Drainage Calculations to accompany Land Development Application

Bank of America

Conway and Hoffner- RATM
5126 S. Conway Road, Orlando Florida 32812

IEG JOB NO. 10-1523.00

August 2025

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Drainage Narrative
Bank of American – Conway and Hoffner- RATM

The Bank of America located at Conway and Hoffner (RATM) occupies a small portion of a shopping plaza served by a private stormwater management system, the original design of which is not documented. Within the RATM project area, there is an existing retention area with no apparent control structure or outlet pipe, suggesting it was intended to capture and infiltrate stormwater on-site without offsite discharge. This report examines the contributing drainage basin and evaluates whether the proposed retention pond has sufficient capacity to contain the runoff volume generated within that basin.

Since the volume of the proposed retention pond exceeds 3,000 cubic feet (3,426 CF as shown below on this page), this report will use the 25-year, 24-hour storm event for runoff calculations.

Conway and Hoffner-RATM- Proposed pond Volume						
	area	area	ave area	volume	cumulative volume	
ft	ft2	ac	ac	ac.ft	ac.ft	ft3
97	800	0.01837			0	0
			0.02855	0.02855		
98	1687	0.03873			0.02855	1244
			0.05009	0.05009		
99	2677	0.06146			0.07864	3426

Rational Method Formula:

$$Q = C*i*A$$

Where:

- **Q** = peak runoff rate (in **cubic feet per second**, cfs)
- **C** = runoff coefficient = 0.58 (shown on page 7)
- **i** = rainfall intensity (in **inches per hour**) = 0.317 (shown on table page 6)
- **A** = area (in **acres**) = 0.21

Therefore $Q = C*i*A$

$= 0.58*0.317*0.21$

$= 0.0386$ cfs

Formula to Calculate Runoff Volume:

Runoff Volume (cubic feet) = Q×t

Where:

- Q = runoff rate (in **cubic feet per second**, cfs) = 0.0386 cfs
- t = duration of runoff (in **seconds**) = 86,400 secconds

Therefore **Runoff Volume (CF) = Q×t**

= 0.0386*86,400

= 3,335 CF.

Formula for Pond Depth (H):

H = V /A

Where:

- **H** = pond depth (in feet)
- **V** = volume of water to be stored (cubic feet) = 3,335 CF.
- **A** = average surface area of the pond (square feet) = 1,721 SF.

Therefore **H = V /A**

= 3,335 / 1737

= 1.93 FT

The proposed retention pond has a depth of 2 feet, which exceeds the required 1.93 feet. Therefore, it is sufficient to contain the runoff volume from the 9,030 sq.ft. drainage area for the 25-year, 24-hour storm event.

This report includes pages from the USDA NRCS, Custom Soil Resource Report for Orange County, Florida. According to the table for Saturated Hydraulic Conductivity (Ksat), the soil has a K value of 26 ft/day (page 29). Applying a safety factor of 2, the adjusted value becomes 13 ft/day, which is equivalent to 6.5 inches per hour. This report will also present the estimated infiltration duration, based on the Saturated Hydraulic Conductivity (Ksat) values provided in the attached USDA NRCS Custom Soil Resource Report for Orange County, Florida.

Formula to estimate the time for a pond to completely drain or infiltrate through proposed retention pond area

$$t = H / k$$

Where:

- t = time to fully drain/infiltrate (in **hours**)
- H = **water depth** in the pond (in **inches**) = 24 inches
- k = **infiltration rate** of the soil (in **inches/hour**) = 6.5 inches/hour

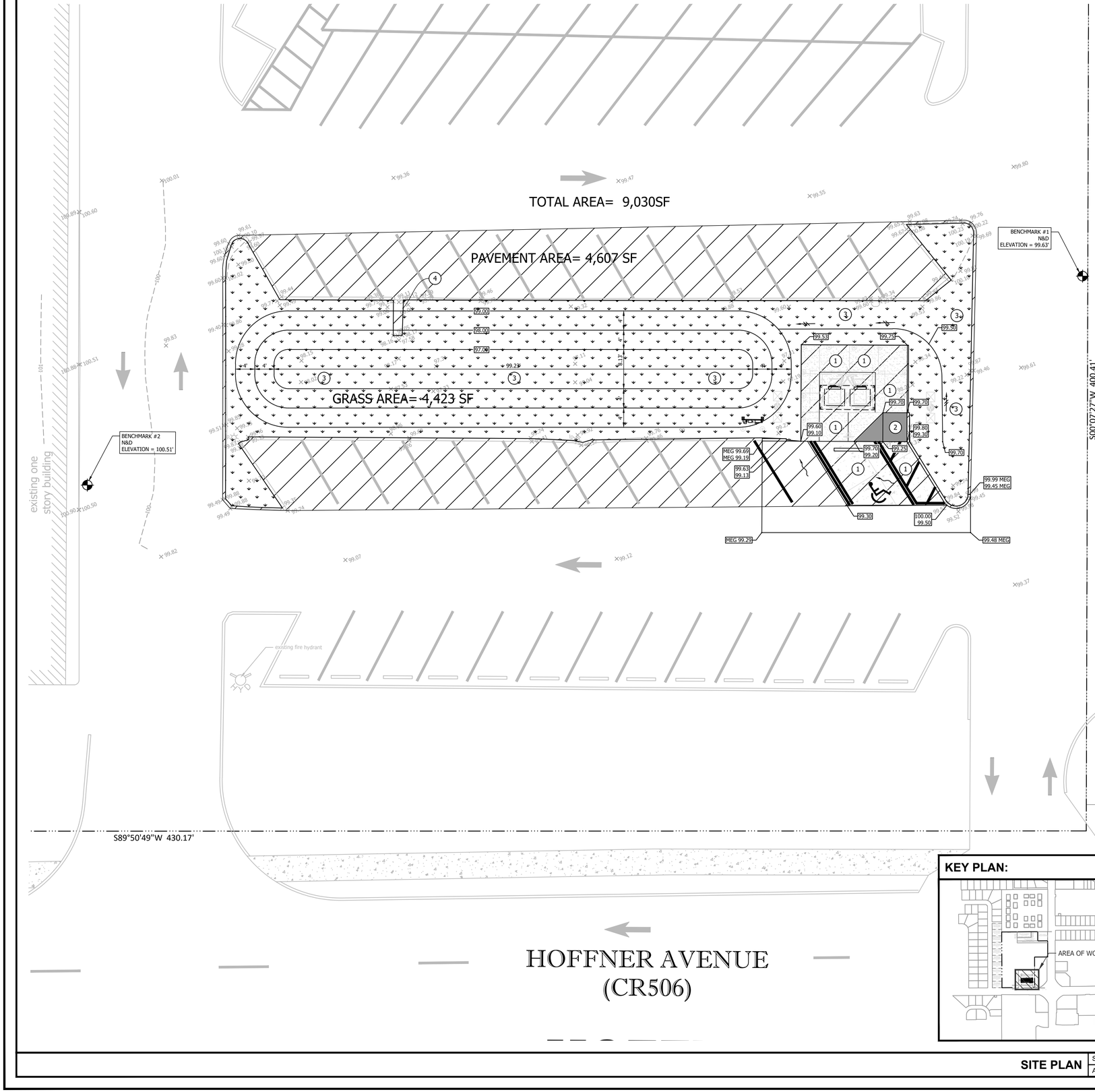
Therefore $t = H / k$

$= 24 / 6.5$

$= 3.70$ hours

Conclusion: The proposed retention pond has a total volume of 3,426 cubic feet, which exceeds the existing retention pond volume of 3,092 cubic feet (as shown below on this page). It also provides a depth of 2 feet, which is greater than the required 1.93 feet. Therefore, the proposed pond is adequately sized to retain the runoff from the 9,030 sq.ft. drainage area for a 25-year, 24-hour storm event, and is expected to fully drain through infiltration within approximately 3.7 hours.

Conway and Hoffner-RTAM- Existing pond Volume						
	area	area	ave area	volume	cumulative volume	
ft	ft2	ac	ac	ac.ft	ac.ft	ft3
97	241	0.00553			0	0
			0.01829	0.01829		
98	1352	0.03104			0.01829	797
			0.0527	0.0527		
99	3239	0.07436			0.07098	3092



KEY PLAN:

SITE PLAN | SCALE: AS NOTED

LEGEND:

PROPERTY LINE	EXISTING ELEVATION
EXISTING CONCRETE PAVEMENT TO REMAIN	EL ELEVATION
PROPOSEDCONCRETE LESS THAN 6"	TYP TYPICAL
PROPOSED CONCRETE PAVEMENT 6" OR GREATER	CO CLEANOUT
PROPOSED ASPHALT PAVEMENT	IE INVERT ELEVATION
PROPOSED LANDSCAPE (MULCH GROUNDCOVER)	FFE FINISH FLOOR ELEVATION
EXISTING TO REMAIN	MEG MATCH EXISTING GRADE
PROPOSED ELEVATION	DS BUILDING DOWN SPOUT
TOP OF SIDEWALK/CURB EDGE OF PAVEMENT	HP HIGH POINT
	PROPOSED SURFACE STORMWATER FLOW DIRECTION OF PIPE FLOW
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SWALE

GRADING NOTES:

- ADJUST EXISTING BASE THICKNESS DEPTH AS NEEDED TO MEET THE PROPOSED GRADES.
- CONTRACTOR TO MAINTAIN EXISTING DRAINAGE PATTERN TO PREVENT ANY PONDING AREA.
- ALL FINISHED LANDSCAPING TO HAVE A SLOPE NO MORE THAN 33.33% (1 TO 3) UNLESS OTHERWISE SPECIFIED.
- REQUIRED EROSION CONTROL MEASURES SHALL BE INSTALLED AS NEEDED AND MUST REMAIN INTACT THROUGHOUT CONSTRUCTION. FAILURE TO INSTALL OR PROPERLY MAINTAIN THESE BARRICADES WILL RESULT IN ENFORCEMENT ACTION WHICH MAY INCLUDE CITATIONS, AND INITIATION OF CIVIL PENALTY PROCEDURES.

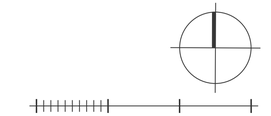
ADA ACCESSIBILITY NOTES:

1. ALL ACCESSIBLE PARKING SPACES AND ACCESS AISLES ADJACENT TO THE ACCESSIBLE PARKING SPACES SHALL HAVE A MAXIMUM OF 2% SLOPE IN ALL DIRECTIONS (THIS INCLUDES RUNNING SLOPE AND CROSS SLOPE).
2. AN ACCESSIBLE ROUTE FROM THE PUBLIC STREET OR SIDEWALK TO ALL BUILDING ENTRANCES MUST BE PROVIDED. THIS ACCESS ROUTE SHALL BE A MINIMUM OF 48" WIDE. THE RUNNING SLOPE OF AN ACCESSIBLE ROUTE SHALL NOT EXCEED 5% AND THE CROSS SLOPE SHALL NOT EXCEED 2%.
3. SLOPES EXCEEDING 5% BUT LESS THAN 8% WILL REQUIRE A RAMP AND MUST CONFORM TO THE REQUIREMENTS FOR RAMP DESIGN (HANDRAILS, CURBS, LANDINGS). NO RAMP SHALL EXCEED AN 8% RUNNING SLOPE OR 2% CROSS SLOPE.
4. IT WILL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT THE ACCESSIBLE PARKING SPACES, ACCESSIBLE ROUTES, AND SIDEWALK/CROSSWALKS ARE CONSTRUCTED TO MEET ADA REQUIREMENTS.
5. ANY REQUIREMENTS LISTED ABOVE THAT CAN NOT BE MET SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY. ANYTHING NOT BUILT TO THE ABOVE STANDARDS WILL REQUIRE REMOVAL AND REPLACEMENT OF THE NON COMPLIANT AREAS AT THE GENERAL CONTRACTORS COST.

KEYED NOTES:

1	SURFACE SLOPES NOT TO EXCEED 1:48 IN ALL DIRECTIONS.
2	SURFACE SLOPES NOT TO EXCEED 1:48 CROSS SLOPES AND 1:12 RUNNING.
3	RE-GRADE SURROUNDING LANDSCAPING GRADE ELEVATION AND RE-SOD TO MATCH EXISTING AS REQUIRED TO MATCH EXISTING GRADE ELEVATIONS, SLOPES NOT TO EXCEED 4:1. PROPOSED POND VOLUME 3,426 CF. (VS EXISTING VOLUME 3,092 CF)
4	EXISTING CONCRETE FLUME TO REMAIN.

SCALE:



No.	Revision/Issue	Date
2	ISSUE FOR 90% CD	05/07/2025
1	ISSUE FOR REVIEW	02/28/2025

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BANK OF AMERICA

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DATE

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Sheet Title: GRADING PLAN

Project No.	10-1523.00
Drawn By	CS
Reviewed By	AM
Sheet	C03.01

PF tabular | PF graphical | Supplementary information

Print page

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**5.50** (4.64-6.66)	**6.36** (5.38-7.70)	**7.70** (6.48-9.37)	**8.76** (7.31-10.7)	**10.1** (8.04-12.8)	**11.1** (8.59-14.3)	**12.0** (8.92-16.0)	**12.8** (9.07-17.8)	**13.8** (9.35-20.0)	**14.5** (9.56-21.7)
10-min	**4.03** (3.40-4.87)	**4.66** (3.93-5.65)	**5.64** (4.74-6.86)	**6.41** (5.35-7.84)	**7.39** (5.89-9.34)	**8.10** (6.29-10.5)	**8.75** (6.53-11.7)	**9.37** (6.64-13.1)	**10.1** (6.85-14.7)	**10.6** (7.00-15.9)
15-min	**3.28** (2.77-3.96)	**3.79** (3.20-4.59)	**4.59** (3.86-5.58)	**5.21** (4.35-6.38)	**6.01** (4.78-7.60)	**6.58** (5.11-8.52)	**7.12** (5.30-9.54)	**7.61** (5.40-10.6)	**8.21** (5.57-11.9)	**8.61** (5.69-12.9)
30-min	**2.80** (2.36-3.38)	**3.20** (2.70-3.88)	**3.83** (3.22-4.65)	**4.32** (3.60-5.28)	**4.95** (3.94-6.25)	**5.40** (4.19-6.99)	**5.82** (4.34-7.80)	**6.22** (4.41-8.67)	**6.70** (4.54-9.72)	**7.02** (4.64-10.5)
60-min	**1.88** (1.59-2.27)	**2.16** (1.82-2.61)	**2.59** (2.18-3.15)	**2.93** (2.45-3.59)	**3.36** (2.68-4.25)	**3.67** (2.85-4.74)	**3.95** (2.95-5.29)	**4.22** (2.99-5.88)	**4.53** (3.07-6.57)	**4.74** (3.13-7.09)
2-hr	**1.18** (1.00-1.42)	**1.36** (1.15-1.64)	**1.64** (1.38-1.98)	**1.85** (1.55-2.25)	**2.13** (1.70-2.67)	**2.32** (1.81-2.98)	**2.50** (1.87-3.32)	**2.66** (1.90-3.68)	**2.85** (1.95-4.11)	**2.98** (1.98-4.44)
3-hr	**0.851** (0.724-1.02)	**0.985** (0.838-1.18)	**1.19** (1.01-1.44)	**1.36** (1.14-1.64)	**1.57** (1.26-1.96)	**1.72** (1.35-2.20)	**1.86** (1.40-2.47)	**2.00** (1.43-2.76)	**2.16** (1.48-3.10)	**2.27** (1.51-3.36)
6-hr	**0.488** (0.417-0.580)	**0.561** (0.479-0.669)	**0.682** (0.580-0.815)	**0.782** (0.661-0.941)	**0.921** (0.747-1.16)	**1.03** (0.812-1.32)	**1.14** (0.862-1.51)	**1.24** (0.900-1.72)	**1.39** (0.961-2.00)	**1.50** (1.01-2.21)
12-hr	**0.279** (0.239-0.329)	**0.315** (0.270-0.373)	**0.380** (0.325-0.452)	**0.441** (0.374-0.527)	**0.532** (0.439-0.676)	**0.610** (0.488-0.788)	**0.693** (0.533-0.928)	**0.784** (0.574-1.09)	**0.914** (0.640-1.32)	**1.02** (0.689-1.49)
24-hr	**0.159** (0.137-0.187)	**0.179** (0.155-0.211)	**0.218** (0.187-0.258)	**0.256** (0.219-0.305)	**0.317** (0.265-0.404)	**0.371** (0.299-0.480)	**0.430** (0.333-0.576)	**0.496** (0.366-0.689)	**0.592** (0.418-0.853)	**0.672** (0.457-0.977)
2-day	**0.090** (0.078-0.105)	**0.103** (0.089-0.120)	**0.128** (0.110-0.150)	**0.152** (0.130-0.180)	**0.190** (0.159-0.241)	**0.223** (0.181-0.287)	**0.260** (0.203-0.346)	**0.301** (0.223-0.415)	**0.360** (0.255-0.515)	**0.408** (0.280-0.590)
3-day	**0.066** (0.057-0.076)	**0.075** (0.065-0.088)	**0.094** (0.081-0.109)	**0.111** (0.095-0.130)	**0.138** (0.116-0.174)	**0.162** (0.131-0.207)	**0.187** (0.146-0.248)	**0.216** (0.161-0.297)	**0.257** (0.183-0.367)	**0.291** (0.200-0.420)
4-day	**0.053** (0.046-0.062)	**0.061** (0.053-0.071)	**0.075** (0.065-0.087)	**0.088** (0.076-0.103)	**0.109** (0.092-0.137)	**0.127** (0.103-0.162)	**0.147** (0.115-0.193)	**0.168** (0.126-0.230)	**0.200** (0.143-0.284)	**0.226** (0.156-0.324)
7-day	**0.036** (0.032-0.042)	**0.041** (0.036-0.047)	**0.049** (0.043-0.057)	**0.057** (0.049-0.066)	**0.069** (0.058-0.085)	**0.079** (0.065-0.100)	**0.090** (0.071-0.118)	**0.102** (0.077-0.139)	**0.120** (0.086-0.169)	**0.134** (0.093-0.192)
10-day	**0.029** (0.026-0.034)	**0.033** (0.029-0.038)	**0.039** (0.034-0.045)	**0.044** (0.038-0.052)	**0.053** (0.044-0.065)	**0.060** (0.049-0.075)	**0.067** (0.053-0.088)	**0.076** (0.057-0.102)	**0.088** (0.063-0.123)	**0.097** (0.068-0.139)
20-day	**0.020** (0.018-0.023)	**0.023** (0.020-0.026)	**0.026** (0.023-0.030)	**0.030** (0.026-0.034)	**0.034** (0.029-0.041)	**0.038** (0.031-0.047)	**0.042** (0.033-0.053)	**0.046** (0.034-0.061)	**0.051** (0.037-0.071)	**0.055** (0.039-0.078)
30-day	**0.017** (0.015-0.019)	**0.019** (0.016-0.021)	**0.022** (0.019-0.025)	**0.024** (0.021-0.028)	**0.027** (0.023-0.033)	**0.030** (0.025-0.037)	**0.033** (0.026-0.041)	**0.035** (0.026-0.046)	**0.038** (0.028-0.053)	**0.041** (0.029-0.058)
45-day	**0.014** (0.012-0.016)	**0.016** (0.014-0.018)	**0.018** (0.016-0.021)	**0.020** (0.017-0.023)	**0.023** (0.019-0.027)	**0.024** (0.020-0.030)	**0.026** (0.021-0.033)	**0.028** (0.021-0.036)	**0.030** (0.021-0.041)	**0.031** (0.022-0.044)
60-day	**0.012** (0.011-0.014)	**0.014** (0.012-0.016)	**0.016** (0.014-0.018)	**0.018** (0.015-0.020)	**0.020** (0.016-0.023)	**0.021** (0.017-0.025)	**0.022** (0.018-0.028)	**0.024** (0.018-0.031)	**0.025** (0.018-0.034)	**0.026** (0.018-0.036)

[1] 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 a 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.

Estimates from the table in CSV format: Precipitation frequency estimates | Submit

Predevelopment Basin 1

	SF	AC	CN Value
Pervious:	4,847.00	0.11	0.20
Impervious:	4,183.00	0.10	0.95
Pond:	0.00	0.00	1.00
Total Area:	9,030.00	0.21	N/A
Composite CN:			0.55

Post-development Basin 1

	SF	AC	CN Value
Pervious:	4,423.00	0.10	0.20
Impervious:	4,607.00	0.11	0.95
Pond:	0.00	0.00	1.00
Total Area:	9,030.00	0.21	N/A
Composite CN:			0.58

APPENDIX

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 Orange County, Florida

August 8, 2025

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.

Map Scale: 1:1,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N 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 1:20,000.

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: Orange County, Florida
Survey Area Data: Version 21, Aug 22, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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
27	Ona-Urban land complex	0.3	2.8%
48	Tavares fine sand-Urban land complex, 0 to 5 percent slopes	9.7	97.2%
Totals for Area of Interest		**10.0**	**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.

Orange County, Florida

27—Ona-Urban land complex

Map Unit Setting

National map unit symbol: bv7w
Elevation: 50 to 130 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Ona and similar soils: 53 percent
Urban land: 40 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ona

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 3 inches: fine sand
B - 3 to 16 inches: fine sand
C - 16 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Interpretive groups

Land capability classification (irrigated): None specified
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

Minor Components

Immokalee, hydric

Percent of map unit: 7 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Yes

48—Tavares fine sand-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2y9gs
Elevation: 0 to 130 feet
Mean annual precipitation: 42 to 63 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Tavares and similar soils: 43 percent
Urban land: 37 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tavares

Setting

Landform: Flats on marine terraces, knolls on marine terraces, ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
C - 6 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: R155XY180FL - Sandy Scrub on Rises, Ridges, and Knolls of Mesic Uplands
Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G155XB121FL)
Other vegetative classification: Sandy soils on rises, knolls, and ridges of mesic uplands (G155XB121FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Interpretive groups

Land capability classification (irrigated): None specified
Ecological site: R155XY180FL - Sandy Scrub on Rises, Ridges, and Knolls of Mesic Uplands
Forage suitability group: Forage suitability group not assigned (G155XB999FL)

Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

Minor Components

Pomello

Percent of map unit: 6 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Flatwoods and Hammocks on Rises and Knolls of Mesic Uplands
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Cassia

Percent of map unit: 5 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Flatwoods and Hammocks on Rises and Knolls of Mesic Uplands
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Apopka

Percent of map unit: 4 percent
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F154XA004FL - Moist Sandy Pine-Hardwood Woodlands
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Astatula

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R155XY230FL - Sandy Scrub on Ridges, Knolls, and Dunes of Xeric Uplands
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Adamsville

Percent of map unit: 2 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Flatwoods and Hammocks on Rises and Knolls of Mesic Uplands
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Upland Hardwood Hammock (R155XY008FL)
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

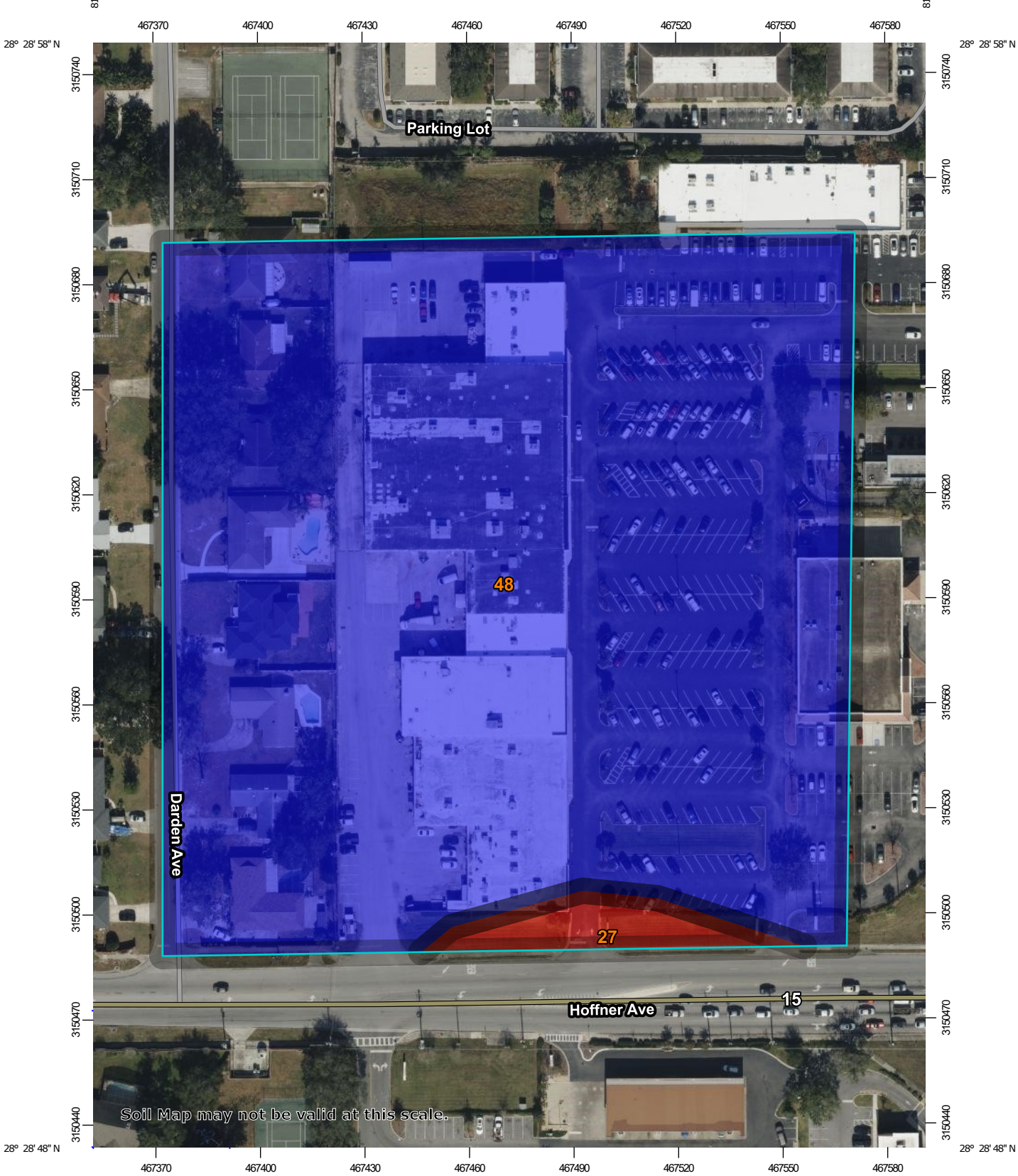
Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.



Map Scale: 1:1,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 73.9803
- > 73.9803 and <= 91.7400
- Not rated or not available

Soil Rating Lines

- <= 73.9803
- > 73.9803 and <= 91.7400
- Not rated or not available

Soil Rating Points

- <= 73.9803
- > 73.9803 and <= 91.7400
- Not rated or not available

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 1:20,000.

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: Orange County, Florida
Survey Area Data: Version 21, Aug 22, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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.

20.96 ft/day

Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
27	Ona-Urban land complex	73.9803	0.3	2.8%
48	Tavares fine sand-Urban land complex, 0 to 5 percent slopes	91.7400	9.7	97.2%
Totals for Area of Interest			**10.0**	**100.0%**

26 ft/day

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 60

Units of Measure: Inches

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map Scale: 1:1,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:20,000.

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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: Orange County, Florida
Survey Area Data: Version 21, Aug 22, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
27	Ona-Urban land complex	B/D	0.3	2.8%
48	Tavares fine sand-Urban land complex, 0 to 5 percent slopes	A	9.7	97.2%
Totals for Area of Interest			**10.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

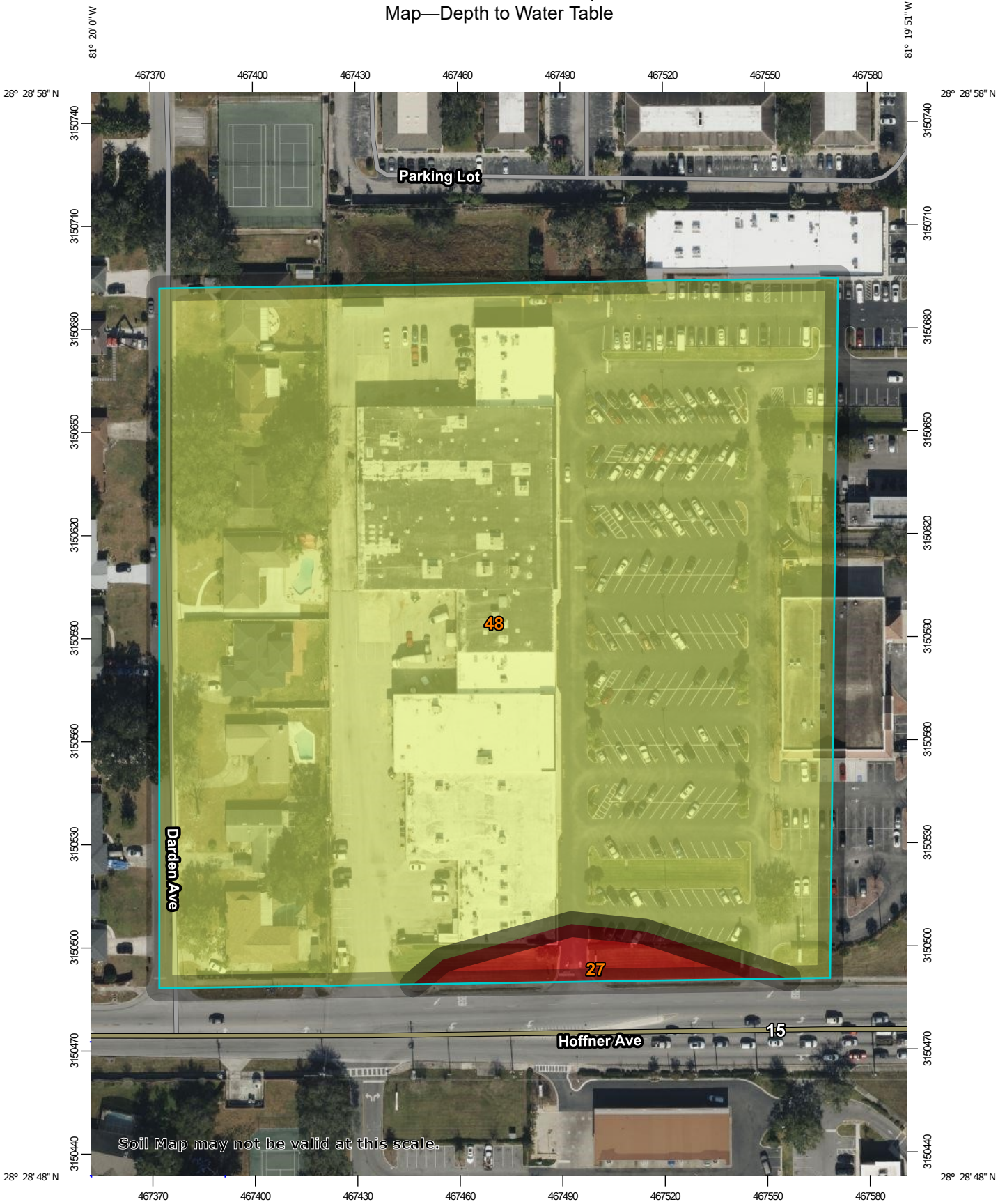
Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.



Map Scale: 1:1,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

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 1:20,000.

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: Orange County, Florida
Survey Area Data: Version 21, Aug 22, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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.

Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
27	Ona-Urban land complex	20	0.3	2.8%
48	Tavares fine sand-Urban land complex, 0 to 5 percent slopes	76	9.7	97.2%
Totals for Area of Interest			**10.0**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Water Management

This folder contains a collection of tabular reports that present soil interpretations related to water management. The reports (tables) include all selected map units and components for each map unit, limiting features and interpretive ratings. Water management interpretations are tools for evaluating the potential of the soil in the application of various water management practices. Example interpretations include pond reservoir area, embankments, dikes, levees, and excavated ponds.

Ponds and Embankments

This table gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the saturated hydraulic conductivity (Ksat) of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against

overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, Ksat of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Ponds and Embankments

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Ponds and Embankments–Orange County, Florida							
Map symbol and soil name	Pct. of map unit	Embankments, dikes, and levees		Aquifer-fed excavated ponds		Pond reservoir areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
27—Ona-Urban land complex							
Ona	53	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Unstable excavation walls	1.00	Seepage	1.00
		Seepage	1.00				
Urban land	40	Not rated		Not rated		Not rated	
48—Tavares fine sand-Urban land complex, 0 to 5 percent slopes							
Tavares	43	Very limited		Very limited		Very limited	
		Seepage	1.00	Unstable excavation walls	1.00	Seepage	1.00
		Depth to saturated zone	0.86	Depth to saturated zone	0.06		
Urban land	37	Not rated		Not rated		Not rated	

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