STORMWATER DRAINAGE CONTROL CERTIFICATE

Land Use Planning Division

www.multco.us/landuse ▪ Email: land.use.planning@multco.us ▪ Phone: (503) 988-3043

> 500 SQUARE FEET OF NEW / REPLACED IMPERVIOUS SURFACES

NOTE TO PROPERTY OWNER/APPLICANT: Please have an Oregon Licensed Professional Engineer fill out this Certificate and attach a signed site plan, stamped and signed storm water system details, and stamped and signed storm water calculations used to support the conclusion. Please note that replacement of existing structures does not provide a credit to the square footage threshold.

Property Address or Legal Description: 13937 NW Springville Rd, Portland, OR 97229

Description of Project: 50' x 50' Wireless Communication Facility

The following stormwater drainage control system will be required:

- [x] Use of Gutter, downspout, and splash block drainage control system;
- [x] Natural Infiltration Process; or
- [ ] Construction of an on-site storm water drainage control system.

The rate of stormwater runoff attributed to the new/replaced development for a 10-year/24-hour storm event will be no greater than that which existed prior to any development as measured from the property line or from the point of discharge into a water body with the use of the designated system [MCC 39.6235].

I certify the attached signed site plan showing the areas needed for the chosen system type, stamped and signed storm water system design details, and stamped and signed calculations dated 2/10/2025 **will meet the requirements listed above.**

Signature: _____ 2/10/25

Print Name: Kenny McManaway

Business Name: Cushing Civil Engineers

Address: 12725 SW Millikan Way Ste 300, Beaverton OR 97005

Phone #: 503-387-5331

Email: kenny@cushingcivilengineers.com

Date: 2/10/2025

Engineer's Stamp Below:

RENEWAL DATE 12/31/26

NOTE TO ENGINEER: Please check one box above. Multnomah County does not use the City of Portland's storm water ordinance. As part of your review, MCC 39.6235 requires that you must consider all new, replaced, and existing structures and impervious areas and determine that the newly generated stormwater from the new or replaced impervious surfaces is in compliance with Multnomah County Code for a 10-year/24-hour storm event. This Storm Water Drainage Control Certificate does not apply to shingle or roof replacement on lawfully established structures.

Exhibit A.8

§ 39.6235 STORMWATER DRAINAGE CONTROL.

(A) Persons creating new or replacing existing impervious surfaces exceeding 500 square feet shall install a stormwater drainage system as provided in this section. This subsection (A) does not apply to shingle or roof replacement on lawful structures.

(B) The provisions of this section are in addition to and not in lieu of any other provision of the code regulating stormwater or its drainage and other impacts and effects, including but not limited to regulation thereof in the SEC overlay.

(C) The provisions of this section are in addition to and not in lieu of stormwater and drainage requirements in the Multnomah County Road Rules and Design and Construction Manual, including those requirements relating to impervious surfaces and proposals to discharge stormwater onto a county right-of-way.

(D) The stormwater drainage system required in subsection (A) shall be designed to ensure that the rate of runoff for the 10-year 24-hour storm event is no greater than that which existed prior to development at the property line or point of discharge into a water body.

(E) At a minimum, to establish satisfaction of the standards in this section and all other applicable stormwater-related regulations in this code, the following information must be provided to the planning director:

(1) A site plan drawn to scale, showing the property line locations, ground topography (contours), boundaries of all ground disturbing activities, roads and driveways, existing and proposed structures and buildings, existing and proposed sanitary tank and drainfields (primary and reserve), location of stormwater disposal, trees and vegetation proposed for both removal and planting and an outline of wooded areas, water bodies and existing drywells;

(2) Documentation establishing approval of any new stormwater surcharges to a sanitary drainfield by the City of Portland Sanitarian and/or any other agency authorized to review waste disposal systems;

(3) Certified statement, and supporting information and documentation, by an Oregon licensed Professional Engineer that the proposed or existing stormwater drainage system satisfies all standards set forth in this section and all other stormwater drainage system standards in this code; and

(4) Any other report, information, plan, certification or documentation necessary to establish satisfaction of all standards set forth in this section and all other applicable stormwater-related regulations in this code, such as, but not limited to, analyses and explanations of soil characteristics, engineering solutions, and proposed stream and upland environmental protection measures.

Bethany Crest Facility

Portland, OR 97229

Stormwater Report
Revised February 10, 2025

Don Cushing Associates

cushing
Civil Engineers

"preserve and protect the general welfare of the public".

12725 SW Millikan Way, Suite 300
Beaverton, OR 97005
Ph. 503-387-5331

Prepared by Rob Howe, PM
Rev. by Kenny McManaway, PE

Contents

Attachments:

Site Plans
Topo Survey
Hydrographs
Web Soil Survey
FEMA FIRM Map

Purpose

The purpose of this stormwater report is to provide the appropriate information to obtain a site development permit. It also assures that all jurisdiction concerns have been addressed. In this stormwater report we address how stormwater will be managed for this site.

Existing Conditions

The subject site located in Multnomah County on a lot approximately 20.07 acres and zoned Exclusive Farm Use (EFU). The site is undeveloped and vacant land. The location will require clearing of trees and brush covering the ground. The site is located on a lot with no existing facilities. There is an existing private access road leading up to the site. The ground at the site location is approximately level. Per the NRCS soil survey the proposed site is located in hydrologic soil groups C and D.

Proposed Improvements

The proposed development for this site includes the construction of a communication facility within a 50'x50'. The site will include new gravel access drive, security fencing, compound gravelling, monopole 140' tall, equipment concrete pad 10'x16', radio equipment and enhanced landscaping around compound. The total new impervious gravel area will be approximately 7,358 sq. ft. The grading of site will not interrupt natural sheet flow drainage patterns and utilize the natural absorption into soil with enhanced landscaping and pervious gravel (no fines) at compound. The cuts and fills are minimal and will not require stockpiling of soil; top soil at gravel locations to be off hauled to an approved disposal location. During construction staging BMP'S for temporary erosion/sedimentation control to be implemented per county guidelines and per plan if applicable.

Table 1: Site Areas

Catchment Description	Square Feet (sf)	
	Impervious	Pervious
Pre-development	0	874,249
Post-development	7,358	866,891
Total New Impervious Area	7,358	

Infiltration

From the Web Soil Survey, the site is poorly drained with a very low to moderately low transmit capacity of 0.00 to 0.06 in/ hr.

Pre and Post Peak Flow Information

Table 1: Hydrograph Summary

	Pre-development	Post-development
2 yr	3.330 cfs	3.330 cfs
10 yr	6.368 cfs	6.368 cfs
100 yr	10.43 cfs	10.43 cfs

Table 2: Input Parameters

Drainage Area (ac.)	20.07
Curve Number	80 for open areas – 91 for gravel roads and parking lots, soil group D
Time of Concentration (min.)	25
Time Interval (min.)	2
Storm Distribution	Type 1A
Return Period (yrs) – 24 hr. precipitation (in); 2 yrs	2.56
10 yrs	3.40
100 yrs	4.40

Engineering Conclusions

As shown above, the proposed improvements will not alter the existing stormwater runoff and infiltration for the 20.07 acre parcel. The added impervious area is about 0.16 acres of the 20.07 acre parcel, about 0.8% of the parcel size. The post-development runoff rates from the site, based on 24-hour storm events ranging from the 2-year return storm to the 100-year return storm, will not exceed their respective pre-development runoff rates as shown in Table 2. The post-development curve number was derived from composite and is reflected in the hydrograph calculations.

As mitigation to accommodate development impacts:

1) Keeping natural drainage patterns and sheet flow of the site location.
2) The proposed development will be on compound rock with no fines to help infiltration to the natural soils.
3) Installation of a landscape buffer with organic mulch to help absorption into the natural grounds.
4) Addition of gutters, downspouts and splash blocks to the structure.

During construction BMP'S for temporary erosion/sedimentation control to be implemented per county guidelines and per plan if applicable.

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 02 / 07 / 2025

Hyd. No. 1

Pre Development

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.330 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.17 hrs
Time interval	=	2 min	Hyd. volume	=	66,740 cuft
Drainage area	=	20.070 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	25.00 min
Total precip.	=	2.56 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

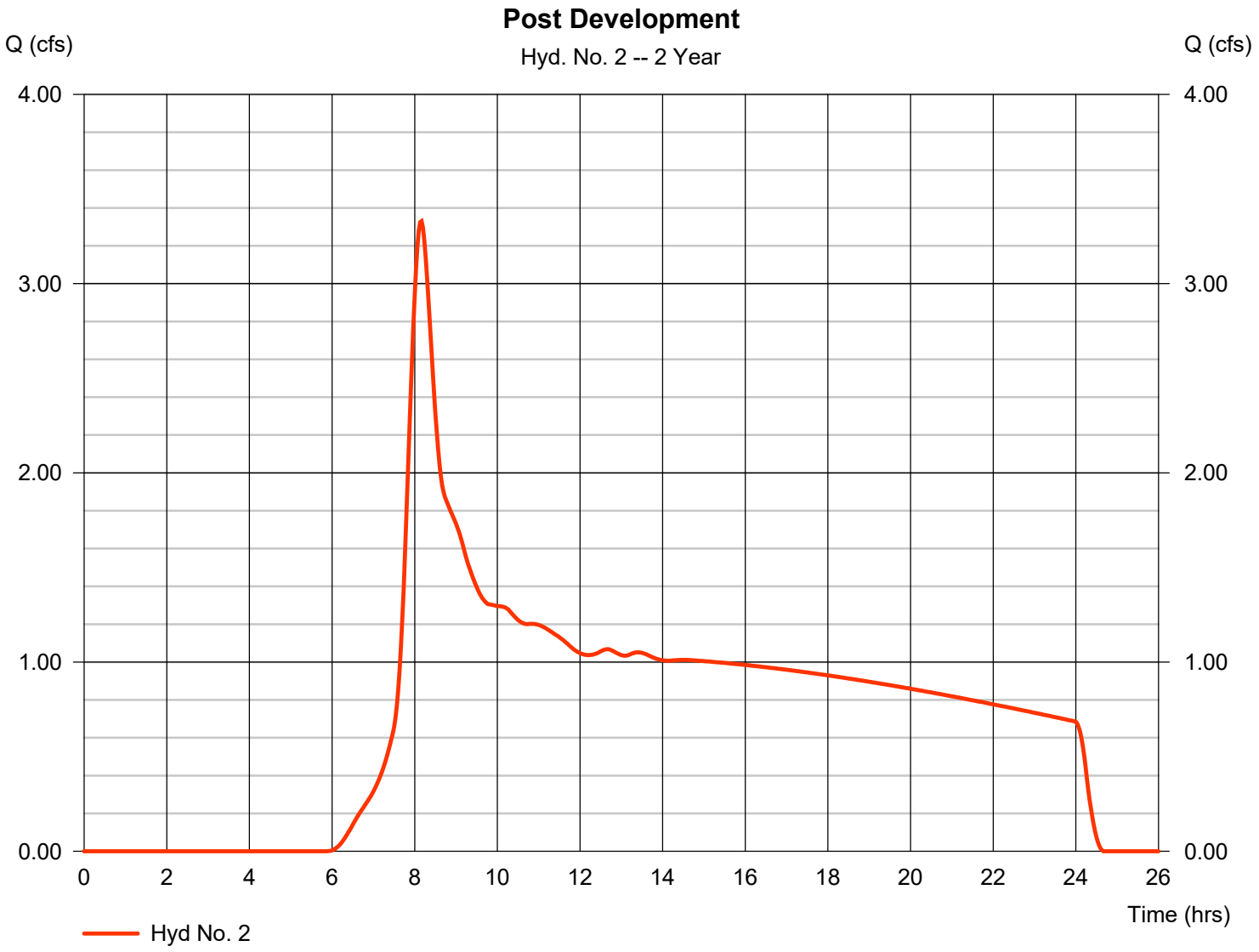
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 02 / 07 / 2025

Hyd. No. 2

Post Development

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.330 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.17 hrs
Time interval	=	2 min	Hyd. volume	=	66,740 cuft
Drainage area	=	20.070 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	25.00 min
Total precip.	=	2.56 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



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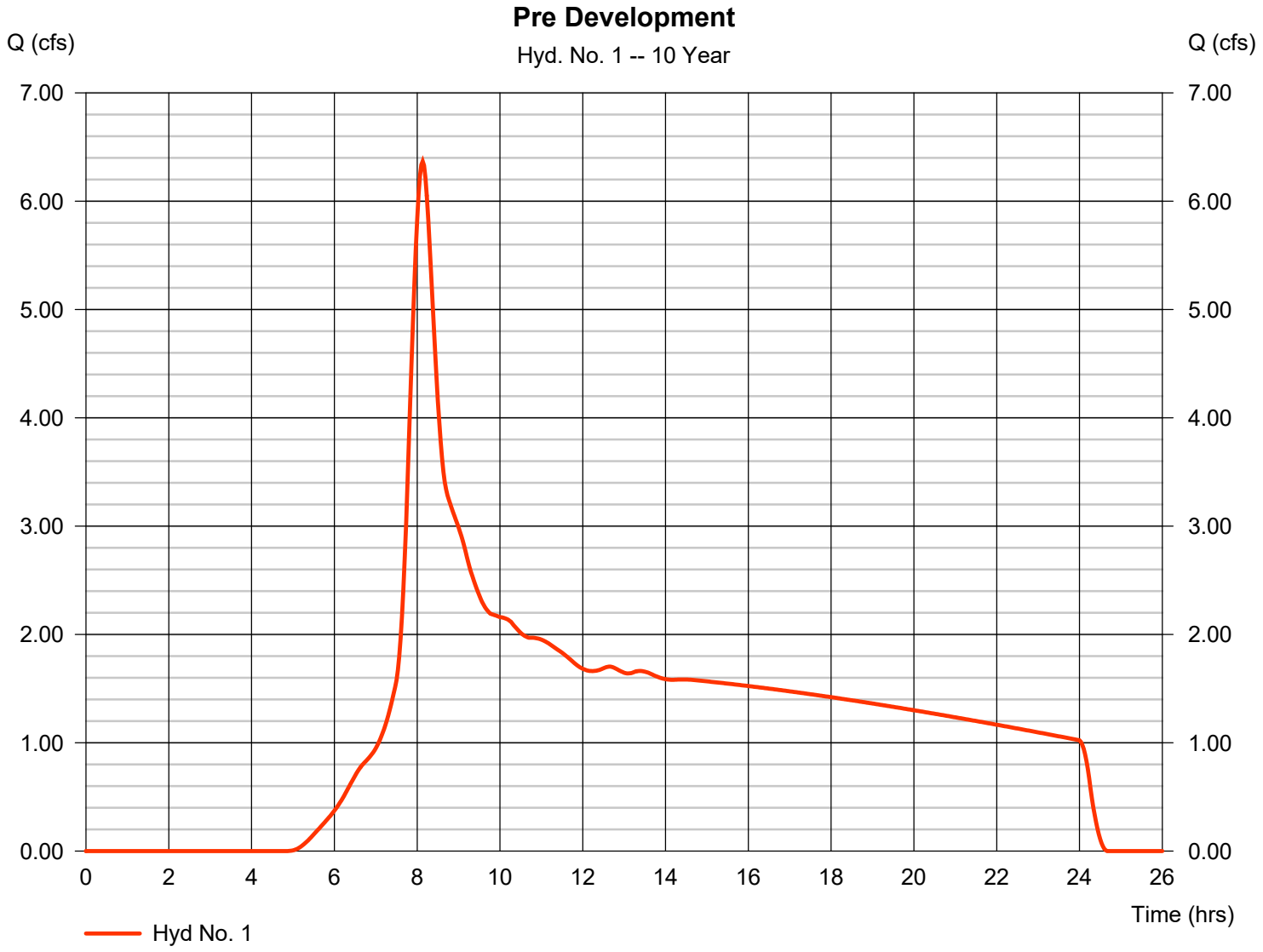
Hyd. No. 1

Pre Development

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.368 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.13 hrs
Time interval	=	2 min	Hyd. volume	=	111,691 cuft
Drainage area	=	20.070 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	25.00 min
Total precip.	=	3.40 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



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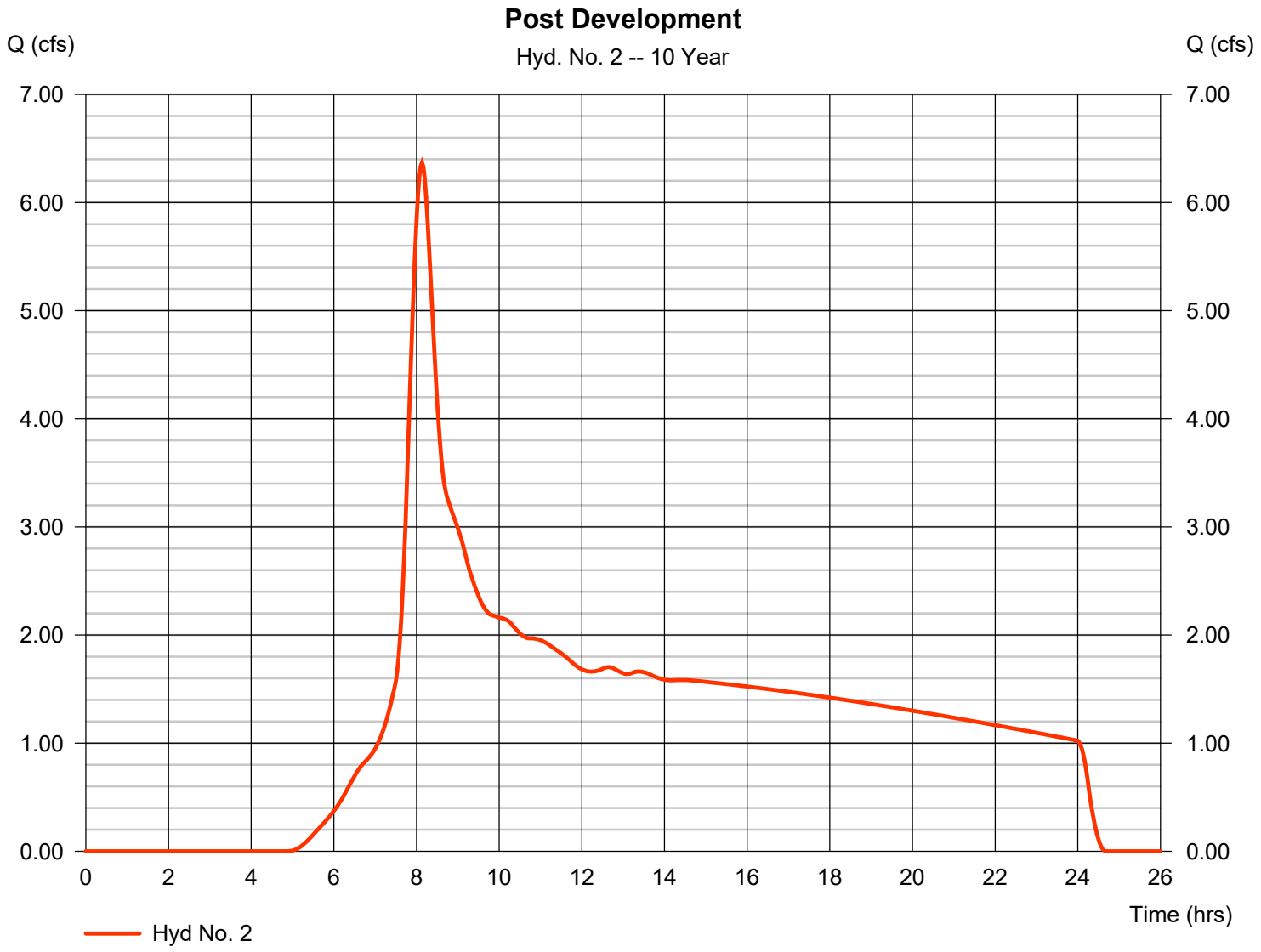

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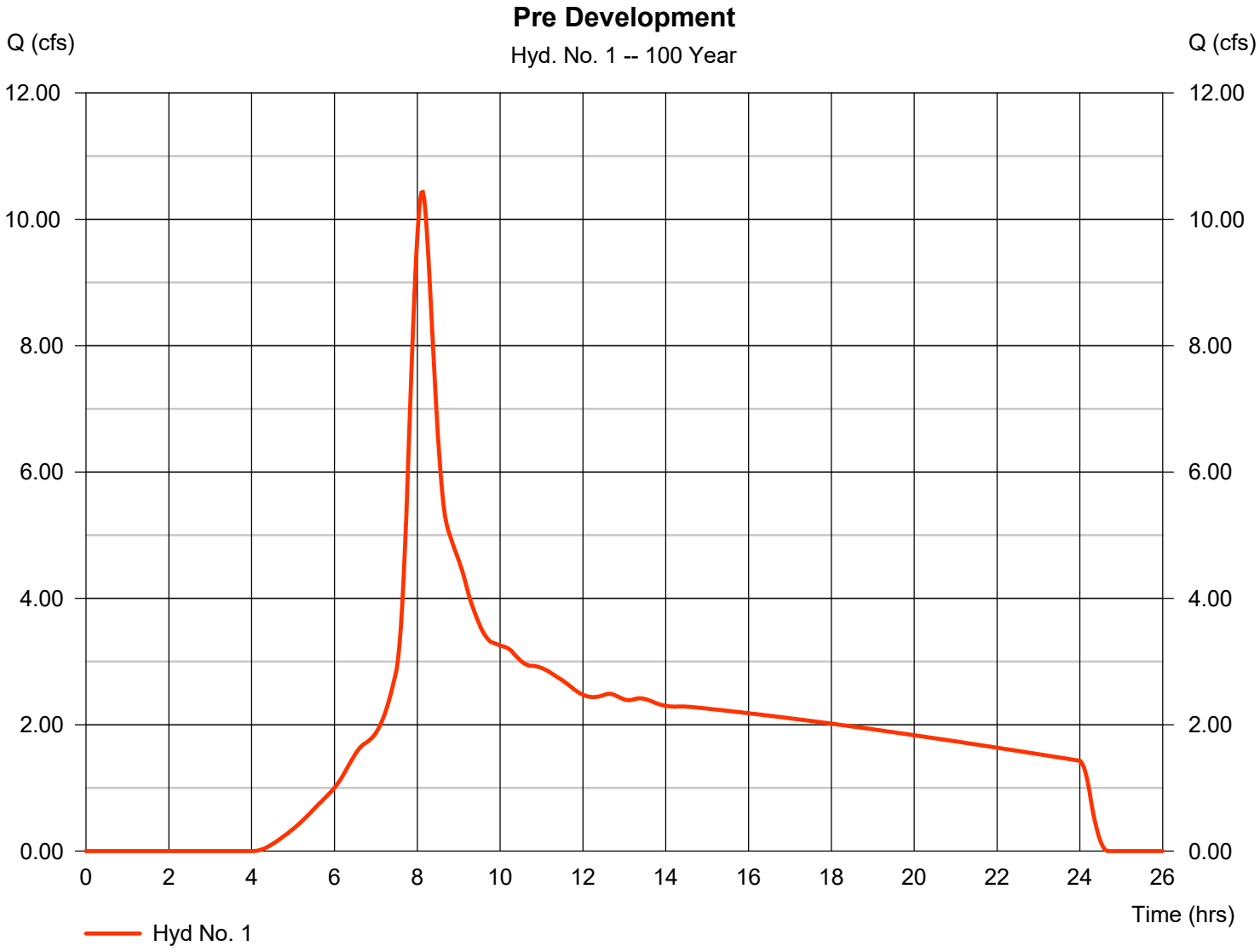
Hyd. No. 1

Pre Development

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.43 cfs
Storm frequency	=	100 yrs	Time to peak	=	8.13 hrs
Time interval	=	2 min	Hyd. volume	=	170,437 cuft
Drainage area	=	20.070 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	25.00 min
Total precip.	=	4.40 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



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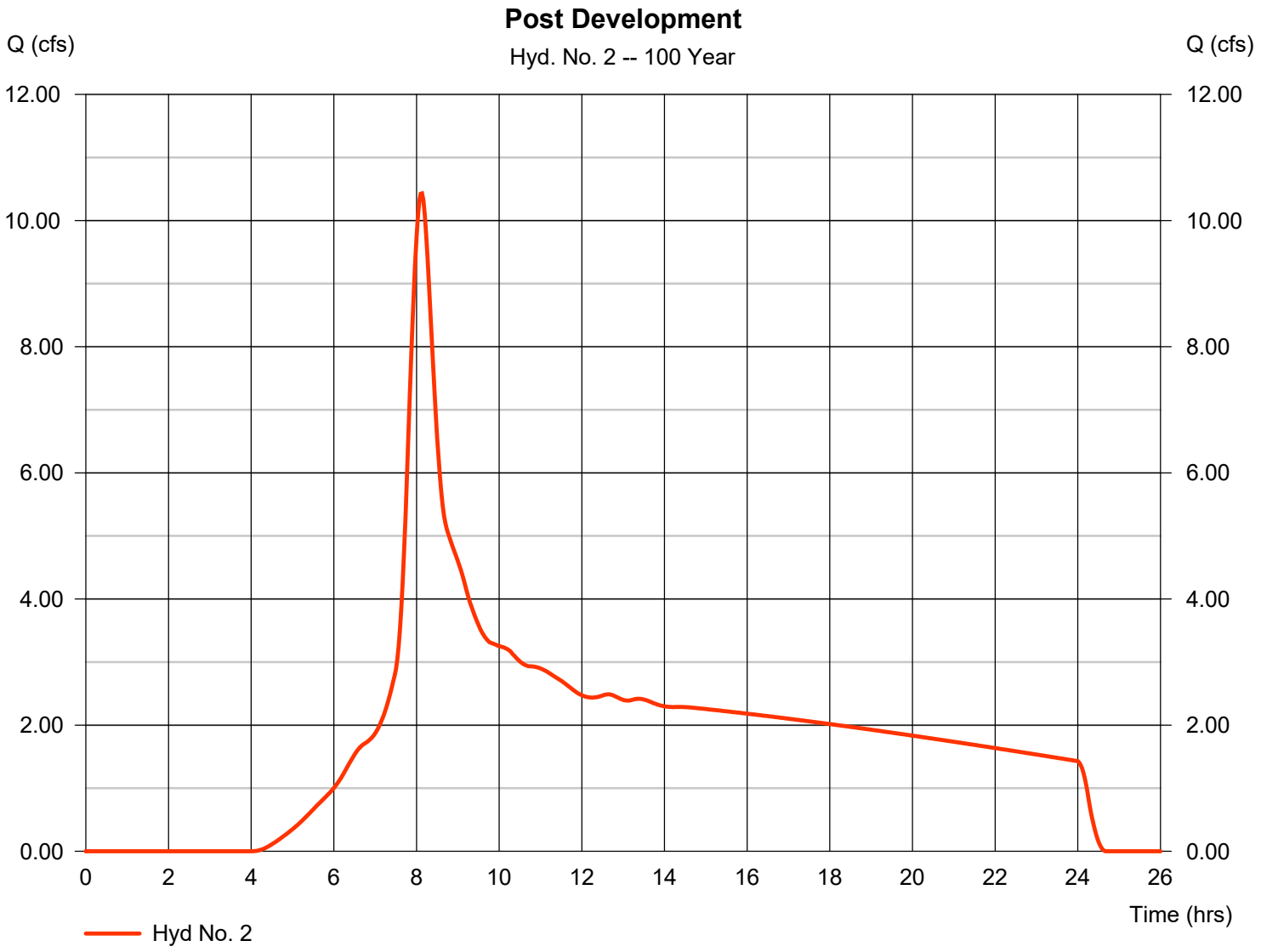


EROSION CONTROL NOTES:

1. OWNER OR DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
2. THE IMPLEMENTATION OF THESE ESC PLANS AND CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED BY THE LOCAL JURISDICTION, AND VEGETATION/LANDSCAPING IS ESTABLISHED. THE DEVELOPER SHALL BE RESPONSIBLE FOR MAINTENANCE AFTER THE PROJECT IS APPROVED UNTIL THE LOTS ARE SOLD.
3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE MARKINGS SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
4. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
5. THE ESC FACILITIES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING CONSTRUCTION PERIODS, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DOES NOT LEAVE THE SITE.
6. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
7. AT NO TIME SHALL SEDIMENT BE ALLOWED TO ACCUMULATE MORE THAN 1/3 THE BARRIER HEIGHT. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATIONS SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
8. STABILIZED GRAVEL ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
9. STORM DRAIN INLETS, BASINS, AND AREA DRAINS SHALL BE PROTECTED UNTIL PAVEMENT SURFACES ARE COMPLETED AND/OR VEGETATION IS RE-ESTABLISHED.
10. PAVEMENT SURFACES AND VEGETATION ARE TO BE PLACED AS RAPIDLY AS POSSIBLE.
11. SEEDING SHALL BE PERFORMED NO LATER THAN SEPTEMBER 1 FOR EACH PHASE OF CONSTRUCTION.
12. IF THERE ARE EXPOSED SOILS OR SOILS NOT FULLY ESTABLISHED FROM OCTOBER 1ST THROUGH APRIL 30TH, THE WET WEATHER EROSION PREVENTION MEASURES WILL BE IN EFFECT. SEE THE EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL (CHAPTER 4) FOR REQUIREMENTS.
13. NO EXPOSED, BARE SOILS SHALL REMAIN UNSTABILIZED FOR MORE THAN TWO DAYS DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30 OR FOR MORE THAN SEVEN DAYS DURING THE PERIOD OF MAY 1 THROUGH SEPTEMBER 30. ALL DISTURBED SOIL SURFACES SHALL BE STABILIZED BY A SUITABLE APPLICATION OF "BEST MANAGEMENT PRACTICES".
14. WHERE FEASIBLE, NO MORE THAN 500 FEET OF TRENCH SHALL BE OPEN AT ONE TIME. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHIL SIDE OF TRENCHES PROVIDED IT DOES NOT CONFLICT WITH SAFETY REQUIREMENTS.
15. THE DEVELOPER SHALL REMOVE ESC MEASURES WHEN VEGETATION IS FULLY ESTABLISHED.

GENERAL NOTES

SCALE: NTS | 1

PROJECT DESCRIPTION:

THE PROPOSED DEVELOPMENT FOR THIS SITE INCLUDES THE CONSTRUCTION OF A COMMUNICATION FACILITY WITHIN A 50' X 50' AREA. THE SITE WILL INCLUDE A NEW GRAVEL ACCESS DRIVE, SECURITY FENCING, COMPOUND GRAVELING, A 140' MONOFIR, 16' X 20' CONCRETE PAD, RADIO EQUIPMENT AND ENHANCED LANDSCAPING AROUND THE COMPOUND. THE TOTAL NEW IMPERVIOUS AREA WILL BE APPROXIMATELY 7,358 SQ. FT. THE FILLS ARE MINIMAL AND WILL NOT REQUIRE STOCKPILING OF SOIL; TOP SOIL AT GRAVEL LOCATIONS TO BE OFF-HAULED TO AN APPROVED DISPOSAL LOCATION. DURING CONSTRUCTION STAGING, BMPS'S FOR TEMPORARY EROSION/SEDIMENTATION CONTROL TO BE IMPLEMENTED PER COUNTY GUIDELINES AND PER PLAN, IF APPLICABLE.

PROPOSED COMPOUND AREA:
CUT: 0 CU. YD.
FILL: 0 CU. YD.

PROPOSED DRIVEWAY AREA:
CUT: 0 CU. YD.
FILL: 0 CU. YD.

STRIPPING ORGANICS FOR PROPOSED COMPOUND AREA:
CUT: 46 CU. YD.

STRIPPING ORGANICS FOR PROPOSED DRIVEWAY AREA:
CUT: 90 CU. YD.

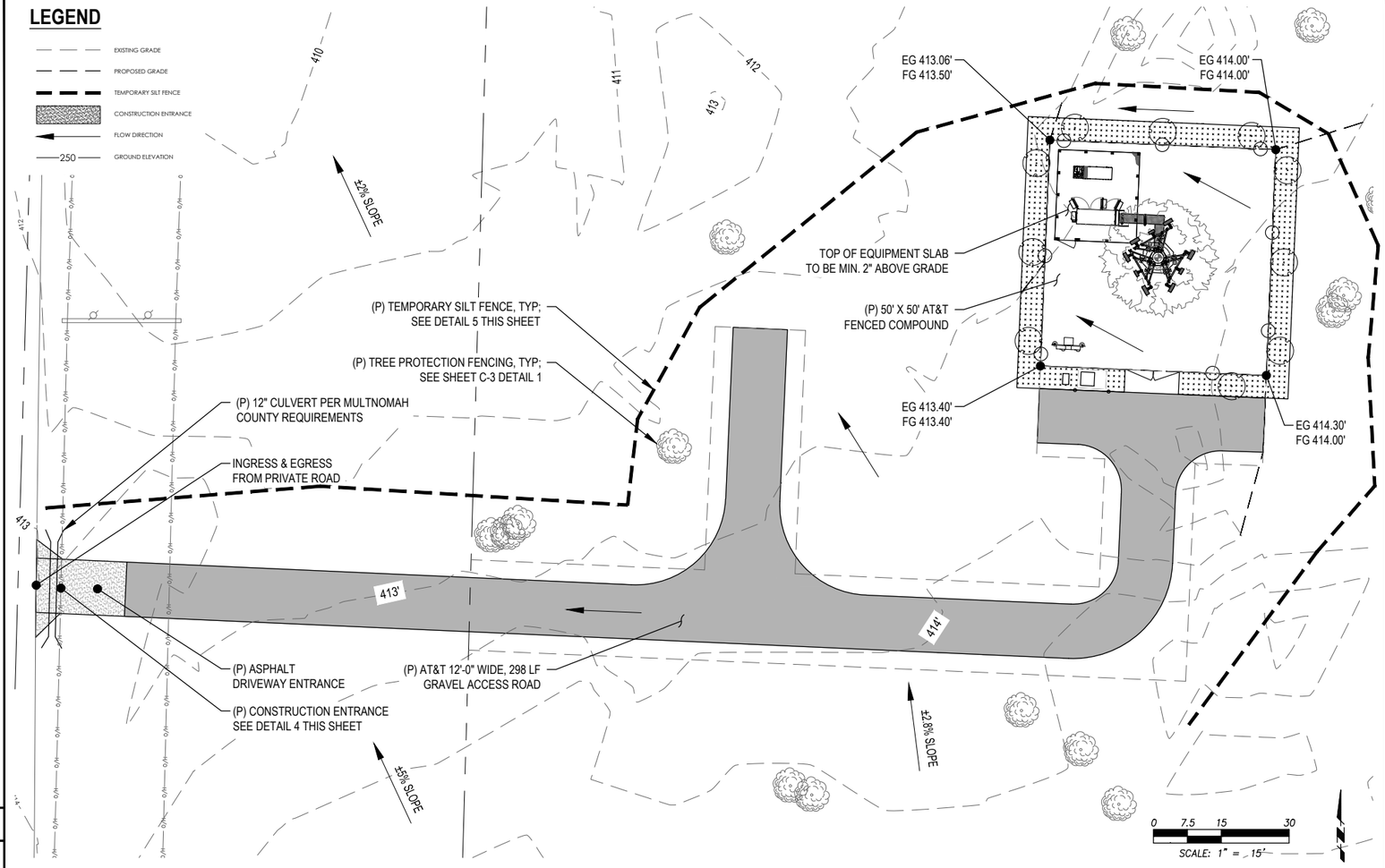
APPROX. TOTAL AREA OF DISTURBANCE (NEW IMPERVIOUS AREA):
4858 SQ. FT. (NEW ACCESS DRIVE & HAMMERHEAD)
2500 SQ FT (NEW GRAVEL COMPOUND)
7358 SQ FT

PROJECT DESCRIPTION, CUT & FILL QTY

SCALE: NTS | 3

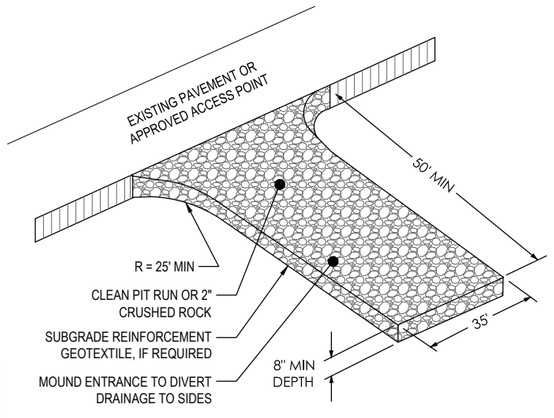
LEGEND

EXISTING GRADE
PROPOSED GRADE
TEMPORARY SILT FENCE
CONSTRUCTION ENTRANCE
FLOW DIRECTION
250 GROUND ELEVATION



GRADING & EROSION CONTROL PLAN

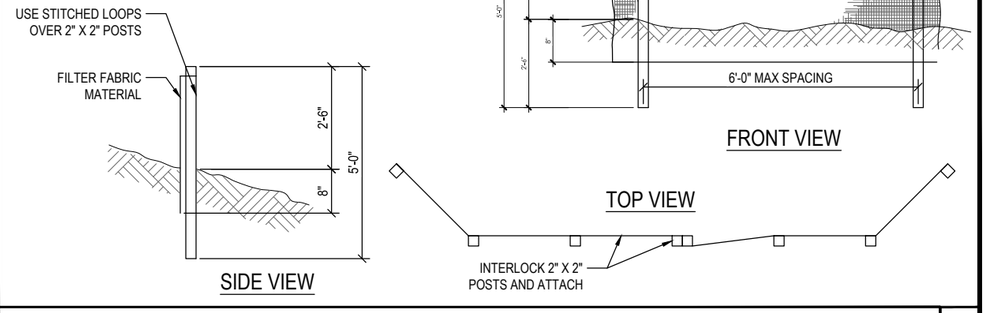
11X17 SCALE: 1" = 30' | 22X34 SCALE: 1" = 15' | 2



CONSTRUCTION ENTRANCE

SCALE: NTS | 4

NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" BELOW FINISHED GRADE, 2" X 2" FIR, PINE, OR STEEL.
2. FENCE POSTS W/ STITCHED LOOPS TO BE INSTALLED ON THE UPHILL SIDE OF THE SLOPE.
3. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.



TEMPORARY SILT FENCE

SCALE: NTS | 5

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cushing Civil Engineers
12725 SW MILLIKAN WAY, SUITE 300
BEAVERTON, OR 97005, (503) 397-5331
www.cushingengineers.com

DRAWN BY:	KT
CHECKED BY:	KM

DRAWING VERSION

VER.	DATE	DESCRIPTION
1	03/28/23	ZONING DRAWINGS
2	02/10/25	REVISED ZONING DRAWINGS

LICENSER

PRELIMINARY UNLESS SIGNED

NOT FOR CONSTRUCTION

PROJECT INFORMATION

PD31
BETHANY CREST

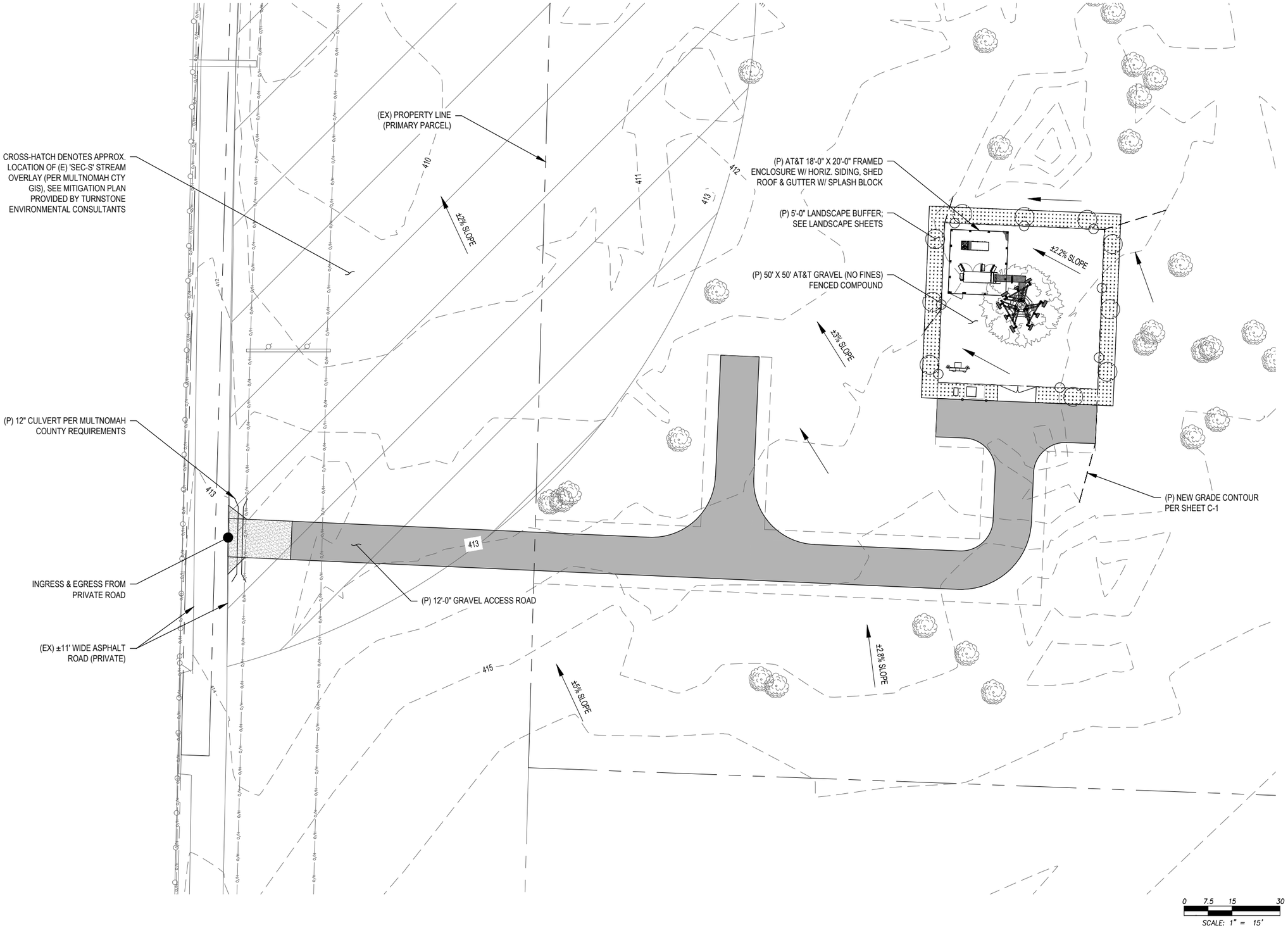
PARCEL #R324301
13937 NW SPRINGVILLE ROAD
PORTLAND, OR 97229

SHEET TITLE

GRADING, DRAINAGE & EROSION CONTROL PLAN

SHEET NO.

C-1



DRAINAGE PLAN

11X17 SCALE: 1" = 30'	22X34 SCALE: 1" = 15'	1

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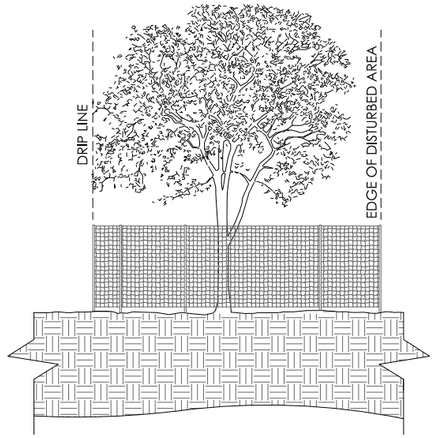
SHEET TITLE

DRAINAGE PLAN

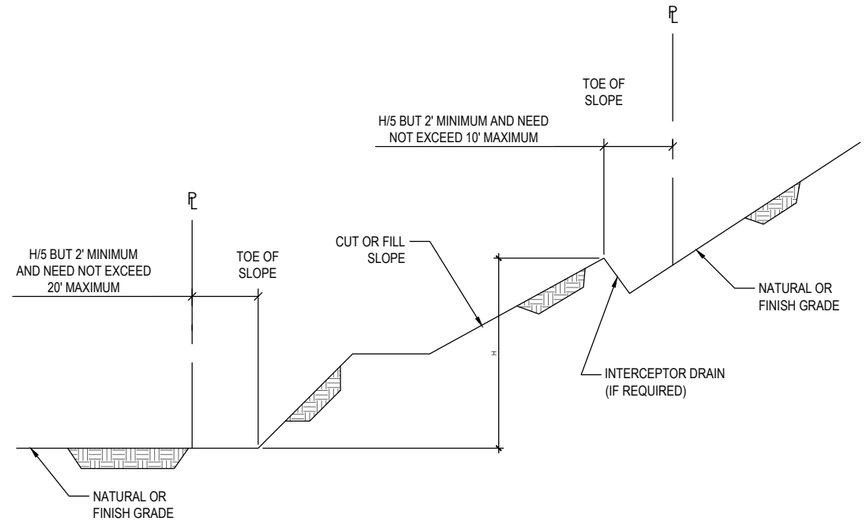
SHEET NO.

C-2



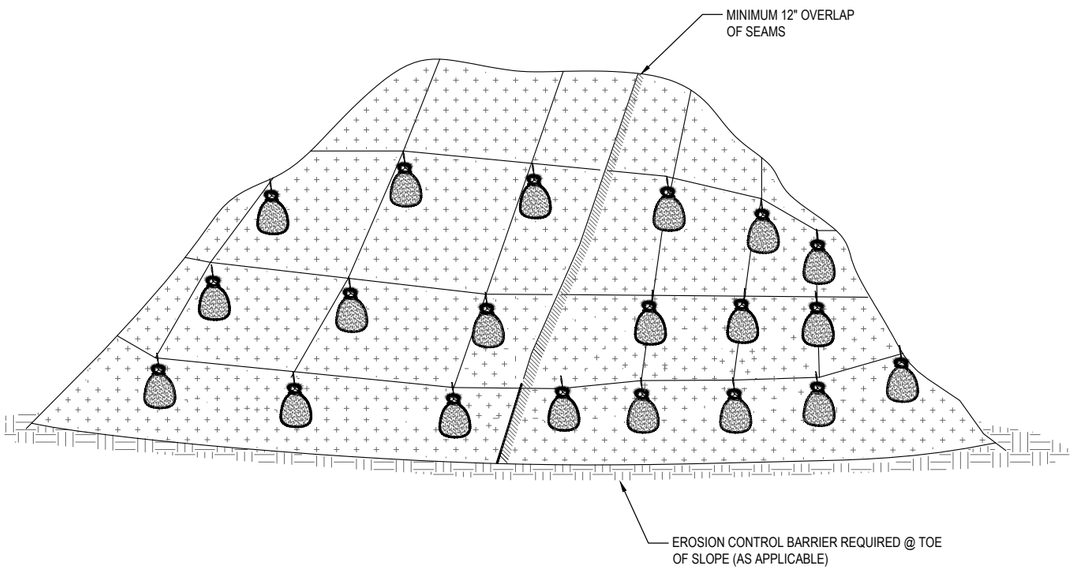
NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS SHOWN.
2. INSTALL TREE PROTECTION FENCE AT THE TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, PRIOR TO START OF CONSTRUCTION.
3. FENCE MATERIAL SHALL BE ORANGE, UV RESISTANT, HIGH TENSILE STRENGTH POLYETHYLENE LAMINAR BARRICADE FENCING W/ 1.33 LBS/LF STEEL POSTS, SPACED 4'-0" MAXIMUM. POSTS SHALL BE 4'-0" ABOVE GRADE, MINIMUM, AND 2'-0" BELOW GRADE, MINIMUM.
4. TREE PROTECTION FENCING SHALL BE ERECTED AND MAINTAINED THROUGH THE DURATION OF THE PROJECT.
5. STORAGE OF MATERIALS WITHIN THE TREE PROTECTION FENCING ZONE IS PROHIBITED.

TREE PROTECTION FENCE — SCALE: NTS — 1



SETBACKS AND DRAINAGE DIMENSIONS — SCALE: NTS — 2

NOTES:
1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. BARRIER REQUIRED @ TOE OF STOCK PILE.
3. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS OR APPROVED EQUAL ON ROPES WITH A MAXIMUM 10' GRID SPACING IN ALL DIRECTIONS.
4. PLASTIC TO EXTEND MINIMUM 1' BEYOND TOE OF SLOPE.



PLASTIC SHEETING — SCALE: NTS — 3

NOT USED — SCALE: NTS — 4

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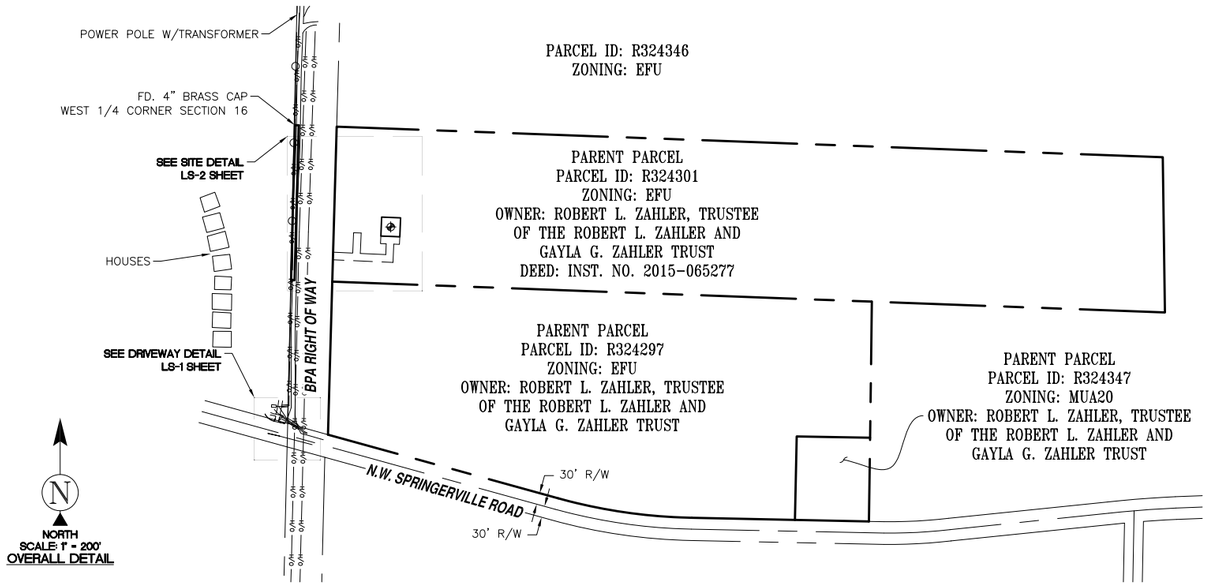
13937 NW SPRINGVILLE ROAD
PORTLAND, OR 97229

SHEET TITLE

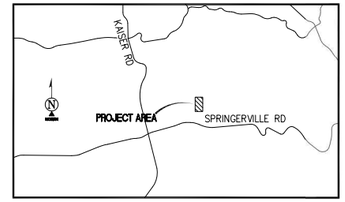
EROSION CONTROL DETAILS

SHEET NO.

C-3



OVERALL DETAIL

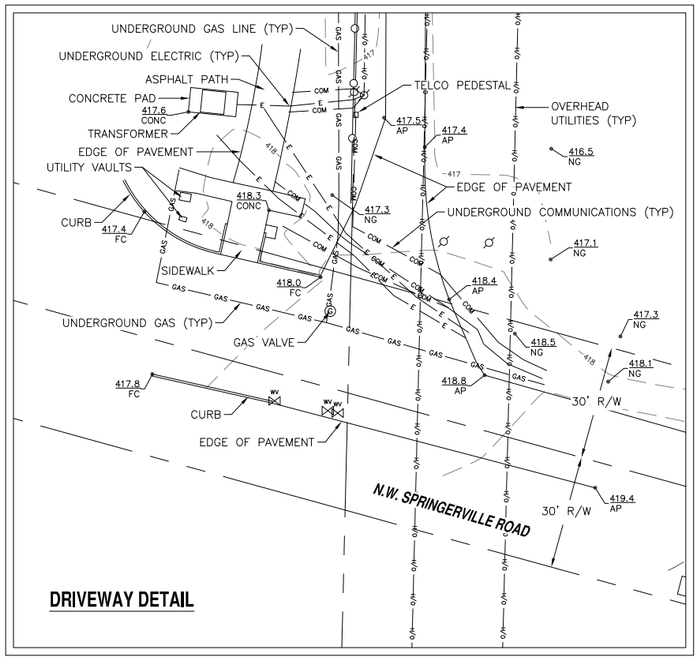


VICINITY MAP
N.T.S.

LEGEND

AP	ASPHALT		FIRE HYDRANT
CLF	CHAIN LINK FENCE		UTILITY POLE
CONC	CONCRETE		POSITION OF GEODETIC COORDINATES
D/W	ACCESS DRIVEWAY		
EP	EDGE OF PAVEMENT		SPOT ELEVATION
NG	NATURAL GRADE		
R/W	RIGHT OF WAY		WATER CONTROL VALVE
	TREES		GAS VALVE
	PINE TREES		

CHAIN LINK FENCE
GAS LINES
OVERHEAD LINES
ELECTRIC LINES
COMMUNICATION LINES
STREET CENTERLINES
SUBJECT PROPERTY LINE
ADJACENT PROPERTY LINE
EASEMENT LINES
TIE LINES
LEASE AREA LIMITS
MAJOR CONTOUR INTERVAL
MINOR CONTOUR INTERVAL



DRIVEWAY DETAIL

SURVEY DATE
11/05/2021

BASIS OF BEARING
BEARINGS SHOWN HEREON ARE BASED UPON THE OREGON ZONE NORTH STATE PLANE COORDINATE SYSTEM BASED ON THE NORTH AMERICAN DATUM OF 1983(2011) (EPOCH 2010.00). DETERMINED BY GLOBAL POSITIONING SYSTEM EQUIPMENT OBSERVATIONS ON THE OREGON REAL-TIME GNSS NETWORK (ORGN).

BENCHMARK
PROJECT ELEVATIONS ESTABLISHED FROM GPS DERIVED ORTHOMETRIC HEIGHTS BY APPLICATION OF NGS 'GEOID 12B' MODELED SEPARATIONS TO ELLIPSOID HEIGHTS DETERMINED BY REAL TIME KINETIC (RTK) GPS DATA PROCESSED ON THE OREGON REAL-TIME GNSS NETWORK (ORGN). ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO NAVD88.

FLOOD ZONE
THIS PROJECT APPEARS TO BE LOCATED WITHIN FLOOD ZONE "X". ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP(S), MAP ID #41051C0130H, DATED 12/18/2009.

UTILITY NOTES
SURVEYOR DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THEIR LOCATIONS ARE DEFINITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND DEVELOPER TO CONTACT 811 AND ANY OTHER INVOLVED AGENCIES TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. REMOVAL, RELOCATION AND/ OR REPLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

SCHEDULE "B" NOTE
REFERENCE IS MADE TO THE OWNERSHIP AND ENCUMBRANCE REPORT ORDER #102147719, ISSUED BY PRIORITY TITLE AND ESCROW, DATED NOVEMBER 5, 2021.

THERE ARE NO ENCUMBRANCES CONTAINED WITHIN SAID TITLE REPORT AFFECTING THE IMMEDIATE AREA SURROUNDING THE LEASE OR THE LESSOR'S PARCEL.

SCHEDULE "B" SUMMARY
THE SURVEYORS OPINION IS THAT NO SCHEDULE "B" ITEMS PROVIDED BY SAID REPORT AFFECT THE PROPOSED LEASE AND EASEMENT AREAS SHOWN HEREON.

LESSOR'S LEGAL DESCRIPTION
PARCEL I:

TRACT A:

ALL THE FOLLOWING DESCRIBED PROPERTY EXCEPT THE EASTERLY 1,639.90 FEET THEREOF:

ALL THAT PORTION OF THE SOUTH HALF OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN IN THE COUNTY OF MULTNOMAH AND STATE OF OREGON, LYING NORTH OF THE NORTH LINE OF THE JACOB FRENCH D.L.C., AND WESTERLY OF THE NORTHERLY EXTENSION OF THE EAST LINE OF THE SAID JACOB FRENCH D.L.C.

TRACT B:

BEGINNING WHERE THE NORTH LINE OF THE J. R FRENCH D.L.C. IN SECTION 16, TOWNSHIP 1 NORTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF MULTNOMAH AND STATE OF OREGON INTERSECTS THE SECTION LINE BETWEEN SECTIONS 16 AND 17 OF SAID TOWNSHIP/RANGE; THENCE SOUTH 6.32 CHAINS; THENCE SOUTH 87°30' EAST, 13.18 CHAINS; THENCE NORTH 9.38 CHAINS TO THE NORTH LINE OF SAID D.L.C.; THENCE NORTH 88°45' WEST, 12.75 CHAINS TO THE PLACE OF BEGINNING.

TRACT C:

THE FOLLOWING DESCRIBED REAL PROPERTY SITUATED IN THE COUNTY OF MULTNOMAH AND STATE OF OREGON AND BEING A PART OF THE J. R. FRENCH D.L.C. IN SECTION 16, TOWNSHIP 1 NORTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF MULTNOMAH AND STATE OF OREGON AND BEGINNING AT A POST ON THE NORTH OF SAID J. R. FRENCH D.L.C. 33.92 CHAINS EAST OF THE NORTHWEST COMER OF SAID CLAIM; THENCE EAST 10.67 CHAINS TO A POST; THENCE SOUTH 9.38 CHAINS TO A POST THENCE WEST 10.67 CHAINS TO A POST; THENCE NORTH 9.38 CHAINS TO THE PLACE OF BEGINNING.

PARCEL II:

A TRACT OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF MULTNOMAH AND STATE OF OREGON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 16; THENCE SOUTH 0°15' EAST ALONG THE WEST LINE OF SAID SECTION, 409.20 FEET TO A POINT; THENCE SOUTH 89° 13' EAST, 1545.72 FEET TO THE NORTHWEST CORNER OF A TRACT DESCRIBED IN DEED RECORDED FEBRUARY 11, 1949 IN BOOK 1319, PAGE 96. MULTNOMAH COUNTY DEED RECORDS; THENCE SOUTH 0°25'30" EAST ALONG THE WEST LINE OF SAID TRACT TO AN IRON PIPE SET IN THE NORTHERLY LINE OF THE N.W. SPRINGVILLE ROAD, #1328-60 AND THE POINT OF BEGINNING; THENCE SOUTH 89°36' WEST ALONG THE NORTHERN LINE OF SAID ROAD, 193.71 FEET TO A POINT; NORTH 0°25'30" WEST, 224.87 FEET TO A POINT; THENCE NORTH 89°36' EAST, 193.71 FEET TO A POINT; THENCE SOUTH 0°25'30" EAST, 224.87 FEET TO THE POINT OF BEGINNING.

at&t

PROJECT INFORMATION:

BETHANY CREST
PD31

NO ADDRESS
PORTLAND, OR 97229

MULTNOMAH COUNTY

ORIGINAL ISSUE DATE:

12/13/2021

REV.:	DATE:	DESCRIPTION:	BY:
A	12/13/2021	PRELIMINARY	DH
0	08/03/2022	UPDATE	PD
1	02/28/2023	REVISE LEASE LOCATION (C)	CK

PROJECT COORDINATION:

CAPITAL DESIGN SERVICES
2101 4TH AVE E, SUITE 202
OLYMPIA, WA 98506
360.991.1501
WWW.CAPITALDESIGNSERVICES.COM

SURVEY PREPARED BY:

ambit consulting
1229 CORNWALL AVE.
SUITE 301
BELLINGHAM, WA 98402
PH. (480) 659-4072
www.ambitconsulting.us

DRAWN BY:	CHK.:	APV.:
DH	PD	XX

LICENSER:

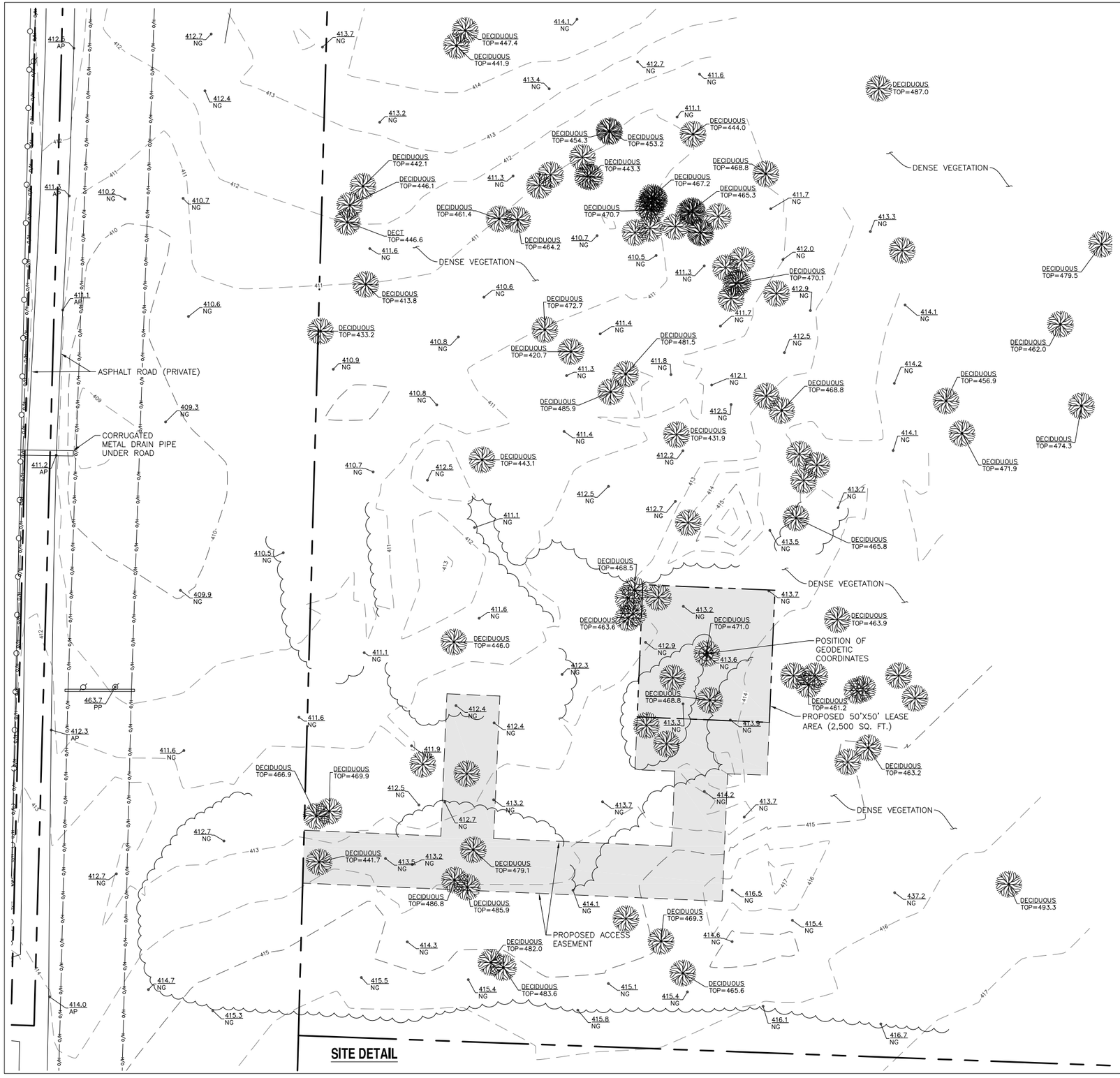
PRELIMINARY

SHEET TITLE:

SITE SURVEY

SHEET NUMBER:

LS-1



at&t

PROJECT INFORMATION:

BETHANY CREST
PD31

NO ADDRESS
PORTLAND, OR 97229

MULTNOMAH COUNTY

ORIGINAL ISSUE DATE:

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DRAWN BY:	CHK.:	APV.:
DH	PD	XX

LICENSER:

PRELIMINARY

SHEET TITLE:

SURVEY DETAIL

SHEET NUMBER:

LS-2

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 Multnomah County Area, Oregon

March 28, 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.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,000 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 10N 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: Multnomah County Area, Oregon
Survey Area Data: Version 21, Sep 14, 2022

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

Date(s) aerial images were photographed: Apr 16, 2021—Apr 18, 2021

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
7B	Cascade silt loam, 3 to 8 percent slopes	9.8	77.2%
10B	Cornelius silt loam, 3 to 8 percent slopes	0.4	3.5%
14C	Delena silt loam, 3 to 12 percent slopes	2.4	19.3%
Totals for Area of Interest		**12.6**	**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.

Multnomah County Area, Oregon

7B—Cascade silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 22cq
Elevation: 250 to 1,400 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Cascade and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cascade

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 27 inches: silt loam
H3 - 27 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 30 inches to fragipan
Drainage class: Somewhat poorly drained
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: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: F002XB005OR - Loess Hill Group
Forage suitability group: Somewhat Poorly Drained (G002XY005OR)
Other vegetative classification: Somewhat Poorly Drained (G002XY005OR)
Hydric soil rating: No

10B—Cornelius silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 228c
Elevation: 250 to 1,400 feet
Mean annual precipitation: 40 to 70 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cornelius and similar soils: 90 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cornelius

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty materials over mixed old alluvium

Typical profile

H1 - 0 to 20 inches: silt loam
H2 - 20 to 33 inches: silty clay loam
H3 - 33 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 30 to 40 inches to fragipan
Drainage class: Moderately well drained
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: About 27 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F002XB005OR - Loess Hill Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Delena

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

14C—Delena silt loam, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: 228l
Elevation: 250 to 1,400 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Delena and similar soils: 90 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Delena

Setting

Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty material

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 23 inches: silty clay loam
H3 - 23 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 30 inches to fragipan
Drainage class: Poorly drained
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: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F002XB004OR - Fragipan Hill Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Delena, 12-20% slopes

Percent of map unit: 4 percent
Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

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NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was State Plane Zone (FIPS zone 3601). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Multnomah County (2004), City of Portland (2008), State of Oregon (2006), and USDA-FSA (2005). This information was compiled at a scale of 1:24,000.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A Cross section line

23 — 23 Transect line

45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

3100000 FT 5000-foot ticks: Oregon State Plane North Zone (FIPS Zone 3601), Lambert Conformal Conic projection

5000 FT 1000-meter Universal Transverse Mercator grid values, zone 10N

DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 18, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0130H

FIRM

FLOOD INSURANCE RATE MAP

MULTNOMAH COUNTY, OREGON AND INCORPORATED AREAS

PANEL 130 OF 550

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MULTNOMAH COUNTY	410179	0130	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41051C0130H
EFFECTIVE DATE
DECEMBER 18, 2009

Federal Emergency Management Agency