CIVIL ENGINEERING
SOLUTIONS

DOWNSTREAM ANALYSIS REPORT

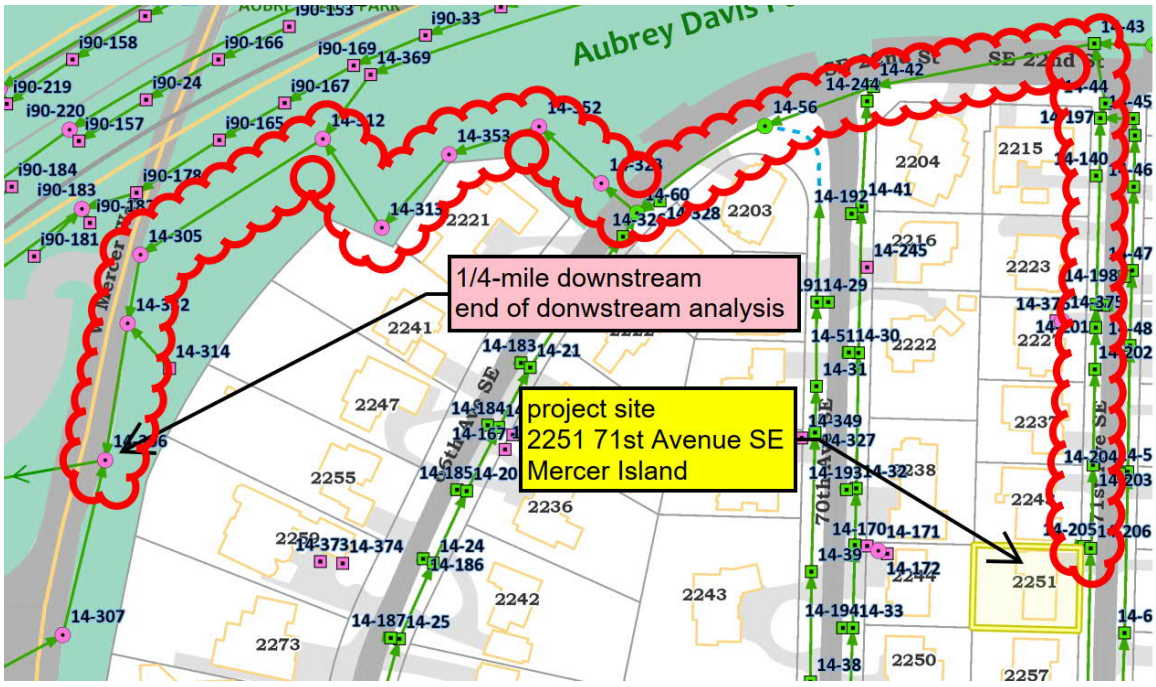
Mastan Residence
2251 71st Avenue SE
Mercer Island, WA 98040

Tax Map #330770-0270
February 12, 2023

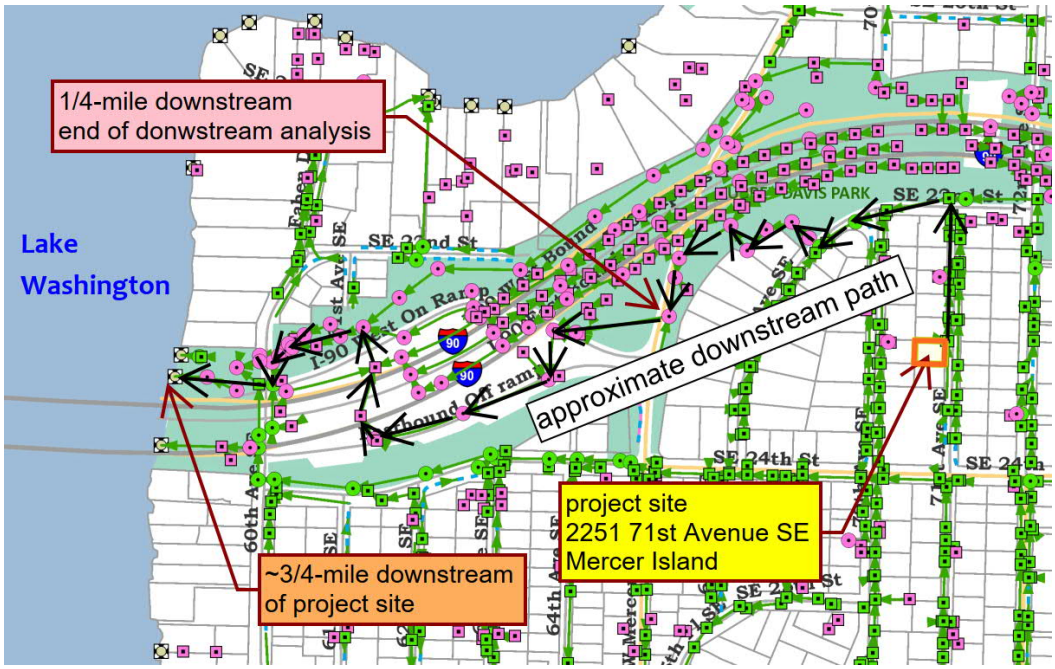
CES #2064

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

Downstream Analysis Map

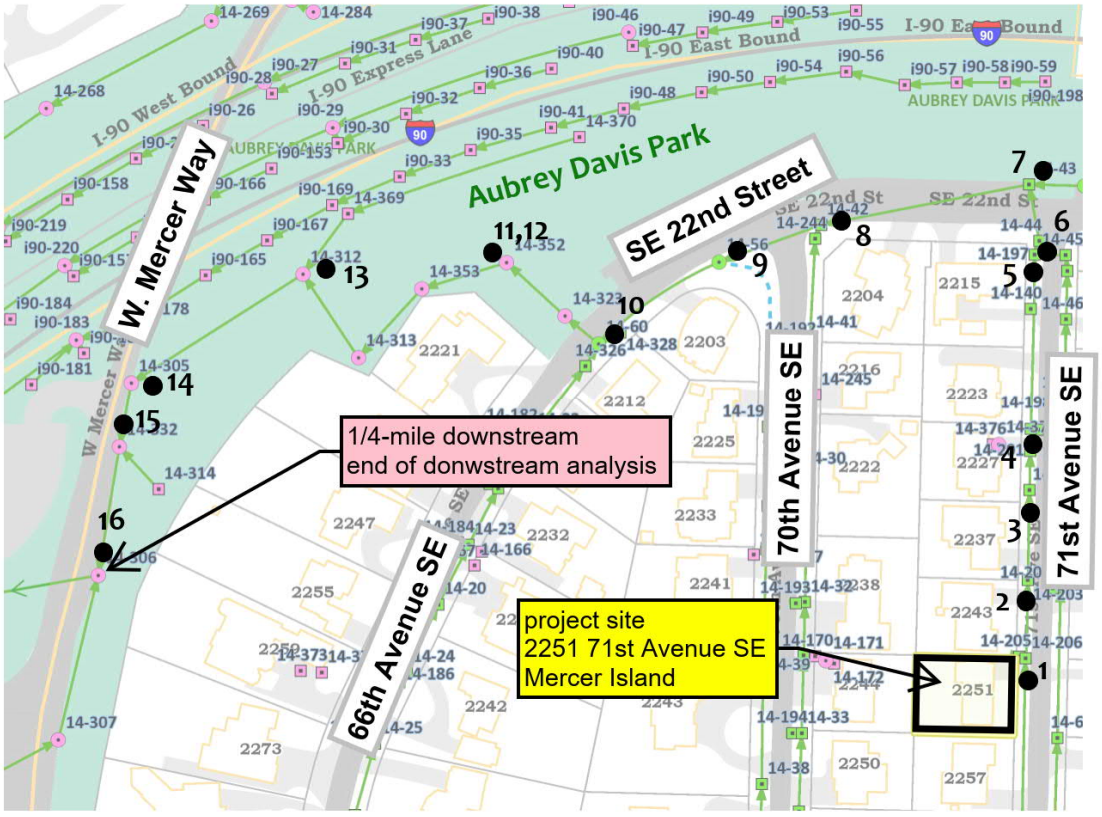


Downstream Map to Lake Washington



Downstream Analysis Map with numbers

Numbers refer to the picture numbers in the report



TIR SECTION 3
OFFSITE ANALYSIS

Summary

This Downstream Analysis Report was requested by City of Mercer Island related to a new single family home project at subject address. The reviewed storm system at the NW tip of Mercer Island was confirmed in field as 100% piped for the ¼-mile analysis. Based on Mercer Island GIS mapping, pipe size ranges from 12" to 18". We estimated average storm pipe grade is 5% for the quarter mile path.

The undersigned's civil engineer visited site and mapped the quarter mile downstream storm drain path to the best of her ability on January 19, 2023. See the downstream analysis maps on previous sheets for the downstream stream path that was observed. See our civil plans for on-site storm design and point of connection to this storm drain.

A Downstream Analysis as defined in the DOE Manual Section I-3.5.3 as 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 typically reach out to a jurisdiction to seek out any drainage complaints for the study area. On this project we opted not given expectations that Mercer Island will not have relevant complaint data on file.

That said, 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 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. Downstream path is 100% piped for the ¼-mile observed.
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.

Flowpath Route

The downstream analysis began at the existing catch basin in the ROW between 2251 and 2243 71st Avenue SE. Water flows north in 71st Avenue SE, southwest in SE 22nd Street, then west in Aubrey Davis Park, and finally southwest along West Mercer Way. Here the downstream analysis stops (1/4 mile from project site), but the water keeps going of course. It continues west in Aubrey Davis Park in/around I-90 and then flows into Lake Washington.

Downstream Analysis

Task 1. Study area Definition and Maps
See maps on Sheets 2 and 3 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.

Offsite--Downstream Drainage Inspection
See our maps on Pages 1 and 2 of this report. The downstream analysis began at the northeast corner of the project site (71st Avenue SE ROW) and ended just before water crosses under W. Mercer Way at Aubrey Davis Park. From end of analysis, water discharges west and eventually into Lake Washington just north of I-90.

See photos on the following pages for reference.

Picture 1:
ROW in front of 2251/ 2243 71st Avenue SE
Water flows north (toward the top of the page)

Picture 2:
ROW in front of 2243/2237 71st Avenue SE
12" pipe along 71st

Picture 3:
ROW in front of 2237/2227 71st Avenue SE
12" SD

Picture 4:
ROW in front of 2227/2223 71st Avenue SE
flowing north
12" SD

Picture 5:
ROW in front of 2215 71st Avenue SE
12" SD

Picture 6:
Corner of 71st Avenue SE and SE 22nd Street
Storm crosses SE 22nd Street toward the north
12" SD

Picture 7:
Parking area at Aubrey Davis Park at intersection with 71st Avenue SE
From here storm pipe crossed under SE 22nd Street (again)
12" SD

Picture 8:
Southeast corner of SE 22nd Street and 70th Avenue SE
From here, storm pipe crossed west under 70th Avenue SE
12" SD

Picture 9:
ROW in front of 2203 70th Avenue SE
CHANGE TO 18" AT THIS CB

Picture 10:
In the street in front of 2212 66th Avenue SE
From here, the storm pipes go northwest into Aubrey Davis Park
18" SD WSDOT OWNED PIPE

Picture 11:
Aubrey Davis Park looking SE toward 2212 66th Avenue SE
The catch basin is under the ivy somewhere near here
18" SD WSDOT OWNED PIPE

Picture 12:
Aubrey Davis Park looking west toward West Mercer Way
The catch basins are under the ivy/woods in vicinity near here
18" SD WSDOT OWNED PIPE

Picture 13:
Aubrey Davis Park at a low point near the playground
From here the storm pipe goes west toward W. Mercer Way
18" SD WSDOT OWNED PIPE

Picture 14:

Aubrey Davis Park very close to W. Mercer Way
This is closest structure that may be storm drain.
18" SD WSDOT OWNED PIPE

Picture 15:
West Mercer Way
18” pipes head south under W. Mercer Way
18” SD WSDOT OWNED PIPE

Picture 16:
West Mercer Way just northeast of the I-90 on-ramp
End of ¼-mile analysis; from here pipes cross west (left of page) under W. Mercer Way
18" SD WSDOT OWNED PIPE