CIVIL ENGINEERING
SOLUTIONS

DOWNSTREAM ANALYSIS REPORT

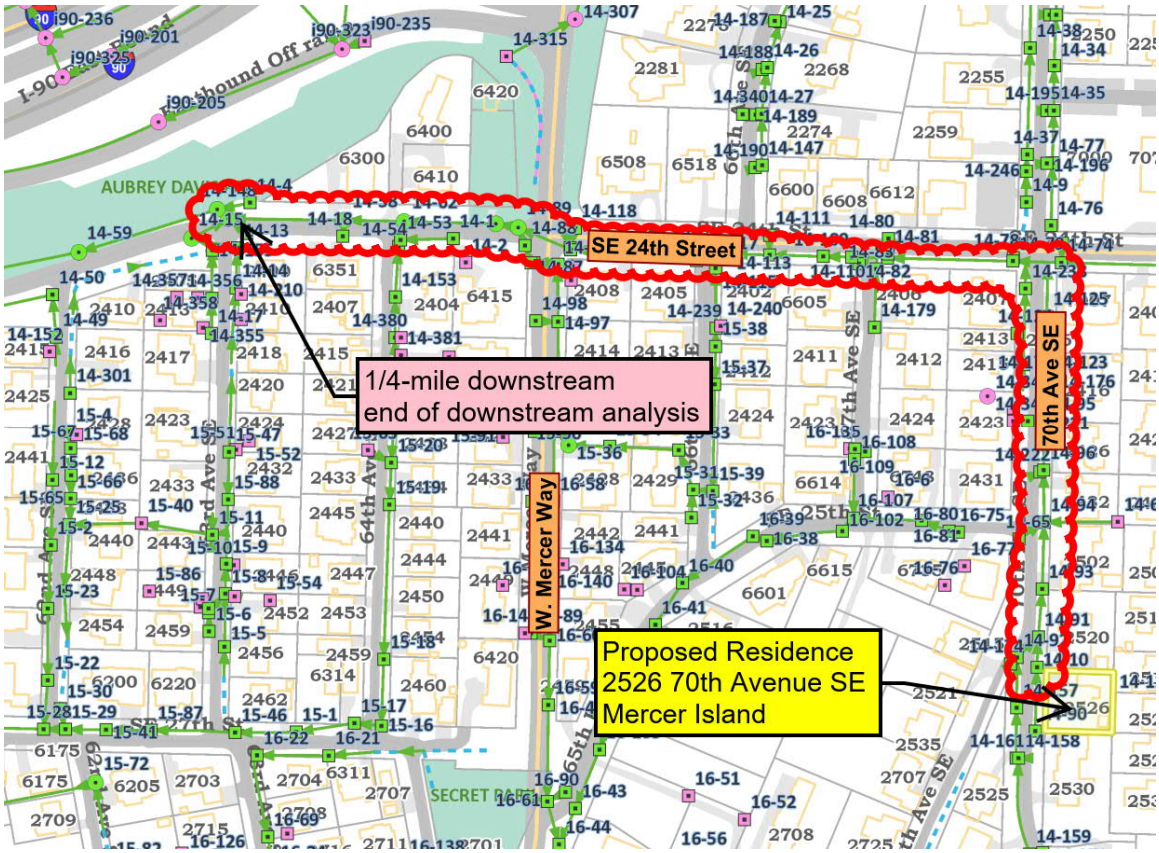
Proposed Residence
2526 70th Avenue SE
Mercer Island, WA 98040

Tax Map #217450-3730
January 12, 2022

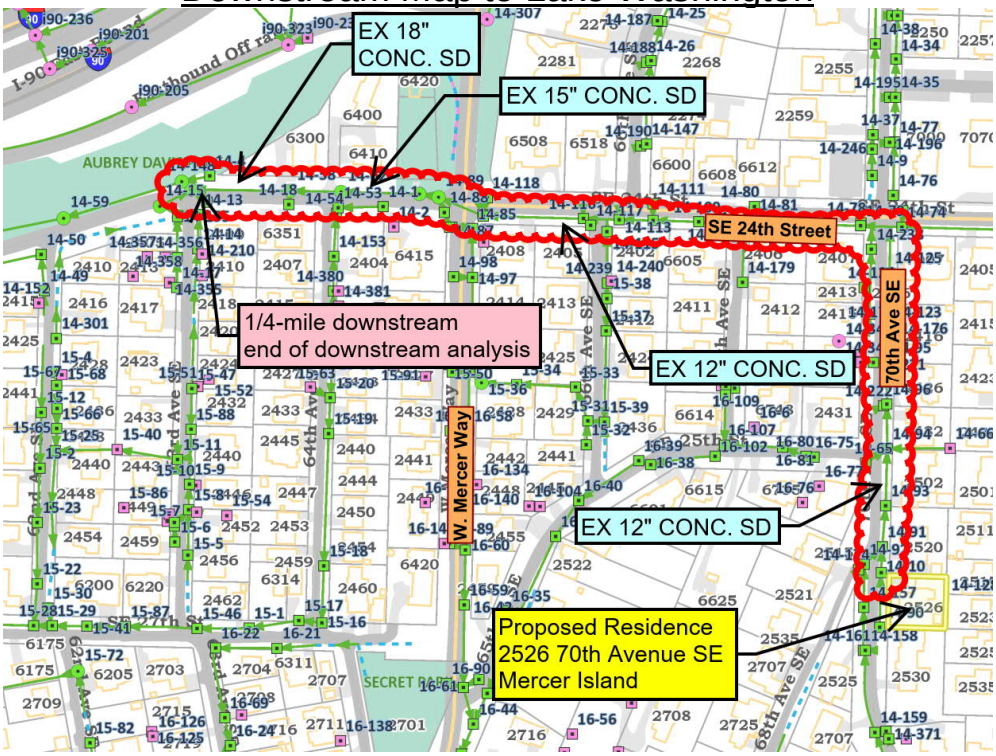
CES #2013

By Stephenie Seawall, Civil Engineer
Edited by Duffy Ellis, PE

Downstream Analysis Map

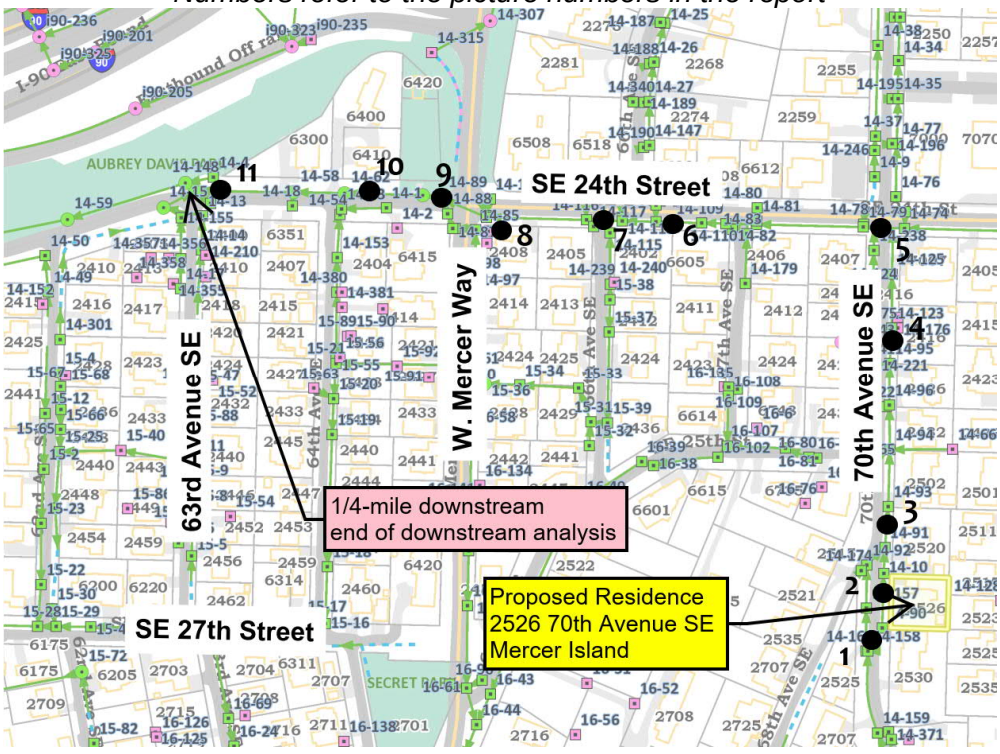


Downstream Map to Lake Washington



Downstream Analysis Map with numbers

Numbers refer to the picture numbers in the report



TIR SECTION 3
OFFSITE ANALYSIS

Summary
This Downstream Analysis is related to a new home proposed at subject address in Mercer Island, Washington. The project will connect to the existing storm line's catch basin in the right-of-way near the northwest corner of the property. This storm system is piped for the whole ¼-mile analysis, and flows north under the eastern ROW in 70th Avenue SE and west under the sidewalk in SE 24th Street. The undersigned's civil engineer visited site and mapped the quarter mile downstream storm drain path to the best of her ability on December 13, 2021. See the downstream analysis maps on previous sheets for the downstream stream path that was observed. See our civil plans for on-site details, which include a stormwater detention pipe.

A Downstream Analysis as defined in the DOE Manual Section I-3.5.3 is a qualitative survey of the downstream storm conveyance system for ¼ mile with goal of identifying any flooding problems, erosion problems, or potential impacts to wetland hydrology if applicable. Report should also identify any water quality problems as described in more detail in DOE Manual's section referenced above.

We have requested downstream drainage complaint information from City of Mercer Island at the time of submitting this document (January 12, 2022). We'll update report with any relevant information and provide report at 2nd submittal.

Below is brief summary of this downstream report:

Item	***Findings***	***Explanation***
Flooding or drainage problems downstream	No evidence of based on field visit observations.	See pictures and maps identifying the alignment and size of storm system verified in the field.
Erosion problems	No evidence of based on field visit	See pictures and maps identifying the alignment and size of storm system verified in the field.
Wetland Impacts	Not applicable	Not applicable
Water quality	No evidence of based on field visit	Water quality assessment not applicable for underground storm drain.

See pictures in the report following. This downstream analysis is mostly a mapping exercise to confirm the route of the storm drain system for a quarter mile beyond the point of connection by subject property. We have limited ability to know condition of the underground storm drain system. This particular analysis was helped by the fact that it had recently rained, and the engineer could hear and see flowing water in the catch basins through the grates.

Flowpath Route

The downstream analysis begins in front of project site at 2526 70th Avenue SE and discharges into the storm main at the catch basin in the ROW between 2520 and 2526 (project site). Pictures were taken of the catch basin lids confirming the storm drain location & route. See the maps on pages 1 and 2 for the route. The average street grade for this section of 70th Avenue SE is 7%. The average street grade for the SE 24th Street section is 9%. No problems were noted or are anticipated.

Downstream Analysis

Task 1. Study area Definition and Maps
See maps on Sheet 2 of this report, sourced from the Mercer Island IGS website.

Task 2. Resource Review
The Mercer Island IGS website storm drainage map was used for mapping resources.

Task 3. Field Inspection

Offsite-Upstream drainage Inspection

Not warranted for this site. Uphill of project lot are developed lots.

Onsite Drainage Inspection

Not warranted for this site. Proposed is piping stormwater to the discharge point (catch basin).

Offsite--Downstream Drainage Inspection

See our maps on Pages 1 and 2 of this report. Downstream analysis was started in front of project site (2526 70th Avenue SE) and continued northerly to SE 24th Street, about 600 LF, all piped. Storm pipe discharges into storm system which heads west under the southern sidewalk along SE 24th Street, crossing the W. Mercer Way intersection diagonally toward Aubrey Davis Park. Analysis concludes at the 63rd Avenue SE / SE 24th Street intersection, just over ¼-mile downstream of project site. From end of analysis, water discharges into Lake Washington at Aubrey Davis Park.

See photos on the following pages for reference.

Picture 1: 2526 70th Avenue SE
ROW in front of project site

Picture 2: ROW between 2526 and 2520 70th Avenue SE
This is connection point for new house.
Existing storm drain runs north under eastern ROW.

Picture 3: ROW between 2520 and 2502 70th Avenue SE

Picture 4: ROW in front of 2416 70th Avenue SE

Picture 5: southwest corner of 70th Avenue SE and SE 24th Street
Existing storm drain has just made a 90-degree turn to the west. The main is under the solid lid.

Picture 6: ROW in front of 6605 SE 24th Street

Picture 7: ROW in front of 2405 SE 24th Street

Picture 8: ROW at SE corner of SE 24th Street and W. Mercer Way
From here (solid lid), water crosses diagonally across the intersection.

Picture 9: just west of NW corner of SE 24th Street and W. Mercer Way
Heading west under north side of SE 24th Street

Picture 10: north side of intersection: SE 24th Street and 64th Avenue SE

Picture 11: north side of intersection: SE 24th Street and 63rd Avenue SE
This is a Type 2 catch basin, very big inside.
From here water turns to the northwest and heads into Aubrey Davis Park.