

State of Oregon  
Department of Environmental Quality

Memorandum

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**Date:** December 30, 2019

**To:** FILE ECSI #6036

**Through:** Michael E. Kucinski, WR Cleanup Manager and  
Bruce Scherzinger, WR Lead Worker

**From:** Nancy Sawka, WR Cleanup Project Manager

**Subject:** Northstar, Staff Memorandum in support of a Partial No Further Action  
Determination for Central Property

This document presents the basis for the Oregon Department of Environmental Quality's recommended Partial No Further Action (NFA) determination for the Northstar Site in Salem. The Partial NFA applies to following cells from Remediation Phases II and III as shown on Figures 3 and 4 and named the Central Property for the purposes of this NFA:

- All of cells 4, 19, 34, 35, 36, and 38.
- All of cell 26 except the SE corner around the drainage ditch.
- The NE, NW, and SW quadrants of cell 5.
- The NW and SW quadrants of cells 18 and 27.
- The NE, NW and SE quadrants of cell 37.

The SW quadrant of cell 37 contains stockpiled contaminated soil that was removed from other parts of the site. This part of cell 37 as well as the SE corner of cell 26 is excluded from this NFA.

DEQ issued a Partial NFA for Phase I (Eastern Property) on June 7, 2018 and a Partial NFA for the western part of Phase II (Western Property cells 1 to 3, 20 to 22 and 23 to 25) on August 6, 2019. These areas are shown in Figures 1 and 2. As discussed in this report, contaminated soils above applicable risk levels have been removed from the Central Property.

The proposed Partial NFA determination meets the requirements of Oregon Administrative Rules Chapter 340 Division 122, Sections 010 to 0140 and 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. Copies of reports referenced in this memo and other site documents are on DEQ's Environmental Cleanup Site Information (ECSI) database at <http://www.oregon.gov/deq/Hazards-and-Cleanup/env-cleanup/Pages/ecsi.aspx>. Select "Search complete ECSI database", then enter 6036 in the Site ID box and click "Submit" at the bottom of the page. Next, click the link labeled 6036 in the Site ID/Info column.

## **1. BACKGROUND**

The Northstar site is located at 4985 Kale St. NE in Salem, Oregon on Marion County Map 062W32C and includes Tax Lots 200, 701, 800, 900, and 1000<sup>1</sup>. The property is approximately 150 acres and was used for agriculture purposes starting in the 1890's. In 2002, the City of Salem annexed the property and rezoned it for residential use. Granada Land Company purchased the property in 2005 and then sold it to I&E Construction in July 2017. I&E is in the process of re-developing the site into residential homes and apartments. The Eastern Property, which was given an NFA in June 2018 and included tax lots 701 and 1000, was subdivided into several single-family home parcels and tax lots. The construction and sale of homes is currently in progress on the Eastern Property. The Western Property, which was issued an NFA in August 2019 and included all of tax lot 800 and the western third of tax lot 900, is currently being prepped for development into homes and apartments.

Additional details on the site background and history is available in the Record of Decision (ROD) for the site (November 2017 DEQ) located on DEQ's ECSI database.

## **2. BENEFICIAL LAND AND WATER USES**

The site is zoned for residential use and is currently being developed into residential homes and apartments. The City of Salem is providing water service to the site. Except for two existing irrigation wells, there are no current or future beneficial uses of groundwater on the property. The two irrigation wells will be taken out of use and removed during the redevelopment process.

There are no beneficial surface water uses at the site. The only surface water body is an intermittent drainage ditch on the Eastern Property. The ditch is dry most of the year and does not appear to provide a significant ecological habitat on the site.

## **3. RECORD OF DECISION**

Granada Land Company, completed environmental investigations on the property between August 2015 and June 2016. These investigations found the pesticide, dieldrin, in the shallow soils from approximately 0 to 30 inches below ground surface (bgs). The concentrations of dieldrin over approximately 71 acres of the site exceeded DEQ's generic risk-based concentration (RBC) of 0.034 mg/kg (milligram per kilogram) for residential ingestion, inhalation and dermal contact. No other pesticides tested were detected above their respective RBC.

Granada's environmental consultant, Anderson Geological, completed a feasibility study and feasibility study amendment with recommendations for site cleanup in August 2016 and June 2017, respectively. Granada planned to cleanup the dieldrin-contaminated soil on the site to meet residential standards for future property development. DEQ issued a public notice and chance to comment on the recommended cleanup in July 2017 and a Record of Decision with a

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<sup>1</sup> All of tax lot 701 and part of tax lot 1000 have been subdivided into tax lots 100 to 14900 on map 062W32DC.

final remedy for the cleanup of dieldrin-contaminated soil was issued in November 2017. The final remedy includes:

- Excavation and removal of soil exceeding the residential cleanup goal of 0.034 mg/kg for dieldrin.
- The transport and reuse of the dieldrin-contaminated soil above this level to a farm located at 6848 Windsor Island Road, Keizer, Oregon (farm site). The soil will be used to infill two abandoned quarries (northern quarry and southern quarry) on the property and then will be covered with 3 feet of cleaner fill.
- The reuse of the soil at the farm site was approved through a Solid Waste Permit Exemption (DEQ September 2017). The exemption requires that appropriate floodplain and wetland permits be obtained from Marion County, the Department of State Lands (DSL) and/or the Army Corps of Engineers before the southern quarry is infilled. These restrictions were not required on the northern quarry.
- A deed notice recorded on the farm site to document the location and restrict residential use in the reuse area unless the dieldrin levels are reduced or remediated to acceptable standards.
- The preparation of a spill prevention, response and safety plan before transporting any contaminated soil offsite.

Any significant changes to the selected alternative requires re-evaluation, review and prior approval by DEQ.

Details on the site background, investigation and selected cleanup are in the ROD on DEQ's ECSI website.

#### **4. SOIL CLEANUP AND PARTIAL NFA - EASTERN PROPERTY**

Details of the cleanup and Partial NFA for the Eastern Property can be found in the soil removal report (AGI 2017) and in DEQ's May 15, 2018 Staff Memorandum. Both documents are on DEQ's ECSI website. The cleanup included all of former tax lots 701 and 1000 and the southern part of tax lot 200 on the Eastern Property. I&E Construction completed cleanup of the Eastern Property between August and September 2017. Soil excavation depths ranged between 6 to 40 inches bgs and included the removal of soil that contained dieldrin above the residential RBC of 0.034 mg/kg. Approximately 24,376 cubic yards of soil were excavated and temporarily stockpiled on the western part of the site for future transport to the farm property. Confirmation soils samples collected from the final excavations were all below the cleanup goals established for the site (0.034 mg/kg for discrete samples and 0.0085 mg/kg for composite samples). DEQ issued a Partial No Further Action for the Eastern Property in June 2018.

## **5. SOIL CLEANUP AND PARTIAL NFA – WESTERN PROPERTY**

Details of the cleanup and Partial NFA for the Western Property can be found in the soil removal report (AGI 2017) and in DEQ's June 11, 2019 Staff Memorandum located on DEQ's ECSI website. The cleanup and Partial NFA included all of tax lot 800 and the western third of tax lot 900. I&E Construction completed cleanup of the Western Property between August and October 2018. Soil removal depths ranged between 12 and 36 inches bgs. Approximately 25,000 cubic yards of excavated soil met the urban residential cleanup goal of 0.085 mg/kg and, as approved by DEQ, this soil was used for structural fill in the multi-family area where apartments would be constructed. The remaining excavated soils, approximately 47,000 cubic yards, were added to the contaminated soil stockpile onsite pending offsite transport and placement at the farm site. Confirmation soils samples collected from the final excavations were all below the cleanup goals established for the site - 0.034 mg/kg for discrete samples and 0.0085 mg/kg for composite samples for the single-family development area and 0.085 mg/kg for discrete samples and 0.02125 mg/kg for the multi-family development area. DEQ issued a Partial No Further Action for the Western Property in August 2019.

## **6. SOIL CLEANUP AND PARTIAL NFA – CENTRAL PROPERTY**

I&E Construction completed soil cleanup on the Central Property in October 2019. Soil removal depths ranged between 12 to 36 inches bgs. Contaminated soil removal areas are shown in Figures 3 and 4 and included soil from all of cells 4, 19, 26, 34, 35, 36 and 38 and parts of cells 5, 18, 19, 26 and 37. The SW quadrant of cell 36 and the SE section of cell 26 around the drainage ditch have not been cleaned up yet and are not included in this NFA. The SE quadrant of cell 5 and the eastern quadrants of cells 18 and 27 were included in the NFA for the Eastern Property.

Confirmation soils samples collected from the final excavations were all below the residential cleanup goals established for the single-family development area of 0.034 mg/kg for discrete samples and 0.0085 mg/kg for composite samples. Tables 1 and 2 show the final excavation depths and confirmation sampling results for each cell.

Approximately 51,585 cubic yards of dieldrin-contaminated soil was removed from the Central Property. The soil was placed in temporary stockpiles on site for later transport to the farm site. Prior to the winter months, the stockpiled soil was contained with a silt fence and seeded with fast growing hydro seed for erosion control.

I&E completed the excavation and removal work under an approved dust control plan. Dry soil was continuously watered with sprinklers and water trucks to suppress dust generation during loading and unloading procedures. I&E constructed temporary haul roads to control truck traffic, dust and limit cross contamination across the site. Air and dust monitoring by a Certified Industrial Hygienist (CIH) during the contaminated soil cleanup on the Eastern and Western properties demonstrated that there was no risk to the public or onsite workers from the dust generated during site cleanup work. Based on recommendations from the CIH, additional dust and air monitoring was not necessary during cleanup of the Central Property.

Details of the soil removal and confirmation sampling results are located in the soil removal report on DEQ's ECSI website (December 2019, AGI).

## **7. REMAINING AREAS REQUIRING CLEANUP**

Cleanup of dieldrin contaminated soil above the residential RBC of 0.034 mg/kg in the single-family development area and above 0.085 mg/kg in the multi-family area (cells 1, 22, and 23 of the Western Property) has been completed over most of the site. The only remaining areas with contamination above the RBC still requiring cleanup is the SW quadrant of cell 37 where contaminated soil is currently stockpiled and the SE corner of cell 26 around the drainage ditch (Figure 3). Stockpiled and remaining contaminated soil from these areas is expected to be removed between mid December 2019 to late January 2020.

## **8. SOIL TRANSPORT TO FARM SITE**

Following issuance of the floodplain development permit from Marion County in April 2019, I&E transported approximately 44,000 cubic yards of the stockpiled contaminated soil from the Northstar site to the farm site. The soil was used to infill the northern part of the southern quarry. Filling of the southern part of the quarry was pending review and approval of a wetlands fill permit from Oregon Division of State Lands (DSL). During loading, transporting and unloading, I&E truck haulers and inspectors were required to follow the dust control and truck cleaning procedures outlined in *Addendum #1 to Remedial Action Work Plan* (AGI 2017). Three (3) feet of clean fill will be used to cap the quarry once infilling is complete.

On November 6, 2019, I&E received authorization from DSL to infill the southern quarry wetland. Filling of this part of the quarry began shortly after issuance of the permit and is estimated to continue through January 2020. Filling and capping of the quarries on the farm site is expected to be complete before Spring 2020.

## **9. POST CLEANUP RISK EVALUATION**

### **Conceptual site model.**

The COC for the site is limited to dieldrin in shallow soil. Dieldrin contamination in the soil is related to the past use of pesticides during agriculture operations on the property. The property is being re-developed into a residential community with single-family homes and multi-family apartments. There are no current drinking water wells on the site and the City of Salem is providing water to the new development. The two agriculture wells on the property will be decommissioned during site development. Given the current and future land and water uses, the main human receptors and pathways on the Western Property include:

- Ingestion, inhalation and dermal contact with shallow soil by future residents.
- Ingestion, inhalation and dermal contact with shallow soil by occupational workers.
- Ingestion, inhalation and dermal contact of soil by construction and excavation workers.

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 3 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

**Table 3. Identification of applicable RBCs for Pertinent Pathways and Receptors**

Pathway	Receptor	Is Pathway Complete?	Is RBC Exceeded?	Basis for selection/exclusion
<b>SOIL</b>				
Ingestion, dermal contact, and inhalation	Residential	Yes	No	See Note 1.
	Urban residential	Yes	No	
	Occupational	No	No	
	Construction worker	Yes	No	
	Excavation worker	Yes	No	
Volatilization to outdoor air	Residential	No	NA	See Note 2.
	Urban residential	No	NA	
	Occupational	No	NA	
Vapor intrusion into buildings	Residential	No	NA	See Note 2.
	Urban residential	No	NA	
	Occupational	No	NA	
Leaching to groundwater	Residential	No	Yes	See Note 3.
	Urban residential	No	Yes	
	Occupational	No	Yes	
<b>GROUNDWATER</b>				
Ingestion and inhalation from tap water	Residential	No	Not Sampled	See Note 3 and 4.
	Urban residential	No	Not Sampled	
	Occupational	No	Not sampled	
Volatilization to outdoor air	Residential	No	NA	See Note 2.
	Urban residential	No	NA	
	Occupational	No	NA	
Vapor intrusion into buildings	Residential	No	NA	See Note 2.
	Urban residential	No	NA	
	Occupational	No	NA	
Groundwater in excavation	Construction and excavation worker	No	No	See Note 3.

Notes:

- NA: Not applicable. There is no RBC for this pathway for dieldrin since it is non-volatile.
- 1. Site is being developed for residential and urban residential use.
- 2. Dieldrin is non-volatile.
- 3. Contamination is limited to shallow soil. Groundwater is not used for drinking on the site. This pathway is therefore not considered, in accordance with Section B.3.2.4 of DEQ's RBDM guidance.
- 4. City water will be provided to the site. Groundwater is not currently used for drinking water at the site and is not likely to be used for this purpose in the future.

**Contaminant concentrations.**

Tables 1 and 2 show the results for remaining contaminant concentrations in the soils of the Central Property. Remaining contamination in soil of the Central Property is below the cleanup goal of 0.034 mg/kg for discrete samples and 0.0085 mg/kg for composite samples. The highest dieldrin concentration for a discrete sample remaining in this area is 0.0321 mg/kg located in the NW quadrant of cell 35 and 0.00111 mg/kg for a composite sample located in the NW corner of cell 5. Approximately 35% of the confirmation samples collected no longer contained detectable concentrations of dieldrin.

**Human health risk.**

As illustrated in the tables, no dieldrin remains in the soil at concentrations above the residential risk cleanup goal in cells of the Central Property.

**Ecological risk.**

There does not appear to be any beneficial ecological habitat at the site. The site has been developed for farm use since the 1890's. The future use of the site will be residential and urban residential, also unlikely to provide beneficial habitat. The ditch on the Eastern Property is dry most of the year.

**10. PUBLIC NOTICE**

A public notice on the Partial NFA will be posted in the local newspaper and on DEQ's public website for the project. A Fact Sheet with an update on the project and the Partial NFA will be sent to the City of Salem, City of Keizer and other interested parties.

**11. RECOMMENDATION**

I&E has requested a Partial NFA for the Central Property, so they can begin construction of homes in this area. Based on the sample results and the human health and ecological risk evaluation, remaining contamination on this part of the property does not pose an unacceptable risk to current or future uses of the property. A Partial No Further Action determination is recommended for the Central Property.

The Partial No Further Action determination should be recorded in DEQ's ECSI database (ECSI # 6063).

## 12. ADMINISTRATIVE RECORD

Multi/Tech Engineering Services Inc. 2015. Memo: *Northstar Development Preliminary Soil Analysis*, August 17, 2015.

AGI 2015. *Pesticide Assessment in Shallow Soils*, December 22, 2015.

AGI 2016. *Remedial Investigation/Feasibility Study*, August 9, 2016.

AGI 2017. *Solid Waste Permit Exemption*, February 22, 2017.

DEQ 2017. Letter: *SW – Permit Exemption for Clean Fill*, March 8, 2017.

AGI 2017. *Addendum to Remedial Action/Feasibility Study*, June 16, 2017.

DEQ 2017. *Record of Decision Final Remedial Action for Northstar Development*, November 2017

AGI 2017. *Removal of Dieldrin Contaminated Soils, North Star Development – Phase I*, December 13, 2017

AGI 2019. *Removal of Dieldrin Contaminated Soils, North Star Development, Phase II Remediation Area*, May 1, 2019.

AGI 2019. *Removal of Dieldrin-Contaminated Soils, North Star Development Phase III Remediation*, December 9, 2019.

## 13. ATTACHMENTS

### Figures:

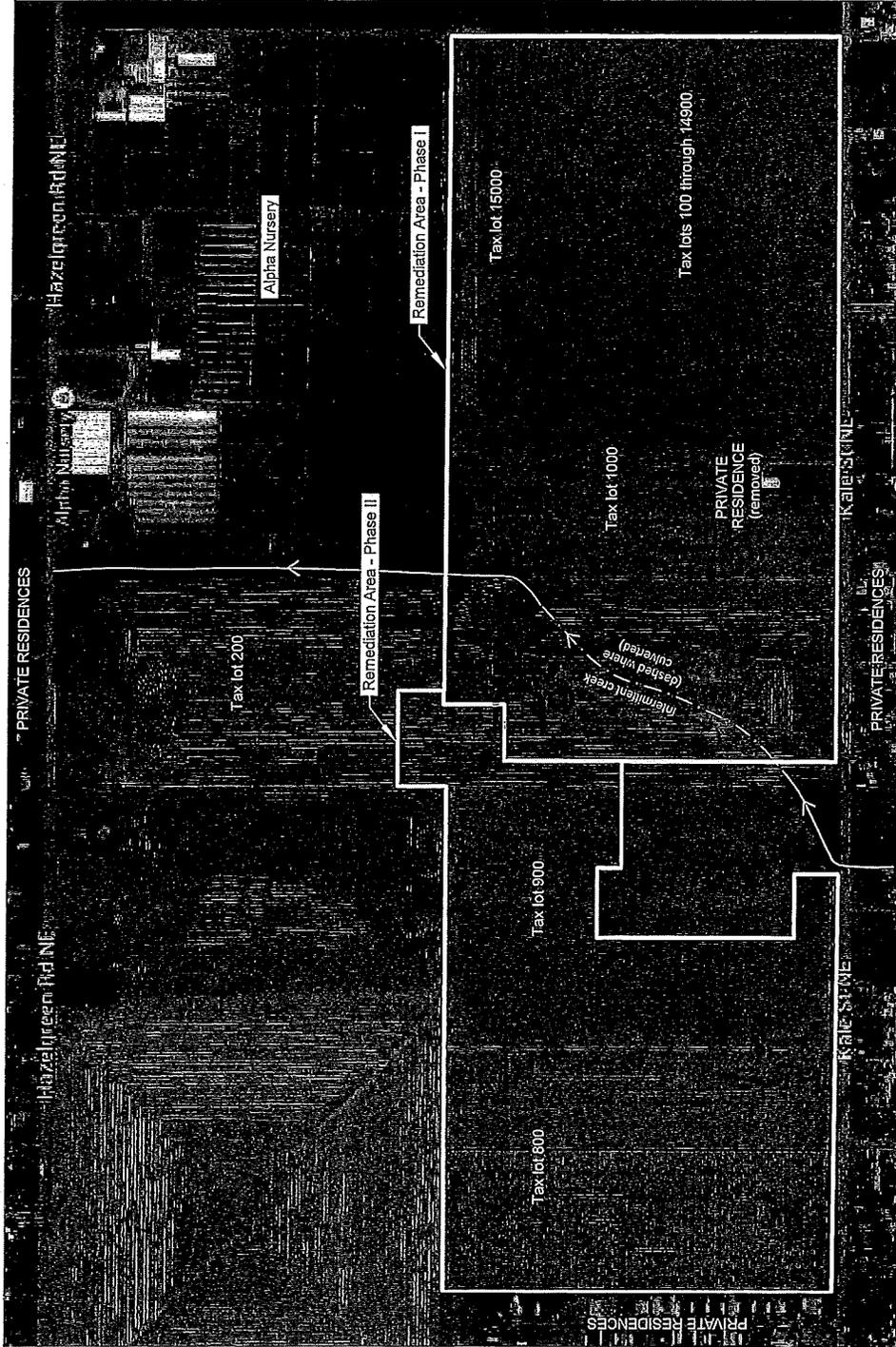
1. Historical Aerial Photograph with Tax Lots
2. Locations of Dieldrin-Contaminated Soil Removal – Remediation Phases II and III
3. Area of Requested No Further Action

### Tables:

1. Lab Results (Dieldrin) and Soil Removal Volumes per Cell (Summer/Fall 2019)
2. Lab Results (Dieldrin) and Soil Removal Volumes per Cell (Summer/Fall 2018)
3. Identification of Applicable RBCs for Pertinent Pathways and Receptors

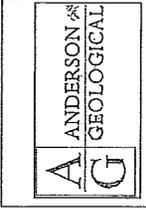
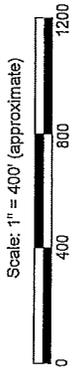
### Exhibits

- A. Written Legal Description Central Property
- B. Survey Map Central Property



**LEGEND**

 Area of North Star development zoned for multifamily use (apartments).  
 All other areas are zoned for single-family residential use.

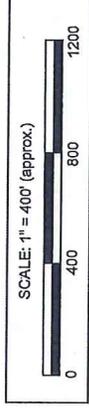
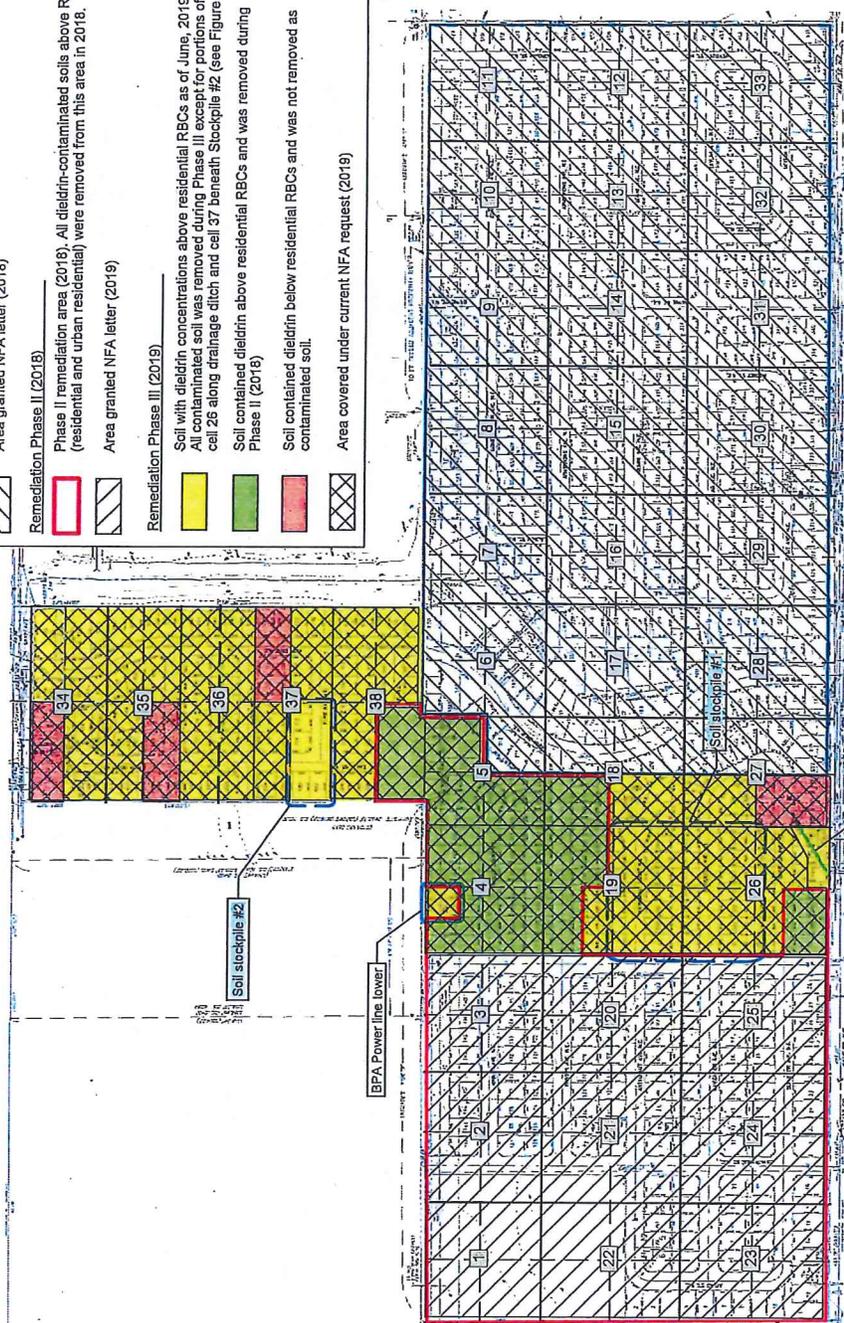


HISTORICAL AERIAL PHOTOGRAPH (C. 2015)	
Proposed Northstar Development - Phase III Salem, Oregon	
SIZE	PROJECT No.
B	
CAGE CODE	DWG NO
	Nov. 2019
FIGURE 1	



**LEGEND**

- Remediation Phase I (2017)**  
 Phase I remediation area (2017). All dieldrin-contaminated soils above residential RBCs were removed from this area in 2017.  
 Area granted NFA letter (2018)
- Remediation Phase II (2018)**  
 Phase II remediation area (2018). All dieldrin-contaminated soils above RBCs (residential and urban residential) were removed from this area in 2018.  
 Area granted NFA letter (2019)
- Remediation Phase III (2019)**  
 Soil with dieldrin concentrations above residential RBCs as of June, 2019. All contaminated soil was removed during Phase III except for portions of cell 26 along drainage ditch and cell 37 beneath Stockpile #2 (see Figure 4).  
 Soil contained dieldrin above residential RBCs and was removed during Phase II (2018)  
 Soil contained dieldrin below residential RBCs and was not removed as contaminated soil.  
 Area covered under current NFA request (2019)

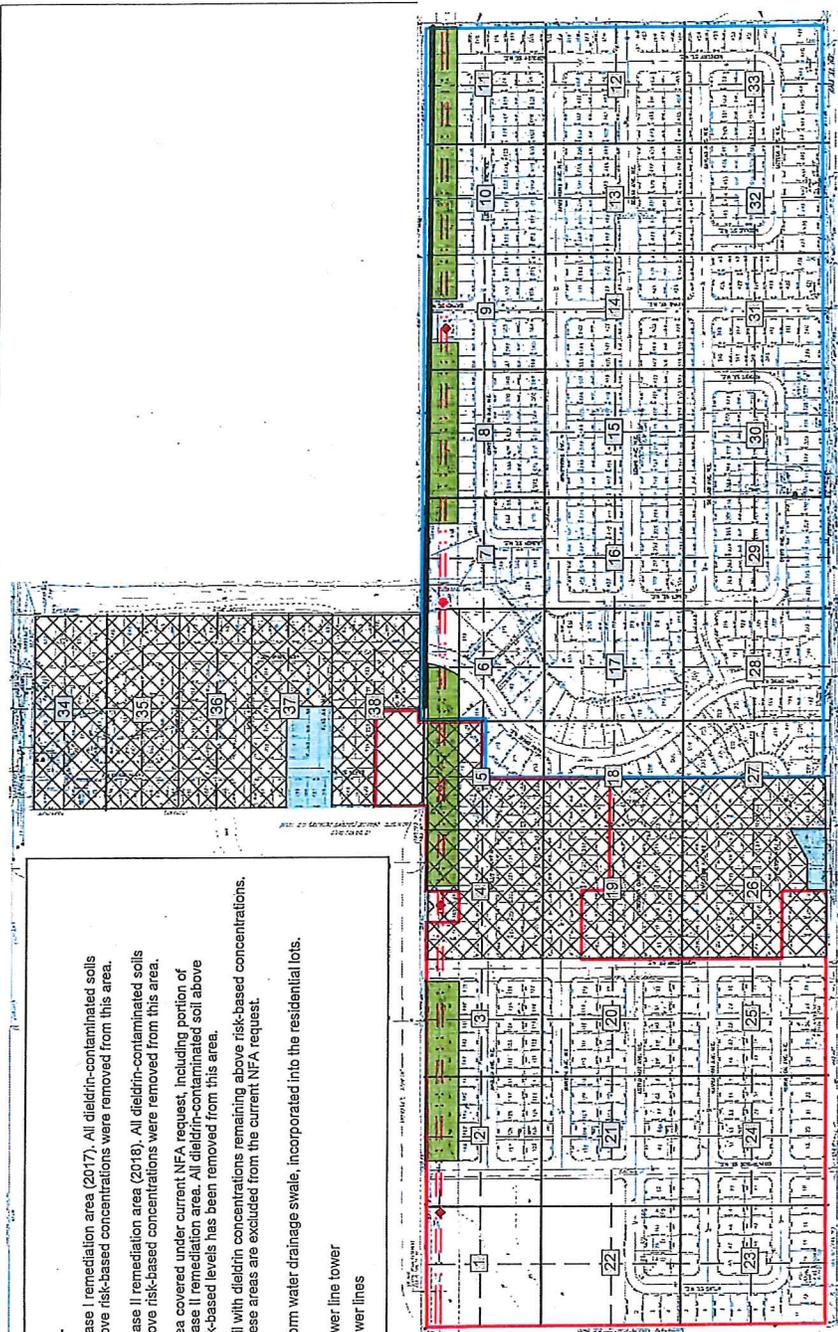


**LOCATIONS OF DIELDRIN-CONTAMINATED SOIL REMOVAL - REMEDIATION PHASES II AND III**  
 North Star Development - Phase III  
 Salem, Oregon  
 SIZE: CASE CODE: DWG NO: PROJECT No.  
 B  
 Dec-2019  
**FIGURE 2**



**LEGEND**

-  Phase I remediation area (2017). All dieldrin-contaminated soils above risk-based concentrations were removed from this area.
-  Phase II remediation area (2018). All dieldrin-contaminated soils above risk-based concentrations were removed from this area.
-  Area covered under current NFA request, including portion of Phase II remediation area. All dieldrin-contaminated soil above risk-based levels has been removed from this area.
-  Soil with dieldrin concentrations remaining above risk-based concentrations. These areas are excluded from the current NFA request.
-  Storm water drainage swale, incorporated into the residential lots.
-  Power line tower
-  Power lines



SCALE: 1" = 400' (approx.)



AREA OF REQUESTED NO FURTHER ACTION (PHASE II)	
North Star Development - Phase III	
Salem, Oregon	
SIZE	CAGE CODE
B	DWG NO
	Product No.
	Dec. 2019
	FIGURE 3



TABLE 1 - Lab Results (Dieldrin) and Soil Removal Volumes per Cell  
 North Star Development - Phase III, Salem, Oregon  
 Soils Removed Summer/Fall 2019

Cell #	Cell Quadrant	Composite Sample #	Discrete Sample #	Date Sampled	Depth of removed soil, below original ground surface (in.)	Dieldrin concentration at base of excavation (mg/kg)	Sample RBC (mg/kg)	Est. Volume to Stockpile/Gravel Pit (CY)	Apex Lab Report ID	
Cell 4	4B		4B-NE-E	10/24/2019	0-18	<0.00122	0.034	280	A9J0891	
			4B-NE-W	10/24/2019	0-18	0.00142	0.034	280	A9J0891	
Cell 18	18C	18C-NCOMP	---	9/12/2019	0-18	<0.00117	0.0085	1125	A9I0343	
		18C-SCOMP	---	9/12/2019	0-18	<0.00112	0.0085	1125	A9I0343	
Cell 19	19B	19B-SSCOMP	---	9/25/2019	0-18	0.00348	0.0085	1125	A9I0784	
	19C	19C-NCOMP	---	9/24/2019	0-18	<0.00217	0.0085	1125	A9I0736	
		19C-SCOMP	---	9/24/2019	0-18	<0.00121	0.0085	1125	A9I0736	
	19D	19D-NCOMP	---	9/25/2019	0-18	0.0108	0.0085	1125	A9I0784	
		19D-NA	---	9/25/2019		0.0298	0.034		A9J0113	
		19D-NB	---	9/25/2019		<0.00236	0.034		A9J0113	
		19D-NC	---	9/25/2019		<0.00253	0.034		A9J0113	
		19D-ND	---	9/25/2019		0.0034	0.034		A9J0113	
	19D-SCOMP	---	9/25/2019	0-18	0.00304	0.0085	1125	A9J0113		
	19W	19W-COMP	---	7/3/2019	0-18	<0.0019	0.0085	650	A9G0103	
Cell 26	26A	26A-NCOMP	---	9/25/2019	0-18	<0.00115	0.0085	1125	A9I0784	
		26A-SCOMP	---	9/25/2019	0-18	<0.00398	0.0085	1125	A9I0784	
	26B	26B-NCOMP	---	9/24/2019	0-18	<0.00121	0.0085	1125	A9I0736	
		26B-SCOMP	---	9/24/2019	0-18	0.0108	0.0085	1125	A9I0736	
		26B-SA	---	9/24/2019		0.00392	0.034		A9I0873	
		26B-SB	---	9/24/2019		0.00652	0.034		A9I0873	
		26B-SC	---	9/24/2019		<0.00113	0.034		A9I0873	
	26B-SD	---	9/24/2019		0.0275	0.034		A9I0873		
	26C	26C-NCOMP	---	9/24/2019	0-18	0.00626	0.0085	1125	A9I0736	
	26D	26D-NCOMP	---	9/25/2019	0-18	0.0107	0.0085	1125	A9I0784	
		26D-NA	---	9/25/2019		<0.0023	0.034		A9J0113	
		26D-NB	---	9/25/2019		0.00348	0.034		A9J0113	
		26D-NC	---	9/25/2019		<0.00245	0.034		A9J0113	
		26D-ND	---	9/25/2019		0.0174	0.034		A9J0113	
	26D-SB (misabeled 26C-SB)	---	9/25/2019	0-18	<0.00124	0.034	600	A9I0784		
26W	26W-COMP	---	7/3/2019	0-18	0.0482	0.0085	650	A9G0103		
	26W-COMP(2)	---	7/11/2019	18-30	0.00588	0.0085	400	A9G0346		
Cell 27	27B	27B-NCOMP	---	9/12/2019	0-18	<0.00115	0.0085	1000	A9I0343	
		27B-SCOMP	---	9/12/2019	0-18	<0.0017	0.0085	1000	A9I0343	
Cell 34	34A	34A-ECOMP	---	7/25/2019	0-12	0.0205	0.0085	600	A9G0803	
		34A-EA	---	7/25/2019		0.0192	0.034		A9H0052	
		34A-EB	---	7/25/2019		0.00378	0.034		A9H0052	
		34A-EC	---	7/25/2019		0.01	0.034		A9H0052	
		34A-ED	---	7/25/2019		0.00746	0.034		A9H0052	
		34A-WCOMP	---	7/25/2019	0-12	0.0415	0.0085	600	A9G0803	
		34A-WCOMP(2)	---	8/6/2019	12-18	0.0301	0.0085	300	A9H0140	
		34A-WCOMP(3)	---	8/14/2019	18-24	0.0138	0.0085	300	A9H0478	
		34A-WA(3)	---	8/14/2019		<0.00225	0.034		A9H0668	
		34A-WB(3)	---	8/14/2019		0.058	0.034		A9H0668	
		34A-WB(4)	---	8/30/2019	24-30	0.0167	0.034	100	A9H0935	
		34A-WC(3)	---	8/14/2019		0.00475	0.034		A9H0668	
		34A-WD(3)	---	8/14/2019		<0.00227	0.034		A9H0668	
		34C	34C-ECOMP	---	7/31/2019	0-12	0.0311	0.0085	800	A9G0976
			34C-ECOMP(2)	---	8/23/2019	12-18	0.0336	0.0085	400	A9H0753
	34C-ECOMP(3)		---	8/30/2019	18-24	0.0072	0.0085	400	A9H0935	
	34C-WCOMP		---	7/31/2019	0-12	0.00629	0.0085	800	A9G0976	
	34D	34D-ECOMP	---	7/25/2019	0-18	0.0466	0.0085	1200	A9G0803	
		34D-ECOMP(2)	---	8/6/2019	18-24	0.0142	0.0085	400	A9H0140	
		34D-EA(2)	---	8/6/2019		0.0675	0.034		A9H0421	
		34D-EA(3)	---	8/19/2019	24-30	<0.00112	0.034	100	A9H0593	
		34D-EB(2)	---	8/6/2019		0.00234	0.034		A9H0421	
		34D-EC(2)	---	8/6/2019		<0.00224	0.034		A9H0421	
		34D-ED(2)	---	8/6/2019		<0.00228	0.034		A9H0421	
		34D-WCOMP	---	7/25/2019	0-18	0.00944	0.0085	1200	A9G0803	
		34D-WA	---	7/25/2019		0.0101	0.034		A9H0052	
		34D-WB	---	7/25/2019		0.00428	0.034		A9H0052	
		34D-WC	---	7/25/2019		0.00294	0.034		A9H0052	
	34D-WD	---	7/25/2019		<0.002187	0.034		A9H0052		

TABLE 1 - Lab Results (Dieldrin) and Soil Removal Volumes per Cell  
 North Star Development - Phase III, Salem, Oregon  
 Soils Removed Summer/Fall 2019

Cell #	Cell Quadrant	Composite Sample #	Discrete Sample #	Date Sampled	Depth of removed soil, below original ground surface (in.)	Dieldrin concentration at base of excavation (mg/kg)	Sample RBC (mg/kg)	Est. Volume to Stockpile/Gravel Pit (CY)	Apex Lab Report ID	
Cell 35	35A	35A-ECOMP	---	7/25/2019	0-18	0.0509	0.0085	1200	A9G0803	
		35A-ECOMP(2)	---	8/6/2019	18-24	0.00641	0.0085	400	A9H0140	
		35A-WCOMP	---	7/25/2019	0-18	0.00667	0.0085	1200	A9G0803	
	35B	35B-ECOMP	---	7/31/2019	0-12	0.0175	0.0085	800	A9G0976	
		35B-EA	---	7/31/2019		0.0321	0.034		A9H0320	
		35B-EB	---	7/31/2019		0.0120	0.034		A9H0320	
		35B-EC	---	7/31/2019		0.00307	0.034		A9H0320	
		35B-ED	---	7/31/2019		0.0184	0.034		A9H0320	
		35B-WCOMP	---	7/31/2019	0-12	0.0513	0.0085	800	A9G0976	
		35B-WCOMP(2)	---	8/23/2019	12-18	0.0419	0.0085	400	A9H0753	
	35D	35B-WCOMP(3)	---	8/30/2019	18-24	<0.00221	0.0085	400	A9H0935	
		35D-ECOMP	---	7/25/2019	0-18	0.0435	0.0085	1200	A9G0803	
		35D-ECOMP(2)	---	8/6/2019	18-24	0.00211	0.0085	400	A9H0140	
		35D-WCOMP	---	7/25/2019	0-18	0.0121	0.0085	1200	A9G0803	
		35D-WA	---	7/25/2019		<0.00220	0.034		A9H0052	
35D-WB		---	7/25/2019		0.00654	0.034		A9H0052		
35D-WC		---	7/25/2019		0.0217	0.034		A9H0052		
Cell 36	36A	36A-ECOMP	---	7/25/2019	0-18	0.0356	0.0085	1200	A9G0803	
		36A-ECOMP(2)	---	8/6/2019	18-24	0.00558	0.0085	400	A9H0140	
		36A-WCOMP	---	7/25/2019	0-18	0.00714	0.0085	1200	A9G0803	
	36B	36B-ECOMP	---	7/31/2019	0-6	0.0246	0.0085	400	A9G0976	
		36B-EA	---	7/31/2019		0.00994	0.034		A9H0320	
		36B-EB	---	7/31/2019		0.0231	0.034		A9H0320	
		36B-EC	---	7/31/2019		0.0178	0.034		A9H0320	
		36B-ED	---	7/31/2019		0.0203	0.034		A9H0320	
		36B-WCOMP	---	7/31/2019	0-6	0.0523	0.0085	400	A9G0976	
		36B-WCOMP(2)	---	8/23/2019	6-12	0.0464	0.0085	400	A9H0753	
	36C	36B-WCOMP(3)	---	8/30/2019	12-18	<0.00231	0.0085	400	A9H0935	
		36C-ECOMP	---	7/31/2019	0-6	0.0712	0.0085	400	A9G0976	
		36C-ECOMP(2)	---	8/23/2019	6-12	0.00722	0.0085	400	A9H0753	
		36C-WCOMP	---	7/31/2019	0-6	0.0529	0.0085	400	A9G0976	
		36C-WCOMP(2)	---	8/23/2019	6-12	0.0362	0.0085	400	A9H0753	
36C-WCOMP(3)		---	8/30/2019	12-18	<0.00235	0.0085	400	A9H0935		
36D		36D-ECOMP	---	7/19/2019	0-6	0.0964	0.0085	400	A9G0641	
	36D-ECOMP(2)	---	8/6/2019	6-12	0.00643	0.0085	400	A9H0140		
	36D-WCOMP	---	7/19/2019	0-6	0.121	0.0085	400	A9G0641		
	36D-WCOMP(2)	---	8/6/2019	6-12	0.0374	0.0085	400	A9H0140		
	36D-WCOMP(3)	---	8/14/2019	12-18	<0.0011	0.0085	400	A9H0478		
Cell 37	37B	37B-ECOMP	---	7/31/2019	0-18	<0.00210	0.0085	1200	A9G0976	
		37B-WCOMP	---	7/31/2019	0-18	0.0326	0.0085	1200	A9G0976	
		37B-WCOMP(2)	---	8/14/2019	18-24	0.0070	0.0085	400	A9H0478	
	37C	37C-ECOMP	---	STOCKPILE #2, AREA NOT SAMPLED						
		37C-WCOMP	---	STOCKPILE #2, AREA NOT SAMPLED						
	37D	37D-ECOMP	---	7/19/2019	0-6	0.0260	0.0085	400	A9G0641	
		37D-EA	---	7/19/2019		0.0194	0.034		A9G0891	
		37D-EB	---	7/19/2019		0.0249	0.034		A9G0891	
		37D-EC	---	7/19/2019		0.0247	0.034		A9G0891	
		37D-ED	---	7/19/2019		0.0344	0.034		A9G0891	
		37D-ED(2)	---	8/6/2019	6-12	<0.00123	0.034	100	A9H0140	
		37D-WCOMP	---	7/19/2019	0-6	0.0236	0.0085	400	A9G0641	
		37D-WA	---	7/19/2019		0.0160	0.034		A9G0891	
		37D-WB	---	7/19/2019		0.0286	0.034		A9G0891	
	38A	37D-WC	---	7/19/2019		0.0233	0.034		A9G0891	
37D-WD		---	7/19/2019		0.0123	0.034		A9G0891		
38A-ECOMP		---	7/19/2019	0-6	0.0264	0.0085	400	A9G0641		
38A-EA		---	7/19/2019		0.0279	0.034		A9G0891		
38A-EB		---	7/19/2019		0.0204	0.034		A9G0891		
38A-EC		---	7/19/2019		0.0198	0.034		A9G0891		
38A	38A-ED	---	7/19/2019		0.0155	0.034		A9G0891		
	38A-WCOMP	---	7/19/2019	0-6	0.0324	0.0085	400	A9G0641		
		38A-WCOMP(2)	---	8/6/2019	6-12	0.00823	0.0085	400	A9H0140	

TABLE 1 - Lab Results (Dieldrin) and Soil Removal Volumes per Cell  
 North Star Development - Phase III, Salem, Oregon  
 Soils Removed Summer/Fall 2019

Cell 38	Composite Sample #	Discrete Sample #	Date Sampled	Depth of removed soil, below original ground surface (in.)	Dieldrin concentration at base of excavation (mg/kg)	Sample RBC (mg/kg)	Est. Volume to Stockpile/ Gravel Pit (CY)	Apex Lab Report ID	
38B	38B-ECOMP(2)	---	8/19/2019	6-12	0.00892	0.0085	400	A9H0593	
		38B-EA(2)	8/19/2019		0.00124	0.034		A9H0593	
		38B-EB(2)	8/19/2019		<0.00108	0.034		A9H0593	
		38B-EC(2)	8/19/2019		0.0292	0.034		A9H0593	
		38B-ED(2)	8/19/2019		0.00560	0.034		A9H0593	
		38B-WCOMP	---	8/6/2019	0-6	0.0237	0.0085	400	A9H0140
		38B-WCOMP(2)	---	8/19/2019	6-12	0.0198	0.0085	400	A9H0593
		38B-WA(2)	8/19/2019		<0.00108	0.034		A9H0593	
		38B-WB(2)	8/19/2019		0.00720	0.034		A9H0593	
		38B-WC(2)	8/19/2019		0.0388	0.034		A9H0593	
		38B-WC(3)	9/9/2019	12-18	<0.0110	0.034	400	A9I0206	
		38B-WD(2)	8/19/2019		0.0386	0.034		A9H0593	
		38B-WD(3)	9/9/2019	12-18	<0.00114	0.034	400	A9I0206	
	38D	38D-ECOMP	---	7/19/2019	0-6	0.0177	0.0085	400	A9G0641
			38D-EA	7/19/2019		0.0177	0.034		A9G0891
		38D-EB	7/19/2019		0.0151	0.034		A9G0891	
		38D-EC	7/19/2019		0.0182	0.034		A9G0891	
		38D-ED	7/19/2019		0.00791	0.034		A9G0891	
		38D-WCOMP	---	7/19/2019	0-6	0.0288	0.0085	400	A9G0641
		38D-WCOMP(2)	---	8/6/2019	6-12	0.0108	0.0085	400	A9H0140
		38D-WA(2)	8/6/2019		<0.00214	0.034		A9H0421	
		38D-WB(2)	8/6/2019		0.00646	0.034		A9H0421	
		38D-WC(2)	8/6/2019		0.0317	0.034		A9H0421	
		38D-WD(2)	8/6/2019		0.00742	0.034		A9H0421	

TOTAL VOLUME (cubic yards)

51185

(a) The whole generic RBC (residential: 0.034 mg/kg) is used for discrete samples. One-quarter of the generic RBC (0.0085 mg/kg) is used as the RBC for all four-point composite samples to account for potential dilution of discrete sample components.  
 CY: Cubic yards. All volumes are approximate.

RBC: Risk-based concentration, from DEQ guidance: *Risk-Based Decision Making for Cleanup of Contaminated Sites (September 2003, revised May 2018)*  
 Sample result used for final confirmation. Areas represented by unshaded cells underwent additional excavation and testing.

Table 2 - Lab Results (Dieldrin) and Soil removal Volumes per Cell  
 North Star Development - Phase III, Salem, Oregon  
 Soils Removed Summer/Fall 2018

Cell #	Cell Quadrant	Composite Sample #	Discrete Sample #	Date Sampled (2018)	Depth of removed soil, below original ground surface (in.)	Dieldrin concentration at base of excavation (mg/kg)	Sample RBC <sub>(a)</sub> (mg/kg)	Est. Volume to Stockpile/G ravel Pit (CY)	Est. Vol to MFR Area (CY)	Disposal Location <sup>(b)</sup> (SP:Stockpile, MFR: Multifamily)	Apex Lab Report ID
Cell 4	4A	4A-NCOMP	---	31-Aug	0-12	0.0798	0.0085	750	0	SP	A8H0917
		4A-NCOMP(2)	---	25-Sep	12-18	0.00452	0.0085	0	375	MFR	A8I0654
		4A-SCOMP	---	31-Aug	0-12	0.0215	0.0085	750	0	SP	A8H0917
		4A-SCOMP(2)	---	25-Sep	12-18	0.00182	0.0085	0	375	MFR	A8I0654
	4B	4B-NWCOMP	---	11-Aug	0-12	0.237	0.0085	375	0	SP	A8H0310
		4B-NWCOMP(2)	---	28-Aug	12-20	0.156	0.0085	250	0	SP	A8H0788
		4B-NWCOMP(3)	---	25-Sep	20-26	0.0014	0.0085	180	0	SP	A8I0654
		4B-SCOMP	---	11-Aug	0-12	0.0128	0.0085	750	0	SP	A8H0310
	4C	4B-SCOMP(2)	---	28-Aug	12-20	0.00246	0.0085	500	0	SP	A8H0788
		4C-NCOMP	---	11-Aug	0-12	0.0673	0.0085	750	0	SP	A8H0310
		4C-NCOMP(2)	---	28-Aug	12-20	<0.00102	0.0085	500	0	SP	A8H0788
		4C-SCOMP	---	11-Aug	0-12	0.0969	0.0085	750	0	SP	A8H0310
	4D	4C-SCOMP(2)	---	28-Aug	12-20	0.0013	0.0085	500	0	SP	A8H0788
		4D-NCOMP	---	31-Aug	0-12	0.055	0.0085	750	0	SP	A8H0917
		4D-NCOMP(2)	---	25-Sep	12-18	0.0088	0.0085	0	375	MFR	A8I0654
		---	4D-NA(2)	2-Oct	---	<0.00109	0.034	---	---	---	A8J0039
---		4D-NB(2)	2-Oct	---	0.00438	0.034	---	---	---	A8J0039	
---		4D-NC(2)	2-Oct	---	<0.00112	0.034	---	---	---	A8J0039	
Cell 5	5A	---	4D-ND(2)	2-Oct	---	<0.00106	0.034	---	---	---	A8J0039
		4D-SCOMP	---	31-Aug	0-12	0.0318	0.0085	750	0	SP	A8H0917
	5B	4D-SCOMP(2)	---	25-Sep	12-18	<0.00105	0.0085	0	375	MFR	A8I0654
		5A-NCOMP	---	11-Sep	0-12	<0.00102	0.0085	750	0	SP	A8I0238
		5A-SCOMP	---	11-Sep	0-12	<0.00100	0.0085	750	0	SP	A8I0238
		5B-NCOMP	---	6-Sep	0-12	0.0103	0.0085	750	0	SP	A8I0126
	5C	5B-NCOMP(2)	---	20-Sep	12-18	0.00111	0.0085	0	375	MFR	A8I0581
		5B-SCOMP	---	6-Sep	0-12	0.0114	0.0085	750	0	SP	A8I0126
		5B-SCOMP(2)	---	20-Sep	12-18	0.00149	0.0085	0	375	MFR	A8I0581
		5C-NCOMP	---	6-Sep	0-12	0.0411	0.0085	750	0	SP	A8I0126
5C-NCOMP(2)		---	20-Sep	12-18	0.00119	0.0085	0	375	MFR	A8I0581	
5C-SCOMP		---	6-Sep	0-12	0.0378	0.0085	750	0	SP	A8I0126	
Cell 18	18B	5C-SCOMP(2)	---	20-Sep	12-18	0.00132	0.0085	0	375	MFR	A8I0581
		18B-NCOMP	---	6-Sep	0-12	0.0367	0.0085	750	0	SP	A8I0126
		18B-NCOMP(2)	---	20-Sep	12-18	<0.00108	0.0085	0	375	MFR	A8I0581
		18B-SCOMP	---	6-Sep	0-12	0.0377	0.0085	750	0	SP	A8I0126
Cell 19	19A	18B-SCOMP(2)	---	20-Sep	12-18	0.00144	0.0085	0	375	MFR	A8I0581
		19A-NCOMP	---	31-Aug	0-12	0.051	0.0085	750	0	SP	A8H0917
		19A-NCOMP(2)	---	25-Sep	12-18	<0.00105	0.0085	0	375	MFR	A8I0654
		19A-SCOMP	---	31-Aug	0-12	0.0426	0.0085	750	0	SP	A8H0917
	19B	19A-SCOMP(2)	---	25-Sep	12-18	0.00741	0.0085	0	375	MFR	A8I0654
		19B-NCOMP	---	11-Aug	0-12	0.087	0.0085	750	0	SP	A8H0310
		19B-NCOMP(2)	---	28-Aug	12-24	<0.00106	0.0085	750	0	SP	A8H0788
		19B-SNCOMP	---	11-Aug	0-12	0.148	0.0085	375	0	SP	A8H0310
Cell 26	26C	19B-SNCOMP(2)	---	28-Aug	12-24	0.00123	0.0085	375	0	SP	A8H0788
		26C-SCOMP	---	5-Jul	0-18	0.112	0.0085	1125	0	SP	A8G0100
26C-SCOMP(2)	---	10-Jul	18-36	0.00325	0.0085	1125	0	SP	A8G0178		

TOTAL VOLUME (cubic yards)

19555

4500

(a) One-quarter of the generic RBC is used as the RBC for all four-point composite samples to account for potential dilution of discrete sample components.

The whole generic RBC (residential: 0.034 mg/kg, urban residential: 0.085 mg/kg) is used for discrete samples.

(b) All soils between depths of 0"-6" were placed in the soil stockpile due to presence of roots and other organic matter which made the soils unsuitable for re-use on site.

CY: Cubic yards. All volumes are approximate.

MFR: Multifamily residential

RBC: Risk-based concentration, from DEQ guidance: *Risk-Based Decision Making for Cleanup of Contaminated Sites (September 2003, revised May 2018)*

Sample result used for final confirmation. Areas represented by unshaded cells underwent additional excavation and testing.

## EXHIBIT A

BEGINNING AT A 5/8" IRON ROD ON THE WEST LINE OF LOT 279, NORTHSTAR PHASE 3, AS RECORDED IN BOOK 48, PAGE 45 BOOK OF TOWN PLATS, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 6 SOUTH, RANGE 2 WEST, OF THE WILLAMETTE MERIDIAN, CITY OF SALEM, MARION COUNTY, OREGON; THENCE ALONG THE WEST LINE OF SAID LOT NORTH  $00^{\circ}11'56''$  WEST 1317.46 FEET TO A 5/8" IRON ROD AT THE NORTHWEST CORNER OF SAID LOT; THENCE ALONG THE NORTH LINE OF SAID LOT FOR THE FOLLOWING 5 CALLS, NORTH  $89^{\circ}13'32''$  EAST 184.24 FEET TO A 5/8" IRON ROD; SOUTH  $87^{\circ}24'00''$  EAST 197.18 FEET TO A 5/8" IRON ROD; NORTH  $89^{\circ}15'42''$  EAST 65.62 FEET TO A 5/8" IRON ROD; SOUTH  $48^{\circ}45'05''$  EAST 44.14 FEET TO A 5/8" IRON ROD; NORTH  $89^{\circ}15'42''$  EAST 160.90 FEET TO A 5/8" IRON ROD AT THE MOST NORTHERLY NORTH EAST CORNER OF SAID LOT; THENCE ALONG THE EAST LINE OF SAID LOT SOUTH  $00^{\circ}11'57''$  EAST 1292.08 FEET TO A 5/8" IRON ROD; THENCE NORTH  $90^{\circ}00'00''$  WEST 359.48 FEET; THENCE SOUTH  $00^{\circ}11'46''$  EAST 183.36 FEET; THENCE NORTH  $89^{\circ}50'56''$  WEST 184.71 FEET; THENCE SOUTH  $00^{\circ}11'30''$  1121.99 FEET TO THE NORTH RIGHT OF WAY LINE OF KALE STREET NORTHEAST; THENCE ALONG THE SAID RIGHT OF WAY LINE SOUTH  $89^{\circ}21'20''$  WEST 590.04 FEET; THENCE NORTH  $00^{\circ}03'16''$  WEST 1316.72 FEET TO SOUTHERLY LINE OF TRACT OF LAND DESCRIBED IN REEL 1500, PAGE 155, MARION COUNTY DEED RECORDS; THENCE ALONG SAID SOUTH LINE AND ITS EXTENSION NORTH  $89^{\circ}45'46''$  EAST 490.25 FEET TO THE POINT OF BEGINNING AND CONTAINING 37.85 ACRES MORE OR LESS.

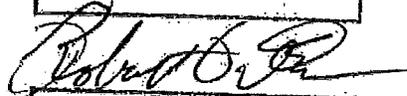
### SAVE AND EXCEPT:

COMMENCING AT A 5/8" IRON ROD ON THE WEST LINE OF LOT 279, NORTHSTAR PHASE 3, AS RECORDED IN BOOK 48, PAGE 45 BOOK OF TOWN PLATS, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 6 SOUTH, RANGE 2 WEST, OF THE WILLAMETTE MERIDIAN, CITY OF SALEM, MARION COUNTY, OREGON; THENCE ALONG THE WEST LINE OF SAID LOT NORTH  $00^{\circ}11'56''$  WEST 312.42 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH  $89^{\circ}51'39''$  EAST 328.74 FEET; THENCE NORTH  $01^{\circ}03'18''$  WEST 135.92 FEET; THENCE NORTH  $89^{\circ}33'17''$  WEST 326.73 FEET TO THE WEST LINE OF SAID LOT; THENCE ALONG SAID WEST LINE SOUTH  $00^{\circ}11'56''$  WEST 139.24 FEET TO THE POINT OF BEGINNING AND CONTAINING 1.03 ACRES MORE OR LESS.

SAVE AND EXCEPT:

COMMENCING AT A 5/8" IRON ROD ON THE WEST LINE OF LOT 279, NORTHSTAR PHASE 3, AS RECORDED IN BOOK 48, PAGE 45 BOOK OF TOWN PLATS, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 6 SOUTH, RANGE 2 WEST, OF THE WILLAMETTE MERIDIAN, CITY OF SALEM, MARION COUNTY, OREGON; THENCE SOUTH 00°11'56" EAST 1313.21 FEET TO THE NORTH RIGHT OF WAY LINE OF KALE STREET NORTHEAST; THENCE ALONG SAID WAY LINE SOUTH 89°21'20" WEST 77.09 FEET TO TRUE THE POINT OF BEGINNING; THENCE NORTH 00°00'00" EAST 121.18 FEET; THENCE SOUTH 60°05'09" WEST 116.76 FEET; THENCE NORTH 90°00'00" WEST 100.37 FEET; THENCE SOUTH 00°00'00" EAST 65.22 FEET TO SAID RIGHT OF WAY LINE; THENCE ALONG SAID RIGHT OF WAY LINE NORTH 89°21'20" EAST 201.59 FEET TO THE POINT OF BEGINNING AND CONTAINING 15,865 SQUARE FEET MORE OR LESS.

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR



OREGON  
JULY 13, 2004  
ROBERT D. HAMMAN  
64202LS

EXPIRES: 6/30/2021

EXHIBIT B

HAZEL GREEN RD. NE

N89°13'32"E  
184.24'

N89°15'42"E  
65.62' N89°15'42"E  
160.90'

S87°24'00"E  
197.18'

S48°45'05"E  
44.14'



1" = 300'  
11/14/2019  
#6610

REEL 1500, PAGE 155

N89°45'46"E 490.25'

N00°11'56"W 1317.46'

N89°33'17"W  
326.73'

139.24'

N89°51'39"E  
328.74'

N01°03'18"W  
135.92'

S00°11'57"E 1292.08'

BEGINNING POINT

N90°00'00"W  
359.48'

N89°50'56"W  
184.71'

S00°11'46"E  
183.36'

LOT 279  
NORTHSTAR PHASE 3  
BOOK 48 PAGE 45

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

OREGON  
JULY 13, 2004  
ROBERT D. HAMMAN  
64202LS

EXPIRES: 6-30-2021

N00°03'16"W 1316.72'

S00°11'56"E 1313.21'

S00°11'30"E 1121.99'

S60°05'09"W  
116.76'

N90°00'00"W  
100.37'

N00°00'00"E  
121.18'

77.09'

S00°00'00"E  
65.22'

KALE ST. NE

201.59'

S89°21'20"W 590.04'

