Stormwater Drainage Report
4533 90th Avenue SE
Mercer Island, Washington
KC Tax Parcel #019110-0190

Prepared For:

JayMarc Homes, LLC
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Prepared By:

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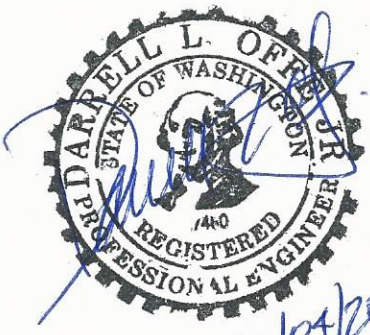


Narrative:

The subject property is located on the west side of 90th Avenue SE between SE 45th Street and dead end of the street at Ellis Pond. The property slopes gently from west to east towards 90th Avenue SE. The subject property is currently covered with heavy vegetation and several large trees. The current runoff from the property sheet flows into 90th Avenue SE along the east side of the property towards the southeast corner.

There are some impervious surfaces on the existing property form 4537 90th Avenue SE overlapping onto this property; these features will be removed during construction of the new residence. There are existing public utilities within 90th Avenue SE on the east side of the property.

The site soils are characterized between Vashon Glacial Till and infeasible for infiltration type BMP's.

The property was visited in November 2021 and again in January 2022 to verify runoff patterns and possible storm water discharge options.

The project will be evaluated for storm water treatment and control using the Amended December 2014 SWMMWW (DOE Manual).

SITE CHARACTERISTICS

Total Lot Area = 10,125 square feet

EXISTING CONDITIONS

Impervious:

Walkways/patio = 235 sq. feet
Shed = 250 sq. feet
Subtotal: *485 sq. feet*

Pervious:

Lawn, trees = *9,640 sq. feet*

DEVELOPED CONDITIONS

Impervious (hard) surfaces:

House roof area w/overhang = 3,051 sq. feet
Uncovered driveway = 460 sq. feet
Uncovered patio = 168 sq. feet

Total Impervious (Hard) Surfaces = 3,679 square feet

Pervious Surfaces:

Landscaping = 6,446 sq. feet

Total Pervious Surfaces = 6,446 square feet

Summary of Project Information

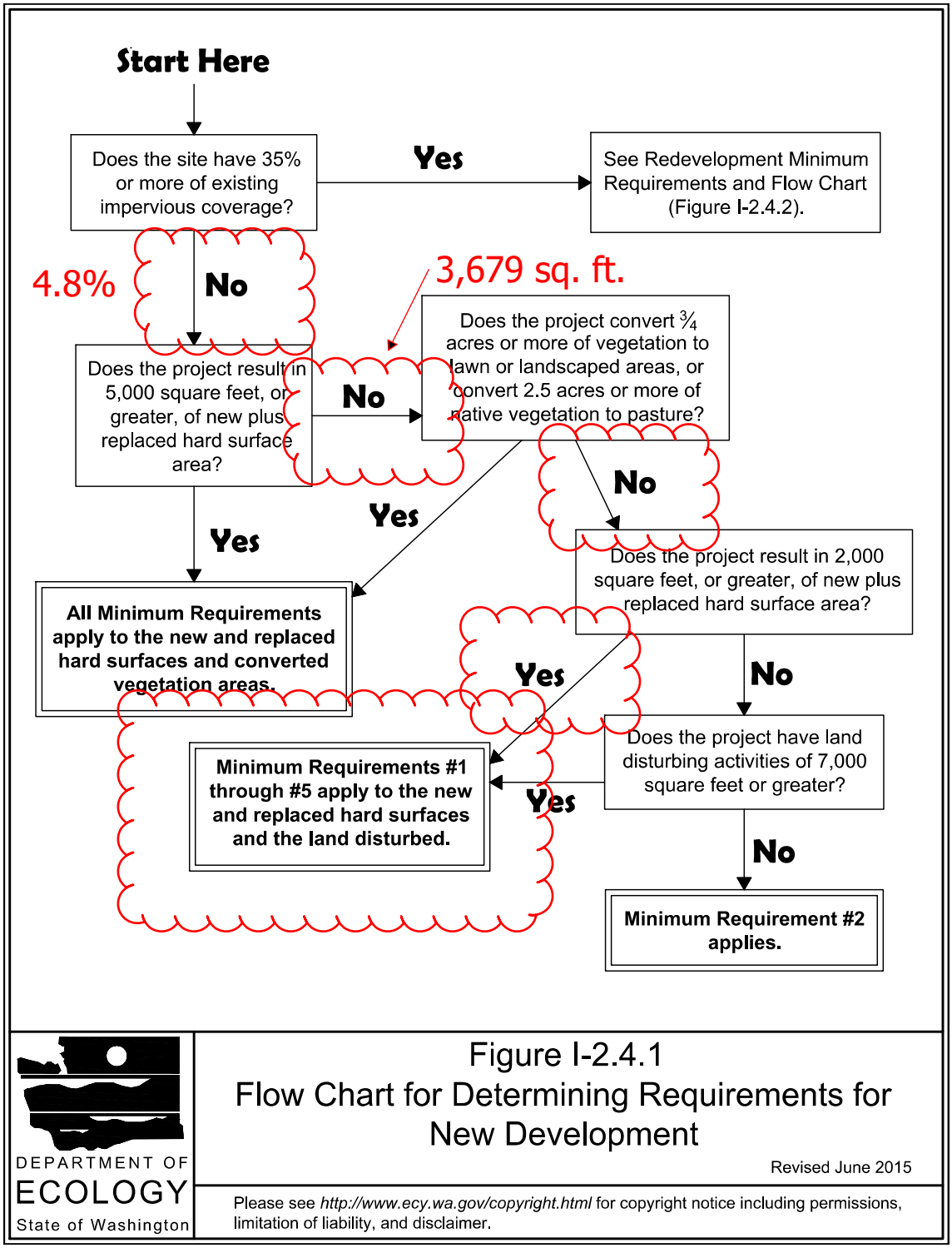
Project Site Area	10,125 square feet
Existing Impervious Area	485 sq. feet
Existing Impervious Coverage	4.8%
New Impervious Area	3,679 sq. feet
Replaced Impervious Area	0 sq. feet
New plus Replaced Impervious	3,679 square feet
Proposed Impervious Area	3,679 square feet
Converted pervious: Native to lawn	0 sq. feet
Converted pervious: Native to pasture	0 sq. feet
Total Area of Land Disturbance	6,200 square feet

The existing property has less than 35% (4.8%) imperious coverage and the total proposed project new plus replaced impervious surfaces will be less than 5,000 (3,679) square feet; using Figure I-2.4.1 – *"Flow Chart for Determining Minimum Requirements for New Development"* page 37, 2014 Stormwater Management Manual for Western Washington, Minimum Requirements #1 – #5 apply to this project.

FLOW CHART FIGURE II-2.4.1

4531 90th Avenue SE

Figure I-2.4.1 Flow Chart for Determining Requirements for New Development



Based upon the Flow Chart Figure I-2.4.1 and I-2.4.2 (Amended December 2014 SWMMWW, DOE Manual), the Minimum Requirements 1-5 apply to this project, see attached Flow Chart.

I-2.5.1 Minimum Requirement #1 – Preparation of Stormwater Site Plans

A Stormwater site plan (drainage plan) has been prepared for this project together with construction details for installation of the proposed drainage control system. The Stormwater site plans and drainage narrative shall be submitted and reviewed by the City of Mercer Island as part of the building permit application.

I-2.5.2 Minimum Requirement #2 - Construction Storm Water Pollution Prevention Plan (CSWPP)

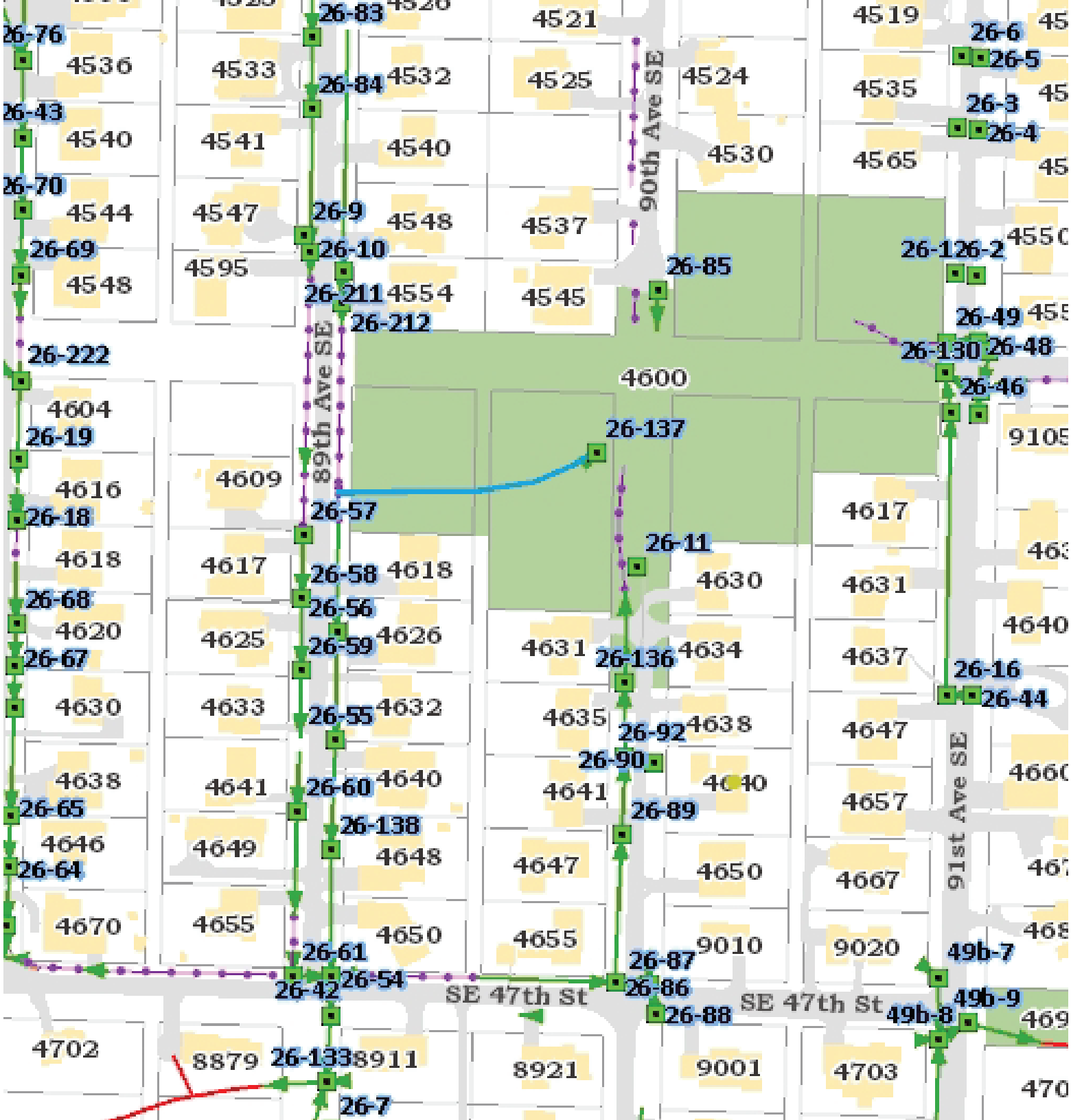
The Stormwater site plan (Minimum Requirement #1) shall include construction installation of erosion control, establish a construction access, preservation of existing vegetation during construction, and protection of existing drainage inlets. This will include but not limited to: constructing a new rocked construction entry off of 90th Avenue SE; installing filter fabric silt fencing along the down gradient property lines (east and south); installation of filter socks within the public catch basins located within 90th Avenue SE; retention of native vegetated areas including tree retention within the rear yard (east); and the use straw or chipped materials placed over exposed disturbed soils to prevent runoff from carrying solids.

I-2.5.3 Minimum Requirement #3 - Source Control of Pollution

Source control BMP's will be utilized to contain pollution generating runoff. No concrete washout will be allowed on the property during construction. No fuel materials will be placed or stored on site during construction.

I-2.5.4 Minimum Requirement #4 - Preservation of Natural Drainage Systems and Outfalls

The property was visited in January 2022, during a storm-event to verify drainage patterns. The subject property slopes gently from the west towards the east. The existing property is covered with heavy vegetation. The drainage sheet flows from the subject property into 90th Avenue SE, then turns south, and flows into a catch basin at the south end of a dead-end cul-de-sac on 90th Avenue SE. The drainage then enters a large ponding area, called Ellis Pond. Ellis Pond overflows towards the west and into an open ditch on the east side of 89th Avenue SE. The drainage then continues south within closed 12" conveyance pipes towards SE 47th Street. The drainage then crosses SE 47th Street flowing south approximately 200 feet before entering an open channel flowing west. The channel was flowing with heavy flow during site visit; there were no sings of overtopping or capacity problems within the downstream system.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I-2.5.5 Minimum Requirement #5 - On-Site Stormwater Management
The proposed project discharge shall be evaluated using *"List #1, On-Site Stormwater Management BMPs for projects triggering Minimum Requirements #1 - #5"* – DOE Volume 1, chapter 2, pages 56 and 57.

The subject property is located within an infiltration infeasibility area as shown the attached City of Mercer Island "*Infiltration Infeasibility Map*". A soils evaluation is not required.

List #1
Lawn and landscape areas – ***feasible -*** The use of Post-Construction Soil Quality and Depth shall be implemented within areas of the property that are not covered by hard surfaces and were disturbed during condition.

Roofs:

1.a. Full Dispersion – ***infeasible*** due to lack of available 100' of vegetated flow path downgradient from the roof area.

1.b. Full Infiltration – ***infeasible*** due to lack of permeable soils.

2. Rain Garden/Bioretention – ***infeasible*** due to lack of available area on the downgradient portion of the property (east side). Can not remove trees in this area nor work under.

3. Downspout Dispersion System – ***infeasible*** due to lack of available 50' flow path downgradient of the downspout leaders.

Other Hard Surfaces:

1. Full Dispersion – ***infeasible*** due to the lack of available 100' of vegetated flow path length.

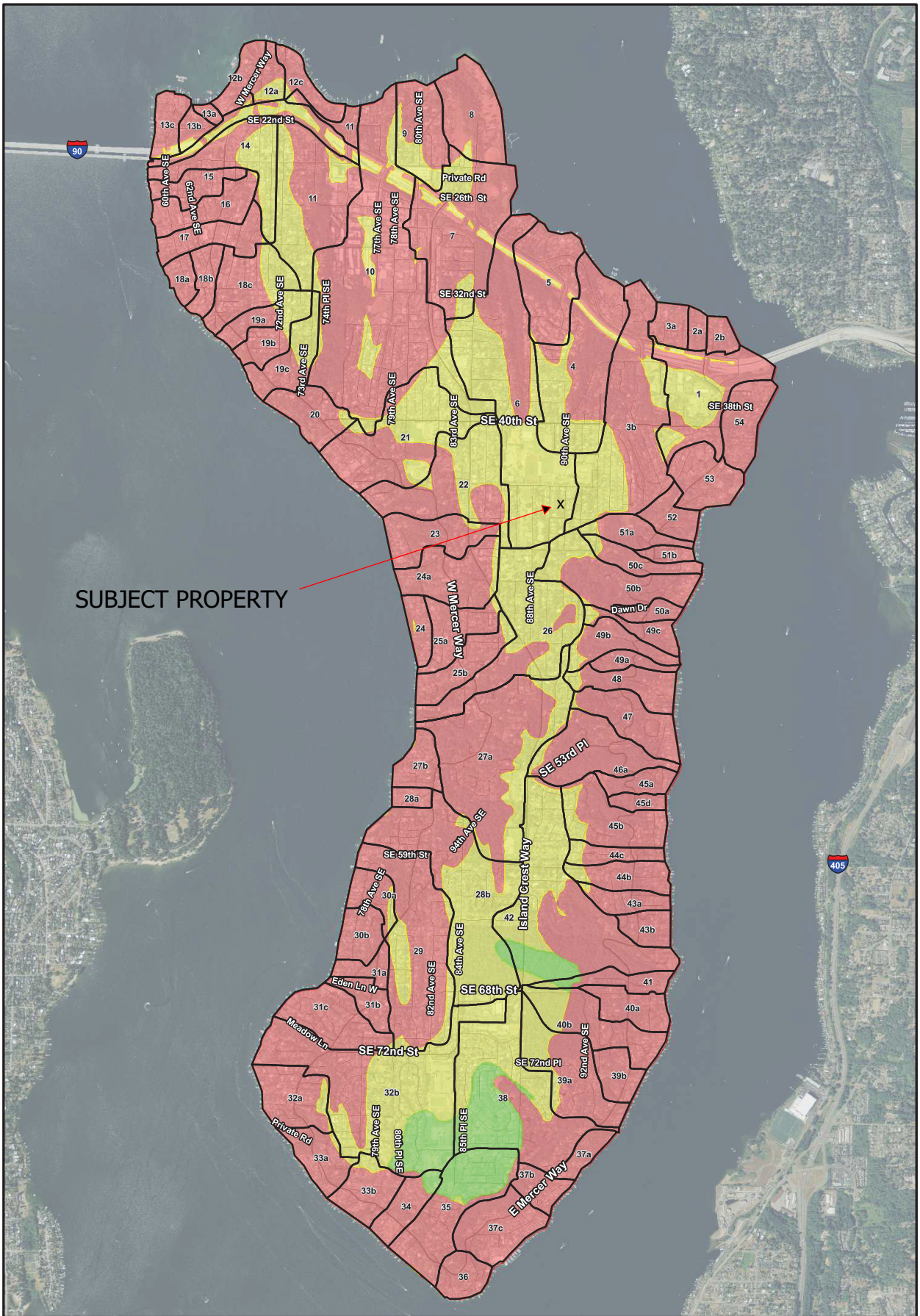
2.a. Permeable Pavement – ***infeasible*** infiltration type BMP not recommended by City of Mercer Island Infiltration Infeasibility Map.

2.b. Rain Garden/Bioretention – ***infeasible*** due to lack of available space on the downgradient portion of the property (east side).

3. Sheet Flow Dispersion – ***infeasible*** due to lack of available 25 feet of flow path downgradient from driveway.

There are no available BMPs to provide treatment of the roof area or other hard surfaces. Therefore, connection the public storm system within 90th Avenue SE will be provided.

The roof area shall be collected using downspouts and a 4" downspout conveyance pipe flowing east towards the southeast corner of the property. The footing drain shall be collected using a perforate 4" pipe and conveying to the southeast corner connection into the downspout line near the public right-of-way on 90th Avenue SE. The driveway shall slope towards the east and sheet flow into 90th Avenue SE then flow south into the conveyance storm conveyance system on the west side of 90th Avenue SE.



Legend

- Infiltrating LID facilities may be feasible, and soil has high infiltration potential
- Infiltrating LID facilities may be feasible, and soil has moderate infiltration potential
- Infiltrating LID facilities are not permitted
- 36 Storm drainage basin

* Map is intended to be used for planning purposes only. Site-specific analysis is required prior to design and construction of LID facilities.

INFILTRATION INFEASIBILITY MAP

N

0 950 1,900 3,800 Feet

HERRERA

Aerial photography: USDA (2009)

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