



Memorandum

DATE: December 28, 2020

TO: Kristen C. Reid, kristen@belcherswanson.com

FROM: Patrick J. Togher, PWS, patrick.togher@pbsusa.com

PROJECT: 41670.000

REGARDING: Mayo Property Watercourse Assessment Memorandum

PBS Engineering and Environmental Inc. (PBS) has been retained by Belcher Swanson PLLC. to assess critical areas and buffers on or near the residential property located at 7025 N Mercer Way in the City of Mercer Island, Washington. The owners wish to sell the subject property (Parcel No. 7355700191) and have been informed there is a potential watercourse present on the property immediately to the west. This watercourse was tentatively typed as a Type Ns stream (non-fishbearing seasonal), with a 60-foot standard buffer and additional building setback limits which would extend onto the subject property. Since purchasers would likely wish to build a new home on the property, the presence of the regulatory buffer and setback would constrain future development. Belcher Swanson has requested, but not received, a definitive answer from the City regarding the type and applicable regulatory buffers for this feature.

PBS has prepared this Watercourse Assessment Memorandum to provide a professional opinion regarding whether the feature located to the west of the subject property meets the City of Mercer Island definitions of a watercourse and a Type Ns water type. The following sections of the memorandum describe the field and office methods employed, results, and our conclusions.

METHODS

The study consisted of two components: an office review and field investigation. The methods for each component are described below.

Office Review

The following information was reviewed to assist in determination of watercourse presence and type :

- Current and historic precipitation data from United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS), used to assess whether normal rainfall conditions were present at the subject property prior to the field investigation.
- City of Mercer Island Information and Geographic Services online Mapping Portal (IGS), to view mapped watercourses, buffers, and stormwater utility connections in the project area.
- A Developable Area Map of the subject property which shows site topography, the boundary and extent of the watercourse where closest to the subject property, and buffer limits (Prepared by Freeland & Associates based on information by others).
- Current and historic aerial photography of the site (Google Earth).

Field Investigation

A field investigation was conducted to determine the presence/location of a regulated watercourse on the parcel west of the Mayo property. The investigation was conducted using the guidance in *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar 2014). The findings are based on the definitions of regulated waters in the Final Rule for The Navigable Waters Protection Rule: Definition of “Waters of the United States” by USACE and USEPA (Final Rule, 85 FR 22250, effective June 22, 2020), the Washington Administrative Code (WAC) 220-660-030 and the Revised Code of Washington (RCW) 90.58.030, and the definitions of watercourses and stream types in the City of Mercer Island City Code (MICC 19.16.010). No boundary flagging was placed, but site photographs were taken to document the conditions existing at the time of the investigation.

RESULTS

The results of the office review and field investigation are described below. These results reflect the conditions present at the site at the time of the investigation, regulations in force, and the best professional judgement of PBS staff.

Office Review

Recent Precipitation

Precipitation levels are considered normal when the probability of that rainfall amount for a given month is greater than or equal to 30% either side of the mean. The nearest NRCS Climate Analysis for Wetlands Tables (WETS) stations for which this information is available is at Seattle Tacoma Airport, in the City of SeaTac, Washington. Precipitation for the 3-month interval prior to the field investigation (September through November of 2020) was evaluated, and the results are displayed in the table below (Table 1).

Table 1. Monthly Precipitation in Inches and “Normal” Range at the Seattle Tacoma Airport, SeaTac, Washington

Month	SeaTac Airport 1971–2000		Monthly Average	Monthly Total Rainfall, 2020	Condition	Value	Weight	Total
	30% chance will have							
	Less than	More than						
September	0.69	1.9	1.63	2.48	Wetter	3	1	3
October	1.96	3.86	3.19	2.58	Normal	2	2	4
November	4.1	7.02	5.9	5.58	Normal	2	3	6
Total								13

Data from AgACIS (Seattle Tacoma Airport WETS), Western Regional Climate Center (NRCS, 2020a).
 Dry = 6 – 9 points; Normal = 10 – 14 points; Wet = 15 – 18 points

The overall precipitation for the 3-month period preceding the field investigation was normal. Approximately 2.38-inches of precipitation was recorded in the 13 days of December preceding the field investigation. This is approximately ½ of the average total rainfall for December, and so is consistent with normal rainfall for this portion of the month.

Review of Maps and GIS Data

Mapping from the City of Mercer Island (Figure 1) shows an open watercourse (Feature A) to the west of the subject property. As mapped by this City, Feature A originates approximately 350 feet to the south of N Mercer Way. The open channel terminates on the south side of N Mercer Way, where the water enters a series of 18-inch concrete pipes and catchbasins (Figure 2). The pipes continue northward for approximately 400 feet, ending at an outfall on Lake Washington. The City mapping portal identifies the open portion of Feature A as a Type Ns with a 60-foot wide buffer, and the piped portion as having a 45-foot "setback" (Figure 1).

PBS evaluated the contributing basin for Feature A using data from the City of Mercer Island Stormwater Map (Figure 2). This basin includes the area north of Aubrey Davis Park, east of W Mercer Way, west of 72nd Avenue SE, and south of N Mercer Way, which totals approximately 11.2 acres.

Field Investigation

PBS Senior Scientist Patrick Togher (PWS 1659) conducted a field investigation on December 14th, 2020 with supplemental site visits to confirm hydrology on December 15 and 17, 2020.

Channel Characteristics

A clearly defined linear swale (Feature A) is present along the bottom of the south to north trending ravine. Feature A begins on Parcel 735570-0210 (1818 70th Avenue SE) and continues northward across Parcel 735570-0200 (1804 70th Avenue SE). The open channel ends at a concrete culvert under N Mercer Way (Figure 3, site photographs), and has a total length of approximately 100 feet.

Approximately 1 inch of water was present in Feature A during all three site visits. This water enters Feature A in two forms: as runoff from surrounding residential parcels; and as stormwater collected from W Mercer Way, 72nd Avenue SE, SE 20th Street, and N Mercer Way. The residential runoff is conveyed to Feature A as overland flow and via stormwater pipes. The roadway runoff is collected in a series of open ditches and culverts that outfall to the east and west banks of Feature A at N Mercer Way.

Upslope of N Mercer Way, Feature A has a distinct break in slope that differentiates the bed and bank. The ordinary high water mark (OHWM) ranges in width from approximately 48 to 60 inches. Above the OHWM of Feature A, the banks are approximately 4-6 inches high in the areas adjoining the subject property and appear to be composed of native earth or topsoil fill with no visible undercutting. Below the OHWM, the streambed is dominated by gravel and cobbles (rounded stones 0.5-inch to 6-inches in size), with eroded silts and sands deposited in the interstices. Several 12 to 24-inch angular or cut stones were present within the channel, as well as several areas of angular quarry spalls that appear to be present to stabilize the slopes and culvert mouth. These artificial features are consistent with past landscaping efforts and ongoing use of this feature as a conveyance for roadside and residential stormwater runoff.

Vegetation present in the ravine includes relic native trees (western red cedar and Douglas fir), landscape trees and shrubs (ornamental fruit trees and laurel), and scattered native shrub and herbaceous species (osoberry, lady fern, sword fern). A dense mat of non-native English ivy forms the lowest vegetative stratum. The ivy extends across the ravine slope to the OHWM on either side of Feature A, but is not present in the channel bed.

CONCLUSIONS

Feature A exhibits all three primary indicators of an active channel: a break in slope, changes in sediment character, and changes in vegetation. Supporting features (evidence of erosion/scour and silt deposits in the active channel) were also observed. The presence of large rocks, quarry spalls, and larger gravels are consistent with past human activity in the area. Overall, the features observed in Feature A are consistent with the OHWM of a non-perennial stream in our region (Mersel and Lichvar 2014). The presence of the intermittent to seasonal surface water flows observed during the field investigation is consistent with this determination. Feature A would satisfy both federal and Washington State definitions of a water.

Feature A has a channel with a defined bed and bank, intermittent to seasonal surface water, and flows from higher elevation to lower (south to north, in this case). The size of the supporting basin and mapped topography are consistent with a naturally occurring watercourse. As a result, the open channel portion of Feature A satisfies the City of Mercer Island's definition of a watercourse.

The City of Mercer Island defines a Type Ns water as follows:

Type Ns, which include all segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, nonfish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np water. Ns waters must be physically connected by an aboveground channel system to Type S, F, or Np waters.

While Feature A satisfies the flow requirements of this definition, it does not possess an aboveground channel system that connects it to Lake Washington. As a result, it does not satisfy the City of Mercer Island's definition of a Type Ns watercourse.

North of N Mercer Way, the flow from Feature A is conveyed approximately 400 feet to Lake Washington in an 18-inch concrete pipe, portions of which have a slope of approximately 16%. This length of concrete pipe and slope likely preclude access by fish, which excludes Feature A from the Type F classification. Further, the ephemeral to intermittent flows do not satisfy the requirements perennial flow required for the Type Np classification.

SUMMARY

One water feature (Feature A) was identified in the ravine to the west of the subject property. The open channel portion of Feature A satisfies City of Mercer Island definition of a watercourse, however, it does not meet the definition for any of the City's watercourse types.

Attachment(s): Figures 1-3, Site Photos, December 14 – 17, 2020
AUTHOR:PT REVIEWER:SH

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REFERENCES

City of Mercer Island. 2020. Mercer Island City Code, Title 19 (Environment), Chapter 19.07 (Critical Areas).
Accessed online at: <https://mercerisland.municipal.codes/MICC/19.07>

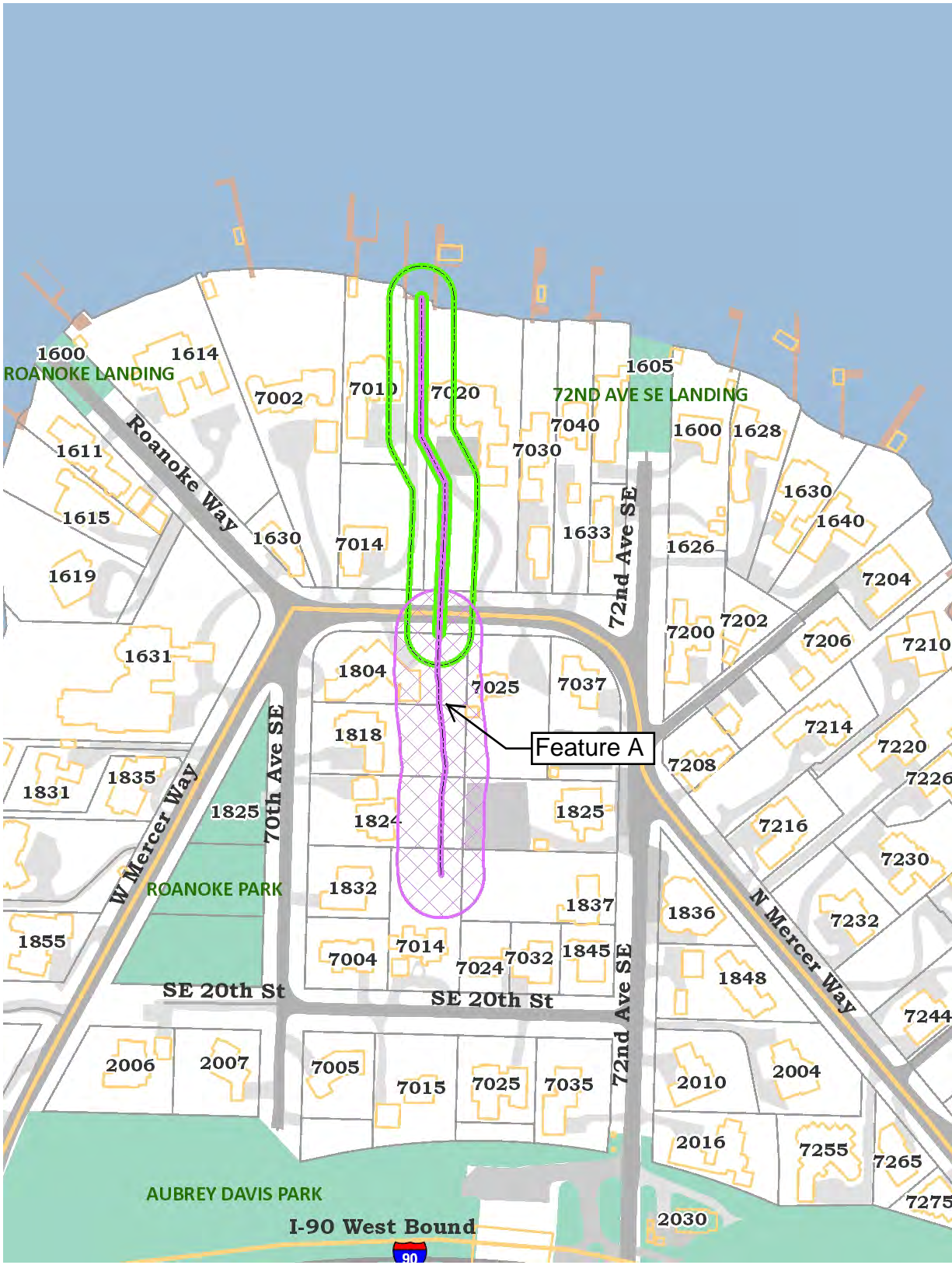
Google Earth Pro. 2020. Aerial Photography, current and historic.

Mersel, Matthew K. and R. Lichvar. 2014. A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States. Wetlands Regulatory Assistance Program (WRAP) ERDC/CRREL TR-14-13. August 2014.

United States Department of Agriculture Natural Resources Conservation Service (NRCS). 2020. Precipitation and WETS Data for Seattle Tacoma Airport, SeaTac, Washington. Available online at: <http://agacis.rcc-acis.org/?fips=53053>.

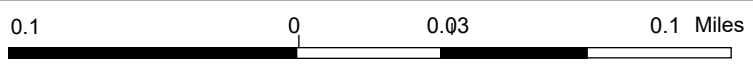
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FIGURES



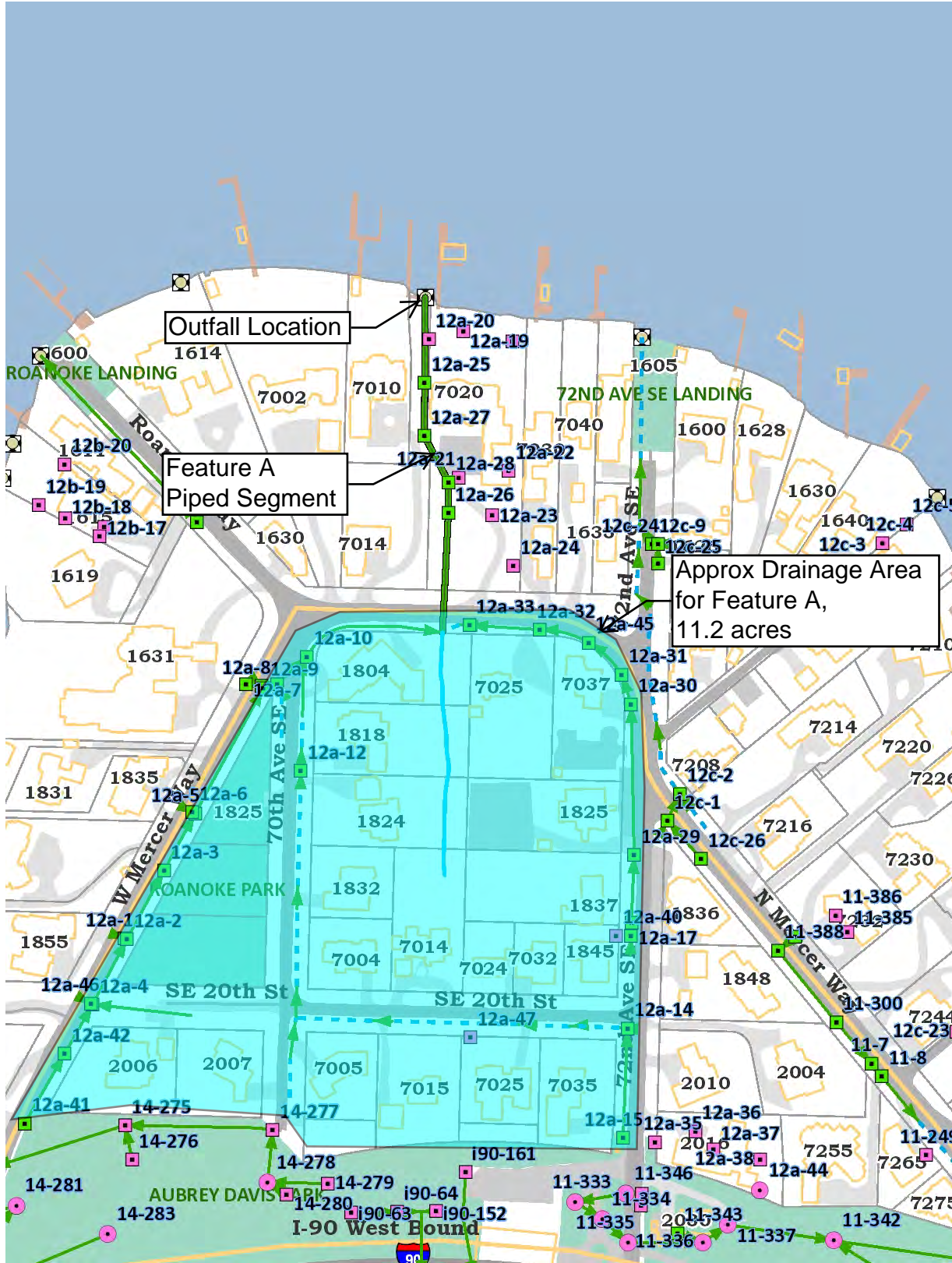
- Legend**
- Unpiped Watercourse**
 - Type "F" = Fish
 - Type "Np" = Non-Fish
 - Type "Ns" = Non-Fish
 - Type "Np" (Unverified)
 - Type "Ns" (Unverified)
 - Piped Watercourse**
 - Watercourse Buffer/S**
 - Type "F" = 120-Ft Buff
 - Type "Np" = 60-Ft Buff
 - Type "Ns" = 60-Ft Buff
 - Type "Np" Unverified =
 - Type "Ns" Unverified =
 - Piped Type F/Np/Ns =
 - Address**
 - Building
 - Property Line
 - Docks
 - Freeway
 - Major Street
 - Street
 - Paved Driveway
 - Paved Road
 - Paved Parking Area
 - Parks
 - Lake Washington

1:2,500



Disclaimer: These maps were developed by the City of Mercer Island and are intended to be a general purpose digital reference tool. These maps are not an accepted legal instrument for describing, establishing, recording or maintaining descriptions for property concerns or boundaries. The City makes no representation or warranty with respect to the accuracy or currency of these data sets, especially in regard to labeling of surveyed dimensions, or agreement with official sources such as records of survey, or mapped locations of features.

Notes
Watercourses & Buffers



Legend

Storm Catch Basin

- CB, City Owned
- CB, Private
- CB, Unknown
- Type 2, City Owned
- Type 2, Private
- Type 2, Unknown

Storm Main

- Pipe
- Open Watercourse
- Piped Watercourse
- - - Ditch
- - - Culvert
- - - Other

— Storm Main - Private

⊠ Storm Discharge Point

Address

□ Building

□ Property Line

■ Docks

— Freeway

— Major Street

— Street

■ Paved Driveway

■ Paved Road

■ Paved Parking Area

■ Parks

■ Lake Washington

1:2,500



0.1 0 0.03 0.1 Miles



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Notes

Stormwater System Map

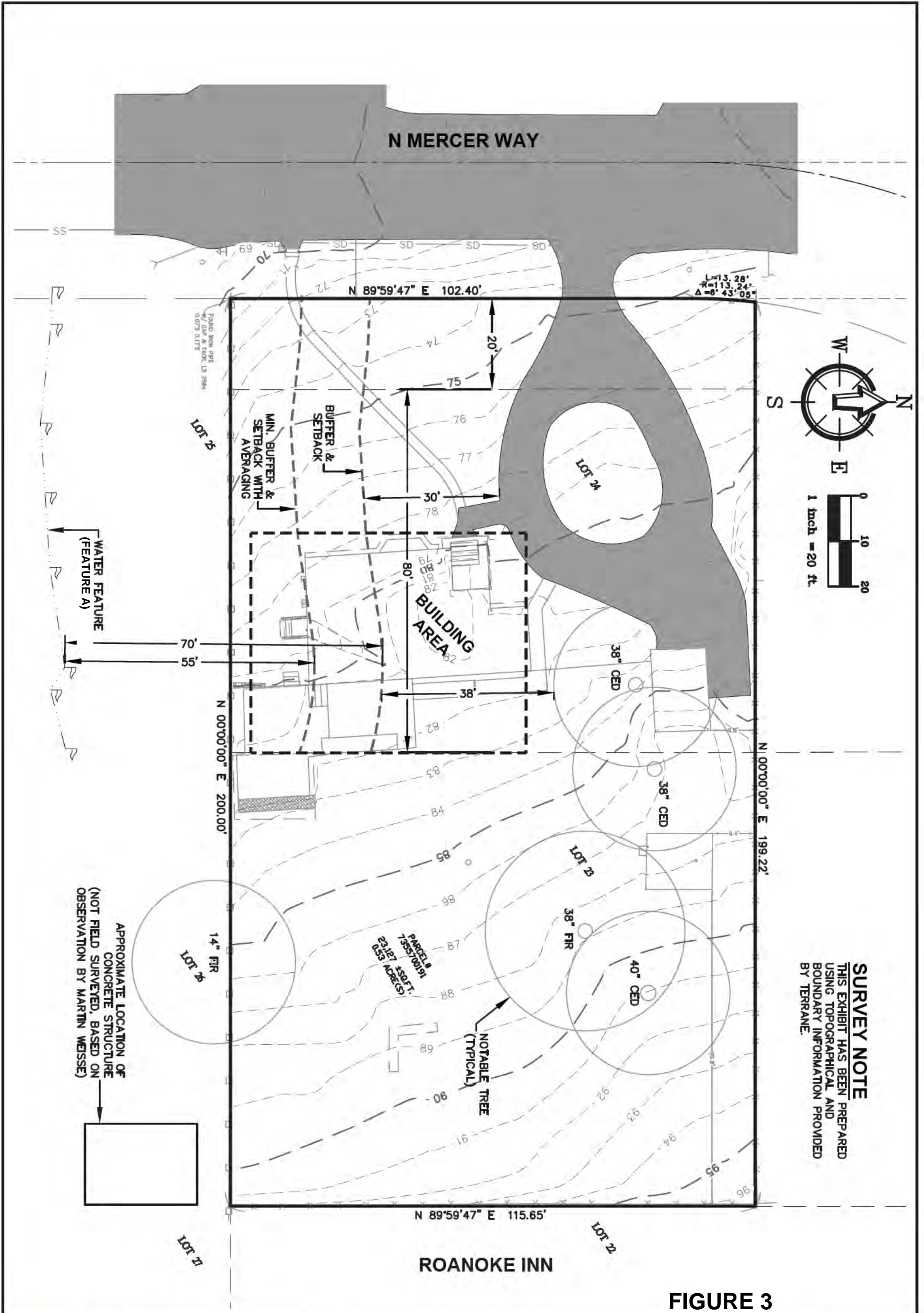



FIGURE 3

 <p>220 W. Champion Street, Suite 200 Bellingham, WA 98225</p> <p>t: 360.650.1408 f: 360.650.1401</p> <p>FREELAND & ASSOCIATES</p>	<p>SHEET CONTENTS</p> <p>DEVELOPABLE AREA EXHIBIT</p>	JOB #	DATE
		20122	9-3-2020
		DRAWING #	SHEET NAME
		20122SP1.DWG	EX1

SITE PHOTOGRAPHS
12/14/2020



Culvert at N Mercer Way.



Watercourse facing south from N Mercer Way.



Stormwater from 1804 70th Avenue SE .



Stormwater from 1818 70th Avenue SE.



Looking north from property line.



North ends of watercourse from subject property.



South of watercourse origin, from subject property.