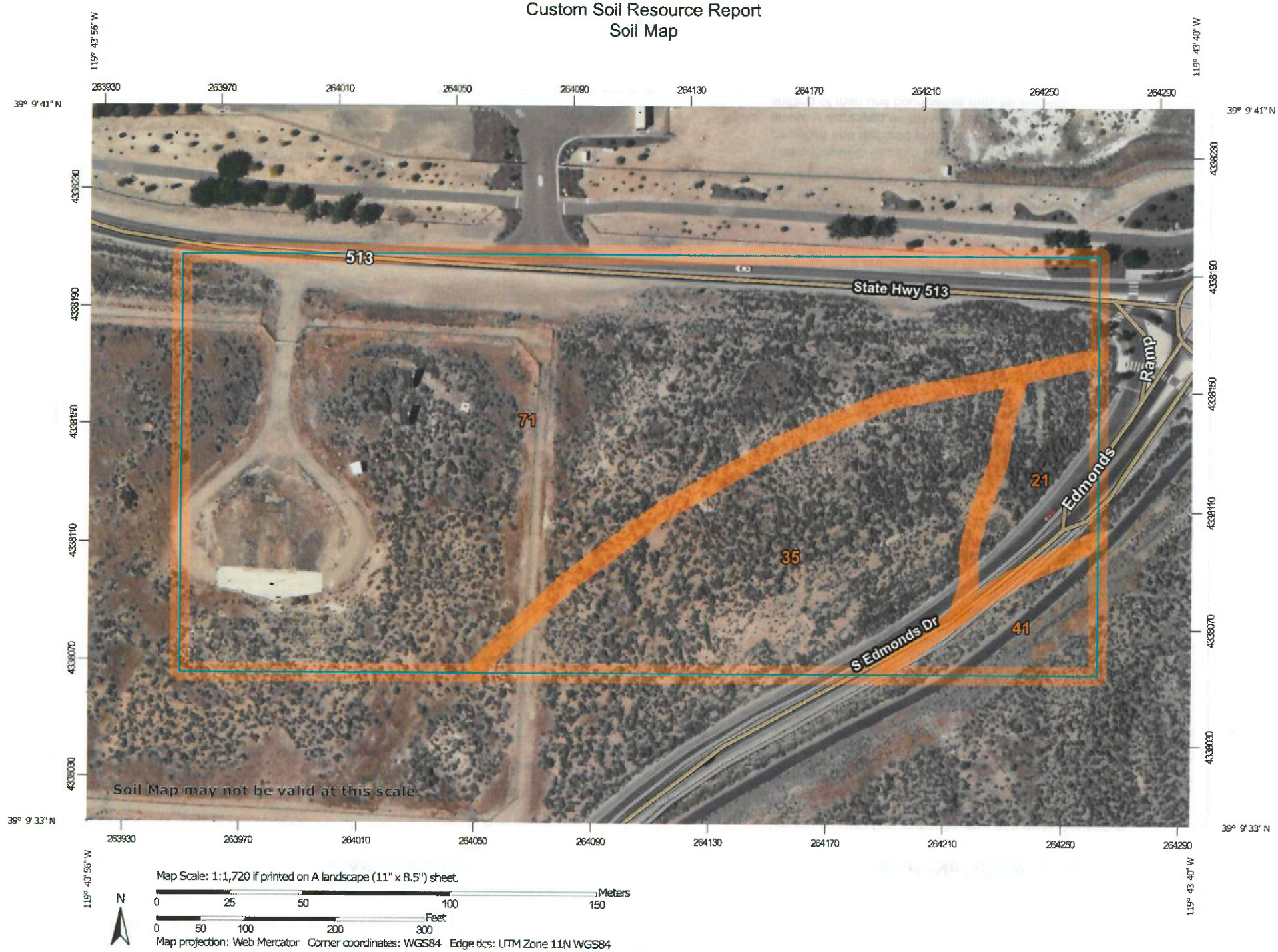
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,720 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carson City Area, Nevada
Survey Area Data: Version 18, Sep 11, 2023

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

Date(s) aerial images were photographed: Jun 10, 2022—Jun 14, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
21	Greenbrae gravelly sandy loam, 4 to 8 percent slopes	0.6	5.6%
35	Indiano variant gravelly fine sandy loam, 4 to 15 percent slopes	2.6	23.6%
41	Koontz-Sutro complex, 30 to 50 percent slopes	0.5	4.3%
71	Urban land	7.3	66.5%
Totals for Area of Interest		**11.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Carson City Area, Nevada

21—Greenbrae gravelly sandy loam, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2nnny
Elevation: 4,500 to 4,700 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Greenbrae and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenbrae

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from mixed

Typical profile

H1 - 0 to 12 inches: gravelly sandy loam
H2 - 12 to 36 inches: sandy clay loam
H3 - 36 to 60 inches: stratified coarse sand to gravelly loam

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: R026XY016NV - LOAMY 8-10 P.Z.
Hydric soil rating: No

35—Indiano variant gravelly fine sandy loam, 4 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2nnpd
Elevation: 4,600 to 5,000 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 49 to 51 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Not prime farmland

Map Unit Composition

Indiano variant and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Indiano Variant

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and/or residuum

Typical profile

H1 - 0 to 11 inches: gravelly fine sandy loam
H2 - 11 to 29 inches: gravelly clay loam
R - 29 to 39 inches: bedrock

Properties and qualities

Slope: 4 to 15 percent
Depth to restrictive feature: 24 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: R026XY022NV - STONY SLOPE 8-10 P.Z.
Hydric soil rating: No

41—Koontz-Sutro complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2nnpl
Elevation: 5,000 to 5,500 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 47 to 51 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Not prime farmland

Map Unit Composition

Koontz and similar soils: 60 percent
Sutro and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Koontz

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and/or residuum

Typical profile

H1 - 0 to 4 inches: very stony loam
H2 - 4 to 9 inches: very gravelly loam
Cr - 9 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 20.0 percent
Depth to restrictive feature: 8 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F026XY062NV - Shallow Sandy Loam Slope 10-14 P.Z
Hydric soil rating: No

Description of Sutro

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum

Typical profile

H1 - 0 to 6 inches: very stony loam
H2 - 6 to 24 inches: gravelly loam
Cr - 24 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 6.0 percent
Depth to restrictive feature: 20 to 39 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Minor Components

Cagle

Percent of map unit: 8 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F026XY069NV - Shallow Clayey Summit 11-14 P.Z. PIMO/ARTRV/POA-KOMA
Hydric soil rating: No

Nosrac

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R026XY005NV - LOAMY 12-14 P.Z.
Hydric soil rating: No

71—Urban land

Map Unit Composition

Urban land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Valleys

Down-slope shape: Convex

Across-slope shape: Convex

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Carson City Area, Nevada

December 5, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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71	Urban land	0.8	100.0%
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The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series.* Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases.* Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas.* Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Carson City Area, Nevada

71—Urban land

Map Unit Composition

Urban land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Valleys
Down-slope shape: Convex
Across-slope shape: Convex

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NOAA Atlas 14, Volume 1, Version 5
Location name: Carson City, Nevada, USA*
Latitude: 39.1615°, Longitude: -119.7295°
Elevation: 4629 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.094 (0.081-0.111)	0.117 (0.101-0.139)	0.156 (0.134-0.186)	0.194 (0.165-0.231)	0.257 (0.211-0.305)	0.314 (0.250-0.375)	0.382 (0.295-0.461)	0.463 (0.343-0.568)	0.592 (0.414-0.742)	0.708 (0.471-0.903)
10-min	0.143 (0.123-0.168)	0.178 (0.154-0.212)	0.238 (0.204-0.283)	0.296 (0.252-0.352)	0.391 (0.322-0.465)	0.477 (0.381-0.571)	0.581 (0.448-0.702)	0.705 (0.522-0.865)	0.901 (0.630-1.13)	1.08 (0.717-1.38)
15-min	0.177 (0.152-0.209)	0.221 (0.191-0.262)	0.295 (0.253-0.351)	0.367 (0.312-0.436)	0.485 (0.399-0.576)	0.591 (0.473-0.708)	0.720 (0.556-0.870)	0.874 (0.648-1.07)	1.12 (0.781-1.40)	1.34 (0.889-1.70)
30-min	0.239 (0.205-0.282)	0.297 (0.258-0.353)	0.398 (0.340-0.473)	0.494 (0.420-0.587)	0.652 (0.537-0.776)	0.797 (0.637-0.954)	0.970 (0.749-1.17)	1.18 (0.872-1.44)	1.50 (1.05-1.88)	1.80 (1.20-2.29)
60-min	0.296 (0.254-0.349)	0.368 (0.319-0.437)	0.492 (0.421-0.585)	0.611 (0.520-0.727)	0.808 (0.665-0.960)	0.986 (0.788-1.18)	1.20 (0.927-1.45)	1.46 (1.08-1.79)	1.86 (1.30-2.33)	2.23 (1.48-2.84)
2-hr	0.402 (0.357-0.461)	0.498 (0.442-0.572)	0.636 (0.561-0.728)	0.759 (0.662-0.868)	0.944 (0.802-1.08)	1.11 (0.921-1.29)	1.29 (1.05-1.52)	1.52 (1.19-1.81)	1.91 (1.42-2.36)	2.26 (1.64-2.87)
3-hr	0.479 (0.429-0.540)	0.597 (0.538-0.676)	0.752 (0.670-0.847)	0.876 (0.775-0.987)	1.06 (0.918-1.20)	1.21 (1.03-1.38)	1.38 (1.15-1.59)	1.60 (1.31-1.87)	1.95 (1.55-2.38)	2.29 (1.77-2.90)
6-hr	0.661 (0.593-0.739)	0.825 (0.742-0.926)	1.03 (0.918-1.15)	1.19 (1.06-1.33)	1.40 (1.23-1.58)	1.58 (1.36-1.78)	1.75 (1.48-2.00)	1.95 (1.62-2.26)	2.24 (1.82-2.64)	2.50 (1.98-3.00)
12-hr	0.869 (0.774-0.976)	1.09 (0.973-1.23)	1.38 (1.22-1.55)	1.60 (1.41-1.80)	1.90 (1.66-2.15)	2.13 (1.83-2.42)	2.36 (2.01-2.72)	2.60 (2.17-3.04)	2.93 (2.38-3.49)	3.19 (2.53-3.85)
24-hr	1.14 (1.03-1.25)	1.42 (1.29-1.57)	1.79 (1.63-1.97)	2.09 (1.89-2.30)	2.50 (2.25-2.76)	2.82 (2.53-3.12)	3.16 (2.81-3.50)	3.51 (3.09-3.91)	3.99 (3.46-4.47)	4.37 (3.74-4.94)
2-day	1.35 (1.21-1.51)	1.70 (1.52-1.90)	2.15 (1.94-2.41)	2.52 (2.26-2.82)	3.04 (2.70-3.41)	3.44 (3.04-3.88)	3.87 (3.40-4.38)	4.32 (3.75-4.92)	4.93 (4.21-5.68)	5.42 (4.57-6.30)
3-day	1.48 (1.33-1.66)	1.86 (1.67-2.10)	2.38 (2.13-2.68)	2.80 (2.49-3.15)	3.38 (2.99-3.82)	3.85 (3.38-4.36)	4.34 (3.78-4.94)	4.87 (4.19-5.56)	5.59 (4.74-6.44)	6.17 (5.15-7.18)
4-day	1.61 (1.44-1.82)	2.03 (1.81-2.29)	2.60 (2.32-2.94)	3.07 (2.73-3.47)	3.73 (3.29-4.22)	4.26 (3.72-4.84)	4.82 (4.17-5.50)	5.42 (4.64-6.19)	6.25 (5.26-7.21)	6.92 (5.73-8.07)
7-day	1.87 (1.67-2.11)	2.36 (2.11-2.66)	3.04 (2.71-3.43)	3.58 (3.19-4.04)	4.34 (3.84-4.91)	4.94 (4.34-5.60)	5.58 (4.85-6.34)	6.23 (5.38-7.11)	7.14 (6.07-8.24)	7.86 (6.59-9.15)
10-day	2.05 (1.82-2.30)	2.60 (2.32-2.93)	3.35 (2.98-3.77)	3.95 (3.50-4.44)	4.75 (4.19-5.36)	5.38 (4.71-6.08)	6.03 (5.24-6.82)	6.69 (5.76-7.60)	7.59 (6.46-8.72)	8.29 (6.98-9.60)
20-day	2.49 (2.23-2.78)	3.15 (2.82-3.53)	4.06 (3.64-4.53)	4.74 (4.24-5.29)	5.65 (5.02-6.31)	6.34 (5.60-7.09)	7.04 (6.18-7.90)	7.73 (6.74-8.71)	8.64 (7.45-9.82)	9.32 (7.95-10.7)
30-day	2.79 (2.51-3.11)	3.54 (3.18-3.94)	4.54 (4.08-5.05)	5.28 (4.74-5.87)	6.28 (5.60-6.98)	7.03 (6.23-7.82)	7.78 (6.85-8.70)	8.52 (7.44-9.57)	9.49 (8.21-10.8)	10.2 (8.76-11.7)
45-day	3.28 (2.96-3.63)	4.16 (3.75-4.60)	5.32 (4.80-5.88)	6.18 (5.56-6.82)	7.27 (6.52-8.03)	8.06 (7.20-8.93)	8.82 (7.86-9.79)	9.54 (8.47-10.6)	10.4 (9.18-11.7)	11.0 (9.68-12.5)
60-day	3.75 (3.37-4.16)	4.77 (4.29-5.29)	6.10 (5.49-6.74)	7.04 (6.33-7.78)	8.21 (7.36-9.07)	9.04 (8.09-10.0)	9.82 (8.76-10.9)	10.5 (9.37-11.7)	11.4 (10.1-12.7)	11.9 (10.5-13.4)

Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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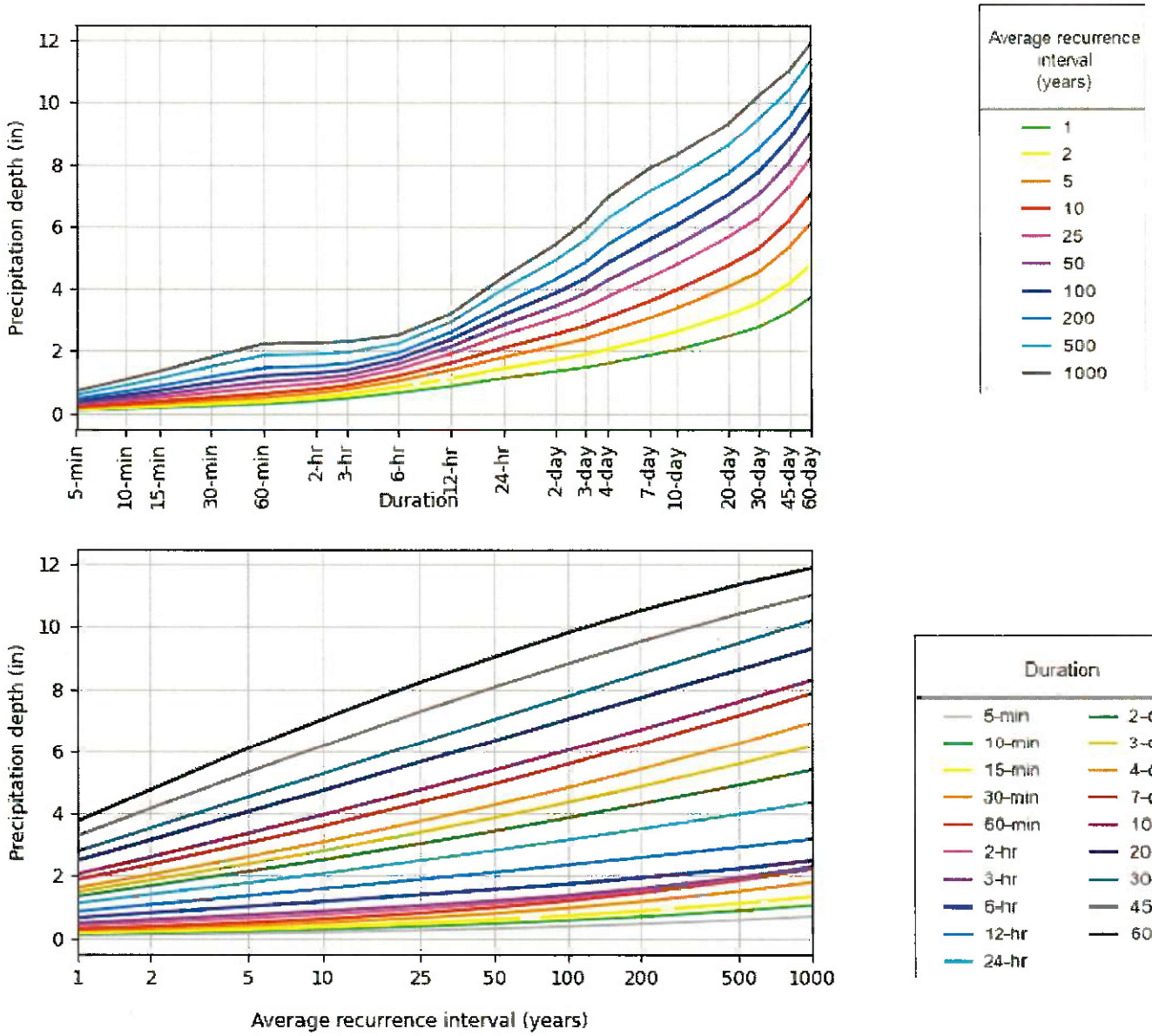
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 39.1615°, Longitude: -119.7295°



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed Dec 6 00:42:05 2023

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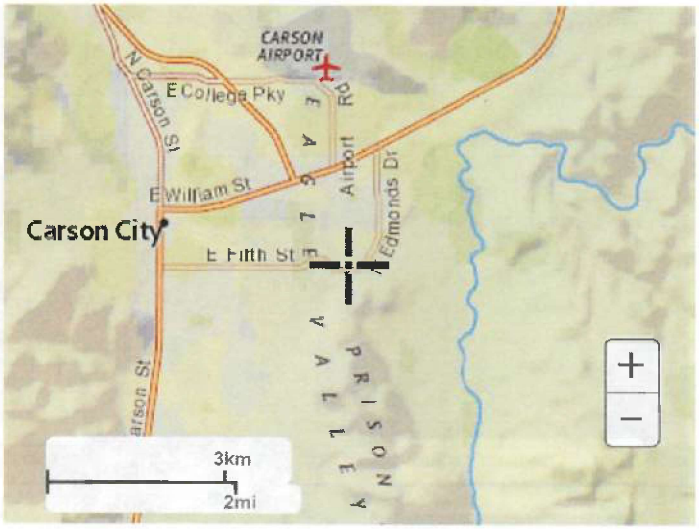
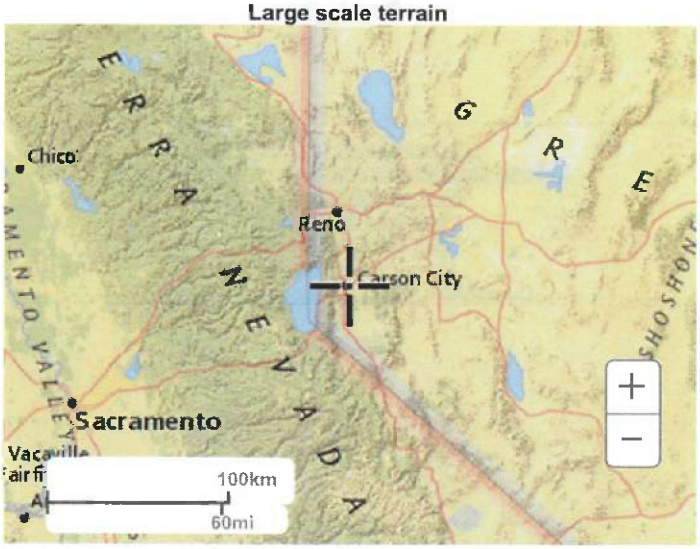
Maps & aerials

Small scale terrain

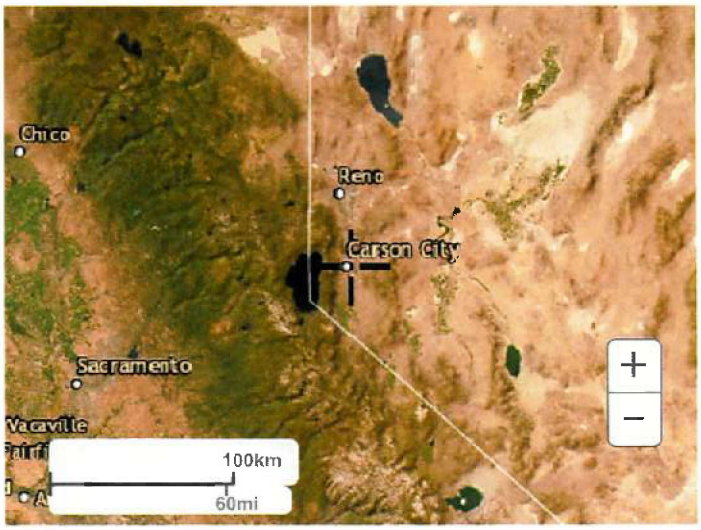


Large scale terrain



Large scale map

Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

R O Anderson

MEMORANDUM

Via E-mail

DATE: December 13, 2023

TO: Heather Ferris
Planning Manager
CARSON CITY PLANNING DIVISION
201 N. Carson Street
Carson City, NV 89701

FROM: Mirica Krajewski, P.E.
R.O. ANDERSON ENGINEERING, INC.

SUBJECT: **Carson City Wastewater Resource Facility (WWRF)**
Basis of Sewer Demand

PROFESSIONAL ENGINEER – STATE OF NEVADA
MIRICA KRAJEWSKI
Exp. 6/30/25
CIVIL
No. 030484
12/13/2023

The purpose of this memorandum is to summarize our basis of determining the sewage demand for the sewer system serving the proposed warehouse building located at 3320 East Fifth Street in Carson City. The demands for the warehouse were determined as shown below based on Drainage Fixture Units (DFU):

Drainage Fixture Units (DFU)

Project:	Carson City Wastewater Resource Facility (WWRF)	APN:	010-03-106
Site	WWRF	Date:	12/13/2023
Address:	3320 East 5th St Carson City, NV	By:	Mirica Krajewski, PE

Appliances, Appurtenances or Fixtures	2018 UPC - Table 709.1	Elastomer (Bld. #1)	Totals
	DFU	Fixtures	
Drinking Fountain or Watercooler	0.5	2	
Lavatory	1.0	2	
Bar Sink	2.0	0	
Kitchen Sink	2.0	1	
Service Sink	2.0	0	
Shower, each head	2.0	2	
Urinal	4.0	0	
Water Closet, 1.6 GPF Gravity Tank	3.0	0	
Water Closet, 1.6 GPF Flushometer Valve	4.0	2	
Total DFU:		**17**	**17**
Estimated Daily Flow (Gallons)		***425***	***425***

As the project is less than two hundred (200) fixture units, per CCDS 15.3.2, a sewer main analysis is not required, and this memo serves.

If you have any questions or need additional information to support the water model, please do not hesitate to contact me at 775.215.5007.

(End of Memorandum)

R O Anderson

TECHNICAL MEMORANDUM

Date: December 13, 2023

To: Carson City Planning

From: Mirica Krajewski, P.E.
R.O. Anderson Engineering, Inc.

Subject: Trip Generation Analysis – Carson City WWRF

The Carson City Wastewater Recovery Facility project site is located on 3220 East Fifth Street and has an Assessor's Parcel Number (APN) of 010-031-06 and 010-031-07. This project contemplates the development of a new warehouse building with an associated parking lot.

This analysis was created using the ITE Manual (11th Edition) as a reference and the values in Table 1 were estimated using the weighted average trip rate. The land uses selected for the trip generation is Warehousing (150). The trips were based on the square footage of the warehouse building.

TABLE 1
TRIP GENERATION

LAND USE	ADT	*AM PEAK*		*PM PEAK*	
		IN	OUT	IN	OUT
Warehouse	14	1	1	0	2

The land use falls under the peak hour trip threshold of 500 for all uses set forth in section 12.13.1 of the Carson City Nevada Municipal Code.

Based on the analysis included in the table above, the expected trip generation is expected to be low enough to not have any adverse effect on the surrounding community and is considered below the threshold to consider further traffic analysis.

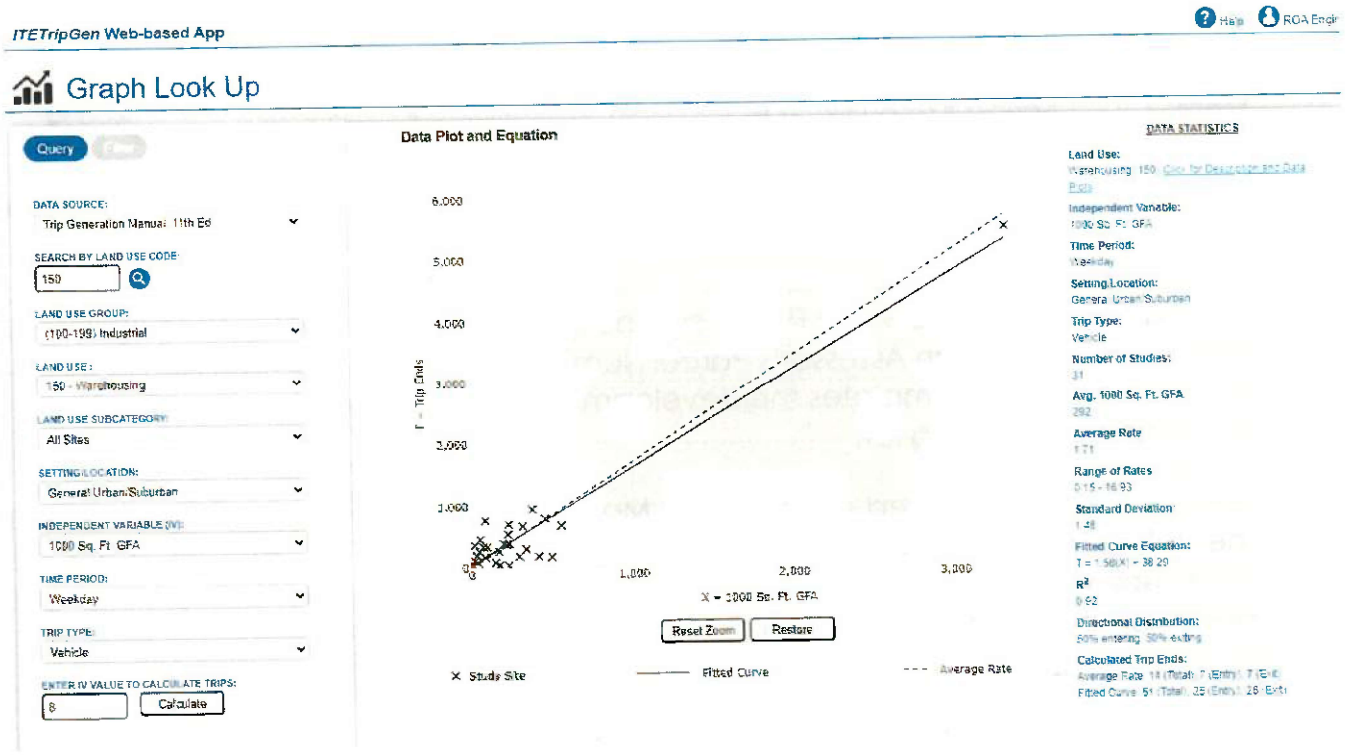
Attachments

1603 Esmeralda Avenue
Minden, Nevada 89423
775.782.2322
www.ROAnderson.com

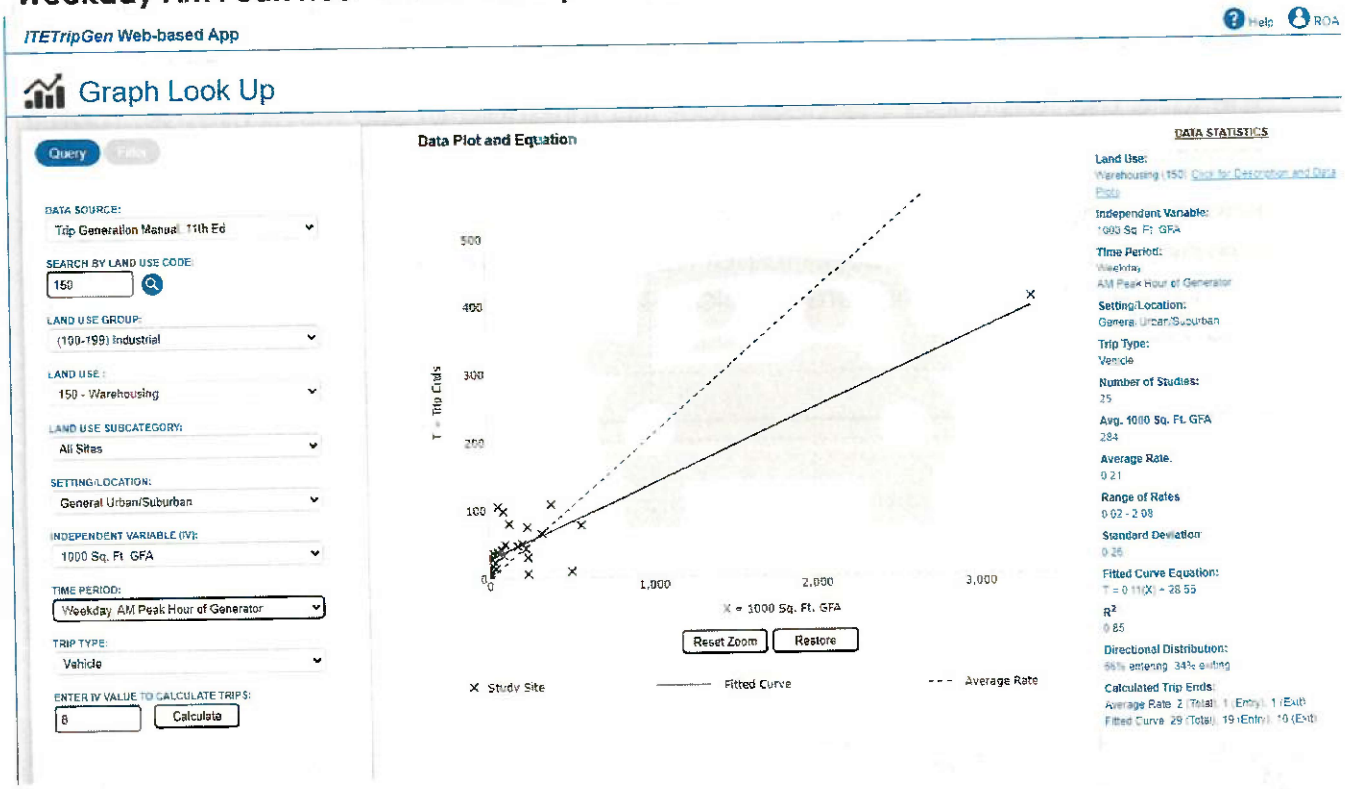
OFFICES
Minden, Nevada
Reno, Nevada

Trip Generation
ITETripGen Web-based App

Weekday
Average Rate: 14 (total), 7 (Entry), 7 (Exit)

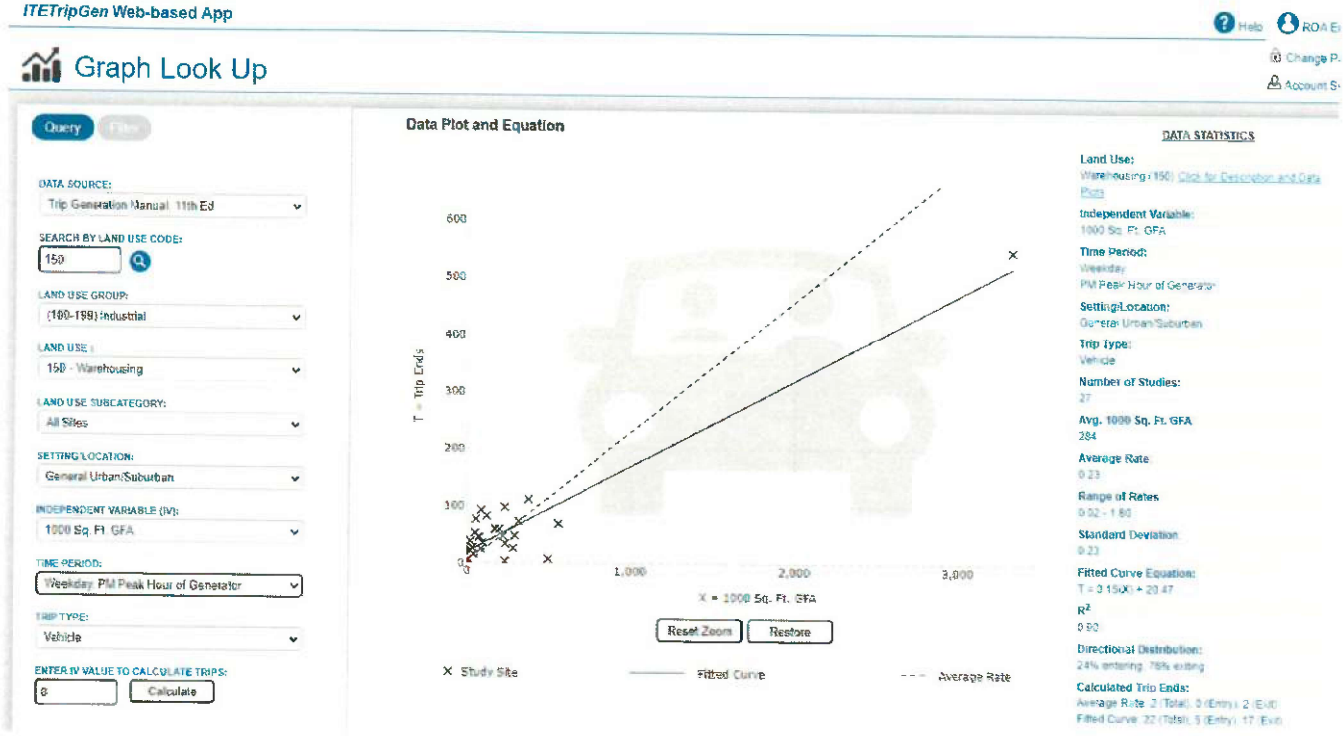


Weekday AM Peak Hour of Generator per 1000 SF GFA



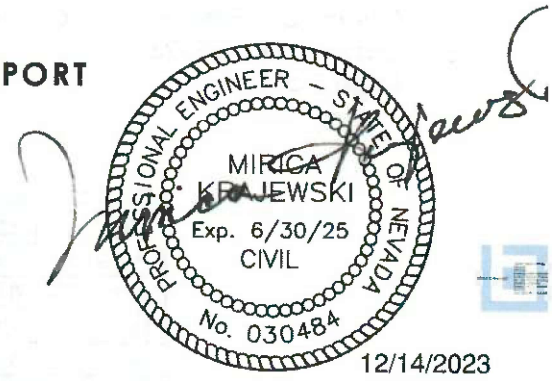
Trip Generation
ITETripGen Web-based App

Average Rate: 2 (total), 1 (Entry), 1(Exit)
Weekday, PM Peak Hour of Generator
Average Rate: 2 (Total), 0 (Entry), 2 (Exit)



R O Anderson

PRELIMINARY ENGINEERING REPORT



DATE: December 14, 2023

TO: Carson City Planning Department

FROM: Mirica Krajewski, P.E.
R.O. ANDERSON ENGINEERING, INC.

SUBJECT: Carson City Wastewater Recovery Facility (WWRF); 3320 East 5th Street, Carson City, NV, APN 010-031-06 and 010-031-07
Preliminary Engineering Report for Water Model

Introduction and Background

A detailed analysis was performed pursuant to Carson City Design Standards, Division 15 to size and configure the water system serving the proposed Carson City Wastewater Recovery Facility at 3320 East 5th Street in Carson City. This report describes the new 8,025 square feet new warehouse building to accommodate four truck bays, equipment storage, additional office space along with a parking lot and drive area on approximately 0.77-acre (33,483 square feet) portion of a larger 52.79-acre parcel of land.

The site will be serviced by a combination of existing water services to supply fire protection, domestic, and irrigation services, while a new 6-inch water line will be constructed to service a proposed fire hydrant. Specifically, an existing 6-inch water line will be utilized to service sprinklers and domestic water and an existing irrigation line in place will serve be used for proposed irrigation. Further, a 6-inch water line will tap into the existing 16-inch water line that runs parallel to East Fifth Street.

Domestic water will be supplied to the building from the existing 6-inch water line utilizing a 1-inch service line and ¾-inch water meter. Irrigation water will be supplied using the existing irrigation line with a ¾-inch service line and a ¾-inch water meter.

Estimate of Water Flows

To estimate the projected water usage to be generated from this site, the fixture units planned and designed for each of the buildings were counted and a maximum daily flow rate of 25 gallons per day (gpd) was assigned to each. Plumbing fixtures for the Carson City Wastewater Recovery Facility (WWRF) operations were obtained directly from architect plans dated December 13, 2023 and are summarized in the table below.

9060 Double Diamond Pkwy Ste 1B
Reno, Nevada 89521
775.782.2322
www.ROAnderson.com

OFFICES
• Minden, Nevada
• Reno, Nevada

Project:	**Carson City WWRF**
Site Address:	**3320 East Fifth Street**
	Carson City, NV
APN:	**010-031-06, 010-031-07**
Date:	**12/14/2023**
By:	**Mirica Krajewski, PE**

Appliances, Appurtenances or Fixtures	***2018 UPC - Table 103.1***	**WWRF**
	WSFU	*Fixtures*
Drinking Fountain or Watercooler	0.75	2
Hose Bibb	2.5	1
Hose Bibb, each additional	1.0	
Lavatory	1.0	2
Lawn Sprinkler, each head	1.0	
Bar Sink	1.0	
Kitchen Sink	1.5	1
Service Sink	1.5	
Shower, each head	2.0	2
Urinal, 1.0 GPF Flushometer Valve	3.0	
Water Closet, 1.6 GPF Gravity Tank	2.5	
Water Closet, 1.6 GPF Flushometer Valve	5.0	2
Total WSFU:		**76.25**

Utilizing the 25 GPD per WSFU per Uniform Plumbing Code, the total WWRF site usage within the building is projected to place an average day demand on the existing water system of about 1,906 GPD (~1.32 GPM; 2.13 AFA)

The project's landscape architect, Marie Hulse, PLA, has similarly estimated the irrigation water demands at 1,020 gpd (0.4 acre-feet annually).

Based on these two estimates of water demand, we anticipate that the project will have a maximum total demand on the system of 2.53 acre-feet annually.

Conclusion

As designed, the public water main and private domestic service lines meet the requirements of the City of Carson City design standards and are anticipated to provide sufficient flows for domestic uses, as well fire service, at acceptable pressures.

Attachments

- Fire Flow Memo

R O Anderson

MEMORANDUM

Via Digital Delivery

DATE: December 14, 2023

TO: Carson City Planning Department

FROM: Mirica Krajewski, PE
R.O. ANDERSON ENGINEERING, INC.

SUBJECT: Carson City Wastewater Recovery Facility (WWRF); 3320 East 5th Street, Carson City, NV, APN 010-031-06 and 010-031-07 Preliminary Engineering Report for Water Model - Request for Confirmation of Required Fire Flow

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The purpose of this memorandum is to summarize our basis of design of the on-site water system improvements to deliver both domestic water and fire protection facilities required to serve the proposed new building located at 3320 East 5th Street in Carson City, Nevada. This memorandum will address the technical descriptions and their specific buildings.

Elastomer

Given

- Building Size (Gross): 8,025 SF
- Type of Construction: VB
- The building will have an automatic sprinkler system.

Code Reference

- 2018 International Fire Code. Table B105.1(2)
  - Web Link: https://codes.iccsafe.org/public/document/IFC2018/appendix-b-fire-flow-requirements-for-buildings

Fire Flow Estimate

- Fire Flow: 2,500 GPM
- Duration: 2 hours
- Fire Flow – Required: 1,250 GPM (50% reduction for sprinkler system)

During your review, should you have any questions or require any clarifications, I hope you will contact me immediately.

(End of Memorandum)

R O Anderson

December 14, 2023

Via Email

Via Hand Delivery

Heather Ferris
Planning Manager
Carson City Planning Division
201 N. Carson Street
Carson City, NV 89701

Special Use Permit Application
Detailed Written Project Description & Special Use Permit Findings
Wastewater Resource Recovery Facility (WRRF)

Dear Ms. Ferris,

The applicant, George Ghusn, Jr. SE, representing the Owner, Carson City Utilities Department, intends to construct a new warehouse building to accommodate four truck bays as well as equipment storage and additional office space. The site is located on property owned by the Carson City Utilities Department.

The proposed warehouse building will provide a central location for the wastewater division to properly store and efficiently access their equipment and parts. The building will also allow the sewer maintenance crew to be physically located at the WRRF with the wastewater operations group. Currently, the wastewater mechanics crew is located in an old and minimally function building which does not meet ADA guidelines and has out-of-date restroom facilities. The new building site will promote cross-training and improved response time to emergencies by allowing both the sewer and wastewater crews to work together more efficiently.

The following project details are provided for context.

Project Overview	
Owner:	Carson City Utilities Department
Address:	3320 E. Fifth Street
APN:	01003106
Applicant/Client:	George Ghusn, Jr. SE, Owner, BJG Architecture and Engineering
Parcel Size:	52.79 acres
Existing Land Use:	Carson City Utilities
Proposed Use:	Carson City Utilities

Project Overview	
Building Size:	+/- 8,025 SF
Req. Entitlements:	Lot Line Deletion, Site Improvement Permit, Building Permit,
Master Plan:	Public / Quasi-Public and Open Space
Zoning:	Public Regional (PR)
Flood Information:	Development site is located primarily in Unshaded X

PLANNING DIVISION CONSIDERATIONS

Setbacks for Non-Residential Development
The two parcels will be merged via a Lot Line Deletion. The landscape setbacks along arterial street frontages is 10'. As shown on the site plan, the project proposes 10' foot setbacks from the front property line and 5' setbacks from side and rear property lines.

Building Height
The building height, as shown on the architect's plans, is 22' – 9" on the frame ridge and 20' – 0" on the eaves.

Parking and Loading
The parking area features 23 parking spaces where 15 are required. The warehouse will accommodate loading and unloading via the four overhead doors provided on the north side of the building.

Architectural Design
The architectural design includes a variety of textures, colors, and materials to add visual interest to the structure. These design features are addressed in more detail below under the findings found in the Master Plan, Chapter 6: Livable Neighborhoods and Activity Centers.

Lighting
Lighting will follow City Code and will be addressed with the final improvement plans.

Roof-Mounted Equipment
Screening for roof-mounted equipment will be addressed with the final improvement plans.

Trash Storage/Enclosures
Trash will be stored in existing enclosures on the property.

Fences, walls, and hedges
The existing fencing will remain, and no additional walls, hedges, or fencing are proposed. Landscaping plans are included with this submittal.

ENGINEERING AND UTILITIES CONSIDERATIONS

Transportation
The Trip Generation report submitted with this submittal shows that traffic impacts will be minimal—particularly in light of the fact that the project is moving employees from an old building to a new one on the same parcel.

Water
A water demand memo is provided with this submittal.

Sewer
A sewer demand memo is provided with this submittal.

Storm Drainage and Flooding
A conceptual storm drainage report is provided with this submittal.

City Lands
A public access easement will be recorded over the pedestrian access path along 5th Street, or a right-of-way will be granted encompassing the path.

General Comments
These general comments will be addressed in the improvement plans.

FIRE DEPARTMENT CONSIDERATIONS

Fire department code will be followed for this project. We understand that a sprinkler system will be required. A Fire Extinguisher Cabinet is shown on A0.2 in the submittal. The location of the Fire Riser is shown on A2.1.

BUILDING DIVISION

Improvement plans including MEPs, structural, Architectural, Entitlements, Energy, Special Inspactions, and Civil pages will be prepared as applicable upon approval of the Special Use Permit.

FINDINGS FOR SPECIAL USE PERMIT APPLICATION

CCMC 18.02.080(5) Findings

Per Carson City Code, approval of a Special Use Permit Application is required for the development of the proposed warehouse for this project located within Public Regional zoning.

1. **Will be consistent with the objectives of the Master Plan elements.**
   The Carson City Master Plan Policy Checklist for a Special Use Permit addresses 5 of the 9 Chapters in the Master Plan. Each will be addressed separately below.

   Master Plan Chapter 3: A Balanced Land Use Pattern

   This project, located in Public Regional zoning, does not apply to the Growth Management Ordinance as it is not in a residential area.

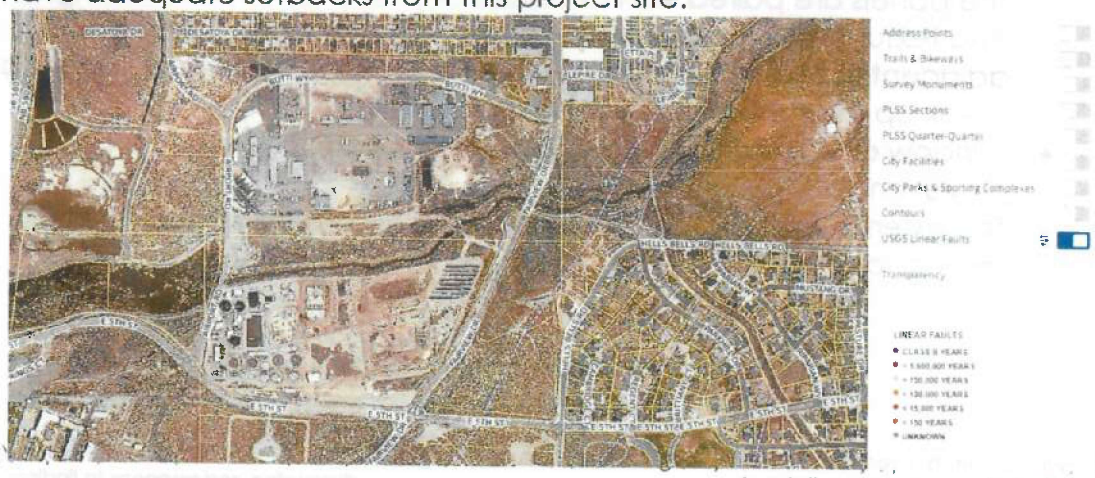
   Sustainable building materials can be found on the prefab metal structures which offer several advantages that contribute to their sustainability compared to traditional construction methods.

   - **Energy Efficiency:** Prefabricated structures are created in a controlled factory environment, which significantly reduces the time required for construction. This efficiency translates to less energy consumption during the building process.
   - **Waste Reduction:** The production of prefab building components generates less waste compared to on-site construction. In factories, materials are accurately cut using software programs, minimizing resource wastage. Broken or unusable materials are also reduced during prefab construction. This contrasts with the standard practice of hauling construction site waste to landfills.

- **Durability:** Well-constructed prefab structures can withstand the elements for decades. The longer a building lasts, the less environmental impact it has because fewer upgrades and repairs are needed over time.
- **Recycled Materials:** Prefabricated metal structures often use substantial amounts of recycled steel.
- **Shorter Construction Timeframes:** Prefabricated steel materials streamline the erection process, leading to shorter construction timeframes. Less machinery is required on the job site, resulting in reduced energy consumption.
- **Reduced Environmental Nuisances:** Prefabrication minimizes environmental nuisances such as noise and dust during construction.

The project site is owned by Carson City and a designated bike trail is provided on the east, south, and west sides of the property. These adjacent amenities will not be significantly impacted by the development of the proposed new warehouse. The neighboring parcels to the west, south, and east are zoned "P," and are owned by various public entities including Carson City, the Department of Conservation and Natural Resources, and the State of Nevada. The parcel to the north is zoned "PR," and is owned by Carson City Property Management. The Utilities Department of Carson City appears to have been compatible with these neighbors.

Although a portion of the property is located in Zone AE, the project site is within LOMR 16-09-1192P, eff. 6/5/2017 and LOMR 23-00-1038P, effective 9/7/2023. USGS Linear Faults are not located on the property. However, there are light purple linear faults (<750,000 years old) to the east and west. Both have adequate setbacks from this project site.



The purpose of the project is to provide facilities that will support the efficiency of the sewer maintenance and wastewater operations groups. In alignment with Chapter 3: A Balanced Land Use Pattern, the levels of service for water, sewer, road improvements, and sidewalks for this project are in good hands.

Master Plan Chapter 4: Equitable Distribution of Recreational Opportunities
As noted above, a bike path is located along three of the four parcel boundaries and these paths connect to other bike paths and/or bike lanes. For this infill project, no additional recreational features are proposed.

Master Plan Chapter 5: Economic Vitality
A primary goal of this project is to increase the collaboration and efficiency of the water and sewer department, update the office, storage, and restroom facilities, and provide ADA compliant site features. By aligning the warehouse to meet current standards and increasing the efficiency of the teams, the project may, in the long run, improve internal productivity.

Master Plan Chapter 6: Livable Neighborhoods and Activity Centers
The exterior of the building consists of prefab metal and Metl-Span CF Tuff Wall panels, which have a hard, fiber-reinforced polymer coating with the Tuff Cote finish system. This coating is very resistant to impacts, abrasions, and severe weather conditions. The insulated metal panels also provide high R-values as well as a stucco-like appearance.

- The design proposal includes prefinished metal panels with stucco texture in a color that blends well with the surrounding environment. The panels are paired with concrete masonry units in contrasting colors and textures to create a dynamic facade. A decorative screen is adjacent to the 5th street wall of the building to add visual interest and break up the monotony of the wall.
- Window openings along East and West elevation see exterior elevation.
- The exterior walls are also adorned with decorative trims and down sprouts to articulate the facades.

Master Plan Chapter 7: A Connected City
As noted above, the project is bounded by a bike path on three sides—and these paths connect to bike lanes.

2. **Will not be detrimental to the use, peaceful enjoyment, economic value, or development of surrounding properties or the general neighborhood; and is compatible with and preserves the character and integrity of adjacent development and neighborhoods or includes improvements or modifications either on-site or within the public right-of-way to mitigate development related to adverse impacts such as noise, vibrations, fumes, odors, dust, glare, or physical activity.**
The property will present minimal impacts to neighboring properties. The addition of a warehouse will not significantly increase impacts on adjacent properties, particularly in light of the buffer around the property—which includes vacant lands largely owned by public entities.

   A. ***Describe the general types of land uses and zoning designations adjoining your property.***
   As discussed above, the property is generally adjacent to sites owned by public entities (i.e. "P" zoning) including Carson City, the Department of Conservation and Natural Resources, and the State of Nevada. No residential properties are adjacent to the project site.

   B. ***Explain why your project is similar to existing development in the neighborhood, and why it will not hurt property values or cause problems, such as noise, dust, odors, vibration, fumes, glare, or physical activity, etc. with neighboring property owners. Have other properties in your area obtained approval of a similar request? How will your project differ in appearance from your neighbors? Your response should consider the proposed physical appearance of your proposal, as well as comparing your use to others in the area.***
   As noted above, the immediate adjacent neighbors are zoned "P." Of these, three sites are vacant. The property owned by the Department of Natural Resources is developed but is not developed near the proposed project site. In addition, the proposed warehouse will house trucks and materials—and have minimal impacts on the adjacent, generally vacant, properties.

In this case, any noise, dust, odors, vibrations, fumes, glare, or physical activity is unlikely to impact the neighboring property owners.

C. ***Provide a statement explaining how your project will not be detrimental to the use, peaceful enjoyment or development of surrounding properties and the general neighborhood.***
One might consider the travelers on the designed bike trail found on three sides of the parcel to be the affected neighbors as no residences are adjacent to the parcel. As noted above, the adjacent properties generally vacant.

While the site may generate a bit more traffic or noise during the construction phase of the project, the long term use of the proposed warehouse and office space will not impact surrounding properties.

D. ***If outdoor lighting is to be a part of the project, please indicate how it will be shielded from adjoining property and the type of lighting (wattage/height/placement) provided.***
Any outdoor lighting will be shielded from adjoining properties and an appropriate wattage/height/and placement will be shown on the final building plans.

E. ***Describe the proposed landscaping, including screening and arterial landscape areas (if required by the zoning code). Include a site place with existing and proposed landscape shown on the plan which complies with City ordinance requirements.***
The required landscape design will be submitted with the building permit.

F. ***Explain any short-range and long-range benefit to the people of Carson City that will occur if your project is approved.***
The short- and long-range benefit to the people of Carson City is found in the purpose of this project: to upgrade the facilities and provide offices, restrooms, and equipment storage areas needed to improve the

collaboration between the wastewater maintenance and sanitary sewer operation crews.

3. **Will have little or no detrimental effect on vehicular or pedestrian traffic.** Seven employees are currently anticipated to be reporting to the new warehouse and associated facilities each weekday. Because these employees were previously working on the same site in a different building, no significant changes to the existing parking and traffic will be required. The employees at the facility are already aware of the bike path when entering the property.

4. **Will not overburden existing public services and facilities, including schools, police and fire protection, water, sanitary sewer, public roads, storm drainage and other public improvements.** The site will not overburden existing public services and facilities. Currently, the sewer maintenance crew and certain equipment and parts used for their work are located in Public Works Buildings C & D on Butti Way. Other wastewater equipment and parts are housed in other buildings on these two properties owned by Carson City. The new warehouse will allow these two crews to access equipment in one place. On site coordination between the two crews will increase efficiency of the water and sanitary sewer teams and improve their response time to emergencies. As a result, the proposed facility will improve public services.

   The project will not negatively impact the school district or police and fire protection because there are no increases in housing under this task or significant additional services required from these providers. The building will have sprinklers and the number of people on the site is generally static.

   The water and sewer services will be appropriately connected—and the project, based on the intent to replace a dilapidated building with an updated one—is not going to significantly impact the water and sanitary sewer services. Drainage for the property is addressed with this submittal and has been prepared based on the applicable Carson City Drainage Plans.

   The site will be accessed from Fifth Street as it has been in the past. The driveway and parking lot will be improved as shown on the site plans.

5. **Meets the definition and specific standards set forth elsewhere in Carson City Municipal Code, Title 18, for such particular use and meets the purpose statement of that district.**
   Per Chapter 18.04.185 of the Carson City Code for Use Districts, "PR" refers to "federal, state, and city facilities and uses whose main purpose is to sustain wide regional needs. The Conditional Uses permitted in the PR District which require approval of a Special Use Permit" include "buildings and facilities owned, leased, or operated by the City of Carson City" including the public utility building proposed for construction on property owned by the Carson City Utility District. The construction of a warehouse on property owned by the City is appropriate under this zoning assignment.

6. **Will not be determinantal to the public health, safety, convenience, and welfare.**
   We believe the construction of this warehouse and the resulting efficiencies will ***improve*** the public health, safety, convenience, and welfare as stated throughout this response.

7. **Will not result in material damage or prejudice to other property in the vicinity, as a result of proposed mitigation measures.**
   As noted above, we believe that this project will not result in material damage or prejudice to other properties in the vicinity—and will improve the services to Carson City residents, particularly those who rely on the City's water and sewer services.

Sincerely,

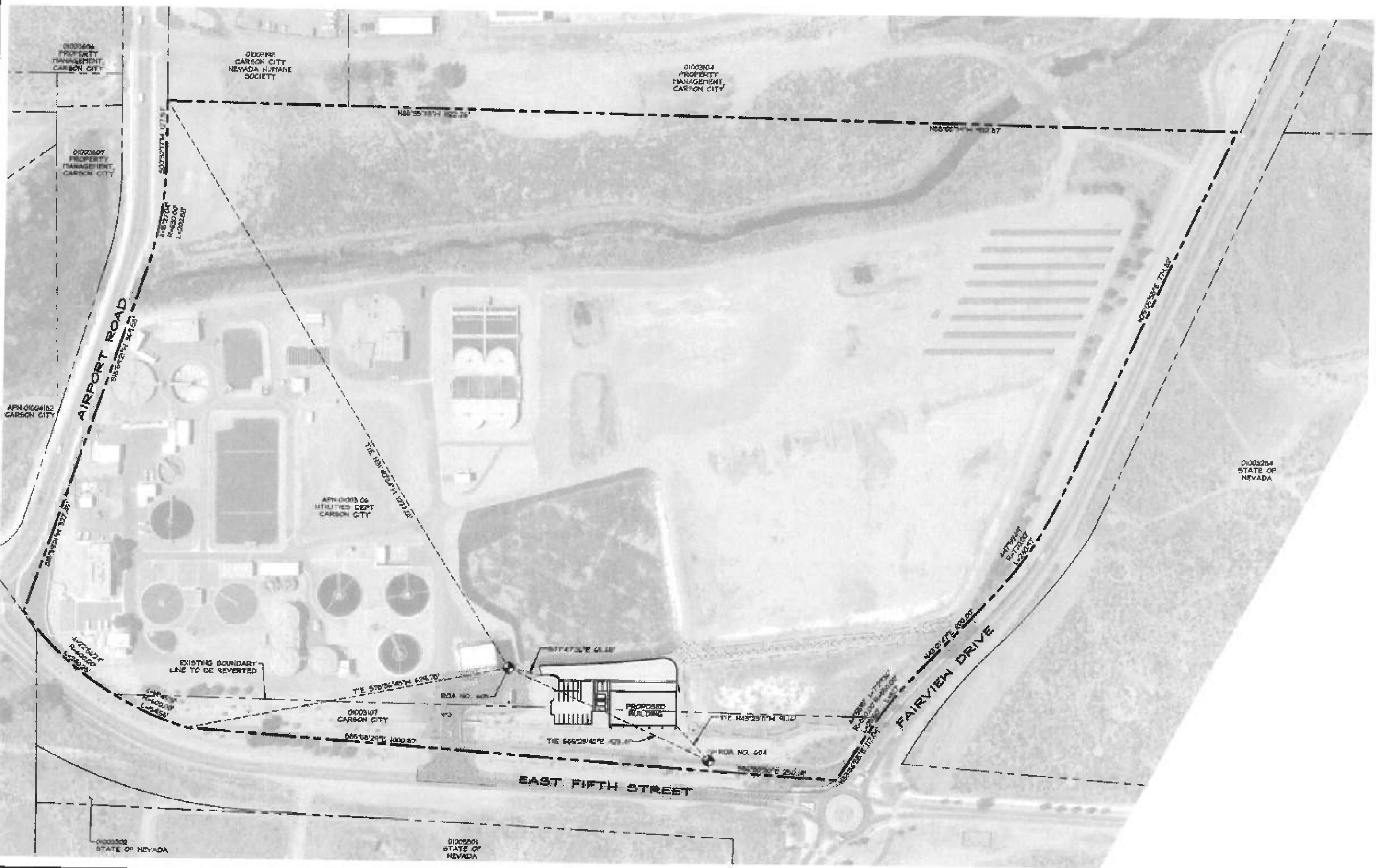
R.O. ANDERSON ENGINEERING, INC.

Mirica Krajewski, PE
Project Engineer
Phone: 775.215.5034
Email: mkrajewski@roanderson.com

SITE IMPROVEMENT PLANS FOR

WASTEWATER RESOURCE RECOVERY FACILITY WAREHOUSE

CARSON CITY, NEVADA



VICINITY MAP

NO SCALE

PROJECT SUMMARY

A.P.N.	01003107
OWNER:	CARSON CITY PUBLIC WORKS DEPT 3505 BUTTI WAY CARSON CITY, NEVADA 89701
ENGINEER	R.O. ANDERSON ENGINEERING, INC P.O. BOX 2229 MINDEN, NEVADA 89423 (775) 782-2322
EXISTING ZONING	PR
FLOOD ZONE:	UN-SHADED 'X', PER FEMA FLOOD MAP NUMBER 32000C0111H, DATED JUNE 20, 2019
TOTAL AREA:	8.71 AC
PARKING TOTALS	REQUIRED: 15 PARKING SPACES PROVIDED: 22 PARKING SPACES

TOTAL IMPERVIOUS AREA = 16,000 SQ FT

PROJECT CONTROL

CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
ROA NO. 604	14734257.96'	[illegible]	4629.89'	FOUND MAG NAIL
ROA NO. 605	14734438.67'	[illegible]	4628.86'	SET MAG NAIL

SHEET INDEX

C1 - OVERALL SITE PLAN

C2 - SITE, UTILITY & GRADING PLAN

UTILITY COMPANY CONTACTS

POWER
NV ENERGY
ADDRESS: 875 E. LONG STREET, CARSON CITY, NV 89706
PHONE: (775) 834-2950

TELEPHONE
AT&T CONSTRUCTION & ENGINEERING
ADDRESS: 745 W. MOANA LN, RM 220A, RENO, NV 89509
PHONE: (775) 448-8813

WATER
CARSON CITY UTILITIES DEPARTMENT
ADDRESS: 108 E. PROCTOR ST., CARSON CITY, NV 89701
PHONE: (775) 283-7494

SEWER
CARSON CITY UTILITIES DEPARTMENT
ADDRESS: 108 E. PROCTOR ST., CARSON CITY, NV 89701
PHONE: (775) 283-7494

GAS
SOUTHWEST GAS CORPORATION
ADDRESS: P.O. BOX 1190, CARSON CITY, NV 89701
SEWER (775) 887-2723

SIGNATURES

CARSON CITY UTILITIES — DATE

PRELIMINARY
For Review Only

NO.	DATE	REVISION BLOCK	BY

SCALE: 1" = 100'

R O Anderson — WWW.ROANDERSON.COM

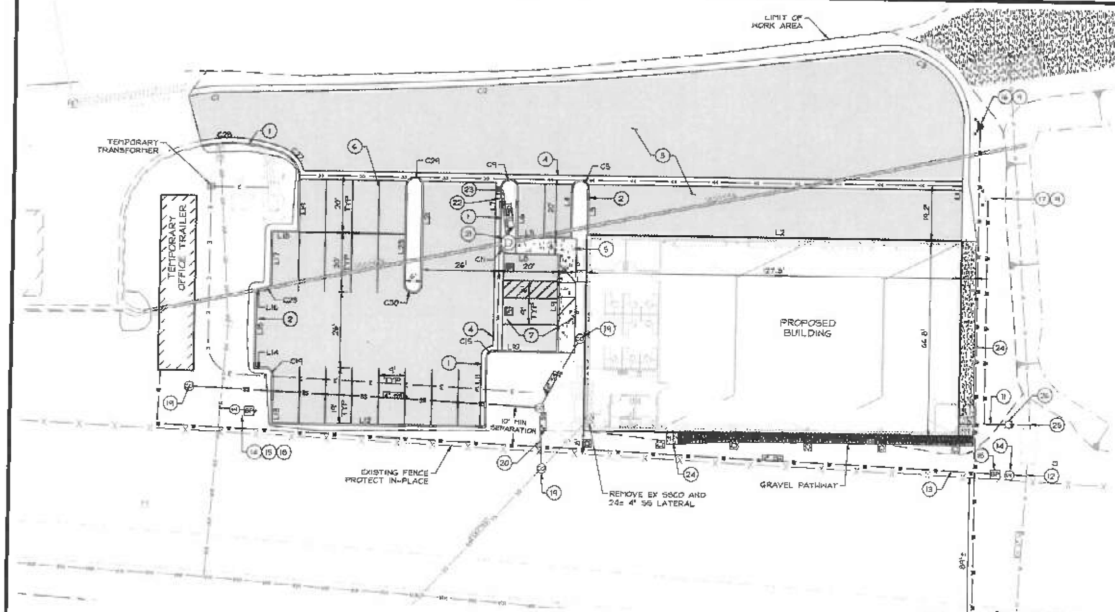
WASTEWATER RESOURCE RECOVERY FACILITY WAREHOUSE

BJG ARCHITECTURE

OVERALL SITE PLAN

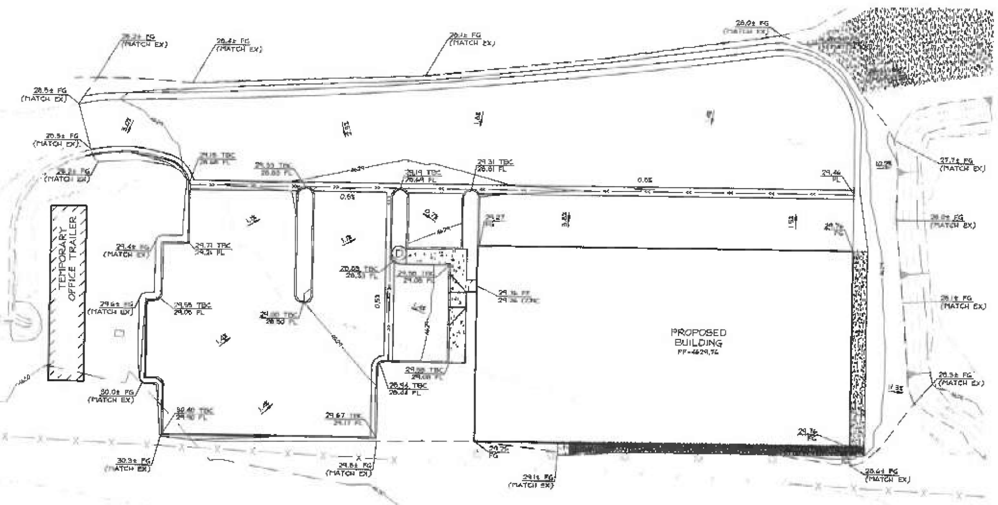
PROFESSIONAL ENGINEER, STATE OF NEVADA — MIRICA KRAJEWSKI — CIVIL — No. 020484

DRAWN: JAG	JOB: 3063-003
ENGINEER: MMK	DRAWING:
SCALE: 1" = 100'	SHEET: C1
DATE: 12/13/2023	OF: 2 SHEETS



ENLARGED SITE & UTILITY PLAN

SCALE: 1" = 20'



ENLARGED GRADING PLAN

SCALE: 1" = 20'

LINE TABLE

LINE	BEARING	LENGTH
L1	N00°00'00"E	19.29'
L2	N90°00'00"W	127.33'
L3	S00°00'00"E	16.73'
L4	N00°00'00"E	17.50'
L5	S90°00'00"E	19.00'
L6	S00°00'00"E	17.50'
L7	N00°00'00"E	20.00'
L8	N90°00'00"W	17.50'
L9	N00°00'00"E	34.00'
L10	N90°00'00"E	22.00'
L11	N00°00'00"E	24.00'
L12	N90°00'00"E	75.00'
L13	S00°00'00"E	16.60'
L14	N90°00'00"E	8.50'
L16	S00°00'00"E	27.00'

LINE TABLE

LINE	BEARING	LENGTH
L16	S89°52'54"W	2.50'
L17	S00°00'00"E	17.50'
L18	N90°00'00"W	9.00'
L19	S00°00'00"E	17.88'
L21	N00°00'00"E	34.00'
L22	S00°00'00"E	34.00'

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD LENGTH
C1	Δ=012°22'44"	64.30'	13.89'	S82°46'43"W	13.86'
C2	Δ=006°52'07"	1050.00'	221.70'	S85°27'22"W	221.44'
C3	Δ=097°58'42"	25.00'	42.75'	N48°59'21"W	37.73'
C5	Δ=180°00'00"	2.50'	7.86'	N90°00'00"E	5.00'
C9	Δ=180°00'00"	2.50'	7.85'	N90°00'00"E	5.00'
C11	Δ=090°00'00"	2.50'	3.93'	N45°00'00"W	3.54'
C15	Δ=090°00'00"	2.00'	3.14'	N45°00'00"E	2.83'
C19	Δ=090°00'00"	2.50'	3.93'	S45°00'00"E	3.54'
C23	Δ=090°00'00"	2.50'	3.93'	S45°00'00"W	3.54'
C27	Δ=070°33'53"	10.00'	12.32'	S35°16'56"E	11.55'
C28	Δ=031°13'24"	49.17'	26.79'	S86°10'34"E	26.46'
C29	Δ=089°59'55"	2.50'	3.93'	N44°59'57"W	3.54'
C30	Δ=090°00'08"	2.50'	3.93'	S45°00'04"E	3.54'

NOTE:
1. ALL LINE AND CURVE LABELS REFERENCE THE BACK FACE OF CURB

SPECIFIC CONSTRUCTION NOTES

SYMBOL USED FOR SPECIFIC CONSTRUCTION NOTE CALL OUT

1. TYPE 1 CURB AND GUTTER
2. PCC MEDIAN CURB
3. FLEXIBLE PAVEMENT SECTION
4. PCC VALLEY GUTTER
5. PCC SIDEWALK
6. PARKING LOT STRIPING
7. ADA STRIPING AND SIGNAGE
8. ADA RAMP
9. BOLLARD
10. 6" WATERLINE HOT TAP AND AND TAPPING VALVE
11. 6" CL150 AWWA C900 PVC FIRE LINE
12. DOM WATER SERVICE CONNECTION
13. DOM WATER LINE
14. 3/4" WATER METER
15. 3/4" BACKFLOW PREVENTER
16. 6" FIRE HYDRANT ASSEMBLY
17. 4" FIRE DEPARTMENT CONNECTION
18. IRRIGATION CONNECTION
19. 4" SS CLEANOUT
20. 4" SDR-35 SEWER LINE
21. TYPE 1 SDMH
22. 12" SD PIPE
23. TYPE 4R CATCH BASIN
24. PCC CONCRETE PAVEMENT
25. 6"x6"x6" TEE
26. 6" POST INDICATOR VALVE

HATCH LEGEND

- EXISTING PAVEMENT
- EXISTING CONCRETE
- PROPOSED PAVEMENT
- PROPOSED CONCRETE
- PROPOSED GRAVEL

SYMBOLS LEGEND

EXISTING | PROPOSED | DESCRIPTION

- SURVEY CONTROL POINT
- FIRE HYDRANT
- CAP/CONNECTION TO BUILDING
- SANITARY SEWER MANHOLE
- SANITARY SEWER / STORM DRAIN CLEANOUT
- STORM DRAIN MANHOLE
- CURB INLET CATCH BASIN
- LANDSCAPE CATCH BASIN
- WATER METER, SINGLE
- WATER GATE VALVE
- ACCESSIBLE PARKING SPACE
- SIGN
- ELECTRICAL/POWER MANHOLE
- ELECTRICAL/POWER VAULT
- SLOPE

LINE TYPE LEGEND

EXISTING | PROPOSED

- BUILDING ENVELOPE
- CENTERLINE OF RIGHT-OF-WAY
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- MAJOR CONTOUR, FIVE-FOOT INTERVAL
- MINOR CONTOUR, ONE-FOOT INTERVAL
- EASEMENT
- EDGE OF PAVEMENT AND/OR CURB
- FLOW LINE
- GAS LINE
- OVERHEAD POWER
- UNDERGROUND POWER
- SANITARY SEWER MAIN
- STORM DRAIN
- WATER MAIN
- FENCE (MATERIAL SPECIFIED ON PLANS)
- COMMON UTILITY TRENCH (POWER, TELEPHONE, GAS, TV)

PRELIMINARY
For Review Only

CALL 811 BEFORE YOU DIG

NO.	DATE	REVISION BLOCK	BY

SCALE: 1" = 20'

R O Anderson
www.ROAnderson.com

WASTEWATER RESOURCE RECOVERY FACILITY WAREHOUSE
BJG ARCHITECTURE

SITE, UTILITY & GRADING PLAN

PROFESSIONAL ENGINEER - STATE OF NEVADA
MIRICA KRAJEWSKI
CIVIL
No. 030484

DRAWN:	JAG/MCJ	JOB:	3063-003
ENGINEER:	MMK	DRAWING:	
SCALE:	1" = 20'	SHEET:	C2
DATE:	12.14.2023	OF:	2 SHEETS

SITE IMPROVEMENT - 12.14.2023

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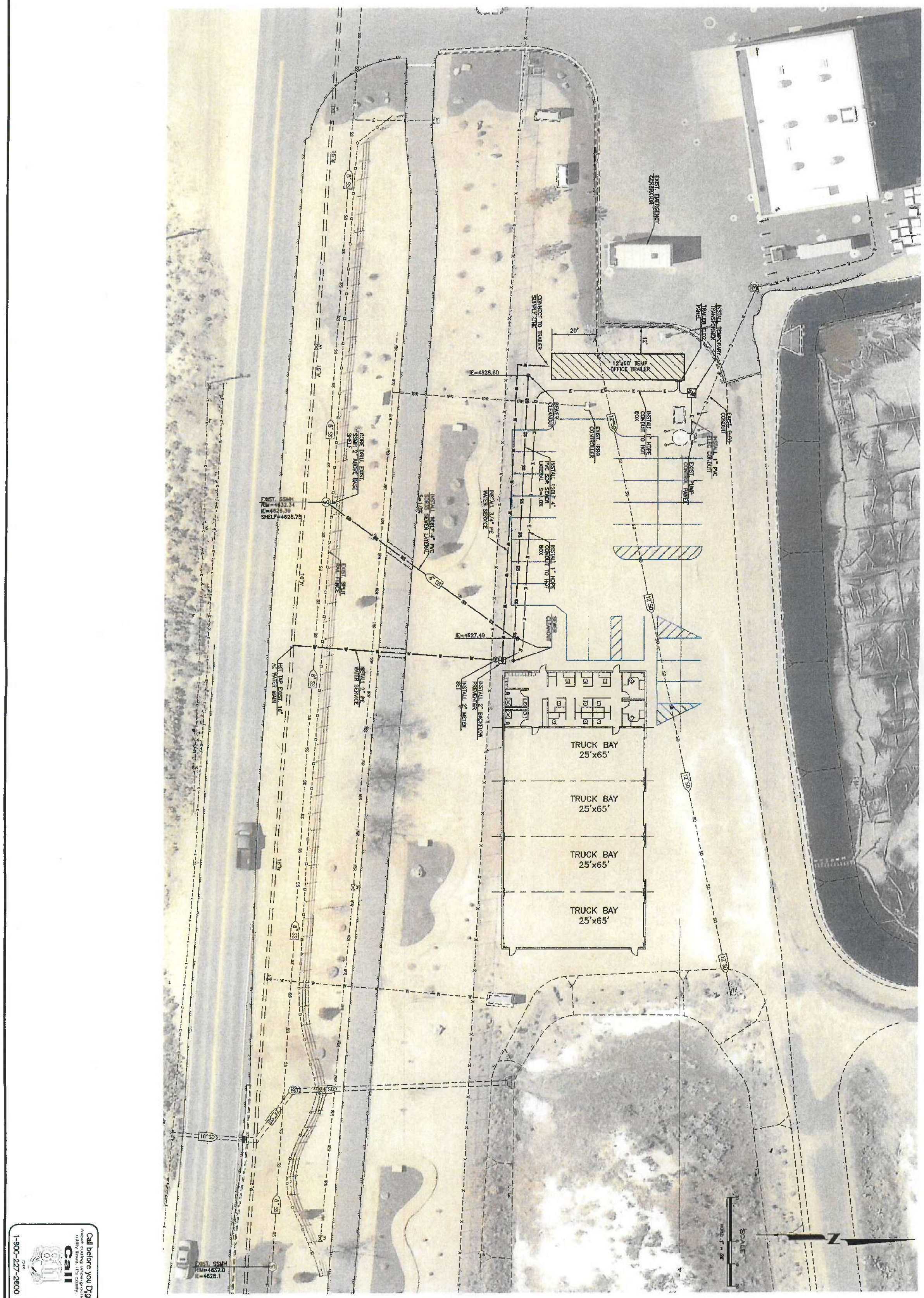

REV.	DATE	DESCRIPTION	BY	APP'D

DATE 9/13/2023

WASTE WATER RECLAMATION FACILITY
SEWER DEPARTMENT WAREHOUSE
PROJECT No. P320122002

WAREHOUSE SITE PLAN
ALTERNATE #1

SHEET C1 OF 4

CARSON CITY
PUBLIC WORKS DEPARTMENT

3505 BUTTI WAY CARSON CITY, NEVADA 89701
PH: 887-2355 FAX: 887-2112

DESIGNED BY: XXX
DRAWN BY: XXX
CHECKED BY: XXX
DWG NO:
SCALE (HORIZ): X"=XX'
SCALE (VERT): X"=XX'
PLOT DATE: 9/13/23

0% DESIGN FOR REVIEW ONLY