or Structures.** As provided for in section 14 Lessee is required to maintain the Premises, Site Improvements, fixtures, and structures in good condition, order, and appearance. In the event of damage or destruction to the Premises, Site Improvements, or fixtures, any insurance proceeds obtained for such a covered loss shall be used to repair or replace the damaged or destroyed items to a state and condition equivalent to their status before the damage or destruction. Rent will not be abated or reduced as a result of any such damage or destruction.
18. **Assignment.** Lessee will not assign, hypothecate, encumber, sublease, allow the Premises to be subject to a lien, or in any manner transfer any interest in this Lease to any person or entity directly or indirectly, by operation of law or otherwise, without first securing County's express and written approval. Lessee will request approval for any such transfers in interest from the County at least 30 days prior to any contemplated transfer and provide the County with any reasonably requested information the County may need to evaluate the proposed transfer. Any attempt to assign, hypothecate,

encumber or transfer an interest in this Lease, including transfers made at or after Lessee's death, without the express written approval of the County, shall be null and void and any purported assignee shall acquire no right or interest by reason of the attempted assignment or transfer. The County's approval of any such assignment, sublease, or transfer is conditioned on the County's determination that the assignee or transferee would be able to reasonably and adequately comply with the terms and conditions of this Lease. In any case, Lessee shall not be entitled to assign or transfer the property if it is in violation of any term or obligation of the Lease. In any case, the County will not unreasonably withhold consent for the assignment, transfer, or sublease of the Premises.

19. **Indemnity and County's Non-liability for Damages.** The County shall not be liable for damage for injury to persons, including Lessee, its agents, employees, customers, or invitees, or for property damage, from any cause, related to the lease of the Premises, including the public use areas. Lessee agrees to defend, indemnify, and hold harmless the County against all liability, loss or other damage claims or obligations arising out of or related to the lease of the Premises, Lessee's use of the Premises, negligence, violation of the law, or willful misconduct.
20. **Written Notification:** Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other party shall be in writing and either served personally or sent prepaid, first class mail. Any such notice, demand, etc., shall be addressed to the other party at the address set forth below. Either party may change its address by notifying the other party of the change of address. Notice shall be deemed communicated within 48 hours from the time of mailing if mailed as provided in this section.

If to County: Colusa County Airport Manager
Colusa County Department of Public Works
1215 Market Street
Colusa, CA 95932

If to Lessee: **LESSEE**
1234 Pick It Drive
Anywhere , CA 99999

21. **Amendments.** This Lease may be modified or amended only by a written document executed by both parties and approved as to form by County Counsel.
22. **Waiver.** No failure on the part of either party to exercise any right or remedy provided for by this Lease shall operate as a waiver of any other right or remedy that party may have.
23. **Execution:** This Lease may be executed in several counterparts, each of which shall constitute one and the same instrument and shall become binding upon the parties.

24. **Termination:** This Lease may be terminated:
- A. Immediately for cause if either party violates any term or provision of this Lease;
 - B. Upon abandonment of the Premises by Lessee; or
 - C. If during the Lease, Lessee becomes insolvent, declares bankruptcy or bankruptcy proceedings are started against Lessee, or a receiver or trustee is appointed for Lessee.
25. **Partial Invalidity.** If any provision of this Lease is held to be invalid, void, or unenforceable, the remainder of the provision and/or provisions shall remain in full force and effect and shall not be affected or invalidated.
26. **Storm Water Regulations.** Lessee agrees that its operations and uses involving the Premises or any other portion of the Airport will comply with the California State Storm Water Discharge Permit for the Airport which is incorporated by reference and available for inspection at the Colusa County Department of Public Works.
27. **Inspections and Access by County.** Lessee will permit the County, its agents, employees and contractors to enter all parts of the Premises for inspection following reasonable notice by the County.
28. **Surrender of the Premises.** Upon expiration or termination of this Lease, title and ownership of the Premises including all Site Improvements, structures, fixtures, or alterations constructed or purchased by Lessee or existing at the time of this Lease, will automatically vest in the County. Lessee shall leave the surrendered Premises and any other items as described in this section in a well maintained, sanitary, and clean condition, subject to Items 3(B) and 13 herein.

COUNTY OF COLUSA

Lessee

Kent S. Boes, Board Chair

Signature

APPROVED AS TO FORM

ATTEST: Wendy G. Tyler, Clerk of the Board
of Supervisors

Richard Stout, County Counsel

By _____
Melissa Kitts, Deputy

**COUNTY OF COLUSA, CA****Request For Airport Advisory Committee**

MEETING DATE: March 6, 2023

DEPARTMENT: Community Development

FROM: Greg Plucker

SUBJECT: Laurel Ag and Water Compatibility Plan Review (ALUC 23-1)

SITTING AS THE AIRPORT LAND USE COMMISSION

Receive an informational update report on the Laurel Ag and Water project.

DISCUSSION

At the November 7, 2022 Airport Land Use Commission meeting, the Commission conducted a preliminary review of a proposed irrigation design, supply and installation use (Laurel Ag and Water) located at 2959 Davison Court in the City of Colusa. As discussed at that meeting, Laurel Ag and Water plans to utilize the existing 2,400 sq.ft. building, add a 2,400 sq.ft. addition to the existing building, potentially install additional buildings, and convert adjacent land designated by the City as open space area to an outdoor storage yard. During the initial review of the preliminary application, County staff asked about the process that the City would undertake to approve the outdoor commercial storage area within the City's Open Space Zoning District; County staff assumed that it would require a General Plan Amendment and a Rezoning. Staff was informed that the City had determined that it would be processed through a minor use permit. Pursuant to ALUCP §2.1.1(a)(2) and (3) [proposed land use regulation changes and amendments], the Minor Use Permit was required to be reviewed by the Commission for consistency with the ALUCP.

Subsequently, the City of Colusa referred the proposed Minor User Permit to establish the outdoor storage area to the Commission for a formal consistency review. When County staff reviewed this application, it became apparent that potential buildings (warehouse and fabrication building, and possible pump service building) could also be located within the City's Open Space Zoning District. County staff subsequently sent an incomplete letter that, in part, asked about the applicability of the minor use permit process; the City's Open Space Zoning District only lists "living quarters for caretakers or watchmen" as an allowed use permitted with a minor use permit. This incomplete letter also requested "a copy of the staff report" and "a copy of the CEQA documentation" that the City would prepare for the application.

In following up with the City on this issue, the City manager stated that in the future should buildings be proposed to be located in the Open Space Zoning District, a

General Plan Amendment and Rezoning would be required to change the land use designations. This would then trigger a future consistency review by the Commission. With respect to the outdoor storage use, the City manager also stated that the City planned to issue a conditional (minor) use permit which would include requirements that the occupancy of the outdoor use does not exceed the maximum and average density requirements and that upward lighting be prohibited.

County staff proceeded with the processing of the Commission's staff report based on this information. During this time, County staff further requested information on the timing of the use permit staff report. As part of the ALUC application submittal requirements, any referring agency staff report and any environmental document (initial study, draft environmental impact report, etc.) that have been prepared for a project are required to be submitted (ALUC §2.6.1(g) and (h)). The ALUCP requires these documents so that the Commission can fully evaluate the referring agency's actual project, its analysis, any approval requirements or conditions, and any environmental documentation. It also prevents issues should the application change or is approved with conditions that the Commission did not consider.

However, staff ultimately learned that the use permit staff report would not be prepared prior to the Commission's March meeting. County staff notified the applicant and the City that because of the lack of the staff report and analysis of the potential conflict with emergency landings given the placement of the outdoor storage area, staff was unable to recommend that the Commission find that the project was consistent with the ALUCP. However, County staff did include in the staff report an analysis of the project and a draft resolution that would allow the Commission to approve the project should the Commission determine that the currently proposed configuration of the outdoor storage area has provided adequate area for emergency landings and that additional review was not necessary. The draft staff report was sent to the applicant and City for the review and comment. Attached is a copy of this report for the Commission's information.

Subsequently, staff received an email from the City which stated, "*Laurel's intended use is a permitted use in the City's Open Space zoning district. Accordingly, no use permit staff report will be issued.*"

County staff followed up and asked for the specific City Zoning Code Section permitting the outdoor storage area in the City's open space zoning district. This information was needed to determine whether or not the proposal was still subject to the ALUC's review. County staff then discussed the matter with City staff and was informed that the City had determined that the outdoor irrigation pipe and equipment storage yard is permitted under Section 17.02(1) of the City Zoning Code as a measure to promote conservation of natural terrain and vegetation, and to reduce fire and erosion hazards.

Upon consultation with County Counsel, it has been determined that this administrative interpretation is not subject to an ALUC consistency determination. The City is not approving a new or changed zoning ordinance or building regulation. The City is

making an interpretation that outdoor storage is a conservation measure which is outside the scope of the review requirements detailed in the ALUCP.

Based on the aforementioned, the Commission has no review authority of the current project. However, the applicant will present the project changes and receive any input from the Commission.

PRIOR COMMISSION ACTION

The Commission conducted a preliminary review of the project at its November, 2022 meeting.

FISCAL IMPACT/FUNDING SOURCE

The cost of staff time spent on this application has been paid for by the application processing deposit submitted by the applicant.

PREPARATION:

Prepared By:

Greg Plucker
Community Development Director
gplucker@countyofcolusa.com <<mailto:gplucker@countyofcolusa.com>>
(530) 458-0483

ACTION FOR THE CLERK

None at the present time.

ATTACHMENTS:

- Laurel Water and Ag Staff Report and Resolution (PDF)
- Laurel Ag and Water Staff Report Attachments (PDF)

**COUNTY OF COLUSA, CA****Request For Airport Advisory Committee**

MEETING DATE: March 6, 2023

DEPARTMENT: Community Development

FROM: Greg Plucker

SUBJECT: Laurel Ag and Water Compatibility Plan Review (ALUC 23-1)

SITTING AS THE AIRPORT LAND USE COMMISSION

Review a proposed outdoor storage area for the Laurel Ag and Water company's Colusa site for consistency with the Airport Land Use Compatibility Plan.

PROJECT OVERVIEW**Owner:**

Jake Kley, General Manager
Colusa Industrial Properties
50 Sunrise Boulevard
Colusa, California 95932

Project Summary:

At the November 7, 2022 Airport Land Use Commission meeting, the Commission conducted a preliminary review of a proposed irrigation design, supply and installation use (Laurel Ag and Water) located at 2959 Davison Court in the City of Colusa. As discussed at that meeting, Laurel Ag and Water plans to utilize the existing 2,400 sq.ft. building, add a 2,400 sq.ft. addition to the existing building, potentially install additional buildings, and convert adjacent land designated by the City as open space area to an outdoor storage yard. Please refer to Attachment #1 for the November 7, 2022 ALUC staff report for additional information.

Subsequently, the City of Colusa has referred the proposed establishment of the outdoor storage area for the Commission's formal review.

Project Description:

The proposed project currently before the Commission is limited to the conversion of the adjacent open space area to a commercial outdoor storage yard. While Laurel Ag and Water is moving forward with occupying the existing 2,400 sq.ft. building and constructing a 2,400 sq.ft. addition, neither of these actions trigger the Commission's

Attachment: Laurel Water and Ag Staff Report and Resolution (8956 : Laurel Ag and Water (ALUC 23-1))

consistency review. In addition, there is also the potential that an additional building(s) for other potential operations and services will be desired in the future. Should any building be proposed in the future, the requirement for the Commission's review would be determined at that time.

As detailed in the submitted written description of operations (Exhibit "A"), Laurel Ag and Water proposes to establish an office and sales presence within the existing building located at 2959 Davison Court. As noted above, the existing building would be expanded and adjacent land designated as open space area would be converted to an outdoor commercial storage yard. Attachment #2 shows the location of the 2,400 sq.ft. building addition (and the potential location of an additional building) and Attachment #3 shows the proposed outdoor storage area.

Large irrigation parts and materials would be stored outdoors in the area shown in Attachment #3. The stored product would not exceed 15 feet in height and would be surrounded by a 6-foot high fence for security. The applicant has stated that there would be no outdoor lighting within the fenced storage area. Access to and from the storage yard is proposed to occur from Sunrise Boulevard to the north and Davison Drive to the east. Material delivery and shipping schedules depend on seasonal activity, but is anticipated to average no more than 6 total trips per day. No hazardous materials are proposed to be stored on site as part of the project. Customer access would occur off Davison Drive utilizing the existing driveway and adjacent paved parking lot. Employee parking is anticipated to be within varying locations throughout the proposed area as occupancy is established.

Hours of operation are anticipated to be Monday thru Friday 8:00 am to 5:00 pm; although weekend uses may occur depending on seasonal activity. Total number of employees is anticipated to be 15 at full build and customer activity and walk-in traffic are not anticipated to exceed 10 individuals at any one time.

DISCUSSION:

The Airport Land Use Compatibility Plan (ALUCP) requires that the change in land use from designated open space (City's General Plan and Zoning) to a commercial/industrial outdoor storage use be reviewed by the Commission for consistency with the ALUCP pursuant to ALUCP §2.1.1(a)(2) and (3) [proposed land use regulation changes and amendments].

As discussed at the Commission's November meeting, the preliminary plans for the proposed outdoor storage use (the only aspect of the current project that is triggering ALUC review) appeared to meet many of the ALUCP requirements. The main issue that was discussed related to the outdoor storage and any future buildings being located within Runway 13's Threshold Siting Surface and under its approach and departure pattern. The conceptual plans at that time included the possibility of the outdoor storage occupying over 5 acres of land in the B1 open space area that would have essentially segregated the B1 open space area into 3 different areas. The Commission expressed a safety concern with this arrangement; it would have significantly reduced the available emergency landing area in close proximity to Runway 13. The

Commission direction was to conduct additional analysis of this issue.

Subsequently to the Commission's November meeting, this ALUC consistency review application was filed. As previously discussed, the project has been segmented into various phases and currently the only phase of the project that is triggering ALUC review is the proposed outdoor storage area located on lands zoned by the City as open space. It should be noted that County staff is required to review the proposed building addition prior to the City issuing the building permit. Provided that the building addition does not penetrate any protected surface planes (which staff fully believes that it will not), the building addition would be exempted from the Commission's review.

To address the Commission's concerns expressed at the November meeting about the outdoor storage conflicting with potential emergency landings, project proponents have reduced the size of the outdoor storage area. Attachment #4 shows the proposed outdoor storage area in yellow (as well as the potential future building location in blue) in relation to the Threshold Siting Surface within the B1 Compatibility Zone. As is shown, the outdoor storage area would occupy just over 2 acres within this area and leaves an approximate 385-foot wide opening to prevent segregating the B1 open space area.

In reviewing the current proposal, County staff reached out to the Office of Aviation Planning, CALTRANS Division of Aeronautics to see if they had any input as to the proposed project. As the Commission is aware, due to progress in addressing CALTRANS concerns with flight obstructions north of Runway 13, Runway 13's nighttime flight restriction was recently lifted. Staff wanted to make sure that the placement of the proposed outdoor storage area would not result in a new flight restriction for Runway 13. CALTRANS response was that the proposed storage area from a land use perspective met applicable local and state requirements.

CALTRANS did not comment on potential safety implication of the proposed location of the outdoor storage use with emergency landings. As discussed in the ALUCP, the B1 zone encompasses areas overflowed by aircraft at low altitudes (typically only 200 to 400 feet with agricultural aircraft flying at even lower altitudes) and 22% of off-runway general aviation accidents near airports take place in this area. In the event that a light aircraft is forced to land away from an airport, the risks to the people on board (and the ground) can best be minimized by providing as much open land area as possible within the airport vicinity. This concept is based upon the fact that the majority of light aircraft accidents and incidents occurring away from an airport runway are controlled emergency landings in which the pilot has reasonable opportunity to select the landing site.

During the initial review of the preliminary application, County staff asked about the process that the City would undertake to process this land use change; County staff assumed that it would require a General Plan Amendment and a Rezoning. Staff was informed that the City had determined that it would be processed through a minor use permit. When County staff reviewed the current application, it became apparent that potential buildings (warehouse and fabrication building, and possible pump service building) could also be located with the City's Open Space Zoning District. County staff

subsequently sent an incomplete letter which, in part, asked about the applicability of the minor use process; the City's Open Space Zoning District only lists "*living quarters for caretakers or watchmen*" as an allowed use permitted with a minor use permit. This incomplete letter also requested "*a copy of the staff report*" and "*a copy of the CEQA documentation*".

In following up with the City on this issue, the City manager has stated that in the future should buildings be proposed to be located in the Open Space Zoning District, a General Plan Amendment and Rezoning would be required to change the land use designations. This would then trigger a consistency review by the Commission. With respect to the outdoor storage use, the City manager also stated that the City planned to issue a conditional (minor) use permit which would include requirements that the occupancy of the outdoor use does not exceed the maximum and average density requirements and that upward lighting be prohibited.

As part of the ALUC application submittal requirements, any referring agency staff reports and any environmental document (initial study, draft environmental impact report, etc.) that have been prepared for a project are required to be submitted (ALUC §2.6.1(g) and (h)). The ALUCP requires these documents so that the Commission can fully evaluate the referring agency's actual project, its analysis, any approval requirements or conditions, and any environmental documentation. It also prevents issues should the application change or is approved with conditions that the Commission did not consider. With respect to this project, County staff believes that these documents should provide information that the Commission should consider prior to taking formal action on this project; specifically information with respect to applicable safety issues with emergency landings. Because of the absence of this information, County staff cannot recommend that the Commission make a formal consistency finding at this time.

However, should the Commission determine that the currently proposed configuration of the outdoor storage area has provided adequate area for emergency landings and that additional review is not necessary, the Commission could take action on the proposed application. The remainder of the staff report would provide the Commission the basis for this action.

Use Compatibility:

The subject site is located in the ALUCP's B1 Compatibility Zone. The B1 Compatibility Zone is described as an "Inner Approach/Departure Zone" with High Noise Level Risk and a High Risk Level Zone for Safety and Airspace Protection Factors.

The proposed use of the "outdoor storage" is considered by the ALUCP as a "conditionally compatible" use. The term "conditional" is used by the ALUCP to indicate that a use may be compatible depending on how the use complies with the indicated usage intensity, lot coverage, and other listed conditions.

Hazardous Materials and Airspace Obstruction:

The ALUCP identifies the storage of hazardous materials and height obstruction as potential issues with light industrial and outdoor storage uses. As stated in the written narrative, the proposed use would not store or utilize hazardous materials on the site. In addition, the 15-foot height of the outdoor storage area and the 6-foot security fence would be below any defined surface slopes.

Population Density:

The B1 Compatibility Zone specifies a Maximum Sitewide Average density of 25 persons per acre and a Maximum Single Acre density of 50 persons. In analyzing the density intensity, staff took a conservative approach that included adding the Chamber of Commerce building. The Chamber of Commerce building was included because it is currently on the same parcel as the storefront building and should be considered as part of the overall development.

Per the below table, a maximum of 88 persons could be allowed on the entirety of the 3.52 acre area with no more than 50 person being on any one acre. It is estimated that the population within the area of development would be approximately 45, which is below the single-acre maximum and well below the maximum sitewide average.

B1 Compatibility Zones Maximum Density Intensity				
	People/Acre	Project Area Size (3.52 Total Acres)	Allowed Persons	Persons Proposed
Maximum Sitewide Average	25	3.52	88	45
Maximum Single Acre*	50	1.00	50	45

Based on the above analysis, the proposed intensity of the population density would be consistent with the ALUCP.

Open Space:

With respect to the open space land requirement in the B1 Zone, as shown in the table below, the open space requirement for the B1 Zone per Table 3A of the ALUCP has been calculated at 19.17 acres based on staff's most recent calculation of the area of the northern B1 Zone. Attachment #5 shows the boundary of the northern B1 zone (orange line) and the defined open space area within the B1 zone (green line). There are a number of properties that could have qualified for inclusion in the open space area calculation but were excluded due to the lots being zoned commercial and planned for future development.

B1 Existing Open Space Calculation					
Compatibility Zone	Total Acreage	Open Space % Required	Required Open Space	Ex Open Space Area(1)	Ex Open Space %(1)
B1	63.90	30.00%	19.17	27.50	43.04%

As is shown in the above table, there is approximately 27.5 acres (43.04%) of land which qualifies as open space which is above the B1 Zone's 19.17 acre (30 %) requirement.

Attachment #5 also shows the area of the proposed outdoor storage area (light green) within the current open space land area of the northern B1 Zone. The below table shows that the open space calculation with the proposed outdoor storage area would still be above the 19.17 acre (30%) open land requirement at 24.75 acres (38.73%).

B1 Open Space Calculation With Laurel Ag and Water					
Compatibility Zone	Total Acreage	Open Space % Required	Required Open Space	Open Space Area With Laurel(1)	Open Space % With Laurel(1)
B1	63.90	30.00%	19.17	24.75	38.73%

Pursuant to Section 3.4.10(c), open land requirements for each Compatibility Zone are to be applied with respect to the entire zone as individual parcels may be too small to accommodate the minimum-size open area requirement. Because of this, the ALUCP calls for the identification of open land areas at the general plan or specific plan level or as part of large (10 acres or more) development projects. This was accomplished during the processing of CIP residential development when the open land of the northern B1 area was slated for the expansion of the golf course area. However, the golf course expansion is not happening and CIP is now proposing to use part of this area for development opportunities. As noted earlier, the proposed outdoor storage area has been reduced to provide more open space in the B1 zone in an effort to address safety concerns with emergency aircraft landing as discussed at the November, 2022 meeting.

Light and Glare:

As detailed in the project narrative (Exhibit "A"), no outdoor area lighting is proposed within the fenced storage area. Accordingly, there would be no light or glare issues due to the absence of lighting.

ALUC STAFF RECOMMENDATION:

The proposed outdoor storage is a fairly straightforward use that if it not for its location in the City's designated open space area within Runway 13's Threshold Siting Surface and under the approach and departure path it would likely not even have triggered an ALUC consistency review. However, the change of use is triggering an ALUC review and a discretionary review from the City of Colusa. As such, staff believes that before the Commission takes formal action on the project, the Commission should review the

City's minor use permit staff report and any applicable environmental review pertaining to the proposed use, including any safety review due to the proximity of the outdoor storage use to the end of Runway 13 as required by the ALUCP.

However, the applicant has amended the proposal to increase the amount of open space area to provide additional space that could potentially be used during an emergency landing. Should the Commission determine that this redesign has addressed the previously expressed safety concern, staff has attached a resolution that the Commission could adopt. It should be noted that this resolution only applies to the proposed outdoor storage use and specifically stipulates that the resolution does not apply to any other future uses, including any future buildings, and these future uses/buildings will require a separate consistency review pursuant to the provisions of the ALUCP.

PRIOR COMMISSION ACTION

The Commission conducted a preliminary review of the project at its November, 2022 meeting.

FISCAL IMPACT/FUNDING SOURCE

The cost of staff time on this application has been paid for by the application processing deposit submitted by the applicant.

PREPARATION:

Prepared By:

Greg Plucker
Community Development Director
gplucker@countyofcolusa.com <<mailto:gplucker@countyofcolusa.com>>
(530) 458-0483

ACTION FOR THE CLERK

None at the present time unless the Commission adopts the attached resolution and, if so, obtain the Chair's signature and send an electronic copy to the Community Development Director.

ATTACHMENTS:

- ALUC Resolution Regarding the Laurel Ag and Water Project (DOCX)
- Exhibit "A" Laurel Ag and Water Written Narrative (PDF)
- Attachment #1 ALUC November 2022 Laurel Ag and Water Staff Report (PDF)
- Attachment #2 Conceptual Floor Plans(PDF)
- Attachment #3 Proposed Building and Outdoor Storage Area Locations (PDF)
- Attachment #4 TSS and B1 Zoning and Laurel Ag and Water Uses (PDF)

- Attachment #5 Open Space Area and the B1 Zone (PDF)

RESOLUTION NO. 23-__**A RESOLUTION OF THE COLUSA COUNTY AIRPORT LAND USE COMMISSION
MAKING AIRPORT LAND USE COMPATIBILITY PLAN CONSISTENCY FINDINGS
REGARDING THE LAUREL AG AND WATER OUTDOOR STORAGE PROJECT**

WHEREAS, the proposed Laurel Ag and Water outdoor storage project was referred to the Airport Land Use Commission (ALUC) for a consistency determination with the Colusa County's Airport Land Use Compatibility Plan (ALUCP);

WHEREAS, the project site is located at 2959 Davison Court in the City of Colusa and is approximately 1,400 feet north of the end of Runway 13 of the Colusa County Airport;

WHEREAS, the project site is located within the ALUCP's B1 Compatibility Zone and pursuant to the Airport Land Use Compatibility Plan (ALUCP) Sections 2.1.1(a)(2) and (3) (proposed land use regulation changes and amendments) the project is required to be reviewed by the ALUC for consistency with the ALUCP; and

WHEREAS, the proposed project was submitted to the ALUC for review of its consistency with the ALUCP and at which time the Commission considered the staff report, the requirements of the ALUCP and all oral and written testimony presented concerning the application.

NOW, THEREFORE, BE IT RESOLVED that the Colusa County Airport Land Use Commission makes the following determinations and findings based on the totality review of the project:

- I. The Commission can only make a finding of consistency or inconsistency for the proposed outdoor storage use considered herein and is unable to make any finding of consistency with respect to any future use or development on the project site and, as such, all future uses and development not considered herein must be submitted to the County's ALUC staff to determine if the Commission is required to make a review of consistency consistent with the ALUCP. During any required subsequent review, the Commission may or may not find any future use or building associated with the project is consistent with the ALUCP.
- II. The proposed use and development (ALUC 23-1) as described in the Commission's March 6, 2023 staff report and the attached Exhibits and Attachments are herein incorporated by reference have the potential to be inconsistent with the ALUCP due to a variety of issues including but not limited to use compatibility, density, light and glare impacts, hazardous materials and airspace obstruction. All of which could negatively impact aviation at the Colusa County Airport. However, based on the following facts, conditions on the proposed development and use, and contingent upon the agreement of project proponents to said conditions detailed herein the proposed project would be consistent with the ALUCP:

A. Use Compatibility

1. The subject site is located in the ALUCP's B1 Compatibility Zone and the proposed outdoor storage use is defined as a "conditional" use within said zone.
2. The use and any improvements would not be higher than 15 feet and as such would not penetrate any protected surface plane.
3. Pursuant to Section B (Density) below, the person density would be consistency with the ALUCP requirements.

B. Density

1. The B1 Compatibility Zone specifies a Maximum Sitewide Average density of 25 persons per acre and a Maximum Single Acre density of 50 persons which results in a maximum of 88 persons allowed on the entirety of the 3.52 acre area with no more than 50 person being on any one acre.
2. The proposed project would have a population within the area of development of a maximum of 45 persons, which is below the single-acre maximum and well below the maximum sitewide average.
3. In the future, should total occupancy of the site be proposed or would exceed the ALUCP's calculated maximum of 88 persons allowed on the entirety of the site or 50 persons within any single acre (including uses on Parcel 1 of the proposed parcel map) the occupancy density shall be reviewed by ALUC staff to determine whether said occupancy would require further consistency review by the ALUC. This consistency review shall occur prior to said occupancy exceeding said limits.

C. Exterior Lighting Impacts

1. The installation of high-intensity and/or unshielded exterior outside lighting could create a negative impact to night-time aircraft flight operations.
2. Based on the applicant's statement that no exterior lighting within the outdoor storage area will be used, the proposed project would not create a negative impact to aircraft flight operations as a result and would be consistent with the ALUCP. In the future should any exterior lighting be proposed, said proposal shall be reviewed by ALUC staff to determine whether said lighting would require further consistency review by the ALUC. This determination and consistency review shall occur prior to any exterior lighting being installed.

D. Avigation Easements

1. Section 3.7.1(b) of the Compatibility Plan specifies that an Avigation Easement shall be required for discretionary projects. The project triggers discretionary approval by the ALUC and, therefore, the proposed project is required to grant an Avigation Easement to Colusa County.
2. An Avigation Easement substantially consistent with the sample easement of Appendix "E" of the ALUCP shall be granted to the County of Colusa to the satisfaction of the Community Development Director.

E. Hazardous Materials

1. No hazardous materials have been proposed to be used with the proposed project.
2. Based on the applicant's statement that no hazardous materials within the outdoor storage area will be used, the proposed project would not create a negative impact to aircraft flight operations as a result and would be consistent with the ALUCP. In the future should any hazardous materials be proposed, said proposal shall be reviewed by ALUC staff to determine whether said materials would require further consistency review by the ALUC. This determination and consistency review shall occur prior to any hazardous materials being brought on site.

PASSED AND ADOPTED this ____ day of _____, 2023 by the following vote:

AYES:

NOES:

ABSENT:

Mike West, Chair
Airport Land Use Commission

ATTEST: Wendy G. Tyler, Secretary
Airport Land Use Commission

ATTEST TO FORM

Melissa Kitts, Deputy Clerk

Richard Stout, County Counsel

Exhibit "A"

Laurel Ag & Water

Written Description of Operations

Laurel Ag & Water intends to occupy the existing 2,400 sq.ft. commercial space located at 2959 Davison Dr. for the purposes of operating a store front location for irrigation parts sales and service. Large irrigation parts and materials will be stored outdoors on the tentative parcels 2-4 as indicated on the provided TPM. The material storage yard is anticipated to have all product stored at or below 15' AGL within a 6' high fenced secure area. There is no area lighting proposed within the fenced storage area. Access to and from the fenced storage yard is anticipated to be from Sunrise Blvd. to the north and Davison Dr. to the east. Material delivery and shipping schedules depend on seasonal activity, but is anticipated to average no more than 6 total per day. No hazardous material is anticipated to be stored on site or within the proposed area. Customer walk in business to the store location will be via Davison Dr. and the existing adjacent paved parking lot area. Employee parking is anticipated to be within varying locations throughout the proposed area as occupancy is established.

Laurel Ag & Water does have interest in adding on to the existing 2,400 sq.ft. building for office and meeting space, which could possibly double the square footage to 4,800 sq.ft. Laurel Ag & Water also desires to possibly expand into the market of pump service and repair with the addition of a second building to incorporate this activity to be located on parcel #3 as depicted on the TPM provided. This is conceptual in nature at this point and no detailed building or structural plans have been presented.

Hours of operation for the anticipated use is expected to be Monday thru Friday 8:00am to 5:00pm with possible weekend scheduling as necessary, depending on seasonal activity. Total number of employees is anticipated to be 15 at full build out as described above. Customer activity and walk in business varies but is not anticipated to exceed 10 individuals at any one period of time daily.



Request For Airport Advisory Committee

MEETING DATE: November 7, 2022

DEPARTMENT: Community Development

FROM: Greg Plucker

SUBJECT: Introduction to the Laurel Ag and Water Development Project

SITTING AS THE AIRPORT LAND USE COMMISSION

Presentation of conceptual plans for the development of a site for the Laurel Ag and Water company.

PROJECT OVERVIEW

Owner:

Jake Kley, General Manager
Colusa Industrial Properties
50 Sunrise Boulevard
Colusa, California 95932

Project Summary:

Colusa Industrial Properties (CIP) has requested that the ALUC conduct a preliminary review of a proposed development located at 2959 Davison Court in the City of Colusa. As the Commission may recall, at the Commission's August meeting the Commission reviewed a consistency application from XO Cannabis for a cannabis cultivation and production use within the existing 2,400 sq.ft. building at 2959 Davison Court. CIP representatives would like to relocate the XO Cannabis business to another location in the industrial park and instead establish an irrigation design, supply and installation use (Laurel Ag and Water) on the property and on adjacent open space land.

Project Description:

Laurel Ag and Water proposes to establish an office and sales presence within the existing building located at 2959 Davison Court. As part of this project, the existing building would be expanded and adjacent open space area would be converted to an outdoor storage yard. Attachment #1 shows the conceptual building plans and Attachment #2 shows the building location and initial outdoor space being located on the areas identified as Parcels #2 and #3 (highlighted in red) with the potential for the

outdoor storage yard expanding to Parcel #4 (highlighted in blue) in the future. From an operational perspective, Laurel Ag and Water would employ up to 15 employees and serve up to 40 customers on a daily basis. Laurel Ag and Water currently has other operations in California in Corning, Lodi, Delano, Bakersfield and Yuma.

DISCUSSION:

The Airport Land Use Compatibility Plan (ALUCP) requires that the proposed building expansion be reviewed by the Commission for consistency with the ALUCP due to it having a floor area over 10,000 sq.ft. (ALUCP §2.2.2(h)). With respect to the outdoor storage use, the change in land use from designated open space (City's General Plan and Zoning) to a commercial/industrial outdoor storage use would also trigger the Commission's review should the Commission determine that the proposed use involves a use located in an area where the risk of an aircraft accident poses a heightened safety concern for people and property on the ground (ALUCP §2.1.1(a)(2), §1.3.1.(a)(2)).

Prior to the submittal of a formal ALUCP consistency review application, project proponents are seeking any initial Commission comments with respect to the proposed development. Given the location of the project and proposed use, staff believes that a number of issues (such as building height, light and glare, and noise) can be addressed at the time that the building plans are submitted for review. However, given the proposed layout and the information regarding the number of employees and customers, staff believes that there is the opportunity to perform a preliminary review of the use compatibility, population density and open space area.

Use Compatibility:

The subject site is located in the ALUCP's B1 Compatibility Zone. The B1 Compatibility Zone is described as an "Inner Approach/Departure Zone" with High Noise Level Risk and a High Risk Level Zone for Safety and Airspace Protection Factors.

The proposed use within the building would best be described as a low intensity light industrial use with an outdoor storage use by the ALUCP and is considered "conditionally compatible" due to the potential hazardous materials, possible airspace obstruction, population intensity, and open space.

Hazardous Materials and Airspace Obstruction:

The ALUCP identifies the storage of hazardous materials and height obstruction as potential issues with light industrial and outdoor storage uses. However, the proposed use is not expected to store or utilize hazardous materials that could create an issue to aircraft operations. In addition, the height of the outdoor storage area and the 6-foot security fence would be below any defined surface slopes. This information would be updated as necessary in the future during any formal consistency review application.

Population Density:

The B1 Compatibility Zone specifies a Maximum Sitewide Average density of 25 persons per acre and a Maximum Single Acre density of 50 persons. In analyzing the density intensity, staff took a conservative approach which included adding the Chamber of Commerce building, the proposed building site area, and only the outdoor storage area on Parcel 3. Please see Attachment #3.

The Chamber of Commerce building was included because it is currently on the same parcel as the proposed building. Only the outdoor storage area on Parcel #3 was included because the number of employees is not anticipated to change should Parcel #4 be used for outdoor storage in the future.

Per the below table, a maximum of 88 persons could be allowed on the entirety of the 3.504 acre area with no more than 50 person being on any one acre. It is estimated that the population within the initial area of development would be approximately 45, which is below the single-acre maximum and well below the maximum sitewide average. Staff believes that this calculation is conservative due to it only including only the initial outside storage area of Parcel 3, that 20 persons were assumed in the Chamber of Commerce building, and that 15 employees and 10 customers would all be on the site all at the same time.

B1 Compatibility Zones Maximum Density Intensity				
	People/Acre	Project Area Size (3.504 Total Acres)	Allowed Persons	Persons Proposed
Maximum Sitewide Average	25	3.504	88	45
Maximum Single Acre*	50	1.00	50	45

Based on the above analysis, the proposed intensity of the population density would be consistent with the ALUCP.

Open Space:

With respect to the open space land requirement in the B1 Zone, as shown in the table below, the open space requirement for the B1 Zone per Table 3A of the ALUCP has been calculated at 20.04 acres based on staff's most recent calculation of the area of the northern B1 Zone. Exhibit "A" shows the boundary of the northern B1 zone (orange line) and the open space area within the B1 zone (green line). There are a number of properties that could have qualified for inclusion in the open space area calculation but were excluded due to the lots being zoned industrial and planned for future development.

B1 Existing Open Space Calculation					
Compatibility Zone	Total Acreage	Open Space % Required	Required Open Space	Ex Open Space Area(1)	Ex Open Space %(1)
B1	66.80	30.00%	20.04	27.50	41.17%

As is shown in the above table, there is approximately 27.5 acres (41.14%) of land which qualifies as open space which is above the B1 Zone's 20.04 acre (30 %) requirement.

Exhibit "A" also shows the area of the proposed outdoor storage area within the current open space land area of the northern B1 Zone. The below table shows that the open space calculation with the proposed outdoor storage area would still be above the 20.04 acre (30%) open land requirement at 22.26 acres (33.32%). The area calculated does include the potential future expansion of the outdoor storage shown in a blue outline in Attachment #2.

B1 Open Space Calculation With Laurel Ag and Water					
Compatibility Zone	Total Acreage	Open Space % Required	Required Open Space	Open Space Area With Laurel(1)	Open Space % With Laurel(1)
B1	66.80	30.00%	20.04	22.26	33.32%

The total open space area is comprised of three different and separate areas. Pursuant to Section 3.4.10(c), open land requirements for each Compatibility Zone are to be applied with respect to the entire zone as individual parcels may be too small to accommodate the minimum-size open area requirement. Because of this, the ALUCP calls for the identification of open land areas at the general plan or specific plan level or as part of large (10 acres or more) development projects. This was accomplished during the processing of CIP residential development when the open land of the northern B1 area was slated for the expansion of the golf course area. However, the golf course expansion is not happening and CIP is now proposing to use part of this area for development opportunities. Mr. Kley has stated that the City would process a minor (staff level) use permit to allow for the outdoor storage use within the open space area.

ALUC STAFF RECOMMENDATION:

This item is being brought to the Commission for information and discussion purposes prior to the applicant filing a formal application for the Commission's formal consistency review.

PRIOR COMMITTEE ACTION

None on this project.

Colusa County Airport Advisory Committee (ID # 8676)

FISCAL IMPACT/FUNDING SOURCE

None at this time.

PREPARATION:

Prepared By:

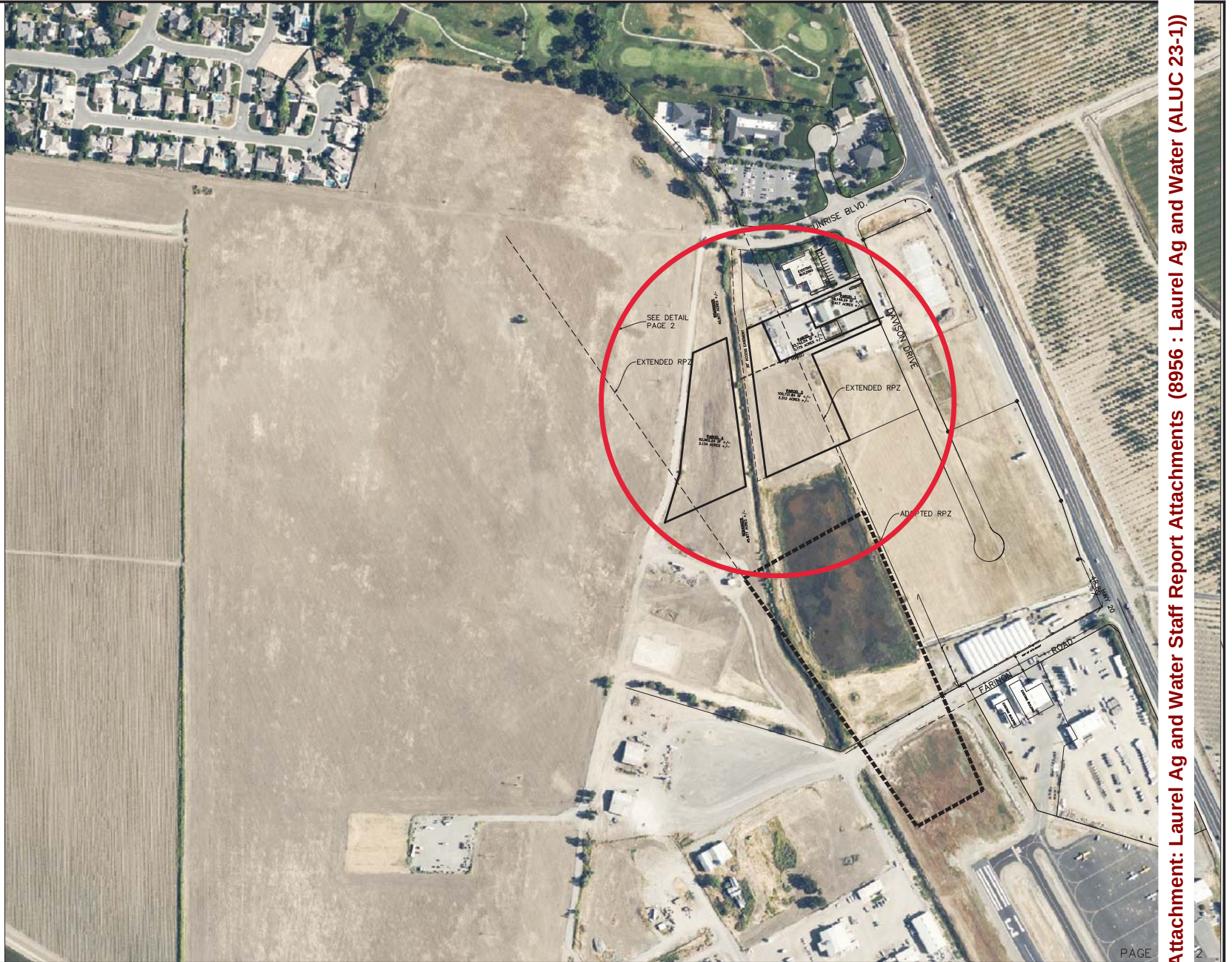
Greg Plucker, Community Development Director (530) 458-0483

ACTION FOR THE CLERK

None at the present time.

ATTACHMENTS:

- Attachment #1 Location Map (PDF)
- Attachment #2 Site Plan (PDF)
- Attachment #3 Population Density Area (PDF)
- Exhibit "A" B1 Zone Area and Open Space Mapping (PDF)



PREPARED BY:
NVES
NORTH VALLEY ENGINEERING AND SURVEYING
1547 STARR DRIVE SUITE "J"
YUBA CITY, CA 95993
(530) 713-0417

PAGE



EXHIBIT "A"

B1 Zone Area and Open Space Calculation

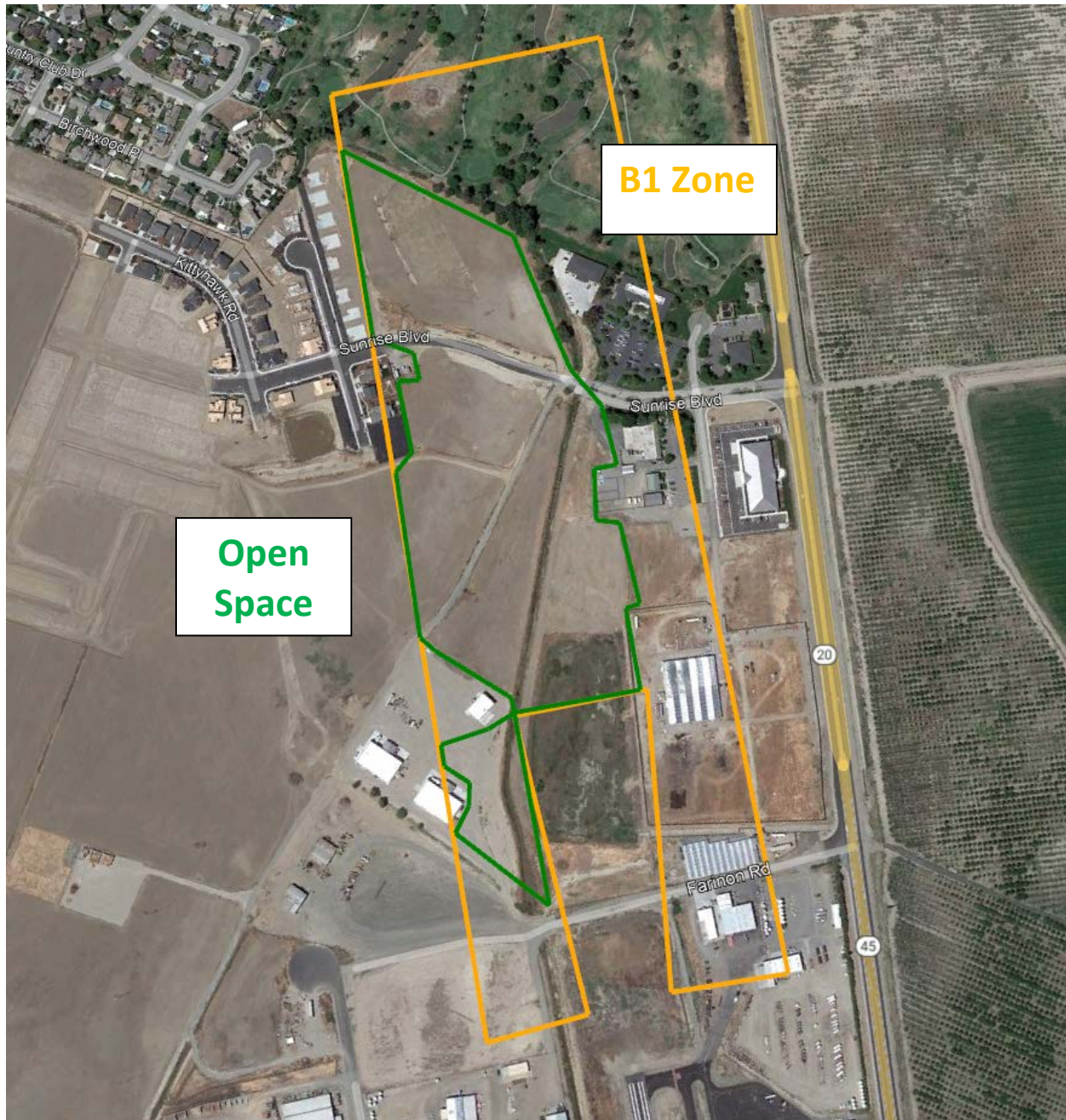
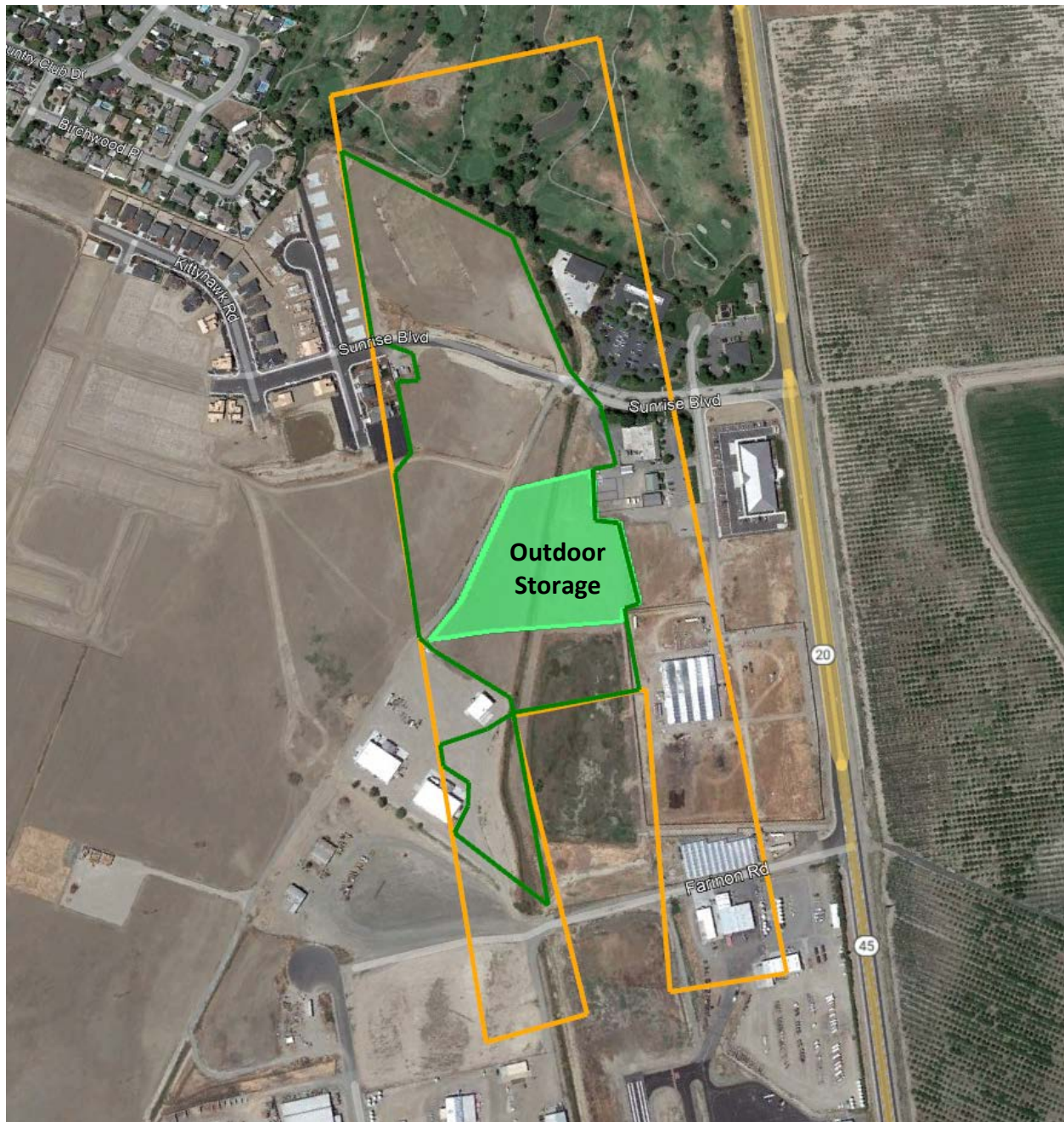
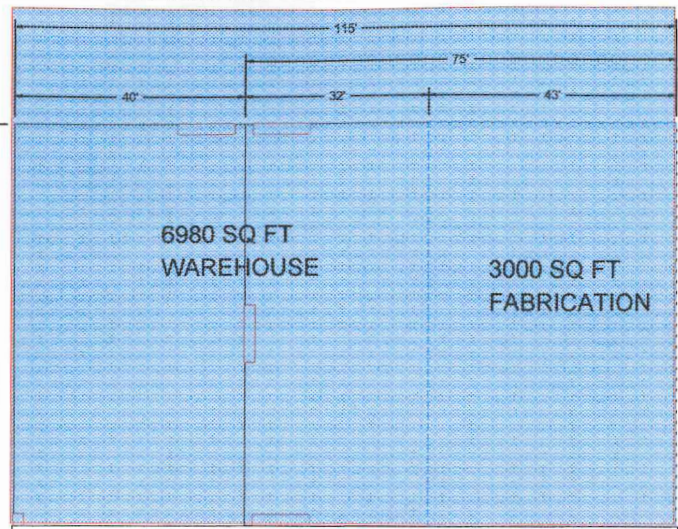


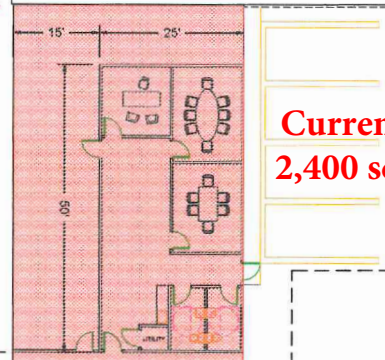
EXHIBIT "A"**Outdoor Storage Area in the B1 Zone Open Space**



Possible Future Building



Currently Proposed 2,400 sq.ft. addition.



SITE PLAN

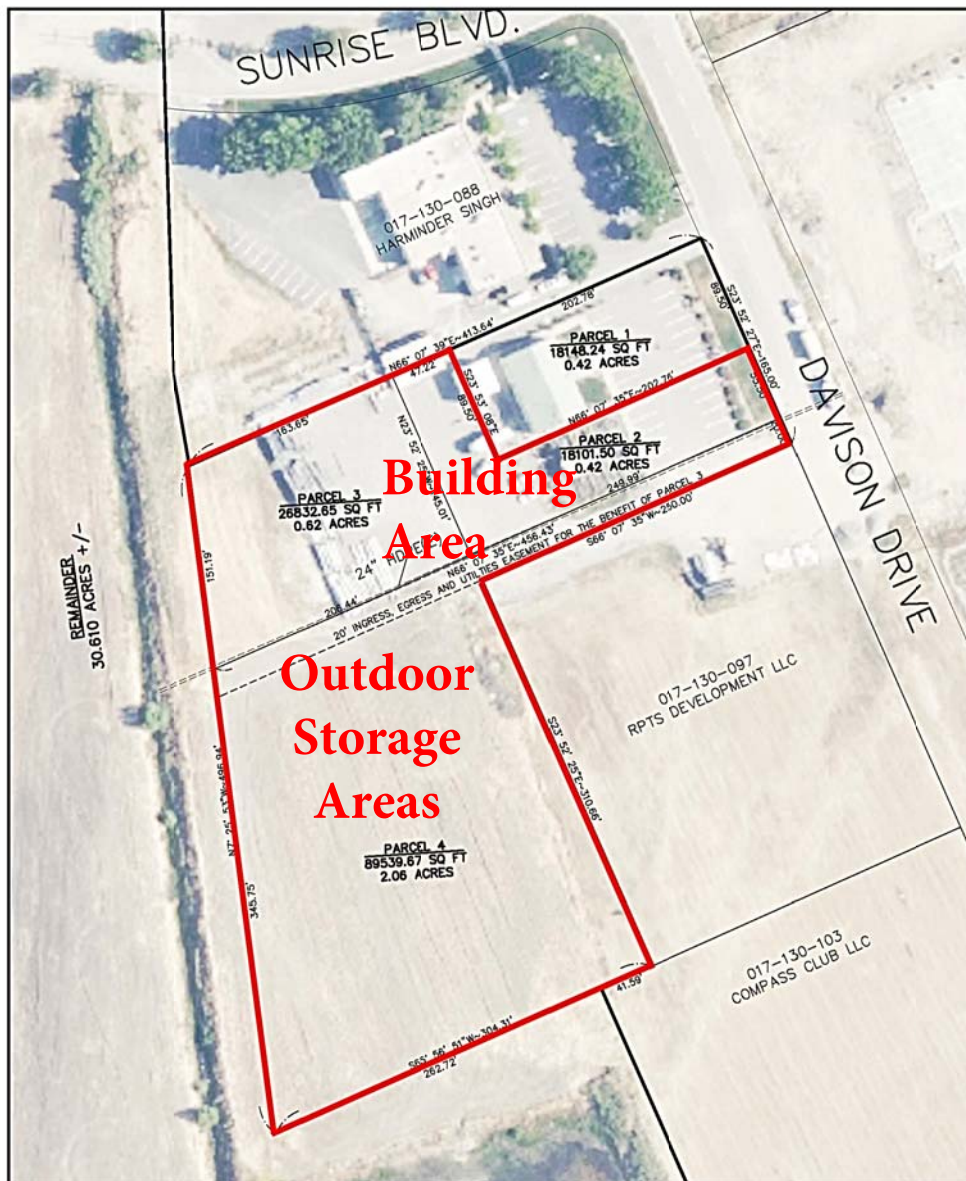
1"=10'

PRELIMINARY

#	REVISIONS	DATE

PREPARED FOR:
LAUREL G & WATER COLUSA





PREPARED BY:
NYES
 NORTH VALLEY ENGINEERING AND SURVEYING
 1547 STARR DRIVE SUITE "J"
 YUBA CITY, CA 95993
 (530) 713-0417



PROJECT NOTES:

OWNERS:

COLUSA INDUSTRIAL PROPERTIES.
 50 SUNRISE BLVD.
 COLUSA, CA 95932

ENGINEER/SURVEYOR:

NORTH VALLEY ENGINEERING
 AND SURVEYING
 1547 STARR DRIVE SUITE "J"
 YUBA CITY, CALIFORNIA 95993
 (530) 713-0417

ASSESSOR'S PARCEL NUMBER:

APN: 017-130-105 & 114

LOT ACREAGE:

PARCEL ACREAGE AS SHOWN.

EXISTING USE:

COMMERCIAL BUILDINGS & OPEN FIELD

PROPOSED USE

COMMERCIAL BUILDINGS

EXISTING ZONING:

O-S AND C-O

PROPOSED ZONING:

NO CHANGE

WATER, SEWER:

CITY OF COLUSA

UNDERGROUND ALERT SERVICES:

1-800-642-2444

ELECTRICAL, GAS:

PG&E

FLOOD PLAIN DESIGNATION:

LOCATED WITHIN FLOOD ZONE X

THE FOLLOWING ARE REQUESTED TO BE
 EXEMPT FROM THIS MAP DUE TO NO
 PROPOSED CHANGE IN LAND USE:

CONTOURS, CROSS SECTIONS

TENTATIVE PARCEL MAP NO. COLUSA INDUSTRIAL PROPERTIES

BEING A PORTION OF SECTION 5, T. 15 N., R. 1 W., M.D.B.&M., IN THE COUNTY OF
 COLUSA, IN THE STATE OF CALIFORNIA.

NOVEMBER 2022

PAGE 1 OF 1

Attachment #4



ATTACHMENT #5

