Technical Memorandum – Draft Final

To: **Georgia Baxter / JH Baxter & Co**

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Date: **September 3, 2020**

Re: **Off-site soil sampling investigation**

Background

The operating J.H. Baxter & Co. (Baxter) Wood Treating Facility (the Site) is located at 85 Baxter Street, on the corner of Baxter Street and Roosevelt Boulevard in Eugene, Oregon. The Site is on about 31 acres located in north Eugene in a mix of industrial, commercial, and residential properties. Roosevelt Boulevard and the Roosevelt Channel border the Site to the north and northwest. Commercial properties, including Yale Transport, Armored Transport, and Lile of Oregon, are located northeast of the facility along Roosevelt Boulevard. The Southern Pacific Railroad right-of-way (ROW) borders the Site to the south and there is a stormwater drainage channel along that property line. To the west is Zip-O-Log Mills, Inc., Cascade Plating & Machine, and Heli-Jet Heliport. To the east, is Pacific Recycling, Inc. Figure 1 shows the location of the Site. The Site is identified by Oregon Department of Environmental Quality (DEQ) as Environmental Cleanup Site Information (ECSI) No. 55.

A DEQ Record of Decision was completed for the Site in October 2019 (DEQ, 2019). The remedy includes capping about 16 acres of contaminated soil at the Site, continuing groundwater pumping for hydraulic containment of contaminated groundwater, removal of contaminated ditch sediments on the south side of the Site, and sampling of soil and sediments (referred to as soil throughout remainder of this Data Evaluation Report) in offsite areas that could reasonably have been impacted by contaminant discharges from the facility. The ditch on the south side of the Site accepts stormwater runoff from the east, along the railroad tracks and treated stormwater from the Site. Offsite areas with the highest potential to have been historically impacted are to the north and south of the Site, in the direction of the prevailing winds. Currently, Baxter is performing detailed air modeling for the Lane Regional Air Protection Agency to provide a more detailed assessment of annual emissions patterns and patterns of emission migration.

A February 2020 Sampling and Analysis Plan (SAP) summarized the approach, data collection, and evaluation methods to (1) update offsite data for site contaminants of concern (COCs) present in surface soil near offsite areas due to the age of the historical data collected previously in 1996, (2) evaluate site COC concentrations in a drainage immediately downstream of the Site to determine potential impacts, and (3) collect background surface soil samples required to support the understanding of general area-wide COC concentrations present (GSI, 2020).

This TM summarizes the work that was completed in the field investigation and sampling on May 5th through 7th, 2020, including deviations to the original SAP, sample point locations, and results from the investigation.

Field Activities – Off-site Soil Sampling

Approach and Methodology

Samples were collected from locations identified in the attached Figure 2. The sample locations included six soil Incremental Sampling Methodology (ISM) sampling composite decision units (DUs) and two background ISM composite DU. Analytical testing included total metals (arsenic, chromium, copper, and zinc), polycyclic aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), and dioxins/furans. In addition, at sediment sampling locations (3 samples), analytical testing included total solids and total organic carbon (TOC).

- Collected ISM samples from background locations (southeast of site in an undeveloped field and within the drainage ditch on the south side of Baxter's property but upstream of the stormwater treatment system point of discharge)
- Collected ISM sample from two drainage ditch locations downstream of where Baxter has permitted discharge (downstream of the stormwater treatment system point of discharge and downstream of the groundwater treatment system point of discharge)
- Collected ISM samples from north and south offsite locations in near site areas

ISM sampling is a structured composite sampling protocol that reduces data variability, increases sample representativeness, and reduces the chance of missing significant contamination in a volume of soil targeted for sampling (ITRC, 2012). ISM characterizes the average concentration of chemicals in a predefined area called a DU and is more representative of potential average exposure by receptors within the DU than discrete samples. The DU defines the area and depth of sampling units upon which risk decisions can be based. To conduct ISM sampling, numerous samples of soil (each called an increment) are collected and combined, processed (homogenized) in a laboratory to reduce potential variability in the final volume used for analysis, and subsampled according to specific protocols. Each DU for this event consisted of 30 increments (90 increments in DU-4).

The goal of this sampling approach was to update COC concentrations in specific offsite areas, while avoiding an iterative approach to characterization. The ISM approach provides high-quality data that help manage uncertainty and support risk management decisions.

ISM sampling DU boundaries are presented in Figure 1.

The sampling objective is to characterize the nature and distribution of chemicals of interest (COIs) in surface soil or sediment. Sampling depth was zero to 6 inches below ground surface (bgs) or below mudline (bml), which is considered to be the depth of possible air emission particulate deposition over time from site operations and is representative of surface sediment within the discharge channel.

Eight DUs, including two background DUs (Figure 2) were delineated in near-site locations; these areas includes the north bank of Roosevelt Channel, public right-of-way (ROW) areas in neighborhood north of Roosevelt Channel, vegetated surface areas on the north side of West 1st Avenue, approximately 400 feet of the discharge channel in the southwest corner of the Site between the west property line and the discharge for Outfall #2, approximately 200 feet of discharge channel west of the Site below Outfall #1, a public park northeast of the Site, a background area within the south drainage channel upstream of where Outfall #2 enters the channel, and an industrial background area south of the Site beyond anticipated air emission impacts.

A split sample was analyzed by the laboratory staff after processing the background soil sampling unit composite and analyzed for dioxins/furans, allowing for a measure of replicability in sample means and the efficiency of homogenization.

Field Activities

The ISM sediment samples from the eight Decision Units (Figure 2) were collected by GSI on May 5th through 7th, 2020. Attachment A shows the field notes and Attachment B shows the final locations of all increments collected.

The soil descriptions for each DU include:

- **DU-1:** Silt (ML), brown, moist, medium stiff, few clay, more gravel near south side of park near fence, trace gravelly silt (two increments), ditch increments wet (two increments).
- **DU-2:** Loam/Topsoil, brown, stiff, damp to moist (few increments wet due to proximity to sprinkler), remove sod where applicable, appeared to be all non-native material.
- **DU-3:** Silt with Gravel, brown, moist to wet (bank to mid-channel), soft to stiff, gravel appears well-graded and rounded with up to 6" cobbles.
- **DU-4:** Silt and Silt with Gravel (ML), brown, moist to wet, medium stiff, voids, trace clay, few increments had methane gas/bubbles present (channel locations).
- **DU-5:** Topsoil/Silty Loam or Well-Graded Gravel (highly variable throughout DU), lower recovery where gravel present.
- **DU-6:** Silt (ML), brown, soft, moist, varied well-graded round gravel and sand also present in DU, voids and soft soil affecting recovery.
- **BKGD-1:** Silt to Silt with Gravel (ML), brown, stiff, damp, organics (root/grass debris), and gravel was 1.5" minus.
- **BKGD-2:** Silt (ML), brown, medium stiff, damp to moist, trace organics.

GSI collected samples from each DU using a stainless-steel push tube, hand trowel and a drill with a small auger bit. All increment sampling locations are shown in Attachment B, some increment locations were adjusted to avoid asphalt, concrete, or areas where access was limited. Each increment was then placed into a single one-gallon sample container provided by the laboratory and were homogenized and processed by Apex Laboratories, LLC (Apex) in Tigard, Oregon, as per the approved SAP (GSI, 2020). The samples were then analyzed by Apex for PCP by EPA Method 8041A, PAHs by EPA Method 8270D LL, TOC by EPA Method 5310B-Mod, Total Solids by EPA Method 2540G, and Metals (Arsenic, Chromium, Copper and Zinc) by EPA Method 6020A. Dioxins/Furans analysis by EPA Method 1613B was subcontracted to Cape Fear Analytical in Wilmington, North Carolina (Cape Fear). DU specific analyses are presented in the approved SAP (Table 1; GSI, 2020).

Location Positioning

Increment locations within each DU were selected on the basis of a stratified random approach using a square grid (using Esri ArcGIS 10 and Visual Sample Plan 7), each grid had one sample randomly placed within 30 of the grids generated (or 90 points for DU-4). This allowed for complete coverage of each DU using a randomized method.

Increment positions were pre-loaded into the global positioning system (GPS), several locations needed to be adjusted in the field due to ground cover obstructions (asphalt and concrete) and lack of access (locations near or in running water or on steep embankments). Sampling increment location changes were track in the field using ArcGIS Collector with a Real-time kinematic (RTK) positioning antenna When obtaining the coordinates of each sampling location, the projection method used was Horizontal Datum: North American Datum of 1983 (NAD83), State Plane Coordinate System, Oregon South Zone. Station accuracy may have been affected by satellite positioning and obstructions, such as high, steep banks or heavy cloud cover.

Quality Control Samples

Quality Control (QC) best practices were performed during sampling activities and as required by the SAP. This included field duplicate sample collection, equipment rinsate samples, and laboratory method blanks.

All method blank sample results were non-detect. Rinsate blanks were collected during the ISM sampling and erroneously not analyzed. Field staff followed EPA decontamination procedures while conducting field efforts. It does not appear that any cross contamination resulted from sampling procedures. Variability in organic compound analysis was evaluated by analysis of matrix spike (MS) and matrix spike duplicate (MSD) samples. Two MS recoveries were not within the acceptance limits (ISM-05_0520---After Processing and ISM-08_0520---After Processing). Failures were confirmed in the matrix spike duplicate and are attributed to matrix interference. One RPD sample (ISM-08_0520---After Processing) was outside the acceptance limits, the sample data was validated based on acceptable LCS/LCSD. Precision and accuracy information was generated for dioxins/furans using the ongoing precision and recovery samples run per the method.

Duplicate Samples

One field duplicate was collected from DU-4, parent and blind sample results were found to be comparable. Sample analytical variability and laboratory precision and accuracy was determined by the analysis of laboratory-generated sample split. The laboratory duplicate was collected from parent sample BKGD-01 (background composite), the relative percent difference (RPDs) between the parent and duplicate sample is 8%.

Triplicate Samples

Triplicate ISM samples were collected from DU-4 to assess the variability in average surface soil concentrations. DU-4 was selected for the triplicate samples to evaluate variability in the most likely DU to contribute to offsite atmospheric deposition from Site operations. However, this DU is also impacted by the high volume of commercial traffic that traverses Roosevelt Avenue adjacent to the channel, also contributing atmospheric deposition from heavy truck emissions.

The replicate sample increment locations were collected at different systematic random locations than initially used. This was accomplished by generating random points three time within DU-4. Unlike field and laboratory duplicate samples, which will be split off from the initial multi-increment sample, the triplicate samples will follow the same procedures as other unique DU samples and be homogenized separately by Apex. The results are used to evaluate data variability representativeness of the primary sample within the decision unit. The relative standard deviation (RSD) between the primary, duplicate, and triplicate samples with Arsenic RSD at 15%, Chromium RSD 12%, Copper RSD 23%, Zinc RSD 27% and dioxin/furan TEQ RSD at 46%.

Soil Results

Laboratory reports are provided in Attachment C. Method descriptions for EPA Methods 8041A, 8270D LL, 2540G, 6020A and 1613B are available through https://www.epa.gov/esam/selected-analytical-methods-environmental-remediation-and-recovery-sam.

Pentachlorophenol

Table 1 summarizes the PCP concentrations generated by EPA Method 8041A for the ISM soil samples. Resulting concentrations ranged from 0.0139 milligrams per kilogram (mg/kg) to 2.86 mg/kg. DEQ Risk Based Decision Making (RBDM) values for Residential soil and Occupational soil exceedances are 1.0 mg/kg and 4.0 mg/kg respectively.

Concentrations of PCP in soil exceeded RBDM for Residential Soil in DU-03 and BKGD-2 (Table 1). All other DUs were below RBDM for Residential and Occupational soil. It should be noted that DU-03 is the southeast drainage ditch and is in not located in an area where residential receptors are present or anticipated to reside in the future.

Polycyclic Aromatic Hydrocarbons

Table 1 summarizes the PAH concentrations generated by EPA Method 8270D Low Level (LL). Detections were noted in several analytes, however, exceedances for RBDM for Residential and Occupational soil as well as the Site specific cleanup level was noted for Benzo(a)pyrene and Dibenz(a,h)anthracene. DEQ Risk Based Decision Making (RBDM) values for Residential soil and Occupational soil exceedances are 0.11 mg/kg and 2.1 mg/kg respectively and the site specific cleanup level is 0.27 mg/kg for Benzo(a)pyrene and Dibenz(a,h)anthracene.

Concentrations for Benzo(a)pyrene exceeded RBDM for Residential soil in DU-03 with a concentration of 0.121 mg/kg. Concentrations for Benzo(a)pyrene also exceeded RBDM for Residential soil and the site-specific cleanup level at BKGD-2 and DU-6 at 0.499 mg/kg and 0.359 mg/kg respectively. It should be noted that DU-03 is the southeast drainage ditch and is in not located in an area where residential receptors are present or anticipated to reside in the future.

Concentrations for Dibenz(a,h)anthracene exceeded RBDM for Residential soil in BKGD-2, DU-4 Duplicate and DU-4 Triplicate locations with a concentration of 0.138 mg/kg. Due to laboratory limitations, these locations were unable to achieve the lower detection limit generally associated with the 8270D LL analytical method, resulting in a higher detection limit of 0.138 mg/kg. Although the detection limit exceeded the RBDM for Residential soil, exceeding DU locations were all noted as not detected by the analytical laboratory.

Metals

Table 1 summarizes the metals concentrations generated by EPA Method 6020A.

Arsenic concentrations ranged from 6.05 mg/kg to 67.2 mg/kg. DEQ Background Concentrations in Soil for the South Willamette Valley for Arsenic is 18 mg/kg, the Site-Specific cleanup level is also 18 mg/kg. Exceedances to both background and Site cleanup levels were noted in DU-03, BKGD-2, and DU-6 at 59.7 mg/kg, 67.2 mg/kg and 41.6 mg/kg respectively.

Chromium concentrations ranged from 33.1 mg/kg to 110 mg/kg. DEQ Background in Soil for the South Willamette Valley for Chromium is 100 mg/kg, DU-6 exceeded the Background level.

Copper concentrations ranged from 35.3 mg/kg to 233 mg/kg. DEQ Background in Soil for the South Willamette Valley for Copper is 140 mg/kg, DU-03 and DU-6 exceeded the Background level.

Zinc concentrations ranged from 97.2 mg/kg to 560 mg/kg. DEQ Background in Soil for the South Willamette Valley for Zinc is 200 mg/kg, DU-03, BKGD-2, DU-6, DU-4, DU-4 Duplicate and DU-4 Triplicate samples exceeded the Background level.

Dioxins/Furans

Table 1 summarizes the Dioxins/Furans concentrations generated by EPA Method 1613B.

Detections were noted for most Dioxin/Furan congeners, RBDM for Residential and Occupational soil and the Site-Specific Cleanup Level are 4.7 picogram per gram (pg/g), 12 pg/g and 20 pg/g respectively. The Toxicity Equivalence (TEQ) World Health Organization (WHO) Estimated Maximum Potential Concentration (EMPCs) using ND values of 0.0 mg/kg and 0.5 mg/kg (TEQ WHO2005 ND=0,0.5 with EMPCs on Table 1) exceeded values for Residential and Occupational soil and the Site-Specific Cleanup Level at DU-03, BKGD-2, DU-6, DU-4, DU-05 and DU-02; BKGD-01 exceeded the RBDM for Residential and Occupational Soil but did not exceed the Site-Specific Cleanup level. TEQ values presented in Table 1 are calculated by multiplying the weight of each dioxin/furan congener by its Toxic Equivalent Factor (TEF) and summing the results for each congener.

Other Analytes

The ISM sediment samples were analyzed for total organic carbon (TOC) and total solids in support of the risk evaluation for the Site, results are presented in Table 1. Total solids concentrations in the samples collected ranged from 92.6% to 94.9% solids by weight. TOC concentrations ranged from 3.2% to 5.4%.

Data Validation

Third-party data validation was performed to ensure there were no significant data quality issues identified. Attachment D presents the findings from the data validator.

Conclusions and Recommendations

The Key findings of this memo indicate the following:

- Baxter completed the Data Quality Objectives (DQOs) outlined in the Offsite Soil Sampling and Analysis Plan (GSI, 2020) evaluating (1) surface soil dioxin/furan concentrations present in near offsite areas due to the age of the historical data collected previously, (2) site COC concentrations in a drainage immediately downstream of the Site to determine potential impacts, and (3) collecting background surface soil samples required to support the understanding of general area-wide COC concentrations present.

- Decision/Background units BKGD-1 and DU-2 experienced low-level impacts from PCDD/Fs and did not experience impacts from other contaminants of concern (COCs); in addition, DU-1 did not exceed screening levels for any of the COCs analyzed during this investigation. Low-level PCDD/Fs could be the result of the sampling locations proximity to busy and heavily trafficked haul/transportation roads. Heavy trucking traffic from diesel burning vehicles is linked to the emission of Dioxins/Furans (Gullet and Ryan, 1997). These sampling locations, in general, are the farthest away from the railway corridor and J.H. Baxter facility, potentially supporting the lower analytical results. Upon review of aerial photographs from 1936, 1978, 1994 and 2000 (Attachment E) the J. H. Baxter Facility and surrounding areas have undergone several iterations of filling, excavation, and development. BKGD-1, DU-2 and DU-1 appear least effected by the areas industrial and residential development activities, allowing these locations to be less affected by the deposition of potentially contaminated fill material.
- Decision/Background units DU-3, BKGD-2, DU-6, DU-4 and DU-5 have elevated concentrations of COCs upon comparison to BKGD-1, DU-1 and DU-2 locations (Table 1). Based on development and filling activities, proximity to a railway, a busy haul road, and the J. H. Baxter facility, elevated detected concentrations are likely an artifact of historical and current uses of the area. Based on current data, it is unlikely that the J. H. Baxter facility is the only potential source for all detected COCs noted in the off-site ISM soil sampling event.
- BKGD-2 is located up channel from the stormwater system outfall (Outfall 2) and the data results indicated arsenic and zinc concentrations greater than regional background levels. DU-3 also noted elevated levels of arsenic, copper, and zinc. Arsenic, copper and zinc and commonly found in railroad ballasts; ballasts were historically sourced from mine tailings, mill tailings and other mining related processing wastes which have been linked to containing heavy metals (Collins, 1984). In addition to railroad ballasts, rail car wheel/brake block dust has also been linked to producing airborne particulates containing copper and zinc (Abbasi et al., 2013). BKGD-2 and DU-3 are both located in a channel near a historically/presently active railway which receives runoff from the track line and downgradient from adjacent parcels which may have been involved with industrial activities associated with producing heavy metal related runoff and airborne particulate deposition. J. H. Baxter remains committed to clean-up of the upper 6" of soil below Outfall 001 (DEQ, 2019).
- DU-6 noted arsenic, chromium, copper and zinc concentrations greater than regional background levels (Table 1). Baxter has not had exceedances for metals in past Outfall 001 sampling (discharge from groundwater treatment system) at this location. Historically, the parcel located south of DU-6 was used as a plating mill facility. Based on the elevated metal concentrations, especially elevated chromium, J.H. Baxter recommends DEQ perform additional investigation south of DU-6 to determine if the source of elevated metals is from the historic plating facility.
- PCDD/Fs results were elevated in decision units located near Roosevelt Channel (DU-4, DU-4 Duplicate, DU-4 Triplicate, DU-5 and DU-6). These results are approximately one order of magnitude above the screening level for the site. Heavy truck traffic could be a contributing factor to detected concentrations, diesel emissions, especially those linked to the heavy trucking industry generate detectable amount of PCDD/Fs (Gullet and Ryan, 1997). Roosevelt Boulevard (adjacent to Roosevelt Channel) is heavily trafficked by diesel burning haul trucks associated with supporting the industry in the area. In

addition to diesel emissions, brake dust which is also associated with the automotive and heavy trucking industry is known to have elevated levels of Zinc (and other heavy metals) in brake dust particulate matter (Grigoratos and Martini, 2014) which could easily migrate to Roosevelt Channel through direct airborne particulate settling or migration through secondary surface runoff. As part of the Cleaner Air Oregon emission monitoring program, J.H. Baxter is currently performing air modeling studies which will better inform the wind direction and potential depositional patterns related to facility operations.

References

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Tables

Unit	Metals: South Willamette Valley	Residential Soil	Occupational Soil	Cleanup Level	SW Corner of Plant)	Flag	(Ditch - SE Perimeter of Plant)	Flag	NW Side of Plant)	Flag	Side Roosevelt Channel)	Flag	(North Side Roosevelt Channel)	Flag	(North Side Roosevelt Channel)	Flag	(Neighbor-hood north of Site)	Flag	(South of Facility)	Flag	(Bkgd: Lark City Park)	Fla
mg/kg	--	--	--	--	**2.34E-02**		--		**4.62E-02**		**1.13E-02**	E	**2.18E-02**		**3.50E-02**		**5.80E-03**	E	**8.28E-03**		**7.60E-04**	
mg/kg	--	--	--	--	**1.60E-03**		--		**1.00E-03**		**9.91E-04**		**1.48E-03**		**2.55E-03**		**2.66E-04**		**2.77E-04**		**4.15E-05**	
mg/kg	--	--	--	--	**2.31E-03**		--		**4.52E-03**		**1.41E-03**		**2.23E-03**		**3.72E-03**		**7.45E-04**		**6.75E-04**		**8.11E-05**	
mg/kg	--	--	--	--	**3.89E-04**		--		**6.11E-04**		**3.39E-04**		**5.11E-04**		**8.77E-04**		**1.36E-04**		**1.27E-04**		**1.64E-05**	
mg/kg	--	--	--	--	**3.08E-05**	J	--	J	**2.68E-05**	J	**1.87E-05**		**2.94E-05**	J	**4.81E-05**	J	**9.09E-06**		**9.92E-06**	J	**1.10E-06**	J
mg/kg	--	--	--	--	**2.21E-05**	J	--	J	**2.81E-05**	J	**2.62E-05**		**3.43E-05**	J	**6.15E-05**	J	**8.05E-06**		**8.39E-06**	JK	**1.40E-06**	J
mg/kg	--	--	--	--	**1.62E-05**	J	--	J	**4.11E-05**	J	**1.25E-05**		**1.86E-05**	J	**3.44E-05**	J	**2.27E-05**		**5.59E-06**	BJK	**8.22E-07**	J
mg/kg	--	--	--	--	**8.93E-05**	J	--	J	**1.95E-04**	J	**6.37E-05**		**9.60E-05**		**1.52E-04**		**3.34E-05**		**3.08E-05**	J	**3.86E-06**	J
mg/kg	--	--	--	--	**1.21E-05**	J	--	J	**2.24E-05**	J	**1.20E-05**		**1.88E-05**	JK	**3.47E-05**	J	**9.31E-06**		**5.52E-06**	J	**6.56E-07**	J
mg/kg	--	--	--	--	**4.69E-05**	J	--	J	**7.66E-05**	J	**4.41E-05**		**6.80E-05**		**1.12E-04**		**1.65E-05**		**1.20E-05**	J	**1.97E-06**	J
mg/kg	--	--	--	--	9.59E-06	U	--	U	**1.86E-05**	J	**3.21E-06**	J	**6.04E-06**	J	**9.67E-06**	J	**5.43E-06**		3.04E-06	U	**4.16E-07**	J
mg/kg	--	--	--	--	**1.25E-05**	J	--	J	**1.90E-05**	J	**1.50E-05**		**2.17E-05**	J	**3.40E-05**	J	**4.22E-06**	J	**5.49E-06**	JK	**8.60E-07**	J
mg/kg	--	--	--	--	**4.98E-06**	J	--	J	1.17E-05	U	**3.13E-06**	J	**5.23E-06**	BJ	**1.01E-05**	JK	**3.67E-06**	J	**4.13E-06**	BJK	**5.51E-07**	B
mg/kg	--	--	--	--	**1.85E-05**	J	--	J	**2.95E-05**	J	**1.68E-05**		**2.47E-05**	J	**4.24E-05**	J	**1.06E-05**		**6.46E-06**	JK	**9.87E-07**	J
mg/kg	--	--	--	--	**8.59E-06**	JK	--	JK	**1.82E-05**	J	**6.44E-06**		**9.61E-06**	J	**1.63E-05**	J	**8.14E-06**		**4.35E-06**	BJK	**7.24E-07**	B
mg/kg	--	--	--	--	4.20E-06	U	--	U	4.96E-06	U	**2.45E-06**		**4.73E-06**	J	**7.83E-06**	J	**2.54E-06**		3.56E-06	U	**5.14E-07**	J
mg/kg	--	--	--	--	3.75E-06	U	--	U	4.40E-06	U	**2.68E-06**		**2.23E-06**	JK	3.60E-06	U	**1.70E-06**		3.12E-06	U	2.51E-07	U
mg/kg	--	4.7E-06	1.2E-05	**2.0E-05**	**7.05E-05**	J	--	J	**1.31E-04**	J	**5.89E-05**	J	**9.10E-05**	J	**1.49E-04**	J	**3.08E-05**	J	**2.45E-05**	J	**3.85E-06**	J
mg/kg	--	4.7E-06	1.2E-05	**2.0E-05**	**7.33E-05**	J	--	J	**1.34E-04**	J	**5.89E-05**	J	**9.10E-05**	J	**1.49E-04**	J	**3.08E-05**	J	**2.66E-05**	J	**3.86E-06**	J
%	--	--	--	--	**92.6**		**93.6**		**93.4**		**93**		**94.9**		**93.3**		**94.6**		**94.2**		**94.8**	
%	--	--	--	--	**5.4**		--		**3.2**		--		--		--		--		--		--	
mg/kg	18	0.43	1.9	**18**	**59.7**		**67.2**		**41.6**		**8.22**		**7.67**		**10.3**		--		**6.05**		**6.37**	
mg/kg	100	120,000	--	--	**47.7**		**75.1**		**110**		**50.4**		**46.2**		**58.9**		--		**33.1**		**42.9**	
mg/kg	140	3,100	47,000	--	**218**		**84.3**		**233**		**86.2**		**84.3**		**125**		--		**35.3**		**38.2**	
mg/kg	200	--	--	--	**444**		**369**		**208**		**349**		**369**		**560**		**97.7**		**128**		**97.2**	
mg/kg	--	--	--	--	0.114	U	0.277	U	0.112	U	0.113	U	0.278	U	0.278	U	--	U	0.0280	U	0.0278	U
mg/kg	--	--	--	--	0.114	U	0.277	U	0.112	U	0.113	U	0.278	U	0.278	U	--	U	0.0280	U	0.0278	U
mg/kg	--	4,700	70,000	--	0.0568	U	0.138	U	0.0559	U	0.0564	U	0.138	U	0.138	U	--	U	0.0139	U	0.0139	U
mg/kg	--	--	--	--	0.0568	U	0.138	U	0.0559	U	0.0564	U	0.138	U	0.138	U	--	U	0.0139	U	0.0139	U
mg/kg	--	23,000	350,000	--	**0.133**		**0.186**	J	**0.157**		0.0564	U	0.138	U	0.138	U	--		0.0139	U	0.0139	U
mg/kg	--	1.1	21	--	**0.0822**		**0.244**	J	**0.39**		0.0564	U	0.138	U	0.138	U	--		0.0139	U	**0.0234**	
mg/kg	--	0.11	2.1	**0.27**	**0.121**		**0.499**		**0.359**		**0.0953**		0.208	U	0.208	U	--		**0.0288**		**0.0454**	
mg/kg	--	1.1	21	--	**0.377**		**0.928**		**0.725**		**0.113**		0.208	U	0.208	U	--		**0.0292**		**0.0472**	
mg/kg	--	--	--	--	**0.151**		**0.351**	J	**0.134**		**0.117**		**0.15**		**0.21**		--		0.0139	U	**0.0239**	
mg/kg	--	11	210	--	**0.107**		**0.408**		**0.224**		0.0848	U	0.208	U	0.208	U	--		0.0209	U	**0.0264**	
mg/kg	--	--	--	--	0.0855	U	**0.218**	J	0.084	U	0.0848	U	0.208	U	0.208	U	--	U	--		--	
mg/kg	--	110	2,100	--	**0.237**		**0.510**		**0.67**		**0.109**		0.138	U	0.138	U	--		0.0139	U	**0.0229**	
mg/kg	--	0.11	2.1	**0.27**	0.0568	U	0.138	U	0.0559	U	0.0564	U	0.138	U	0.138	U	--	U	0.0139	U	0.0139	U
mg/kg	--	--	--	--	0.0568	U	0.138	U	0.0559	U	0.0564	U	0.138	U	0.138	U	--	U	--		--	
mg/kg	--	2,400	30,000	--	**0.153**		**0.484**		**0.618**		**0.0891**		**0.144**		**0.164**		--		**0.0257**		**0.0353**	
mg/kg	--	3,100	47,000	--	0.0568	U	0.138	U	0.0559	U	0.0564	U	0.138	U	0.138	U	--	U	0.0139	U	0.0139	U
mg/kg	--	1.1	21	--	**0.14**		**0.385**		**0.156**		**0.063**		0.138	U	0.138	U	--		0.0139	U	**0.0198**	
mg/kg	--	5.3	23	--	0.114	U	0.277	U	0.112	U	0.113	U	0.278	U	0.278	U	--	U	0.0280	U	0.0278	U
mg/kg	--	1.0	4.0	--	**1.65**		**2.86**		**0.996**		0.0564	U	1.38	U	1.38	U	--		**0.156**		0.0139	U
mg/kg	--	--	--	--	**0.0907**		**0.289**		**0.0981**		**0.069**		0.138	U	0.138	U	--		**0.0227**		**0.0164**	
mg/kg	--	1,800	23,000	--	**0.166**		**0.477**		**0.771**		**0.129**		**0.19**		**0.257**		--		**0.0236**		**0.0333**	

	Unit	Metals: South Willamette Valley	Residential Soil	Occupational Soil	Cleanup Level	SW Corner of Plant)	Flag	(Ditch - SE Perimeter of Plant)	Flag	NW Side of Plant)	Flag	Side Roosevelt Channel)	Flag	(North Side Roosevelt Channel)	Flag	(North Side Roosevelt Channel)	Flag	(Neighbor-hood north of Site)	Flag	(South of Facility)	Flag	(Bkgd: Lark City Park)	Fla

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Figures

J.H

LEG

ISM S

Attachment A
Field Notes

Tuesday, ~~March~~ May 5, 2020

830 - Renee onsite to meet Thomas to collect offsite soil ISM sample

Discuss approach + H/S + COVID issues

Get Josh to send us update zoomed in figures of DU 5, DU 1, + DU 4 (residence, park + roosevelt / triplicates).

930 - wrap up @ JH Baxter office, pick up ice + go to DU 2

1030 - Start DU-2

increment #13 moved 6' (#1 on east side of DU, heading west) to east b/c location in driveway. Didn't take new point b/c have a 6' buffer

Had to move another location

further west due to driveway. Collected new point w/ location is >6' from marked SE increment.

Moved two more increments b/c of driveway + intersection. Moved so that a road separated the 2 new increment locations.

1230 - finish DU-2:
ISM general description:
brown, slightly moist, couple increments wet due to sprinkler system, loam / top soil, little to no native material, removed sod when applicable. 2-4 increments = ↓ recovery due to loose formation.

1130 = time for ISM-02-0520 Sample

decon equipment, bathroom break, print hard copies of figures / locations

1325 - Start DU Background 1 or DU 7 (ISM-07)

Based on field testing, need 2 6" holes to get ~4 oz of soil for sample. Did this on previous DU (DU-2), too but forgot to record. All locations had 2 holes drilled

1455 - finished DU7 (Background 1)
- no locations moved
- all increments had top ~1" removed due to grass / roots. (~~ISM~~ DU in field)
- poor recovery on quite a few increments

General description
Silt to silt w/ gravel, compact / tight formation, moist, dense, brown, gravel 1.5" minus

1430 = Sample time for ISM-07-0520

1540 - Start Bkgd 2 (ISM 08)
- Moved all locations into ~~sed~~ ditch so collecting sediment. Locations 10' to 20' south, almost to RR tracks
→ all locations saturated
- Switch from drill to push tube sampler. Only 1 hole per increment (not 2)

General Description Bkgd 2
Silt, med. dense, brown, moist to slightly moist, sparse organics

1725 - Finish ISM - ~~B0~~ 08-0520 (Bkgd 2)

1600 (1630) = Sample time for ISM-08-0520

Decon equip + pack up

1830 - offsite

Wednesday, May 6, 2020

810 - onsite @ park (DU1). Begin setting up.

825 - Thomas (Baxter) onsite to help

835 - Start DU1 ISM @ Lane Park

1030 - finish DU1

General Description
Silt, med dense, brown, few clay, gravel on South side of park fence (north of path) so ~~silty~~ gravelly silt in 2 increments. moist in all but 2 ~~locat~~ increments in ditch = wet.

930 = Sample time for ISM-01-0520

1130 - Start the 1st (purple dot/04) triplicate + 3rd triplicate (green dot/204) samples in DU4

1500 - Thomas offsite for break + check availability for tomorrow to finish work. Renee finishes collecting flagged increments in 1st + 3rd

Triplicates. 5 increments remaining in each + stop for Thomas to finish flagging. ~~Renee breaks for water + lunch~~

1515 - Renee breaks for water + lunch
1530 - Renee continues 1st + 3rd triplicates solo.
1545 - Thomas back onsite
1630 - Finish 1st + 3rd triplicates in DU 4. Locations on Roosevelt bank had to be moved to ~~past~~ off channel at both ends of DU b/c no safe place to cross. Able to cross in middle + grabbed Roosevelt increments on that bank when safe + reasonable (within 1/4 mile of channel crossing).

General Description - Pathway bank
~~silty sand~~ on upstream side transitioning to silt w/ gravel on downstream side of DU. Moist to wet, clay (few increments) present, brown, med. dense
of sandy silt

Scale: 1 square = ______

General Description - Roosevelt Bank
Silty gravel, gravel 2" minus, well rounded, silt was brown, gravel = well graded, all increments in this bank collected using hand trowel (not drill) due to high gravel content.

General Description - Channel
Silt, brown, wet, soft w/ air gaps, methane gas present @ some increments.

* Many locations had ↓ recovery due to ↑ gravel content or very loose compaction in channel

1300 = ISM-04-0520
1400 = ISM-204-0520

1700 - Start 2nd triplicate in DU4
1900 - finish 2nd triplicate in DU4
1800 = Sample time for ISM-104-0520
2nd triplicate has same description

Scale: 1 square = ______

as other triplicates. Had a hard
time w/ retention in gravels +
compression (air pockets) in channel.

Decon equipment

1930 - offsite

Thursday, May 7, 2020

810 - Renee onsite @ DU 5
818 - Thomas onsite
Prep for sample collection

845 - Start ISM Sampling @ DU5

- Some locations moved b/c in asphalt.
- Couple increments relocated on Archie b/c sidewalk took up 4' of buffer + remaining 2' is a highway of utilities - including power. Call Josh to confirm okay to relocate across street.

1110 - finish DU 5
General Description
highly modified + different across all increments. Most increments in residential yards. Top soil often present. If top soil didn't penetrate all 6", gravel often present. Lack of topsoil gravel often found. Gravel = 1/2"

gravel is well rounded + well graded

minors with 10-50% silt, few sand. Topsoil = silty loam.

— Low recovery when gravel present

1000 = sample time for ISM-05_0520

decon + move locations

1145 - Start DU 3. GPS is on RR tracks again so will relocate all ISM locations

FYI - no H2O run down ditch since April 30th from SW ~~Stf~~ system.

1315 - Finish DU 3

General Description

silt w/ gravel. Some fine + med coarse present in 2/3 increments @ US end of DU. Clay present. brown, moist to wet (bank to mid-channel), ~~med stiff~~ stiff to soft, gravel is well rounded,

well graded, + up to cobble size (6")

— all increments in DU 3 collected with hand trowel. Attempted push probe but too much gravel present → drill would be not better.

° Fully penetrated 6" w/ hand trowel to get full depth + trimmed sides so all depths equally represented. Used 1" diameter as guide.

— Since all increments were relocated, increments do not necessarily match density of suggested locations. Some moved to property boundary + poison oak growing over top of ditch.

1230 = Sample time for ISM-03-0520

decon equipment ~~ahe~~ used on project for ease after next DU.

1350 - Collect EB-03-0520

Equipment blank collected
on hand trowel after routine
deconing.

1425 - At DU 6, DS of Baxter
+ US of Cascade Plating +
Machine.

GPS locations do not match
creek. Called Josh to confirm
all locations should be in channel.
Currently ~1/2 locations are up on
bank / parking lot. Will ~~to~~ pick
all new locations in channel but
try to maintain density.

1440 - Start DU 6
1630 - finish DU6
Worked DS to US. Nutria
lives in canal + chased us for
the first ~15 increments.

General Description (DU6)
Silt (generally), soft, lots of
air gaps w/ depth, high gravel
on ~~bot~~ south side of channel -
difficult to get increments on
south side. Often not 6"
after extruding b/c silt so
soft + separated w/ depth.
Gravel is well rounded + well
graded. Upper 20' of DU (US
end) switched from silt to
fine to ~~m~~coarse sand.

1550 = sample time for ISM-06-0520
(1530)

Decon equipment

1715 - offsite to PDX

Attachment B

Sampling Locations


1st Ave
BKGD-1

J.F

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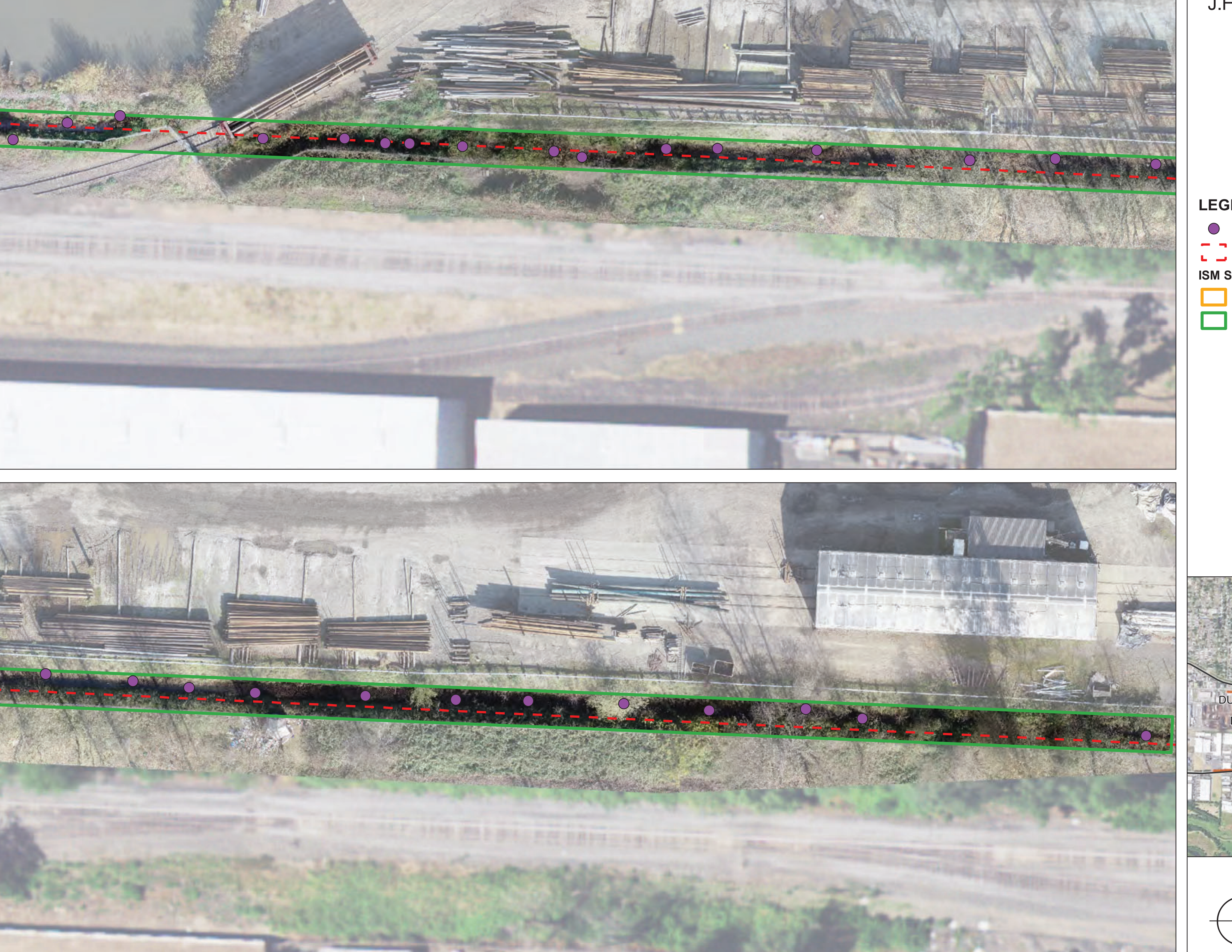
DU-
DU


J.F
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DU

J.F

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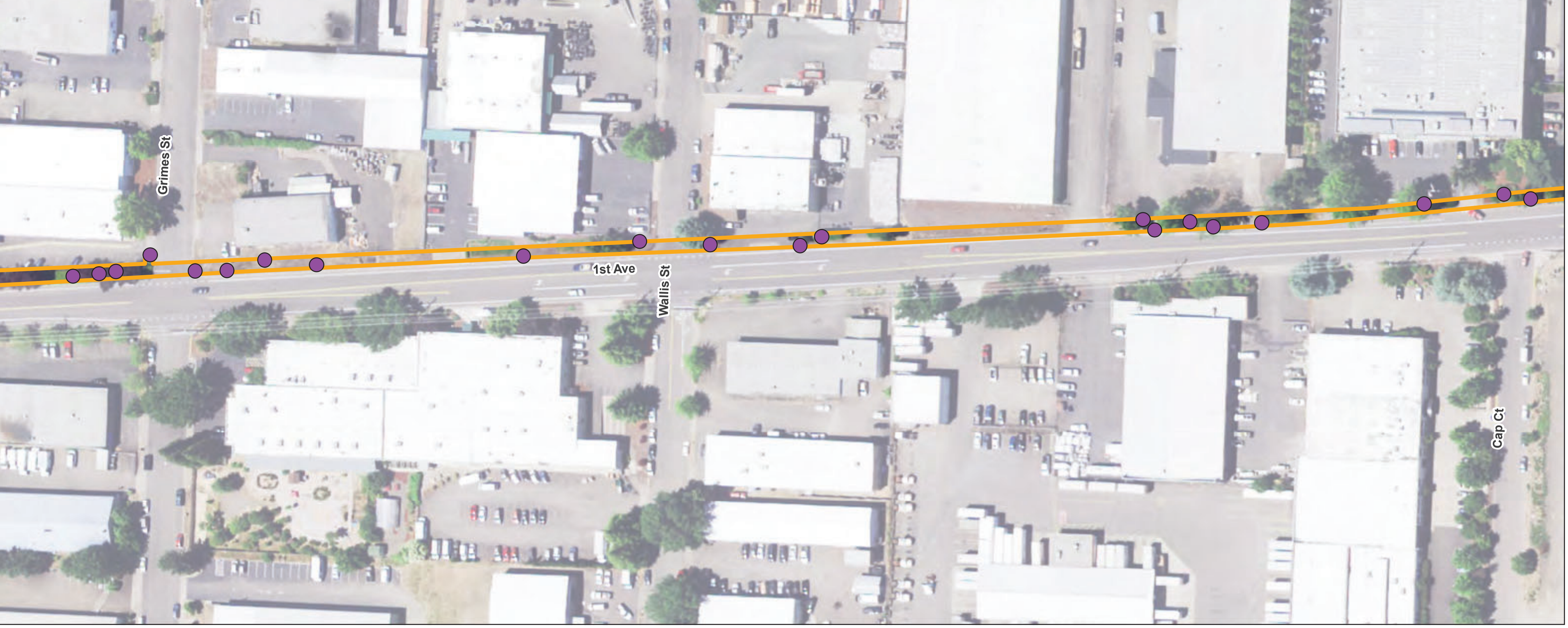
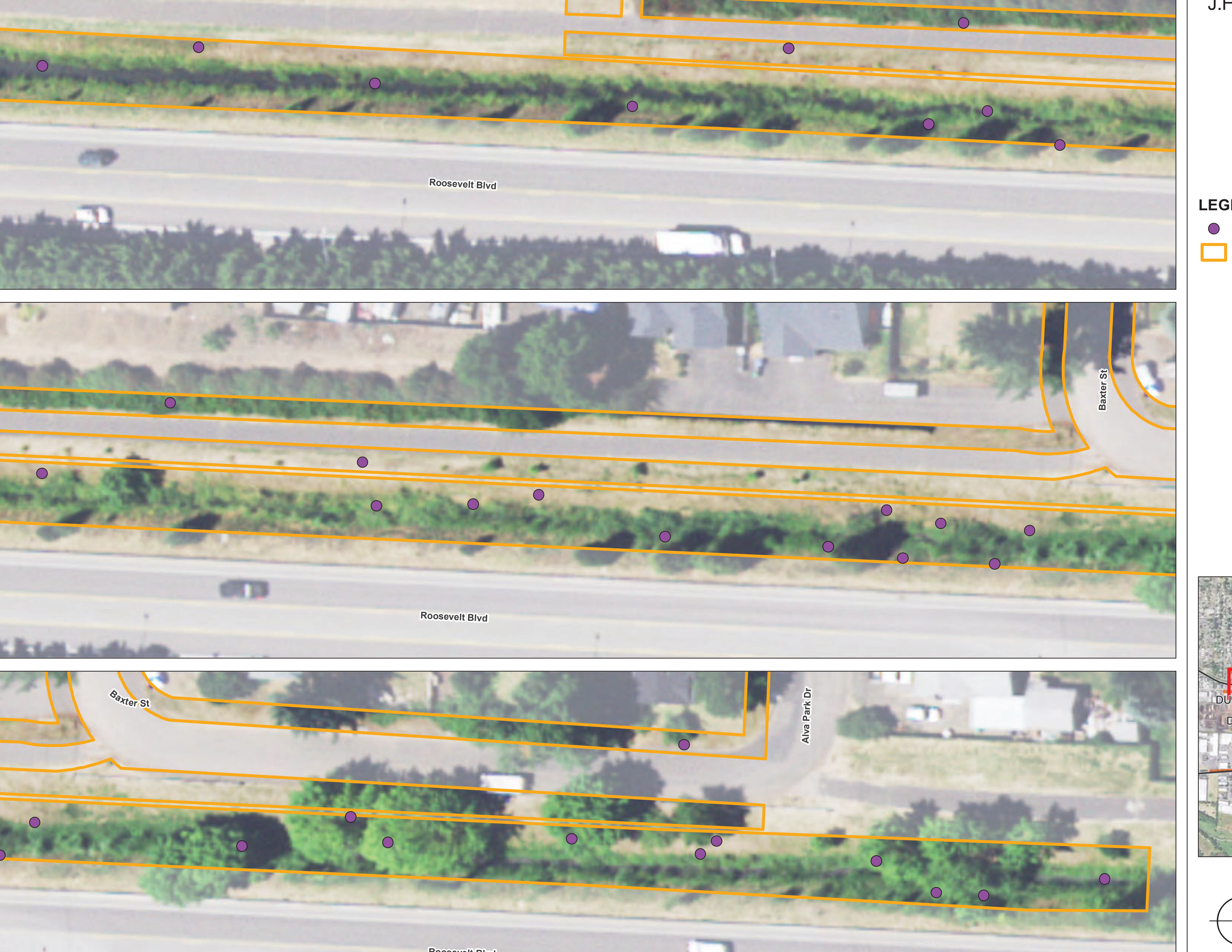


Grimes St
1st Ave
Wallis St
Cap Ct

1st Ave
Cap Ct

J.F


Roosevelt Blvd
Baxter St
Roosevelt Blvd
Baxter St
Alva Park Dr
LEG

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Roosevelt Blvd


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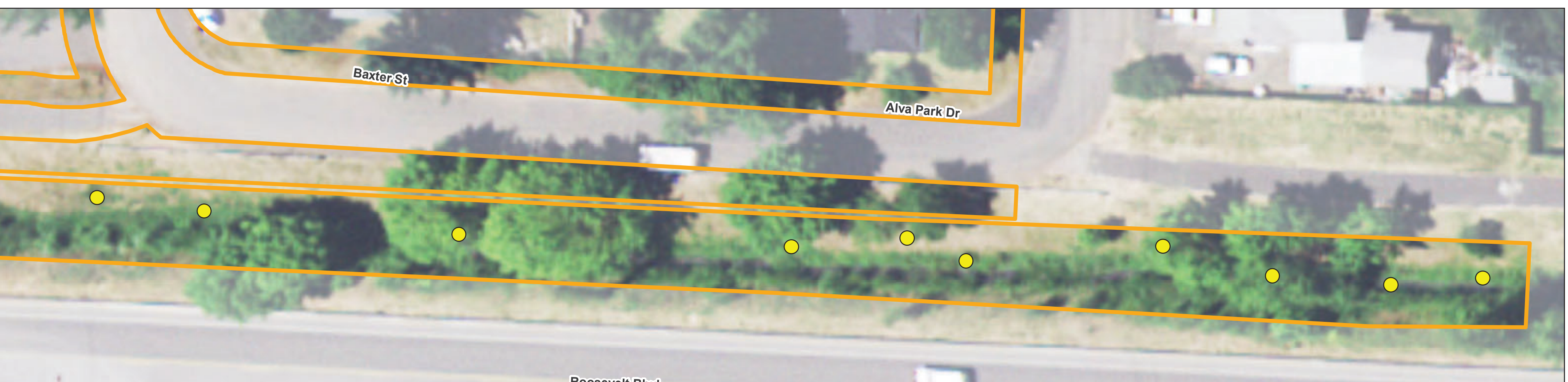
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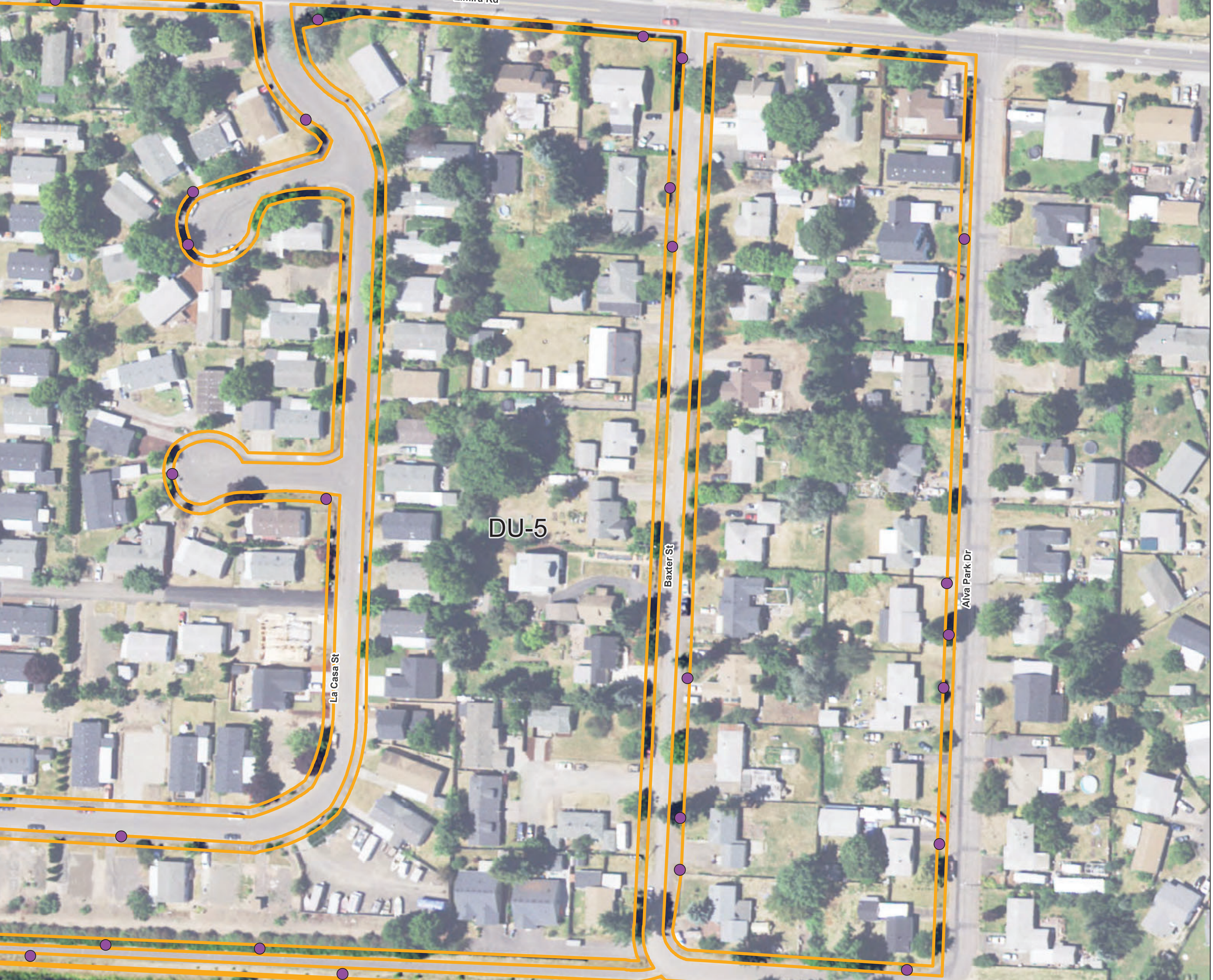

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