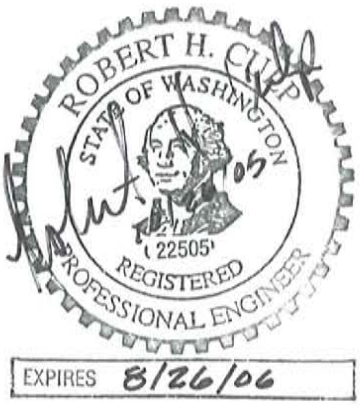
ROTARY PARK

Wenatchee, Washington

CLEANUP ACTION REPORT



Prepared by

Munson Engineers, Inc.
610 North Chelan Avenue
Wenatchee, Washington 98801

March 7, 2005
Revised October 26, 2005

CLEANUP ACTION REPORT

ROTARY PARK
Wenatchee, Washington

Introduction

Wenatchee's Rotary Park site underwent a cleanup action conducted in accordance with the Model Toxics Control Act Cleanup Regulation as an independent cleanup action. The City of Wenatchee requested this report to describe and document its voluntary cleanup action for Department of Ecology review under the Voluntary Cleanup Program.

Background

The City of Wenatchee recognizes public concern and the recommendations of the Area-Wide Soil Contamination Task Force, a 17-person panel chartered by the Washington State Departments of Agriculture, Ecology, Health and Community, Trade and Economic Development. The recommendations provide advice for a statewide strategy for response to low - to moderate – level arsenic and lead soil contamination in Washington Sate. The "Area-Wide Soil Contamination Task Force Report", June 30, 2003 prepared with the assistance of: Ross & Associates Environmental Consulting, Ltd., Landau Associates, Inc. and Hubbard Gray Consulting, Inc. is available at *http://www.ecy.wa.gov/programs/tcp/area_wide/Final-Report/PDF/TF-Report-final.pdf*

The purposes of the Task Force deliberations and report were to understand the nature and extent of area-wide soil contamination, to recommend effective, practical and affordable steps individuals and organizations could choose to implement to reduce potential exposure to lead and arsenic in soil, and to create a streamlined remediation under the MTCA for properties affected by area-wide soil contamination.

Specifically, the Task Force recommended strategies for Child Use Areas affected by area-wide soil contamination. Child Use Areas included public playgrounds and play fields such as those at parks. The Task Force distinguished between publicly maintained child-use areas such as parks and privately maintained areas, and recommended that publicly maintained child use areas should be prioritized and responses in those areas should set the standard for protection of children. The strategy consisted of the five following actions:

1. Individual protection measures and maintenance of good soil cover in areas where children play to reduce the potential for children to be exposed to contaminated soil;
2. Qualitative evaluations to increase understanding of where exposure could occur and to focus implementation of soil testing and additional protection measures;

3. Soil testing where qualitative evaluations indicate the potential for exposure to contaminated soil and implementation of additional protection measures if contamination is found;
4. Mandatory soil testing at new public child-use area construction sites and implementation of additional protection measures if contamination is found.
5. Special approaches, including targeted outreach and a voluntary certification program, for family home childcare facilities and childcare centers.

Site Description

Rotary Park fronts Western Avenue between Maple Street and Mulberry Lane in the City of Wenatchee, located in Chelan County in north central Washington (Figure 1). For a period of time prior to its acquisition by the city of Wenatchee, the site had been a commercial orchard. Based on soil sampling results taken prior to development, the park site had residual lead/arsenic concentrations greater than MTCA cleanup levels (Table 1). Locations of soil logs at the ground surface (0" to 6") and subsurface (2' to 6') are shown on Figures 2 and 3.

TABLE 1

CONCENTRATIONS OF LEAD AND ARSENIC

	Lead			**Arsenic**		
Soil Log	MTCA Cleanup Level	Surface Sample	Subsurface Sample	MTCA Cleanup Level	Surface Sample	Subsurface Sample
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
OR02	250	271		20	N/A	
OR03	250	333		20	22.7	
OR04	250	546		20	41.5	25.6
OR05	250	N/A		20	N/A	N/A
OR06	250	N/A		20	N/A	
OR07	250	N/A		20	29.8	N/A
OR08	250	N/A		20	26.0	N/A
OR09	250	276		20	33.2	N/A
OR10	250	557		20	74.9	24.8
OR11	250	622		20	104	N/A

Contaminants of Concern

The contaminants of concern at this site are lead and arsenic. Long term exposure to elevated levels of arsenic may cause cancer. Long term exposure to lead may affect and impair the human nervous system and proper brain function. More information on short and long term effects of lead and arsenic may be found at *http://www.doh.wa.gov/topics/childhood%20lead%20poisoning.htm*

Site Assessment

At the Rotary Park site, sample results indicated the presence of a band of low – to moderate – level arsenic and lead soil contamination from the center of the site on the west side to the northeasterly corner of the site. It is not unusual for orchard properties in the area to have similar soil contamination due to application of lead arsenate as a pesticide for apple trees in the 1940's, or from wind-blown dust.

Terrestial Ecological Evaluation

An exclusion from a Terrestial Ecological Evaluation (TEE) in accordance with WAC 13-340-7491.b is applicable.

Final Cleanup Action

The City of Wenatchee conducted a final cleanup action at the site during the summer of 2004 with technical and engineering support from Munson Engineers, Inc. Based on the technical assistance provided, the City of Wenatchee determined that a multi-tiered approach to soil contamination remediation best suited the site.

As the site existed in January, 2004, the cleared orchard site had piles of clean excavated soil material from the new City of Wenatchee Police Station site stockpiled in the northeast corner, and remnants of chipped fruit trees stockpiled elsewhere on site.

Site remediation consisted of the following steps:

1. At the northeast corner of the site, the native ground remained undisturbed. Residue from chipped trees was removed from the site. Clean import material from the police station was spread at a depth greater than two feet to encapsulate the contaminated native ground.
2. The top two feet of native soil above pit areas was removed and stockpiled on the northwest side of property. The first pit was excavated approximately 10 feet deep and clean subsurface material was stored on clean stripped ground.
3. The first pit was filled with contaminated material that had been stockpiled. Additionally the top two feet of a portion of the site was removed and used to fill the pit until the level rose to slightly deeper than two feet from finished grade. Soil from the stockpiled subsurface material covered the first pit.
4. The second pit was excavated to a depth of approximately 10 feet. The top two feet of remaining exposed undisturbed native soil filled the second pit. The second pit was capped with greater than two feet of clean subsurface material excavated on site and clean imported material from trench excavation and subgrade excavation from Maple Street.
5. Topsoil excavated from undisturbed sage land was used to complete the site cap.

Two areas were identified by the Subsurface Soil Sample Screening Level Exceedance Map (Figure 3) as having levels of arsenic greater than the Model Toxics Control Act limit of 20 mg/kg. The map labeled the sample locations as OR 04 and OR 10.

OR 04, located at the northeast corner of the property, showed a concentration of arsenic of 41.6 mg/kg and a concentration of lead of 546 mg/kg in the top six inches of soil. Between 2 and 6 feet, the arsenic level was measured at a concentration of 25.6 mg/kg and the lead level was not reported indicating it was below the maximum contaminant level. The native ground at this area of the site was not disturbed. A layer of soil imported from the Police Station expansion project covers that area to depth greater than 2 feet. The photographs in the appendix show the imported material being graded over the top of the orchard loam.

OR 10 is located on the west side of Field 2. The measured concentration of arsenic in the top six inches of soil at OR 10 was 74.9 mg/kg, and the concentration of lead was 557 mg/kg. Between 2 and 6 feet, the arsenic level was measured at a concentration of 24.8 mg/kg and the lead level was not reported, indicating it was below the maximum contaminant level. This area was excavated five feet below the original ground level and covered with six inches of soil generated from native sageland that had not been disturbed prior to this project.

OR 11 demonstrated the highest arsenic concentration of all surface samples taken on site at 104 mg/kg. After the top 2 feet of soil was stripped off to be buried in the pits, Sample No. 1 (Table 2) was taken at this location. The arsenic concentration of that sample measured 3.94 mg/kg and the lead concentration measured 15.8 mg/kg.

Sample No. 3, Table No. 2 was taken from 2 feet below original ground surface in Pit No. 1. It showed levels of contaminants greater than cleanup limits. This material was buried in the pit. DOE later randomly sampled the Pit 1 area when it was partially constructed, and no printout showed any contaminant concentration above the cleanup limit.

The pit volume was sized to contain the top two feet of soil over the entire site except the portion that would be covered in place by at least two feet of clean soil. Since arsenate does not migrate through the soil column except by mechanical mixing, and because of the testing data and conclusions of the screening level report, the exposed ground surface two feet below the native ground surface should have concentrations of arsenic and lead below the maximum contaminant levels listed in the Model Toxics Control Act. Material excavated from the pits ranging in depth from two feet to fifteen feet was placed on the site as shown on the attached Subsoil Distribution Map (Figure 5) and covered with six inches of soil from wild sageland. The areas shown as covered with 0 to 5 feet of cover on the Subsoil Distribution Map should have no arsenic or lead concentrations at any depth that exceed the limits listed by the Model Toxics Control Act.

Cap soils came from five sources.

The only cobbly soil used as cap came from the Police Station expansion at Mission Street and Yakima Avenue in Wenatchee. This site first developed as commercial area. The material capped the portions of the site described as Rotary Plaza, the Western Avenue frontage, and the basketball court.

The second cap source was excavated from a 2 to 15 foot depth at the pits used to bury contaminated soil. This material was distributed on site as shown on the Subsoil Distribution Map and was also used to cap the two pits. Depth of the fill as shown on the Subsoil Distribution Map was measured from two feet below the native ground surface.

The third cap source came from the storm drain excavation of Maple Street. Maple Street is an old paved arterial street. Storm drain improvements replaced small diameter pipes with large diameter pipes below the paved surface of Maple Street. The paved surface prevented contamination from entering the soils below the street. This material was used for a portion of the cap of Pit 1.

The fourth cap source was excavated material generated by the regarding of Maple Street. This material was also located below the paved surface of Maple and therefore was protected from contamination. This material was used for a portion of the cap of Pit 1.

The fifth cap material was soil generated by the construction of J & K Earthworks shop facility north of Pangborn Airport in Douglas County. The land was undisturbed sageland. Lead and arsenic concentrations at random locations were tested after construction at Rotary Park were tabulated in Table 3, Sample 1D Numbers 1a, 1b, 2, 3, 5, 6, and 7. All arsenic levels were below the level of detection of DOE instrumentation, and lead levels ranged from below the level of detection to a maximum of 24.95 mg/kg, well below the 250 mg/kg cleanup standard. This material was used to cover all areas of the site that would not be paved or covered with concrete slabs. "Final Imported 6" Soil Cap" refers to this material.

Contaminated soils should not exist at any depth in areas that need to be excavated for future building construction as shown on the site plan, or for maintenance of utility services. Excavated soil will be used for backfill of footings and foundations and then covered by floor slabs.

Operation and Maintenance

The following areas are contaminated with lead/arsenic below a cap exceeding two feet in depth (Figure 4):

- Rotary Plaza area – shallow area of contamination in native ground capped with more than two feet of clean soil
- Field One area – pit filled with contaminated material to depth of eight feet and capped with more than two feet of clean soil
- Field Two – pit filled with contaminated material to depth of eight feet and capped with more than two feet of clean soil

Compliance Monitoring

Site monitoring for lead and arsenic soil contamination took place during the construction process and upon completion of the work, to ensure the cover soil meets MTCA cleanup levels.

During construction, sample sites were selected to verify the concentration level in material to be used as cap. The samples were extracted by Munson Engineers, Inc., which will retain an additional sample for each location for three years. Sample No. 1 came from the bare ground over which cap material would be stockpiled. Sample No. 2 was collected four feet under the native ground surface at Field Two. Sample No. 3 was collected two feet under the native ground surface at Field One. Sample No. 4 tested import cap material excavated from the Maple Street storm drain extension. Sample No. 5 tested import cap material excavated from the Maple Street roadway improvement. The sample results are shown in Table 2.

TABLE 2

LEAD AND ARSENIC CONCENTRATIONS SAMPLED DURING CONSTRUCTION

Sample No.	Date	Pb Cleanup Standard	Pb Level	As Cleanup Standard	As Level
		mg/kg	mg/kg	mg/kg	mg/kg
1.	05/28/04	250	15.8	20	3.94
2.	05/28/04	250	5.3	20	<2.5
3.	06/04/04	250	256	20	42.06
4.	07/09/04	250	5.5	20	<2.475
5.	08/09/04	250	41.0	20	8.676

Upon completion, final cleanup was sampled by Norm Hepner, P.E., Washington State Department of Ecology, Central Region Office. Monitoring tests were conducted on October 5, 2004 and sample results are listed in Table 3. Sample No. 4 was collected offsite immediately west of Rotary Park.

TABLE 3

LEAD AND ARSENIC CONCENTRATIONS IN CAP AFTER COMPLETION

Date	Sample 1D	Mode	Live Time	As	As +/-	Pb	Pb +/-
10/05/04	1a	Soil	65.8	<LOD	11.11	<LOD	15.33
10/05/04	1b	Soil	64.18	<LOD	11.15	<LOD	15.47
10/05/04	2	Soil	66.07	<LOD	11.62	22.89	5.33
10/05/04	3	Soil	63.84	<LOD	11.4	17.7	5.27
10/05/04	4	Soil	61.7	150.97	10.67	992.65	14.64
10/05/04	5	Soil	63.76	<LOD	11.59	<LOD	15.52
10/05/04	6	Soil	63.79	<LOD	11.73	17.95	5.3
10/05/04	7	Soil	63.47	<LOD	11.61	24.95	5.26

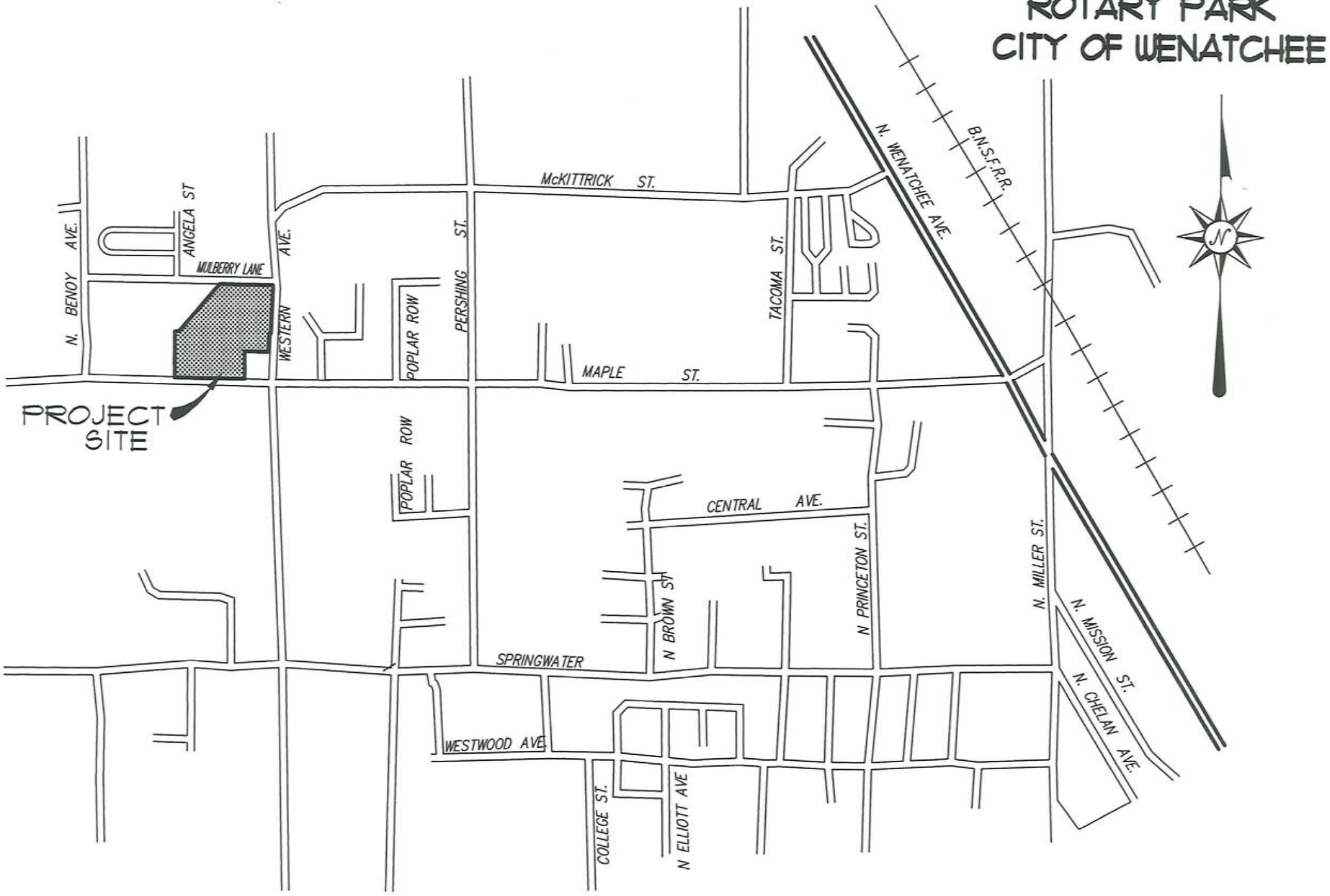
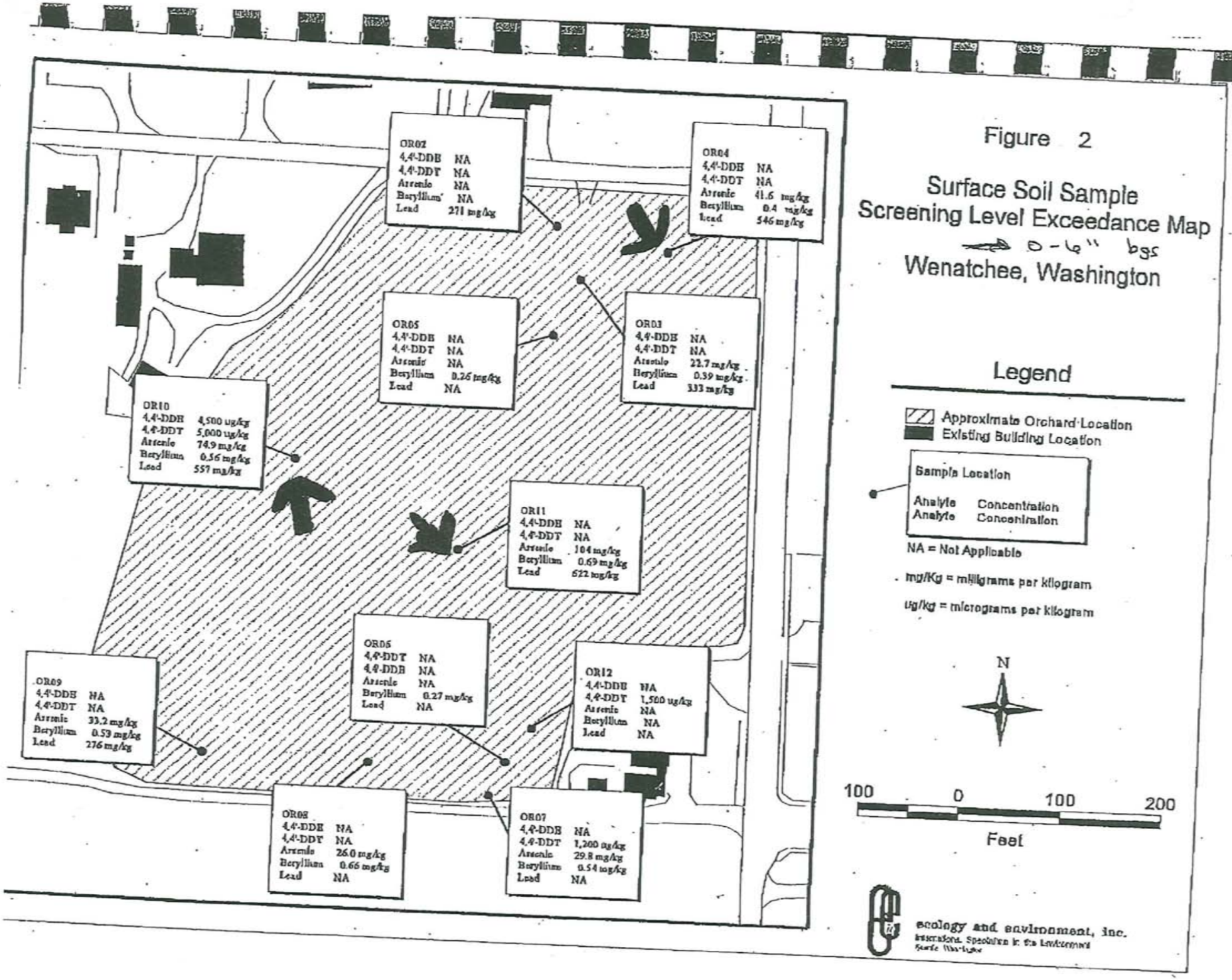
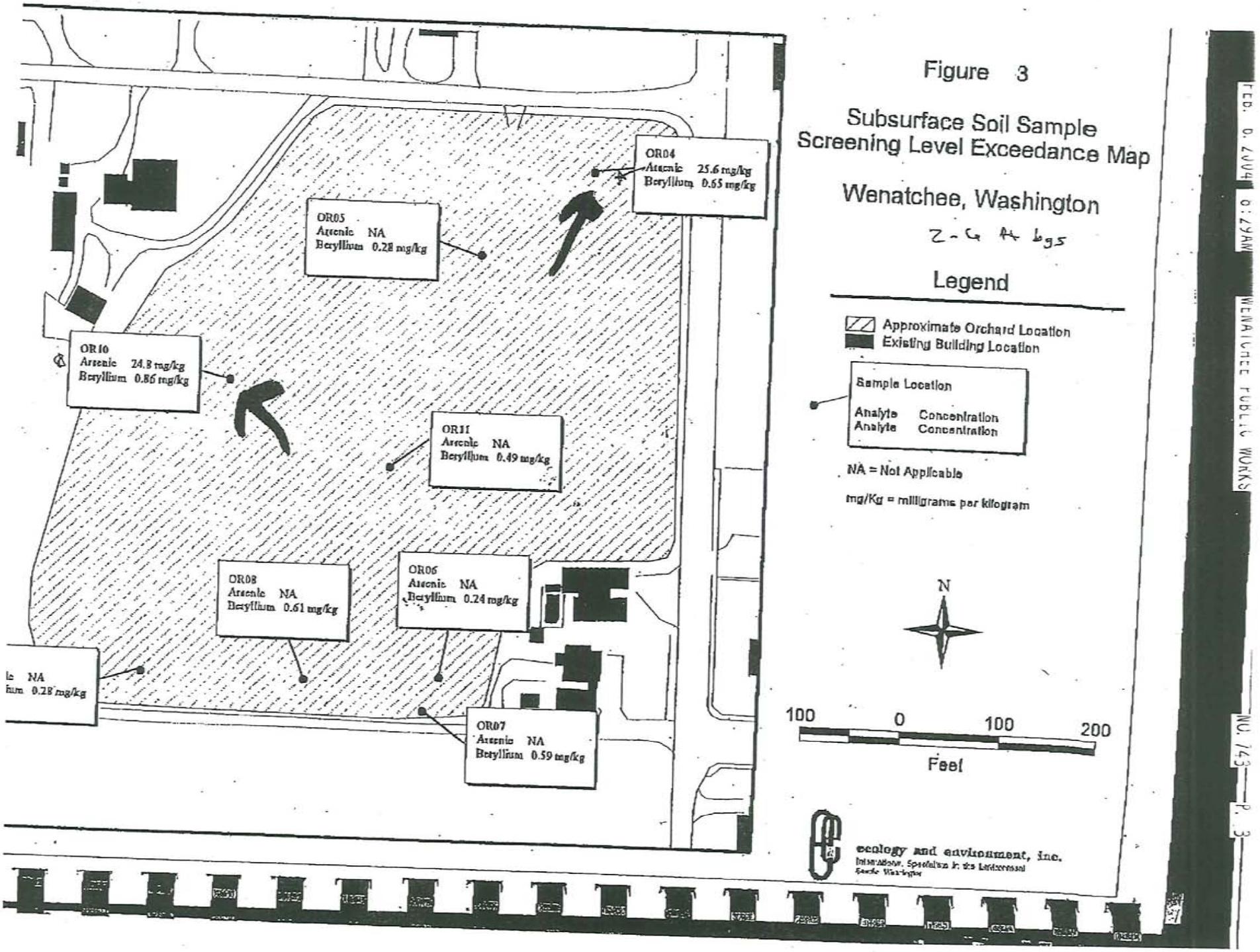
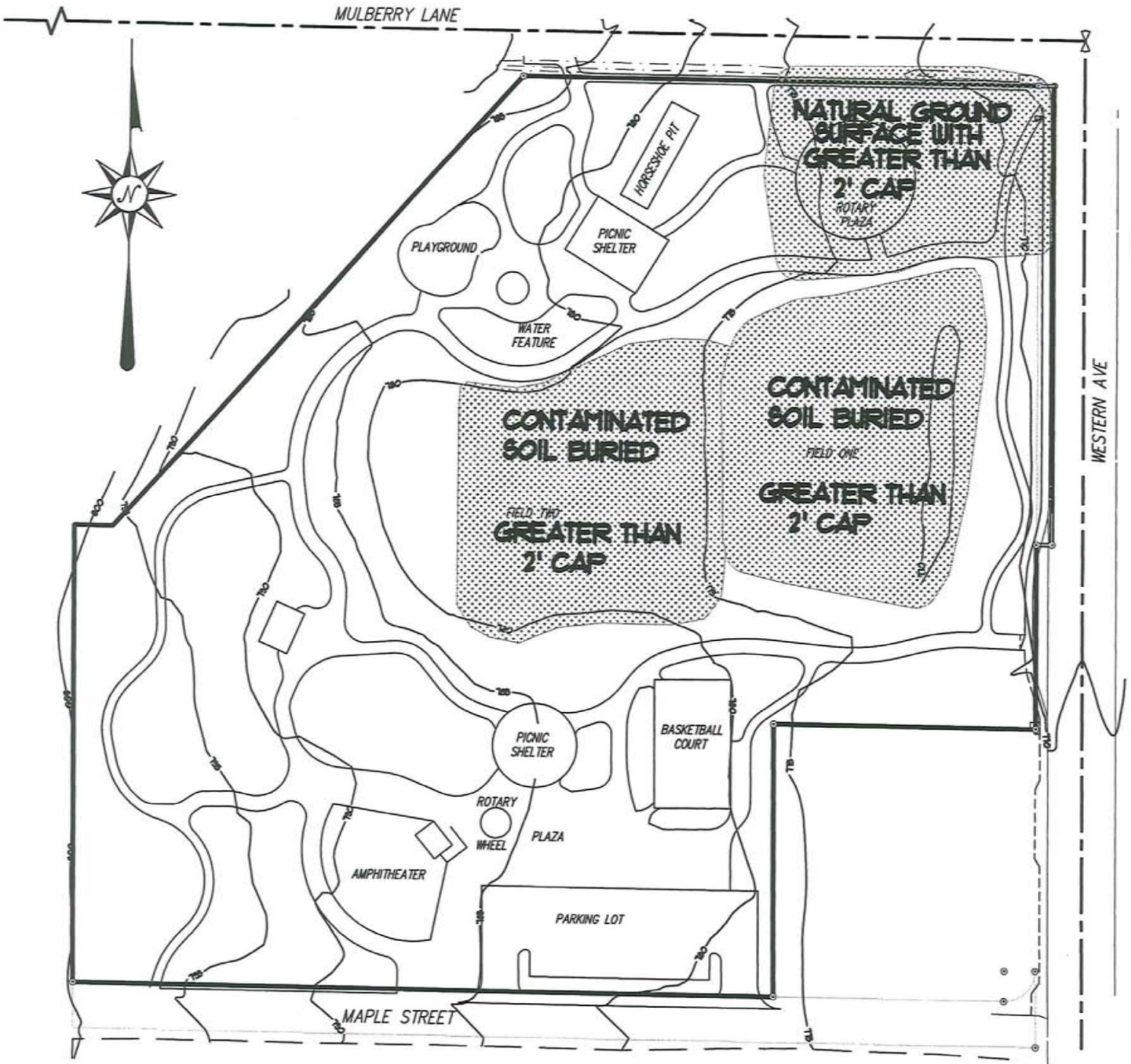

ROTARY PARK
CITY OF WENATCHEE
N. BENOY AVE.
ANGELA ST
MULBERRY LANE
WESTERN AVE.
McKITTRICK ST.
POPLAR ROW
PERSHING ST.
TACOMA ST.
N. WENATCHEE AVE.
B.N.S.F.R.R.
MAPLE ST.
PROJECT SITE
POPLAR ROW
CENTRAL AVE.
N BROWN ST
N PRINCETON ST.
N. MILLER ST.
N. MISSION ST.
N. CHELAN AVE.
SPRINGWATER
WESTWOOD AVE.
COLLEGE ST.
N ELLIOTT AVE
N

FIGURE 1

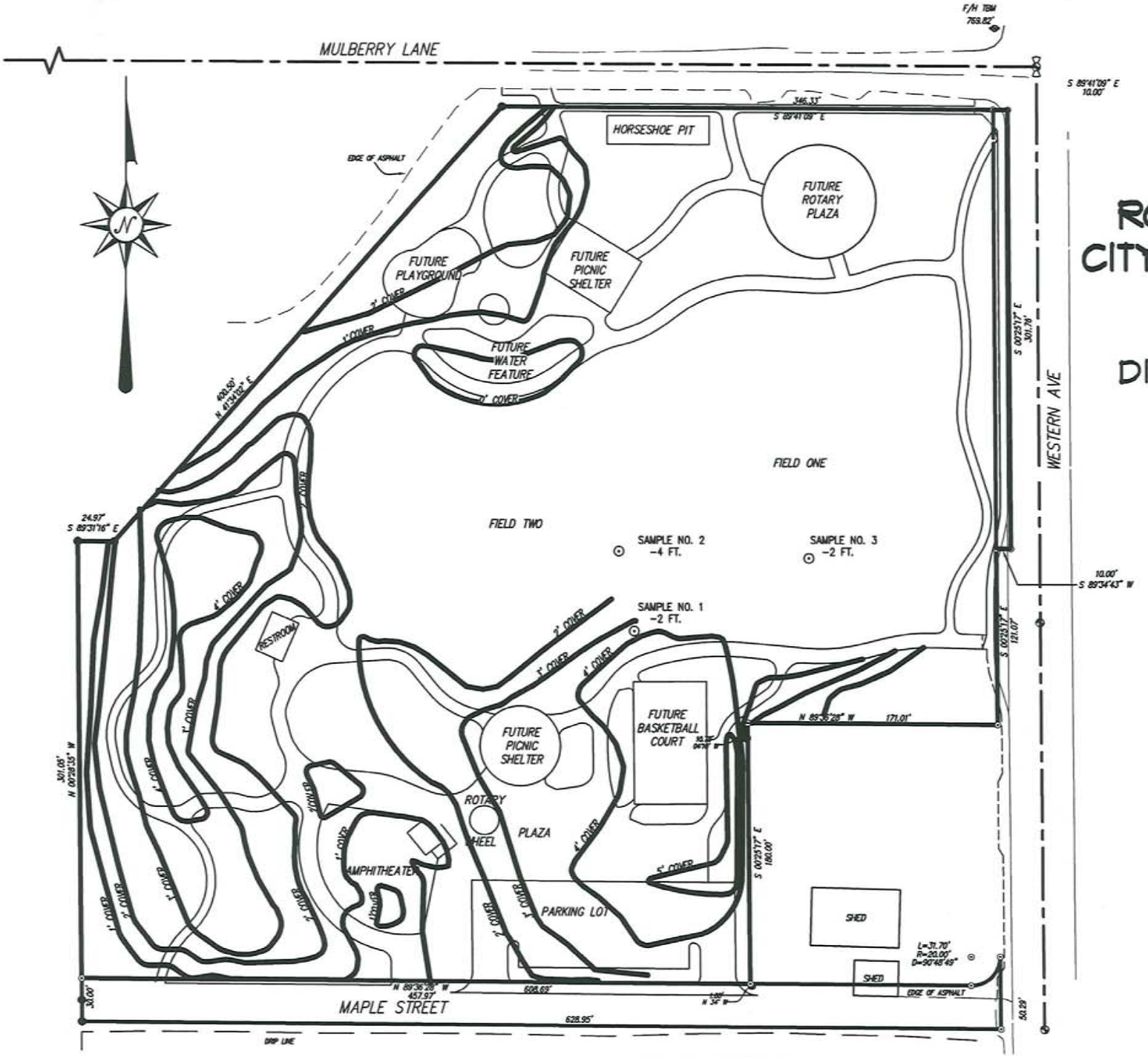






ROTARY PARK
CITY OF WENATCHEE

FIGURE 4



ROTARY PARK
CITY OF WENATCHEE

SUB SOIL DISTRIBUTION MAP

FIGURE 5

ROTARY PARK
SOURCE LOCATION OF FINAL IMPORTED 6" SOIL CAP

IN SECTION 9, T 22 N, R 21 E, W.M.,
DOUGLAS COUNTY, WASHINGTON.

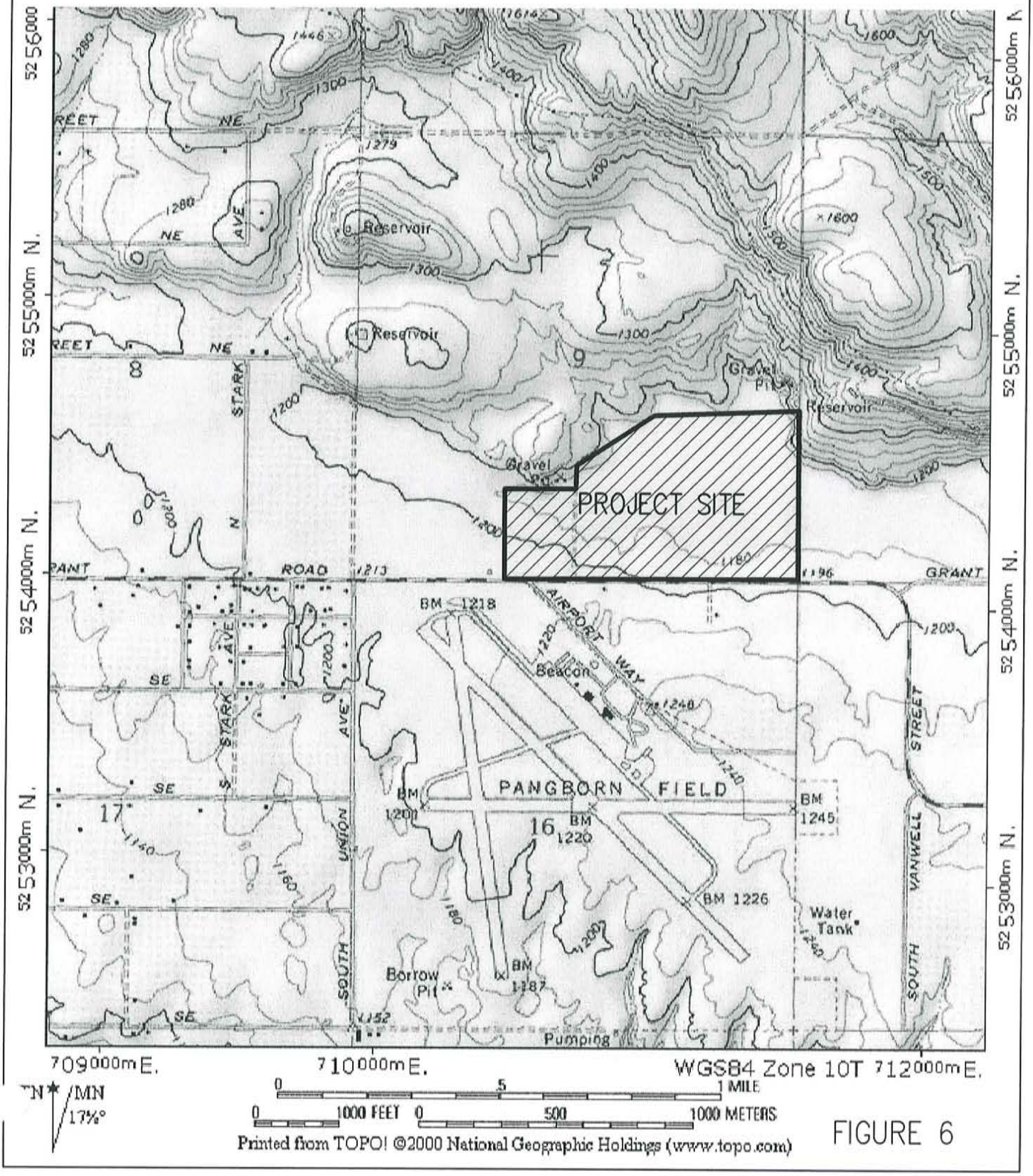


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FIGURE 6

WOODCHIP PILES ADJACENT TO MULBERRY LANE LOOKING SOUTH

WOODCHIP PILES WITH IMPORTED CAP MATERIAL IN BACKGROUND

CAPPING NATIVE GROUND WITH IMPORTED SOIL

REMOVING TOP TWO FEET ABOVE PITS AND STOCKPILING

REMOVING TOP TWO FEET CONTAMINATED MATERIAL AND STOCKPILING

CASCADE ANALYTICAL, INC.
1-800-545-4206

(509) 662-1888
Fax: (509) 662-8183
3019 G.S. Center Road
Wenatchee, WA 98801

(509) 452-7707
Fax: (509) 452-7773
1008 W. Ahtanum Rd.
Union Gap, WA 98903

Batch: 404263
Client: Munson Engineers
Account: 07046
Sampler: Bob Culp
PO Number:

--- Analytical Services Report ---

Report Date: 6/ 8/04

Munson Engineers
610 N Chelan Ave
Wenatchee, WA 98801

Laboratory Number: 04-E008484
Sample Identification: #1

Date Received: 5/28/04
Date Sampled: 5/28/04

Test Requested	Results	Units	MDL	Method	Date Analyzed	Flags
Arsenic Total Solid	3.940	mg/Kg	2.5	SW846 6010	6/ 4/04	
Lead Total Solids	15.8	mg/Kg	2.1	SW846 6010	6/ 4/04	
Beryllium Total Solid	0.680	mg/Kg	0.05	SW846 6010	6/ 4/04	
Total Metals Digest Solid	Metals Digest			SW846 3050	6/ 2/04	

Approved By:

CASCADE ANALYTICAL, INC.
1-800-545-4206

(509) 662-1888
Fax: (509) 662-8183
3019 G.S. Center Road
Wenatchee, WA 98801

(509) 452-7707
Fax: (509) 452-7773
1008 W. Ahtanum Rd.
Union Gap, WA 98903

Batch: 404263
Client: Munson Engineers
Account: 07046
Sampler: Bob Culp
PO Number:

--- Analytical Services Report ---

Report Date: 6/ 8/04

Munson Engineers
610 N Chelan Ave
Wenatchee, WA 98801

Laboratory Number: 04-E008485
Sample Identification: #2

Date Received: 5/28/04
Date Sampled: 5/28/04

Test Requested	Results	Units	MDL	Method	Date Analyzed	Flags
Arsenic Total Solid	< 2.5	mg/Kg	2.5	SW846 6010	6/ 4/04	
Lead Total Solids	5.3	mg/Kg	2.1	SW846 6010	6/ 4/04	
Beryllium Total Solid	0.575	mg/Kg	0.05	SW846 6010	6/ 4/04	
Total Metals Digest Solid	Metals Digest			SW846 3050	6/ 2/04	

Approved By:

CASCADE ANALYTICAL, INC.
1-800-545-4206

(509) 662-1888
Fax: (509) 662-8183
3019 G.S. Center Road
Wenatchee, WA 98801

(509) 452-7707
Fax: (509) 452-7773
1008 W. Ahtanum Rd.
Union Gap, WA 98903

Batch: 404466
Client: Munson Engineers
Account: 07046
Sampler: Bob Culp
PO Number:

--- Analytical Services Report ---

Report Date: 6/18/04

Munson Engineers
610 N Chelan Ave
Wenatchee, WA 98801

Laboratory Number: 04-E008922
Sample Identification: #3

Date Received: 6/ 4/04
Date Sampled: 6/ 4/04

Test Requested	Results	Units	MDL	Method	Date Analyzed	Flags
Arsenic Total Solid	42.06	mg/Kg	2.5	SW846 6010	6/18/04	
Lead Total Solids	256.	mg/Kg	2.1	SW846 6010	6/18/04	
Beryllium Total Solid	0.505	mg/Kg	0.05	SW846 6010	6/18/04	
Total Metals Digest Solid	Metals Digest			SW846 3050	6/18/04	

Approved By:

CASCADE ANALYTICAL, INC.
1-800-545-4206

(509) 662-1888
Fax: (509) 662-8183
3019 G.S. Center Road
Wenatchee, WA 98801

(509) 452-7707
Fax: (509) 452-7773
1008 W. Ahtanum Rd.
Union Gap, WA 98903

Batch: 405658
Client: Munson Engineers
Account: 07046
Sampler: Bob Culp
PO Number:

--- Analytical Services Report ---

Report Date: 7/28/04

Munson Engineers
Bob Culp
610 N Chelan Ave
Wenatchee, WA 98801

Laboratory Number: 04-E011347
Sample Identification: Rotary Park #4

Date Received: 7/ 9/04
Date Sampled: 7/ 9/04

Test Requested	Results	Units	MDL	Method	Date Analyzed	Flags
Arsenic Total Solid	< 2.475	mg/Kg		SW846 6010	7/28/04	
Lead Total Solids	5.5	mg/Kg		SW846 6010	7/28/04	
Beryllium Total Solid	0.376	mg/Kg		SW846 6010	7/28/04	
Total Metals Digest Solid	Metals Digest			SW846 3050	7/21/04	

Approved By:

CASCADE ANALYTICAL, INC.
1-800-545-4206

(509) 662-1888
Fax: (509) 662-8183
3019 G.S. Center Road
Wenatchee, WA 98801

(509) 452-7707
Fax: (509) 452-7773
1008 W. Ahtanum Rd.
Union Gap, WA 98903

Batch: 407191
Client: Munson Engineers
Account: 07046
Sampler: Robert Culp
PO Number:

--- Analytical Services Report ---

Report Date: 8/26/04

Munson Engineers
610 N Chelan Ave
Wenatchee, WA 98801

Laboratory Number: 04-E014639
Sample Identification: 5-Rotary Park

Date Received: 8/19/04
Date Sampled: 8/19/04

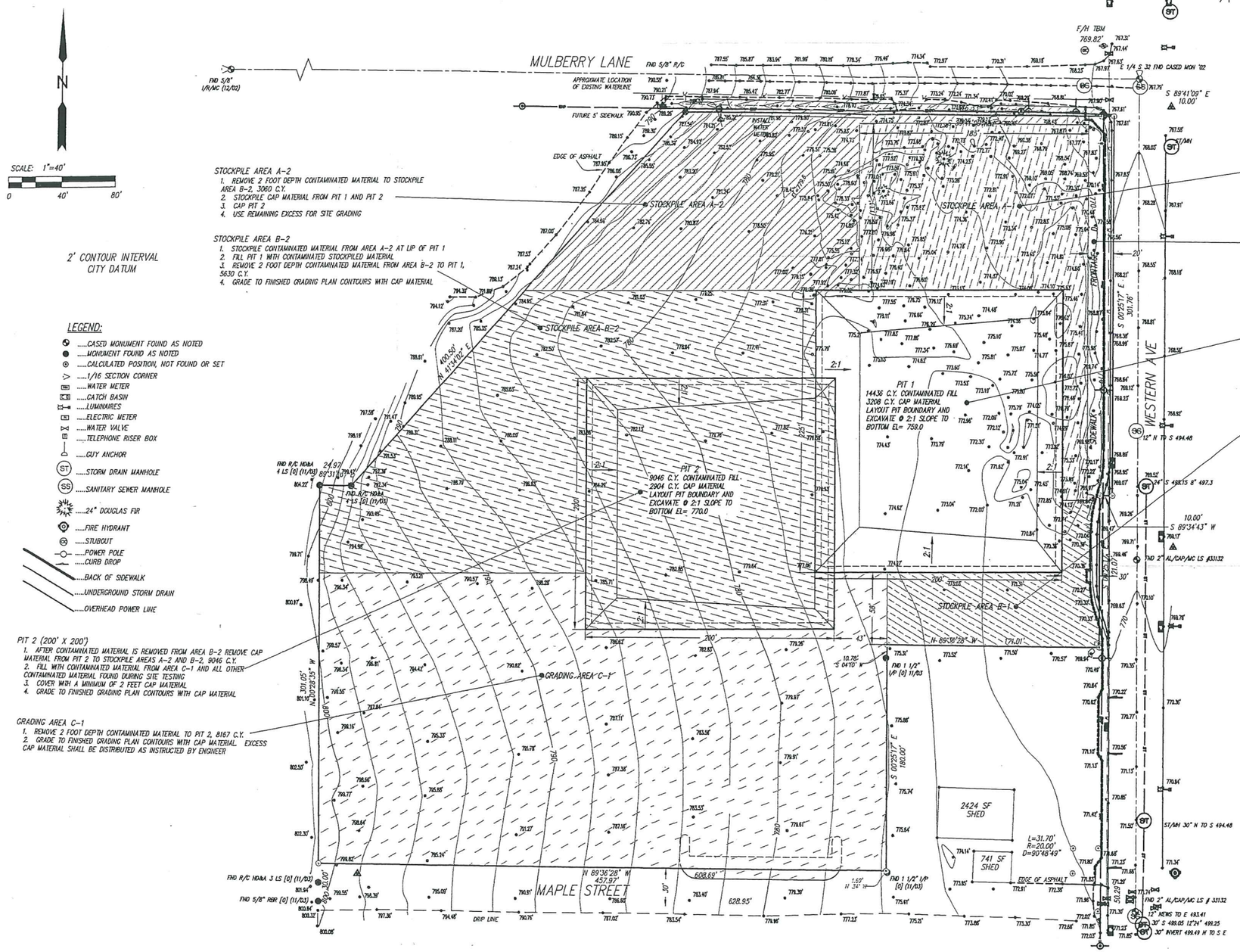
Test Requested	Results	Units	MDL	Method	Date Analyzed	Flags
Arsenic Total Solid	8.676	mg/Kg	2.451	SW846 6010	8/25/04	
Lead Total Solids	41.0	mg/Kg	2.1	SW846 6010	8/25/04	X7
Beryllium Total Solid	0.368	mg/Kg	0.049	SW846 6010	8/25/04	
Total Metals Digest Solid	Metals Digest			SW846 3050	8/23/04	

Approved By:

Date	Sample ID		Mode	LiveTime	As	As +/-	Pb	Pb +/-
5-Oct-04			Standardiz	5.72				
5-Oct-04			Standardiz	5.7				
5-Oct-04			Standardiz	36.67				
5-Oct-04			Standardiz	36.85				
5-Oct-04			Standardiz	37.68				
5-Oct-04			Standardiz	37.97				
5-Oct-04			Standardiz	5.72				
5-Oct-04			Standardiz	37.99				
5-Oct-04	1a		Soil	65.8	<LOD	11.11	<LOD	15.33
5-Oct-04	1b		Soil	64.18	<LOD	11.15	<LOD	15.47
5-Oct-04	2		Soil	66.07	<LOD	11.62	22.89	5.33
5-Oct-04	3		Soil	63.84	<LOD	11.4	17.7	5.27
5-Oct-04	4	offsite sample	Soil	61.7	150.97	10.67	992.65	14.64
5-Oct-04	5		Soil	63.76	<LOD	11.59	<LOD	15.52
5-Oct-04	6		Soil	63.79	<LOD	11.73	17.95	5.3
5-Oct-04	7		Soil	63.47	<LOD	11.61	24.95	5.26

ROTARY PARK

A PORTION OF THE SOUTHEAST 1/4 OF SECTION 32 TOWNSHIP 23 NORTH RANGE 20 EAST, W.M. CHELAN COUNTY, WASHINGTON



CALL BEFORE YOU DIG 663-6111

APPROVED _____ DATE _____

REVISIONS			
NO.	DATE	DESCRIPTION	APPR.

MUNSON ENGINEERS, INC.
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
P.O. BOX 3796 610 N. CHELAN AVE.
WENATCHEE, WASHINGTON 98801
(509) 663-0544 FAX (509) 663-0546
EMAIL: rculp@munsonengineers.com WEB PAGE: www.munsonengineers.com

DATE: Apr 14, 2004	SCALE: AS NOTED	ACAD DWG FILE: 04022_Base
DRAWN: MLW	CHKD: BC	PLOT: 1=1

ROBERT H. CULP — STATE OF WASHINGTON — PROFESSIONAL ENGINEER
EXPIRES AUGUST 26, 2004

ROTARY PARK
SITE RECLAMATION PLAN

SHEET 2/4
JOB NO. 04022