State of Oregon
# Department of Environmental Quality Memorandum

**Date:** March 11, 2024

**To:** FILE

**Through:** Kevin Parrett and Katie Daugherty

**From:** Kevin Dana
Northwest Region

**Subject:** River Terrace Town Center Development, ECSI #6283; Staff Memorandum in support of a Conditional No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended Conditional No Further Action (CNFA) determination for the River Terrace Town Center Development site in Tigard. As discussed in this report, contaminant concentrations in soils exceed acceptable risk levels for applicable exposure pathways. Consequently, the No Further Action determination will be conditioned upon adherence to restrictions in Easements & Equitable Servitudes recorded with the property.

The proposed CNFA determination meets the requirements of Oregon Administrative Rules (OAR) Chapter 340, Division 122, Sections 010 to 0140; and Oregon Revised Statues (ORS) 465.200 through 465.455.

The proposal is based on information documented in the administrative record for this site. A copy of the administrative record index is presented at the end of this report.

## 1. BACKGROUND

**Site location.**
The site's location can be described as follows:
- Address: 13580 & 13794 SW Roy Rogers Road, Tigard, Washington County, Oregon.
- Latitude 45.4199º North: Longitude 122.8517º West
- Tax Lots 3300 & 3301, Township 2 South, Range 1 West, Section 6, Willamette Baseline and Meridian.

**Site setting.**
The 38.52-acre site covered two rural properties on the east side of Roy Rogers Road. See Attachment 1 for a topographic map of the area (circa 1977) and Attachment 2 for an aerial photo of the site (circa 2022). A residential neighborhood bordered the site to the east, and at the time the site entered the Voluntary Cleanup Program (circa 2018), residential neighborhoods were being planned to the north and south of the site. Residences were under construction to the west of the site, across Roy Rogers Road.

**Hydrogeological setting.**
Soils at the site were described as "fine-grained alluvium" (silts and clays), and extended from 7-20 feet below ground surface (bgs). The soils are underlain by basalt bedrock. Shallow (likely perched) groundwater was encountered at a variety of depths, ranging from 4-17 feet bgs. The local groundwater aquifer is estimated to be about 90 feet bgs.

**Site history.**
The site was undeveloped prior to the 1940s. From the 1940s to 1960 the site was converted to agricultural use, with fields, an orchard, and a large irrigation pond. Two rural residences were constructed, each with its own septic tank and water well, and various outbuildings were established, including a vehicle maintenance building with a dirt floor. The site was brought inside the Urban Growth Boundary in 2002 and annexed to the City of Tigard in 2011. Polygon Northwest Company acquired the site a year or two later for residential development. Polygon was subsequently acquired by Stanton Street Building Company, circa 2020.

## 2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

**Land use.**
The City of Tigard has rezoned the site for a mix of Medium-Density Residential (R-7), Medium High and High Density Residential (R-25), and Community Commercial (C-C) development. The development includes approximately 7 acres of public parks and approximately 2 acres of open space at the north end of the site.

**Groundwater use.**
A search of well logs on file with the Oregon Water Resources Department identified 31 domestic wells and three irrigation wells in the same township/range/section as the site. However, well abandonment logs for 25 domestic wells and three irrigation wells were also recorded, almost all in the last 20 years. It appears that water wells in the area are being decommissioned as the area becomes urbanized.

A municipal water supply will be provided to the site by the City of Tigard. The city obtains its supply from a surface water intake on the Clackamas River.

**Surface water use.**
An unnamed, intermittent creek flows to the southwest across the northwest corner of the site. The creek and the on-site irrigation pond were identified as wetlands in the 2020 National Wetland Inventory, as shown on Attachment 3. The intermittent creek flows southwest roughly 7,000 feet to the Tualatin River, as shown on Attachment 4.

## 3. INVESTIGATION AND CLEANUP WORK

Eighteen composite soil samples and seven composite sediment samples were collected from across the site in June 2018 to determine the nature and extent of potential contamination.

*Agricultural Area Samples*
A total of 14 composite soil samples were collected from eight decision units covering the agricultural areas of the site. The eight decision units are labeled COMP-2 through COMP-9 on Attachment 5. In each decision unit, four discrete soil samples were collected from 0-6 inches bgs and combined into a composite sample. In six of the decision units (all but COMP-2 and COMP-5), four additional discrete soil samples were collected from 1-1½ feet bgs and combined into a composite sample. The 14 composite soil samples were analyzed for organochlorine pesticides.

Low concentrations of a variety of pesticides were detected in the eight near-surface (0-6 inch) composite samples, including chlordane at concentrations up to 0.482 parts per million (ppm). Other pesticides included alpha-Chlordane (0.0619 ppm), gamma-Chlordane (0.0387 ppm), DDD (0.0114 ppm), DDE (0.393 ppm), DDT (0.556 ppm), dieldrin (0.162 ppm), and heptachlor epoxide (0.0095 ppm). The six deeper composite samples (1-1½ feet bgs) identified beta-BHC (0.00528 ppm), delta-BHC (0.011 ppm), alpha-Chlordane (0.012 ppm), gamma-Chlordane (0.00883 ppm), DDE (0.178 ppm), DDT (0.192 ppm), dieldrin (0.0377 ppm), and heptachlor epoxide (0.00325 ppm). The eight near-surface composite samples were also analyzed for metals. Metals concentrations were consistent with naturally-occurring background levels.

The maximum concentrations of five pesticides exceeded DEQ's clean fill screening level values (SLVs): DDD, DDE, DDT, dieldrin, and heptachlor epoxide. The maximum dieldrin concentration (0.162 ppm) also exceeded DEQ's residential direct contact risk-based concentration (RBC) of 0.034 ppm.

*Sediment Samples*
Three composite sediment samples were collected from the intermittent creek in the northwest corner of the site. The sample locations are labeled SEDCOMP-1 through SEDCOMP-3 on Attachment 5. The three composites, each consisting of 2-4 discrete samples collected from the upper six inches of sediments, were analyzed for organochlorine pesticides and total metals. The only pesticide detected was DDE, at a concentration of 0.00533 ppm. Metals included arsenic (10.6 ppm), barium (221 ppm), beryllium (0.645 ppm), chromium (25.8 ppm), cobalt (27.8 ppm), copper (23.4 ppm), lead (11.8 ppm), nickel (16.3 ppm), vanadium (81.9 ppm), and zinc (247 ppm).

Four composite sediment samples were collected from the shoreline of the irrigation pond. The sample locations are labeled SEDCOMP-4 through SEDCOMP-7 on Attachment 5. The four composites, each consisting of four discrete samples collected from the upper six inches of sediments, were analyzed for organochlorine pesticides and metals. DDE was detected in three of the composites, at concentrations up to 0.0151 ppm, and dieldrin was detected in one composite at a concentration of 0.0028 ppm. Metals included arsenic (3.54 ppm), barium (153 ppm), beryllium (0.532 ppm), cadmium (0.282 ppm), chromium (19.3 ppm), cobalt (14.2 ppm), copper (13.6 ppm), lead (45.1 ppm), nickel (11.0 ppm), vanadium (60.6 ppm), and zinc (47.9 ppm).

Across the seven composite sediment samples, there was one clean fill SLV exceedance each for DDE, arsenic, lead, and zinc.

*Earthen Berm Samples*
Two composite soil samples were collected from an earthen berm on the northwest side of the irrigation pond. The sample locations are labeled COMP-11 and COMP-12 on Attachment 5. The two composites, each consisting of four discrete samples collected from the upper three feet of the berm soils, were analyzed for petroleum hydrocarbons, metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs).

Naphthalene was detected in the two composites at concentrations of 0.205 ppm and 0.211 ppm, respectively. Both concentrations exceeded the clean fill SLV of 0.077 ppm. Heavy oils were detected in COMP-12 at a concentration of 89.4 ppm. No clean fill SLVs have been established for heavy oils. Concentrations of metals were consistent with naturally-occurring background levels.

*AST Soil Sample*
A composite soil sample was collected beneath three aboveground storage tanks (ASTs) on the west end of the site. The sample location is labeled COMP-10 on Attachment 5. The composite, consisting of five discrete soil samples collected from 0-6 inches bgs, was analyzed for petroleum hydrocarbons, metals, PAHs, PCBs, and VOCs. Diesel (1,290 ppm) and heavy oils (195 ppm) were detected, along with low levels of PAHs including benzo[b]fluoranthene (0.0139 ppm), indeno[1,2,3-cd]pyrene (0.0123 ppm), naphthalene (0.183 ppm), and pyrene (0.125 ppm). One PCB (Aroclor 1260, at 0.0718 ppm) was also detected, along with elevated concentrations of cadmium (2.92 ppm) and lead (63.9 ppm).

The diesel concentration exceeded the residential direct contact RBC of 1,100 ppm, and the concentrations of cadmium, lead, and naphthalene exceeded their clean fill SLVs.

*Vehicle Maintenance Building Sample*
A composite soil sample was collected from the earthen floor of a vehicle maintenance building in the northwest corner of the site. The sample location is labeled COMP-1 on Attachment 5. The composite, consisting of four discrete soil samples collected from 0-6 inches bgs, was analyzed for petroleum hydrocarbons, metals, PAHs, PCBs, and VOCs. Gasoline (166 ppm), diesel (5,510 ppm), and heavy oils (3,320 ppm) were detected, along with naphthalene (1.41 ppm), pyrene (1.06 ppm), 1,2,4-trimethylbenzene (1.69 ppm), 1,3,5-trimethylbenzene (0.399 ppm), and xylenes (0.0627 ppm). Concentrations of metals were consistent with naturally-occurring background levels. The four discrete soil samples (labeled SS-1 through SS-4) were subsequently individually analyzed for gasoline, diesel, and heavy oils. Diesel and heavy oils were detected, at concentrations up to 1,390 ppm and 2,190 ppm, respectively.

Concentrations of diesel in the composite soil sample and one of the discrete soil samples exceeded the residential direct contact RBC of 1,100 ppm. The naphthalene concentration exceeded its clean fill SLV. No RBCs or SLVs have been established for heavy oils.

*Remediation Plan*

Based on the sampling results, soils in the earthen berm and sediments in the creek bed and irrigation pond very nearly qualified as clean fill and could be reused on-site without restrictions. Soils in the agricultural area were impacted by pesticides, and soils from the floor of the vehicle maintenance building and beneath the ASTs were impacted by petroleum. The contamination appeared to be limited to surface soils, and did not extend more than 18 inches bgs.

The development company decided to excavate and remove the petroleum-contaminated soils (PCS) from the vehicle maintenance building and the AST area. The pesticide-impacted soils from the agricultural area would be scraped off during site clearing and placed into two on-site disposal cells. The pond and stream sediments, and soils from the earthen berm, would be reused as on-site fill material.

*Confirmation Sampling*

Clearing and redevelopment of the site began in August 2022. The two on-site residences were demolished and their septic tanks were removed, and the two water supply wells were properly abandoned in October 2022.

In August 2022, PCS was removed from the AST area to a depth of 1½ feet bgs. A confirmation soil sample collected from the base of the excavation was analyzed for diesel, heavy oils, PAHs, PCBs, and metals. Only metals were detected, at concentrations consistent with naturally-occurring background levels.

PCS in the vehicle maintenance building was removed to depths ranging from 6-12 inches bgs. Four composite soil samples (VComp-1 through VComp-4), each consisting of three discrete soil samples, were collected from the base of the excavation in October 2022, as shown on Attachment 6. The samples were analyzed for gasoline, diesel, heavy oils, metals, PAHs, PCBs, and VOCs. Only metals were detected in VComp-1 and VComp-2, at concentrations consistent with naturally-occurring background levels. Gasoline (18.8 ppm) and diesel (2,060 ppm) were detected in VComp-3, and heavy oils (93.3 ppm) were detected in VComp-4. An additional 12 inches of soils were removed from the VComp-3 area (to a depth of 18 inches bgs), and a follow-up composite soil sample collected in November 2022 found no detectable diesel. A total of 28.61 tons of PCS were shipped to the Hillsboro Landfill in January 2023.

Pesticide-impacted soils were removed to depths ranging from 6-18 inches bgs. Approximately 6,100 cubic yards of pesticide-impacted soils with organics, and 7,400 cubic yards of pesticide-impacted soils with no organics, were combined with 11,000 cubic yards of non-impacted, non-organic soils and placed into two on-site disposal cells. The disposal cell locations are shown on Attachment 6. The disposal cells were covered with demarcation fabric and capped with three feet of clean fill. Disposal Cell #1 was capped in November 2022, and Disposal Cell #2 was capped in July 2023.

The eastern half of the River Terrace Town Center site will be redeveloped with 93 detached, single-family houses and 50 rowhouses, as shown on Attachment 7. The western half of the site

will be redeveloped with 348 apartment units across 10 buildings, and a community park will be established around the intermittent creek in the northwest corner of the site.

**Nature and extent of contamination.**
Pesticide-impacted surface soils covered much of the site. Petroleum-contaminated surface soils were present in two small developed areas.

## 4. RISK EVALUATION

**Conceptual site model.**
A conceptual site model identifies the sources of contamination at a site, the human or ecological receptors that could be exposed to the contamination, and the pathways by which the exposures could occur.

To evaluate human exposure to residual chemical contamination requires an assessment of the type and extent of that exposure. This is based on current and reasonably likely future site use. DEQ publishes risk-based concentrations (RBCs) for contaminants commonly encountered, for different types of exposure scenarios. These RBCs are conservative estimates of protective levels of contaminants in soil, groundwater and air. Table 1 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

**Table 1. Identification of applicable RBCs, based on pertinent pathways and receptors**

| Pathway | Receptor | Applicable RBC? | Basis for exclusion |
|---|---|---|---|
| **SOIL** | | | |
| Ingestion, dermal contact, and inhalation | Residential | Yes | |
| | Urban residential | Yes | |
| | Occupational | Yes | |
| | Construction worker | Yes | |
| | Excavation worker | Yes | |
| Volatilization to outdoor air | Residential | No | See Note 1. |
| | Urban residential | No | See Note 1. |
| | Occupational | No | See Note 1. |
| Leaching to groundwater | Residential | No | See Note 2. |
| | Urban residential | No | See Note 2. |
| | Occupational | No | See Note 2. |

Notes:
1. The encapsulated pesticides remaining at the site are nonvolatile.
2. A municipal water supply is available to the area, and domestic wells in the area have been decommissioned. This exposure pathway is not likely to be complete.

**Human health risk.**
Contaminants of Potential Concern (COPCs) are contaminants that are present at a site at concentrations exceeding an RBC for a complete exposure pathway.

Concentrations of two contaminants, diesel and dieldrin, in soils at the River Terrace Town Center site exceeded RBCs for the residential direct contact exposure pathway. The diesel-contaminated soils were excavated and removed from the site. Soils impacted with dieldrin were excavated and placed into two on-site disposal cells. The disposal cells were covered with demarcation fabric and capped with three feet of fill soils, which should prevent future direct contact. However, the caps will need to be maintained to ensure that future direct contact does not occur.

**Ecological risk.**
A formal ecological risk assessment was not completed for this site. However, residual soil contamination at the site is minimal and is not expected to impact ecological receptors. Most of the site will be redeveloped as a residential and urban residential neighborhood, as shown on Attachment 7. The primary remaining ecological habitat will be the creek and community park in the northwest corner of the site.

Composite sediment samples collected from the creek bed in June 2018 showed a low concentration of the pesticide DDE and elevated concentrations of arsenic and zinc. The DDE concentration (0.00533 ppm) is below all ecological RBCs. The maximum arsenic concentration (10.6 ppm) exceeds the Freshwater Sediment RBC of 6 ppm. However, the intermittent creek is unlikely to support significant aquatic life, so DEQ has determined that Freshwater Sediments are not an applicable exposure pathway for this site.

Zinc was present in one of the composite sediment samples from the creek bed at a concentration of 247 ppm, which exceeds multiple ecological RBCs. However, the other two composite samples from the creek bed showed zinc concentrations of 92.4 ppm and 72.3 ppm, for an average zinc concentration of 137.2 ppm, below the Portland Basin clean fill/background level of 180 ppm. Given that the average zinc concentrations in creek bed sediments are consistent with naturally occurring background levels of zinc in soils, DEQ has determined that zinc in sediments is not a COPC for ecological risks at the site.

## 5. RECOMMENDATION

Soils impacted by dieldrin at concentrations above the residential direct contact RBC of 0.034 ppm have been encapsulated beneath a future community park and a future apartment building at the site. Future residents of River Terrace are unlikely to come into direct contact with the encapsulated soils. However, to maintain the integrity of the soil caps, Easements and Equitable Servitudes will be recorded requiring that the caps be maintained to prevent either erosion or future construction and excavation work from exposing the encapsulated soils.

Following removal of the petroleum-contaminated soils and encapsulation of the pesticide-contaminated soils, a No Further Action determination is recommended for the River Terrace

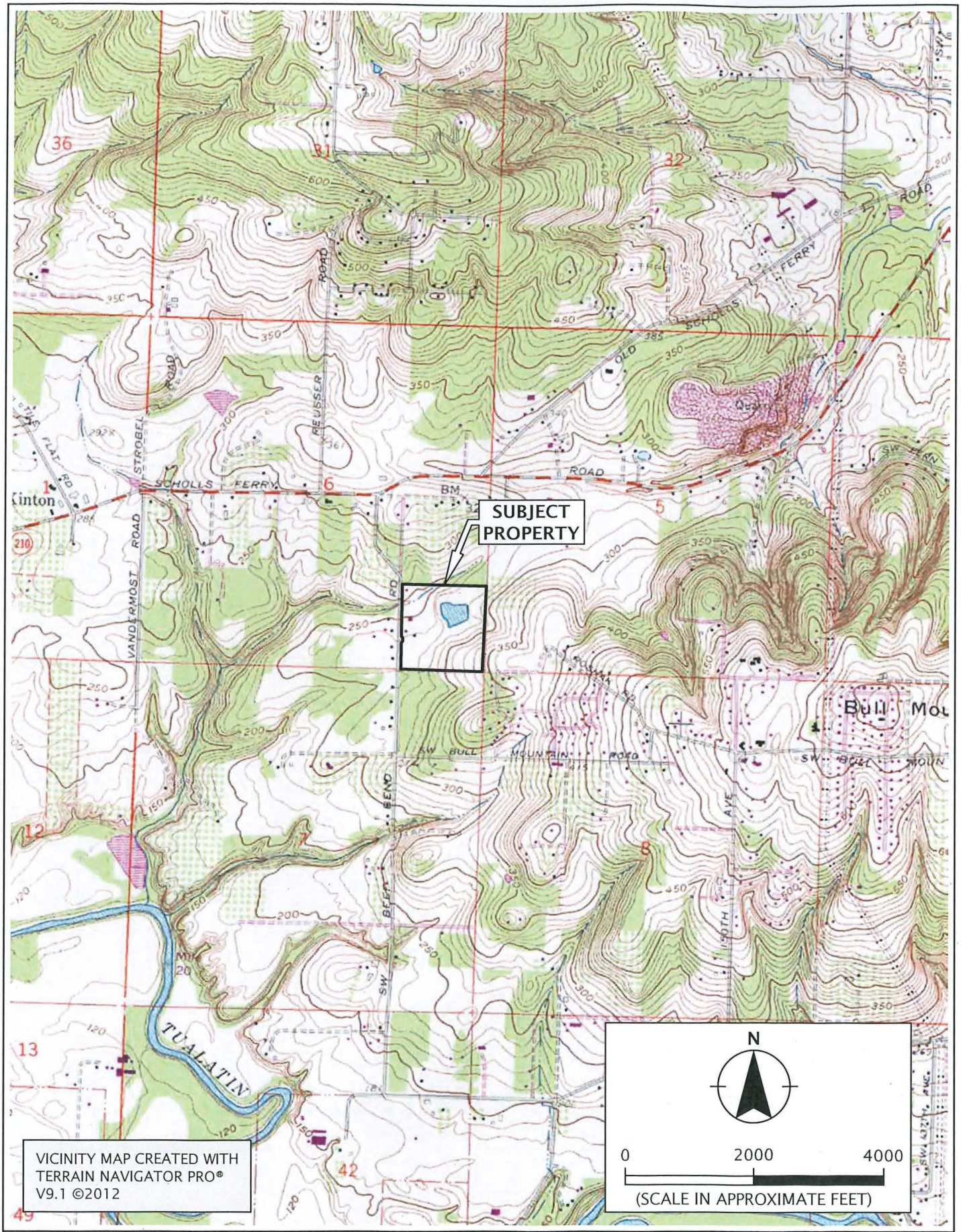
Town Center site, conditioned upon adherence to the requirements in the Easements & Equitable Servitudes. The Conditional No Further Action determination will be recorded in Your DEQ Online (YDO) in Environmental Cleanup Site Information (ECSI) file #6283.

## 6. ADMINISTRATIVE RECORD

1. GeoDesign "Request for Solid Waste Permit Exemption Determination" (August 27, 2018).
2. NV5 "Contaminated Media Management Plan" (July 6, 2022).
3. NV5 "Environmental Summary & Closure Report" (September 8, 2023).

## 7. ATTACHMENTS

1. Topographic Map (1977)
2. Aerial Photo (2022)
3. Wetlands Map
4. Surface Water Map
5. Sampling Locations Map
6. Remediation Map
7. Redevelopment Plan Map




| | | | |
|---|---|---|---|
| NV5 | NEWHOME-5-03 | **VICINITY MAP** | |
| | SEPTEMBER 2023 | RIVER TERRACE TOWN CENTER<br>TIGARD, OR | **ATTACH 1** |

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**LEGEND:**

- SUBJECT PROPERTY BOUNDARY
- TAX LOT BOUNDARY
- UNDOCUMENTED FILL BERM
- T PAD-MOUNTED TRANSFORMER
- W WELL
- PH PUMP HOUSE
- D UNMARKED DRUM

Attachment 2

N

0 200 400

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH DATED JULY 10, 2022, OBTAINED FROM GOOGLE EARTH PRO.

SITE PLAN - PRE CONSTRUCTION

RIVER TERRACE TOWN CENTER
TIGARD, OR

NEWHOME-5-03

SEPTEMBER 2023

NW|5 AVE

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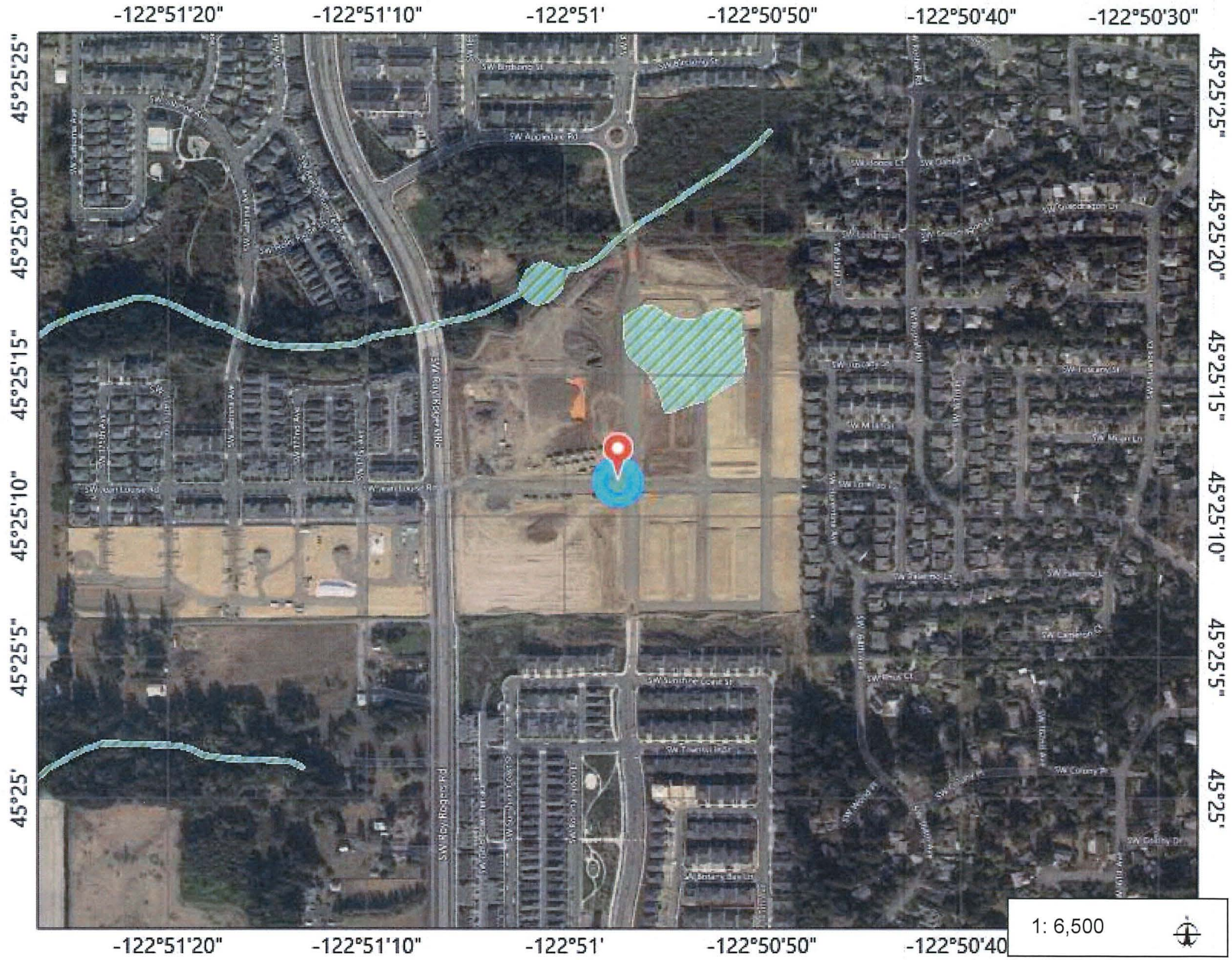
OREGON EXPLORER

# River Terrace Town Center Development



## Legend

- County Boundaries (2015)
- National Wetland Inventory (2020)
- Dark Gray Canvas Reference
- Dark Gray Canvas Base

## Notes

Attachment 3

0.2 0 0.10 0.2 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

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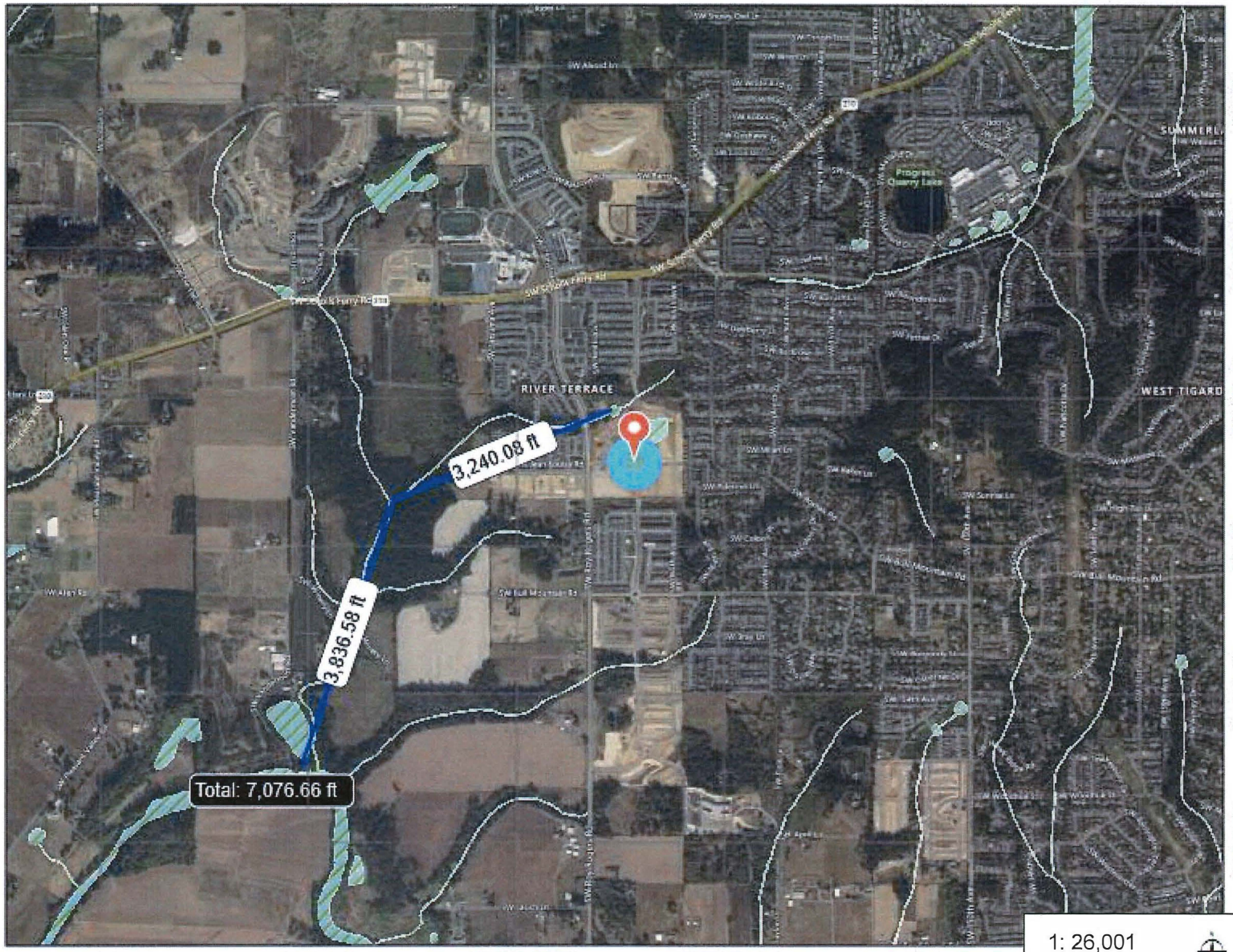
Data layers that appear on this map may or may not be accurate, current, or reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION.

OREGON EXPLORER

# River Terrace Town Center Development




1: 26,001

## Legend

- County Boundaries (2015)
- National Wetland Inventory (2020)
- Dark Gray Canvas Reference
- Dark Gray Canvas Base

## Notes

Attachment 4

0.8 0 0.41 0.8 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

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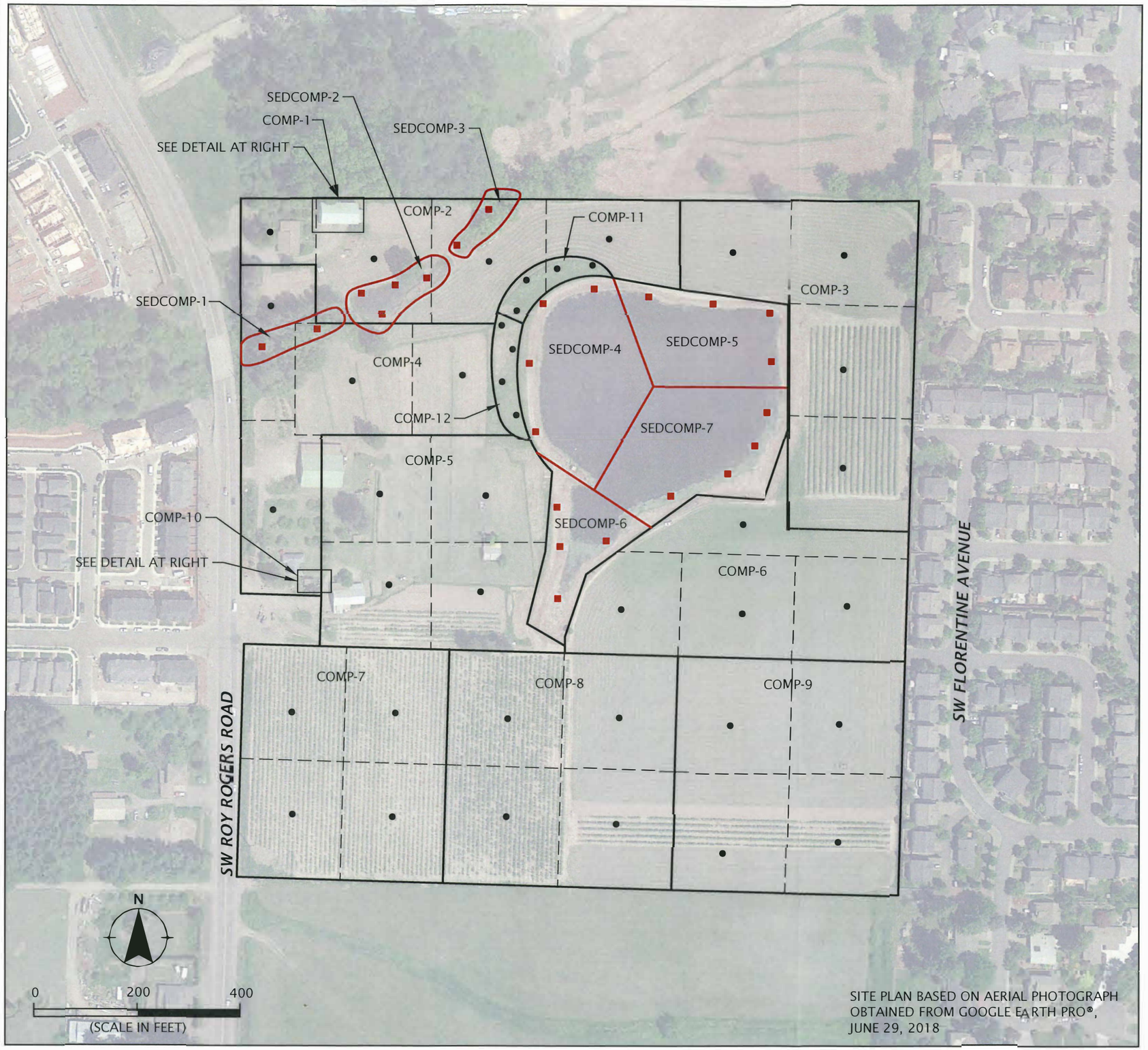


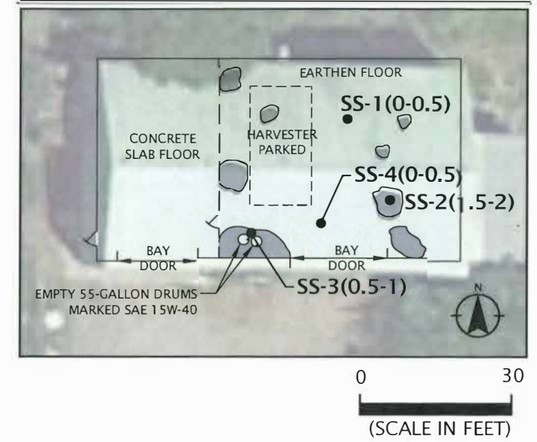

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®, JUNE 29, 2018

**LEGEND:**

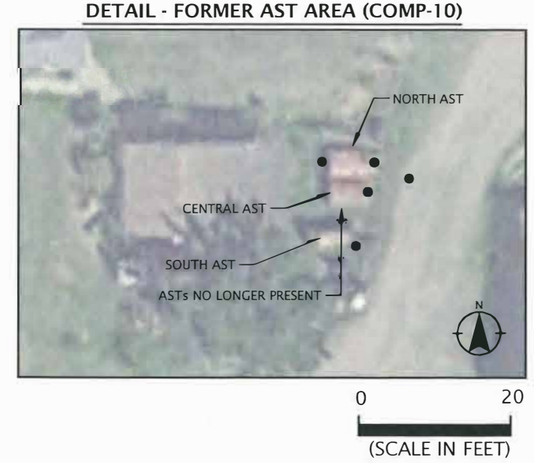
- COMPOSITE SOIL SAMPLING AREA
- DISCRETE SOIL SAMPLE LOCATION
- COMPOSITE SEDIMENT SAMPLING AREA
- DISCRETE SEDIMENT SAMPLE LOCATION
- SURFACE STAINING (SEE DETAIL BELOW)

Attachment 5

**DETAIL - VEHICLE MAINTENANCE BUILDING (COMP-1)**




**DETAIL - FORMER AST AREA (COMP-10)**




**SITE PLAN - SAMPLING LOCATIONS**

N ROSHAK PROPERTY
TIGARD, OR

POLYGON-166-01

AUGUST 2018

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

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SITE PLAN BASED ON AERIAL PHOTOGRAPH DATED MAY 10, 2023; OBTAINED FROM GOOGLE EARTH PRO

**LEGEND:**

- SUBJECT PROPERTY BOUNDARY
- TAX LOT BOUNDARY
- CB — CATCH BASIN
- APPROXIMATE EXTENT OF PESTICIDE-IMPACTED SOIL DISPOSAL CELL #1
- APPROXIMATE EXTENT OF PESTICIDE-IMPACTED SOIL DISPOSAL CELL #2
- (1) PETROLEUM-IMPACTED SOIL FROM THE FORMER VEHICLE MAINTENANCE BUILDING HAS BEEN REMOVED AND DISPOSED OF OFF SITE
- (2) PETROLEUM-IMPACTED SOIL FROM THE FORMER AST AREA HAS BEEN REMOVED AND DISPOSED OF OFF SITE

Attachment 6

**DETAIL 1 (NOT TO SCALE)**

**DETAIL 2 (NOT TO SCALE)**

SITE PLAN - CURRENT CONDITIONS

RIVER TERRACE TOWN CENTER
TIGARD, OR

NEWHOME-5-03

SEPTEMBER 2023

NV5

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**LEGEND**

MIXED USE APARTMENT BUILDING
216 UNITS & 24,000 SF OF COMMERCIAL SPACE

RESIDENTIAL ONLY APARTMENT BUILDING - 102 UNITS

RESIDENTIAL ONLY APARTMENT BUILDING WITH TUCK UNDER GARAGES
30 UNITS

TOTAL MULTI-FAMILY UNITS - 348

ROWHOME LOTS - 50

SMALL - SINGLE FAMILY REAR LOADED
76 LOTS

MEDIUM - SINGLE FAMILY FRONT LOADED
2 LOTS

LARGE - SINGLE FAMILY FRONT LOADED
15 LOTS

TOTAL SINGLE-FAMILY UNITS - 143

Attachment 7

N

0 200 400

(SCALE IN FEET)

SITE PLAN BASED ON IMAGE OF SHEET 5.3 CONCEPT SITE MAP DATED DECEMBER 30, 2021, PREPARED BY PACIFIC COMMUNITY DESIGN

REDEVELOPMENT PLAN

RIVER TERRACE TOWN CENTER
TIGARD, OR

NEWHOME-5-03

SEPTEMBER 2023

NIV 5

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File Name: J:\M-R\NewHome\NewHome-5\NewHome-5-03\Figures\CAD\NewHome-5-03-SP02.dwg | Layout: FIGURE 4