

Date: May 15, 2018

To: FILE ECSI #6036

Through: Donald Hanson, Acting 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

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended Partial No Further Action (NFA) determination for the Northstar Site, in Salem. The Partial NFA applies only to the eastern portions of property (Eastern Property) described in the legal description and on the map shown on Figures 1 and 2 and includes all of current tax lots 701 and 100 and the southern part of tax lot 200. As discussed in this report, contaminant concentrations in soil on this portion of the property are below acceptable risk levels.

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. 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. The property was purchased by Granada Land Company in 2005 and then sold to the current owner, I&E Construction in July 2017. I&E is in the process of re-developing the site into residential 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 will be providing water service to the site in the future, so there are no future beneficial uses of groundwater on the property. There are currently two irrigation wells on the site, but they will be 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. I&E plans to re-route the drainage ditch and infill the existing ditch with clean material as part of the site development.

3. RECORD OF DECISION AND CLEANUP OF EASTERN PROPERTY

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 site development. DEQ issued a public notice and chance to comment on the recommended cleanup in July 2017 and a Record of Decision with a 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 to an agriculture land located at 6848 Windsor Island Road, Keizer, Oregon. The soil will be used to infill two abandoned quarries (northern quarry and southern quarry) on the property and will be covered with 3 feet of cleaner fill.
- The reuse of the soil on the agriculture land 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 and/or the Army Corps of Engineers before the southern quarry is infilled. These requirements were not placed on the northern quarry.

- A deed notice recorded on the Windsor Island farm property 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.

CLEANUP OF EASTERN PROPERTY

Before the ROD was issued, DEQ allowed I&E Construction to start soil removal work on the Eastern Property. The work was conducted between August and September 2017. During this time, I&E excavated and removed dieldrin-contaminated soil on the eastern part of the site. Soil removal depths ranged between 6 to 40 inches bgs. Contaminated soil removal areas are shown in Figure 3 and included soils from cells 8, 9, 10, 13, 14, 15, and 33 that contained dieldrin above the residential RBC of 0.034 mg/kg. No other cells on the Eastern Property contained dieldrin contaminated soils above 0.034 mg/kg (see areas in white on Figure 4).

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). Tables 1 through 7 show the final excavation depths and confirmation sampling results for each cell. Soils within 8 to 20 feet of the electrical tower located in cell 9B could not be safely removed. This area is part of an existing power line corridor that will be deeded to the City of Salem. Use of this area is considered occupational because it will not be developed or used by the residents, but will be maintained by the City of Salem as an easement. Discrete samples were collected from 0-6 and 6-12 inches on the east and west sides of the tower. Dieldrin levels ranged between 0.0191 to 0.094 mg/kg. The levels of dieldrin in the soil around the tower are below the occupational RBC.

The excavated soils from the Eastern Property were temporarily stockpiled on the western part of the site. Offsite transport of the soil was not allowed until after the final remedy was selected and approved. A silt fence was placed around the stockpile to prevent runoff and erosion and the soil was seeded with fast-growing grass seed. I&E plans to begin transport the soil off site to the Windsor Island farm sometime between mid-May and June 2018. Only the north quarry will be

filled. Use of the southern quarry is pending receipt of appropriate floodplain and wetland permits.

I&E completed the excavation and removal work under an approved dust control and air monitoring plan. The 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. A Certified Industrial Hygienist oversaw air monitoring for dust and dieldrin during the first two weeks of work. The dust concentrations were very low and dieldrin levels in the dust were below residential inhalation RBCs. The results indicated that the dust did not pose an unacceptable risk to site workers or the surrounding residents.

Details of the soil removal and confirmation sampling results are in located in the soil removal report on DEQ's ECSI website (December 2017, AGI).

4. REMAINING CONTAMINATION EASTERN PROPERTY

Based on previous and final confirmation sampling results, no soil with dieldrin above the residential RBC of 0.034 mg/kg remains on the Eastern Property.

5. POST CLEANUP RISK EVALUATION – EASTERN PROPERTY

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 will be 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 Eastern 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 9 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

CONCEPTUAL SITE MODEL TABLE

Table 9. Identification of applicable RBCs, based on pertinent pathways and receptors

Pathway	Receptor	Is Pathway Complete?	Is RBC Exceeded?	Basis for selection/exclusion
SOIL				
Ingestion, dermal contact, and inhalation	Residential	Yes	No	See Note 1.
	Urban residential	Yes	No	
	Occupational	Yes	No	See Note 2.
	Construction worker	Yes	No	
	Excavation worker	Yes	No	
Volatilization to outdoor air	Residential	No	NA	See Note 3.
	Urban residential	No	NA	
	Occupational	No	NA	
Vapor intrusion into buildings	Residential	No	NA	See Note 3.
	Urban residential	No	NA	
	Occupational	No	NA	
Leaching to groundwater	Residential	No	NA	See Note 4.
	Urban residential	No	NA	
	Occupational	No	NA	
GROUNDWATER				
Ingestion and inhalation from tap water	Residential	No	NA	See Note 5.
	Urban residential	No	NA	
	Occupational	No	NA	
Volatilization to outdoor air	Residential	No	NA	See Note 3.
	Urban residential	No	NA	
	Occupational	No	NA	
Vapor intrusion into buildings	Residential	No	NA	See Note 3.
	Urban residential	No	NA	
	Occupational	No	NA	
Groundwater in excavation	Construction and excavation worker	Yes	No	See Note 4.

Notes:

NA: Not applicable since pathway is not complete.

1. Site is being developed for residential and urban residential use.
2. The overhead power line corridor on the north side of the site is considered occupational use. It will be deeded to the City and maintained by City employees.
3. Dieldrin is non-volatile.
4. Contamination is limited to shallow soil and 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.
5. 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 through 7 show the results for remaining soil contaminant concentrations in the soils of cells 8, 9, 10, 13, 14, 15, and 33 on the Eastern Property. The highest concentration of dieldrin remaining in the soil of these cells is 0.0328 mg/kg. No other cells on the Eastern Property contained soil with dieldrin above the residential level of 0.034 mg/kg, so did not require cleanup.

Table 8 shows the results of the four soil samples collected around the power line tower in cell 9 where soils could not be safely removed. The highest concentration in this area was 0.0941 mg/kg.

Human health risk.

As illustrated in the tables, no dieldrin remains in the soils at concentrations above the residential risk level of 0.034 mg/kg in the areas being developed for residential use. Dieldrin around the power line in cell 9 is below the occupational risk level of 0.14 mg/kg. There is no dieldrin contamination in the soil above the construction or excavation worker RBCs of 1.2 and 33 mg/kg, respectively.

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. This ditch will be rerouted and the existing ditch will be filled in and graded during site development.

6. RECOMMENDATION

I&E has requested a Partial NFA for the Eastern Property, so a property transfer and home construction could be started. Based on the sample results and the human health ecological risk evaluation, remaining contamination at the site does not pose an unacceptable risk to current or future uses of the property. A Partial No Further Action determination is recommended for the Eastern Property.

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

7. 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*, December 13, 2017

8. ATTACHMENTS

Figures:

1. Legal Description of Eastern Property
2. Map Showing Eastern Property
3. Soil Removal Areas
4. Contaminated Soil Above and Below Residential RBC

Tables:

1. Confirmation Sampling Results – Cell 8
2. Confirmation Sampling Results – Cell 9
3. Confirmation Sampling Results – Cell 10
4. Confirmation Sampling Results – Cell 13
5. Confirmation Sampling Results – Cell 14
6. Confirmation Sampling Results – Cell 15
7. Confirmation Sampling Results – Cell 33
8. Confirmation Sampling Results – Power Line Tower Cell 9
9. Conceptual Site Model

FIGURE 1

Exhibit A

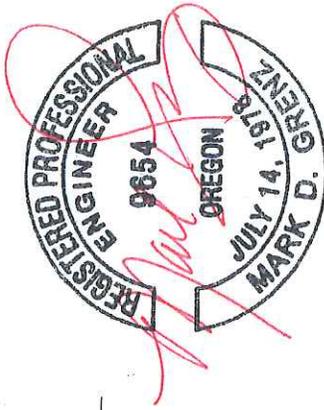
Commencing at a 3" Brass Cap in a monument box at the Northeast Corner of DLC No. 71 in the Northeast Quarter of Section 5, Township 7 South, Range 2 West of the Willamette Meridian, City of Salem, Marion County, Oregon; thence along the centerline of Kale Street South 89°21'20" West 178.16 feet; thence North 00°11'57" West 20.00 feet to the True Point of Beginning; thence North 00°11'57" West 1324.40 feet to a 5/8" iron rod; thence South 89°00'54" West 1281.76 feet to a 5/8" iron rod; thence South 89°10'23" West 640.86 feet to a 5/8" iron rod; thence North 89°19'43" West 359.51 feet; thence South 00°00'00" East 179.11 feet; thence North 90°00'00" West 179.11 feet; thence South 00°03'47" West 1131.96 feet to the North Right of Way of Kale Street; thence along said centerline the following five calls: North 89°21'20" East 1185.20 feet; South 00°38'40" East 4.00 feet; North 89°21'20" East 640.84 feet to a 5/8" iron rod; South 00°11'57" East 10.00 feet; North 89°21'20" East 640.84 feet to the True Point of Beginning and containing 73.36 acres, more or less.



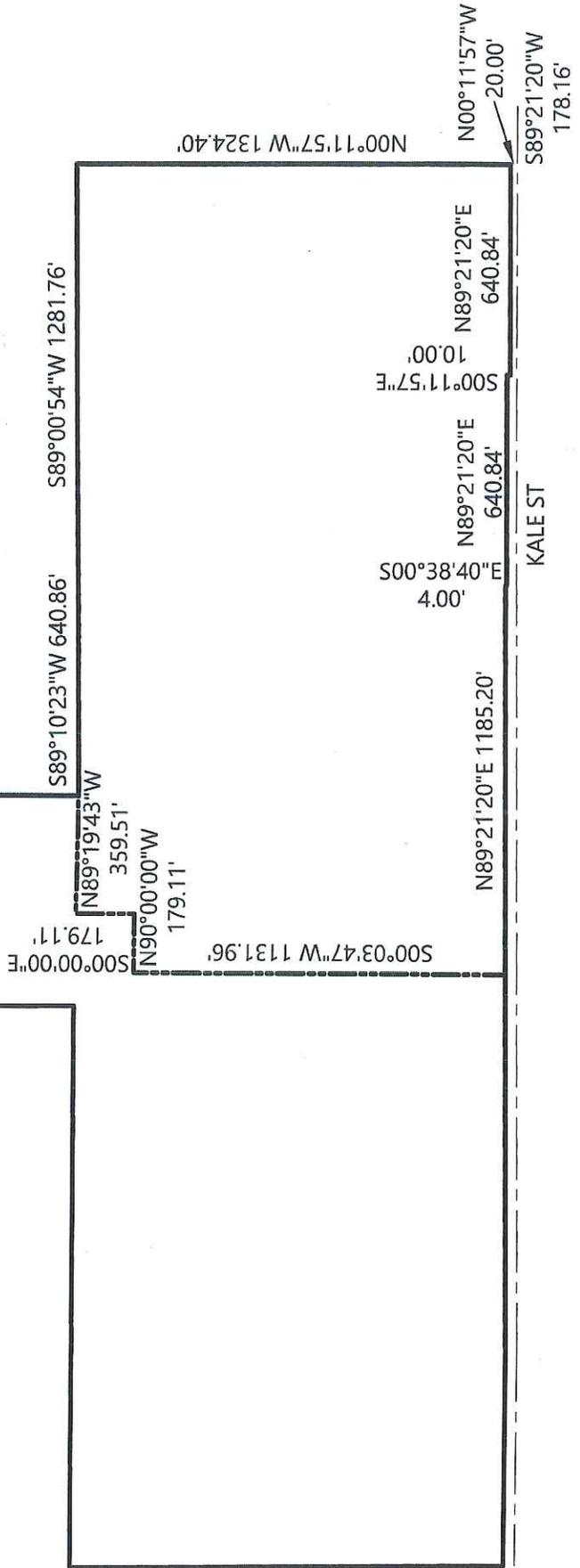
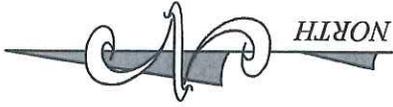
FIGURE 2

EXHIBIT B

HAZELGREEN RD

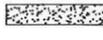


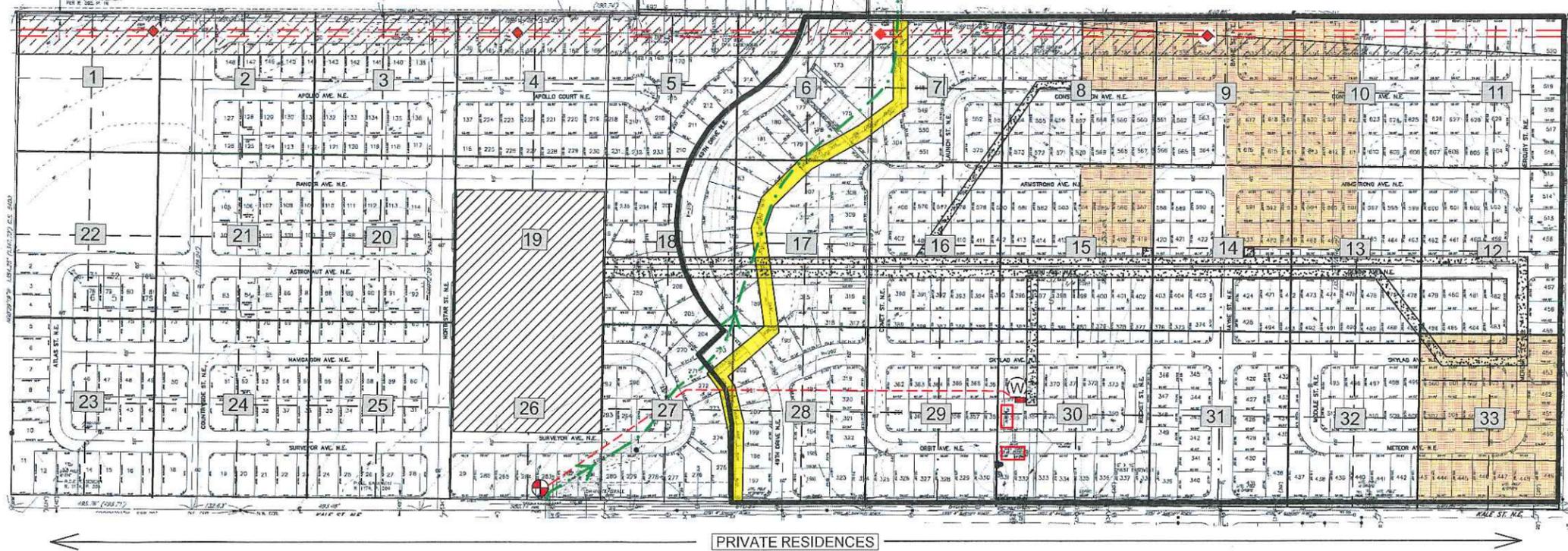
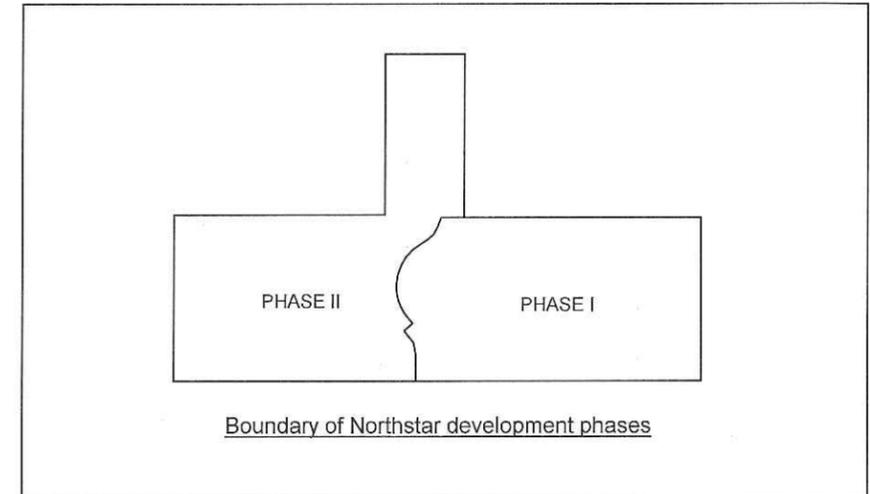
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LEGEND

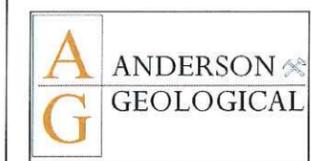
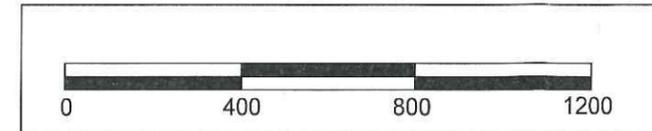
-  Areas where dieldrin-contaminated soil was removed
-  Temporary stockpile for contaminated soil from cells 8, 9, 10, 13, 14, 15 and 33.
-  Power line transmission corridor and future drainage swale, to be deeded to City of Salem
-  Temporary haul road between excavation areas and soil stockpile
-  Future route of open-air ditch
-  Cell number
-  Existing ditch/swale
-  Water well
-  Elevated water tank for storage of dust suppression water
-  Power line tower
-  Power lines



PRIVATE RESIDENCES

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PRIVATE RESIDENCES

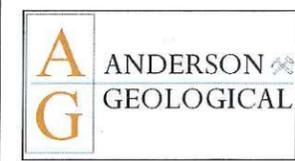
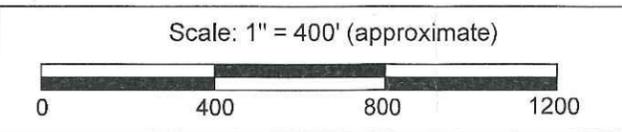
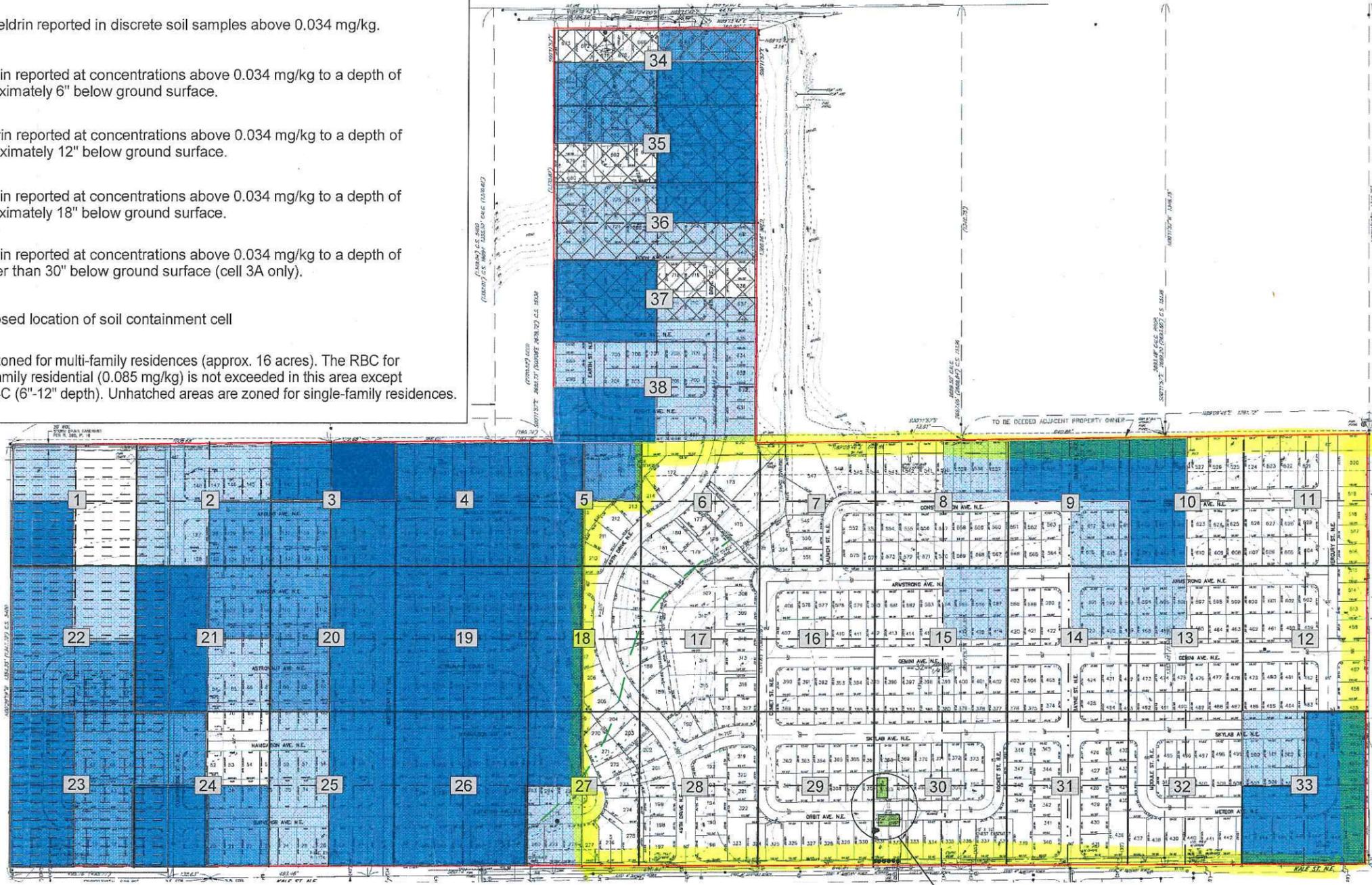


EXCAVATED AREAS AND SOIL HAUL ROADS			
North Star Development - Phase I Salem, Oregon			
SIZE B	CAGE CODE	DWG NO	PROJECT No.
		October 2017	FIGURE 3



LEGEND

- No dieldrin reported in discrete soil samples above 0.034 mg/kg.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of approximately 6" below ground surface.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of approximately 12" below ground surface.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of approximately 18" below ground surface.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of greater than 30" below ground surface (cell 3A only).
- Proposed location of soil containment cell
- Area zoned for multi-family residences (approx. 16 acres). The RBC for multifamily residential (0.085 mg/kg) is not exceeded in this area except cell 23C (6"-12" depth). Unhatched areas are zoned for single-family residences.



DIELDRIN CONCENTRATIONS ABOVE RESIDENTIAL RBCs (0"-6", 0"-12", 0"-18" AND 0"-30" DEPTH)

Proposed Northstar Development
Salem, Oregon

SIZE	CAGE CODE	DWG NO	PROJECT No.
B			July 2016
			FIGURE 4

**Table 1
Soil Analysis Summary - Cell 8
Northstar Development**

CELL 8					
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.*)	Pesticides
					Dieldrin
Northeast Corner (8A)	North (8A-N)	Composite	8A-N-COMP	6	0.0757
			8A-N-COMP (2)	18	<0.00106
		Discrete	8A-NA	6	—
			8A-NB	6	—
			8A-NC	6	—
			8A-ND	6	—
	South (8A-S)	Composite	8A-S-COMP	6	0.0271
			8A-S-COMP (2)	18	<0.00107
		Discrete	8A-SA	6	—
			8A-SB	6	—
			8A-SC	6	—
			8A-SD	6	—
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)					
Screening Level - Composite Samples					0.0085
Screening Level - Discrete Samples					0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)

All values in milligrams per kilogram (mg/kg)

— Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 2
Soil Analysis Summary - Cell 9
Northstar Development

CELL 9					
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.*)	Pesticides
					Dieldrin
Northeast Corner (9A)	North (9A-N)	Composite	9A-N-COMP	18	0.0521
			9A-N-COMP (2)	30	<0.00123
		Discrete	9A-NA	-	-
			9A-NB	-	-
			9A-NC	-	-
	South (9A-S)	Composite	9A-S-COMP	18	0.0710
			9A-S-COMP (2)	30	0.0815
			9A-S-COMP (3)	40	<0.00122
		Discrete	9A-SA	-	-
			9A-SB	-	-
Northwest Corner (9B)	North (9B-N)	Composite	9B-N-COMP	18	0.0384
			9B-N-COMP (2)	30	0.00248
		Discrete	9B-NA	-	-
			9B-NB	-	-
			9B-NC	-	-
	South (9B-S)	Composite	9B-S-COMP	18	0.0701
			9B-S-COMP (2)	30	<0.00103
		Discrete	9B-SA	-	-
			9B-SB	-	-
			9B-SC	-	-
Southeast Corner (9D)	North (9D-N)	Composite	9D-N-COMP	6	0.0968
			9D-N-COMP (2)	18	0.167
			9D-N-COMP (3)	30	<0.00112
		Discrete	9D-NA	-	-
			9D-NB	-	-
	South (9D-S)	Composite	9D-S-COMP	6	0.0717
			9D-S-COMP (2)	18	0.00221
		Discrete	9D-SA	-	-
			9D-SB	-	-
			9D-SC	-	-
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)					
Screening Level - Composite Samples					0.0085
Screening Level - Discrete Samples					0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)

All values in milligrams per kilogram (mg/kg)

- Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 3
Soil Analysis Summary - Cell 10
Northstar Development

CELL 10					
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.)*	Pesticides
					Dieldrin
Northwest Corner (10B)	North (10B-N)	Composite	10B-N-COMP	18	0.00518
		Discrete	10B-NA	18	-
			10B-NB	18	-
			10B-NC	18	-
			10B-ND	18	-
	South (10B-S)	Composite	10B-S-COMP	18	<0.00116
		Discrete	10B-SA	18	-
			10B-SB	18	-
			10B-SC	18	-
			10B-SD	18	-
Southwest Corner (10C)	North (10C-N)	Composite	10C-N-COMP	18	0.0342
		Discrete	10C-NA	18	0.00148
			10C-NB	18	0.0237
			10C-NC	18	0.0753
			10C-NC(2)	28	<0.0011
			10C-ND	18	0.0833
	10C-ND(2)	28	<0.00115		
	South (10C-S)	Composite	10C-S-COMP	18	0.00439
		Discrete	10C-SA	18	-
			10C-SB	18	-
10C-SC			18	-	
10C-SD	18	-			
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)					
Screening Level - Composite Samples					0.0085
Screening Level - Discrete Samples					0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)

All values in milligrams per kilogram (mg/kg)

- Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 4
Soil Analysis Summary - Cell 13
Northstar Development

CELL 13							
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.*)	Pesticides		
					Dieldrin		
Northwest Corner (13B)	North (13B-N)	Composite	13B-N-COMP	6	0.0432		
			13B-N-COMP(2)	18	0.0190		
			13B-N-COMP(3)	24	0.0331		
			13B-N-COMP(4)	30	<0.00115		
		Discrete	13B-NA	6	-		
	13B-NB		6	-			
	13B-NC		6	-			
	13B-ND		6	-			
	South (13B-S)	Composite	13B-S-COMP	6	0.0361		
			13B-SA	6	0.0253		
		Discrete	13B-SB	6	0.0526		
			13B-SB(2)	18	-		
			13B-SB(3)	24	0.00128		
			13B-SC	6	0.0718		
			13B-SC(2)	18	-		
			13B-SC(3)	24	<0.00105		
13B-SD			6	0.0328			
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)							
Screening Level - Composite Samples					0.0085		
Screening Level - Discrete Samples					0.034		

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)

All values in milligrams per kilogram (mg/kg)

- Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 5
Soil Analysis Summary - Cell 14
Northstar Development

CELL 14					
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.*)	Pesticides
					Dieldrin
Northeast Corner (14A)	North (14A-N)	Composite	14A-N-COMP	6	0.0418
			14A-N-COMP (2)	18	0.0228
			14A-N-COMP (3)	24	<0.00113
		Discrete	14A-NA	6	–
			14A-NB	6	–
			14A-NC	6	–
	South (14A-S)	Composite	14A-S-COMP	6	0.0272
			14A-S-COMP (2)	18	0.00355
			14A-SA	6	0.0279
		Discrete	14A-SB	6	0.0452
			14A-SC	6	0.0343
			14A-SD	6	0.0565
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)					
Screening Level - Composite Samples					0.0085
Screening Level - Discrete Samples					0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)
 All values in milligrams per kilogram (mg/kg)

– Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 6
Soil Analysis Summary - Cell 15
Northstar Development

CELL 15					
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.)*	Pesticides
					Dieldrin
Northeast Corner (15A)	North (15A-N)	Composite	15A-N-COMP	6	0.0118
		Discrete	15A-NA	6	<0.0010
			15A-NB	6	0.00987
			15A-NC	6	0.0144
			15A-ND	6	0.0625
			15A-ND(2)	12	0.00149
	South (15A-S)	Composite	15A-S-COMP	6	0.0198
		Discrete	15A-SA	6	0.0475
			15A-SA(2)	12	<0.00106
			15A-SB	6	0.00732
			15A-SC	6	0.00647
			15A-SD	6	0.0576
			15A-SD(2)	12	<0.00111
			Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)		
Screening Level - Composite Samples					0.0085
Screening Level - Discrete Samples					0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)
 All values in milligrams per kilogram (mg/kg)

– Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 7
Soil Analysis Summary - Cell 33
Northstar Development

CELL 33					
Quarter Cell	North/South half of quarter cell?	Sample type	Sample Number	Sample Depth (in.*)	Pesticides
					Dieldrin
Northeast Corner (33A)	North (33A-N)	Composite	33A-N-COMP	18	0.00857
			33A-N-COMP (2)	28	<0.00110
		Discrete	33A-NA	-	-
			33A-NB	-	-
			33A-NC	-	-
	South (33A-S)	Composite	33A-S-COMP	18	0.00787
			33A-SA	-	-
		Discrete	33A-SB	-	-
			33A-SC	-	-
			33A-SD	-	-
Northwest Corner (33B)	North (33B-N)	Composite	33B-N-COMP	6	0.0224
			33B-N-COMP (2)	16	<0.00107
		Discrete	33B-NA	-	-
			33B-NB	-	-
			33B-NC	-	-
	South (33B-S)	Composite	33B-S-COMP	6	0.0320
			33B-S-COMP (2)	16	<0.0010
		Discrete	33B-SA	-	-
			33B-SB	-	-
			33B-SC	-	-
Southwest Corner (33C)	North (33C-N)	Composite	33C-N-COMP	18	0.0069
			33C-NA	-	-
		Discrete	33C-NB	-	-
			33C-NC	-	-
			33C-ND	-	-
	South (33C-S)	Composite	33C-S-COMP	18	<0.00106
			33C-SA	-	-
		Discrete	33C-SB	-	-
			33C-SC	-	-
			33C-SD	-	-
Southeast Corner (33D)	North (33D-N)	Composite	33D-N-COMP	18	<0.0114
			33D-NA	-	-
		Discrete	33D-NB	-	-
			33D-NC	-	-
			33D-ND	-	-
	South (33D-S)	Composite	33D-S-COMP	18	0.0197
			33D-SA	18	0.00411
		Discrete	33D-SB	18	<0.000957
			33D-SC	18	<0.000980
			33D-SD	18	0.0933
33D-SD(2)	24	<0.00113			
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)					
Screening Level - Composite Samples					0.0085
Screening Level - Discrete Samples					0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)

All values in milligrams per kilogram (mg/kg)

- Sample not analyzed

Sample result used for final compliance [<0.0085 (composite) and <0.034 (discrete)]

*Sample depth is in inches below original ground surface (approximate)

Sample numbers that have a numeral in parentheses, such as (2) or (3), represent a second (2) or third (3) sample collected from successive depths in the same location.

Table 8
Soil Analysis Summary - Base of Power Line Tower, Cell #9
Northstar Development

POWER LINE TOWER - CELL #9			
Sample Number	Sample type	Sample Depth (in.)*	Pesticides
			Dieldrin
Tower 9-E6	Discrete	0-6	0.0612**
Tower9-E18		6-18	0.0191
Tower 9-W6		0-6	0.0941**
Tower9-W18		6-18	0.0447**
Residential Screening Levels (Soil Ingestion, Dermal contact, Inhalation)			
Screening Level - Discrete Samples			0.034

Generic Risk-Based Levels are based on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003 (revised November 1, 2015)
 All values in milligrams per kilogram (mg/kg)

*Sample depth is in inches below ground surface (approximate)

** Concentration exceeds residential RBC