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Site Planning
Civil Engineering
Project Management
Land Development Consulting

February 4, 2014

Ryan Miller
Public Works
City of Woodinville
17301 – 133rd Avenue NE
Woodinville, WA 98072

RE: Brickyard Ridge Subdivision (PPA13002) — CPH Project No. 0067-13-002
Downstream Storm Drainage Capacity Analysis

Dear Mr. Miller,

This letter and enclosures are provided to outline the downstream storm drainage capacity analysis and shall replace the entirety of Section 3 (Offsite Analysis) of the Preliminary Technical Information Report, dated May 30, 2013 previously submitted to the City. This analysis was requested in January 23, 2014 via email correspondence.

Please, contact me directly at (425) 285-2392 or by e-mail at jamie@cphconsultants.com if you have questions or need any additional information to complete your review of this analysis. Thank you.

Sincerely,

CPH Consultants

Jamie B. Schroeder, PE
Vice President

Enclosures

Cc: Tom DeDonato
Copy to file

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SECTION 3 – OFFSITE ANALYSIS

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Task 1: Study Area Definition and Maps

The proposed project site is fronted by Woodinville-Duvall Road along its north property line. The site is currently occupied by two single-family residences with gravel and asphalt driveways, and various out buildings (see Figure 4, Existing Site Characteristics). The remaining ground cover consists mostly of forest, dense undergrowth and limited residential landscaped areas. The existing site topography consists of slopes ranging from 0-40%. These existing site conditions are shown on Figure 4 of this report.

The property contains topographic highs along the South property boundary. This general north-to-south climbing topography continues onto the properties south of the site. The stormwater flows northerly across the site and flows into existing roadside drainage facilities along the southerly edge of Woodinville-Duvall Road and portions of NE 185th Court.

Task 2: Resource Review

The site is listed as both a medium and high Critical Area Ordinance (CAO) Basin Condition area according to available King County GIS information. The proposed site also contains some isolated steep slope hazard areas that are to be modified with the proposed site grading. There were no King County drainage complaints directly related to the proposed site.

Task 3: Field Inspection

A field inspection of the project site was performed on Wednesday May 29, 2013, on an overcast day with a temperature of approximately 55 degrees and occasional light showers. This investigation included observations of current land use, ground cover, topographic conditions, and existing drainage patterns upstream and downstream of the project site. A completed Off-site Analysis Drainage Table for the project is included in Appendix A. The narrative provided with Task 4 of the off-site analysis describes the observations made of the existing storm drainage system during the initial site visit and subsequent field investigations.

Task 4: Drainage System Description

Downstream Basin

The existing topography of the site has slopes ranging from 0 to 40+ percent, generally tending from south to north. The property is comprised of a single drainage basin that drains northerly. The runoff from this basin is currently dispersed through forested ground cover and two overgrown home sites collected by an existing ditch and a series of existing catch basins along Woodinville-Duvall Road. These catch basins are connected by underground pipes that convey the water west and away from the site. Approximately 2,800 feet west of the site, flows discharge to a pond on the south side NE North Woodinville Way. Discharge from the pond continues west along Woodinville-Duvall Road in underground pipes for approximately 1,100 feet where flows are directed north along 144th Ave NE for 500 feet and discharges to an open channel. The open channel flows west for 1,200 feet through a series of swales and culverts that ultimately flows under Highway 522. Once past Highway 522 the pipe system conveys flows south for 1,600 feet and discharge to Little Bear Creek. No drainage complaints have been recorded on this property in the last ten years. A Downstream Map is provided in Appendix A showing the current drainage system alignment.

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Upstream Basin

Large lot single-family residential developments exist to the north and east of the project. West of the project consists of the R-6 zoned Woodridge short plot. Runoff contributions to the site from upstream properties are limited due to the existing drainage system along NE 185th Court. No drainage complaints have been recorded for the neighboring sites within the last ten years. Although there was a complaint shown from 1987 on the property to the south (see Drainage Complaint Map), but appears to have been resolved.

Task 5: Mitigation of Existing or Potential Problems

The Downstream Map provided lists the components of the downstream drainage system. Development of the proposed site will be in accordance with current City of Woodinville and King County standards. The proposed storm water collection, conveyance, detention, and water quality systems will provide adequate measures to collect and convey increased surface water runoff and mitigate potential downstream systems.

Potential for severe erosion problems will be mitigated with the proposed conveyance system and flow control facilities design. The system will be designed to contain runoff rates generated by a 100 year storm event. Potential erosion or failure of on-site steep slope areas will be further protected with the conveyance of runoff generated by roofs and portions of on-site landscape areas to the proposed roadway system. Since on-site storm water will discharge to an existing storm drainage system within Woodinville-Duvall Road, no adverse impacts to downstream sensitive slope areas should be expected.

Temporary Erosion and Sedimentation Control (TESC) measures will be installed during the construction phase to further mitigate any potential erosion problems. These measures will be continually monitored and maintained in accordance to City of Woodinville Standards. Potential flooding problems will be mitigated with the installation and maintained performance of the on-site flow control and drainage conveyance systems. No storm water runoff will be directed to unimproved off-site drainage systems.

No observed indications of flooding or overtopping were found along the downstream conveyance system. There are no known drainage complaints within ½ mile downstream of the site per available data (see enclosed Drainage Complaints Map). The complaints farther downstream appear to be water quality complaints and not issues of capacity.

The proposed detention vault will meet Level 2 (Conservation) flow control standards which will maintain historic peak flow rates during typical storm events. This model is also conservative in the fact that existing impervious areas currently developed on-site are not allowed to be utilized for the target runoff rate when modeling the storm drainage facility. Formal backwater capacity calculations would require significant field data and field surveying which is not available at this time. But given the on-site storm drainage facilities and minimal increase of peak flow rates anticipated with this project, it is expected that the existing downstream conveyance capacity will adequately serve the proposed development.

iMAP Drainage Complaints

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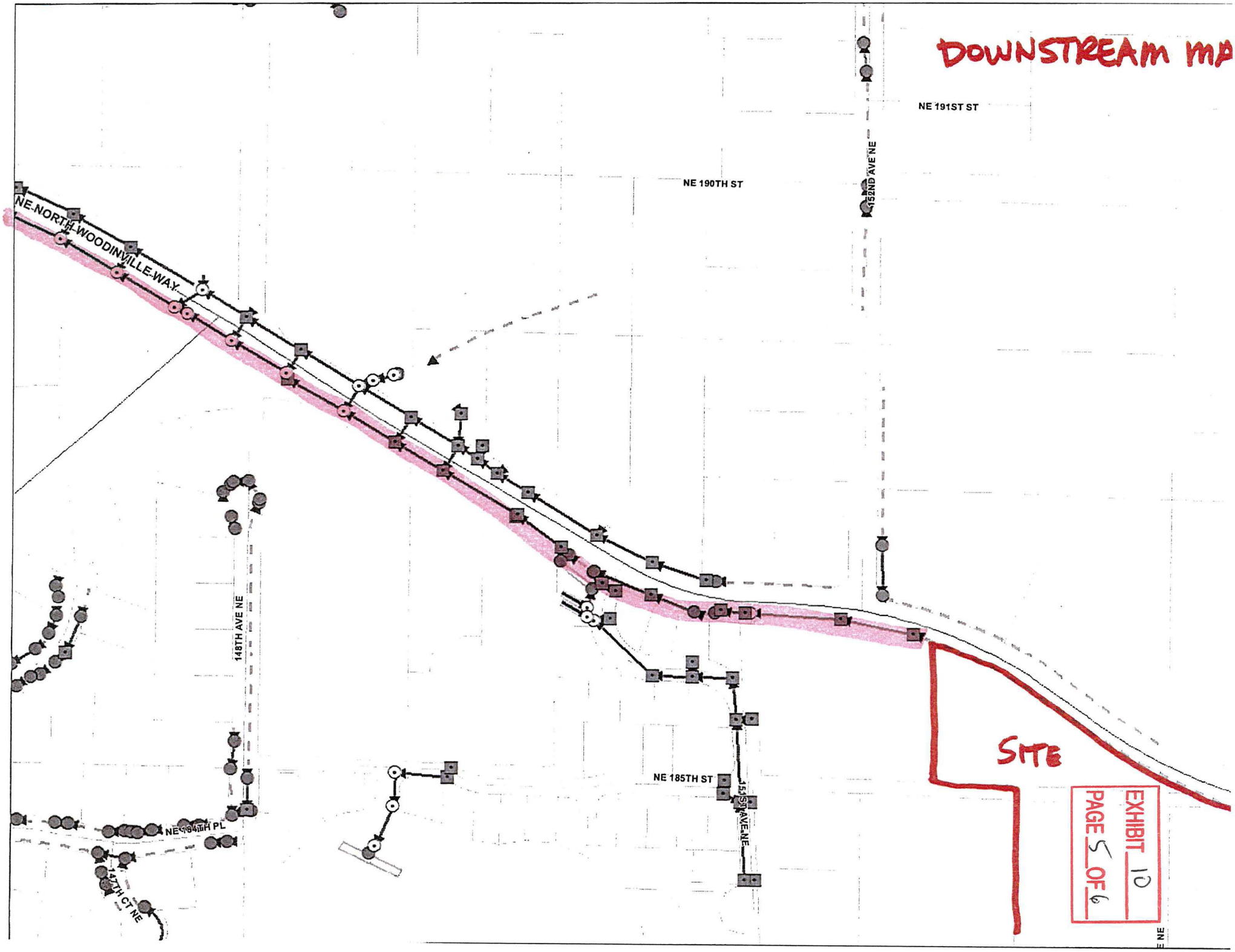
The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

King County

Date: 2/4/2014 Source: King County iMAP - Stormwater (http://www.metrokc.gov/GIS/iMAP)


DOWNSTREAM MA
NE 191ST ST
152ND AVE NE
NE 190TH ST
NE NORTH WOODINVILLE WAY
148TH AVE NE
NE 184TH PL
147TH CT NE
NE 185TH ST
155TH AVE NE
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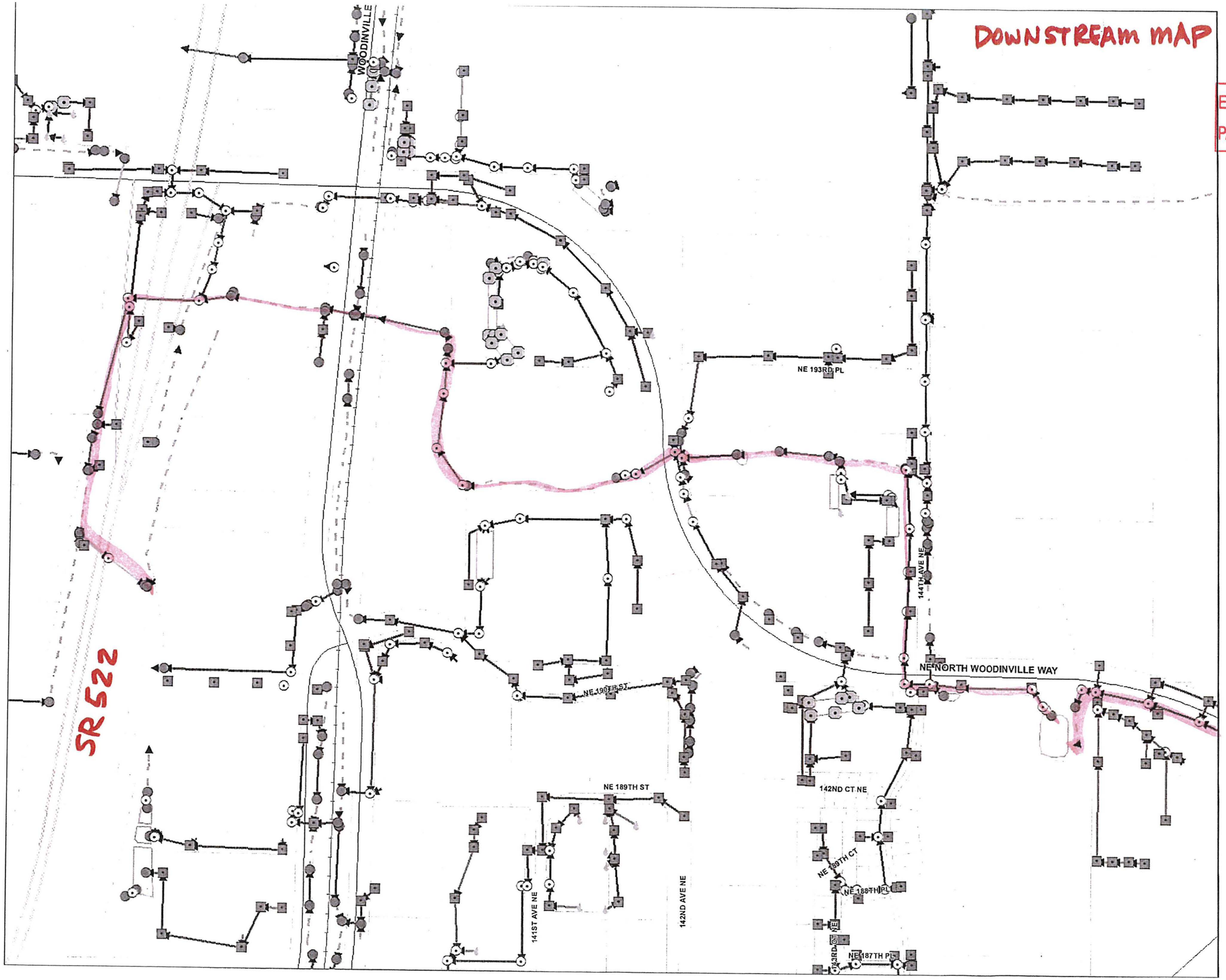
DOWNSTREAM MAP
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WOODINVILLE
NE 193RD PL
144TH AVE NE
NE NORTH WOODINVILLE WAY
NE 190TH ST
SR 522
NE 189TH ST
142ND CT NE
NE 189TH CT
NE 188TH PL
141ST AVE NE
142ND AVE NE
143RD CT NE
NE 187TH PL