November 6, 2012

Ms. Stephanie Linebaugh
U. S. Environmental Protection Agency, Region 5
77W. Jackson Blvd. (SR-6J)
Chicago, IL 60604-3590

Re: Sauget Area 1 Sites - Sauget, Illinois
Final - Approved Remedial Investigation / Feasibility Study (RI/FS)

Dear Stephanie:

Attached please find two hard copies and one extra CD of the approved Sauget Area 1 Remedial Investigation / Feasibility Study. This document includes the final, minor revisions that you approved today.

Also attached is a distribution list for this document.

Please give me a call if you have any questions.

Sincerely,

Steven D. Smith
SA 1 Project Coordinator

cc: Distribution List

Sauget Area 1 RI/FS Distribution List – 11/6/12

Stephanie Linebaugh – 2 Hard Copies and 3 CDs
U.S. Environmental Protection Agency
Superfund Division
77 West Jackson Blvd. (SR-6J)
Chicago, IL 60604
312-353-2315

Paul Lake – 2 Hard Copies and 2 CDs
Illinois EPA
Bureau of Land, FSRS/NPL Unit
1021 North Grand Avenue East
Springfield, Illinois 62794-9276
217-785-7728

Lisa Cundiff – 1 Hard Copy and 1 CD
CH2M HILL
1034 S. Brentwood Blvd
Suite 2300
Richmond Heights, MO 63117
314-421-0900

Phil Smith – 1 Hard Copy and 1 CD
CH2M Hill
135 South 84th Street
Suite 325
Milwaukee, WI 53214
262 968-4392

Sauget Area 1 Group

Remedial Investigation / Feasibility Study

Sauget Area 1
Sauget and Cahokia, Illinois

Volume I – Text and Tables

November 6, 2012

GSI ENVIRONMENTAL

2211 Norfolk, Suite 1000
Houston, Texas 77098
tel. (713) 522-6300 fax (713) 522-8010

TABLE OF CONTENTS

VOLUME 1 – TEXT AND TABLES

1.0 INTRODUCTION 1-1

1.1 Site Regulatory History 1-1
1.2 Site Investigation History 1-1
1.2.1 Remedial Investigation 1-1
1.2.2 Supplemental Remedial Investigation 1-4
1.2.2.1 Source Area Investigations 1-4
1.2.2.2 Groundwater Investigations 1-5
1.2.2.3 Creek Bottom Soil Investigations 1-5
1.3 Remedial Investigation Report Purpose and Organization 1-5
1.4 Feasibility Study Purpose and Organization 1-6

REMEDIAL INVESTIGATION

2.0 SITE BACKGROUND 2-1

2.1 Site Location and Description 2-1
2.1.1 Site G 2-1
2.1.2 Site H 2-2
2.1.3 Sites I South and I North 2-2
2.1.4 Site L 2-3
2.1.5 Site M 2-3
2.1.6 Site N 2-3
2.1.7 Dead Creek 2-4
2.2 Site Physical Characteristics 2-4
2.2.1 Climatology 2-4
2.2.2 Hydrology 2-5
2.2.3 Geology 2-6
2.2.4 Hydrogeology 2-6
2.2.5 Demography and Land Use 2-10
2.3 Sauget Area 1 Removal and Remedial Actions 2-12
2.3.1 Source Areas 2-12
2.3.1.1 Site G Removal Action 2-12
2.3.2 Dead Creek 2-12
2.3.2.1 Creek Segment A Sediment Remedial Action 2-12
2.3.2.2 Creek Segment B, C, D, E, and F Sediment Removal Action 2-13
2.3.2.3 Creek Segment B, D and F Soil Removal Action 2-13
2.3.2.4 Borrow Pit Lake Soil Removal Action 2-16
2.3.2.5 Creek Segment E Soil Removal Action 2-17
2.3.2.6 Creek Segment B Liner 2-17
2.4 Sauget Area 2 Groundwater Migration Control System 2-17

3.0 REMEDIAL INVESTIGATION (1999 to 2000) 3-1

3.1 Remedial Investigation Objectives and Approach 3-1
3.2 Source Area Investigation 3-3

3.2.1 Source Area Boundary Investigation 3-3
3.2.1.1 Boundary Delineation Trenches 3-3
3.2.1.2 Soil Gas Surveys 3-3
3.2.1.3 Source Area Boundary Investigation Results 3-4
3.2.2 Source Area Buried Drum and Tank Investigation 3-5
3.2.2.1 Magnetometer Survey 3-5
3.2.2.2 Anomaly Trenches 3-6
3.2.2.3 Source Area Buried Drum and Tank Investigation Results 3-6
3.2.3 Source Area Soil and Waste Investigation 3-8
3.2.3.1 Surface Soil Sampling 3-8
3.2.3.2 Subsurface Soil and Waste Sampling 3-8
3.2.3.3 Source Area Soil and Waste Investigation Results 3-9
Source Area Waste Volume 3-9
Source Area Waste Characterization 3-9
Site G Waste Characterization 3-10
Site H Waste Characterization 3-11
Site I South Waste Characterization 3-12
Site I North Waste Characterization 3-13
Site L Waste Characterization 3-14
Site N Waste Characterization 3-15
3.2.4 Source Area Soil, Waste and Leachate Treatability Studies 3-15
3.2.4.1 Source Area Soil and Waste Treatability Evaluation 3-16
3.2.4.2 Source Area Leachate Treatability Evaluation 3-16
3.2.5 Source Area Ambient Air Investigation 3-17
3.2.5.1 Source Area Ambient Air Investigation Sampling 3-17
3.2.5.2 Source Area Ambient Air Investigation Results 3-18
3.2.6 Source Area Groundwater Investigation 3-20
3.2.6.1 Upgradient Groundwater Investigation 3-20
3.2.6.2 Shallow Hydrogeologic Unit Groundwater Sampling 3-22
3.2.6.3 Middle and Deep Hydrogeologic Units Groundwater Sampling 3-24
3.2.6.4 Alluvial Aquifer/Bedrock Interface Groundwater Sampling 3-24
3.2.6.5 Source Area Groundwater Investigation Results 3-24
3.3 Downgradient Groundwater Investigation 3-29
3.3.1 Downgradient Groundwater Sampling 3-29
3.3.1.1 Groundwater Sampling Downgradient of Source Areas 3-29
3.3.1.2 Groundwater Sampling Downgradient of Creek Segment B 3-30
3.3.1.3 Groundwater Sampling in Residential Areas 3-30
3.3.2 Downgradient Groundwater Investigation Results 3-31
3.3.2.1 Groundwater Downgradient of Site I South 3-31
3.3.2.2 Groundwater Downgradient of Sites G, H and L 3-33
3.3.2.3 Groundwater Downgradient of Creek Segment B 3-35
3.3.2.4 Groundwater in Residential Areas 3-37
3.4 Surface Water and Sediment Investigation 3-38
3.4.1 Surface Water Investigation 3-38
3.4.1.1 Surface Water Investigation Locations 3-38
3.4.1.2 Surface Water Sampling and Testing 3-39
3.4.1.3 Surface Water Investigation Results 3-39
3.4.2 Sediment Investigation 3-40
3.4.2.1 Sediment Investigation Sampling 3-40
3.4.2.2 Sediment Investigation Results 3-42
3.5 Soil Investigation 3-42
3.5.1 Background Soil Investigation 3-42
3.5.2 Floodplain Soil Investigation 3-43
3.5.2.1 Undeveloped Area Floodplain Soil Investigation 3-44

3.5.2.2 Developed Area Floodplain Soil Investigation 3-44
3.5.2.3 Floodplain Soil Investigation Results 3-45
Creek Segment B 3-45
Creek Segment C 3-46
Creek Segment D 3-47
Creek Segment E 3-48

4.0 SUPPLEMENTAL REMEDIAL INVESTIGATION (2002 to 2007) 4-1

4.1 Site G, H, I, L, and N Supplemental Investigations 4-1
4.1.1 Site G 4-2
4.1.2 Site H 4-2
4.1.3 Site I South 4-3
4.1.4 Site L 4-3
4.1.5 Site N 4-4
4.2 DNAPL Investigation 4-4
4.2.1 DNAPL Characterization and Remediation Study 4-4
4.2.1.1 NAPL Surveys and Recovery Tests 4-5
4.2.1.2 Seismic Reflection Survey 4-6
4.2.1.3 Soil Sampling and Piezometer Installation 4-6
4.2.1.4 DNAPL Treatability Tests 4-8
4.2.1.5 Downhole Geophysical Logging at Well BR-I 4-10
4.2.2 DNAPL Recovery Study at Well BR-I 4-11
4.2.2.1 DNAPL Recovery at BR-I (November 2006 to March 2007) 4-11
4.2.2.2 DNAPL Recovery at BR-I (October 2008 to May 2012) 4-12
4.3 Regional Groundwater Flow and Contaminant Transport Model Sampling 4-12
4.4 Vapor Intrusion Investigation 4-13
4.5 Utility Corridor Investigation 4-15
4.6 Soil to Groundwater Migration Investigation 4-16

5.0 NATURE AND EXTENT OF CONTAMINATION 5-1

5.1 Introduction 5-1
5.2 Source Areas 5-2
5.2.1 Source Area Soil and Waste Volume 5-2
5.2.2 Soil and Waste Characterization 5-3
5.2.2.1 Site G 5-4
5.2.2.2 Site H 5-5
5.2.2.3 Site I South 5-6
5.2.2.4 Site I North 5-7
5.2.2.5 Site L 5-7
5.2.2.6 Site N 5-8
5.2.3 Principal Threat Waste Evaluation 5-9
5.2.3.1 Principal Threat Waste Evaluation - Liquids 5-9
5.2.3.2 Principal Threat Waste Evaluation - Mobile Source Material 5-12
5.2.3.3 Principal Threat Waste Evaluation - Highly Toxic Source Material 5-13
5.2.4 DNAPL Evaluation 5-15
5.2.4.1 Residual DNAPL 5-15
5.2.4.2 Pooled DNAPL 5-17
5.3 Groundwater at and Downgradient of the Source Areas 5-17
5.3.1 Groundwater at and Downgradient of Sites I South and North 5-18
5.3.2 Groundwater at and Downgradient of Sites G and H 5-21
5.4 Site Conditions after Completion of Sediment and Creek Bottom Soil Removal Actions 5-23
5.5 Floodplain Soil 5-24

5.6 Air 5-24
5.6.1 Source Area Ambient Air 5-24
5.6.2 Vapor Intrusion 5-25

6.0 CONTAMINANT FATE AND TRANSPORT 6-1

6.1 Sources and Routes of Contaminant Migration 6-1
6.1.1 Sources Areas 6-1
6.1.2 Routes of Contaminant Migration 6-1
6.1.2.1 Leaching to Groundwater 6-1
6.1.2.2 Groundwater Flow and Discharge to Mississippi River and GMCS 6-2
6.1.2.3 Volatilization 6-2
6.1.2.4 Erosion and Release 6-2
6.2 Mass Flux from Source Areas Due to Leaching and Lateral Groundwater Flow 6-2
6.2.1 Background Information 6-3
6.2.2 Source Release Mechanisms 6-4
6.2.3 Mass Discharge Rate Due to Lateral Groundwater Flow 6-5
6.2.4 Estimated Rate of Mass Flux by Leaching at Site I 6-6
6.2.5 Comparison of Mass Flux Estimates Due to Leaching and Laterial Groundwater Flow 6-8
6.3 Biodegradation of the Indicator Constituents in Groundwater 6-8
6.3.1 Natural Attenuation Processes 6-8
6.3.2 Biodegradation of Chlorobenzenes 6-10
6.3.3 Biodegradation of Chloroethenes 6-12
6.3.4 Biodegradation of Benzene 6-13
6.3.5 Biodegradation of 4-Chloroaniline 6-14
6.3.6 Biodegradation of 2,4-D 6-14
6.4 Regional Groundwater Flow and Contaminant Transport Model 6-14
6.4.1 Background and Objectives 6-14
6.4.2 Groundwater Flow Model 6-15
6.4.2.1 Description of Groundwater Flow Model 6-15
6.4.2.2 Calibration of Groundwater Flow Model 6-16
6.4.3 Groundwater Contaminant Transport Model 6-16
6.4.3.1 Description of Groundwater Contaminant Transport Model 6-16
6.4.3.2 Calibration of Groundwater Contaminant Transport Model 6-18
6.4.3.3 Key Results from Calibration of Contaminant Transport Model (GSI, 2008b) 6-19
6.4.3.4 Updated Groundwater Model (GSI, 2012) 6-21
6.4.3.5 Modeled Isoconcentration Contour Maps for 2006 and 2038 6-22
6.5 Mass Flux to Mississippi River and Mass Flux Removed by Natural Attenuation 6-22
6.5.1 Mass Flux Discharged to Mississippi River 6-22
6.5.2 Calculated Mass Removal by Natural Attenuation in 2006 6-24

7.0 CONCEPTUAL SITE MODEL 7-1

8.0 SUMMARY OF HUMAN HEALTH RISK ASSESSMENT 8-1

8.1 Summary of Risk Assessment Documents 8-1
8.2 Conceptual Site Model 8-2
8.2.1 Sites 8-2
8.2.2 Dead Creek, Site M, and Borrow Pit Lake 8-7
8.2.3 Transect Areas 8-7
8.3 Summary of Risk Assessment Results and Conclusions 8-8
8.3.1 Sites 8-9

8.3.1.1 Site G 8-9
8.3.1.2 Site H 8-10
8.3.1.3 Site I 8-12
8.3.1.4 Site I North and I South 8-13
8.3.1.5 Site L 8-13
8.3.1.6 Site N 8-14
8.3.2 Transects 8-14
8.3.3 Dead Creek, Borrow Pit Lake, and Site M 8-15
8.3.4 Summary 8-15
8.4 References 8-16

9.0 SUMMARY OF ECOLOGICAL RISK ASSESSMENTS 9-1

FEASIBILITY STUDY

10.0 EVALUATION OF AREAS REQUIRING REMEDIATION AND IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES AND ARARs 10-1

10.1 Evaluation of Areas and Media to be Carried Forward in Feasibility Study 10-1
10.2 Development of Remedial Action Objectives 10-1
10.3 Areas and Media that Require Remedial Action 10-3
10.4 Sites Screened from Active Remediation 10-6
10.5 Identification of Applicable or Relevant and Appropriate Requirements (ARARs) 10-8

11.0 IDENTIFICATION AND SCREENING OF TECHNOLOGIES 11-1

11.1 General Response Actions 11-1
11.2 Identification and Screening of Remedial Technologies 11-1
11.3 Evaluation of Potential DNAPL Source Depletion Technologies 11-2
11.3.1 Results of Treatability Evaluations Performed During the DNAPL Characterization and Remediation Study 11-2
11.3.2 Evaluation of Enhanced Bioremediation for DNAPL Source Depletion 11-3
11.4 Initially Retained Technologies 11-5

12.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES 12-1

12.1 Development of Remedial Alternatives 12-1
12.1.1 Descriptions of General Process Options and Technologies 12-1
12.1.2 Discussion Regarding Bioventing 12-3
12.1.3 Discussion Regarding the Sauget Area 2 GMCS 12-3
12.1.4 Development of Site-Specific Alternatives 12-4
12.2 Discussion Regarding MNA and Point of Compliance Monitoring Along the River 12-6
12.2.1 Evaluation of Monitored Natural Attenuation 12-6
12.2.2 Conceptual Groundwater Monitoring Program for MNA 12-7
12.2.3 Conceptual Point of Compliance Locations Along the River 12-7
12.3 Evaluation of Hydraulic Containment for Sauget Area 1 Plumes 12-8
12.4 Discussion Regarding Time to Clean Estimate 12-9
12.5 Discussion Regarding Why MCLs Can't Be Achieved within 50 to 100 Years 12-10
12.6 Screening of Remedial Alternatives 12-10

13.0 DETAILED EVALUATION OF ALTERNATIVES 13-1

13.1 Criteria for Detailed Evaluation of the Alternatives 13-1
13.2 Description and Evaluation of Alternative 1 13-3
13.3 Description and Evaluation of Alternative 2 13-4
13.3.1 Description of Alternative 2 13-4
13.3.2 Detailed Evaluation of Alternative 2 13-5
13.4 Description and Evaluation of Alternative 3 13-7
13.4.1 Description of Alternative 3 13-7
13.4.2 Estimated Mass of SA1 1 COCs Removed by DNAPL Pumping at BR-I 13-9
13.4.3 Discussion Regarding the Limited Benefits of RCRA Subtitle C Covers 13-10
13.4.4 Detailed Evaluation of Alternative 3 13-11
13.5 Description and Detailed Evaluation of Alternative 4 13-15
13.5.1 Description of Alternative 4 13-15
13.5.2 Detailed Evaluation of Alternative 4 13-15
13.6 Description and Detailed Evaluation of Alternative 5 13-20
13.6.1 Description of Alternative 5 13-20
13.6.2 Performance of Pulsed Air Biosparging 13-22
13.6.3 Generation and Management of Soil Vapors During Pulsed Air Biosparging 13-22
13.6.4 COCs Susceptible to Aerobic Degradation and Estimated Concentrations in Groundwater at Source Areas Before and After Biosparging Treatment 13-23
13.6.5 Estimated Mass of Principal COCs in Source Areas Before and After Biosparging Treatment 13-24
13.6.6 Detailed Evaluation of Alternative 5 13-25
13.7 Comparative Analysis of Alternatives 1 through 5 13-29

14.0 REFERENCES 14-1

14.1 General and Site-Specific References 14-1
14.2 Biodegradation References 14-5

TABLES

Table 1-1 General Site Timeline

Table 3-1 Number of Samples Collected for the Sauget Area 1 Support Sampling Plan
Table 3-2 Site G Surface Soil Analytical Data Summary
Table 3-3 Site H Surface Soil Analytical Data Summary
Table 3-4A Site I South Surface Soil Analytical Data Summary
Table 3-4B Site I North Surface Soil Analytical Data Summary
Table 3-5 Site L Surface Soil Analytical Data Summary
Table 3-6 Site N Surface Soil Analytical Data Summary

Table 3-7 Site G Subsurface Soil and Waste Data Summary
Table 3-8 Site H Subsurface Soil and Waste Data Summary
Table 3-9A Site I South Subsurface Soil and Waste Data Summary
Table 3-9B Site I North Subsurface Soil and Waste Data Summary
Table 3-10 Site L Subsurface Soil and Waste Data Summary
Table 3-11 Site N Subsurface Soil and Waste Data Summary

Table 3-12 Site G Historical Subsurface Soil and Waste Data Summary
Table 3-13 Site H Historical Subsurface Soil and Waste Data Summary

Table 3-14 Site I South Historical Subsurface Soil and Waste Data Summary
Table 3-15 Site L Historical Subsurface Soil and Waste Data Summary
Table 3-16 Site N Historical Subsurface Soil and Waste Data Summary

Table 3-17 Site G Upwind Ambient Air Data Summary
Table 3-18 Site G Downwind Ambient Air Data Summary
Table 3-19 Site H Upwind Ambient Air Data Summary
Table 3-20 Site H Downwind Ambient Air Data Summary
Table 3-21 Site I Upwind Ambient Air Data Summary
Table 3-22 Site I Downwind Ambient Air Data Summary
Table 3-23 Site L Upwind Ambient Air Data Summary
Table 3-24 Site L Downwind Ambient Air Data Summary

Table 3-25 Upgradient Groundwater Data Summary

Table 3-26 Site G Source Area Groundwater Data Summary
Table 3-27 Site H Source Area Groundwater Data Summary
Table 3-28A Site I South Source Area Groundwater Data Summary
Table 3-28B Site I North Source Area Groundwater Data Summary

Table 3-29 Site I South Downgradient Groundwater Data Summary
Table 3-30 Site G, H and L Downgradient Groundwater Data Summary
Table 3-31 Creek Segment B Downgradient Groundwater Data Summary

Table 3-32 Non-Potable Domestic Well Groundwater Data Summary
Table 3-33 Walnut Street Shallow Groundwater Data Summary
Table 3-34 Walnut Street Time-Series Sampling Groundwater Data (0 Hour)
Table 3-35 Walnut Street Time-Series Sampling Groundwater Data (12 Hour)
Table 3-36 Walnut Street Time-Series Sampling Groundwater Data (24 Hour)
Table 3-37 Judith Lane Shallow Groundwater Data Summary
Table 3-38 Judith Lane Time-Series Sampling Groundwater Data (0 Hour)
Table 3-39 Judith Lane Time-Series Sampling Groundwater Data (12 Hour)
Table 3-40 Judith Lane Time-Series Sampling Groundwater Data (24 Hour)

Table 3-41 Creek Segment B Surface Water Data Summary
Table 3-42 Creek Segment D Surface Water Data Summary
Table 3-43 Creek Segment E Surface Water Data Summary
Table 3-44 Creek Segment F Surface Water Data Summary
Table 3-45 Site M Surface Water Data Summary
Table 3-46 Borrow Pit Lake Surface Water Data Summary
Table 3-47 Prairie du Pont Creek Surface Water Data Summary
Table 3-48 Reference Area Surface Water Data Summary

Table 3-49 Creek Segment B Broad-Scan Sediment Data Summary
Table 3-50 Creek Segment C Broad-Scan Sediment Data Summary
Table 3-51 Creek Segment D Broad-Scan Sediment Data Summary
Table 3-52 Creek Segment E Broad-Scan Sediment Data Summary
Table 3-53 Creek Segment F Broad-Scan Sediment Data Summary
Table 3-54 Borrow Pit Lake Broad-Scan Sediment Data Summary
Table 3-55 Prairie du Pont Creek Broad-Scan Sediment Data Summary
Table 3-56 Reference Area Broad-Scan Sediment Data Summary
Table 3-57 Site M Broad-Scan Sediment Data Summary
Table 3-58 Site M Bottom Soil TCLP Extraction and Analysis Data Summary

Table 3-59 Background Surface Soil Data Summary
Table 3-60 Background Subsurface Soil Data Summary

Table 3-61 UAS Transect 1 Floodplain Surface Soil Data Summary
Table 3-62 UAS Transect 1 Floodplain Subsurface Soil Data Summary
Table 3-63 UAS Transect 2 Floodplain Surface Soil Data Summary
Table 3-64 UAS Transect 2 Floodplain Subsurface Soil Data Summary
Table 3-65 UAS Transect 3 Floodplain Surface Soil Data Summary
Table 3-66 UAS Transect 3 Floodplain Subsurface Soil Data Summary
Table 3-67 UAS Transect 4 Floodplain Surface Soil Data Summary
Table 3-68 UAS Transect 4 Floodplain Subsurface Soil Data Summary
Table 3-69 UAS Transect 5 Floodplain Surface Soil Data Summary
Table 3-70 UAS Transect 5 Floodplain Subsurface Soil Data Summary
Table 3-71 UAS Transect 6 Floodplain Surface Soil Data Summary
Table 3-72 UAS Transect 6 Floodplain Subsurface Soil Data Summary
Table 3-73 UAS Transect 7 Floodplain Surface Soil Data Summary
Table 3-74 UAS Transect 7 Floodplain Subsurface Soil Data Summary

Table 3-75 DAS Transect 1 Floodplain Surface Soil Data Summary
Table 3-76 DAS Transect 1 Floodplain Subsurface Soil Data Summary
Table 3-77 DAS Transect 2 Floodplain Surface Soil Data Summary
Table 3-78 DAS Transect 2 Floodplain Subsurface Soil Data Summary
Table 3-79 DAS Transect 3 Floodplain Surface Soil Data Summary
Table 3-80 DAS Transect 3 Floodplain Subsurface Soil Data Summary
Table 3-81 DAS Transect 4 Floodplain Surface Soil Data Summary
Table 3-82 DAS Transect 4 Floodplain Subsurface Soil Data Summary
Table 3-83 DAS Transect 5 Floodplain Surface Soil Data Summary
Table 3-84 DAS Transect 5 Floodplain Subsurface Soil Data Summary
Table 3-85 DAS Transect 6 Floodplain Surface Soil Data Summary
Table 3-86 DAS Transect 6 Floodplain Subsurface Soil Data Summary
Table 3-87 DAS Transect 7 Floodplain Surface Soil Data Summary
Table 3-88 DAS Transect 7 Floodplain Subsurface Soil Data Summary

Table 3-89 Groundwater MCLs or EPA Regional Screening Levels

Table 5-1 Groundwater Exceedances – Shallow Hydrogeologic Unit (SHU)
Table 5-2 Groundwater Exceedances – Middle Hydrogeologic Unit (MHU)
Table 5-3 Groundwater Exceedances – Deep Hydrogeologic Unit (DHU)
Table 5-4 Groundwater Exceedances – Bedrock Wells
Table 5-5 Groundwater Exceedances in Groundwater (Residential Areas)

Table 8-1 Selection of Exposure Pathways
Table 8-2 Summary of Potential Risks for All Receptors – Sites G, H, I, L, and N
Table 8-3 Summary of Potential Hazard Indices for All Receptors – Sites G, H, I, L, and N
Table 8-4 Summary of Potential Risks for All Receptors – Transects
Table 8-5 Summary of Potential Hazard Indices for All Receptors – Transects
Table 8-6 Summary of Potential Risks for All Receptors – Dead Creek, Borrow Pit Lake, and Site M
Table 8-7 Summary of Potential Hazard Indices for All Receptors – Dead Creek, Borrow Pit Lake, Site M
Table 8-8 Summary of Constituents of Concern

Table 10-1 Feasibility Study Site Screening
Table 10-2 Potential ARARs

Table 11-1 Screening of Technologies for Waste and Soils

Table 11-2 Screening of Technologies for Groundwater and Leachate

Table 12-1 Screening of Preliminary Remedial Alternatives

Table 13-1 ARAR Classification and Demonstration of Compliance
Table 13-2 Carbon Footprint Analysis for Import of Fill Material for Alternatives 3, 4, and 5

VOLUME 2 – FIGURES AND APPENDICES

FIGURES

Figure 1-1 Site Location and Topographic Map
Figure 1-2 Site Location Map
Figure 1-3 Disposal Area Location Map
Figure 1-4 Dead Creek Location Map

Figure 2-1 Generalized Geologic Section

Figure 2-2 Slug Test Locations

Figure 2-3 SHU Groundwater Elevation Contours - 3Q99
Figure 2-4 SHU Groundwater Elevation Contours - 4Q99
Figure 2-5 SHU Groundwater Elevation Contours - 1Q00
Figure 2-6 SHU Groundwater Elevation Contours - 2Q00

Figure 2-7 MHU Groundwater Elevation Contours - 3Q99
Figure 2-8 MHU Groundwater Elevation Contours - 4Q99
Figure 2-9 MHU Groundwater Elevation Contours - 1Q00
Figure 2-10 MHU Groundwater Elevation Contours - 2Q00

Figure 2-11 DHU Groundwater Elevation Contours - 3Q99
Figure 2-12 DHU Groundwater Elevation Contours - 4Q99
Figure 2-13 DHU Groundwater Elevation Contours - 1Q00
Figure 2-14 DHU Groundwater Elevation Contours - 2Q00

Figure 2-15 Creek Segment B Creek Bottom Soil Sampling Transects
Figure 2-16 Creek Segment C Creek Bottom Soil Sampling Transects
Figure 2-17 Creek Segment D Creek Bottom Soil Sampling Transects
Figure 2-18 Creek Segment E Creek Bottom Soil Sampling Transects
Figure 2-19 Creek Segment F Creek Bottom Soil Sampling Transects

Figure 2-20 Creek Segment B Unexcavated Creek Bottom Soil Sampling Transects
Figure 2-21 Creek Segment C Unexcavated Creek Bottom Soil Sampling Transects
Figure 2-22 Creek Segment D Unexcavated Creek Bottom Soil Sampling Transects
Figure 2-23 Creek Segment E Unexcavated Creek Bottom Soil Sampling Transects
Figure 2-24 Creek Segment F Unexcavated Creek Bottom Soil Sampling Transects

Figure 2-25 Borrow Pit Lake Sampling Grid

Figure 2-26 Sauget Area 2 Groundwater Migration Control System

Figure 2-27 Water Well Location Map

Figure 2-28 Historical Aerial Photo – 1950
Figure 2-29 Historical Aerial Photo – 1955
Figure 2-30 Historical Aerial Photo – 1962
Figure 2-31 Historical Aerial Photo – 1993
Figure 2-32 Historical Aerial Photo – 2005
Figure 2-33 Recent Aerial Photo – 2008

Figure 3-1 Site G Sampling Locations
Figure 3-2 Site H Sampling Locations
Figure 3-3 Site I Sampling Locations
Figure 3-4 Site L Sampling Locations
Figure 3-5 Site N Sampling Locations

Figure 3-6 Ambient Air Sampling Locations

Figure 3-7 Groundwater Sampling Locations

Figure 3-8 Surface Water Sampling Locations

Figure 3-9 Broad-Scan Sediment Sampling Locations

Figure 3-10 Floodplain Soil Sampling Locations
Figure 3-11 Floodplain Surface Soil Total SVOC Concentrations
Figure 3-12 Floodplain Surface Soil PCB Concentrations
Figure 3-13 Floodplain Surface Soil Dioxin TEQ Concentrations
Figure 3-14 Floodplain Surface Soil Copper Concentrations

Figure 4-1 USEPA Test Trench Locations at Sites H, I, and L
Figure 4-2 USEPA Test Trench Locations at Site N

Figure 4-3 2004/2005 NAPL Survey Results

Figure 4-4 Aerial and Vertical Distribution of Total Chlorobenzenes in SHU, MHU and DHU
Figure 4-5 Aerial and Vertical Distribution of Total Chloroethenes in SHU, MHU and DHU

Figure 4-6 Conceptual Model of DNAPL in Bedrock at BR-I

Figure 4-7 Soil Vapor Sampling Locations

Figure 4-8 Utility Corridor Soil Sampling Locations

Figure 5-1A Fill and SHU DNAPL Area Delineation
Figure 5-1B MHU/DHU DNAPL Area Delineation

Figure 5-2 Isoconcentration Cross Section Location Map

Figure 5-3 Benzene Isoconcentration Cross Section - Downgradient of Site I
Figure 5-4 Chlorobenzene Isoconcentration Cross Section - Downgradient of Site I
Figure 5-5 1,4-Dichlorobenzene Isoconcentration Cross Section - Downgradient of Site I
Figure 5-6 Tetrachloroethene Isoconcentration Cross Section - Downgradient of Site I
Figure 5-7 Trichloroethene Isoconcentration Cross Section - Downgradient of Site I
Figure 5-8 1,2-Dichloroethene Isoconcentration Cross Section - Downgradient of Site I
Figure 5-9 Vinyl Chloride Isoconcentration Cross Section - Downgradient of Site I
Figure 5-10 4-Chloroaniline Isoconcentration Cross Section - Downgradient of Site I
Figure 5-11 2,4-D Isoconcentration Cross Section - Downgradient of Site I

Figure 5-12 Benzene Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-13 Chlorobenzene Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-14 1,4-Dichlorobenzene Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-15 Tetrachloroethene Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-16 Trichloroethene Isoconcentration Cross Section - Downgradient of Site G and H

Figure 5-17 1,2-Dichloroethene Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-18 Vinyl Chloride Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-19 4-Chloroaniline Isoconcentration Cross Section - Downgradient of Site G and H
Figure 5-20 2,4-D Isoconcentration Cross Section - Downgradient of Site G and H

Figure 5-21 Benzene Isoconcentration Map – SHU
Figure 5-22 Benzene Isoconcentration Map – MHU
Figure 5-23 Benzene Isoconcentration Map – DHU
Figure 5-24 Chlorobenzene Isoconcentration Map – SHU
Figure 5-25 Chlorobenzene Isoconcentration Map – MHU
Figure 5-26 Chlorobenzene Isoconcentration Map – DHU
Figure 5-27 1,4-Dhlorobenzene Isoconcentration Map – SHU
Figure 5-28 1,4-Dhlorobenzene Isoconcentration Map – MHU
Figure 5-29 1,4-Dhlorobenzene Isoconcentration Map – DHU
Figure 5-30 Tetrachloroethene Isoconcentration Map – SHU
Figure 5-31 Tetrachloroethene Isoconcentration Map – MHU
Figure 5-32 Tetrachloroethene Isoconcentration Map – DHU
Figure 5-33 Trichloroethene Isoconcentration Map – SHU
Figure 5-34 Trichloroethene Isoconcentration Map – MHU
Figure 5-35 Trichloroethene Isoconcentration Map – DHU
Figure 5-36 1,2-Dichloroethene Isoconcentration Map – SHU
Figure 5-37 1,2-Dichloroethene Isoconcentration Map – MHU
Figure 5-38 1,2-Dichloroethene Isoconcentration Map – DHU
Figure 5-39 Vinyl Chloride Isoconcentration Map – SHU
Figure 5-40 Vinyl Chloride Isoconcentration Map – MHU
Figure 5-41 Vinyl Chloride Isoconcentration Map – DHU
Figure 5-42 4-Chloroaniline Isoconcentration Map – SHU
Figure 5-43 4-Chloroaniline Isoconcentration Map – MHU
Figure 5-44 4-Chloroaniline Isoconcentration Map – DHU
Figure 5-45 2,4-D Isoconcentration Map – SHU
Figure 5-46 2,4-D Isoconcentration Map – MHU
Figure 5-47 2,4-D Isoconcentration Map – DHU
Figure 5-48 Groundwater Exceedances – SHU
Figure 5-49 Groundwater Exceedances – MHU
Figure 5-50 Groundwater Exceedances – DHU

Figure 6-1 Simulated Chlorobenzene Plume – 2006 - SHU
Figure 6-2 Simulated Chlorobenzene Plume – 2038 – SHU
Figure 6-3 Simulated Chlorobenzene Plume – 2006 – MHU
Figure 6-4 Simulated Chlorobenzene Plume – 2038 – MHU
Figure 6-5 Simulated Chlorobenzene Plume – 2006 – DHU
Figure 6-6 Simulated Chlorobenzene Plume – 2038 – DHU
Figure 6-7 Simulated 1,4-Dichlorobenzene Plume – 2006 - SHU
Figure 6-8 Simulated 1,4-Dichlorobenzene Plume – 2038 – SHU
Figure 6-9 Simulated 1,4-Dichlorobenzene Plume – 2006 – MHU
Figure 6-10 Simulated 1,4-Dichlorobenzene Plume – 2038 – MHU
Figure 6-11 Simulated 1,4-Dichlorobenzene Plume – 2006 – DHU
Figure 6-12 Simulated 1,4-Dichlorobenzene Plume – 2038 – DHU
Figure 6-13 Simulated 2,4-D Plume – 2006 - SHU
Figure 6-14 Simulated 2,4-D Plume – 2038 – SHU
Figure 6-15 Simulated 2,4-D Plume – 2006 – MHU
Figure 6-16 Simulated 2,4-D Plume – 2038 – MHU
Figure 6-17 Simulated 2,4-D Plume – 2006 – DHU
Figure 6-18 Simulated 2,4-D Plume – 2038 – DHU

Figure 6-19 Simulated Tetrachloroethene Plume – 2006 - SHU
Figure 6-20 Simulated Tetrachloroethene Plume – 2038 – SHU
Figure 6-21 Simulated Tetrachloroethene Plume – 2006 – MHU
Figure 6-22 Simulated Tetrachloroethene Plume – 2038 – MHU
Figure 6-23 Simulated Tetrachloroethene Plume – 2006 – DHU
Figure 6-24 Simulated Tetrachloroethene Plume – 2038 – DHU
Figure 6-25 Simulated Trichloroethene Plume – 2006 - SHU
Figure 6-26 Simulated Trichloroethene Plume – 2038 – SHU
Figure 6-27 Simulated Trichloroethene Plume – 2006 – MHU
Figure 6-28 Simulated Trichloroethene Plume – 2038 – MHU
Figure 6-29 Simulated Trichloroethene Plume – 2006 – DHU
Figure 6-30 Simulated Trichloroethene Plume – 2038 – DHU
Figure 6-31 Simulated 1,2-Dichloroethene Plume – 2006 - SHU
Figure 6-32 Simulated 1,2-Dichloroethene Plume – 2038 – SHU
Figure 6-33 Simulated 1,2-Dichloroethene Plume – 2006 – MHU
Figure 6-34 Simulated 1,2-Dichloroethene Plume – 2038 – MHU
Figure 6-35 Simulated 1,2-Dichloroethene Plume – 2006 – DHU
Figure 6-36 Simulated 1,2-Dichloroethene Plume – 2038 – DHU
Figure 6-37 Simulated Vinyl Chloride Plume – 2006 - SHU
Figure 6-38 Simulated Vinyl Chloride Plume – 2038 – SHU
Figure 6-39 Simulated Vinyl Chloride Plume – 2006 – MHU
Figure 6-40 Simulated Vinyl Chloride Plume – 2038 – MHU
Figure 6-41 Simulated Vinyl Chloride Plume – 2006 – DHU
Figure 6-42 Simulated Vinyl Chloride Plume – 2038 – DHU

Figure 6-43 Case 1 and Case 2 – Area of Unsaturated Source Materials
Figure 6-44 Source Width in Shallow Hydrogeologic Unit
Figure 6-45 Source Width in Middle and Deep Hydrogeologic Units
Figure 6-46 Mass Flux at Site I Source Zone – without Cover
Figure 6-47 Mass Flux at Site I Source Zone – with Cover

Figure 7-1 Conceptual Site Model - Plan View
Figure 7-2 Conceptual Site Model - Cross Section

Figure 10-1 Areas of Waste/ Soils and Residual DNAPL At Sites G, H, I South and L
Figure 10-2 Locations of Existing and Proposed Fencing for Access Control

Figure 10-3 Groundwater Exceedances – SHU
Figure 10-4 Groundwater Exceedances – MHU
Figure 10-5 Groundwater Exceedances – DHU

Figure 13-1 Conceptual Monitoring Well Locations

Figure 13-2 Conceptual Model of DNAPL in Bedrock at BR-I

Figure 13-3 Conceptual Cap or Cover Areas, Sites G, H, and L
Figure 13-4 Conceptual Cap or Cover Area, Site I South
Figure 13-5 Low-Permeability Cap Details, Sites G, H, and L
Figure 13-6 Low-Permeability Cap Details, Site I South

Figure 13-7 Conceptual Leachate Recovery Well Locations

Figure 13-8 Soil Cover Detail
Figure 13-9 Crushed Rock Cover Detail

Figure 13-10 Conceptual Biosparge Well Locations
Figure 13-11 Biosparging Conceptual Cross Section

APPENDICES

Appendix A Evaluation of Site I North

Appendix B Groundwater Analytical Data for Conceptual Point of Compliance Wells Located Along the Mississippi River North of the Barrier Wall

Appendix C Air Sparging and Pulsed Air Biosparging Evaluation

Appendix D Time to Clean Estimates for Chlorobenzene and 1,4-Dichlorobenzene

Appendix E Draft Preliminary Work Plan for Pulsed Air Biosparging Pilot Test

Appendix F Cost Estimates Calculations

Appendix G Evaluation of Monitored Natural Attenuation

Appendix H Evaluation of Hydraulic Containment Alternatives

Appendix I Calculation of Source Mass and Ranges of Source Mass Removal for Key COCs in Residual DNAPL Source Areas

ABRTF	American Bottoms Regional Treatment Facility
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
BERA	Baseline Ecological Risk Assessment
BGS	Below Ground Surface
BR	Bedrock
BS	Background Sample
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Constituent of Concern
COPC	Constituents of Potential Concern
CSM	Conceptual Site Model
DAS	Developed Area Sample (floodplain soil sampling)
DCB	Dichlorobenzene
DCE	Dichloroethene
DHU	Deep Hydrogeologic Unit
DNAPL	Dense Non Aqueous Phase Liquid
DUS/HPO	Dynamic Underground Stripping and Hydrous Pyrolysis Oxidation
EE/CA	Engineering Evaluation/ Cost Analysis
ENSR	An environmental consulting firm, now known as AECOM
ERA	Ecological Risk Assessment
FID	Flame Ionization Detector
FOD	Frequency of detection
FS	Feasibility Study
FSP	Field Sampling Plan
FSR	Field Sampling Report
GMCS	Groundwater Migration Control System
GP	Geoprobe
GPS	Global Positioning System
GRA	General Response Action
GWL	Groundwater Level Elevation
HDPE	High-Density Polyethylene
HELP	Hydrologic Evaluation of Landfill Performance
HHRA	Human Health Risk Assessment
HI	Hazard Index
HRS	Hazard Ranking System
IAC	Illinois Administrative Code
IAWC	Illinois American Water Company
IEPA	Illinois Environmental Protection Agency
LDPE	Low-Density Polyethylene
MCL	Maximum Contaminant Level
MESD	Metro East Sanitary District
MHU	Middle Hydrogeologic Unit
MLE	Most Likely Exposure
MNA	Monitored Natural Attenuation
MSL	Mean Sea Level
MS/ MSD	Matrix Spike/ Matrix Spike Duplicate

NAPL	Non Aqueous Phase Liquid
NCDC	National Climatic Data Center
ND	Not Detected
NE	No Exceedance
NGVD	National Geodetic Vertical Datum
NIVO	No Ignition of Vapor Over Sample
O&M	Operation and Maintenance
OBG	O'Brien and Gere Engineers
ORP	Oxidation reduction potential
PABS	Pulsed Air Biosparging
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated biphenyl
PID	Photo Ionization Detector
PM	Particulate matter
POTW	Publicly owned treatment works
PUF	Polyurethane Foam
QA/QC	Quality Assurance/ Quality Control
RAO	Remedial Action Objective
RBC	Risk Based Concentration
RCRA	Resource Conservation and Recovery Act
RGO	Remediation Goal Options
RI	Remedial Investigation
RI/FS	Remedial Investigation/ Feasibility Study
RME	Reasonable Maximum Exposure
RMS	Root Mean Squared
ROD	Record of Decision
SHU	Shallow Hydrogeologic Unit
SOW	Scope of Work
SSP	Support Sampling Plan
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
TACO	Tiered Approach to Corrective Action Objectives
TBC	To be Considered
TCLP	Toxic Characteristic Leaching Potential
TDS	Total Dissolved Solids
TEQ	Toxic equivalent
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
TSS	Total Suspended Solids
UAO	Unilateral Administrative Order
UAS	Undeveloped area sample (floodplain soil sampling)
UGGW	Up-gradient Groundwater
USEPA	United States Environmental Protection Agency
VI	Vapor Intrusion
VOC	Volatile Organic Compound

1.0 INTRODUCTION

1.1 Site Regulatory History

On January 21, 1999, Solutia Inc. (Solutia) entered into an Administrative Order by Consent (AOC) with Region 5 of the United States Environmental Protection Agency (USEPA) to perform an Engineering Evaluation/Cost Analysis (EE/CA) for soil, sediment, surface water and air and a Remedial Investigation/Feasibility Study (RI/FS) for groundwater at Sauget Area 1 (USEPA, 1999a). Sauget Area 1 ("the Site") is located just east of the Mississippi River within the Villages of Sauget and Cahokia, Saint Clair County, Illinois. The Site consists of four closed disposal areas (Sites G, H, I and N), a backfilled impoundment (Site L), an inactive borrow pit (Site M) and Dead Creek (Figures 1-1, 1-2 and 1-3).

USEPA issued a time-critical removal action order (UAO) on June 21, 1999 to replace culverts in Dead Creek (USEPA, 1999b). This order was modified on May 31, 2000 to include removal of sediments from Creek Segments B, C, D and E and amended on August 29, 2001 to include removal of sediments from Creek Segment F including the Borrow Pit Lake. As described in Section 2.3.2, Solutia excavated 46,000 cubic yards of sediments from Creek Segments B, C, D, E and F in 2001/2002 and 5,028 cubic yards of creek bottom soils and 7,315 cubic yards of sediments, respectively, from Creek Segments B, D and E and the Borrow Pit Lake in 2005/2006 under this order (Figure 1-4). Excavated sediments were transferred to an on-site RCRA and TSCA-compliant containment cell constructed adjacent to the west bank of Dead Creek just north of Judith Lane (Figure 1-2).

Table 1-1 provides a general site timeline of regulatory orders, remedial actions, site investigations, and human health and ecological risk assessments at Sauget Area 1.

1.2 Site Investigation History

1.2.1 Remedial Investigation

In 1999, Solutia prepared a Support Sampling Plan (SSP) in order to implement the site characterization actions required by the AOC Scope of Work (SOW) and provide the data necessary to support completion of both the EE/CA and the RI/FS (Solutia, 1999). USEPA approved this work plan on September 9, 1999. The overall objective of the Sauget Area 1 site characterization process was to further determine the extent of contamination at the Site beyond that defined by previous Site investigations and provide the data needed to evaluate the impact to soil, groundwater, sediments, surface water and air resulting from migration from the Sauget Area 1 source areas. Data and information from this site characterization process were then used to prepare a human health risk assessment (ENSR, 2001) and an ecological risk assessment (Menzie-Cura, 2001). Affected media were investigated in sufficient detail to support informed risk management decisions that would address the impact to human health and/or to the environment from affected media at the Site during the EE/CA and RI/FS remedy evaluation process.

Data gaps identified by the USEPA in the AOC SOW and by a review of two Ecology and Environment reports, one prepared for IEPA (Ecology and Environment, 1988) and one prepared for USEPA (Ecology

and Environment, 1998), were addressed by implementation of the Support Sampling Plan. Because these previous investigations were conducted more than 10 years prior to the start of the SSP implementation, a considerable amount of new data was collected from all media at the Site. However, some of these historical data, specifically waste characterization data from Sites G, H, I, L, M and N, were also used to fill gaps in the information collected during the SSP investigation.

Support Sampling Plan field work started in the third quarter of 1999 (3Q99) and was completed in the second quarter of 2000 (2Q00). Data collected during implementation of the SSP to fill data gaps and provide information for the HHRA, ERA, EE/CA and RI/FS are described below. A Data Report, containing analytical data for the waste, soil, groundwater, sediment, surface water, biota and air samples collected during implementation of the SSP, was submitted to USEPA in January 2001 (O'Brien and Gere, 2001).

Disposal Area Characterization - Surface soil and subsurface soil/waste samples were collected from borings installed at each of the disposal areas (Sites G, H, I, L and N) in order to characterize the depth and types of wastes present at each site and to evaluate potential exposures for the Human Health Risk Assessment including the outdoor industrial worker and construction/utility worker exposure scenarios (Figure 1-3). Additional activities included determination of disposal area boundaries using historical air photo analysis, soil gas surveys and test trenching and identification of buried tanks and/or drums using magnetometer surveys and test trenches.

Ambient air sampling was conducted upwind and downwind of Sites G, H, I and L to determine the tendency of Site constituents to enter the atmosphere and local wind patterns. Air sampling data were subsequently evaluated in the HHRA outdoor industrial worker, construction/utility worker and trespassing teenager exposure scenarios.

Treatability studies were planned for disposal area soils and wastes in order to identify any characteristics that would prevent their treatment using off-site incineration or on-site thermal desorption technologies. Vendors of these technologies indicated that these materials were not amenable to treatment by incineration or thermal desorption. Therefore, the planned disposal area soil and waste treatability studies were not performed. Leachate treatability studies were performed to determine the appropriate combination of physical/chemical and/or biological treatment processes needed to achieve pretreatment requirements for discharge to the American Bottoms Regional Treatment Facility (ABRTF).

Groundwater Sampling - Groundwater samples were collected to define the horizontal and vertical distribution of constituents in the alluvial aquifer beneath and downgradient of Site I and Sites G, H and L (Figure 1-3) and provide information for two HHRA exposure scenarios - volatilization from ground water to outdoor air for the outdoor industrial worker and construction/utility worker, and vapor intrusion into buildings for the indoor industrial worker. In addition, groundwater samples were collected from weathered bedrock beneath Sites G, H and I to determine the vertical extent of migration from these source areas.

Alluvial aquifer groundwater samples were also collected downgradient of Creek Segment B and Site M. Site N was not included in the groundwater sampling program because historical information on waste

disposal activities and historical soil and groundwater data did not indicate a potential for groundwater impact from this disposal area.

Shallow groundwater samples were collected from non-potable domestic water-supply wells located along Judith Lane to assess any potential adverse impacts of residential use of groundwater for lawn and garden watering scenarios in the HHRA. In addition, shallow groundwater samples were collected adjacent to Site M at the end of Walnut Street and the east bank of Dead Creek at Judith Lane to determine their effect on groundwater quality.

Background groundwater samples were collected upgradient of the disposal areas to determine if constituents were migrating into Sauget Area 1 from source areas to the east (upgradient) of the Site.

Groundwater flow direction was determined by installing water-level measurement piezometers in each of the three hydrogeologic units present in Sauget Area 1 and measuring groundwater-level elevations in 3Q99, 4Q99, 1Q00 and 2Q00. Aquifer hydraulic conductivity was measured by conducting slug tests in piezometers completed in each of the hydrogeologic units. Aquifer grain size analyses were also performed on soil samples collected from each hydrogeologic unit.

Surface Water, Sediment and Biota Sampling - Surface water, sediment and biota samples were collected in Dead Creek, the Borrow Pit Lake, Prairie du Pont Creek and two Reference Areas (Figure 1-4) to determine the extent of downstream migration of site-related constituents and provide information for use in the HHRA (recreational teenager and recreational fishing exposure scenarios) and the ERA (potential ecological receptor exposures).

Biota sampling included collection of tissue samples and performance of sediment bioassays. Tissue samples were collected from fish (large-mouth bass, brown bullheads and forage fish), clams, shrimp and plants in order to evaluate the impact of site-related constituents on potential ecological receptors (i.e., large mouth bass, great blue herons, bald eagles, mallard ducks, muskrats and river otters). Fish filet data were also used in the HHRA (recreational fishing scenario). Bioassays were performed on sediment samples using sensitive test organisms (Hyallela azteca and Chironomous tentans) to determine the effects of impacted sediments on organism survival, growth and reproduction.

Surface water, sediment and biota data were collected in 1999/2000 prior to performance of the time-critical sediment and soil removal action. Surface water and sediment data are discussed in this report and the biota data are included in the January 2001 Support Sampling Plan Data Report (O'Brien & Gere, 2001) and the June 2001 Ecological Risk Assessment (Menzie-Cura & Associates, 2001).

Floodplain Soil Sampling - Surface and subsurface floodplain soil samples were collected within the developed area of Dead Creek bounded by Queeny Road on the north, Falling Springs Road on the east, Route 157 on the south and Route 3 (Mississippi Avenue) on the west (Figure 1-4). Floodplain soil samples were collected in areas susceptible to flooding to determine the extent of overbank transport of impacted sediments. There is no historical knowledge of overbank flooding of Dead Creek. Overbank flooding of Dead Creek is very unlikely because the Metro East Sanitary District pumping station at Prairie du Pont Creek controls discharge from Dead Creek. Floodplain soil sampling was also performed to

assess airborne transport of impacted sediments because Dead Creek is an intermittent stream that is frequently dry during warm weather conditions.

Information from the floodplain soil sampling program was used to determine the extent of migration due to overbank flooding and wind-blown dust deposition. In addition, surficial and subsurface soil information was used in the HHRA to evaluate outdoor industrial worker, construction/utility worker and residential exposure scenarios and in the ERA to assess risks to terrestrial organisms. Background soil samples were also collected as part of this sampling program.

1.2.2 Supplemental Remedial Investigation

After completion of the Remedial Investigation, a number of supplemental remedial investigations were performed to collect information needed to complete the Sauget Area 1 site characterization process. Most of these supplemental investigations focused on source areas but additional investigations were performed for groundwater and creek bottom soil.

1.2.2.1 Source Area Investigations

USEPA performed test trenching and soil, waste and groundwater sampling at Sites H, I, L and N in 2002 and 2003 to look for buried tanks and drums and to identify the presence of contaminants in these disposal areas (Tetra Tech, 2003a, 2003b and 2003c). Solutia investigated surface soils at Site G in 2004 after wastes were found at the surface of the site during performance of a geophysical survey (Golder, 2004).

Solutia performed the following five supplemental remedial investigations in Sauget Area 1 to characterize source areas and migration pathways that were not evaluated during the Remedial Investigation:

- DNAPL Characterization and Remediation Study at Sites G, H and I in 2004/2005 (GSI, 2006c) to identify the volume of DNAPL-containing aquifer materials beneath these sites;
- DNAPL Recovery Study at Site I in 2007/2008 (GSI, 2008a) to determine whether or not pooled DNAPL at Site I was recoverable;
- Flux Study at Sites G, H, I and L in 2005 (GSI, 2005) to determine mass flux from the disposal areas and the underlying DNAPL-containing aquifer matrix and identify the primary source of site-related constituents entrained in groundwater and migrating downgradient;
- Soil Vapor Investigation in 2006 (Golder Associates, 2007a) to sample soil vapors at the Sauget Village Hall, Cerro Flow Products and Wiese, Inc. and provide information for the HHRA (vapor intrusion into occupied buildings); and
- Utility Corridor Investigation in 2007 (Golder Associates, 2008) to characterize soils and wastes present in the utility corridors on either side of Queeny Avenue adjacent to Sites I and H and provide information for the HHRA (construction/utility worker exposure scenario); and

1.2.2.2 Groundwater Investigations

Regional Groundwater Model Sampling - During Phase 1 of the Sauget Area 2 Supplemental Remedial Investigation, groundwater samples were collected from monitoring wells throughout the region, including monitoring wells at Sauget Area 2 sites, Sauget Area 1 sites, the W.G. Krummrich facility and ConocoPhillips bulk storage terminal. In addition, groundwater samples were collected from 26 groundwater monitoring wells installed during Phase 2 of the Sauget Area 2 Supplemental Remedial Investigation. Monitoring wells sampled in Sauget Area 1 included BR-G, BR-H, EE-01, EE-03, EEG-107, IMW-1S, IMW-1M AND IMW-1D. Groundwater quality data from these 2005/2006 sampling programs were used for calibration of the regional groundwater model (GSI, 2008b).

Soil to Groundwater Leaching Investigation - Groundwater samples were collected in the SHU downgradient of the highest detected cadmium concentrations in Dead Creek Segments C, D, E and F to determine if leaching from creek bottom soil to groundwater was a migration pathway (Golder Associates, 2007b).

1.2.2.3 Creek Bottom Soil Investigations

Post Sediment-Removal Creek Bottom Soil Investigation- After completion of sediment removal in Dead Creek in 2001, creek bottom soil samples were collected in Creek Segments B, C, D, E and F to characterize residual constituent concentrations and provide information for the Dead Creek Final Remedy HHRA (ENSR, 2001 and ENSR, 2002) and ERA (Menzie-Cura, 2002). In 2003, sediment samples were collected in the Borrow Pit Lake upstream and downstream of the confluence of the channel portion of Creek Segment F (Solutia, 2008b).

Post Soil-Removal Creek Bottom Soil Investigation - Creek bottom soils were removed in Creek Segments B (2005), Creek Segment D (2006), Creek Segment E (2006), Creek Segment F (2006) and the Borrow Pit Lake (2006) to achieve site-specific, risk-based concentrations for the protection of forage fish (i.e., small fish which serve as food for predatory fish and birds) or site-specific, soil to groundwater leaching criteria. Confirmatory samples were collected in all four creek segments and the Borrow Pit Lake to demonstrate that criteria were achieved (Solutia, 2008b).

1.3 Remedial Investigation Report Purpose and Organization

In order to streamline the Sauget Area 1 remedy selection and implementation, the January 21, 1999 AOC divided the site characterization and remedy evaluation process into two components: 1) an Engineering Evaluation/Cost Analysis (EE/CA) for soil, sediment, surface water and air and 2) a Remedial Investigation/Feasibility Study (RI/FS) for groundwater. When the June 21, 1999 UAO for a time-critical removal action in Dead Creek was modified on May 31, 2000 to include sediment removal in Creek Segments B, C, D and E and amended on August 29, 2001 to include removal of sediments from Creek Segment F including the Borrow Pit Lake, a streamlined remedy-selection process was no longer necessary because removal of sediments from Dead Creek in 2001/2002 addressed any immediate threats to public health and the environment from exposure to impacted sediments and surface water. Completion of human heath risk assessments (ENSR, 2001, 2002 and 2006) and ecological risk

assessments (Menzie-Cura, 2001 and 2002) for Sauget Area 1 confirmed that any immediate threats to public health and the environment were controlled by the time-critical removal action and demonstrated that a two-component site characterization and remedy evaluation process was no longer appropriate. As a result, the RI focus was expanded. Thus, environmental media originally included in the EE/CA but not addressed by the time-critical removal action (i.e. soil and air) is included in this RI for groundwater.

The Remedial Investigation Report (RI Report) is found in Sections 2.0 through 9.0 of this document. It presents the information collected for the Support Sampling Plan, including sediment and surface water sampling, as well as the information collected after completion of the SSP. The biota sampling data was excluded from the RI report because it was already presented and evaluated in the Ecological Risk Assessment (Menzie-Cura & Associates, 2001).

Section 1.0 provides an introduction of the project and states the project objectives, technical approach, and outline of this document. Section 2.0 discusses Sauget Area 1 location and description, physical characteristics and removal and remedial actions, and the Sauget Area 2 Groundwater Migration Control System (GMCS). Section 3.0 presents the results of the 1999 to 2000 Remedial Investigation and Section 4.0 summarizes the 2002 to 2008 Supplemental Remedial Investigation. Sections 5.0 and 6.0 discuss, respectively, the nature and extent of contamination and contaminant fate and transport. Section 7.0 presents a Conceptual Site Model developed from data collected for the Remedial Investigation and the Supplemental Remedial Investigation. Section 8.0 presents a summary of the various human health risk assessments that were conducted. Section 9.0 summarizes ecological risk assessment activities and results.

Several companies were involved in preparation of the Remedial Investigation Report. Solutia was the primary author of Sections 1.0, 2.0, and 3.0, GSI Environmental wrote Sections 4.0 through 7.0, and AECOM wrote Sections 8.0 and 9.0. AECOM maintained the database, prepared Appendix A (Evaluation of Site I North), and prepared the data summary tables for Sections 3.0, 5.0, and 8.0. GSI Environmental, URS, Roux Associates, and Golder Associates prepared the figures. Each figure has the logo of the company that prepared it.

1.4 Feasibility Study Purpose and Organization

The Feasibility Study is presented in Sections 10.0 through 13.0 of this document. Section 10.0 includes a summary evaluation of Sauget Area 1 sites including those carried forward to the Feasibility Study that require remedial action as well as those sites that do not require active remedial action and are not carried forward. Section 10.0 also identifies the Remedial Action Objectives (RAOs) and the Applicable Relevant and Appropriate Requirement (ARARs) for Sauget Area 1 sites.

Section 11.0 identifies general response actions and identifies and screens remedial technologies that may be applicable to the Sauget Area 1 sites. Section 12.0 develops a range of potential remedial alternatives for Sauget Area 1 using the technologies and process options that were retained after the screening and evaluation completed in Section 11.0. Section 13.0 presents the detailed evaluation of five remedial action alternatives that were retained after the screening and evaluation in Section 12.0. GSI

Environmental was the primary author of the Feasibilty Study and the associated figures, tables, and appendices.

2.0 SITE BACKGROUND

2.1 Site Location and Description

Sauget Area 1, which is located in the Villages of Sauget and Cahokia, St. Clair County, Illinois, consists of three closed waste disposal areas (Sites G, H and I), a closed construction debris disposal area (Site N), a backfilled impoundment (Site L), an inactive borrow pit (Site M) and Dead Creek, an actively-managed stormwater conveyance channel running through heavily-developed residential and commercial areas in its upper reaches and through agricultural and undeveloped areas in its lower reaches (Figures 1-2 and 1-4). Background information on each of these sites, previously reported in the Support Sampling Plan (SSP) using information from prior investigations (Solutia, 1999), is presented below along with a description of Dead Creek.

2.1.1 Site G

Site G is located in the Village of Sauget south of Queeny Avenue, west of Dead Creek and north of the containment cell constructed for the Sauget Area 1 Time-Critical Removal Action (Figure 1-3). The eastern portion of Site G is within a fenced area and is covered with vegetation. In previous reports, the disposal area boundary of Site G shown on site maps coincided with the fenced area, but this is not consistent with current information regarding the extent of waste and fill materials at Site G.

Waste and fill materials are not present within the southern portion of the fenced area but are present outside the fenced area to the west at the Wiese Engineering property. The Wiese property includes parking lots and a forklift maintenance building that is currently used for storage. This western portion of the disposal area is referred to as Site G West.

The disposal area at Site G and Site G West occupies approximately 3.3 acres. Site G and Site G West were operated and served as a disposal area from sometime after 1940 to 1966, and were subject to intermittent dumping thereafter until 1982, when most of the site was fenced pursuant to a USEPA removal action under CERCLA. Prior to the SSP investigation, there were estimated to be 60,000 cubic yards of wastes within Site G and Site G West, including oil pits located on the east side of Site G, buried drums containing wastes (including pyrophoric materials), paper wastes, documents and laboratory equipment.

Wastes located on the surface and/or in the subsurface within the fenced area of Site G spontaneously combusted and/or burned on four separate occasions during the period March to June 1994. USEPA conducted a second CERCLA removal action during the period March to September 1995. The on-scene coordinator's report summarized the results of this removal action (USEPA, 1995).

The 1995 removal action involved the following activities: soil sampling inside and outside the fenced area; excavation of approximately 25 cubic yards of soils along the Queeny Avenue sidewalk and 30-50 cubic yards of soils from the Wiese parking lot; placement of these soils within the fenced area; excavation of a waste pile on the southwest corner of the site and placement of these wastes within the fenced area; solidification of two oil pits located on the northeast and central east portions of the site; installation of a shallow barrier wall on the eastern boundary of the site; and installation of a clean soil

cover approximately 18-30 inches thick to cover the wastes inside the fenced area. The soil layer covered the entire fenced area except for the southeast and southwest corners and the central south portion of the fenced area (USEPA, 1995).

2.1.2 Site H

Site H, which occupies approximately 4.9 acres of land, is located south of Queeny Avenue, west of Falling Spring Road and east of the Metro Construction Company property. The boundary between the Village of Sauget and the Village of Cahokia runs through Site H (Figure 1-3). Prior to the SSP investigation, the southern boundary of Site H was not known with certainty, but was estimated to extend approximately 1,250 feet south of Queeny Avenue. While Site H is not fenced and access is currently unrestricted, the property is graded and grass covered with exposed slag at grade.

Site H was at one time connected to Site I, but they are now separated at ground level by Queeny Avenue, which was constructed at its present location in 1949 or 1950. The landfill operated from approximately 1931 to 1957. Due to this physical connection, waste disposal at Site H was similar to that at Site I South. Industrial wastes were disposed here from approximately 1931 to 1957. Wastes included solvents, other organics and inorganics, including PCBs, para-nitroaniline, chlorine, phosphorous pentasulfide, and hydrofluosilic acid. Municipal wastes were also reportedly disposed at Site H. The estimated volume of waste in Site H prior to the SSP investigation was 110,000 cubic yards.

2.1.3 Sites I South and I North

Site I occupies approximately 14.7 acres of land located north of Queeny Avenue, west of Falling Springs Road and south of the Alton & Southern Railroad in the Village of Sauget (Figure 1-3). Access to the site, which is fenced, graded, covered with crushed stone and used for equipment and truck parking, is restricted and controlled by Cerro Flow Products. Prior to performance of the SSP, Site I was estimated to contain approximately 250,000 cubic yards of contaminated wastes and fill material.

Cerro acquired the tracts constituting Site I in 1965 and 1967. Historically, Cerro periodically used inert fill material (e.g., refractory brick and construction debris) to fill low areas and maintain grades. Cerro continues to place clean, purchased stone and surplus concrete on the property to fill depressions.

Site I has been divided into two areas, Site I South and Site I North, based on further review of historical aerial photographs. The boundary between Site I South and Site I North is visible on historical aerial photographs from 1950, 1955, and 1962 (see Figures 2-28, 2-29, and 2-30). Sites I South and I North are described below and are considered as separate sites throughout the remainder of this report.

Site I South occupies approximately 8.8 acres of land and was at one time connected to Site H. Sites H and I South are separated at ground level by Queeny Avenue, which was constructed at its present location in 1949 or 1950. Sites H and I South together were known to be part of the “Sauget-Monsanto Landfill", which was originally used as a sand and gravel pit and then received industrial and municipal wastes from approximately 1931 to 1957. Cerro may also have used a part of Site I South to dispose of waste oil for a brief period of time during the late 1960s and early 1970s.

Wastes from Site I South potentially leached and/or were released into Creek Segment A and available downstream creek segments until Creek Segment A was remediated in 1990-1991. The Village of Sauget occasionally dredged Dead Creek and deposited the sediments from that dredging on the east bank of Dead Creek or Site I South.

In September 1989, several workers were sent to the hospital and one was kept overnight for observation after being exposed to materials brought to the surface during installation of a pole to carry computer lines. This incident occurred in Site I South at a location east of the railroad tracks and south of the main plant road.

Site I North occupies approximately 5.9 acres of land, and historical aerial photos indicate that this area was not part of the "Sauget-Monsanto Landfill" described above. As discussed in Section 3.2.2.3, the interior trench excavated at Site I North encountered bricks, concrete, rebar, sheet metal, wood, and soil.

2.1.4 Site L

Site L, located immediately east of Dead Creek and south of the Metro Construction Company property in the Village of Cahokia (Figure 1-3), was used for the disposal of wash water from truck cleaning operations from approximately 1971 to 1981. The trucks were used for bulk-chemical transport. Volume of contaminated fill material in the two closed impoundments that comprised Site L was not known prior to completion of the SSP investigation. However, the area of the impoundment was estimated to be 7,600 square feet. This site is now covered by cinders and used for equipment storage.

2.1.5 Site M

Site M, approximately 59,200 square feet in size and an estimated 14 feet deep, was located along the eastern side of Dead Creek at the western end of Walnut Street in the village of Cahokia (Figure 1-3). Originally used as a borrow pit in the middle to late 1940s, Site M was connected to Dead Creek through an opening at its southwest corner. In the past, water from Dead Creek entered Site M through this connection. An estimated 3,600 cubic yards of contaminated sediments was located in this borrow pit prior to the Removal Action. Contaminated sediments were removed from Site M in 2000/2001 under the Time-Critical Removal Action UAO and transferred to the Judith Lane containment cell (Figure 1-2). Site M was backfilled during sediment removal and a fence restricts access to the site.

2.1.6 Site N

Site N is located on property formerly owned by the H. Hall Construction Company on the eastern side of Dead Creek between Judith Lane and Cahokia Street in the Village of Cahokia (Figure 1-3). Initially developed as a borrow pit in the 1940s, this four-acre site was formerly used to dispose of concrete rubble, demolition debris, and to a lesser degree, some drums and other solid waste. Disposal of some painting wastes and/or chemical wastes may also have occurred at Site N based on observations during waste sampling and exploratory trenching performed at this site during the remedial investigations in 1999-2000 and 2003.

Currently inactive, access to the site is limited by a fence at the property line. Fill volume was not known prior to the SSP, but fill depth was estimated to be as much as 30 feet.

2.1.7 Dead Creek

Dead Creek is an approximately 17,000 ft. long, actively-managed stormwater conveyance channel running through heavily-developed residential and commercial areas in its upper reaches and through agricultural and undeveloped areas in its lower stretches before it discharges to Prairie du Pont Creek at the Metro East Sanitary District (MESD) lift station (Figure 1-4). Prairie du Pont Creek is located at the southern (downstream) end of Creek and routes all of the water from Dead Creek to the Mississippi River. When Sauget Area 1 was investigated by the Illinois Environmental Protection Agency (IEPA) in the 1980s (Ecology and Environment, 1988), Dead Creek was subdivided into six segments (Figure 1-4):

Dead Creek Segments	Creek Segment Location	Creek Segment Length (Feet)
• Creek Segment A	Alton & Southern Railroad to Queeny Avenue	1,800
• Creek Segment B	Queeny Avenue to Judith Lane	1,800
• Creek Segment C	Judith Lane to Cahokia Street	1,300
• Creek Segment D	Cahokia Street to Jerome Lane	1,100
• Creek Segment E	Jerome Lane to Route 157	4,300
• Creek Segment F	Route 157 to Prairie du Pont Creek	6,500
	Estimated Total Length	16,800

Creek Segment A was remediated by Cerro Flow Products in 1990/1991 under a plan approved by IEPA. Approximately 27,500 tons of sediments were excavated and taken to Waste Management disposal facilities. Solutia remediated Creek Segments B, C, D, E and F by removing 46,000 cubic yards of sediments in 2001/2002 and 12,400 cubic yards of sediments and creek bottom soil in 2005/2006. Excavated sediments and soils removed after 2000 were transferred to a RCRA and TSCA-compliant on-site containment cell constructed adjacent to the west bank of Creek Segment B just north of Judith Lane (Figure 1-4).

2.2 Site Physical Characteristics

2.2.1 Climatology

Climate of the study area is described by the National Climatic Data Center (NCDC) as a modified continental climate. The area is subject to four-season climate changes without the undue hardship of prolonged periods of extreme heat or high humidity. To the south is the warm, moist air of the Gulf of Mexico; and to the north, in Canada, is a region of cold air masses. Convergence of air masses from these sources, and the conflict on the frontal zones where they come together, produce a variety of weather conditions, none of which are likely to persist for any great length of time.

Winters are brisk and seldom severe. Records since 1870 show that the temperature drops to zero degrees Fahrenheit (0°F) or below on average two to three days per year. The area stays at or below 32°F for less than 25 days in most years. Average snowfall for the area is a little over 18 inches per winter season. Snowfall of an inch or more is received on five to ten days in most years. Long-term

records for the St. Louis area (since 1870) indicate that temperatures of 90°F or higher occur on about 35 to 40 days per year, and extremely hot days of 100°F or more are expected no more than five days per year.

Normal annual precipitation for the area is slightly less than 34 inches. The winter months are the driest, with an average total of about six inches of precipitation. The spring months of March through May are normally the wettest with normal precipitation of just under 10.5 inches.

2.2.2 Hydrology

Sauget Area 1 is situated in an area of the Mississippi River floodplain called the American Bottoms, which is located on the eastern side of the river directly opposite St. Louis, Missouri. American Bottoms encompasses approximately 175 square miles (30 miles north to south with a maximum width of 11 miles) and is bordered on the west by the Mississippi River and on the east by bluffs that rise 150 to 200 feet above the valley bottom. Land surface is relatively flat, ranging between 400 and 445 feet above mean sea level (MSL) and generally slopes from north to south and from east to west.

The Mississippi River, bordering the American Bottoms to the west, is the major surface-water body draining the area. It is fed by a complex network of natural and artificial channels that were extensively improved throughout the 20th Century. According to an investigation of groundwater resources conducted by the Illinois State Water Survey, at least 40 miles of improved drainage ditch were constructed in the American Bottoms and the natural lake area in the center of the floodplain was reduced by more than 40 percent.

Locally across Sauget Area 1 the topography consists of nearly flat bottomland with elevations ranging from 400 to 410 feet MSL. Dead Creek, a channelized stream, serves as the main conduit for surface-water drainage through Sauget Area 1. The creek flows to a floodway south of Cahokia (Prairie du Pont Creek), which in turn discharges to the Cahokia Chute of the Mississippi River. Surface drainage across the study area is generally toward Dead Creek, although localized drainage patterns are present at Sites G, H, I, L, M and N:

- An emergency response action by USEPA in 1995 resulted in the placement of a soil cover at Site G. Because of this, surface water flows radially away from the site.
- Drainage at Site H is typically toward Dead Creek, although the site is relatively flat and contains several depressions capable of retaining water. Water accumulating in these depressions due to precipitation infiltrates into the ash cinder cover or evaporates, rather than draining from the site across the surface.
- The majority of drainage at Site I South and Site I North is to the west although the grade is relatively flat. Water flows to an interceptor and is ultimately carried through a series of storm sewers and effluent pipes to the American Bottoms Regional Treatment Facility. Currently, stormwater runoff from Site I South drains to a catch basin on the north side of Queeny Avenue that drains into Creek Segment B. Water also infiltrates into the subsurface due to the flat grade and permeable stone parking areas, or evaporates.
- Drainage at Site L flows to the west toward Dead Creek across a cover of highly permeable material (cinders).

- Site M receives some runoff from a small residential area located on Walnut Street. Surface water discharges into Dead Creek on the west side of the former impoundment, which was backfilled during the Sauget Area 1 Time Critical Removal Action.
- Site N receives runoff from the surrounding area.

Ponding occurs in low-lying areas of Sauget Area 1 during periods of heavy precipitation because there is no stormwater drainage system to convey ponded water to Dead Creek. Stormwater periodically backs up in Dead Creek since MESD does not operate the lift station at Prairie du Pont Creek until the stormwater storage capacity of Dead Creek and the Borrow Pit Lake is fully utilized. The pumps come on at a pre-set level so that the stormwater does not cause overbank flooding. Overbank flooding from Dead Creek is very unlikely because a lift station controls discharge from the creek.

2.2.3 Geology

The American Bottoms are underlain by unconsolidated valley fill composed of recent alluvium, known as the Cahokia Alluvium, which overlies a unit of glacial material known as the Henry Formation. Cahokia Alluvium is approximately 40 feet thick in the American Bottoms and consists of unconsolidated, poorly sorted, fine-grained material with some local sand and clay lenses. These alluvial deposits unconformably overlie the Henry Formation, which is composed of medium to coarse sand and gravel that increases in grain size with depth. This unit is approximately 95 feet thick and generally becomes thinner with increasing distance from the Mississippi River.

Sauget Area 1 is located in the southwestern section of the American Bottoms floodplain. More specifically, it is situated south of East St. Louis, and is approximately three-quarters to one mile east of the eastern bank of the Mississippi River. Stratigraphy beneath the Site is much like that of the rest of the floodplain. The Cahokia Alluvium is about 30 feet thick and exists as a fine-grained silty sand that is gray and brown in color with some interbedded silts and clays. Below this, the unconsolidated sand and gravel valley-fill deposits of the Henry Formation are present. Locally, the Henry Formation, which ranges in thickness from approximately 100 feet near the river to about 80 feet on the east side of the Site, is characterized by fine to medium sand in its upper portions and medium-to-coarse sand in its lower portions. Valley fill throughout the American Bottoms is underlain by Mississippian and Pennsylvanian bedrock consisting primarily of limestone and dolomite with some sandstone and shale units. In some locations, glacial till is encountered above bedrock and below the valley fill. Figure 2-1 presents a generalized geologic cross-section of the Site.

2.2.4 Hydrogeology

Two types of water-bearing formations exist in the American Bottoms: unconsolidated and consolidated. Unconsolidated formations (clay, silt, sand and gravel) are those that lie between ground surface and bedrock. Thickness of the unconsolidated formation varies throughout the area, but is typically 100 to 110 feet thick in Sauget Area 1. Finer-grained sediments generally dominate at the ground surface and become coarser and more permeable with depth and, consequently, permeability and porosity increase with depth. Consolidated formations are deep bedrock units of limestone and dolomite that exhibit low permeability and are not considered to be a significant source for ground water in the area. As noted in

the literature, "… because of low permeability and poor water quality with depth, the bedrock does not constitute an important aquifer in the area" (Ritchey and Schicht, 1982). Further, Bruin and Smith (1953) state "The shallower consolidated rock formations in this area are generally not highly productive….". In some areas, till and/or boulder zones are encountered 10 to 15 feet above the bedrock surface.

Geologic data show that the thickness of the unconsolidated deposits ranges from approximately 140 feet at the Mississippi River in Sauget Area 2 to 100 feet in the eastern part of Sauget Area 1. At most locations, the contact between Cahokia Alluvium and the Henry Formation cannot be distinguished. However, three distinct hydrogeologic units can be identified at Sauget Area 1: 1) a Shallow Hydrogeologic Unit (SHU); 2) a Middle Hydrogeologic Unit (MHU); and 3) a Deep Hydrogeologic Unit (DHU).

The SHU includes the Cahokia Alluvium (recent deposits) and the uppermost portion of the Henry Formation. This unit, which is typically 30 ft. thick, is a fine-grained silty sand with silt and clay interbeds with low to moderate permeability. Typically 40 ft. thick, the MHU is formed by the upper to middle, medium to coarse sand portions of the Henry Formation. It contains a higher permeability sand than found in the overlying SHU, and these sands become coarser with depth. At the bottom of the aquifer is the DHU, which includes the high permeability, coarse-grained deposits of the lower Henry Formation. This zone is typically about 40 feet thick at the Site.

Regional hydraulic characteristics of the American Bottoms aquifer were determined by the Illinois State Water Survey using information from 10 aquifer tests and 100 specific-capacity tests conducted on industrial, municipal, irrigation and relief wells (Ritchey and Schicht, 1982). Hydraulic conductivity values for the aquifer ranged from 1.0×10^3 to 3.0×10^3 gallons per day per square foot (4.7×10^{-2} to 1.4×10^{-1} centimeters per second). Coefficient of storage ranged from 0.002 to 0.155.

Hydraulic properties of the three hydrogeologic units in the vicinity of Sauget Area 1, which are summarized below, were determined using data that Ritchey and Schicht (1982) obtained from aquifer tests performed over a span of 30 years:

Average Hydraulic Characteristics of the Shallow, Middle and Deep Hydrogeologic Units at Sauget Area 1

Hydrogeologic Unit	Transmissivity (gpd/ft)	Hydraulic Conductivity (gpd/ft^2)	Hydraulic Conductivity (cm/sec)	Storage Coefficient
Shallow Hydrogeologic Unit	**141.5**	**9.5**	**4×10^{-4}**	**Not Available**
Middle Hydrogeologic Unit	**165,000**	**3,300**	**1.6×10^{-1}**	**0.04**
Deep Hydrogeologic Unit	**211,000**	**2,600**	**1.2×10^{-1}**	**0.002 to 0.1**

Slug tests were performed for the Support Sampling Plan to determine the hydraulic coefficients for the aquifer system at Sauget Area 1. To conduct the slug tests, three two-inch diameter, stainless steel piezometers were installed adjacent to each disposal area (Sites G, H, I, L, and N). The three wells in each area were screened in the SHU, MHU and DHU. Fifteen slug tests were performed (five tests in each of the three zones). Data collected during these tests were recorded with a Hermit Data logger and than analyzed using the Bouwer-Rice method for unconfined aquifers. Slug test locations are shown on Figure 2-2, identified with the prefix "ST" and the results from these tests are summarized below:

SHU, MHU and DHU Hydraulic Conductivity Estimates Based on Sauget Area 1 Support Sampling Plan Slug Test Data

	Hydraulic Conductivity (centimeters per second)					
Hydrogeologic Unit	**Site G**	**Site H**	**Site I**	**Site L**	**Site N**	**Average**
Shallow Hydrogeologic Unit	**6.24E-3**	**4.32E-3**	**4.53E-3**	**2.44E-3**	**2.71E-2**	**8.93E-3**
Middle Hydrogeologic Unit	**3.47E-2**	**2.14E-2**	**5.07E-2**	**4.76E-2**	**2.20E-2**	**3.53E-2**
Deep Hydrogeologic Unit	**3.31E-2**	**1.84E-2**	**1.27E-1**	**2.52E-2**	**1.37E-2**	**4.35E-2**

Analysis of the slug test data indicated that the hydraulic conductivity for the SHU ranged from 2.44 x 10^{-3} to 2.71 x 10^{-2} cm/s for the SHU, 2.14 x 10^{-2} to 5.07 x 10^{-2} cm/s for the MHU, and 1.37 x 10^{-2} to 1.27 x 10^{-1} cm/s for the DHU. Average hydraulic conductivity in the SHU, MHU and DHU was 8.93 x 10^{-3}, 3.53 x 10^{-2} and 4.35 x 10^{-2} cm/sec, respectively, and increased downward from the SHU to the MHU and then the DHU. For a description of the procedures that were followed during the aquifer testing program and for supporting documentation, refer to Section 3.14 of the FSR (Volume 3).

Aquifer characteristics used throughout this document were selected after considering historical regional sustained pumping data, together with the site-specific data that were collected as a part of the SSP. These aquifer characteristics are listed below:

ALLUVIAL AQUIFER CHARACTERISTICS

Ground Water Unit	Saturated Thickness (feet)	Average Hydraulic Conductivity (gal/day-ft^2)	Average Hydraulic Conductivity (cm/sec)	Hydraulic Gradient (ft/ft)
Shallow Hydrogeologic Unit	**15**	**212.1**	**1x10^{-2} cm/s**	**.001**
Middle Hydrogeologic Unit	**40**	**2121**	**1x10^{-1} cm/s**	**.001**
Deep Hydrogeologic Unit	**40**	**2121**	**1x10^{-1} cm/s**	**.001**

Recharge to the American Bottoms aquifer occurs through four sources: precipitation, infiltration from the Mississippi River, inflow from the buried-valley channel of the Mississippi River and subsurface flow from the bluffs that border the floodplain on the east.

Groundwater beneath Sauget Area 1 flows generally from east to west, toward the Mississippi river with horizontal groundwater gradients averaging about 0.001 feet per foot (ft/ft) to the west. (During high river stage, gradients near the river reverse because surface water levels in the Mississippi River are higher than groundwater levels in the American Bottoms aquifer.) Downward vertical gradients occur on parts of the Site, with varying magnitudes depending on location and season.

Groundwater flow direction in Sauget Area 1 during implementation of the Support Sampling Plan was determined by installing nine piezometer clusters and measuring groundwater levels in each cluster quarterly for four quarters. Each cluster contained three small-diameter piezometers screened in the SHU (0-30 feet deep), MHU (30-70 feet deep), and DHU (greater than 70 feet deep). SHU, MHU and DHU groundwater elevation contour maps were prepared for the third and fourth quarters of 1999 (3Q99 and 4Q99) and the first and second quarters of 2000 (1Q00 and 2Q00). Groundwater level contours for

3Q99, 4Q99, 1Q00 and 2Q00 are shown on Figures 2-3 to 2-6 for the SHU, Figures 2-7 to 2-10 for the MHU and Figures 2-11 to 2-14 for the DHU. Groundwater flow direction in the SHU, MHU and DHU is to the west and northwest at an approximate gradient of one foot vertical to 1,000 feet horizontal (0.001 ft/ft). Estimated groundwater flow velocity is 29.6 feet per year in the SHU and 296 feet per year in the MHU/DHU based on a porosity of 0.35.

Groundwater-level measurements indicate downward vertical gradients occurred in portions of Sauget Area 1 during performance of the SSP. Vertical groundwater-level measurements in piezometer cluster P2-C-Shallow (S), Middle (M) and Deep (D), which is the closest cluster to the Sauget Area 1 disposal areas, are presented below:

SHU/MHU and MHU/DHU Head Differences in 3Q99, 4Q99, 1Q00 and 4Q00 at Piezometer Cluster P2-C-S, M and D

Groundwater Level Piezometer	3Q99		4Q99		1Q00		2Q00	
	GWL	Head	GWL	Head	GWL	Head	GWL	Head
P2-C-S	399.00	NA	397.83	NA	396.58	NA	401.81	NA
P2-C-M	398.80	0.20 ▼	395.61	2.22▼	394.14	2.44▼	395.20	6.61▼
P2-C-D	398.30	0.50 ▼	395.62	0.01 ▲	394.17	0.03 ▲	395.23	0.03 ▲

Notes:
1) GWL = Groundwater Level Elevation, Feet NGVD
2) Head = Head difference between SHU and MHU and MHU and DHU
3)) ▼ = Downward Head (GWL in upper unit higher than in lower unit)
4) ▲ = Upward Head (GWL in lower unit higher than in upper unit)

Head differences (gradients) between the SHU and MHU were downward in all four quarters but the magnitude of the head difference varied widely, from 0.20 feet in 3Q99 to 6.61 feet in 2Q00. In all but 3Q99, head differences between the MHU and DHU were upward although the magnitude was small, ranging from 0.01 to 0.03 feet. In 3Q99 there was a 0.50 ft. downward head difference between the MHU and the DHU.

An upward vertical gradient is expected as groundwater in the alluvial aquifer system approaches and discharges into the Mississippi River, which is a gaining stream in the region and serves as the discharge boundary for the American Bottoms alluvial aquifer system.

Historically, groundwater from the American Bottoms aquifer was a major source of water for the area and was used for industrial, cooling water, and irrigation purposes. Groundwater levels prior to industrial and urban development were near land surface. Intensive industrial withdrawal and use and construction of a system of drainage ditches, levees, and canals to protect developed areas lowered groundwater levels for many years. However, by the mid-1980s, groundwater levels increased due to reduced pumpage, high river stages, and high precipitation.

Currently, no groundwater is being pumped from the American Bottoms aquifer within or in the vicinity of Sauget Area 1 for public or industrial supply purposes. The Villages of Cahokia and Sauget both have city ordinances that prohibit use of groundwater as potable water and the public water supply is the exclusive potable water source. Nine individual residential wells (see Figure 2-27) were identified within Sauget Area 1: 101 Walnut Street, 3300 Falling Springs Road, 100 Judith Lane, 102 Judith Lane, 104

Judith Lane, 109 Judith Lane, 118 Edwards Street, 22 Cahokia Street, and 24 Cahokia Street (Ecology and Environment, 1998 and Solutia, 1999). These wells are used for irrigation purposes and four of them were sampled as part of the SSP investigation.

Drinking water for area residents comes from the Illinois American Water Company (IAWC) surface water intake in the Mississippi River located at river mile 181, approximately three miles north of Sauget Area 1 and about six miles upstream of the confluence of Dead Creek with Prairie du Pont Creek. IAWC supplies water to Sauget and the Commonfields of Cahokia Public Water District, which distributes water to portions of Cahokia and Centerville Township. The Cahokia Water Department also purchases water from IAWC and distributes it to small residential areas in the west and southwest portions of Cahokia.

The nearest downstream surface-water intake on the Illinois side of the Mississippi River is located at river mile 110, approximately 64 miles south of Sauget Area 1. This intake supplies drinking water to residents in the Town of Chester and surrounding areas in Randolf County, Illinois. A Ranney well operated by the Village of Crystal City, Missouri (pop. 4,000) at river mile 149, approximately 28 miles downstream of Dead Creek, is the nearest public water supply on the Missouri side of the river.

Agricultural land in Sauget Area I is not irrigated.

2.2.5 Demography and Land Use

Sauget Area 1 is located in the Villages of Sauget and Cahokia and the City of East St. Louis is located approximately a half mile north of the Site. Residential populations of these area municipalities as of the latest census are, respectively, about 200; 17,550 and 40,944. Small residential, commercial and agricultural properties are interspersed throughout the Village of Sauget. There is a residential area adjacent to Sites H and I with the closest residence approximately 200 feet to the east. The Sauget Village Hall is located on Site I but not necessarily on waste. Vacant land is located in a number of areas in Sauget including just south of Site L, east of Falling Springs Road and west of Route 3.

Heavy industry has been located on the east bank of the Mississippi River between Cahokia and Alton, Illinois (also known as the “American Bottoms”) for over a century. Although much of the industry has closed down throughout the American Bottoms, the primary land use in the vicinity of Sauget Area 1 continues to be industrial, with over 50 percent of the land being used for this purpose. In addition to heavy industry (chemical plants, copper tube manufacturing, zinc processing/recycling plants, a foundry, a hazardous waste incinerator, an ethanol production plant), the Sauget and Cahokia area currently is also home to warehouses, trucking and barge terminal facilities, underground pipelines, commercial facilities, and miscellaneous business establishments.

Closed and currently operating commercial and industrial facilities located in or near Sauget Area 1 are listed below:

Facility	Years of Use	Use
Cahokia Marine Services & Slay Terminals	1979 to date	Coal Bulk Storage and Transfer
Center Ethanol	2008 to date	Ethanol processing
Cerro Flow Products	1927 to date	Current - Copper Tube Manufacturing

		Historic - Copper Recycling and Cathode Production
Clayton/RRG	1962-1998	Waste Recycling
Chemical Warfare Service	1942 to 1945	Chemicals for the war effort
Darling Fertilizer	1921 to 1967	Chemical Fertilizer
Eagle Marine Industries	1962 to date	Barge Terminal and Fleeting
Ethyl Petroleum Additives (f/k/a Edwin Cooper, n/k/a Afton Chemical Corp.)	1971 to date	Petroleum Additive Manufacturing
Illinois Central (f/k/a Gulf, Mobil & Ohio Railroad)	1930 to 1959	Railroad yard and roundhouse facility
Mobil (n/k/a ExxonMobil)	1917 to 1993	Refinery & Tank Farm
Midwest Rubber	1928 to 1997	Rubber Recycling
Pillsbury	1979 to 1989	Bulk Grain Storage and Transfer
Phillips Petroleum (n/k/a ConocoPhillips)	1931 to date	Petroleum Bulk Storage and Transfer
Peavey/ConAgra	1989 to date	Bulk Grain Storage and Transfer
Rogers Cartage	1970 to 1990	Truck terminal/truck washing
River City Landscape Supply	1993 to date	Lawn and Garden Product Storage
T.J. Moss	1927 to 1969	Wood Treating
Sterling Steel Castings	1922 to date	Foundry
Union Electric (n/k/a Ameren)	1923 to 1979	Power generation and electricity distribution
Veolia Environmental Services (f/k/a Trade Waste Incineration)	1979 to date	Hazardous Waste Incinerator
W.G. Krummrich Plant (past and present owners include Pharmacia and Solutia)	1917 to date	Chemical manufacturer
Waggoner Trucking		Truck terminal/truck washing
Wiese Engineering	1967 to date	Equipment repair
Zinc Plant (American Zinc, Cyprus Amax, Big River Zinc are all past owners)	1940 to date	Historic - Zinc roast and processing. Current - In conversion to a zinc recycling facility.

Prior to the late 1950's, waste disposal for local residents, industries and businesses took place in large part in landfills located in Sauget Area 1 (Sites G, H and I). After the late 1950's, similar types of wastes were disposed of in landfills that are today part of the Sauget Area 2 Superfund sites, located adjacent to (and down gradient of) Sauget Area 1. Wastes likely disposed of in the Sauget Area 1 landfills include:

Filter Cake/Aid	Pine Tars	Fiber Packs	Slag
Waste Solvent	Wood Treatment Chemicals	Steel Drums	Still Bottoms
Sludges	Waste Paper	Waste Catalyst	Municipal Waste
Construction Debris	Paper Sacks	Truck Tank Washings	Lab Wastes
Refractory Brick	Foundry Sand	Misc. Chemical Production Wastes	

Before 1930, industries, and other facilities located along the Dead Creek, disposed of wastewater directly into the Creek. As industry grew, use of the creek for waste disposal declined. Sometime in the 1930's the portion of Dead Creek located on the W.G. Krummrich plant property was backfilled. In the early to mid 1930's Village of Sauget installed sewers that carried sanitary and industrial/commercial wastewaters to the Mississippi River. The Village sewer system consisted of a north trunk running along Monsanto Avenue and a 24-inch diameter south trunk, running just south of the W.G. Krummrich plant, which conveyed sewage from east to west toward the river. The sewer system also included an 18-inch sewer line that flowed from Route 3 eastward into Dead Creek. Sometime between 1939 and 1943, the Village incorporated Dead Creek to act as surge pond in the Village sewer system in order to relieve the sewers in times of high storm water volume flows. Thus, Dead Creek received wastewater discharges from various Sauget industries and residences until the sewer connection to the Creek was closed in 1990. In addition, after 1933, some individual sewer outfalls continued to discharge wastewater directly into Dead Creek.

At some point the Village of Sauget dredged Dead Creek between the W.G. Krummrich plant and Queeny Ave. Dredged material was deposited along the east bank of the creek or at Site I South. Such dredging may have occurred more than one time.

Trucking companies that hauled a wide variety of chemical products for various industries began to wash tank trucks in Sauget Area 1 beginning in the mid-1960s. Wash water was discharged directly into Dead Creek, the north trunk of the Sauget sewer, and into pits at Site L. Wash water discharges directly into Dead Creek were discontinued in about 1971. Discharges into Site L were discontinued sometime in the late 1970's. Discharges to the sewer from truck washing operations continued until at least the overflow at the north end of Dead Creek was closed in 1990.

Because of the wide variety of facilities that have been located in Sauget over the years, the Sauget Area 1 landfills and Dead Creek received a broad array of waste materials including solvents, chemical precursors and intermediates, petroleum hydrocarbons, aromatic amines, halogenated aromatic hydrocarbons, PAHs, PCBs, herbicides, pesticides acids, metals, and lubricating oil additives.

2.3 Sauget Area 1 Removal and Remedial Actions

2.3.1 Source Areas

2.3.1.1 Site G Removal Action

USEPA conducted a CERCLA removal action at Site G in 1995. This removal action involved the following activities: soil sampling inside and outside the fenced area; excavation of approximately 25 cubic yards of soils along the Queeny Avenue sidewalk and 30-50 cubic yards of soils from the Wiese parking lot; placement of these soils within the fenced area; excavation of a waste pile on the southwest corner of the site and placement of these wastes within the fenced area; solidification of two oil pits located on the northeast and central east portions of the site; installation of a shallow barrier wall on the eastern boundary of the site; and installation of a clean soil cover approximately 18-30 inches thick to cover the wastes inside the fenced area. The soil layer covered the entire fenced area except for the southeast and southwest corners and the central south portion of the fenced area (USEPA, 1995).

2.3.2 Dead Creek

2.3.2.1 Creek Segment A Sediment Remedial Action

This northernmost segment of Dead Creek originally consisted of two holding ponds that the Village of Sauget occasionally dredged. Sediments from that dredging were deposited on the east bank of Dead Creek or at Site I South.

Cerro Flow Products conducted a remedial action in Creek Segment A during 1990 and 1991 under an IEPA-approved plan. Approximately 27,500 tons of contaminated sediments were excavated from depths of 10 to 15 feet below grade and transported to separate non-hazardous, RCRA and TSCA permitted Waste Management disposal facilities, depending upon the nature of the excavated materials. After installation of an HDPE vapor barrier, Creek Segment A was backfilled and covered with crushed gravel.

Since Creek Segment A was remediated under an agreement with the IEPA, no additional remedial or removal actions are planned for this stretch of Dead Creek. Total cost for this remedial action was approximately $14M.

2.3.2.2 Creek Segment B, C, D, E and F Sediment Removal Action

USEPA issued a UAO on June 21, 1999 for a Time Critical Removal Action requiring replacement of Dead Creek culverts (USEPA, 1999b). Solutia and USEPA reached agreement that the UAO would be limited to the culverts at Cargill Road and the Terminal Railroad Embankment (Figure 1-4) and replacement of these culverts was completed in 2000 at a cost of approximately $750,000.

On May 31, 2000, USEPA modified the June 21, 1999 UAO to include removal of sediments in Creek Segment B, C, D and E in order to eliminate potential risks associated with flooding and to eliminate adverse ecological impacts (Figure 1-4). On August 29, 2001, the UAO was amended to include sediments in CS-F between Route 157 (Camp Jackson Road) and the confluence of Dead Creek with the Borrow Pit Lake. Sediments in the MESD lift station sump at Prairie du Pont Creek were included in the sediment removal action.

Solutia submitted a Time Critical Removal Action Work Plan to USEPA on June 30, 2000 and the plan was approved in April 2001. Work began in November 2000 with the installation of a sediment dewatering system in Dead Creek. Pursuant to USEPA's acceptance of the work plan and associated designs, a 50,000 cubic yard, RCRA and TSCA compliant, on-site containment cell was constructed in 2001 adjacent to the west bank of Creek Segment B immediately south of Site G and north of Judith Lane (Figure 1-4). USEPA approved sediment transfer to the completed containment cell in September 2001. Sediment transfer to the cell began shortly thereafter and excavation and transfer of all sediments in Creek Segments B, C, D and E and the channel portion of Creek Segment F to the containment cell was completed in February 2002. Solutia excavated a total of 46,000 cubic yards of sediments. The sediments were soft, unconsolidated materials, and they had much lower shear strength than the underlying natural creek bottom soils. No sediments remained in Creek Segments B, C, D, E, and F after completion of the sediment removal action in 2001-2002, thereby eliminating any potential adverse ecological impacts associated with sediments that were present prior to that time.

By agreement with USEPA, risk-based concentrations (RBCs) for protection of forage fish in Dead Creek were developed for residual concentrations of known bioaccumulative compounds (Total DDT, Dieldrin, gamma-Chlordane, Total PCBs, Dioxin TEQ and Mercury), and site-specific metals (Copper, Lead and Zinc), and Bis(2-ethylhexyl)phthalate. Following the sediment removal efforts within Creek Segments B, C, D, E and F in 2001-2002, the remaining creek bottom soils were sampled and compared against the RBCs.

2.3.2.3 Creek Segment B, D and F Soil Removal Action

By agreement with USEPA, risk-based concentrations (RBCs) for protection of forage fish in Dead Creek were developed for residual concentrations of known bioaccumulative compounds (Total DDT, Dieldrin, gamma-Chlordane, Total PCBs, Dioxin TEQ and Mercury), site-specific metals (Copper, Lead and Zinc),

and Bis(2-ethylhexyl)phthalate. Following the sediment removal efforts within Creek Segments B, C, D, E and F in 2001-2002, the remaining creek bottom soils were sampled and compared against the RBCs.

Creek bottom soil samples were collected on sampling transects located at approximately 100 ft. intervals in Creek Segment B, 150-ft. intervals in Creek Segments C, D and E and 400-ft. intervals in Creek Segment F (Figures 2-15, 2-16, 2-17, 2-18 and 2-19). Creek bottom soil samples were analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs, Dioxin and Metals (Solutia, 2008b). Sampling started in October 2001 and was completed in February 2002. Sample analysis and data validation were completed in May 2002.

Site-specific, risk-based concentrations (RBCs) for the protection of forage fish were exceeded in creek bottom soil at the following sampling transects (Figures 2-15, 2-16, 2-17, 2-18 and 2-19):

Creek Bottom Soil Sampling Locations with Concentrations Greater than Site-Specific, Risk-Based Concentrations

Creek Segment	Constituent	Transect
Creek Segment B	Bis(2-ethylhexyl)phthalate	T3
	Total PCBs	T0, T1, T3, T5, T6, T8, T11 and T17
	Dioxin TEQ	T0, T3, T16 and T17
	Mercury	T0, T1, T2, T3, T6, T9, T11, T12 and T17
	Zinc	T0, T4, T8, T11 and T12
Creek Segment C	Mercury	T6
Creek Segment D	Total PCBs	T6
	Dioxin TEQ	T6
	Mercury	T4
	Zinc	T1 and T2
Creek Segment E	Mercury	T2, T6, T8, T9, T10, T11, T12, T13, T14, T15, T16 and T17
	Zinc	T16
Creek Segment F	Dioxin TEQ	T5
	Mercury	T3, T5, T9 and T14
	Zinc	T5

On November 2, 2005, USEPA approved the October 28, 2005 "Sauget Area 1 Time Critical Sediment Removal Action, Revised Creek Bottom Soil Removal Work Plan, Creek Segments B, D and F" for excavation of creek bottom soils with residual concentrations greater than RBCs. Mercury removal was not considered necessary in Creek Segments C, D and E because public-health protection measures (dewatering to control mosquitoes) resulted in a habitat that was not conducive to a sustainable fish population.

A second work plan, "Sauget Area 1 Time Critical Sediment Removal Action, Soil and Sediment Removal Work Plan, Dead Creek Segment F and Borrow Pit Lake", was submitted to USEPA on December 8, 2005. USEPA approved the work plan on December 21, 2005.

Creek Segment B - RBCs were exceeded at Creek Segment B Transects T0, T1, T2, T3, T4, T5, T6, T8, T9, T11, T12, T16 and T17. Excavation was conducted at the following locations and depths in order to remove these creek bottom soils:

Summary of Creek Bottom Soil Excavation Locations and Depths in Creek Segment B

Excavation Location		Excavation Depth
Start	Finish	(Feet)
T0+00	T1+12.5	3.6
T1+87.5	T2+37.5	2.4
T2+37.5	T3+37.5	6.2
T4+87.5	T5+12.5	1.8
T5+87.5	T6+62.5	1.5
T7+87.5	T8+12.5	1.6
T8+87.5	T9+12.5	1.9
T10+87.5	T11+12.5	1.7
T11+87.5	T12+12.5	1.6
T15+50	T16+50	1.7
T16+87.5	T17+37.5	1.7

Excavation started at Queeny Avenue and worked to downstream to the Judith Lane. A total of 2,300 cubic yards of soil was removed between December 6 and 22, 2005. Confirmation soil sampling was performed to ensure the excavated areas no longer contained concentrations of constituents that exceeded their respective RBCs. Confirmation soil samples, collected at a depth of one foot below the base of each excavated area, demonstrated that concentrations of Total PCBs, Bis(2-ethylhexyl)phthalate, Mercury, Zinc, and Dioxin TEQ were below RBCs throughout the entire length of Creek Segment B (Solutia, 2008b). Creek bottom soil sampling transects remaining in Creek Segment B after completion of these excavations are shown on Figure 2-20.

Creek Segment D - After completion of sediment removal in Creek Segment D, creek bottom soils at sampling transects T1 and T2 had residual zinc concentrations greater than the 4,379 mg/kg RBC. Excavation of these soils was completed on January 11, 2006 after a total of 840.5 cubic yards of creek bottom soil was removed to an average depth of 1.6 ft. between T0+00 and T3+15. Excavated soil was transferred to the Judith Lane containment cell. Post-excavation soil sampling demonstrated that residual zinc concentrations in the excavation area were below the RBC (Solutia, 2008b).

Creek bottom soils in the southern portion of Creek Segment D (Sampling Transect T6), just upstream of Jerome Lane, contained residual concentrations of Total PCBs and Dioxin TEQ that exceeded their respective RBCs of 0.58 and 0.00051 mg/kg after completion of sediment removal. Excavation to an average depth of 1.3 ft. between stations T5+00 and T6+50 was completed on January 18, 2006. A total of 282.5 cubic yards of creek bottom soil was transferred to the Judith Lane containment cell. An additional 77 cubic yards was removed to cleanup cross contamination resulting from transfer soil from the excavation area at the south end of Creek Segment D to the truck loading area on the south side of Kinder Street. Post-excavation confirmatory sampling demonstrated that Total PCB concentrations were below the RBC of 0.58 mg/kg but the Dioxin TEQ RBC of 0.00051 mg/kg was exceeded at transect T5. An additional 180 cubic yards of material was excavated between CSD-T5 and CSD-T5+50 on March 8, 2006.

Creek bottom soil sampling transects remaining in Creek Segments C, D and E after completion of these excavations are shown on Figures 2-21, 2-22 and 2-23.

Creek Segment F - Dioxin TEQ and Zinc were detected in creek bottom soils at a concentration higher than their respective RBCs of 0.00051 mg/kg and 4,739 mg/kg at Sampling Transect T5 in Creek Segment F after completion of sediment removal in 2002. Mercury was also detected at concentrations higher than the 0.18 mg/kg RBC in creek bottom soils at sampling transects T3, T5, T9 and T14. Beta-BHC was present in creek bottom soils at transect T3 with a concentration greater than the 0.00222 mg/kg site-specific, soil to groundwater leaching criterion.

Excavation of creek bottom soils at sampling transects T3, T5, T9 and T14 started on January 25, 2006 and was completed on February 16, 2006. Approximately 1,328 cubic yards of wet soil were removed from Creek Segment F at the following excavation locations, mixed with a drying/solidifying agent ("Code L") and then transferred to the Judith Lane containment cell:

Summary of Creek Bottom Soil Excavation Locations, Depths and Targeted Constituents in Creek Segment F

Excavation Location		Excavation Depth	Targeted Constituents
Start	Finish	(Feet)	
T2+200	T3+200	1.1	beta-BHC and Mercury
T4+200	T5+200	1.2	Dixon TEQ, Mercury and Zinc
T8+200	T9+200	0.8	Mercury
T13+200	T15+00	1.0	Mercury

Confirmatory sampling in the bottom of the excavated areas demonstrated that residual concentrations of beta-BHC, Dioxin TEQ, Mercury and Zinc were below RBCs (Solutia, 2008). Creek bottom soil sampling transects remaining in Creek Segment F after completion of these excavations are shown on Figure 2-24.

2.3.2.4 Borrow Pit Lake Soil Removal Action

In May 2003, surface and subsurface sediment samples were collected from the Borrow Pit Lake to characterize the extent of Mercury concentrations greater than the 0.18 mg/kg RBC. Samples were collected from the center point of 60 grid cells; cells north of the confluence of Dead Creek were 300 ft. by 300 ft. in size and cells south of the confluence were 200 ft. by 200 ft (Figure 2.25). Surface sediment samples (0 to 6 inches) were collected from all 60 grid cells while subsurface sediment samples (6 to 18 inches) were collected from odd numbered cells. Mercury concentrations exceeded the RBC in Grid Cells 30, 31, 32, 33, 34, 36, 38, 49 and 50 (Solutia, 2008b).

Excavation of sediments from these grid cells was initiated on January 31, 2006 and completed on February 22, 2006. Grid Cells 30, 31, 32, 33, 34, 36 and 49 were excavated to an average depth of 0.6 ft. below ground surface while Grid Cells 38 and 50 were excavated to an average depth of 1.3 ft. and 0.9 ft. below ground surface, respectively. A total of 6,500 cubic yards of sediment were removed and transferred to the Judith Lane containment cell during this time period. Excavation of an additional 761 cubic yards of sediment was done in Grid Cells 38 and 49 between February 24 and 28, 2006 in order to achieve the RBC. The access ramp into Grid Cell 49 was removed in two steps; excavation of 40 cubic yards on March 7, 2006 and 14 cubic yards on March 24, 2006. In total, 7,315 cubic yards of sediment were excavated from the Borrow Pit Lake and transferred to the Judith Lane containment cell.

Confirmatory samples collected from the excavation areas demonstrated that residual concentrations of mercury were less than the site-specific, risk-based concentration of 0.18 mg/kg (Solutia, 2008b).

2.3.2.5 Creek Segment E Soil Removal Action

Creek bottom soil sampling after sediment removal revealed that Dieldrin concentrations at sampling transect T16 exceeded the 0.0153 mg/kg TACO Tier II site-specific criterion established for soil to groundwater leaching in Creek Segment E (Figure 2.18). In addition, Zinc concentrations exceeded the 4,379 mg/kg RBC. Removal of creek bottom soils at Creek Segment E Transect 16 was approved by USEPA on February 23, 2006 so that the residual concentration of Dieldrin in excess of the 0.0153 mg/kg site-specific TACO Tier II criteria for soil to groundwater leaching at this sampling location could be transferred to the Judith Lane containment cell.

Between October 31 and November 1, 2006, approximately 20 cubic yards of wet soil were excavated to a depth of 0.75 ft from 15 feet upstream to 15 feet downstream of T16 in order to remove Dieldrin concentrations above the soil to groundwater leaching criterion. Ground corncobs, a drying agent, were mixed with the excavated soils prior to transporting the excavated material to Waste Management's Milam Landfill in East St. Louis, Illinois. Confirmation sampling at 13 locations in the bottom of the excavation area (Solutia, 2008b) demonstrated that Dieldrin concentrations were non-detect at all locations with detection limits ranging from 0.00035 mg/kg to 0.00042 mg/kg. Given the complete removal of residual concentrations of Dieldrin from this excavation area, it is reasonable to assume that residual Zinc concentrations higher than the RBC were also removed.

2.3.2.6 Creek Segment B Liner

The Time-Critical Removal Action UAO requires installation of an armored, impermeable liner throughout the entire length of Creek Segment B. Approximately 1500 ft. of liner with the following section were installed in 2007 before the on-set of cold, wet weather prevented completion of the last 300 ft. upstream of Judith Lane.

Creek Segment B Armored Channel Liner Section

Top of Liner Section	**Riprap**	**3 to 6-Inch Crushed Limestone**
	Protective Layer	**Dense Grade Bedding Material**
	Geotextile	**Non-Woven Cushion Layer**
	Membrane Liner	**60 mil HDPE**
Bottom of Liner Section	**Geotextile**	**Non-Woven Cushion Layer**

Unusually wet weather in 2008 delayed resumption of liner installation until November but construction was completed by year end 2008.

2.4 Sauget Area 2 Groundwater Migration Control System

On October 3, 2002, an Administrative Order for Remedial Design and Interim Remedial Action associated with the Sauget Area 2 groundwater operable unit (OU) was sent by USEPA to a list of PRPs for the Sauget Area 2 Superfund Site. The Order (Docket No. V-W-'02-C-716) directed respondents to perform a remedial design for the Interim Groundwater Remedy, as described in the associated

Statement of Work (SOW) and the ROD dated September 30, 2002, and to implement the design by performing an interim remedial action. The Sauget Area 2 Groundwater Migration Control System (GMCS) was designed to abate adverse impacts on the Mississippi River resulting from the discharge of groundwater from Sauget Area 2 Sites O, Q North, R and S; potential adverse impacts from Sauget Area 1 Sites G, H, I and L; and potential adverse impacts from the southern portion of the W. G. Krummrich Facility and other industries in the Sauget area.

Solutia submitted the Pre-Final Design for the Sauget Area 2 Groundwater Migration Control System to USEPA on January 21, 2003. The GMCS Pre-Final Design consisted of a 3,300 ft. long, "U"-shaped, fully-penetrating barrier wall located downgradient of Sauget Area 2 Site R and three groundwater extraction wells on the upgradient side of the barrier wall (Figure 2-26). To facilitate completion of the GMCS, Solutia proceeded with construction of the groundwater extraction system at its own risk prior to USEPA design approval. Preparations for a treatability pilot test began in November 2002, and remedial action construction began in August 2003.

The middle of three extraction wells was installed in November 2002 to provide water for the treatability pilot test. Access for installation of a temporary 6-inch discharge pipeline was obtained and installation of this pipeline was completed in May 2003. Development of the center extraction well was also completed in May 2003 and the pilot treatability test was performed that month.

Installation of the two remaining extraction wells was started on May 20, 2003 and development of these wells was completed June 16, 2003. While well installation and development was underway, construction of the permanent 20-inch discharge pipeline was started on May 27, 2003. On June 3, 2003, construction of the electrical supply system and the instrumentation and control system were started.

Solutia submitted the Final Design for the Sauget Area 2 Groundwater Migration Control System to USEPA on July 3, 2003. Mobilization for barrier wall construction began on August 18, 2003 and pre-trenching along the barrier wall alignment was initiated on August 29, 2003. Slurry trench excavation started on September 4, 2003. USEPA approved the Sauget Area 2 Groundwater Migration Control System Final Design on October 16, 2003. Backfilling of the slurry trench was completed on November 8, 2004. Total construction and operation costs in 2003/2004 were an estimated $25.4M.

Pumping from the Sauget Area 2 Groundwater Migration Control System and discharge to the American Bottoms Regional Treatment Facility started on July 12, 2003 at the flow rate mandated by the POTW. On September 15, 2003, which was 65 days after start of pumping, American Bottoms Regional Treatment Facility agreed to increase the discharge rate to 1,000 gpm over an eight to nine day period with an additional increase to a total of 1,350 gpm 30 days thereafter if its system acclimated to the 1,000 gpm flow. American Bottoms Regional Treatment Facility also indicated that "the American Bottoms Plant should be able to accept up to 2,000 gpm". Discharge at 1,000 gpm was started on September 29, 2003 (79 days after start of pumping) and increased to 1,250 gpm on October 7, 2003 (87 days after start of pumping). Full discharge, to the "maximum necessary", was authorized by American Bottoms Regional Treatment Facility 14 days later on October 21, 2003 and was started on October 22, 2003. Total pumping capacity of the three GMCS extraction wells is 2,200 gpm.

The design basis for the GMCS was consistent with the Record of Decision (ROD) requirement to:

> **"address the release of contaminated groundwater in the vicinity of Site R and the associated risks … [by installing] three partially penetrating groundwater recovery wells capable of pumping a total of 303 to 724 gpm … [that] will be installed inside the "U"-shaped barrier wall to abate groundwater moving into the wall".**

To meet this ROD requirement, the Sauget Area 2 Groundwater Migration Control System is operated so that the amount of groundwater extracted from the "U"-shaped barrier wall is to equal the amount of groundwater that flows into it (i.e. $Q_{In} = Q_{Out}$). Darcy's Law, which is given below, governs the amount of groundwater discharging into the upgradient open end of the GMCS barrier wall:

$$Q = KIA$$

Where:

Q	**=**	**Groundwater Discharge into Barrier Wall**
K	**=**	**Aquifer Hydraulic Conductivity (1E-1 cm/sec or 285 ft/day)**
I	**=**	**Groundwater Gradient (Average of PZ-5 U/D and PZ-8 U/D)**
A	**=**	**Groundwater Discharge Area (209,522 square feet)**

Hydraulic conductivity was established using regional information on hydraulic characteristics of the American Bottoms aquifer. Groundwater gradient is determined using dynamic, real-time groundwater level measurements from piezometer pairs PZ-5 U/D and PZ-8 U/D. Groundwater discharge area is determined by multiplying the actual seepage face length of 2,095.22 feet, which is the distance between the north and south wings at the open end of the "U"-shaped barrier wall, by the measured aquifer saturated thickness.

3.0 REMEDIAL INVESTIGATION (1999 to 2000)

3.1 Remedial Investigation Objectives and Approach

The January 21, 1999 AOC Scope of Work identified the additional Site characterization data required to define and evaluate removal/remedial action alternatives for Sauget Area 1. A Field Sampling Plan (FSP) was prepared by O'Brien & Gere Engineers, Inc. (OBG), on behalf of Solutia Inc., to implement the SSP. The FSP was designed to achieve the objectives of the SSP and the AOC as described in Section 1.0 of this report. OBG was also responsible for the implementation of the FSP, which commenced in September 1999 and was completed in April 2000. After completing field work in 2Q00, OBG prepared a Data Report (O'Brien & Gere, 2001) and a Field Sampling Report (O'Brien & Gere, 2000b). An outline of the work undertaken in 1999-2000 is presented below:

Area of Investigation	Investigation Objective	Investigation Approach
Source Areas	Boundary Confirmation	● Boundary Delineation Trenches ● Soil Gas Surveys
	Buried Drum and Tank Identification	● Magnetometer Survey ● Anomaly Trenches
	Soil and Waste Characterization	● Surface Soil Sampling ● Subsurface Soil and Waste Sampling
	Soil, Waste and Leachate Treatability	● Thermal Desorption Treatability Study ● Incineration Treatability Study ● Leachate Treatability Study
	Vapor/Dust Entrainment	● Upwind Ambient Air Sampling ● Downwind Ambient Air Sampling
	Groundwater Characterization	● Upgradient Groundwater Sampling ● SHU Groundwater Sampling ● MHU/DHU Groundwater Sampling ● Alluvial Aquifer/Bedrock Interface Groundwater Sampling
Groundwater	Aquifer Properties Determination	● Grain Size Analysis ● Hydraulic Conductivity (Slug) Tests
	Groundwater Flow Direction Determination	● Groundwater Level Piezometer Installation and Measurement
	Groundwater Migration Evaluation	● Downgradient Groundwater Sampling
	Residential Area Groundwater Quality Evaluation	● SHU Time-Series Sampling ● Domestic Well Sampling
Floodplain Soils	Overbank Flooding and Wind-Blown Dust Evaluation	● Background Soil Sampling ● Surface and Subsurface Floodplain Soil Sampling

Seven hundred forty-eight media samples and 328 QA/QC samples were collected during the 1999 to 2000 Remedial Investigation resulting in 6,635 chemical and physical property analyses (Table 3-1). Quality assurance and quality control (QA/QC) samples collected during the sampling programs generally consisted of the following:

- One duplicate per 10, or fraction of 10, environmental samples collected;
- One matrix spike/matrix spike duplicate (MS/MSD) per 20, or fraction of 20, environmental samples collected or one MS/MSD every three working days, whichever was sooner;
- One environmental blank (or field blank) per 10, or fraction of 10, environmental samples collected unless dedicated or disposable sampling equipment was used to collect samples; and
- One trip blank per sample cooler containing environmental samples for VOC analysis.

Data collected pursuant to the FSP and field changes to the FSP were found to be inadequate for proper site characterization in some instances. In particular, Toxicity Characteristic Leaching Potential (TCLP) tests performed on composite waste samples were not adequate to characterize the nature and extent of contamination in the disposal areas. The TCLP analyte list does not include many of the contaminants that can be expected at the Site. Compositing the samples resulted in the inability to identify the vertical extent of potential hot spots within the fill areas. TCLP results cannot be evaluated against appropriate standards for protection of human health or groundwater quality, resulting in the inability to assess the magnitude of potential source impacts. In addition, no testing was performed on samples of solid or liquid wastes that were exposed during test trenching and waste boring tasks. In those instances where the data collected during the 1999/2000 Remedial Investigation were inadequate, data from previous investigations summarized in the 1998 Ecology & Environment report were used to more fully characterize site conditions.

Data collection activities and results are described in the following sections:

- **Section 3.2 Source Area Investigation**

  3.2.1 Source Area Boundary Investigation
  3.2.2 Source Area Buried Drum and Tank Investigation
  3.2.3 Source Area Soil and Waste Investigation
  3.2.4 Source Area Soil, Waste and Leachate Treatability Studies
  3.2.5 Source Area Ambient Air Investigation
  3.2.6 Source Area Groundwater Investigation

- **Section 3.3 Downgradient Groundwater Investigation**

  3.3.1 Downgradient Groundwater Investigation Sampling
  3.3.2 Downgradient Groundwater Investigation Results

- **Section 3.4 Surface Water and Sediment Investigation**

  3.4.1 Surface Water Investigation
  3.4.2 Sediment Investigation

- **Section 3.5 Soil Investigation**

  3.5.1 Background Soil Investigation
  3.5.2 Floodplain Soil Investigation

3.2 Source Area Investigation

3.2.1 Source Area Boundary Investigation

3.2.1.1 Boundary Delineation Trenches

Prior to performing any environmental sampling at the source areas, several tasks were performed to ensure that the boundaries of these areas were adequately delineated. This work included viewing historical aerial photographs, performing elevation surveys at the sites, reviewing topographic maps, and installing boundary test trenches. Details and supporting information concerning these tasks are included in Volume 1 of the Field Sampling Report (Non-measurement Data Acquisition).

Boundary confirmation trench locations at Sites G, H, I, L and N are shown on Figures 3-1, 3-2, 3-3, 3-4 and 3-5, respectively. Installation of these test trenches confirmed the source area boundaries identified through historical aerial photograph analysis. The original plan was to excavate a trench on each side of each fill area (four trenches per site). However, due to access limitations, the number of trenches varied per site. Additionally, eight test borings were substituted for test trenches on the west border of Site G (i.e., at the Wiese property) where access was an issue. In all, a total of 22 trenches were excavated at Sites G, H, I, L, and N and eight test borings were installed at Site G at the Wiese property to confirm disposal area boundaries.

For additional information pertaining to the trenching operation and copies of field logs, records, and color digital photographs for the boundary trenches at Sites G, H, I, L, and N, refer to the Field Sampling Report (Volume 1, Section 3.1). For copies of field records pertaining to the eight test borings at the Wiese property at Site G, refer to the Field Sampling Report (Volume 8, Appendix D, Record Book #3, pp. 155-167).

3.2.1.2 Soil Gas Surveys

Soil gas survey were conducted at Sites G, H, I, L, and N using a shallow soil probe to collect samples from a depth of five feet sample below ground surface. Collected vapors were analyzed on site for Total VOCs. Soil gas samples were collected at an approximate frequency of one sample per acre. Each disposal area was divided into a 200 ft. by 200 ft. grid and soil gas samples were collected at the approximate center point of the grid cell using the following grids:

Site	Sampling Grid Size (Feet)	Grid Cell Size (Feet)	No. of Soil Gas Samples
G	400 x 600	200 x 200	6
H	400 x 800	200 x 200	8
I	400 x 1200	200 x 200	12
L	200 x 200	200 x 200	1
N	300 x 300	200 x 200	2
		Total Number of Soil Gas Samples	29

When detectable concentrations of VOCs were found in a sample, the soil gas survey was extended beyond the grid cell boundaries. A total of 36 additional soil gas samples were collected perpendicular to the Fill Area grid cells (see table below). Soil gas samples were collected at 100 ft. intervals (0, 100 and 200 ft. away from the edge of the grid cell) along four 200 ft.-long transects; one sampling transect located perpendicular to each side of the grid cell.

Site	No. of Soil Gas Sampling Transects	No. of Soil Gas Samples
G	2	6
H	4	10
I	3	10
L	4	10
N	0	0
	Total Number of Samples	36

Soil gas sample locations at Sites G, H, I, L and N are shown on Figures 3-1, 3-2, 3-3, 3-4 and 3-5, respectively. Field logs, notes, and graphs developed during the soil gas survey program are provided in the Field Sampling Report (Volume 1).

3.2.1.3 Source Area Boundary Investigation Results

All four boundaries of Sites G, H, L, and N identified by air photo analysis were confirmed by soil gas surveys (VOCs detected inside the boundaries but not outside) and by boundary trenching or Site G West boundary delineation borings (waste observed inside the boundaries but not outside). The notes from the boundary test trenching can be found in Volumes 8 and 9 of the Field Sampling Report (O'Brien & Gere, 2000) and in Attachment D of the "Evaluation of Buried Drums" (GSI, 2006).

The eastern portion of Site G is within a fenced area and is covered with vegetation. In previous Sauget Area 1 reports, the disposal area boundary shown on site maps coincides with the fenced area. However, source area boundary investigation results (Figure 3-1) and review of historical aerial photographs (Figures 2-28, 2-29, and 2-30) indicate that waste and fill materials are not present within the southern portion of the fenced area but are present west of the fenced portion of Site G beneath the Wiese parking lot and building. The portion of Site G that extends onto the Wiese property is labeled Site G West.

Site I was considered to be a single site when the source area boundary investigation was performed in 1999-2000. However, Site I has since been divided into two areas, Site I South and Site I North, based on review of historical aerial photographs and observations during interior test trenching, as described in Section 3.2.2.3. The boundary between Site I South and Site I North is visible on historical aerial photographs dated 1950, 1955, and 1962 (see Figures 2-28, 2-29, and 2-30). Site I North contains inert fill material, rather than waste.

The boundaries of Site I South are defined by general knowledge of the fill extent to the south (bounded by Queeny Road), to the west (bounded by the former location of Dead Creek), and to the north (bounded by Site I North, as shown on the historical aerial photos). The eastern boundary of Site I South was identified based on a trench excavated during the source area boundary investigation (see Boundary Trench 2 on Figure 3-3),

The boundaries of Site I North are defined by general knowledge of the fill extent to the south (bounded by Site I South as shown on the historical aerial photos), to the west (bounded by the former location of Dead Creek), and to the east (bounded by Falling Springs Road). The northern boundary of Site I North was investigated during the source area boundary investigation (see Boundary Trench 1 on Figure 3-3),

3.2.2 Source Area Buried Drum and Tank Investigation

3.2.2.1 Magnetometer Survey

Magnetometer surveys were conducted at Sites G, H, I, L, and N to identify anomalies indicative of drum disposal or buried tanks. The following tasks were performed for each survey:

- Magnetometer measurements were made at locations determined by superimposing an approximate 50 ft. by 50 ft. grid on the disposal areas. The magnetometer survey was conducted with a Geometrics 856 Total Field Magnetometer. Operation of equipment and calibration of instruments were in accordance with the manufacturer's recommended field procedure and application manual.
- Magnetometer measurement points were located in the field using known points such as buildings, roads, or other fixed features or by using Global Positioning System (GPS).

The total number of measurements completed for each Site is presented below:

Site	Magnetometer Measurements
G	77
H	106
I	255
L	19
N	86
Total Number of Magnetometer Measurements	543

After the magnetometer surveys were completed, maps were developed that showed the distribution of

magnetic field strength over the five sites. These maps were compared with the observed field conditions (including the location of known interfering objects such as vehicles, overhead power lines, and surface debris). Magnetic anomalies that could not be explained by observed site conditions were presumed to be the result of buried metallic subsurface material (drums, tanks, debris, etc.). These data were used to strategically place the anomaly confirmation trenches discussed in the next section. Additional information pertaining to the magnetometer survey, equipment used, and procedures are in the Field Sampling Report (Volume 1, Section 3.4).

3.2.2.2 Anomaly Trenches

To evaluate whether the anomalies detected during the magnetometer surveys were associated with buried drums or tanks, test trenches were dug in the interior of each disposal area at anomalies that coincided with the following findings:

- Elevated groundwater concentrations as identified by the 1998 Ecology and Environment Data Report;
- Total VOC detections from the soil gas survey;
- Magnetic anomalies identified during the 1988 Ecology and Environment geophysical survey; and
- Areas of drum or tank disposal identified during historical aerial photograph analysis of disposal area boundaries.

One anomaly trench each was excavated in the interior of Sites G, H, L, and N and two trenches were excavated in the interior of Site I. One of the Site I anomaly trenches falls within Site I South and the other is at Site I North. Anomaly trenching was conducted as described below:

- Anomaly trenches were advanced until evidence as to the source of the anomaly was located.
- Spoils from the trenching operation were placed on polyethylene sheeting, and the stockpile was sloped to allow any excavated liquids to drain back to the trench.
- At the completion of the excavation, the spoils were returned to the excavation and the site was restored.

Anomaly trench locations for Sites G, H, I L and N are shown on Figures 3-1, 3-2, 3-3, 3-4 and 3-5, respectively. For additional information pertaining to the trenching operation and copies of field logs, records, and color digital photographs, refer to the Field Sampling Report (Volume 1, Section 3.5). Each of the source areas was restored to its original condition at the conclusion of trenching operations.

3.2.2.3 Source Area Buried Drum and Tank Investigation Results

Interior test trenches were excavated at each of the source areas to confirm the presence or absence of buried metallic containers (tanks or drums). One interior trench was excavated at Sites G, H, L, and N and two trenches were excavated at Site I, one located at Site I South and one at Site I North, to determine whether or not magnetic highs detected during the magnetometer survey were caused by buried tanks and/or drums. The notes from the interior test trenching can be found in Volumes 8 and 9 of

the Field Sampling Report (O'Brien & Gere, 2000) and in Attachment D of the "Evaluation of Buried Drums" (GSI, 2006).

Most of the waste encountered during the interior test trenching consisted of glass containers, wood and metal debris, paper documentation (bill of lading, invoices, brochures, etc.) and miscellaneous trash. Uncontained solid and liquid wastes were also uncovered during trenching. Although the investigation targeted potential hot spots, no intact buried tanks or drum caches were located. However, test trenching exposed partially or fully-crushed drums and drum fragments in each of the disposal areas with several of the drums still containing waste products.

None of the drums that were located during the drum and tank identification study were intact except for one intact drum that was located during a fill area boundary confirmation trench at Site G, over-packed and removed. The drums in the interior anomaly trenches were either crushed or rusted and were not capable of holding liquid contents. Solid contents were noted in some of the buried drums.

At Site G, a damaged drum that was exhumed smoked upon exposure to the atmosphere, a sign of pyrophoric material. This smoking drum was removed and then placed back into the trench at 17 feet bgs, the depth to groundwater. Several other damaged drums at Site G had solid media, described as a shiny black tar-like substance, in them. Another drum had a bright orange solid material. A yellowish, green substance was identified covering rocks at the groundwater interface at the bottom of the anomaly trench and a green oily substance was reported to be floating on the groundwater table.

The only evidence of drums in the trenches at Site H was partial drums and drum fragments. Throughout substantive portions of the interior test trench at Site H, contaminated waste soil was identified and described as very dark, uniform, black, fine, and silty.

The first four damaged drums found in the anomaly trench at Site I South were co-located. Some solid yellowish material was reported in the drum(s). The third damaged drum had a white solid near it. The anomaly trench at Site I North encountered bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, other metal scrap, and wood. No evidence of drums was observed in the anomaly trench at Site I North.

Damaged drums in the Site L anomaly trench were described as containing a black and powdery material, a black semi-solid material, a black tar-like material that leaked from some drums, a tannish-brown material that leaked from a drum, and a whitish material in and around drums. A note in the FSR stated that "additional drums were likely in the southern area of the trench" though the test trenching was terminated.

At Site N several damaged drums in the anomaly trench were described as containing a pasty, whitish material. The PID readings for the white material were between 800 and 900 ppm, which were the highest readings for all exhumed waste media from Site N. The pasty whitish material could have been painting waste, which would be consistent with the former use of Site N for disposal of construction debris. Site N is located on property formerly owned by the H. Hall Construction Company.

Section 5.2.3.1 of this report provides a detailed inventory of the buried drums found at Sauget Area 1

during boundary and interior trenching in 1999-2000 and during supplemental investigations performed by Tetra Tech in 2002-2003.

3.2.3 Source Area Soil and Waste Investigation

3.2.3.1 Surface Soil Sampling

A discrete surface soil sample, from 0 to 0.5 feet, was collected at the location of each of the four subsurface soil and waste characterization borings installed at Sites G, H, I, L and N prior to installation of the borings (Figures 3-1, 3-2, 3-3, 3-4 and 3-5, respectively). Samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxins and metals. Nomenclature used for these analyses was as follows: WASTE-G-B1-0-0.5FT. The “WASTE” nomenclature identifies the sample as a fill area sample; “G” identifies the fill area that the sample was collected from; “B1” identifies the boring number (four sample borings per fill area); and “0-0.5 FT” identifies the sample interval (0-0.5 feet for all discrete surface samples).

Analytical data summary statistics (frequency of detection and minimum, average and maximum constituent concentrations) for surface soils at Sites G, H, I South, I North, L and N are presented in Tables 3-2, 3-3, 3-4A, 3-4B, 3-5 and 3-6, respectively.

3.2.3.2 Subsurface Soil and Waste Sampling

The following tasks were performed to characterize subsurface soils and wastes within Sites G, H, I, L and N:

- Five soil borings were advanced at each of Sites G, H, I, L, and N using conventional hollow-stem auger drilling methods.
- Continuous soil samples were collected from the ground surface to approximately two feet below the bottom of the fill material in four of the five borings per site. These borings are referred to as "sample borings" in this document and in the Field Sampling Report.
- In one of five soil borings per site, native soil below the fill material was field screened for VOCs using a photoionization detector (PID). This screening was conducted to a depth of 10 to 15 feet below the fill material. These borings are referred to as "screen borings" in this document and in the Field Sampling Report.
- One composite waste sample was collected at each "sample boring" location and analyzed for waste characteristics (ignitability, corrosivity, reactivity and TCLP). Visual observations (discoloration, presence of foreign objects, etc.) and PID readings were used to identify whether waste was present in a continuous boring sample.

Boring locations are shown on Figures 3-1, 3-2, 3-3, 3-4 and 3-5 for Sites G, H, I, L and N, respectively. A copy of the boring logs, field notes, color digital photographs, and more detailed descriptions of work performed in the field are presented in the Field Sampling Report (Volume 1, Section 3.3).

Samples were analyzed for waste characteristics - ignitability, corrosivity, reactivity and TCLP. Nomenclature used for the waste composite samples was as follows: WASTE-G-B1-COMP. This nomenclature is the same as for the discrete surface samples except the letters “COMP” are inserted

instead of a sampling depth. The label "COMP" identifies that the sample was composited over the boring profile. Samples analyzed for VOCs were not composited due the potential loss of volatile organics. In these cases, the sample interval replaced COMP on the sample number. For samples that were not composited, the sample interval with the highest PID reading was submitted for analysis. Summary statistics for subsurface soil and waste characterization analyses of samples collected from Sites G, H, I, L and N are presented in Tables 3-7 to 3-11.

3.2.3.3 Source Area Soil and Waste Investigation Results

Source Area Waste Volume - Investigations completed during the SSP included the review of historical aerial photographs, performance of soil-gas and magnetometer surveys, and installation of test trenches and borings to delineate the disposal area boundaries. Estimated volume for each disposal area was based upon the surface area and a conservative estimate of the average waste depth determined during the SSP. Average depths were determined by reviewing the disposal area boring logs. Borings that encountered little or no waste were not used in determining average waste depths. Surface areas were determined by scaling the footprint depicted on the drawings. Volumes were then estimated by multiplying the scaled area by the average waste depth, and converting to cubic yards, as shown in the following table.

Estimated Sauget Area 1 Disposal Area Waste Volumes

Disposal Area	Disposal Area Areal Extent (Acres)	Average Estimated Waste Thickness (Feet)	Estimated Waste Volume (Cubic Yards)
Site G + Site G West	3.32	20	107,000
Site H	4.87	20	157,000
Site I South	8.79	25	355,000
Site I North	5.87	6	56,800
Site L	1.08	10	17,500
Site N	3.84	16	103,000
			796,000

Collectively, Sites G, H, I South, I North, L and N contain an estimated 796,000 cubic yards of soil and waste. Site I South is the largest disposal area with an estimated waste volume of 355,000 cubic yards followed by Site H with 157,000 cubic yards and Site G plus G West with 107,000 cubic yards. All three of these sites were formerly used for industrial/municipal waste disposal. Estimated waste volume in Site L is much smaller, 17,500 cubic yards. Site L is a backfilled wastewater impoundment, Site N contains an estimated volume of 103,000 cubic yards, and Site I North contains an estimated volume of 56,800 cubic yards. Site N is an inactive construction debris disposal area on the former H.H. Hall Construction Company property, and Site I North is a former fill area that contains broken concrete, bricks, scrap metal, wood, and soil.

Source Area Waste Characterization - Disposal area waste characterization investigations completed during the SSP included installation of interior test trenches, performance of soil and waste borings and collection of subsoil and waste characterization samples. Waste materials encountered at Sites G, H, I South, L and N included crushed or partially-crushed drums, drum fragments and remnants, uncontained solid and liquid wastes, wood, glass, paper, construction debris and miscellaneous trash. The fill material

encountered at Site I North included bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, other metal scrap, and wood. No evidence of drums was observed in the anomaly trench at Site I North. Although the SSP investigation targeted potential hot spots in each disposal area, no significant residual wastes were identified during these investigations. Crushed or partially crushed drums and drum remnants were discovered at each site. However, only one intact drum was found (Site G). No surface leachate breakouts or discharges were observed at any of the disposal areas.

Corrosivity, ignitability and reactivity for the waste samples collected at Sites G, H, I, L and N are summarized below:

Summary of Maximum Detected Corrosivity, Ignitability and Reactivity Data from Site G, H, I, L and N Waste Samples

Waste Characteristic	Site G	Site H	Site I	Site L	Site N
Corrosivity, pH (S.U.)	3.16 to 9.28	6.02 to 9.64	7.19 to 11.05	7.48 to 9.85	7.28 to 9.80
Ignitability, Flash Point (Degrees)	NIVO	NIVO	NIVO	NIVO	NIVO
Total Releasable Cyanide, mg HCN	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Total Cyanide, mg/l	3.6	ND (0.67)	1.1	ND (0.64)	ND (0.58)
Total Releasable Sulfide, mg H_2S	ND (50)	730	ND (50)	480	ND (50)

Notes:
1) NIVO = No apparent ignition of vapor over sample was observed
2) ND = Not detected at the detection limit within parentheses
3) Source: O'Brien & Gere, 2001

Site G Waste Characterization - Test trenching at Site G revealed the presence of crushed or partially-crushed drums and drum fragments, some containing waste materials. Material within one drum generated smoke when it was uncovered, indicating the presence of pyrophoric materials. Other uncontained solid wastes were encountered during trenching. A yellowish-green material was observed covering some rocks at the water table. One intact drum was found, which was over-packed and disposed of off-Site. Site G subsoil and waste borings encountered oily wastes and an unidentified yellow substance. Maximum PID readings ranged up to 1367 ppm for materials recovered in the waste borings. TCLP analyses indicate that materials encountered in Site G can be classified as hazardous waste exhibiting the characteristic of toxicity.

Summary statistics for historical Site G subsurface soil and waste analytical data are included in Table 3-12 and summary statistics for constituents detected more than once in the historical data are summarized below:

Maximum, Minimum and Mean Concentrations of Constituents Detected More Than Once In Site G Wastes

Detected Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Acetone	11	0.032	5.66	15.4
	Benzene	6	0.003	15.3	45.3
	2-Butanone (MIBK)	11	0.022	7.9	17.8
	Chlorobenzene	8	0.107	108	538
	Dichloromethane	11	0.003	1.63	7.11
	Ethylbenzene	6	0.164	6.80	16.9
	4-Methy-2-Pentanone (MIBK)	4	0.635	2.99	6.00

	Tetrachloroethene	8	0.009	18.8	58.6
	Toluene	6	0.406	48.5	118
	Trichloroethylene	4	0.762	1.94	3.85
	Xylenes, Total	6	0.092	16.4	41.5
SVOCs	4-Chloroaniline	3	5.97	81.6	231
	Dibenzofuran	2	4.30	19.1	33.8
	1,4-Dichlorobenzene	2	2.38	2.97	3.56
	2,4-Dichlorophenol	3	14.1	64.5	141
	Di-n-butylphthalate	4	0.279	8.92	17.6
	Hexachlorobenzene	2	27.9	34.3	40.6
	2-Methylnapthalene	4	8.71	18.4	37.1
	Napthalene	7	4.83	893	5,430
	Phenanthrene	4	12.9	28.4	51.4
	Pyrene	2	7.56	13.3	19.1
	1,2,4-Trichlorobenzene	4	7.87	61.6	120
Pesticides	4,4'-DDE	4	3.07	48.8	135
Herbicides	Pentachlorophenol	5	23.5	1,320	4,770
PCBs	Total PCBs	7	13.0	90.8	4,430
Metals	Copper	20	8.0	173	2,220
	Lead	18	3.0	241	3,120
	Nickel	19	8.0	51.3	399
	Zinc 19	27.0	475	4,260	

Notes: 1) Target metals reported in this table; all detected metals reported in Table 3-12
2) Historical data from Ecology and Environment, 1988 and 1998

The greatest concentrations in subsurface soils at Site G were detected at depths between 10 to 25 feet below ground surface (bgs).

Site H Waste Characterization - As discussed above, anomaly trenching in Site H revealed the presence of crushed or partially-crushed drums and drum fragments, at least one of which contained waste solid material. Other materials encountered included brick, wood, plastic and other refuse. A variety of materials were encountered in Site H borings, but no specific uncontained waste substances were described in the field notes and logs. Waste materials found in six of the eight borings consisted of multicolored sludges, solids, and oily refuse underlying the fill. Maximum PID readings ranged up to 2000 ppm. Results from TCLP analyses indicate that materials encountered in Site H can be classified as hazardous waste exhibiting the characteristic of toxicity.

Summary statistics for historical Site H subsurface soil and waste analytical data are included in Table 3-13 and summary statistics for constituents detected more than once in the historical data are summarized below:

Maximum, Minimum and Mean Concentrations of Constituents Detected More Than Once In Site H Wastes

Detected Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Acetone	11	0.015	4.85	21.1
	Benzene	7	0.004	15.2	61.3
	2-Butanone (MIBK)	5	0.033	12.6	27.2
	Chlorobenzene	6	0.024	97.6	452
	Chloroform	2	0.053	0.123	0.192
	Dichloromethane	11	0.006	6.34	55.6

	Ethylbenzene	3	4.38	9.06	12.8
	4-Methy-2-Pentanone (MIBK)	4	0.009	2.33	7.85
	Toluene	5	0.145	22.8	76.5
	Xylenes, Total	3	1.51	14.8	23.6
SVOCs	Acenaphthylene	3	0.130	126	378
	Anthracene	4	0.129	170	680
	Benzo(a)anthracene	3	0.554	126	378
	Benzo(a)pyrene	2	0.780	136	272
	Benzo(b)fluoranthene	3	0.442	71.0	211
	Benzo(g,h,i)perylene	2	0.449	56.9	113
	Benzoic Acid	2	1.41	2.02	2.64
	Bis(2-ethylhexyl)phthalate	4	0.251	0.428	0.614
	Chrysene	3	0.750	112	332
	Dibenzofuran	4	0.143	15.5	60.4
	1,2-Dichlorobenzene	3	0.548	6,480	19,400
	1,3-Dichlorobenzene	3	7.65	87.6	242
	1,4-Dichlorobenzene	5	0.062	6,320	30,600
	2,4-Dichlorophenol	5	0.167	150	742
	Di-n-butylphthalate	8	0.343	4.03	25.7
	Fluoranthene	4	0.145	333	1,330
	Fluorene	3	0.247	161	483
	2-Methylnapthalene	3	0.156	116	347
	Napthalene	4	0.044	567	2,270
	Phenanthrene	6	0.047	353	2,110
	Pyrene	3	0.935	222	664
	1,2,4-Trichlorobenzene	6	0.061	1,330	7,580
	2,4,6-Trichlorophenol	2	0.179	307	613
Pesticides	4,4'-DDE	2	0.504	0.642	0.780
	4,4'-DDT	2	0.780	0.852	0.923
PCBs	Total PCBs	7	0.251	2,730	18,000
Metals	Copper	8	3.0	536	2,440
	Lead	2	4.0	577	1,150
	Nickel	10	4.0	1,770	15,100
	Zinc	11	8.0	4,740	39,500

Notes: 1) Target metals reported in this table; all detected metals reported in Table 3-13
2) Historical data from Ecology and Environment, 1988 and 1998

Based upon results of previous investigations (Ecology and Environment, 1988 and 1998), contaminant concentrations were generally higher in the central and northern portions of Site H compared to the southern portion. Highest concentrations were generally from samples collected from 10 to 25 feet bgs.

Site I South Waste Characterization - Crushed or partially crushed drums and drum fragments, some containing waste materials, were found in the Site I South anomaly trench. Material within some of the drums was described as a solid, yellowish material. Other uncontained solid wastes were encountered during trenching, including contents leaking out of broken drums. Black soil, bricks, wood, and metal scraps were also encountered in the anomaly trenches. Materials encountered in Site I South borings included uncontained solid wastes described as white and metallic shiny substances. Maximum PID readings ranged up to 2000 ppm for materials recovered in the waste borings. TCLP analyses indicate that materials encountered in Site I South can be classified as hazardous waste exhibiting the characteristic of toxicity.

Summary statistics for historical Site I South subsurface soil and waste analytical data are included in Table 3-14 and summary statistics for constituents detected more than once in the historical data are summarized below:

Maximum, Minimum and Mean Concentrations of Constituents Detected More Than Once In Site I South Wastes

Detected Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Acetone	16	0.549	6.66	16.9
	Benzene	10	0.023	3.81	24.1
	2-Butanone (MIBK)	15	0.012	6.86	16.9
	Chlorobenzene	12	0.010	34.7	127
	Dichloromethane	16	0.007	1.52	6.77
	Ethylbenzene	10	0.096	4.65	15.1
	4-Methy-2-Pentanone (MIBK)	2	0.001	2.08	4.16
	Tetrachloroethene	5	0.612	2.57	5.27
	Toluene	11	0.048	11.3	77.9
	1,1,1-Trichloroethane	2	0.432	1.06	1.69
	Trichloroethylene	2	0.648	2.23	3.81
	Xylenes, Total	10	0.008	4.96	19.2
SVOCs	Anthracene	2	23.1	113	203
	Benzo(a)anthracene	2	2.47	4.59	6.72
	Benzo(b)fluoranthene	2	1.51	17.0	32.4
	Bis(2-ethylhexyl)phthalate	7	2.38	34.9	131
	Chrysene	2	3.97	4.78	5.59
	1,2-Dichlorobenzene	6	2.68	82.9	324
	1,3-Dichlorobenzene	2	18.9	44.5	70.1
	1,4-Dichlorobenzene	8	1.60	255	1,840
	Di-n-butylphthalate	8	0.134	37.1	203
	Fluoranthene	3	8.91	76.9	203
	Fluorene	3	3.08	14.9	35.4
	Hexachlorobenzene	7	32.3	258	1,270
	2-Methylnapthalene	7	1.70	38.5	169
	Napthalene	7	1.10	98.1	515
	N-Nitrosodiphenylamine	2	45.9	73.1	100
	Phenanthrene	5	1.32	34.3	102
	Phenol	2	15.2	21.1	27.0
	Pyrene	4	2.21	19.6	49.3
	1,2,4-Trichlorobenzene	8	6.71	1,400	8,260
Pesticides	4,4'-DDD	2	6.64	18.2	29.7
PCBs	Total PCBs	5	20.4	181	343
Metals	Copper	8	23.0	298	630
	Lead	15	3.0	2,060	23,300
	Nickel	12	0.9	335	2,410
	Zinc	16	13.0	624	6,330

Notes: 1) Target metals reported in this table; all detected metals reported in Table 3-14
2) Historical data from Ecology and Environment, 1988 and 1998

Waste material was noted in several borings in Site I South at depths below the water table and consisted of oily sand, clay, wood and cinders mixed with refuse. Contamination was detected at depths extending to 38 feet bgs.

Site I North Waste Characterization – Bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, other metal scrap, and wood were found in the Site I North anomaly trench. Maximum PID readings ranged up to 21 ppm for materials recovered in the boring B3 and 1.1 ppm for fill material in boring B4. Concrete pieces were observed in borings B3 and B4 at maximum depths of 2 ft and 5 ft bgs, respectively.

One soil boring was drilled at Site I North during the historical investigation (Ecology and Environment, 1988 and 1998). This boring was at location EE-13 and was drilled to a depth of 27,5 ft bgs. The boring log indicates that there was four feet of fill consisting of sandy clay and a mixture of crushed limestone, gravel, and concrete fragments. No soil samples from this historical boring were submitted for laboratory analysis (Ecology and Environment, 1988).

Site L Waste Characterization - Anomaly trenching in Site L revealed the presence of crushed or partially-crushed drums and drum fragments, some containing waste materials. A black tar-like substance was noted to be leaking from several drums. Other uncontained solid wastes were encountered during trenching. Other materials encountered in Site L trenching include bricks, rags, small pieces of concrete, and various other refuse. Discovery of crushed or partially crushed drums and the likelihood of more drums noted by the O'Brien and Gere in field notes, indicates that Site L was used for more than disposal of wash water from truck-cleaning operations. A variety of fill materials were encountered in Site L borings, but no specific uncontained waste substances were described in the field notes and logs. Maximum PID readings ranged up to 728 ppm for materials recovered in the waste borings. TCLP analyses did not indicate that materials encountered in Site L exhibited the characteristic of toxicity.

Summary statistics for historical Site L subsurface soil and waste analytical data are included in Table 3-15 and summary statistics for constituents detected more than once in the historical data are summarized below:

Maximum, Minimum and Mean Concentrations of Constituents Detected More Than Once In Site L Wastes

Detected Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Acetone	6	0.015	1.01	4.56
	Benzene	5	0.004	2.01	5.70
	2-Butanone (MEK)	3	0.016	3.34	10.0
	Chlorobenzene	8	0.012	1.25	5.30
	Chloroform	3	0.049	6.80	20.3
	Dichloromethane	5	0.005	0.489	2.28
	4-Methy-2-Pentanone (MIBK)	4	0.008	0.073	0.167
	Toluene	7	0.050	66.5	400
	Xylenes, Total	4	0.179	3.10	11.0
SVOCs	Acenaphthene	3	0.044	1.08	3.10
	Anthracene	3	0.028	1.46	4.20
	Benzo(a)anthracene	4	0.075	2.46	8.60
	Benzo(a)pyrene	3	0.022	1.80	5.30
	Benzo(b)fluoranthene	3	0.058	1.88	5.40
	Benzoic Acid	2	0.049	1.62	3.20
	Bis(2-ethylhexyl)phthalate	6	0.017	0.921	2.20
	4-Chloroaniline	6	0.043	98.7	270
	2-Chlorophenol	3	0.013	1.59	2.60
	Chrysene	4	0.076	2.20	8.20
	Dibenzofuran	2	0.042	1.52	3.00
	1,2-Dichlorobenzene	4	0.010	3.50	7.70
	1,4-Dichlorobenzene	9	0.018	23.4	100
	2,4-Dichlorophenol	2	2.40	6.70	11.0
	Diethyl Phthalate	2	0.310	0.655	1.00
	Di-n-butylphthalate	4	0.171	1.28	2.78
	Fluoranthene	4	0.130	4.27	16.0
	Fluorene	2	0.79	2.54	5.00

	Indeno(1,2,3,c,d)pyrene	2	0.110	1.51	2.90
	2-Methylnapthalene	6	0.210	1.42	3.10
	3&4-Methylphenol	4	0.100	0.143	0.190
	4-Methylpenol	5	0.088	3.40	7.10
	Napthalene	4	0.096	2.02	7.30
	Phenanthrene	5	0.091	5.18	23.0
	Phenol	5	0.346	8.77	16.0
	Pyrene	4	0.130	5.96	23.0
	1,2,4-Trichlorobenzene	3	5.50	52.5	79.0
Herbicides	Pentachlorophenol	4	11.5	31.7	58.2
PCBs	Total PCBs	2	16.0	258	500
Metals	Copper	10	9.7	92.7	308
	Lead	13	0.220	74.6	664
	Nickel	10	21.0	378	2,390
	Zinc	11	6.4	534	4,240

Notes: 1) Target metals reported in this table; all detected metals reported in Table 3-15
2) Historical data from Ecology and Environment, 1988 and 1998

Contaminants in Site L were generally detected at depths ranging from 5 to 15 feet bgs.

Site N Waste Characterization – Site N is located on property formerly owned by the H. Hall Construction Company and was primarily used for disposal of construction debris. The construction waste materials encountered in Site N trenches included bricks, concrete debris, rebar, metal pipes and cables, sheet metal, railroad ties, scrap lumber, telephone poles, crushed and partially crushed drums and drum lids, plastic sheeting, rags, scrap tires, various other refuse, and fill soil.

Some of the crushed or partially crushed drums and drum fragments contained waste materials. Whitish and pasty white substances were noted in several of the crushed and partially crushed drums. PID readings inside the excavated drums ranged up to 870 ppm. Other uncontained solid wastes were encountered during trenching, including a whitish material discharging from the northwest corner of the interior excavation that appeared similar to the material inside some of the crushed drums. The pasty whitish material noted in the damaged drums and in the interior trench could have been painting waste, which would be consistent with the former use of Site N for disposal of construction debris.

Materials encountered in Site N borings included an unidentified green material. Maximum PID readings ranged up to 65.7 ppm for materials recovered in the waste borings. TCLP analyses did not indicate that materials encountered in Site N exhibited the characteristic of toxicity. A limited amount of previous sampling and analytical data are available for Site N. Ecology and Environment (1998) indicated that VOC concentrations ranged up to 0.014 mg/kg in the two subsurface collected at Site N. SVOCs were detected at a maximum concentration of 2.28 mg/kg in the two subsurface samples. Pesticides and PCBs were not detected in either of the samples analyzed. Summary statistics for historical Site N subsurface soils and waste analytical data are presented in Table 3-16.

3.2.4 Source Area Soil, Waste and Leachate Treatability Studies

Pilot treatability tests were planned for waste area material, sediments, and leachate to evaluate specific remedial technologies identified in the AOC SOW (on-site thermal desorption and off-site incineration). In accordance with the approved Support Sampling Plan, no treatability tests were planned or executed for

contaminated groundwater. Sediments and waste area material were to be tested using both on-site thermal desorption and off-site incineration. However, the requirement to pilot test creek sediments was eliminated after the Time Critical Removal Action UAO (see Section 2.3.2) was modified on May 31, 2000 to include removal of sediments from Dead Creek. Furthermore, a thermal desorption contractor could not be located in the United States with the RCRA and TSCA permits required to thermally treat soil and waste materials containing dioxins and PCBs. Thus, the thermal treatment pilot-testing program was reduced to evaluating the feasibility of off-site incineration of disposal area materials.

Treatability evaluation and testing for waste materials and leachate are described below. For additional information pertaining to the procedures that were followed during field work or the pilot testing program, refer to Section 3.23 (Volume 6) of the FSR.

3.2.4.1 Source Area Soil and Waste Treatability Evaluation

One composite organic waste sample was produced by mixing materials generated from one waste boring at each of the fill areas (Boring B3 on Site G, B3 on Site H, B2 on Site I South, B4 on Site L, and B1 on Site N). Boring selection was based on PID readings and log descriptions recorded during boring advancement. The composite sample from these borings was submitted to SafetyKleen in Coffeyville, Kansas for waste profiling, characterization, and to determine the feasibility of treatment through incineration (pilot testing). SafetyKleen was the only incineration contractor that possessed the RCRA and TSCA permits required to process the Site waste materials.

After review of laboratory analysis of the composite sample, personnel at SafetyKleen determined that they would need to modify their incinerator to treat the emissions generated from the PCBs and from the volatile metals, especially arsenic and mercury. Other concerns identified with off-site incineration involved the heterogeneous nature of fill area waste and associated materials handling problems. Large pieces of concrete, brick and other debris were present in the waste materials and would cause problems in feeding the material into the incineration unit. Thus, a pre-treatment effort would be required to segregate debris that was not suitable for incineration. Given the potential exposure problems associated with material handling and the other problems stated above, it was determined by SafetyKleen and Solutia Inc. that incineration pilot testing of the disposal area materials was not feasible.

3.2.4.2 Source Area Leachate Treatability Evaluation

Leachate treatability pilot tests were conducted for Site G and Site I South to evaluate if pretreatment limits could be achieved prior to discharge to the American Bottoms Regional Treatment Facility. The purpose of the testing was to identify technically sound, operationally reliable and cost-effective technologies for treating leachate from Sauget Area 1 disposal areas in the event such leachate requires removal, treatment and subsequent discharge to the American Bottoms Regional Treatment Facility.

Leachate samples were collected from Site G and Site I South, one from each site, using the two-inch diameter leachate-sampling well installed at each of these fill areas. Each leachate sample consisted of 25 one-gallon plastic containers filled with leachate collected after purging approximately 80 gallons from the well. Leachate collected from both Site G and Site I South was shipped to the Advent Group, Inc.'s

(Advent's) treatability testing laboratory in Brentwood, Tennessee. Both samples were subsequently composited into a 55-gallon drum and sampled for characterization purposes. For additional information pertaining to the procedures that were followed during field work or the pilot testing program, refer to Section 3.23 (Volume 6) of the FSR. All leachate characterization data and treatability testing results are presented in Advent's November 2000 report (Advent, 2000).

Advent performed leachate treatability studies using the following technologies:

Leachate Treatment Technology	Batch Test Method
● Chemical precipitation using lime and caustic	Jar tests
● Oxidation with hydrogen peroxide and ozone	Jar tests
● Filtration	Filtration at various pore sizes
● Activated carbon adsorption	Isotherm and column tests
● Biological treatment	Batch tests

Treatability study results are summarized below:

- Metals can be effectively removed by pH adjustment and chemical precipitation.
- PCBs and total suspended solids can be effectively removed by filtration.
- Activated carbon adsorption can effectively remove VOCs, SVOCs, herbicides, PCBs and dioxins; however, total TOC loadings and adsorption rates indicate rapid column exhaustion rendering the technology more suitable as a final polishing step.
- Biological treatment (activated sludge) and oxidation (hydrogen peroxide or ozone) appear to be technically feasible options for treating the organics in the leachate

3.2.5 Source Area Ambient Air Investigation

3.2.5.1 Source Area Ambient Air Investigation Sampling

Ambient air sample collection was performed to measure airborne levels of VOCs, SVOCs, PCBs, dioxin, and metals that may be emanating from the Site. An air sample collection and analytical test method was selected to measure airborne constituent levels over a 24-hour time period. A 24-hour sample duration was required to average the air emission differences that may occur from the daytime to nighttime cycle from on-site and off-site conditions and activities. Also, air sample collection locations were positioned at the Site to collect upwind and downwind samples for differentiation of constituents originating from the surrounding area and those originating from the Site. Air sampling locations for Site G, H, I and L are shown on Figure 3-6.

VOCs- Twenty-four-hour cumulative duration sorbent tube samples were collected over a one-day period using USEPA Method TO-1 sampling protocol (Appendix G of the 1999 FSP). Two upwind and two downwind sorbent tube samplers (two tubes each) were installed around Site G; and three upwind and six downwind sorbent tube samplers (two tubes each) were installed at Sites H, I, and L. Sampling

locations were selected in the field with the concurrence of USEPA Region V or its designee. Thirteen air samples were collected for analysis of the presence of volatile organics.

SVOCs, PCBs and Dioxin - Twenty-four hour cumulative-duration polyurethane foam (PUF) samples were collected over a one-day period using USEPA Method TO-13, TO-4, and TO-9 sampling protocols (Appendix G of the 1999 FSP). Two upwind and two downwind PUF samplers were installed around Site G; and three upwind and six downwind PUF samplers were installed at Sites H, I, and L. Sampling locations were selected in the field with the concurrence of the USEPA or its designee. Thirteen air samples were collected for the analysis of SVOCs (Method TO-13), PCBs (Method TO-4), and dioxin (Method TO-9).

Metals - Twenty-four hour cumulative-duration PM 2.5 samples were collected over a one-day period using USEPA Method 6010B sampling protocol (Appendix G of the 1999 FSP). Two upwind and two downwind PM 2.5 samplers were installed around Site G; and three upwind and six downwind PM 2.5 samplers were installed at Sites H, I, and L. Sampling locations were selected in the field with the concurrence of the USEPA or its designee. Thirteen air samples were collected for the analysis of metals. For more information concerning the air sampling procedures, or the supporting documentation, refer to Section 3.22 of the FSR (Volume 6).

3.2.5.2 Source Area Ambient Air Investigation Results

Upwind and downwind air sampling were performed to evaluate the potential release and migration of constituents from Sites G, H, I and L. Transport pathways of potential interest include direct volatilization and potential airborne transport of particulate matter containing constituents. Summary statistics for upwind and downwind samples collected at Sites G, H, I and L are presented in Tables 3-17 to 3-24. Site I South and Site I North were not evaluated separately during the sampling program and therefore cannot be discussed independently in the following data summary.

VOCs - Air sampling results indicate a net average increase (average downwind minus average upwind concentrations) in VOCs at all four fill areas; however, total VOCs were less than 1 mg/m^3 at all fill areas. The average net increase across all four fill areas was 0.334 mg/m^3. Individual VOCs detected varied by fill area, but generally included petroleum-related VOCs and select chlorinated VOCs. Maximum detected upwind and downwind VOC concentrations at Sites G, H, I and L are summarized below:

Maximum Detected VOC Concentrations Upwind and Downwind of Sites G, H, I and L

	Site G		Site H		Site I		Site L	
Constituent	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)
Acetone	ND	717	ND	24	229	ND	ND	ND
2-Butanone (MEK)	ND	16.8	ND	24.7	24	ND	ND	30.5
Ethylbenzene	2.79	13.3	ND	1.82	ND	1.69	1.31	ND
1,1-Dichlorothene	ND	ND	27.1	ND	ND	ND	ND	ND
Dichloromethane	146	2,420	ND	11	295	2,090	ND	890
4-Methyl-2-Pentanone (MIBK)	ND	61.9	ND	ND	ND	ND	ND	ND
Styrene	ND	15.9	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	2.92	ND	0.909	ND	ND	ND	ND
Toluene	ND	159	ND	ND	ND	ND	ND	ND

1,1,1-Trichloroethane	ND	ND	ND	6.37	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	3.44	4.8	ND	ND	ND

SVOCs - Average downwind SVOC concentrations were less than or equivalent to the average upwind concentration at Sites G and L. A net increase (downwind minus upwind) in average SVOC concentrations was observed at Site H (0.00025 mg/m^3) and Site I (0.00063 mg/m^3). Individual SVOCs detected at these fill areas included naphthalene and phthalate compounds. Maximum detected upwind and downwind SVOC concentrations at Sites G, H, I and L are summarized below:

Maximum Detected SVOC Concentrations Upwind and Downwind of Sites G, H, I and L

	Site G		Site H		Site I		Site L	
Constituent	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)
Acenaphthene	0.0203	0.0237	0.021	0.0225	ND	0.0385	0.0336	0.0331
Bis(2-ethylhexyl)phthalate	0.07	0.0825	0.0525	ND	ND	0.0738	0.0738	0.0777
Dibenzofuran	0.0223	0.0254	0.0207	0.0213	ND	0.0385	0.0369	0.0372
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	0.259	ND	ND
1,4-Dichlorobenzene	0.0162	ND	0.0494	0.0638	0.0846	0.42	ND	0.024
Diethylphthalate	0.0487	0.0254	0.0228	ND	ND	ND	0.0238	0.0324
Dimethylphthalate	0.0533	0.0464	0.0432	0.0729	0.0393	0.0585	0.0309	0.0405
Fluorene	0.0172	0.0237	0.0191	0.0201	ND	0.0325	ND	0.0297
2-Methylnapthalene	0.12	0.114	0.0895	0.112	0.136	0.122	0.154	0.149
2-Nitroaniline	ND	ND	ND	ND	ND	0.0294	ND	ND
Phenanthrene	0.027	0.0323	0.0401	0.0304	0.0332	0.0594	ND	0.0367
Phenol	ND	ND	ND	ND	ND	ND	0.0604	ND

PCBs and Dioxin - No PCBs were detected at any sampling location. Dioxin TEQs were lower in downwind samples than upwind samples, with the exception of Site G where average dioxin TEQs in downwind samples (0.098 picograms/m^3) were slightly higher than the upwind average (0.088 picograms/m^3). The average dioxin TEQ concentration measured across all sampling stations at all four fill areas was 0.11 picograms/m^3. These data indicate dioxin TEQs at the four locations are at or below expected background concentrations.

Metals - Maximum detected upwind and downwind target metals (copper, lead, nickel and zinc) concentrations at Sites G, H, I, and L are summarized below:

Maximum Detected Target Metal Concentrations Upwind and Downwind of Sites G, H, I and L

	Site G		Site H		Site I		Site L	
Constituent	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)	Upwind (ug/m^3)	Downwind (ug/m^3)
Copper	0.108	0.102	0.75	0.583	0.313	0.208	ND	ND
Lead	0.285	0.307	0.0229	0.0267	0.0221	0.0263	0.3	0.281
Nickel	ND	ND	ND	ND	ND	ND	0.00583	ND
Zinc	ND	ND	ND	ND	ND	ND	ND	ND

Total metals were lower in downwind samples than upwind samples, with the exception of Site H where average total metals in downwind samples (0.0013 mg/m^3) were higher than the average upwind concentration (0.0008 mg/m^3). The primary metals detected in the downwind samples from Site H were calcium and copper.

3.2.6 Source Area Groundwater Investigation

3.2.6.1 Upgradient Groundwater Investigation

Existing wells EE-04 and EEG-108, renamed UGGW-EE-04 and UGGW-EEG-108 for the SSP (with UGGW standing for Upgradient Groundwater), were used as background (upgradient) groundwater sampling locations for Sites G, H and L (Figure 3-7). The SHU and MHU sampling locations for UGGW-EE-04 were located approximately 900 feet upgradient of Site G, and about 75 feet upgradient of Site H. Access permission could not be obtained from the property owner to perform DHU push sampling at UGGW-EE-04 so a substitute location was selected (EE-04-SUB) approximately 1,600 feet upgradient of Site G (Figure 3-7). Sampling location UGGW-EE-108 was established approximately 750 feet upgradient of Site G, cross-gradient from Site H.

Existing well EE-20 (renamed UGGW-EE-20) was used as an upgradient groundwater sampling location for Site I (Figure 3-7). This background groundwater sampling location is approximately 75 feet upgradient of Site I North. One sample each was taken from the shallow, middle and deep hydrogeologic units at UGGW-EE-20.

UGGW-EE-04, UGGW-EEG-108 and UGGW-EE-20 are screened at depths of 23 to 28 feet, 18 to 23 feet, and 24 to 29 feet in the SHU, respectively. Each existing well was redeveloped using the procedures stated in the FSR (Section 3.16) prior to background groundwater sampling in the SHU. Background groundwater samples were collected at depths of 60 feet below grade in the Middle Hydrogeologic Unit and 100 feet below grade in the Deep Hydrogeologic Unit at each of these locations using push-sampling technology (Geoprobe) and low-flow sampling techniques. A sampling depth of 60 feet is approximately the midpoint between the screened interval of the existing shallow wells and the bottom of the aquifer, which was anticipated to be approximately 100 feet deep. For discussion of the field procedures that were followed during sample collection and documentation related to the sampling of upgradient groundwater wells, refer to Section 3.16 (Volume 4) of the FSR.

A total of nine upgradient groundwater samples were collected. These samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals.

Table 3-89 presents the groundwater regulatory levels (i.e., MCLs or EPA Regional Screening Levels if MCLs are not available) for the chemical constituents that were analyzed during Sauget Area 1 groundwater investigations. Exceedances of regulatory levels are highlighted on the groundwater data summary tables, Tables 3-25 to 3-40, which are discussed in Sections 3.2.6, 3.3.1, and 3.3.2.

Summary statistics for upgradient groundwater analytical data are presented in Table 3-25 and maximum detected constituent concentrations are given below:

Maximum Detected Constituent Concentrations in Groundwater Upgradient of the Sauget Area 1 Source Areas

Constituent		Maximum Detected Concentration (ug/l)
VOCs	Benzene	6.55
	Carbon Disulfide	13.0
	Ethylbenzene	1.60
	Trichloroethene	0.57
	Xylenes, Total	11.0
SVOCs	Acenaphthene	8.0
	Benzo(a)anthracene	0.97
	Benzo(g,h,i)perylene	0.82
	Chrysene	1.3
	Dibenzofuran	0.36
	Diethylphthalate	0.35
	Fluorene	0.24
	Napthalene	9.9
	N-Nitrosodiphenylamine	0.25
Pesticides	delta-BHC	0.00675
	Endosulfan sulfate	0.001
	Endrin ketone	0.0021
	Gamma-BHC (Lindane)	0.00062
	Heptachlor	0.001
	Heptachlor epoxide	0.0016
Herbicides	2,4,5-T	0.210
	2,4,5-TP (Silvex)	0.160
Dioxin	Dioxin TEQ (Human Health)	0.000019
Target Metals	Copper	52.0
	Lead	22.0
	Nickel	175
	Zinc	1,000

Another potential source of contamination, the former Moss-American wood-preserving site, is located about ¼-mile east (upgradient) of Sauget Area 1. The former Moss-American site is not part of Sauget Area 1 (Ecology and Environment, 1998). Creosote, a common wood-preservative, contains PAHs.

A review of the groundwater data reveals that VOC and SVOC distributions are representative of the general extent of chemical constituents that are present above regulatory levels in Sauget Area 1. Consequently, discussion of background groundwater quality in the following paragraphs is limited to maximum detected concentrations of Total VOCs and Total SVOCs and their relation to constituent migration.

Total VOCs were not detected in the Shallow or Middle Hydrogeologic Units upgradient of Site G at background groundwater sampling location UGGW-EE-04. The maximum detected Total VOCs upgradient of Site G were in the Deep Hydrogeologic Unit at the farthest upgradient sampling location where benzene was detected at a concentration of 6.55 μg/L versus a Class I standard of 5 μg/L. The following table compares the maximum detected concentrations of Total VOCs at the Site G upgradient sampling locations with the maximum detected fill area concentrations.

TOTAL VOC CONCENTRATIONS UPGRADIENT OF SITE G (ug/L)			
	UGGW-EE-108	UGGW-EE-04	Maximum Detected Source Area Concentration
Upgradient Distance from Site G (Feet)	750	900 to 1,600	0
Shallow Hydrogeologic Unit	13	ND	19,153
Middle Hydrogeologic Unit	1.0	ND	145
Deep Hydrogeologic Unit	1.0	19	890

Total SVOCs were detected only in the Deep Hydrogeologic Unit at the farthest upgradient location, at concentrations higher than were detected at sampling locations 275 ft and 600 ft downgradient from Site G. Naphthalene was detected at a concentration of 100 μg/L, versus a Class I standard of 25 μg/L. The following table compares the concentrations of Total SVOCs at the upgradient sampling locations with the maximum detected fill area concentrations:

TOTAL SVOC CONCENTRATIONS UPGRADIENT OF SITE G (ug/L)			
	UGGW-EE-108	UGGW-EE-04	Maximum Detected Source Area Concentration
Upgradient Distance from Site G (Feet)	750	900 to 1,600	0
Shallow Hydrogeologic Unit	ND	ND	49,290
Middle Hydrogeologic Unit	ND	ND	14,957
Deep Hydrogeologic Unit	ND	101	3,013

As can be seen in the following table, Total VOCs were not detected in Site I upgradient groundwater sampling locations UGGW-EE-20:

TOTAL VOC CONCENTRATIONS UPGRADIENT OF SITE I (ug/L)		
	UPGW-EE-20	Maximum Detected Source Area Concentration
Upgradient Distance from Site I (Feet)	75	0
Shallow Hydrogeologic Unit	ND	4,835
Middle Hydrogeologic Unit	ND	14
Deep Hydrogeologic Unit	ND	163

Total SVOCs were detected in upgradient location UGGW-EE-20 at comparatively low concentrations but no detections were above Class I standards:

TOTAL SVOC CONCENTRATION UPGRADIENT OF SITE I (ug/L)		
	UPGW-EE-20	Maximum Detected Source Area Concentration
Upgradient Distance from Site I (Feet)	75	0
Shallow Hydrogeologic Unit	1.2	17,647
Middle Hydrogeologic Unit	2.3	363
Deep Hydrogeologic Unit	8.0	1,415

3.2.6.2 Shallow Hydrogeologic Unit Groundwater Sampling

Groundwater concentrations in the Shallow Hydrogeologic Unit at Sites G, H, I and L were evaluated by sampling existing wells EE-01 through EE-05, EE-12 through EE-15, EE-20, and EEG-101 through EEG-112 (Figures 3-7). Each of these Ecology and Environment wells was located, checked for the presence of non-aqueous phase liquids (NAPLs), plumbed for depth and matched against construction records,

redeveloped to remove accumulated fine-grained materials and promote ground water entry into the well, and sampled to provide data on current groundwater conditions in the SHU. A summary of the wells sampled and the corresponding disposal areas that the samples were collected for is provided below:

Existing Source Area Groundwater Monitoring Wells Completed in the Shallow Hydrogeologic Unit

Disposal Area	Existing Well	Screen Depth
Site G	EE-05	18 to 23
	EEG-101	18 to 23
	EEG-102	16.5 to 21.5
	EEG-104	19 to 24
	EEG-106	18 to 23
	EEG-107	23 to 28
	EEG-111 (1	No Construction Log
	EEG-112	21 to 26
Site H	EE-01	28 to 23
	EE-02 (1	18 to 23
	EE-03	27 to 32
	EEG-110	18 to 23
Site I South	EE-12 (2	28 to 33
	EE-14 (1	32.5 to 37.5
	EE-15 (2	24 to 29
Site I North	EE-13 (2	23 to 29
Site L	EEG-103 (2	16.5 to 21.5
	EEG-105 (1	No Construction Log
	EEG-109	17.5 to 22.5

Notes:
1) **Well could not be sampled; groundwater sample collected with Geoprobe**
2) **Well no longer exists; groundwater sample collected with Geoprobe**
3) **Well EEG-109 is the only existing well at Site L; EEG-103 and EEG-109 are located south of Site L**
4) **A total of 19 existing source area wells were sampled for the SSP**

Generally, samples were obtained from wells with screen intervals less than 30 feet below grade (i.e. in the SHU). One location, EE-14 was screened to a depth of 38 feet; however, this is still believed to be within the fill material of Site I South. In accordance with the approved work plan, no groundwater samples were collected beneath Site N although test trenching for the SSP revealed the presence of crushed or partially crushed drums, drum fragments and waste materials within that area. For wells that no longer existed or could not be sampled, samples were collected by advancing a Geoprobe and obtaining a groundwater sample from the same depth interval screened by the former well. Geoprobe samples were identified by the suffix "GP". Thus, the nomenclature for the disposal area groundwater sampling results was either the corresponding well number where the sample was collected, or the well number followed by the symbol GP. EEG-111 was described in the Support Sampling Plan as “South of Site G,” so it was grouped with the Site G data. A discussion of the field procedures that were used while collecting these samples is provided in Section 3.7.3 of the FSR (Volume 1), which also contains all of the corresponding documentation (chain-of-custody forms, logs, meeting records, etc.). Each of the samples collected from the SHU at Sites G, H, I and L was analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals.

3.2.6.3 Middle and Deep Hydrogeologic Units Groundwater Sampling

Groundwater samples were collected in the MHU and DHU beneath Site H and Site I South at shallow groundwater concentration highs identified by Ecology and Environment (Ecology and Environment, 1998) in order to evaluate the vertical extent of organic and inorganic constituents underlying these source areas (Figure 3-7). Prior to collecting these push samples, telescoping surface casing was installed to approximate depths of five feet and 20 feet below the fill material at each site in order to exclude waste materials from the borehole and minimize carry-down of site-related constituents during groundwater sample collection. Surface casings were grouted from the bottom up after completion of sampling. Groundwater samples were collected every 10 feet from the bottom of the surface casing to bedrock, which were approximately 44 and 105 feet below existing grade at Site H and approximately 48 and 104 feet below existing grade at Site I South, respectively. For discussion of the field procedures that were followed during sample collection and documentation related to the alluvial aquifer ground-water sampling, refer to Section 3.8 (Volume 2) of the FSR. Eleven groundwater samples were collected in the MHU and DHU at Site H and Site I using push-sampling and a peristaltic pump. Samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals.

3.2.6.4 Alluvial Aquifer/Bedrock Interface Groundwater Sampling

To evaluate the vertical extent of organic and inorganic constituents at the alluvial aquifer/bedrock interface, three monitoring wells were installed in the upper, weathered portion of the bedrock below the alluvial aquifer/bedrock interface at Sites G, H, and I South (Figure 3-7). Locations for these wells were based on shallow groundwater concentration highs identified by Ecology and Environment (Ecology and Environment, 1998). Telescoping surface casings were installed to the top of bedrock in order to minimize carry-down of site-related constituents during well installation and to prevent vertical migration of site-related constituents after completion. Bedrock was cored to a depth of 20 feet below the telescoping casing. Cores were digitally photographed in color against a scale and evaluated for porosity by examination in petrographic thin sections. Groundwater samples were collected from the open core holes in the bedrock below the telescoping casing. For discussion of the field procedures that were followed during sample collection and documentation related to the ground-water sampling of the alluvial aquifer/bedrock interface, refer to Section 3.10 (Volume 2) of the FSR. Three groundwater samples were collected in all, one from each of the wells (BR-G, BR-H and BR-I) completed in weathered bedrock at Sites G, H and I South. These samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals.

3.2.6.5 Source Area Groundwater Investigation Results

Summary statistics (minimum, average and maximum concentrations) for constituents detected in groundwater within and below Sites G, H and I South are presented in Tables 3-26 to 3-28A. Because VOCs and SVOCs are good indicators of contaminant transport at the Sauget Area 1 source areas, the following discussion of groundwater within and beneath Sites G, H, I South, I North, and L focuses on these two parameter groups.

VOCs in Source Area Groundwater - Frequency of detection and maximum concentrations of the VOCs detected in groundwater at Sites G, H and I South are summarized in the following table. No VOCs were detected in shallow groundwater at Site I North at sampling location EE-13-GP.

Frequency of Detection (FOD) and Maximum Detected Concentration of VOCs in Groundwater at Sites G, H and I South

	Site G		Site H		Site I South	
Constituent	FOD (%)	Maximum Concentration (ug/l)	FOD (%)	Maximum Concentration (ug/l)	FOD (%)	Maximum Concentration (ug/l)
Acetone	50	590	11	490	ND	ND
Benzene	100	3,700	78	2,250	57	750
Chlorobenzene	100	4,300	100	4,350	57	3,800
Chloroform	ND	ND	33	425	ND	ND
1,1-Dichloroethene	ND	ND	11	3.7	ND	ND
1,2-Dichlorothene	ND	ND	33	17	14	160
Ethylbenzene	50	32	67	1,800	43	83
4-Methyl-2-Pentanone	50	1,300	11	26	ND	ND
Tetrachloroethene	50	170	ND	ND	ND	ND
Toluene	100	8,500	89	1,550	43	42
1,1,2,2-Trichloroethane	ND	ND	11	12	ND	ND
Trichloroethene	100	200	33	49.5	ND	ND
Vinyl Chloride	50	41	ND	ND	ND	ND
Xylenes, Total	50	130	67	200	29	18

Ten VOCs were detected in groundwater within or beneath Site G, twelve at Site H and six at Site I South. Frequently detected VOCs (FOD ≥ 50% at two or more sites) include benzene (3,700 ug/l maximum detected concentration at Site G), chlorobenzene (4,350 ug/l maximum detected concentration at Site H), ethylbenzene (1,800 ug/l maximum detected concentration at Site H), toluene (8,500 ug/l maximum detected concentration at Site G) and xylene (200 ug/l maximum detected concentration at Site H). Based on frequency of detection and maximum detected concentrations, Sites G and H are the primary source areas for VOCs in groundwater at Sauget Area 1. That said, chlorobenzene is frequently detected in groundwater within and beneath Site I South at concentrations up to 3,800 ug/l so this site is also a source area for VOCs in groundwater at Sauget Area 1. At Site L, a total of seven VOCs were detected in shallow groundwater at existing well EEG-109: benzene (44 ug/l), chlorobenzene (2.8 ug/l), chloroform (76 ug/l), dichloromethane (3.6 ug/l), 4-methyl-2-pentanone (50 ug/l), trichloroethene (1.6 ug/l) and xylene (3.8 ug/l). While a number of VOCs are present in groundwater in the SHU at Site L, their concentrations range from 2.8 to 76 ug/l indicating that this site is not likely to be a significant source area.

Given its high frequency of detection (50 to 100%) and high maximum detected concentrations (3,800 to 4,350 ug/l) at Sites G, H and I South, chlorobenzene would be a good indicator of any downgradient migration from these source areas.

SVOCs in Source Area Groundwater - Frequency of detection and maximum concentrations of the SVOCs detected in groundwater within or below Sites G, H and I South are summarized in the following table. No SVOCs were detected in shallow groundwater at Site I North at sampling location EE-13-GP.

Frequency of Detection (FOD) and Maximum Detected Concentration of SVOCs in Groundwater at Sites G, H and I South

	Site G		Site H		Site I South	
Constituent	FOD (%)	Maximum Concentration (ug/l)	FOD (%)	Maximum Concentration (ug/l)	FOD (%)	Maximum Concentration (ug/l)
Acenaphthene	ND	ND	11	2.2	14	2.1
Benzo(a)anthracene	ND	ND	ND	ND	14	2.3
Benzo(a)pyrene	ND	ND	ND	ND	29	3.4
Benzo(b)fluoranthene	ND	ND	ND	ND	29	3.8
Benzo(g,h,i)perylene	ND	ND	ND	ND	14	3.0
Benzo(k)fluoranthene	ND	ND	ND	ND	14	4.0
Bis(2-ethylhexyl)phthalate	ND	ND	67	32	100	3.8
Butylbenzylphthalate	ND	ND	ND	ND	29	10
Carbazole	ND	ND	44	5.2	29	26
4-Chloro-3-Methylphenol	ND	ND	11	1	ND	ND
4-Chloroaniline	100	23,000	67	1,800	29	1,800
2-Chloronaphthalene	ND	ND	11	12	ND	ND
2-Chlorophenol	100	630	67	73	29	27
Chrysene	ND	ND	ND	ND	14	3.1
Dibenzo(a,h)anthracene	ND	ND	ND	ND	14	3.0
Dibenzofuran	ND	ND	22	1.1	ND	ND
1,2-Dichlorobenzene	100	300	100	720	43	500
1,3-Dichlorobenzene	50	1.9	78	140	71	51.5
1,4-Dichlorobenzene	100	850	100	14,000	100	14,000
2,4-Dichlorophenol	100	3,600	78	370	14	3.8
Diethylphthalate	50	7.1	22	21	ND	ND
Dimethylphthalate	ND	ND	11	3.65	ND	ND
Di-n-butylphthalate	ND	ND	44	0.52	57	1.4
Di-n-octylphthalate	ND	ND	11	0.39	14	2.4
4,6-Dinitro-2-Methylphenol	ND	ND	11	14	ND	ND
Fluoranthene	ND	ND	ND	ND	14	0.41
Fluorene	ND	ND	78	30	ND	ND
Hexachlorobenzene	ND	ND	44	21	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	14	0.92
Isophorone	ND	ND	11	0.75	ND	ND
2-Methylnapthalene	ND	ND	22	8	29	5.6
2-Methylphenol	100	230	22	30	29	21
3/4-Methylphenol	100	2,400	44	215	29	110
Naphthalene	100	2,100	44	2,300	57	1,400
2-Nitroaniline	ND	ND	11	13.5	ND	ND
Nitrobenzene	ND	ND	11	56.5	ND	ND
N-Nitrsodiphenylamine	ND	ND	11	7.6	14	23
Pentachlorophenol	50	2,000	100	4,300	50	500
Phenanthrene	ND	ND	22	4.8	ND	ND
Phenol	100	14,000	33	315	43	19
1,2,4-Trichlorobenzene	100	180	89	2,500	29	510
2,4,5-Trichlorophenol	ND	ND	67	190	14	1.6
2,4,6-Trichlorophenol	ND	ND	67	465	14	15

A total of 43 SVOCs were detected in groundwater within or beneath Sites G, H or I South but only ten SVOCs have a frequency of detection greater than or equal to 50 percent at two or more of the three sites: bis(2-ethylhexyl)phthalate (32 ug/l maximum detected concentration at Site H); 4-chloroaniline (23,000 ug/l maximum detected concentration at Site G); 2-chlorophenol (630 ug/l maximum detected concentration at Site G); 1,2-dichlorobenzene (720 ug/l maximum detected concentration at Site H); 1,3-dichlorobenzene (140 ug/l maximum detected concentration at Site H); 1,4-dichlorobenzene (14,000 ug/l maximum detected concentration at Site H); 2,4-dichlorophenol (3,600 ug/l maximum detected concentration at Site G); naphthalene (2,300 ug/l maximum detected concentration at Site H);

pentachlorophenol (4,300 ug/l maximum detected concentration at Site H); and 1,2,4-trichlorobenzene (2,500 ug/l maximum detected concentration at Site H). Of these ten SVOCs, seven of the maximum detected concentrations were found at Site H bis(2-ethylhexyl)phthalate; 1,2-dichlorobenzene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; naphthalene; pentachlorophenol; and 1,2,4-trichlorobenzene], indicating that this site is the primary source area for SVOCs in Sauget Area 1. Three of the maximum detected concentrations of SVOCs with a high frequency of detection were found at Site G: 4-chloroaniline, 2-chlorophenol and 2,4-dichlorophenol. 1,4-Dichlorobenzene and napthalene were the only two SVOCs at Site I South with a frequency of detection equal to or greater than 50 percent (88 and 50%, respectively) and a high maximum detected concentration (14,000 and 1,400 ug/l, respectively).

At Site L, five SVOCs were detected in existing well EEG-109 screened in the SHU: 4-chloroaniline (55 ug/l); 2-chlorophenol (21 ug/l); 2,4-dichlorophenol (26 ug/l); 3/4-methylphenol (5.5 ug/l); and napthalene (28 ug/l). With maximum detected SVOC concentrations in SHU groundwater ranging from 5.5 to 28 ug/l, Site L is not a significant source area.

Based on high frequency of detection (greater than or equal to 50 percent at two or more sites) and high maximum detected concentrations, 4-chloroaniline (23,000 ug/l maximum detected concentration at Site G) and 1,4-dichlorobenzene (14,000 ug/l maximum detected concentration at Sites H and I South) would be good indicators of any downgradient migration from Sites G, H and I South.

Vertical Distribution of VOCs and SVOCs in Source Area Groundwater - Total VOCs and Total SVOCs, which are good indicators of contaminant transport, were detected throughout the saturated zone beneath Sites G, H and I South as shown below:

Disposal Area	Hydrogeologic Unit	Total VOCs (ug/L)	Total SVOCs (ug/L)
Site G	SHU	19,153	49,290
	MHU	NS	NS
	DHU	NS	NS
	Weathered Bedrock	247	10,468
Site H	SHU	8,250	11,978
	MHU	145	14,957
	DHU	890	3,013
	Weathered Bedrock	225	661
Site I South	SHU	4,835	17,647
	MHU	14	363
	DHU	163	1,415
	Weathered Bedrock	797	1,271,950

With the exception of Total SVOCs at Site H, concentrations of Total VOCs and Total SVOCs at Sites G, H and I South are one to two orders of magnitude higher in the SHU than in the underlying MHU and DHU. Observed high Total VOC and Total SVOC concentrations in the SHU at Sites G, H and I South are most likely the result of inhomogeneous waste materials, which range from industrial wastes to construction debris, and low-permeability backfill within the disposal areas, and low-permeability silty sands in the SHU beneath these sites, all of which can retard leaching and transport of contaminants to the underlying MHU and DHU.

Waste materials were originally deposited in the Sauget Area 1 disposal areas during a period of time when groundwater levels in the American Bottoms alluvial aquifer were significantly lower compared to current levels due to extensive industrial groundwater withdrawal. Base elevations of the disposal areas are located within the SHU, and in some cases may extend into the MHU. Leaching of constituents from wastes in the disposal areas represents a historic source of impact to ground water and a potential ongoing source in the future.

Section 6.2 of this report summarizes result of mass flux estimates that were developed for Site I (GSI, 2005). Results indicate that the estimated mass flux of chlorobenzene, 1,4-dichlorobenzene, and benzene due to leaching of unsaturated source materials is small compared to estimated mass flux of these three COCs by lateral groundwater flow in the MHU and DHU beneath the Site I source area.

Dense non-aqueous phase liquid (DNAPL) waste materials disposed in the Sauget Area 1 source areas may have migrated vertically into the alluvial aquifer matrix. A second potential continuing source of groundwater impact in Sauget Area 1 is dissolution of liquid waste that migrated vertically from the disposal areas before becoming trapped by capillary forces in pore spaces within the aquifer matrix (residual DNAPL) and/or accumulating at the alluvial aquifer/bedrock interface (pooled DNAPL).

Typically, the majority of DNAPL mass migrating from a source area is trapped by capillary forces within the alluvial aquifer pore space in small, discrete blobs and ganglia as residual DNAPL. Residual DNAPL is not believed to be mobile, and is expected to dissolve relatively slowly. As stated by Pankow and Cherry (1996), “Once the release of liquid waste into the subsurface ceases, subsurface movement of DNAPL also ceases soon thereafter, perhaps within weeks or months…”. With industrial disposal ceasing in 1957 at Sites H and I South and in 1966 at Site G, residual DNAPL at these sites is not likely to be mobile.

The potential for DNAPL occurrence at Sauget Area 1 is based on several indicators: 1) some constituent concentrations increase with depth, 2) constituents are found deep in the aquifer, and 3) some constituents are present at concentrations in excess of 1% of the pure-phase water solubility limit. Results of the USEPA Quick Reference Fact Sheet *Estimating Potential for Occurrence of DNAPL at Superfund Sites* indicate a “high-moderate” potential for DNAPL (USEPA, 1992).

Where DNAPL migration has occurred, most of the mass is expected to be trapped throughout the alluvial aquifer matrix as discrete small blobs and ganglia that are held tightly in the porous alluvial aquifer media by capillary forces (residual DNAPL). Where sufficient quantities were disposed in the fill areas, some DNAPL may have migrated to the bedrock surface and pooled. The slow dissolution of DNAPL trapped in the alluvial aquifer matrix or pooled at the bedrock surface represents a potential source of ongoing impact to ground water.

An extensive DNAPL characterization and remediation study was performed at Sauget Area 1 in 2004-2005 to characterize the extent of residual and pooled DNAPL (GSI, 2006c). Results of the DNAPL characterization and remediation study are summarized in Sections 4.2 and 5.2.4 of this report.

Dissolution of residual and/or pooled DNAPL is a likely ongoing source of impacted groundwater at Sites G, H and I South. Dissolution of residual DNAPL is the likely cause of the observed Total SVOC concentration in the MHU at Site H, which is 24.9% higher than the concentration in the overlying SHU. Pooled DNAPL is the likely cause of the 1,271,950 ug/L Total SVOC observed in weathered bedrock beneath Site I South. VOCs and SVOCs detected in Site I South weathered bedrock monitoring well BR-I are listed below:

VOC and SVOC Concentrations Detected in Weathered Bedrock at Site I South

Analytes	Constituent	Concentration (ug/l)	Analytes	Constituent	Concentration (ug/l)
VOCs	Benzene	63	SVOCs	Acenaphthene	130
	Chlorobenzene	240		Anthracene	130
	Ethylbenzene	390		Benzo(a)anthracene	400
	Trichloroethene	3.7		Benzo(a)pyrene	380
	Xylenes, Total	36		Benzo(b)fluoranthene	290
				Benzo(g,h,i)perylene	300
				Benzo(k)fluoranthene	220
				Bis(2-ethylhexyl)phthalate	420
				Butylbenzylphthalate	160
				Carbazole	240
				Chrysene	740
				1,2-Dichlorobenzene	12,000
				1,3-Dichlorobenzene	1,100
				1,4-Dichlorobenzene	51,000
				2,4-Dichlorophenol	2,400
				Di-n-butylphthalate	300
				Di-n-octylphthalate	180
				Dibenzo(a,h)anthracene	210
				Fluoranthene	170
				Fluorene	360
				Hexachlorobenzene	90,000
				Indeno(1,2,3-cd)pyrene	240
				2-Methylnaphthalene	670
				N-nitrosodiphenylamine	760
				Naphthalene	5,800
				Nitrobenzene	140
				Phenanthrene	790
				Phenol	180
				Pyrene	540
				1,2,4-Trichlorobenzene	1,100,000
				2,4,6-Trichlorophenol	1,700

3.3 Downgradient Groundwater Investigation

3.3.1 Downgradient Groundwater Investigation Sampling

3.3.1.1 Groundwater Sampling Downgradient of Source Areas

Groundwater quality downgradient of the disposal areas was investigated by collecting groundwater samples along two sampling transects, one downgradient of Site I South (Figure 3-7) and another downgradient of Sites G, H and L (Figure 3-7). Horizontal and vertical extent of organic and inorganic constituents in groundwater downgradient of these source areas were evaluated by collecting samples at three sampling stations located along a transect between the maximum shallow-groundwater concentrations observed by Ecology and Environment (1998) and Illinois Route 3. These sampling stations are listed below:

Sampling Stations Downgradient of Site I South	Sampling Stations Downgradient of Sites G, H and L
AA-I-S1	AA-GHL-S1
AA-I-S2	AA-GHL-S2
AA-I-S3	AA-GHL-S3

Stations with the S1 suffix are closest to the disposal areas, and stations with the *S3* suffix are farthest from the disposal areas. Groundwater samples were collected from the SHU, MHU, and the DHU. Sample collection began at the water table and continued every ten feet until bedrock was encountered.

A total of 28 groundwater samples were collected downgradient of Site I South and 31 samples were collected downgradient of Sites G, H and L. Samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs and metals. The presence or absence of dioxin in ground water downgradient from Site I South and Sites G, H and L was evaluated by analyzing samples from the SHU, MHU and DHU downgradient of each of these source areas. A total of 18 samples were collected and analyzed for dioxins via USEPA Method 8290. Samples were collected concurrently with the other downgradient samples described above.

For discussion of the field procedures that were followed during sample collection and documentation related to the downgradient alluvial aquifer ground-water sampling, refer to Section 3.9 (Volume 2) of the FSR.

3.3.1.2 Groundwater Sampling Downgradient of Creek Segment B

Groundwater samples were collected every ten feet from the water table to bedrock at three sampling stations located approximately 300 to 450 feet downgradient of Creek Segment B between Site G and Judith Lane (Figure 3-7). Thirty samples were collected and analyzed in an off-site laboratory for VOCs, SVOCs, pesticides, herbicides, PCBs and metals. The presence or absence of dioxin in groundwater was evaluated by analyzing a total of nine samples from the Shallow, Middle and Deep Hydrogeologic Units, three samples from each unit.

3.3.1.3 Groundwater Sampling in Residential Areas

Shallow groundwater in residential areas bordering Creek Segment B was sampled during the SSP investigation to evaluate potential transport of constituents from creek sediments and floodplain soils to groundwater. This sampling program included four non-potable domestic wells (100 Judith Lane, 102 Judith Lane, 104 Judith Lane, and 109 Judith Lane – see Figure 2-27) and vertical profiling (15, 20 and 40 ft. bgs) at the west end of Walnut Street and the east bank of Creek Segment B just north of Judith Lane (Figure 3-7). After collection and analysis of the vertical-profile shallow-groundwater samples at Walnut Street and Judith Lane, one MicroWell® was installed at each sampling station with its screened interval in the zone of highest detected constituent concentrations (approximately 40 feet below ground surface). These wells were continuously pumped for 24 hours using a peristaltic pump in order to stress the saturated zone during sampling. Time-series samples were collected at approximately 0, 12, and 24 hours after the start of pumping to evaluate constituent concentration trends over time. For discussions of the field procedures that were followed during sample collection and documentation related to the domestic well sampling, vertical profiling and times-series sampling, refer to Sections 3.13, 3.11 and 3.12

(Volume 3) of the FSR, respectively.

3.3.2 Downgradient Groundwater Investigation Results

Groundwater flowing beneath Sauget Area 1 ultimately discharges to the Mississippi River, approximately 5,700 feet downgradient of its western boundary. Groundwater in the alluvial aquifer underlying Sauget Area 1 flows west and northwest toward the Mississippi River at an estimated velocity of 29.6 feet/year in the SHU and 296 feet/year in the MHU/DHU (assuming a porosity of 0.35). Groundwater is the most important migration pathway from the Sauget Area 1 source areas because it has the potential to discharge site-related constituents to the Mississippi River. Potential impact could result from groundwater discharge into the river if the constituents detected in groundwater downgradient of the Sauget Area 1 source areas migrate that far.

Review of groundwater data collected during the SSP revealed that the distributions of VOCs and SVOCs downgradient of Site I South and Sites G, H and L were representative of the extent of chemical constituents present above regulatory levels. Generally speaking, herbicide and pesticide distributions parallel the VOC and SVOC data.

Concentrations of PCBs, dioxin TEQs and metals occur sporadically and at comparatively low concentrations both upgradient and downgradient of disposal areas, throughout the aquifer saturated thickness. There were no detections of PCBs at the upgradient groundwater sampling locations. Concentrations of PCBs exceeding regulatory levels were detected downgradient of the Sites G. H, and L and Site I South source areas (see Tables 3-29 and 3-30). Concentrations of Dioxin-TEQ were below regulatory levels both upgradient and downgradient of the disposal areas.

A total of 7 metals were detected in one or more upgradient groundwater samples at concentrations exceeding regulatory levels (see Table 3-25). A total of 12 metals were detected in one or more groundwater samples from downgradient of Site I South at concentrations exceeding regulatory levels (see Table 3-29), and a total of 8 metals were detected in one or more groundwater samples from downgradient of Sites G, H, and L at concentrations exceeding regulatory levels (see Table 3-30).

Discussion of the downgradient groundwater investigation is limited to maximum detected concentrations of VOCs and SVOCs because VOCs and SVOCs were representative of the extent of chemical constituents present above regulatory levels.

3.3.2.1 Groundwater Downgradient of Site I South

VOCs in Downgradient Groundwater - As shown in Table 3-29 and summarized below, VOCs were present in the SHU, MHU and DHU downgradient of Site I South:

MAXIMUM DETECTED TOTAL VOC CONCENTRATIONS DOWNGRADIENT OF SITE I SOUTH (ug/L)			
Sampling Station	**AA-I-S1**	**AA-I-S2**	**AA-I-S3**
Distance from Source Area	**100 ft.**	**650 ft.**	**1,200 ft.**
Shallow Hydrogeologic Unit	**9,230**	**4,230**	**ND**
Middle Hydrogeologic Unit	**20,276**	**19,300**	**2,314**
Deep Hydrogeologic Unit	**34,140**	**11,120**	**5,677**

Total VOCs extended throughout the saturated zone downgradient of Site I South to the last sampling station (AA-I-3), which was located just east of Mississippi Avenue (Route 3). Compared to concentrations in AA-I-S1, maximum detected Total VOC concentrations in AA-I-S3 decreased to none detected in the Shallow Hydrogeologic Unit, and decreased by nearly an order of magnitude in the Middle and Deep Hydrogeologic Units. Maximum detected Total VOC concentrations were found in the MHU and DHU, which is consistent with dissolution of residual and pooled DNAPL resulting from past vertical migration of liquid waste from this disposal area into the underlying MHU and DHU. As previously described, hydraulic conductivities in the MHU and DHU are higher than in the SHU and, therefore, mass flux is higher in these hydrogeologic units than in the SHU.

The VOCs most frequently detected downgradient of Site I South (Table 3-29) were chlorobenzene (97% FOD); benzene (86% FOD); ethylbenzene (41% FOD); 1,1-dichloroethane (38% FOD); 1,2-dichloroethene (38% FOD) and vinyl chloride (38% FOD). Tetrachloroethene (24% FOD) and trichloroethene (17% FOD) were also present in groundwater downgradient of Site I South.

Individual VOCs within each of the three hydrogeologic units at sampling location AA-I-S1, which is 100 feet downgradient from the boundary of Site I South, were compared to the standards for Illinois Class I Potable Resource Groundwater as defined in 35 IAC 620 and 35 IAC 742 Appendix B. Discrete interval samples exceeded standard in all three hydrogeologic units for benzene and chlorobenzene. These constituents were also detected above standard at downgradient location AA-I-S3. There were exceedances of other constituents in the Shallow and Middle hydrogeologic units, as summarized below:

Maximum Detected VOC Concentrations Downgradient of Site I South that Exceeded Illinois Class I Groundwater Standards

Constituents Detected Above Standard		Standard	SHU	MHU	DHU
VOCs, ug/L	Benzene	5	620	190	140
	Chlorobenzene	100	8,700	20,000	34,000
	1,1-Dichloroethane	700	960	NE	NE
	1,1-Dichloroethene	7	32	NE	NE
	1,2-Dichloroethene	170	1,200	310	NE
	Vinyl Chloride	2	970	320	NE

Notes: 1) Groundwater samples collected 100 ft. downgradient of Site I South
2) NE = No Exceedance

SVOCs in Downgradient Groundwater - SVOCs occurred within the SHU, MHU and DHU immediately downgradient of Site I South (Sampling Station AA-I-S1) and extended as far as 1,200 feet downgradient of this source area (Sampling Station AA-I-S3). The following table summarizes the maximum detected Total SVOC concentrations at Site I South downgradient sampling station locations AA-I-S1, AA-I-S2 AA-I-S3:

MAXIMUM DETECTED TOTAL SVOC CONCENTRATIONS DOWNGRADIENT OF SITE I SOUTH (ug/L)			
Sampling Station	AA-I-S1	AA-I-S2	AA-I-S3
Distance from Source Area	100 ft.	650 ft.	1,200 ft.
Shallow Hydrogeologic Unit	7,056	5,153	0.8
Middle Hydrogeologic Unit	12,054	5,544	1,777
Deep Hydrogeologic Unit	11,047	5,565	3,502

Total SVOC concentrations decreased with distance downgradient of Site I South in the SHU, MHU and DHU. Comparing maximum detected concentrations between AA-I-S1 and AA-I-S3, Total SVOC concentrations decreased by four orders of magnitude in the Shallow Hydrogeologic Unit, nearly one order of magnitude in the Middle Hydrogeologic Unit, and by a factor of slightly more than three in the Deep Hydrogeologic Unit.

The highest downgradient Total SVOC concentrations occurred in the MHU and DHU at sampling station AA-I-S1, which is located 100 feet downgradient of Site I South. These comparatively high concentrations of Total SVOCs are most likely due to dissolution and downgradient transport of DNAPL trapped in the alluvial aquifer matrix and/or pooled on bedrock beneath Site I South. Following vertical migration of liquid waste and/or leaching of dissolved constituents into the hydrogeologic units below Site I South, more constituent migration occurred in the MHU and DHU downgradient of the disposal area because their higher hydraulic conductivities resulted in a significantly higher mass flux.

1,4-Dichlorobenzene was the most frequently detected SVOC (Table 3-29) in groundwater downgradient of Site I South (90% FOD) followed by 4-chloroaniline (86% FOD); 1,2-dichlorobenzene (83% FOD), 1,3-dichlorobenzene (79% FOD); 2-chlorophenol (72% FOD); naphthalene (69% FOD); 2,4-dichlorophenol (48% FOD) and n-nitrosodiphenylamine (34% FOD). Frequency of detection of the remaining SVOCs detected in groundwater downgradient of Site I South ranged from 3 to 17% (Table 3-29).

Individual SVOCs within each of the three hydrogeologic units at sampling location AA-I-S1, which is 100 feet downgradient from the boundary of Site I South, were compared to the standards for Illinois Class I Potable Resource Groundwater as defined in 35 IAC 620 and 35 IAC 742 Appendix B. Discrete interval samples exceeded standard in all three hydrogeologic units for 1,4-dichlorobenzene, and in the Shallow and Middle Hydrogeologic Units for 4-chloroanaline. These constituents were also detected above standard in the Middle and Deep Hydrogeologic Units at the downgradient location AA-I-S3. There were exceedances of other SVOCs in the Middle and Deep Hydrogeologic Units at AA-I-S1, as summarized below:

Maximum Detected SVOC Concentrations Downgradient of Site I South that Exceeded Illinois Class I Groundwater Standards

Constituents Detected Above Standard		Standard	SHU	MHU	DHU
SVOCs, ug/L	1,4-Dichlorobenzene	75	4,400	10,000	9,700
	4-Chloroaniline	28	4,100	1,700	NE
	2-Chlorophenol	35	NE	39	52
	2,4-Dichlorophenol	21	NE	42	47
	1,2,4-Trichlorobenzene	70	NE	NE	2,700
	N-nitrosodiphenylamine	10	NE	28	18

Notes: 1) Groundwater samples collected 100 ft. downgradient of Site I South
2) NE = No Exceedance

3.3.2.2 Groundwater Downgradient of Sites G, H and L

VOCs in Downgradient Groundwater - The following table summarizes the maximum Total VOC concentrations detected downgradient of Sites G, H and L and Table 3-30 includes summary statistics (frequency of detection and minimum, mean and maximum detected concentrations):

MAXIMUM DETECTED TOTAL VOC CONCENTRATIONS DOWNGRADIENT OF SITES G, H and L (ug/L)			
Sampling Station	**AA-GHL-S1**	**AA-GHL-S2**	**AA-GHL-S3**
Distance from Source Area	**25 ft.**	**275 ft.**	**600 ft.**
Shallow Hydrogeologic Unit	**13.5**	**3.5**	**ND**
Middle Hydrogeologic Unit	**270**	**131**	**8.8**
Deep Hydrogeologic Unit	**9.6**	**79**	**16**

Total VOC concentrations in the SHU and MHU decreased consistently with distance downgradient of Sites G, H and L but the highest Total VOC concentration in the DHU occurred at Sampling Station AA-GHL-S2, which is 275 ft. downgradient of these source areas. The highest detected Total VOC concentrations at Sampling Stations AA-GHL-S1 (25 feet downgradient) and AA-GHL-S2 (275 feet downgradient) occurred in the MHU while the highest Total VOC concentration at Sampling Station AA-GHL-S3 was found in the DHU.

Table 3-30 gives the frequency of detection (FOD) and minimum, maximum and mean concentrations of the individual VOCs detected in groundwater downgradient of Sites G, H and L. Nine VOCs were detected in groundwater downgradient of Sites G, H and L and chlorobenzene was the most frequently detected VOC (70% FOD). Tetrachloroethene (17% FOD) and its breakdown products, trichloroethene (20% FOD), dichloroethane (37% FOD) and vinyl chloride (3% FOD), were also present in groundwater downgradient of these source areas. Toluene was detected with a frequency of 17%. The FOD for acetone and ethylbenzene was 3% while the FOD for benzene was 7%.

Individual VOCs within each of the three hydrogeologic units at sampling location AA-GHL-S1, which was located at the downgradient boundary of Site G, were compared to the standards for Illinois Class I Potable Resource Groundwater as defined in 35 IAC 620 and 35 IAC 742 Appendix B. Two discrete interval samples in the SHU exceeded the standard for tetrachloroethene with a maximum detected concentration of 13 ug/L versus the 5 ug/L Class I standard and one discrete interval sample within the MHU exceeded the chlorobenzene standard (270 ug/L versus 100 ug/L). Neither of these constituents was detected above standard at downgradient sampling location AA-GHL-S3.

SVOCs in Downgradient Groundwater - With the exception of the SHU at Sampling Station AA-GHL-S2, Total SVOCs were detected in all three hydrogeologic units downgradient of Sites G, H and L:

MAXIMUM DETECTED TOTAL SVOC CONCENTRATIONS DOWNGRADIENT OF SITES G, H and L (ug/L)			
Sampling Station	**AA-GHL-S1**	**AA-GHL-S2**	**AA-GHL-S3**
Distance from Source Area	**25 ft.**	**275 ft.**	**600 ft.**
Shallow Hydrogeologic Unit	**2.4**	**ND**	**0.8**
Middle Hydrogeologic Unit	**38**	**32**	**2.9**
Deep Hydrogeologic Unit	**38**	**11.3**	**4.5**

Total SVOC concentrations in the MHU and DHU consistently decreased with increasing distance from these source areas.

Nineteen SVOCs were detected in groundwater downgradient of Sites G, H and L with 1,2-dichlorobenzene (FOD 37%) and 1,4-dichlorobenzene (FOD 33%) the most frequently detected (Table 3-30). Other chlorobenzenes detected included 1,3-dichlorobenzene (FOD 7%) and 1,2,4-trichlorobenzene (FOD 3%). 2-Chlorophenol and 4-chloroaniline were detected at a frequency of 17% and 7%,

respectively. Two phthalates were detected with FODs of 10% and 20% and eleven PAHs were detected with FODs ranging from 3 to 10%.

Chrysene was the only organic constituent present at sampling location AA-GHL-S1, the first sampling location downgradient of Sites G, H and L, with a concentration higher in the DHU than the Class I Potable Resource Groundwater standard as defined in 35 IAC 620 and 35 IAC 742 Appendix B (2.4 ug/L versus 1.5 ug/L). There was one exceedance of a discrete sample interval for lead in the DHU at AA-GHL-S1 (0.01 mg/L versus a Class I standard of 0.0075 mg/L).

3.3.2.3 Groundwater Downgradient of Creek Segment B

During the SSP investigation, groundwater sampling was conducted a three stations along a north/south transect located approximately 300 feet south of Site G and approximately 300 to 500 feet west of Creek Segment B to determine whether constituents were present in a cross-gradient direction from the Sauget Area 1 disposal areas. With groundwater flow patterns now shown to be generally to the west and northwest, this objective is now moot. Nonetheless, these data can be used to evaluate impacted groundwater migration downgradient of Creek Segment B.

Groundwater samples were collected every ten feet from the water table to bedrock at three sampling stations located approximately 300 to 500 feet downgradient of Creek Segment B between Site G and Judith Lane (Figure 3-7). Thirty samples were collected and analyzed in an off-site laboratory for VOCs, SVOCs, pesticides, herbicides, PCBs and metals. The presence or absence of dioxin in groundwater was evaluated by analyzing a total of nine samples from the Shallow, Middle and Deep Hydrogeologic Units, three samples from each unit.

As discussed above, review of the groundwater data revealed that VOC and SVOC distributions were representative of general plume extent, especially concerning the extent of constituents that are present above regulatory levels. Consequently, discussion in the following paragraphs is limited to maximum detected concentrations of Total VOCs and Total SVOCs and their relation to constituent migration.

VOCs in Downgradient Groundwater - VOCs occurred in low concentrations in the SHU, MHU and DHU downgradient of Creek Segment B as shown in the following table of maximum detected Total VOC concentrations at sampling stations AA-SW-S1, AA-SW-S2 AND AA-SW-S3:

MAXIMUM DETECTED TOTAL VOC CONCENTRATIONS DOWNGRADIENT OF CS-B (ug/L)			
Sampling Station	**AA-SW-S1**	**AA-SW-S2**	**AA-SW-S3**
Distance from Dead Creek	**440 ft.**	**440 ft.**	**320 ft.**
Shallow Hydrogeologic Unit	**28**	**ND**	**0.3**
Middle Hydrogeologic Unit	**16**	**12**	**38**
Deep Hydrogeologic Unit	**7.5**	**6.5**	**4.5**

Table 3-31 summarizes the analytical results for the groundwater samples collected downgradient of Creek Segment B and frequency of detection and maximum concentration of individual VOCs are presented below:

Maximum Detected Total VOC Concentrations in Groundwater Downgradient of Creek Segment B

Constituent		Frequency of Detection (%)	Maximum Detected Concentration (ug/l)
VOCs	Acetone	3	28
	Benzene	9	3.3
	Chlorobenzene	33	34
	1,1-Dichloroethene	6	0.8
	1,2-Dichloroethene	18	1.4
	Toluene	12	0.99
	Trichloroethene	15	0.75
	Xylenes, Total	3	3.7

Individual VOCs within each of the three hydrogeologic units at each of the three sampling stations were compared to the standards for Illinois Class I Potable Resource Groundwater as defined in 35 IAC 620 and 35 IAC 742 Appendix B. No VOCs in excess of Class I standards were detected.

SVOCs in Downgradient Groundwater - SVOCs were detected sporadically at sampling stations AA-SW-S1, AA-SW-S2 AND AA-SW-S3 downgradient of Creek Segment B as shown in the following table of maximum Total SVOC concentrations in the SHU, MHU and DHU and summarized in Table 3-31:

MAXIMUM DETECTED TOTAL SVOC CONCENTRATIONS DOWNGRADIENT OF CS-B (ug/L)			
Sampling Station	AA-SW-S1	AA-SW-S2	AA-SW-S3
Distance from Dead Creek	440 ft.	440 ft.	320 ft.
Shallow Hydrogeologic Unit	0.4	ND	0.3
Middle Hydrogeologic Unit	11	16	7.1
Deep Hydrogeologic Unit	5.5	1.8	0.9

Eight SVOCs were detected in groundwater downgradient of Creek Segment B with frequency of detections ranging from 3 to 27%:

Maximum Detected Constituent Concentrations in Groundwater Downgradient of Creek Segment B

Constituent		Frequency of Detection (%)	Maximum Detected Concentration (ug/l)
SVOCs	2-Chlorophenol	3	0.25
	4-Chloroaniline	6	5.3
	1,2-Dichlorobenzene	27	5.8
	1,4-Dichlorobenzene	27	11
	Diethylphthalate	6	0.49
	Di-n-butylphthalate	9	0.43
	Pentachlorophenol	15	1.40
	Phenanthrene	3	0.42

Individual SVOCs within each of the three hydrogeologic units at all three sampling stations downgradient of Creek Segment B were compared to the standards for Illinois Class I Potable Resource Groundwater as defined in 35 IAC 620 and 35 IAC 742 Appendix B. Pentachlorophenol, with a maximum detected concentration of pentachlorophenol of 1.4 ug/l, was the only SVOC present in groundwater downgradient of Creek Segment B at concentrations higher than the Illinois Class I Groundwater Remediation Objective of 1.0 ug/l.

3.3.2.4 Groundwater in Residential Areas

Residential-area shallow groundwater samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals. The well locations are shown on Figure 2-27. Summary statistics (minimum, mean and maximum detected concentrations) for the non-potable domestic well samples are presented in Table 3-32. Walnut Street shallow groundwater sampling results are summarized in Table 3-33 and the time-series sampling results are given in Table 3-34 (0 Hour), Table 3-35 (12 Hour) and Table 3-36 (24 Hour). Judith Lane shallow groundwater sampling results are summarized in Table 3-37 and the time-series sampling results are given in Table 3-38 (0 Hour), Table 3-39 (12 Hour) and Table 3-40 (24 Hour).

The maximum concentration of total VOCs detected during these sampling programs was 1.5 μg/L in the non-potable residential well at 102 Judith Lane. Maximum detected concentration of total SVOCs was 6.7 μg/L at time-series groundwater sampling location TS-S1 at Walnut Street after 24 hours of pumping. Some of these SVOCs included concentrations above Class I standards.

Pesticides were detected at a maximum concentration of 0.004 μg/L in the non-potable residential well at 100 Judith Lane. Total pesticides were initially detected at 0.04 μg/L at one of the time-series sampling locations; however, no pesticides were detected during subsequent time-series sampling events. All of the pesticide detections were below regulatory levels. Herbicides were not detected in any of the non-potable domestic wells. The maximum concentration of total herbicides detected at the time-series sampling locations was 0.66 μg/L at the 15-feet depth interval at Judith Lane (SGW-2). All of the herbicide detections were below regulatory levels.

No PCBs were detected in any of the domestic wells. PCBs were initially detected at 0.06 μg/L, below regulatory levels, at the 40-feet sampling interval at location SGW-S1; however, no PCBs were detected during subsequent time-series sampling at this location.

Dioxin TEQs were measured in all non-potable domestic wells at concentrations ranging from 3 ppq to 6 ppq. Dioxin TEQs measured in initial samples collected from the time-series sampling locations ranged from 0.014 ppq to 77 ppq, and the 77 ppq detection exceeded the regulatory level. However, concentrations measured during subsequent time-series sampling under pumping conditions were all below 15 ppq, and below the regulatory level.

Arsenic, iron, lead, and manganese were detected in samples from the non-potable domestic wells at concentrations exceeding regulatory levels. Aluminum, arsenic, cobalt, iron, lead, and manganese were detected at concentrations above regulatory levels in initial samples from Walnut Street shallow groundwater, but during time-series sampling under pumping conditions the only metals exceeding regulatory levels were arsenic, iron, and manganese. Aluminum, iron, and manganese were detected at concentrations above regulatory levels in initial samples from Judith Lane shallow groundwater, but during time-series sampling under pumping conditions the only metals exceeding regulatory levels were iron and manganese.

3.4 Surface Water and Sediment Investigation

3.4.1 Surface Water Investigation

3.4.1.1 Surface Water Investigation Locations

Surface-water sampling was conducted at Dead Creek, Site M, the Borrow Pit Lake, Prairie du Pont Creek and two reference areas during baseflow conditions to determine the downstream concentrations of site-related constituents and to provide information for use in the HHRA and the ERA. Surface-water sampling locations, which are described below, are shown on Figure 3-8:

- Surface-water samples were collected at the approximate upper, middle, and lower sections of each segment of Dead Creek (Creek Segments B, C, D, E and F) to evaluate the downstream extent of site-related constituents. Additionally, one surface water sample was collected at Site M.

- Two surface-water samples were collected in Borrow Pit Lake upstream of the discharge of Dead Creek to assess the effect of backwater conditions and/or the contributions of other sources.

- One surface-water sample was collected upstream and one sample was collected downstream of the confluence of Dead Creek and Prairie du Pont Creek.

- Two surface-water samples were collected at two sampling stations located at Reference Areas 1 and 2.

The ERA (Menzie-Cura, 2001) includes descriptions, maps, and photos of Reference Areas 1 and 2. The reference areas were selected based on the following criteria: i) physical similarity to Dead Creek or Borrow Pit Lake; and ii) location away from direct influence of industrial discharges, including major highways. The selected location for Reference Area 1 was a section of Old Prairie du Pont Creek near the town of East Carondelet, Illinois, approximately three miles southwest of the end of Dead Creek in the Borrow Pit Lake. This section of Old Prairie du Pont Creek is a broad shallow water body with a mud substrate similar to the Borrow Pit Lake. It was distant from any influence from Sauget Area 1 or other industrial areas but was similar to Borrow Pit Lake in that it was located near agricultural land. Two sampling locations, RA-1-S1 and RA-1-S2, were selected in Reference Area 1.

The selected location for Reference Area 2 was two bodies of water in Monroe County, Illinois, at a location approximately 20 miles south of Dead Creek. Each water body contained one sampling station. RA-2-S1 was in Long Slash Creek north of the culvert where Merrimac Road crosses the creek. This section was similar to Dead Creek Segments B through E in that it was shallow and muddy. It was similar to Dead Creek Segment F in that it traversed an agricultural area. RA-2-S2 was a flooded borrow pit north of Fountain Creek and similar in depth, hydrology, and surrounding land use to the Borrow Pit Lake.

3.4.1.2 Surface Water Sampling and Testing

Surface-water samples were collected at an approximate depth of 60 percent of the creek water column (measured from the top of the water column). All surface-water samples were collected prior to implementation of the Time-Critical Sediment Removal Action (Section 2.3.2). Sufficient water was not available to sample three of the stations in Creek Segment C and two of the stations in Creek Segment E. A total of 20 surface-water samples were collected. Each sample was analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals. In addition, the samples were analyzed for fluoride, hardness, ortho-phosphate, total dissolved solids (TDS), total phosphorous, and total suspended solids (TSS). For discussion of the field procedures that were followed during sample collection and documentation related to the surface-water sampling, refer to Section 3.21 (Volume 5) of the FSR.

The surface water sampling and testing results for Dead Creek were likely to have been influenced by the presence of contaminated sediments in Dead Creek that were later removed during the Time-Critical Sediment Removal Action (Section 2.3.2). As a result, these surface water samples are not representative of current conditions.

3.4.1.3 Surface Water Investigation Results

Surface-water sampling analytical results are summarized in Table 3-41 (Creek Segment B), Table 3-42 (Creek Segment D), Table 3-43 (Creek Segment E), Table 3-44 (Creek Segment F), Table 3-45 (Site M), Table 3-46 (Borrow Pit Lake), Table 3-47 (Prairie du Pont Creek), and Table 3-48 (Reference Areas).

The primary VOC found in the Dead Creek surface-water samples was acetone, which was reported as estimated values and is a typical laboratory artifact. Two VOCs were detected in Creek Segment B: acetone (FOD 67%) with a maximum detected concentration of 18 ug/l and chlorobenzene (FOD 33%) with a maximum detected concentration of 2.8 ug/l. Acetone was also detected in Creek Segment D with a FOD of 100% and a maximum concentration of 17 ug/l. No VOCs were detected in Creek Segment E but benzene was detected in Creek Segment F with an FOD of 33% and a maximum concentration of 1.7 ug/l. Acetone was detected in the Borrow Pit Lake with a FOD of 100% and a maximum concentration of 18 ug/l.

Pentachlorophenol was the only SVOC detected in Creek Segment B with an FOD of 33% and a maximum detected concentration of 1.0 ug/l. No SVOCs were detected in Creek Segment D. Three SVOCs were detected in the one surface-water sample collected in Creek Segment E: fluoranthene (1.2 ug/l), phenanthrene (0.67 ug/l) and pyrene (8.7 ug/l). Fluoranthene and phenanthrene were also detected in Creek Segment F with FODs and maximum concentrations for both constituents of 33% and 0.7 ug/l. No SVOCs were detected in the Borrow Pit Lake.

Total pesticide concentrations in Dead Creek ranged from a high of 0.1218 μg/L in Creek Segment B to none detected in Creek Segment F and Prairie du Pont Creek. Thirteen pesticides were detected in both Creek Segment B and Creek Segment D with maximum concentrations ranging from 0.0025 to 0.04 ug/l

in the former and 0.0023 to 0.0454 ug/l in the latter. Four related pesticides (alpha, beta, delta and gamma BHC) were detected in Creek Segment E at maximum concentrations of 0.0028 to 0.028 ug/l. No pesticides were detected in Creek Segment F but twelve pesticides were detected in the Borrow Pit Lake with maximum concentrations ranging from 0.00094 to 0.02 ug/l. Maximum detected total pesticide concentrations in the Borrow Pit Lake (0.037 μg/L) were less than the average concentrations found at the two reference areas (0.046 μg/L).

Herbicides were not detected in Creek Segments B, D, E and F nor were they detected in the Borrow Pit Lake.

PCBs were detected in one of the twenty surface-water samples at an estimated concentration of 0.055 μg/l (Creek Segment D). Maximum Dioxin TEQs in Dead Creek were 21.7 parts per quadrillion (ppq) in Creek Segment B, 17.7 ppq in Creek Segment D, 2.95 ppq in Creek Segment E and 9.16 ppq in Creek Segment F. Dioxin was present in the Borrow Pit Lake at a maximum TEQ concentration of 1.16 ppq. The maximum Dioxin TEQ value in the Reference Area surface water was 27.0 ppq (Reference Area 2).

Maximum detected concentrations of lead (20 ug/l in the Borrow Pit Lake) and nickel (22 ug/l in Creek Segment D), which are two of the four Sauget Area 1 target metals, were lower in Dead Creek than the maximum detected concentrations for lead (32 ug/l) and nickel (24.5 ug/l) in the Reference Area surface-water samples. The maximum detected concentration of zinc, 130 ug/l in Creek Segment B, was the same as the maximum detected concentration in the Reference Area surface-water samples. Copper was the only target metal with a maximum detected concentration in Dead Creek (130 ug/l in Creek Segment B) higher than the maximum detected Reference Area concentration (18.5 ug/L) but the maximum detected copper concentration in the Creek Segment F was 7.4 ug/l and no copper was detected in Prairie du Pont Creek.

With completion of sediment removal in February 2002, downstream migration of sediments from Creek Segments B, C, D, E and F during storm conditions is no longer a significant migration pathway.

3.4.2 Sediment Investigation

As described in Section 2.3.2, all sediments were removed from Creek Segments B, C, D, E and F and Site M in 2000/2001 and transferred to the Judith Lane containment cell as part of the Time-Critical Sediment Removal Action. The sediments described below are no longer in Dead Creek.

3.4.2.1 Sediment Investigation Sampling

Vertically-integrated sediment core samples were collected in Creek Segments B, C, D, E and F; Site M; the Borrow Pit Lake, and Prairie du Pont Creek in order to evaluate the downstream extent of industry-specific and broad-scan constituents, and to provide information for use in the HHRA and the ERA. Sediment samples were analyzed for two separate sets of parameters – industry-specific constituents (Total PCBs, TPH, copper and zinc) and broad-scan constituents (Target Compound List/Target Analyte List). Industry-specific sediment sampling and analytical results are not discussed here because all of these constituents, with the exception of TPH, were included in the broad-scan sediment sample

analyses. Analytical results for the industry-specific sediment samples are included in the Sauget Area 1 EE/CA and RI/FS Support Sampling Plan Data Report (O'Brien and Gere, 2001).

Broad-scan sediment samples were collected at three sampling stations in Creek Segments B, C, D, E and F (three stations per creek segment) at the locations shown on Figure 3-9. In addition, sediment samples were collected at three sampling stations in the Borrow Pit Lake, two sampling stations in Reference Area 1 and two sampling stations in Reference Area 2 (Figure 3-9). Reference Areas were water bodies physically comparable to those in the Dead Creek watershed in order to provide a basis for comparison with Dead Creek and Borrow Pit Lake and were located away from the direct influence of industrial discharges, including major highways. Samples were collected using an Ekman grab sampler or by using stainless-steel trowels and spoons. For more information concerning these sampling procedures, refer to the Ecological Risk Assessment (Menzie-Cura, 2001). The nomenclature used to identify these samples was similar to the following: “SED-CSB-S1-0.2FT”. This nomenclature was identical to the labels used for the industry-specific constituents, except that the symbol “SED” (which stands for sediment) was used in place of “FASED”.

Site M was characterized by collecting one surface-sediment sample and four vertically integrated sediment samples. Broad-scan analyses were performed on the surface sample, which was labeled “SED-M-S1-0.2FT”. The nomenclature “SED” identified a sediment sample; “M” designated Site M, “S1” designated the sample number, and “0.2 FT” identified the sample depth. Four composite sediment samples were collected from Site M as well. Samples were collected from depths of 0 to 1.5 feet at two locations, and 0 to 2 feet at two locations. Composite sediment samples from Site M were labeled similar to the following: WASTE-M-B1-0-1.5FT where WASTE identified the sample as being handled similar to composite waste samples from the other fill areas, M identified the sample as coming from Site M, B1 was the boring location number, and 0-1.5FT identified the depth interval for the composite sample.

Prairie du Pont Creek is located at the southern (downstream) end of Creek Segment F and routes all of the water from Dead Creek to the Mississippi River. To evaluate the impact of the Dead Creek discharge on sediment quality in Prairie du Pont Creek, one broad-scan sediment sample was collected upstream and one broad-scan sediment sample was collected downstream of the confluence of Dead Creek and Prairie du Pont Creek. These two broad-scan sediment samples were numbered in the following manner: BSSED-PDC-S-0-30IN and BSSED-PDC-N-O-20IN. The nomenclature “BSSED” identified the sampling parameters as broad scan sediments; the “PDC” identified that the sample was collected at Prairie du Pont Creek; the “N” and “S” identified that the sample was collected north and south of the Prairie du Pont Creek and Dead Creek intersection, respectively; and the “0-20IN” identified the sampling interval.

Sediment samples were collected from Prairie du Pont Creek via the procedures described in the FSR, except an additional VOC sample was collected using EnCore® samplers per USEPA Method 5035. The upstream sample in Prairie du Pont Creek was collected at an appropriate distance from the confluence with Dead Creek so that possible previous effects of flooding and flow reversals would not affect the collection of the background sample. As reported in the 1996 Hazard Ranking System (HRS) package prepared by PRC Environmental Management, Inc. for USEPA Region V, a background sampling station was located 200 feet north (upstream) of the confluence of Dead Creek and Prairie du Pont Creek. The sediment background sample was collected at this approximate location.

With the exception of the vertically integrated sediment samples from Site M, broad-scan sediment samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals. TCLP extracts of the vertically-integrated samples from Site M were analyzed for VOCs, SVOCS, pesticides, herbicides, PCBs, dioxin and metals, similar to the subsoil and waste samples collected in from Sites G, H, I, L and N.

3.4.2.2 Sediment Investigation Results

Broad-scan sediment analytical results are summarized in Tables 3-49 to 3-53 (Creek Segments B, C, D, E and F), Table 3-54 (Borrow Pit Lake), Table 3-55 (Prairie du Pont Creek) and Table 3-56 (Reference Areas). Analytical results for Site M sediment and bottom soil samples are presented in Tables 3-57 and 3-58, respectively.

After a review of historical data (Ecology and Environment, 1988 and 1998), Total SVOCs, PCBs, Dioxin TEQ and copper were selected as representative indicator compounds for evaluation of downstream migration of site-related constituents in Dead Creek sediments.

3.5 Soil Investigation

3.5.1 Background Soil Investigation

Three shallow soil samples and three subsurface soil samples were collected to establish background soil conditions in Sauget Area 1. Background soil samples were collected near the locations of the wells that were sampled for upgradient groundwater background data, specifically EE-04, EE-20 and EEG-108 which are located upgradient of sites G, I and L, respectively (Figure 3-10). Background soil samples were collected from depths of 0 to 0.5 feet (surface soil samples) and three to six feet below ground surface (subsurface soil samples) at the three locations. The samples were numbered with nomenclature that defined the background well and sampling depth such as: BS-EE-20-0-0.5FT. The “BS” stands for background sample, “EE-20” identifies the background monitoring well that the sample was collected near, and the remainder of the label identifies the sample depth. A total of six total samples were collected and analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals. In addition, surface soil samples were analyzed for bulk density, moisture content, pH and specific gravity. For more information pertaining to the procedures that were followed during sample collection, refer to Section 3.19 of the FSR (Volume 4).

Tables 3-59 and 3-60 summarize, respectively, the results of the background surface and subsurface soil sample analyses. More constituents were detected in surface soils than subsurface soils, and at higher concentrations, so only surface soil results are discussed in this section. Maximum detected concentrations of VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and target metals are given below:

Maximum Detected Constituent Concentrations in Sauget Area 1 Background Surface Soils

Constituent		Maximum Detected Concentration (mg/kg)
VOCs	2-Hexanone	0.018
	Dichloromethane	0.012
SVOCs	Anthracene	0.008
	Benzo(a)anthracene	0.170
	Benzo(a)pyrene	0.150
	Benzo(b)fluoranthene	0.110
	Benzo(g,h,i)perylene	0.082
	Benzo(k)fluoranthene	0.140
	Bis(2-ethylhexyl)phthalate	0.420
	Carbazole	0.032
	Chrysene	0.020
	Diethylphthalate	0.110
	Di-n-butylphthalate	0.240
	Fluoranthene	0.440
	Pentachlorophenol	0.045
	Phenanthrene	0.290
	Pyrene	0.360
Pesticides	4,4'-DDE	0.020
	4,4'-DDT	0.017
Herbicides	MCPA	13
	MCPP	6.55
	2,4,5-TP (Silvex)	0.013
PCBs	Total PCBs	1.71
Dioxin	Dioxin TEQ (Human Health)	0.000203
Target Metals	Copper	190
	Lead	180
	Nickel	28
	Zinc	820

3.5.2 Floodplain Soil Investigation

While localized flooding (ponded water) occurs in Sauget Area 1 during periods of significant precipitation, it is the result of the: 1) lack of relief, poor drainage and absence of storm drains in the floodplain area, and 2) use of Dead Creek and the Borrow Pit Lake for stormwater retention by the Metro East Sanitary District (MESD). Stormwater periodically backs up in Dead Creek since MESD does not operate the lift station at Prairie du Pont Creek until the stormwater storage capacity of Dead Creek and the Borrow Pit Lake is fully utilized. The pumps come on at a pre-set level so that the stormwater does not cause overbank flooding. Overbank flooding from Dead Creek is very unlikely because the discharge from Dead Creek is controlled by a lift station at Prairie du Pont Creek. Based on these considerations, significant scouring of sediments with subsequent deposition in the floodplain was not expected.

In order to confirm this premise and further explore this potential migration pathway, a series of floodplain surface (0.0 to 0.5 ft bgs) and subsurface (3.0 to 6.0 ft bgs) soil samples were collected along transects adjacent to Dead Creek in both developed and undeveloped areas of its floodplain. Sampling methods and results are discussed below.

3.5.2.1 Undeveloped Area Floodplain Soil Investigation

Surface and subsurface soil samples were collected at evenly spaced 200-ft. intervals on seven transects located in undeveloped areas adjacent to Dead Creek (Figure 3-10) to evaluate the extent of migration via the surface water (overbank flow) and air (wind-blown dust) pathways. Four transects were located on the west bank of Dead Creek (UAS - T1, T3, T5 and T7) and three were on the east bank (UAS - T2, T4 and T6). Soil samples were collected at a total of 45 sampling stations: seven stations on Transect T1, six stations on Transect T2, seven stations on Transect T3, seven stations on Transect T4, six stations on Transect T5, five stations on Transect T6 and seven stations on Transect T7.

Surface soil samples were collected from 0 to 0.5 feet below ground surface at each of the 45 sampling stations and subsurface soil samples were collected from three to six feet below ground surface. Each sampling station was labeled with a designation defining transect number, sample number, and sample depth. An example of this nomenclature is the following: “UAS-T1-S1-0-0.5FT”. “UAS” identified that the sample matrix was soil and was collected from an undeveloped area. “T1” identified the transect number, “S1” identified the sample number, and “0-0.5FT” was the sampling interval. Note that the lower sample numbers correspond to samples closer to Dead Creek. For example, sample number 1 (or S1) is located near the edge of Dead Creek in all transects, S2 is approximately 200 feet from Dead Creek, and each consecutive sample number represents a sampling station that is 200 feet farther along the transect. S7 is located approximately 1,200 feet from Dead Creek. For more information pertaining to the procedures that were followed during sample collection, refer to Section 3.17 of the FSR (Volume 4).

Surface and subsurface soil samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs and metals. Moisture content, bulk density, specific gravity and pH were also determined for each sample. Twenty percent of the surface soil samples were analyzed for dioxins to provide data for the HHRA and the ERA. The total number of soil samples collected for dioxin analysis was 18 (nine surface soil samples, and nine subsurface soil samples).

3.5.2.2 Developed Area Floodplain Soil Investigation

Surface and subsurface soil samples were collected at 20 locations adjacent to the seven undeveloped area soil sampling transects discussed above (Figure 3-10). Three soil samples (both surface and subsurface) were collected at residences adjacent to Transects 1 through 6, and two soil samples (both surface and subsurface) were collected adjacent to Transect 7. Visual observation (discoloration) and field PID readings were recorded for the samples. Surface soil samples were collected from 0 to 0.5 feet below ground surface at each of the 20 sampling stations and subsurface soil samples were collected from three to six feet below ground surface. Each sampling station was labeled with similar designations as was used for the undeveloped areas (Section 3.4.2.1), except DAS (meaning developed area sample) replaced UAS. For more information pertaining to the procedures that were followed during sample collection, refer to Section 3.18 of the FSR (Volume 4).

Developed area floodplain surface and subsurface soil samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin and metals. Moisture content, bulk density, specific gravity and pH

were also determined for each sample. Twenty percent of the subsurface soil samples (a total of four samples) were also analyzed for dioxin to provide data for the HHRA and ERA.

3.5.2.3 Floodplain Soil Investigation Results

Summary statistics for detected constituent concentrations in undeveloped area floodplain surface and subsurface soils are presented in Tables 3-61 to 74 while those for developed area floodplain surface and subsurface soils are given in Tables 3-75 to 3-88. As discussed in Section 3.4.2.2, a review of historical data (Ecology and Environment, 1988 and 1998) indicated that Total SVOCs, Total PCBs, Dioxin TEQ and copper were representative indicator compounds for evaluation of downstream migration of site-related constituents in Dead Creek sediments. Maximum concentrations of Total SVOCs, PCBs, Dioxin TEQ and copper in floodplain soil samples from Creek Segments B, C, D and E are discussed below.

Creek Segment B - Maximum detected concentrations of Total SVOCs, Total PCBs, Dioxin TEQ and copper in Creek Segment B floodplain soils are presented below:

CREEK SEGMENT B FLOODPLAIN SOIL - MAXIMUM DETECTED INDICATOR COMPOUND CONCENTRATIONS				
Constituent	**Total SVOCs (mg/kg)**	**Total PCBs (mg/kg)**	**Dioxin TEQ (mg/kg)**	**Copper (mg/kg)**
CS-B Sediments	**22.05**	**226**	**0.0134**	**11,000**
Background Soil	**1.374**	**0.600**	**0.000062**	**190**
Floodplain Surface Soil				
UAS-T1 (West)	**0.037**	**0.244**	**0.00000618**	**230**
UAS-T2 (East)	**0.823**	**0.164**	**0.0000102**	**140**
DAS-T1 (East)	**0.160**	**0.072**	**0.0000156**	**97.5**
DAS-T2 (East)	**0.719**	**0.041**	**0.000012**	**110**
Floodplain Subsurface Soil				
UAS-T1 (West)	**0.200**	**0.0201**	**ND**	**24**
UAS-T2 (East)	**0.160**	**ND**	**0.0000501**	**16**
DAS-T1 (East)	**ND**	**ND**	**0.000000162**	**13**
DAS-T2 (East)	**ND**	**ND**	**0.000000128**	**10**

Notes:
1) **ND = Not Detected**
2) **UAS-T1 = Undeveloped floodplain soil sampling transect number**
3) **DAS-T1 = Developed floodplain soil sampling transect number**
4) **Background concentrations are maximum concentrations**
5) **West = Sampling transect on west bank of Dead Creek**
6) **East = Sampling transect on east bank of Dead Creek**

Maximum detected Total SVOC concentrations were all below background concentrations in developed and undeveloped floodplain soils in Creek Segment B. Surface soil Total SVOC concentrations were one to two orders of magnitude lower than the concentrations measured in adjacent Creek Segment B sediments. Total SVOC concentrations were often higher with increasing distance from the creek (Figure 3-11), further indicating no relationship to the adjacent sediments. Subsurface soil Total SVOC concentrations were generally lower than corresponding surface soil values.

Maximum detected Total PCB concentrations in developed and undeveloped floodplain surface soils were lower than background concentrations, and did not display noticeable trends relative to distance from the creek (Figure 3-12). PCBs were detected in only two subsurface samples; both at sampling transect UAS-T1. Subsurface soil Total PCB concentrations were generally lower than corresponding surface soil values.

Maximum detected Dioxin TEQ concentrations were two to three orders of magnitude lower than concentrations measured in Creek Segment B, all below Sauget Area 1 background concentrations and did not display noticeable trends relative to distance from the creek (Figure 3-13).

Maximum detected copper concentrations in developed and undeveloped floodplain surface soils were two orders of magnitude lower than the average concentrations measured in Creek Segment B, but an order of magnitude higher than Sauget Area 1 background levels. No noticeable trends relative to distance from the creek were apparent (Figure 3-14).

Creek Segment C – Maximum detected concentrations of Total SVOCs, Total PCBs, Dioxin TEQ and copper in Creek Segment C floodplain soils are presented below:

CREEK SEGMENT C FLOODPLAIN SOIL - MAXIMUM DETECTED INDICATOR COMPOUND CONCENTRATIONS				
Constituent	Total SVOCs (mg/kg)	Total PCBs (mg/kg)	Dioxin TEQ (mg/kg)	Copper (mg/kg)
CS-C Sediments	13.43	4.6	0.00317	2,200
Background Soil	1.374	0.600	0.000062	190
Floodplain Surface Soil				
UAS-T3 (West)	9.69	0.116	0.00000327	79
UAS-T4 (East)	58.595	0.058	0.0000114	180
UAS-T5 (West)	1.775	0.173	0.00000441	84.5
DAS-T3 (West)	1.435	0.030	0.00000438	72
DAS-T4 (East)	2.121	0.0675	0.00000604	79
DAS-T5 (West)	7.369	0.035	0.0000243	75
Floodplain Subsurface Soil				
UAS-T3 (West)	0.173	0.0095	0.000000021	19
UAS-T4 (East)	125.394	0.0539	0.000000018	30
UAS-T5 (West)	0.585	ND	0.000000105	16
DAS-T3 (West)	0.377	ND	NA	12
DAS-T4 (East)	0.1325	0.01	NS	12.5
DAS-T5 (West)	0.126	ND	0.00000003	12

Notes:
1) **ND = Not Detected**
2) **NS = Not Sampled**
3) **UAS-T1 = Undeveloped floodplain soil sampling transect number**
4) **DAS-T1 = Developed floodplain soil sampling transect number**
5) **Background concentrations are maximum concentrations**
6) **West = Sampling transect on west bank of Dead Creek**
7) **East = Sampling transect on east bank of Dead Creek**

Total SVOC concentrations in both surface and subsurface soils exceeded Creek Segment C sediment concentrations and background soil concentrations at undeveloped area sampling transect UAS-T4 located along the east side of the Dead Creek (Figure 3-11). The highest Total SVOC concentrations on this sampling transect were located within the boundary of Site N. Maximum detected Total SVOC concentrations at transects UAS-T3, DAS-T4 and DAS-T5 exceeded background soil concentrations for surface samples, but were less than the maximum concentration measured in Creek Segment C sediments. Except for transect UAS-T4, subsurface sample concentrations of Total SVOCs were one to two orders of magnitude less than the respective surface soil concentrations. No trends were observed with increasing distance from the creek.

The maximum detected Total PCB concentrations in developed and undeveloped floodplain surface soils were two to three orders of magnitude lower than the maximum concentrations measured in Creek

Segment C sediments and were also below the average background concentrations measured in Sauget Area 1. PCBs were detected in subsurface samples at three sampling transects (UAS-T3, UAS-T4 and DAS-T4). No trends were observed with increasing distance from the creek (Figure 3-12).

Maximum Dioxin TEQ concentrations were one to three orders of magnitude lower than maximum concentrations measured in Creek Segment C sediments, and below average background levels. No trends were observed with increasing distance from the creek (Figure 3-13).

The maximum detected copper concentrations in developed and undeveloped floodplain surface soils were two to three orders of magnitude lower than the maximum concentrations measured in Creek Segment C sediments. Subsurface soil maximum copper concentrations were comparable to Sauget Area 1 background levels. No trends were observed with increasing distance from the creek (Figure 3-14).

Creek Segment D - Maximum-detected concentrations of total SVOCs, PCBs, Dioxin TEQ and copper in Creek Segment D floodplain soils are presented below:

CREEK SEGMENT D FLOODPLAIN SOIL - MAXIMUM DETECTED INDICATOR COMPOUND CONCENTRATIONS				
Constituent	**Total SVOCs (mg/kg)**	**Total PCBs (mg/kg)**	**Dioxin TEQ (mg/kg)**	**Copper (mg/kg)**
CS-D Sediments	**7.97**	**1.15**	**0.000717**	**740**
Background Soil	**1.374**	**0.600**	**0.000062**	**190**
Floodplain Surface Soil				
DAS-T6 (East)	**52.007**	**0.179**	**0.00000732**	**56**
Floodplain Subsurface Soil				
DAS-T6 (East)	**ND**	**ND**	**0.000000057**	**12**

Notes:
1) **ND = Not Detected**
2) **UAS-T1 = Undeveloped floodplain soil sampling transect number**
3) **DAS-T1 = Developed floodplain soil sampling transect number**
4) **Background concentrations are maximum concentrations**
5) **West = Sampling transect on west bank of Dead Creek**
6) **East = Sampling transect on east bank of Dead Creek**

The maximum Total SVOC concentrations for developed area surface soils samples from transect DAS-T6 exceeded both Creek Segment D sediment and background soils concentrations. However, the highest concentration measured along this transect was found at sampling station DAS-T6-S3-3-6FT located slightly away from the creek along Jerome Lane (Figure 3-11). Total SVOC concentrations measured at proximate station UAS-T6-S1-0-0.5FT along Dead Creek were 0.160 mg/kg, indicating the DAS-T6 values may be attributed to another source. No SVOCs were found in subsurface soils analyzed at transect DAS-T6. Total SVOC concentrations increased from upstream to downstream in the Creek Segment D developed area soil samples.

Maximum detected Total PCB concentrations measured in surface soils at transect DAS-T6 were below background soils concentrations (Figure 3-12). No PCBs were detected in subsurface samples. Similarly, Dioxin TEQ concentrations measured at DAS-T6 were less than background soil concentrations, further indicating the absence of sediment migration to adjacent floodplain soils (Figure 3-13). Maximum detected copper concentrations in surface soils were more than two orders of magnitude lower than in Creek Segment D sediments, but above Sauget Area 1 background levels. No trends were

observed from upstream to downstream in the Creek Segment D developed area soil samples (Figure 3-14).

Creek Segment E - Maximum-detected concentrations of Total SVOCs, Total PCBs, Dioxin TEQ and copper in Creek Segment E floodplain soils are presented below:

CREEK SEGMENT E FLOODPLAIN SOIL - MAXIMUM DETECTED INDICATOR COMPOUND CONCENTRATIONS				
Constituent	Total SVOCs (mg/kg)	Total PCBs (mg/kg)	Dioxin TEQ (mg/kg)	Copper (mg/kg)
CS-E Sediments	6.29	1.04	0.000481	570
Background Soil	1.374	0.600	0.000062	190
Floodplain Surface Soil				
UAS-T6 (East)	1.609	0.385	0.0000159	31
UAS-T7 (West)	5.166	0.090	0.00000295	130
DAS-T7 (West)	27.023	0.010	0.00000628	33
Floodplain Subsurface Soil				
UAS-T6 (East)	14.138	0.0043	0.00000192	35
UAS-T7 (West)	8.135	0.0084	0.000000084	33
DAS-T7 (West)	0.140	ND	NS	62

Notes:
1) ND = Not Detected
2) NS = Not Sampled
3) UAS-T1 = Undeveloped floodplain soil sampling transect number
4) DAS-T1 = Developed floodplain soil sampling transect number
5) Background concentrations are maximum concentrations
6) West = Sampling transect on west bank of Dead Creek
7) East = Sampling transect on east bank of Dead Creek

Maximum detected Total SVOC concentrations in surface soil samples were below Creek Segment E sediment concentrations with the exception of transect DAS-T7 (Figure 3-11). The highest detected Total SVOC concentration in surface soils on sampling transect DAS-T7 occurred at station DAS-T7-S2, which was located between Dead Creek and the adjacent Quail Run trailer park. Maximum detected subsurface soil Total SVOC concentrations were higher than surface soil sample maximum concentrations at UAS-T6 and UAS T-7 but lower than surface soil concentrations at DAS-T7. No trends were observed with increasing distance from the creek (Figure 3-11).

Maximum detected Total PCB and Dioxin TEQ concentrations for surface and subsurface soils in all transects in this section of the Creek were less than background concentrations, indicating that these constituents did not migrate from sediments to floodplain soils. Maximum detected copper concentrations for surface and subsurface soils were one order of magnitude lower than maximum sediment concentrations in Creek Segment E. No trends in Total PCB, Dioxin TEQ or copper concentrations were observed with increasing distance from the creek (Figures 3-12, 3-13 and 3-14).

4.0 SUPPLEMENTAL REMEDIAL INVESTIGATION (2002 TO 2007)

Several supplemental investigations were performed during the period from 2002 through 2007 to address identified data gaps at Sauget Area 1. The supplemental investigations included exploratory trenching and sampling by a USEPA contractor, a DNAPL investigation, groundwater sampling to support a regional groundwater flow and contaminant transport modeling study, a vapor intrusion investigation, a subsurface investigation in a utility corridor along Queeny Avenue, and a soil-to-groundwater migration investigation for soil underlying Dead Creek. These supplemental investigations are summarized in this section.

4.1 Site G, H, I, L, and N Supplemental Investigations

During 2002-2003, Tetra Tech EM Inc. (Tetra Tech) was contracted by USEPA to perform site investigations at Sites H, I South, L, and N under the EPA's Superfund Technical Assessment and Response Team (START) program (Tetra Tech, 2003a, 2003b, and 2003c). Trenching locations were selected by Tetra Tech and USEPA based on review of historical aerial photographs. The investigations were not intended to delineate the extent of the fill areas but to investigate the presence and nature of the waste, the presence and extent of buried drums, and the chemical constituents in the fill materials and in shallow groundwater. The investigations were conducted as described below:

- Exploratory trenches were advanced using a trackhoe machine that removed soil in 1 to 2 foot thick lifts. All excavated materials were stockpiled on plastic sheeting.

- Excavated materials were visually examined and screened for organic vapors using a PID and/or FID. Samples of waste materials and/or fill soil were collected for laboratory analysis. The samples were submitted to for laboratory analysis of VOCs, SVOCs, pesticides, metals, and PCBs. A subset of the waste and soil samples was analyzed for dioxins/furans.

- Excavated materials were backfilled into the trenches and the trench locations were restored.

- Groundwater samples were collected using direct-push drilling equipment at Sites I South and L. A rod with a retractable screen was advanced to a depth of approximately 22 feet, and the screen was exposed from 18 to 22 feet to allow water to enter the screen. After water levels were measured, a peristaltic pump was used to purge and to collect groundwater samples. After sampling, the rod and screen were withdrawn from the borehole, and the borehole was plugged.

- Six temporary wells were installed at Site N to depths ranging from 11 to 18 feet below grade using direct-push drilling equipment. The wells were constructed of 1-inch diameter PVC with 5 ft or 10 ft of screen. Water levels were measured and the temporary wells were purged and sampled using a peristaltic pump. The samples were submitted to for laboratory analysis of VOCs, SVOCs, pesticides, metals, and PCBs. A subset of the groundwater samples was analyzed for dioxins/furans.

- An elevation survey was performed at Site N to determine the top of casing elevations of the temporary wells relative to an on-site datum. Water levels were measured one week after

installation of the temporary wells to determine groundwater flow direction at Site N, and the temporary wells were then plugged.

The work performed by Tetra Tech in 2002-2003 did not include investigations at Site G. However, as discussed below, Golder Associates collected samples of waste materials encountered on the surface of Site G at two discrete locations in June 2004 (Golder, 2004).

Figure 4-1 shows the trenches and groundwater sampling locations at Sites H, I South, and L, and the approximate location of the waste samples collected at Site G. Figure 4-2 shows the locations of trenches and temporary wells at Site N. The following sections briefly discuss the observations at each site.

4.1.1 Site G

Waste materials were observed at Site G in June 2004 at two discrete locations, designated L-1 and L-2 (Golder, 2004). These locations were along lines that had been cleared of vegetation to allow placement of geophone leads for a seismic survey, which was performed during the DNAPL characterization and remediation study. The waste at locations L-1 and L-2 appeared to be similar, consisting of a black material with a metallic luster and having the consistency of cold tar. The immediately surrounding soil was stained a dark yellowish brown. In addition, at L-2 there was a small dark yellow solid mass that appeared to have a crystalline structure. There was no discernable odor at either location, and a PID recorded no readings above background (Golder, 2004).

Golder collected a sample of the black tar-like substance, a sample of the yellow crystalline material, and a sample of the dark yellowish brown soil. As a result of the sampling, all of the visible waste materials (both the black tarry substance and the yellow crystalline material) were removed from the site at the two locations where they were observed. Temporary covers were constructed at areas L-1 and L-2. The covers consisted of low-density polyethylene (LDPE) over the visibly affected area of the ground surface, covered by 12 inches of clean soil imported from an off-site source. The soil was compacted with construction equipment and graded to drain.

The waste samples were submitted for laboratory analysis of VOCs, SVOCs, PCBs, pesticides, herbicides, and metals. Field procedures, site photographs, and analytical results were documented in a letter report (Golder, 2004). Laboratory results indicated that all three waste samples had elevated concentrations of 2-nitroaniline and 4-nitroaniline. Other constituents detected at elevated concentrations in one or more samples included 4-chloroaniline; 1,4-dichlorobenzene; nitrobenzene; PCBs; and certain pesticides and herbicides.

4.1.2 Site H

Tetra Tech excavated two trenches at Site H in July 2002. The waste materials found in the trenches included filter paper, crystalline material, catalyst beads, sand-like material, and various soils. No drums were observed in the two trenches at Site H. An oily sludge material removed from trench T1 had a maximum PID reading of 12.7 ppm. A total of four waste samples and three soil samples were submitted for laboratory analysis of VOCs, SVOCs, pesticides, metals, and PCBs. Analytical results were presented

on Tables 2, 3, and 4 in the site investigation report (Tetra Tech, 2003a). During site restoration the following day it was noted that both trenches had a noticeable odor, so additional clean soil was delivered to cover the trenches. No groundwater samples were collected during the investigation at Site H.

4.1.3 Site I South

Tetra Tech excavated four trenches in July 2002 in Site I South at the truck parking area (Tetra Tech, 2003a). In October 2003, Tetra Tech excavated three trenches in a grassy area to the west of the Sauget Village Hall and collected one groundwater sample from that area (Tetra Tech, 2003c).

Fill materials observed in the trenches at the truck parking area included used brick and refractory brick interspersed with expended coal, wood products, rubber hoses, scrap steel, and wire. A total of four drums were found in three of the trenches. Two of the drums were sampled, including one that was in poor condition and contained a non-volatile tar-like substance, and one that contained a cement-like substance. Waste samples were also collected from various substances encountered in the trenches, including filter cake material, crystalline material, filter cloth, sludge-like material, granular beads, a purple substance, yellow crystalline rock, a shiny pumice-like substance, and a black oily material that had a petroleum odor.

At the Sauget Village Hall property, fill materials encountered in the main trench, Site I-T1, included construction debris consisting of soil, concrete, brick, wood, metal, glass, and rubber hoses. No drums were found in this trench. Waste samples were collected from various substances, including a yellow and white sludge material with an FID reading of 130 ppm, a black material with FID readings of 320 to 416 ppm, a black material with oily catalyst beads, and a black soil with broken battery casings and plastic. The northern portion of the main trench was extended about 8 feet to the east to determine if construction debris was present underneath the Village Hall parking lot, and no construction debris was encountered. This suggests that the edge of the Village Hall parking lot is the approximate eastern boundary of waste at Site I South (Figure 4-1).

One of the two smaller trenches, Site I-T2, contained a few pieces of asphalt and concrete, and the other small trench, Site I-T3, had no construction debris or waste. No samples were collected from the two smaller trenches because PID and FID readings indicated no evidence of contamination. The absence of construction debris or waste at trench Site I-T3 provides further evidence to suggest that the edge of the Village Hall parking lot is the approximate eastern boundary of waste at Site I South.

A total of thirteen waste samples from trenches in the truck parking area and four waste samples from the main trench in the grassy area west of the Village Hall property were submitted for laboratory analysis of VOCs, SVOCs, pesticides, metals, and PCBs. One groundwater sample was collected from the Village Hall property for laboratory analysis of VOCs and metals. Analytical results are presented in two separate site investigation reports (Tetra Tech, 2003a and 2003c).

4.1.4 Site L

In March 2003, Tetra Tech excavated five trenches at Site L and used direct-push drilling equipment to collect ten groundwater samples (Tetra Tech, 2003b). Waste materials in trench L-T1 consisted primarily

of soil, concrete, and industrial debris such as pipes and wires. Four drums were encountered in the western section of trench L-T1 at a depth of 8 to 12 ft bgs. The first drum contained a black oily liquid and a yellowish to cream-colored solid the consistency of paint. The second drum was badly crushed and appeared to contain paint solids. A sample of a black and tan sandy material collected from 14 ft bgs had an FID headspace reading of 1200 ppm. Black stained soil was encountered in the middle and eastern portions of trench L-T1, and soil samples from these locations had headspace readings of 290 ppm and 37 ppm, respectively. A reddish-brown and black soil material found in a deteriorated paper bag yielded an FID reading of 290 ppm.

Waste materials in trenches L-T2, L-T3, L-T4, and L-T5 consisted primarily of soil and construction debris such as brick, pipes, concrete, and wood. FID readings for soil samples from trenches L-T2, L-T3, and L-T4 ranged from 10 to 118 ppm. FID readings for the two soil samples from trench L-T5 were 750 ppm and 1500 ppm.

A total of two waste samples collected from drums, fourteen soil samples, and ten groundwater samples were submitted for laboratory analysis. Analytical results are presented on Tables A-1 through A-10 in the site investigation report for Site L (Tetra Tech, 2003b).

4.1.5 Site N

In October 2003, Tetra Tech excavated six trenches at Site N and installed and sampled six temporary wells. Site N is located on property formerly owned by the H. Hall Construction Company and was primarily used for disposal of construction debris. Tetra Tech described the waste observed in the trenches as construction debris consisting of soil, brick, concrete, metal, tires, and wood. Creosote odors were sometimes noted during trenching. A total of 21 drums were uncovered at Site N, including 19 empty crushed drums, one crushed drum with a waste oil odor (FID reading of 72 ppm), and one crushed drum with a white paint-like sludge (FID reading of 600 ppm). The white paint-like sludge could have been painting waste, which would be consistent with the former use of Site N for disposal of construction debris. Samples of black soil found in discrete areas of trenches N-T1 and N-T2 had FID readings of 300 ppm and 710 ppm, respectively. All other soil samples had FID readings ranging from 0 to 97 ppm.

A total of six soil samples and six groundwater samples from Site N were submitted for laboratory analysis. Analytical results are presented on Tables A-1 through A-10 in the site investigation report for Sites I and N (Tetra Tech, 2003c). Based on results of the water level survey, Tetra Tech determined that shallow groundwater flow at Site N is toward the northwest.

4.2 DNAPL Investigation

4.2.1 DNAPL Characterization and Remediation Study

In a letter dated January 9, 2003, USEPA required the performance of a DNAPL characterization and remediation study at Sauget Area 1. The DNAPL characterization and remediation study was conducted from May to December 2004, in accordance with a Work Plan dated April 1, 2004 (GSI, 2004). To address USEPA comments, additional work was conducted from September to December 2005, in accordance with a supplemental work plan dated August 2, 2005.

DNAPL characterization activities included the following: i) NAPL surveys and recovery tests; ii) a 3-D seismic reflection survey to map the topography of the bedrock surface; iii) soil sampling and piezometer installation at 19 locations; iv) bench-scale DNAPL treatability tests; and v) downhole geophysical logging at bedrock well BR-I.

4.2.1.1 NAPL Surveys and Recovery Tests

NAPL Surveys in 2004-2005 - A NAPL survey was performed in May 2004 at 57 wells and piezometers in existence prior to the start of the DNAPL characterization study. NAPL surveys were performed in October 2004 and September 2005 at newly installed DNAPL piezometers A1-1 through A-18 and a subset of the previously existing wells. Additional DNAPL thickness measurements were collected during October to December 2005 at A1-19 and BR-I. NAPL survey procedures included the use of an interface probe and clear bailer to check for LNAPL on top of the water table and the use of an interface probe, weighted cotton string, and clear bailer to check for DNAPL at the bottom of each well.

An accumulation of LNAPL was found at well EE-11 at Site G, and an accumulation of pooled DNAPL was found at BR-I and A1-19, which are located about 10 feet apart at Site I South (see Figure 4-3). Some evidence of DNAPL was observed in BR-G. Droplets of DNAPL were observed at A1-08 during the October 2004 survey but not during the September 2005 survey. There was no evidence of LNAPL or DNAPL in any of the other wells or piezometers surveyed in 2004-2005.

NAPL Recovery Tests in 2004-2005 - Two LNAPL recovery tests were performed at well EE-11 at Site G. The first LNAPL recovery test was performed in May 2004 using a peristaltic pump and recovered an accumulation of LNAPL that was sampled for field testing and laboratory analysis. The second test was performed in October 2004 using a clear bailer, and this test produced only small globs of LNAPL.

DNAPL recovery tests were performed at wells BR-G and BR-I using Waterra pumps. The recovery tests were conducted using alternating periods of pumping and resting. Each NAPL recovery test was terminated when at least one of the following conditions was met: i) the test was performed for at least 8 hours; ii) the test recovered a total of at least 100 gallons of fluids; or iii) no measurable NAPL was recovered during at least two consecutive pumping and rest cycles following the initial pumping period. Some evidence of DNAPL was noted at BR-G during well surveys, but no DNAPL was recovered during three separate recovery tests at BR-G.

DNAPL was recovered from BR-I, and a DNAPL sample from BR-I was retained for field testing and laboratory analysis. Recovery tests confirmed that BR-I is a low-yleld well. After fluids stored in the 4-inch diameter PVC casing were pumped out, the yield was approximately 0.05 gpm of total fluids with drawdown of approximately 100 ft below static water level. After each recovery test, it took several days for the water level in BR-I to return to static conditions.

LNAPL from EE-11 at Site G and DNAPL from BR-I at Site I South were evaluated in the field for NAPL density, viscosity, temperature, and wettability. Containers of NAPL and water from these two wells were submitted for laboratory analysis of fluid properties including dynamic viscosity, fluid density, surface tension, and interfacial tension. Samples of the LNAPL and DNAPL were submitted for distillation testing

and for laboratory analysis of VOCs, SVOCs, pesticides, herbicides, PCBs, dioxin, and metals. Results of the laboratory analyses for the LNAPL and DNAPL samples are summarized in Appendix C of the DNAPL Characterization and Remediation Report (GSI, 2006c).

Key Findings from NAPL Surveys and Recovery Tests - As shown on Figure 4.3, results of the NAPL surveys and recovery tests performed in 2004 and 2005 indicate the following: i) further recovery of LNAPL at EE-11 by pumping does not appear feasible; ii) DNAPL is not present at A1-08; iii) some DNAPL may be present in BR-G, but recovery of DNAPL by pumping does not appear feasible; and iv) pooled DNAPL is present at BR-I and at A1-19.

4.2.1.2 Seismic Reflection Survey

A three-dimensional seismic reflection survey was conducted to map the topography of the bedrock surface and to identify topographic lows where pooled DNAPL could potentially accumulate. The seismic survey covered an L-shaped area approximately 44 acres in size encompassing Sites G, H, I South, I North, and L.

The seismic survey was conducted using a network of geophones and cables, a data acquisition and recording instrument, and an energy source. The energy source was a truck-mounted accelerated weight drop apparatus. Where truck access was not possible, a 20-lb sledgehammer was used as the energy source. To adequately image the bedrock surface, the lines of geophones were at 55 ft intervals. Downhole “check shot” surveys were conducted in BR-G, BR-H, and BR-I to generate seismic travel time to depth relationships. A geophysicist processed the seismic reflection data using a UNIX workstation and Promax 3D seismic processing software, and the result was an interpreted bedrock surface elevation map that was issued in August 2004. The USEPA and the PRP group used the map to help select and prioritize proposed locations for soil sampling and installation of bedrock piezometers.

Measured depths to bedrock and surveyed ground elevations for the first ten bedrock piezometers installed in September 2004 were provided to the geophysicist to improve the accuracy of the velocity model that was used for conversion of seismic reflection time to depth. The revised bedrock surface elevation map was completed by the geophysicist in October 2004 and was used by USEPA and the PRP group to help select remaining locations for soil sampling and installation of bedrock piezometers. Overall, the predicted bedrock elevations from the 3-D seismic survey were found to be more reliable at Sites H and I than at Site G, due to noisy and badly scattered data at Site G.

4.2.1.3 Soil Sampling and Piezometer Installation

A total of 19 piezometers were installed during the DNAPL characterization and remediation study (see Figure 4.3). Bedrock piezometers were installed inside and outside the fill areas and at predicted topographic low spots in the bedrock surface. One piezometer, A1-17, was installed to verify that the LNAPL found at EE-11 did not extend beyond the limits of the Site G fill area. The number of piezometers for each fill area was based on the size of the fill area and the potential magnitude of DNAPL impact. Accordingly, more piezometers were installed at Site I, compared with Site L, because Site I has

a larger surface area and has more potential for DNAPL impacts. The following tasks were performed during soil sampling and piezometer installation.

- Soil borings were advanced using sonic drilling equipment. Each boring was continuously cored through the fill materials, the alluvial deposits, and five or more feet into bedrock, except for the shallow piezometer, A1-17, which stopped at a depth of 25 ft bgs.

- Each soil core was examined and screened for NAPL based on the following methods: i) visual inspection of the core surface, ii) inspection of flexible reactive liner material (i.e., NAPL FLUTe strips) placed along the core surface, iii) measurement of headspace vapor concentrations using a PID, and iv) use of vial test kits containing Sudan IV dye. Each core was examined to determine soil type and was digitally photographed.

- One soil sample from each 10-foot depth interval of core was retained for laboratory analysis of VOCs and SVOCs. Samples were selected based on results of field screening and examination for NAPL or other evidence of organic constituents. In addition, a total of three "clean" soil samples (i.e., with little or no evidence of NAPL) were retained from each boring for analysis of fraction organic carbon.

- Several undisturbed cores were collected from each boring using a split-spoon sampler and were immediately placed on dry ice. These frozen cores were submitted to PTS Laboratory for possible testing for one or more of the following: i) physical properties (i.e., porosity, bulk density, and grain size classification); ii) pore fluid saturations; and iii) DNAPL mobility using a modified centrifuge test procedure.

- Each soil boring was completed as a piezometer. The bedrock piezometers were screened both above and below the bedrock surface and constructed of 2-inch diameter stainless steel casing with 15 feet of screen. The shallow piezometer, A1-17, was installed to a depth of 25 feet bgs with 15 feet of screen. After installation, each piezometer was developed and checked for the possible presence of LNAPL and pooled DNAPL. NAPL survey results from 2004-2005 are shown on Figure 4-3.

Core examination and field screening results, sample analytical data, testing results from the undisturbed cores, and boring log/as-built diagrams are presented in the DNAPL Characterization and Remediation Report (GSI, 2006c).

Figures 4.4 and 4.5 show the horizontal and vertical distribution of total chlorobenzenes and total chloroethenes in the fill and aquifer matrix. Total chlorobenzenes is defined as the sum of the concentrations of the following constituents: chlorobenzene; 1,2-dichlorobenzene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; and 1,2,4-trichlorobenzene. Total chloroethenes is defined as the sum of the concentrations of tetrachloroethene; trichloroethene; cis-1,2-dichloroethene; trans-1,2-dichloroethene; and vinyl chloride.

For total chlorobenzenes in the SHU (0-30 ft bgs), the borings with the highest concentrations (>100 mg/kg) included A1-6, A1-8, A1-19 at Site I South, A1-2 at Site H, and A1-13 and A1-14 at Site G. The

maximum concentration of total chlorobenzenes in the SHU was 25,300 mg/kg at A1-8 (22.5 to 25 ft bgs). For total chlorobenzenes in the MHU and DHU, the borings with the highest concentrations included A1-8, A1-9, and A1-19 at Site I South and A1-14 at Site G. The maximum concentration of total chlorobenzenes in the MHU and DHU was 1620 mg/kg at A1-14 (112.5 to 115 ft bgs).

Concentrations of total chloroethenes were in general significantly lower than the concentrations of total chlorobenzenes. For total chloroethenes in the SHU (0-30 ft bgs), the borings with the highest concentrations (>10 mg/kg) included A1-8 and A1-9 at Site I South and A1-13 and A1-14 at Site G. The maximum concentration of total chloroethenes in the SHU was 36 mg/kg at both A1-9 (25 to 27.5 ft bgs) and A1-14 (12.5 to 15 ft bgs). Total chloroethenes concentrations in the MHU and DHU were relatively low and frequently were below detection limits. The maximum concentration of total chloroethenes in the MHU and DHU was 1.2 mg/kg at A1-9 (42.5 to 45 ft bgs).

4.2.1.4 DNAPL Treatability Tests

Three potential source depletion technologies were evaluated in Section 5.0 of the DNAPL Characterization and Remediation Report (GSI, 2006c). The technologies that were evaluated included surfactant-enhanced solubilization, thermal treatment, and chemical oxidation. Treatability tests were conducted as part of this evaluation, and a comprehensive dissolution test was conducted at the bench-scale to provide data on mass flux and time required to deplete the source. Results of these tests were presented in Appendix G of the DNAPL Characterization and Remediation Report (GSI, 2006c) and are discussed below.

Surfactant Treatability Test - Surfactant flushing (with or without cosolvent) has been developed as an aggressive remediation technology for DNAPL contamination in the subsurface (Yin and Allen, 1999). The feasibility of this technology is based on the interaction between the surfactant and the contaminants in relation to the media in which they are present, typically water.

A bench-scale test was conducted using the DNAPL sample from well BR-I to determine the applicability of two different types of surfactants for enhancing solubility. Surfactants (Tween 80 and Aerosol MA-80I) were added at levels above their critical micelle concentrations to solutions containing DNAPL of known composition that was recovered from well BR-I. No consistent enhancement in solubilization was noted for any of the compounds of interest. The results from this treatability test suggest that surfactant-enhanced solubilization is not an appropriate technology selection for Sauget Area 1. Because increases in concentration following surfactant addition were not observed, no estimates can be made of the mass of surfactant needed to remove the constituents present at the site. While it is possible that surfactant amendments may have a more measurable impact on solubilization *in situ*, there is little indication that the compound profile is amenable to surfactant flushing.

Thermal Treatment Evaluation Using DNAPL Boiling Point Data - Thermal treatment is a general term for a variety of approaches designed to destroy or mobilize constituent mass *in situ*. Most methods involve the injection of heat (often in the form of steam) to vaporize and strip volatile compounds. It is not practical to dewater or completely boil off all water within the saturated zone at Sauget Area 1. One thermal treatment approach that does not require dewatering of the saturated zone is a combination of

Dynamic Underground Stripping and Hydrous Pyrolysis Oxidation (DUS/HPO). The DUS/HPO process involves the continuous injection of steam and oxygen to heat the aquifer to the boiling point of water and mobilize a portion of the contamination through volatilization and stripping. Recovery of volatilized constituents requires a series of extraction wells. Hydraulic control is used to recover a portion of the overall mass, including mobilized free product and aqueous phase constituents.

Laboratory analysis of the DNAPL sample from BR-I indicated that the principal constituents by mass fraction were 1,2,4-trichlobenzene (14%); hexachlorobenzene (1%); and 1,4-dichlorobenzene (0.8%). These chemicals have minimum boiling points of 416°F, 630°F, and 346°F, respectively. Distillation test results using DNAPL from BR-I indicate that only 5% of the DNAPL has a boiling point at or below 432°F. The remaining 83% of the sample volume recovered had a boiling point that fell within the relatively narrow range of 432 to 530°F. These laboratory results are documented in Appendix C of the DNAPL Characterization and Remediation Report (GSI, 2006c)

Based on results from the BR-I DNAPL sample, the DNAPL constituents within the fill materials and alluvial aquifer matrix at Sauget Area 1 have relatively high boiling points, which indicates that volatilization is not likely to be the predominant source removal mechanism during thermal treatment using the DUS/HPO technology. Instead the predominant mass removal mechanism would likely be pumping of free product, based on results from the Visalia site, a well-documented site located in Visalia, California, where DUS/HPO thermal treatment technology was applied (US DOE, 2000). Heating of the fill materials and aquifer matrix at Sauget Area 1 would reduce interfacial tension and viscosity of residual DNAPL, thereby increasing the potential for DNAPL to move through the fill and aquifer matrix and be removed by pumping from recovery wells.

Chemical Oxidation Treatability Test - Chemical oxidation acts to deplete source mass via a chemical reaction between a strong oxidant with a reduced constituent with the goal of directly converting the compound to CO_2. Common chemicals used for this purpose include hydrogen peroxide (H_2O_2), chloride dioxide (ClO_2), and potassium permanganate ($KMnO_4$). Potassium permanganate has been used for removing drinking water pollutants for several decades, and it has been applied in field demonstrations for removing DNAPL at the Borden site (Schnarr et al., 1998) and at the Portsmouth Gaseous Diffusion Plant in Ohio (U.S. DOE). On this basis, potassium permanganate was the chemical oxidant that was selected for further evaluation at Sauget Area 1.

Compounds identified in the Sauget Area 1 DNAPL include trichlorobenzene, dichlorobenzene, and chlorobenzene. The amount of permanganate needed to completely oxidize these compounds was determined from reaction stoichiometries. On a mass basis, this corresponds to ratios of 7.0 mg of $KMnO_4$ required per mg of trichlorobenzene, 9.3 mg of $KMnO_4$ required per mg of dichlorobenzene, and 13.1 mg of $KMnO_4$ required per mg of chlorobenzene.

During a study at another site in the Sauget area (the Solutia Inc. W.G. Krummrich Plant), a DNAPL sample was collected for a bench-scale chemical oxidation treatability test using permanganate. However, the test was not successful in converting all VOCs to CO_2. The tests yielded ratios ranging from 15.7 to 148.3 grams of permanganate needed per gram of VOC oxidized, in part because the oxidation reaction was kinetically limited and non-selective. Because the Krummrich DNAPL is generally

similar in composition to that recovered at Sauget Area 1 (chlorinated benzenes), it is not expected that chemical oxidation would be an effective source depletion technology at Sauget Area 1.

Dissolution Tests - Dissolution of contaminants into the aqueous phase was considered as a baseline condition for remediation of the DNAPL source area. Estimates of persistence of contamination and time scales required for cleanup can be generated, and this provides a comparison case for natural attenuation and pump-and-treat remediation strategies. Dissolution tests were conducted using soil collected during the drilling program at Sauget Area 1. Site soil was added to bench-scale columns to model flow-through conditions in an aquifer. Dissolution was quantified in terms of the mass of constituents recovered per pore volume pumped through the column, or the number of pore volumes required to reach clean-up goals. Soil from the following borings and depth intervals was used: A1-8 (22.5-25 ft); A1-8 (70-72.5 ft); and A1-14 (25-27.5 ft).

Over the course of 50 pore volumes, passive dissolution resulted in depletion of total contaminant mass, but only minimal changes in total COC concentration were observed, suggesting that dissolution rates reached steady-state within a short period following the initiation of pumping. After 50 pore volumes, the total COC concentrations had decreased but within a range of only 10 to 30%. The flat concentration profile over time is consistent with studies that indicate that concentration changes in soil matrices containing NAPL are dependent on mass removal, and that significant changes in concentration are generally preceded by large changes in source mass (Newell and Adamson, 2004; Sale and McWhorter, 2001). In the case of the three soil samples used to create these columns, the total mass of COC present initially can be estimated using previous analyses of the core, and this mass can be compared to the cumulative mass in the effluent over time. After pumping 50 pore volumes, this percent removal of COCs ranged from 0.38 to 35%.

Analysis of the rate of concentration change versus pore volumes indicated that at a minimum 740 pore volumes, and potentially 2800 would be required for natural dissolution to treat the DNAPL zone. This analysis ignored one dissolution test column with no measurable decrease in concentration after 50 pore volume flushes. Detailed information regarding the treatability tests is found in Appendix G of the DNAPL Characterization and Remediation Report (GSI, 2006c).

4.2.1.5 Downhole Geophysical Logging at Well BR-I

Downhole geophysical logging surveys were performed at bedrock well BR-I to obtain more information about the condition of the well and the origin of pooled DNAPL found in the well. The logging surveys were performed by Colog in October 2005 and utilized an optical televiewer, acoustic televiewer, three-arm caliper, video, and a probe that measured fluid temperature/conductivity. Colog's report was included in Appendix I of the DNAPL Characterization and Remediation Report (GSI, 2006c).

Logging results indicated that the 4-inch diameter PVC casing in BR-I extends to a depth of 124.75 ft bgs, followed by an open borehole in the bedrock to a total depth of 146.9 ft bgs. The bottom portion of the PVC casing could not be observed directly due to the presence of DNAPL starting at a depth of 114.5 ft bgs. Colog's interpretation of the acoustic televiewer and caliper logs indicated no evidence of damage to

the bottom of the PVC casing. However, pooled DNAPL was in contact with the lower portion of the PVC casing, which suggested potential for some degree of chemical degradation of the PVC casing.

Within the open-hole portion of the well, a total of 42 acoustic features were observed at depths between 125.2 ft and 144.4 ft bgs. Colog ranked the acoustic features on a scale from 1 to 5 based on a ranking system developed by the U.S. Geological Survey. Of the 42 acoustic features observed in the open borehole, 13 had the rank of 3 (i.e., distinct feature with open aperture). One acoustic feature had the rank of 4 (i.e., very distinct, wide, possible interconnected fracture), and this feature was also observed on the caliper log. Although bedrock fractures are apparently present at BR-I, the low well yield (~0.1 gpm) observed during DNAPL recovery tests at BR-I demonstrates that these fractures transmit very little flow.

4.2.2 DNAPL Recovery Studies at Well BR-I

4.2.2.1 DNAPL Recovery at BR-I (November 2006 to March 2007)

Following review of the DNAPL Characterization and Remediation Report, USEPA requested that a DNAPL recovery study be performed at BR-I. This study was conducted from November 2006 to March 2007 in accordance with a work plan submitted to USEPA in August 2006.

The first task was to install a 2-inch diameter stainless steel well assembly within the existing 4-inch diameter PVC casing and open borehole. An electric-powered piston pump was then installed for DNAPL recovery. The pump included a downhole piston assembly, a 1.25-inch diameter HDPE riser pipe, an electric drive motor / actuator mounted on top of the wellhead, and a motor control box.

During the DNAPL recovery study, DNAPL and water were pumped from BR-I into drums once a week for 15 weeks. A portable generator was used as the power source for operating the electric-powered piston pump. During each visit, pumping was terminated when the DNAPL accumulation in the well was removed and the flow rate of recovered fluids exhibited a noticeable decrease to <0.1 gpm, typically after about 30 to 40 minutes of pumping. Each visit included measurement of flow rates, volumes of total fluids recovered, and depths to water and DNAPL in BR-I and A1-19 before and after pumping. Observations of the appearance and estimated DNAPL fraction of the recovered fluids were noted during pumping. After completion of the 15-week study, depth to water and depth to DNAPL were measured in each drum of recovered fluids in order to calculate an accurate volume of recovered DNAPL during the study.

Based on volume calculations for fluids in the drums, the recovered volumes were as follows:

- Volume of total fluids (DNAPL and water) recovered in 15 weeks: 299 gallons
- Volume of DNAPL recovered in 15 weekly events: 49 gallons
- Average DNAPL recovery: 3.3 gallons / event

Procedures and results of the study are documented in Results of DNAPL Recovery Study at BR-I, Revision 1 (GSI, 2008a).

Figure 4-6 illustrates the conceptual model for the presence of pooled DNAPL at and near BR-I. BR-I is screened in unweathered bedrock, which is overlain by a zone of weathered bedrock and the alluvial aquifer. The lowermost portion of the alluvial aquifer and the weathered bedrock apparently comprise the primary reservoir for pooled DNAPL entering BR-I. While the possibility of some DNAPL in fractures in the unweathered bedrock cannot be ruled out, the contribution of DNAPL to BR-I from unweathered bedrock, if any, is relatively small (GSI, 2008a).

4.2.2.2 DNAPL Recovery at BR-I (October 2008 to May 2012)

A DNAPL recovery program was initiated at BR-I in October 2008. From October 2008 through November 2009, DNAPL was recovered from BR-I once every other week except during a two-week period in June 2009, when a total of 7 DNAPL recovery events were performed. The DNAPL and water recovered from BR-I were stored in a 500-gallon dual-wall poly tank located adjacent to BR-I. The procedures and results of the DNAPL recovery activities from October 2008 through November 2009 were documented in a letter report (GSI, 2009), and the key findings were as follows:

- **DNAPL Recovery from Every-Other-Week Pumping:** Approximately 440 gallons of total fluids (including 80 gallons of DNAPL) accumulated in the 500-gallon tank after a total of 22 every-other-week pumping events, for an average recovery of 3.6 gallons of DNAPL per event.

- **DNAPL Recovery from More Frequent Pumping in June 2009:** Approximately 125 gallons of total fluids (including 20 gallons of DNAPL) accumulated in three drums after a total of 7 pumping events during a two-week period in June 2009, for an average recovery of 2.9 gallons of DNAPL per event.

- **Presence of Pooled DNAPL at Piezometer A1-19:** A pooled DNAPL thickness of approximately 4.9 feet was consistently detected in A1-19, which is located 15 ft from BR-I. Pumping at BR-I does not appear to have any effect on the pooled DNAPL thickness in A1-19.

Approximately 1687 gallons of total fluids were removed from BR-I during the period from December 2009 through May 31, 2012, including an estimated 229 gallons of DNAPL. During this period, DNAPL was recovered from BR-I every other week, except from late January 2012 through April 2012, due to problems with the electric-powered piston pump. A new piston pump was installed in BR-I on May 1, 2012, and every other week DNAPL recovery resumed at that time.

A cumulative volume of approximately 378 gallons of DNAPL was recovered from BR-I during the entire period of DNAPL recovery (i.e., from November 2006 through May 31, 2012). This estimated total represents the sum of the DNAPL recovery volumes discussed in Section 4.2.2.1 and 4.2.2.2.

4.3 Regional Groundwater Flow and Contaminant Transport Model Sampling

In 2006, URS conducted groundwater sampling at selected wells throughout the region, including Sauget Area 2, Sauget Area 1, the Solutia Krummrich facility, and the Conoco Phillips property. The data from this investigation was used to update and refine the groundwater flow and contaminant transport model for the American Bottoms Aquifer (GSI, 2008b).

The following wells at Sauget Area 1 were sampled during this regional groundwater sampling program: i) upgradient wells IMW-1S, IMW-1M, and IMW-1D; ii) Site G wells EEG-107 and BR-G; iii) Site H wells EE-01, EEG-03, and BR-H; and iv) the monitoring wells surrounding the TSCA cell, which is located in the area south of Site G.

The wells selected for sampling were developed before sampling if more than 10% of the well screen was silted in. The water level and total depth of each well were measured using an interface probe. If NAPL was found in a well, the depth and thickness were also measured using the interface probe, and a disposable polyethylene bailer was used to verify the presence of NAPL.

Groundwater samples were collected using low-flow methodologies. A submersible pump equipped with disposable polyethylene tubing was lowered into the well, and the pump intake was set near the middle of the screen. Tubing from the pump was connected to a flow-through cell for measurement of pH, specific conductance, temperature, turbidity, dissolved oxygen, and ORP.

Monitoring well purging was conducted at a flow rate of 100 mL/min or lower if significant drawdown occurred. Water level measurements were recorded during purging, and purging continued until pH, specific conductance, and temperature readings stabilized over a minimum of thee successive flow-through cell volumes or one hour had elapsed and the data was indicative of groundwater from the formation, whichever occurred first. Immediately following purging, groundwater samples were collected at a flow rate of no more than 0.5 L/minute using the same pump used for purging.

The groundwater samples were shipped to the lab for analysis of VOCs, SVOCs, herbicides, metals, ammonium, and several geochemical parameters, which included methane, nitrate, carbon dioxide, alkalinity, sulfate, manganese, chloride, ethane, ethane, and total organic carbon. Due to the short hold time, ferrous iron was analyzed in the field using a spectrophotometer. Results of this regional groundwater sampling program are documented in the Remedial Investigation Report, Sauget Area 2 Sites, Revision 4 (URS, 2009).

4.4 Vapor Intrusion Investigation

Golder performed a vapor intrusion investigation around several structures at Sauget Area 1 during November and December 2006. The investigation was performed in accordance with a workplan approved by USEPA (Golder, 2007). The investigation included collection of soil vapor samples from three locations at the Wiese facility, three locations at the Sauget Village Hall, three locations at the Cerro Flow Products control center, and one location at a guard shack at the entrance to the Cerro truck parking area (Figure 4-7).

Probe Installation - The soil vapor probes were installed within fifteen feet of exterior building walls at each of the structures selected for investigation. The probes were installed using a threaded steel drive tube and were constructed of 3/16th inch diameter Teflon tubing attached to gas vapor probes. The annulus of each probe was backfilled with six inches of clean sand followed by a bentonite that then was hydrated to form a seal. The probe depths were approximately 5 ft bgs at Wiese, 11 ft bgs at Sauget Village Hall, 0.8 to 1.8 ft bgs at the Cerro control building, and 5 ft bgs at the Cerro guard shack.

A surface seal of hydrated bentonite was constructed at each vapor probe location to prevent entry of atmospheric air into the sampling tube during purging and sampling. A clear plastic tote was used as a shroud for helium leak testing, and hydrated bentonite was used to create a seal between the shroud and the ground surface.

Purging and Leak Testing - Each sampling point and associated tubing were purged by removing three probe volumes at a rate of 100 mL/min using a sample pump with a low-flow module. Once two probe volumes were purged from the sampling point, a third probe volume was purged during helium leak testing. Ultra-high purity helium was pumped into the clear plastic tote around the vapor probe location until a helium atmosphere was reached. The third probe volume was then purged from the sampling train while monitoring helium concentrations in purged air. Helium concentrations in the purged air from each probe were below the 5% helium detection level.

Soil Vapor Sampling - Following successful helium leak testing, a dedicated six-liter Summa canister and corresponding flow controller were used for sampling at each vapor probe. Each canister had a vacuum of 25 inches of mercury prior to sampling. An initial vacuum and sampling start time were recorded, and canister vacuum and general observations were noted every 10 minutes until the vacuum gauge indicated 5 inches of mercury remaining.

The vapor samples were submitted for laboratory analysis of VOCs by TO-15 Modified Hi-Lo full scan. After sampling was performed at each location, the sample tubing was pulled from the ground and the remaining hole was backfilled with bentonite.

Data validation was performed upon receipt of laboratory results. Validated analytical results, along with field notes, photo documentation, and laboratory reports, are included in the Soil Vapor Investigation Report (Golder, 2007a). Results are summarized in the table below.

Maximum Detected Concentrations of VOCs in Soil Vapor Samples at Wiese Property, Cerro, and Sauget Village Hall

	Wiese Building	Cerro Control Center	Cerro Guard House	Sauget Village Hall
Constituent	Maximum Concentration (ppbv)	Maximum Concentration (ppbv)	Maximum Concentration (ppbv)	Maximum Concentration (ppbv)
Acetone	ND	12	15	43
Benzene	13,000	1.1	8.2	7.6
1,3-Butadiene	ND	0.22	2.5	4.3
2-Butanone (MEK)	ND	0.81	2.8	9.9
Butylbenzene	ND	1.7	ND	ND
Carbon disulfide	260	1.1	35	8.9
Carbon Tetrachloride	ND	ND	ND	0.15
Chlorobenzene	70,000	ND	ND	140
Chloroethane	ND	ND	0.28	ND
Chloroform	ND	4.1	ND	ND
Chloromethane	ND	0.27	0.2	0.54
Cumene	ND	ND	ND	1.4
Cyclohexane	760	1.8	16	160
1,2-Dichlorobenzene	8,100	ND	ND	0.61
1,3-Dichlorobenzene	600	ND	ND	1.5
1,4-Dichlorobenzene	6,900	ND	ND	7.5
1,1-Dichloroethane	ND	5.5	1.7	ND

1,1-Dichloroethene	ND	0.26	ND	ND
cis-1,2-Dichloroethene	2,800	25	ND	ND
trans-1,2-Dichloroethene	78	ND	ND	ND
Ethanol	ND	1.7	ND	35
Ethyl Acetate	ND	10	ND	ND
Ethylbenzene	680	0.87	1.3	2.9
4-Ethyltoluene	16	0.3	0.49	2.7
Freon 11	ND	0.27	0.28	0.38
Freon 12	ND	0.57	0.49	0.56
Freon 113	ND	0.18	0.2	0.15
Heptane	650	2	7.1	18
Hexane	2,200	3.8	25	140
Methylene Chloride	ND	ND	ND	44
Naphthalene	3,200	ND	21	ND
4-Methyl-2-pentanone	ND	0.23	0.61	ND
2-Propanol	ND	1.0	ND	2.8
Propylbenzene	ND	ND	0.14	0.79
Styrene	ND	ND	0.22	0.66
1,1,2,2-Tetrachloroethane	ND	0.036	ND	ND
Tetrachloroethene	5,700	31	0.28	1.6
Toluene	7,200	7.7	8.7	35
1,2,4-Trichlorobenzene	170	ND	ND	ND
1,1,1-Trichloroethane	ND	9.9	3.6	ND
Trichloroethene	1,800	22	0.54	3.7
1,2,4-Trimethylbenzene	ND	0.53	0.85	3.2
1,3,5-Trimethylbenzene	ND	0.24	0.45	1
2,2,4-Trimethylpentane	4,600	ND	ND	ND
Vinyl Chloride	9,400	3	ND	0.51
m,p-Xylene	640	2.4	2	9.7
o-Xylene	210	0.59	0.83	3.3

Data from the vapor intrusion investigation were evaluated in the Vapor Intrusion HHRA (ENSR, 2009).

4.5 Utility Corridor Investigation

Site H and Site I South together were known to be part of the “Sauget Landfill", which was originally used as a sand and gravel pit and then received industrial and municipal wastes from approximately 1931 to 1957. In 1949 or 1950, Queeny Avenue was relocated southwards from what is now the Cerro Flow Products facility to its present position between Site H and Site I South. Site H is connected to Site I South under Queeny Avenue.

To evaluate risks to utility workers, a subsurface investigation was performed in the utility corridor along Queeny Avenue between Sites H and I South. The investigation was performed in accordance with a USEPA-approved work plan dated March 22, 2007.

A Geoprobe rig was used to advance a total of eight boreholes along the north and south sides of Queeny Avenue. There were four boreholes on each side of the road, spaced approximately 100 feet apart (see Figure 4-8). The boreholes were advanced to the water table unless waste was encountered first. If waste was encountered, the borehole was continued to the bottom of the waste or to the water table, whichever was shallower. The total depths of the borings ranged from 12 to 16 feet bgs.

Samples were collected continuously with depth and examined for stratigraphy, discoloration, and PID headspace readings. A soil sample from the interval of one to three feet below the deepest nearby utility line was selected for laboratory analysis. If elevated PID readings were noted in soil cores from a boring, additional an additional soil sample was selected from the portion of the core with the highest PID reading. If obvious discoloration was noted in a soil core, an additional soil sample was selected from that core. All boreholes were backfilled with granular bentonite when sampling was completed.

A total of 13 soil samples were selected for laboratory analysis, including at least one sample from each boring. The samples were submitted for laboratory analysis of VOCs, SVOCs, pesticides, herbicides, cyanide, metals, PCBs, and dioxins. Field observations, data tables, boring logs, cross sections, laboratory reports, and a data validation summary are included in the Queeny Utility Corridor Investigation report (Golder, 2008).

Waste was observed in three of the four borings in the utility corridor on the south side of Queeny Avenue adjacent to Site H and two of the four borings in the utility corridor on the north side of Queeny Avenue adjacent to Site I South. Based on these observations, there is no conclusive evidence to indicate that waste does also not exist at some locations beneath Queeny Avenue between Site H and Site I South.

ENSR conducted a toxicity evaluation of the data collected in the utility corridor investigation and identified potential risks greater than 10^{-3} in the utility corridor, south of Queeny Avenue, adjacent to Site H (ENSR, 2008b). Constituents with risks above 10^{-3} include PCBs and 2,3,7,8-TCDD-TEQ. These wastes are therefore defined as principal threat wastes. Therefore, action will be needed to prevent exposure to the soils in the utility corridor adjacent to Site H, or to reduce the concentrations to acceptable levels.

4.6 Soil to Groundwater Migration Investigation

A soil to groundwater migration investigation was performed at Dead Creek in July 2007 in accordance with a USEPA-approved workplan dated April 27, 2007 (Golder, 2007b). The purpose of the investigation was to determine whether the concentrations of cadmium detected in creek-bottom soils could present an issue for shallow groundwater quality downgradient (west) of Dead Creek Segments C, D, E, and F. Creek bed transects with the highest cadmium concentrations in soil were selected from each creek segment for the soil to groundwater migration investigation.

Installation of Temporary Wells – A Geoprobe rig was used to advance four boreholes and install temporary wells at the following locations:

- Temporary well 7: Transect-T7 at Dead Creek Segment C (CSC-T7)
- Temporary well 2: Transect-T2 at Dead Creek Segment D (CSD-T2)
- Temporary well 16: Transect-T7 at Dead Creek Segment C (CSE-T16)
- Temporary well 6: Transect-T7 at Dead Creek Segment C (CSF-T6)

Each borehole was terminated approximately 5 feet below the water table. The temporary well was constructed of a ¾-inch diameter PVC riser with a 5-foot long pre-packed well screen. The well was installed inside the Geoprobe rod and the screen was pushed to at least five feet below the water table.

The rods were then slowly withdrawn from the borehole to expose the screen to groundwater. Silica sand was poured into the borehole annulus to a depth of approximately two feet above the top of the screen, and the remainder of the borehole annulus was filled with bentonite pellets.

Temporary wells T2 and T7 were located on the crest of the creek bank, approximately one to five feet from the edge of the bank. Temporary well T6 was offset approximately 150 feet west of the creek bank due to the presence of dense woods and underbrush located along the creek bank. Temporary well T16 was offset approximately 50 feet from the creek bank because an apartment complex is located along the creek at that location and there was no room for the drilling equipment between the creek and the apartment building.

Groundwater Sampling - Groundwater samples were collected from the four temporary wells using a low flow peristaltic pump. Purging was conducted until field parameters (pH, temperature, specific conductivity, and turbidity) had stabilized for three consecutive readings and the turbidity was approximately 10 NTUs or lower.

Two filtered samples and one unfiltered sample were collected from each location. The unfiltered sample was collected to allow measurement of total cadmium. The first filtered sample, which passed through a 10-micron in-line filter, was collected to allow measurement of colloidal cadmium concentrations. The second filtered sample, which passed through a 0.45-micron in-line filter, was collected to allow measurement of dissolved cadmium concentrations.

The temporary wells were plugged and abandoned upon completion of sampling. The groundwater samples were submitted to a laboratory and analyzed for cadmium using USEPA SW-846 Method 3550/6020. Data validation was performed following receipt of analytical results.

Results – Procedures and results of the study were presented in a report titled Dead Creek Soil – Groundwater Leaching Investigation (Golder, 2007b). All groundwater results, both filtered and unfiltered, were below the Illinois Class I groundwater protection standard of 0.005 mg/L. These results demonstrated that cadmium leaching from soils in the creek bottom does not represent a threat to shallow groundwater quality.

5.0 NATURE AND EXTENT OF CONTAMINATION

5.1 Introduction

Sections 3 and 4 summarized procedures and results of the investigation of constituents in various environmental media, including surface soil, subsurface soil / waste, groundwater, air, surface water, and sediments. All sediments were removed from Dead Creek Segments B, C, D, E, and F and Site M in 2000-2002, and all sediments exceeding RBCs were excavated from the Borrow Pit Lake in 2005-2006. Creek-bottom soils with concentrations exceeding RBCs were excavated from Creek Segments B, D, and F in 2005-2006, and an armored impermeable liner was installed throughout the entire length of Creek Segment B.

The remaining contaminant source areas at Sauget Area 1 are the disposal areas at Sites G, H, I South, and L. These disposal areas contain municipal and industrial waste materials, including crushed or partially crushed drums, drum fragments, uncontained soil and liquid wastes, wood, glass, paper, construction debris, and miscellaneous trash. There is residual DNAPL in the aquifer matrix underlying portions of Sites G, H, and I South, and the dissolution of residual DNAPL in the MHU and DHU beneath the Site G, H, and I South source areas represents an on-going source of constituents to downgradient groundwater.

Site I North and Site N are not considered to be contaminant source areas. Site I North contains inert fill materials such as bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, wood, fill soil, and gravel. Site N, which is located on property formerly owned by the H. Hall Construction Company, was primarily used for disposal of construction debris. The waste materials found in Site N included soil, brick, concrete, metal, tires, and wood as well as some crushed drums, including a few that contained a pasty whitish material that could have been painting waste.

This section summarizes the nature and extent of contamination and is organized as follows:

- **Section 5.2 Source Areas**

  5.2.1 Soil and Waste Volume
  5.2.2 Soil and Waste Characterization
  5.2.3 Principal Threat Waste Evaluation
  5.2.4 DNAPL Evaluation

- **Section 5.3 Groundwater**

  5.3.1 Characterization at and Downgradient of Site I South
  5.3.2 Characterization at and Downgradient of Sites G and H

- **Section 5.4 Site Conditions after Completion of Sediment and Creek Bottom Soil Removal Actions**

- **Section 5.5 Floodplain Soil**

- **Section 5.6 Air**

  5.6.1 Source Area Ambient Air

5.6.2 Vapor Intrusion

The nature and extent of contamination at the source areas and in groundwater will be defined for nine indicator constituents, which include six VOCs, two SVOCs, and one herbicide. The six VOC indicator constituents are benzene, chlorobenzene, and a group of four chlorinated ethenes, including tetrachloroethene, trichloroethene, 1,2-dichloroethene (1,2-DCE), and vinyl chloride. The two SVOC indicator constituents are 1,4-dichlorobenzene and 4-chloroaniline, and the herbicide indicator constituent is 2,4-dichlorophenoxyacetic acid (2,4-D). Benzene, chlorobenzene, 1,4-dichlorobenzene, 1,2-DCE, vinyl chloride, and 4-chloroaniline were selected as indicator constituents because of their presence at elevated concentrations in groundwater at and downgradient of the Sauget Area 1 sites. Tetrachloroethene and trichloroethene were not found to be widespread in groundwater but were selected as indicator constituents because they are parent compounds of 1,2-DCE and vinyl chloride and were detected in subsurface soil and waste. The herbicide 2,4-D is not widespread in groundwater but was selected as an indicator constituent because it was detected in groundwater samples from beneath the Site G and Site H source areas and in several groundwater samples downgradient of Site I South.

This section includes isoconcentration cross sections (Figures 5-1 to 5-11) and isoconcentration maps (Figures 5-21 to 5-47) to illustrate the extent of the Sauget Area 1 indicator constituents in groundwater. The exceedance areas in the SHU, MHU, and DHU in the Sauget region that are shown on Figures 5-48, 5-49, and 5-50 are based on exceedances of any of 14 of the Sauget Area 2 indicator constituents, which include the nine Sauget Area 1 indicator constituents listed above plus nitrobenzene; 2,4-dichlorophenol; 2,4,6-trichlorophenol; 1,2-dichloroethane; and arsenic. Table 3-89 presents the groundwater regulatory levels (i.e., MCLs or EPA Regional Screening Levels if MCLs are not available) for the chemical constituents that were analyzed during Sauget Area 1 groundwater investigations. Tables 5-1 through 5-4 present all groundwater testing results that exceed groundwater regulatory levels for the SHU, MHU, DHU, and residential areas, respectively.

5.2 Source Areas

5.2.1 Source Area Soil and Waste Volume

Sites G, H, and I South were historically used for disposal of municipal and industrial waste. Site G was operated from some time after 1940 to 1966, and was subject to intermittent dumping thereafter until1982, when the site was fenced. Sites H and I South were operated from the 1930s to the 1950s. Prior to the construction of Queeny Avenue in the 1940s, Sites H and I South were contiguous disposal areas. Inert material, rather than waste, was placed at Site I North to level the area for truck trailer parking.

Site L was previously used for disposal of wash water from truck cleaning operations from approximately 1971 to 1981 and was later backfilled. Site N is located on the former H.H. Hall Construction Company property and was formerly used to dispose of construction debris consisting of soil, brick, concrete, metal, tires, wood, and to a lesser degree, waste solids and drummed materials, possibly including some painting wastes.

As discussed in Section 3.2, source area investigations completed during the SSP included the review of historical aerial photographs, performance of soil-gas and magnetometer surveys, excavation of boundary trenches and advancement of borings to confirm the boundaries of the waste disposal areas. The source area investigations also included excavation of anomaly trenches to investigate whether the anomalies detected during the magnetometer surveys were associated with buried drums or tanks.

Estimated volume for each disposal area was based upon the surface area and a conservative estimate of the average waste depth determined during the SSP. Average depths were determined by reviewing the disposal area boring logs. Borings that encountered little or no waste were not used in determining average waste depths. Volumes were then estimated by multiplying the surface area by the average waste depth, and converting to cubic yards, as shown in the following table.

Estimated Sauget Area 1 Disposal Area Waste Volumes

Disposal Area	Disposal Area Areal Extent (Acres)	Average Estimated Waste Thickness (Feet)	Estimated Waste Volume (Cubic Yards)
Site G + Site G West	3.32	20	107,000
Site H	4.87	20	157,000
Site I South	8.79	25	355,000
Site I North	5.87	6	56,800
Site L	1.08	10	17,500
Site N	3.84	16	103,000
			796,000

Collectively, Sites G, H, I South, I North, L and N contain an estimated 796,000 cubic yards of soil and waste. Site I South is the largest disposal area with an estimated waste volume of 355,000 cubic yards followed by Site H with 157,000 cubic yards and Site G plus G West with 107,000 cubic yards. All three of these sites were formerly used for industrial/municipal waste disposal. Estimated waste volume in Site L is much smaller, 17,500 cubic yards. Site L is a backfilled wastewater impoundment. Site N contains an estimated volume of 103,000 cubic yards, and Site I North contains an estimated volume of 56,800 cubic yards. Site N is an inactive construction debris disposal area on the former H.H. Hall Construction Company property, and Site I North is a former fill area that contains broken concrete, bricks, metal, wood, and soil.

5.2.2 Soil and Waste Characterization

Disposal area waste characterization investigations completed during the SSP included the performance of soil gas and magnetometer surveys, installation of test trenches and borings and collection of waste characterization samples. Waste materials encountered at Sites G, H, I South, and L consisted of municipal and industrial waste materials, including crushed or partially-crushed drums, drum fragments and remnants, uncontained solid and liquid wastes, wood, glass, paper, construction debris and miscellaneous trash. The fill material encountered at Site I North included bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, other metal scrap, and wood. No evidence of drums was observed in the anomaly trench at Site I North. The fill material encountered at Site N consisted primarily of construction debris such as soil, brick, concrete, metal, tires, and wood as well as some crushed drums, including a few that contained a pasty whitish material that could have been painting waste.

Although the SSP investigation targeted potential hot spots in each disposal area, no significant residual wastes were identified during these investigations. A total of 82 crushed or partially crushed drums and drum remnants were discovered (see summary of drum inventory in Section 5.2.3.1). Only one intact drum was found; it was discovered in a test trench excavated at Site G. No surface leachate breakouts or discharges were observed at any of the disposal areas.

Soil and waste characterization results for each of the sites are discussed below.

5.2.2.1 Site G

Surface Soil - Constituents detected in surface soil at Site G included 13 pesticides as well as PCBs, dioxins, and metals. There were no detections of VOCs, SVOCs, or herbicides. Summary statistics for Site G surface soil analytical data are included in Table 3-2. No indicator constituents were detected in surface soil at Site G.

Subsurface Soil and Waste – Test trenching at Site G revealed the presence of crushed or partially crushed drums and drum fragments, some of which contained waste materials. Material within one drum generated smoke when it was uncovered, indicating the presence of pyrophoric materials. Other uncontained solid wastes were encountered during trenching. One intact drum was found, which was over-packed and disposed of off-Site. Site G subsoil and waste borings encountered oily wastes and an unidentified yellow substance. Maximum PID readings ranged up to 1367 ppm for materials recovered in the waste borings. TCLP analyses indicate that materials encountered in Site G can be classified as hazardous waste exhibiting the characteristic of toxicity.

Constituents detected in subsurface soil and waste at Site G included 15 VOCs, 25 SVOCs, 1 pesticide, 1 herbicide, PCBs, and metals. Summary statistics for historical Site G subsurface soil and waste analytical data are included in Table 3-12. Detections of the indicator constituents are summarized in the table below.

Maximum, Minimum and Mean Concentrations of Indicator Constituents In Site G Subsurface Soil and Wastes

Indicator Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Benzene	6	0.003	15.3	45.3
	Chlorobenzene	8	0.107	108	538
	Tetrachloroethene	8	0.009	18.8	58.6
	Trichloroethylene	4	0.762	1.94	3.85
	cis-1,2-DCE	ND	ND	ND	ND
	Vinyl Chloride	ND	ND	ND	ND
SVOCs	1,4-Dichlorobenzene	2	2.38	2.97	3.56
	4-Chloroaniline	3	5.97	81.6	231
Herbicides	2,4-D	ND	ND	ND	ND

Note: Historical data from Ecology and Environment, 1998

The greatest concentrations in subsurface soils were detected at depths between 10 to 25 feet below ground surface.

5.2.2.2 Site H

Surface Soil - Constituents detected in surface soil at Site H included 3 VOCs, 11 SVOCs, 9 pesticides, 2 herbicides, PCBs, dioxin, and metals. Summary statistics for Site H surface soil analytical data are included in Table 3-3. The only detected indicator constituent was tetrachloroethene, which was detected in one sample at a concentration of 0.017 mg/kg.

Subsurface Soil and Waste – Anomaly trenching in Site H revealed the presence of partial drums and drum fragments. Other materials encountered included brick, wood, plastic and other refuse. A variety of materials were encountered in Site H borings, but no specific uncontained waste substances were described in the field notes and logs. Waste materials found in six of the eight borings consisted of multicolored sludges, solids, and oily refuse underlying the fill. Maximum PID readings ranged up to 2000 ppm. Results from TCLP analyses indicate that materials encountered in Site H can be classified as hazardous waste exhibiting the characteristic of toxicity.

Constituents detected in subsurface soil and waste at Site H included 13 VOCs, 32 SVOCs, 3 pesticides, PCBs, 18 metals, and total cyanide. Summary statistics for historical Site H subsurface soil and waste analytical data are included in Table 3-13. Detections of the indicator constituents are summarized in the table below.

Maximum, Minimum and Mean Concentrations of Indicator Constituents In Site H Wastes

Indicator Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Benzene	7	0.004	15.2	61.3
	Chlorobenzene	6	0.024	97.6	452
	Tetrachloroethene	1	5.65	5.65	5.65
	Trichloroethylene	1	0.01	0.01	0.01
	cis-1,2-DCE	ND	ND	ND	ND
	Vinyl Chloride	ND	ND	ND	ND
SVOCs	1,4-Dichlorobenzene	5	0.062	6,320	30,600
	4-Chloroaniline	ND	ND	ND	ND
Herbicide	2,4-D	ND	ND	ND	ND

Note: Historical data from Ecology and Environment, 1998

Based upon results of previous investigations (Ecology and Environment, 1998), contaminant concentrations were generally higher in the central and northern portions of the site compared to the southern portion. Highest concentrations were generally from samples collected from 10 to 25 feet BGS.

5.2.2.3 Site I South

Surface Soil – Constituents detected in surface soil at Site I South included 23 SVOCs, 15 pesticides, 1 herbicide, PCBs, dioxin, and metals. Summary statistics for Site I South surface soil analytical data are included in Table 3-4A. The detections of indicator constituents included one detection of 1.4-dichlorobenzene at a concentration of 0.046 mg/kg and two detections of 4-chloroaniline with a maximum concentration of 18 mg/kg.

Subsurface Soil and Waste – Crushed or partially crushed drums and drum fragments, some containing waste materials, were found in the Site I South anomaly trench. Material within some of the drums was described as a solid, yellowish material. Other uncontained solid wastes were encountered during trenching, including contents leaking out of broken drums. Black soil, bricks, wood, and metal scraps were also encountered in the anomaly trenches. Materials encountered in Site I South borings included uncontained solid wastes described as white and metallic shiny substances. Maximum PID readings ranged up to 2000 ppm for materials recovered in the waste borings. TCLP analyses indicate that materials encountered in Site I South can be classified as hazardous waste exhibiting the characteristic of toxicity.

Constituents detected in historical subsurface soil and waste samples at Site I South included 13 VOCs, 28 SVOCs, 3 pesticides, 1 herbicide, PCBs, metals, and total cyanide. Summary statistics for historical Site I subsurface soil and waste analytical data are included in Table 3-14. Detections of the indicator constituents are summarized in the table below.

Maximum, Minimum and Mean Concentrations of Indicator Constituents In Site I South Wastes

Indicator Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Benzene	10	0.023	3.81	24.1
	Chlorobenzene	12	0.010	34.7	127
	Tetrachloroethene	5	0.612	2.57	5.27
	Trichloroethylene	2	0.648	2.23	3.81
	cis-1,2-DCE	ND	ND	ND	ND
	Vinyl Chloride	ND	ND	ND	ND
SVOCs	1,4-Dichlorobenzene	8	1.60	255	1,840
	4-Chloroaniline	1	43.2	43.2	43.2
Herbicide	2,4-D	ND	ND	ND	ND

Note: Historical data from Ecology and Environment, 1998

Waste material was noted in several borings in Site I South at depths below the water table and consisted of oily sand, clay, wood and cinders mixed with refuse. Contamination was detected at depths extending to 38 feet bgs.

5.2.2.4 Site I North

Surface Soil – Constituents detected in surface soil at Site I North included 1 VOC, 13 SVOCs, 15 pesticides, 2 herbicides, PCBs, dioxin, and metals. Summary statistics for Site I North surface soil analytical data are included in Table 3-4B. No Sauget Area 1 indicator constituents were detected in surface soil at Site I North.

Subsurface Soil and Waste – Bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, other metal scrap, and wood were found in the Site I North anomaly trench. Maximum PID readings ranged up to 21 ppm for materials recovered in the two fill area borings at Site I North. Concrete pieces were observed at shallow depths in both borings.

One soil boring was drilled at Site I North during the historical investigation by Ecology and Environment, and the boring log indicated that there was four feet of fill consisting of sandy clay and a mixture of crushed limestone, gravel, and concrete fragments (Ecology and Environment, 1988). No soil samples from this boring were submitted for laboratory analysis.

5.2.2.5 Site L

Surface Soil - Constituents detected in surface soil at Site L included 1 VOC, 19 SVOCs, 9 pesticides, 1 herbicide, PCBs, dioxin, metals, and total cyanide. Summary statistics for Site L surface soil analytical data are included in Table 3-5. No indicator constituents were detected in surface soil at Site L.

Subsurface Soil and Waste – Anomaly trenching in Site L revealed the presence of crushed or partially crushed drums and drum fragments, some containing waste materials. A black tar-like substance was noted to be leaking from several drums. Other uncontained solid wastes were encountered during trenching. Other materials encountered in Site L trenching include bricks, rags, small pieces of concrete, and various other refuse. Discovery of crushed or partially crushed drums indicates that Site L was used for more than disposal of wash water from truck-cleaning operations. A variety of fill materials were encountered in Site L borings, but no specific uncontained waste substances were described in the field notes and logs. Maximum PID readings ranged up to 728 ppm for materials recovered in the waste borings. TCLP analyses did not indicate that materials encountered in Site L exhibited the characteristic of toxicity.

Constituents detected in subsurface soil and waste at Site L included 10 VOCs, 35 SVOCs, 1 herbicide, PCBs, metals, and total cyanide. Summary statistics for historical Site L subsurface soil and waste analytical data are included in Table 3-15. Detections of the indicator constituents are summarized in the table below.

Maximum, Minimum and Mean Concentrations of Indicator Constituents In Site L Wastes

Indicator Constituents		Number of Detects	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)
VOCs	Benzene	5	0.004	2.01	5.70
	Chlorobenzene	8	0.012	1.25	5.30
	Tetrachloroethene	ND	ND	ND	ND
	Trichloroethylene	ND	ND	ND	ND

	cis-1,2-DCE	ND	ND	ND	ND
	Vinyl Chloride	ND	ND	ND	ND
SVOCs	1,4-Dichlorobenzene	9	0.018	23.4	100
	4-Chloroaniline	6	0.043	98.7	270
Herbicide	2,4-D	ND	ND	ND	ND

Note: Historical data from Ecology and Environment, 1998

Contaminants in Site L were generally detected at depths ranging from 5 to 15 feet bgs.

5.2.2.6 Site N

Surface Soil - Constituents detected in surface soil at Site N included 13 SVOCs, 7 pesticides, 1 herbicide, PCBs, dioxin, and metals. Summary statistics for Site N surface soil analytical data are included in Table 3-6. No indicator constituents were detected in surface soil at Site N.

Subsurface Soil and Waste – Site N is located on property formerly owned by the H. Hall Construction Company and was primarily used for disposal of construction debris. The construction waste materials encountered in Site N trenches included bricks, concrete debris, rebar, metal pipes and cables, sheet metal, railroad ties, scrap lumber, telephone poles, crushed and partially crushed drums and drum lids, plastic sheeting, rags, scrap tires, various other refuse, and fill soil.

Some of the crushed or partially crushed drums and drum fragments contained waste materials. Whitish and pasty white substances were noted in several of the crushed and partially crushed drums. PID readings inside the excavated drums ranged up to 870 ppm. Other uncontained solid wastes were encountered during trenching, including a whitish material that discharged from an interior trench. The pasty whitish material noted in the damaged drums and in the interior trench could have been painting waste, which would be consistent with the former use of Site N for disposal of construction debris.

Materials encountered in Site N borings included an unidentified green material. Maximum PID readings ranged up to 65.7 ppm for materials recovered in the waste borings. TCLP analyses did not indicate that materials encountered in Site N exhibited the characteristic of toxicity.

A limited amount of historical sampling and analytical data are available for Site N (Ecology and Environment 1998). This 1998 data indicated that total VOC concentrations ranged up to 0.014 mg/kg in the two subsurface soil and waste samples collected at Site N. Total SVOCs were detected at a maximum concentration of 2.28 mg/kg in the two subsurface soil and waste samples. Pesticides and PCBs were not detected in either of the samples. Constituents detected in the subsurface samples at Site N included 4 VOCs and 8 SVOCs. Summary statistics for historical Site N subsurface soil and waste analytical data are included in Table 3-16. There were no detections of the indicator constituents in the two samples.

5.2.3 Principal Threat Waste Evaluation

Principal threat wastes are defined in a USEPA fact sheet (USEPA, 1991).

> *Principal threat wastes are those source materials that are considered to be highly toxic or highly mobile that cannot be reliably contained or would present a significant threat to human health or the environment should exposure occur. They include liquids and other highly mobile materials (e.g., solvents) or materials having high concentrations of toxic compounds. No threshold level of toxicity/risk has been established to equate to principal threat. However, where toxicity and mobility of source material combined to pose a potential risk of 10^{-3} or greater, generally treatment alternatives should be evaluated.*

The USEPA fact sheet presents several examples of principal threat wastes.

> *Wastes that generally will be considered to constitute principal threats include, but are not limited to:*
>
> - *Liquids – waste contained in drums, lagoons or tanks, free product (NAPLs) floating on or under groundwater (generally excluding groundwater) containing contaminants of concern.*
> - *Mobile source material – surface soil or subsurface soil containing high concentrations of contaminants of concern that are (or potentially are) mobile due to wind entrainment, volatilization (e.g., VOCs), surface runoff, or sub-surface transport.*
> - *Highly toxic source material – buried drummed non-liquid wastes, buried tanks containing non-liquid wastes, or soils containing significant concentrations of highly toxic materials.*

The following sections discuss the results of the principal threat waste evaluation for liquids, mobile source material, and toxicity.

5.2.3.1 Principal Threat Waste Evaluation - Liquids

Pooled non-aqueous phase liquids (NAPLs) are source materials and may be considered principal threat waste liquids. The DNAPL Characterization and Remediation Study (GSI, 2006c) identified wells containing pooled NAPLs and delineated the extent of residual DNAPL in the subsurface beneath the source areas. Procedures and results of the DNAPL Characterization and Remediation Study were presented in Section 4.2.1. Section 5.2.4 summarizes the nature and extent of pooled and residual DNAPL.

Buried drums and drum fragments were encountered during source area investigations at Sites G, H, I South, L, and N. No drums or drum fragments were encountered during investigations at Site I North. No underground tanks were found during any of these investigations. GSI prepared a report, “Evaluation of Buried Drums”, to summarize available information regarding the buried drums and to evaluate whether

the drums represent principal threat material. The following paragraphs summarize the information that was presented in that report (GSI, 2006b).

Summary of Source Area Investigations – The source area investigations conducted by O'Brien & Gere in 1999-2000 included the following tasks: i) review of aerial photos, topographic maps, and topographic survey data to obtain information regarding fill area boundaries; ii) excavation of boundary trenches to confirm the horizontal limits of the fill areas; iii) a soil gas survey at and near each fill area; iv) waste sampling to characterize the fill materials; iv) a magnetometer survey at each fill area to identify magnetic anomalies potentially indicative of buried tanks or drums; and v) anomaly test trenching at an interior location in each fill area to look for buried tanks or drums. Sections 3.2.1 and 3.2.2 of this report provide a detailed description of procedures and results. Boundary test trench locations and anomaly test trench locations are shown on Figures 3-1 through 3-5.

Anomaly test trench locations were identified using a combination of magnetic anomalies, aerial photo analysis, and soil gas and groundwater data. One test trench was excavated per site at Sites G, H, L, and N. Two test trenches were excavated at Site I (one each at Site I South and North). Test trenches were performed at the largest magnetic anomaly found that coincided with the following, as applicable: i) possible drum/tank disposal locations identified by analysis of historical aerial photos; ii) an area of high VOC concentrations in soil gas; iii) an area of high groundwater concentration identified in the 1998 Ecology and Environment Data Report; or iv) major magnetic anomalies noted in the 1988 geophysical survey (Ecology and Environment, 1988). The trenches were advanced until evidence as to the source of the anomaly was found.

The source area investigations conducted by TetraTech (Tetra Tech 2003a, 2003b, 2003c) included excavation of exploratory trenches and collection of waste and soil samples at Sites H, I South, L, and N. Groundwater samples were collected at Sites I South, L, and N. Section 4.1 of this report provides a detailed description of procedures and results of the Tetra Tech investigations. Trench locations are shown on Figures 4-1 and 4-2.

Inventory of Buried Drums – The Evaluation of Buried Drums report (GSI, 2006b) included a table with a detailed inventory of the drums and drum fragments discovered during test trenching based on GSI's review of field notes and photos from the test trenching conducted by O'Brien & Gere in 1999-2000 the site investigation reports prepared by Tetra Tech (Tetra Tech, 2003a, 2003b, and 2003c). For each trench location, the drum inventory table documents the number of drums observed, descriptive information regarding drum condition and drum contents, where available, GSI's interpretation regarding whether or not the observed drums contained liquids constituting principal threat waste, and detailed references to the field notes and photos. As documented in the drum inventory table (GSI, 2006b), the total number of drums observed at each site was as follows:

Total Number of Drums Observed in Test Trenches at Sites G, H, I South, L, and N

- Site G 15
- Site H None (only fragments and lids)
- Site I South 14

- Site L 22
- Site N 31

Total: 82

No drums or drum fragments were encountered during investigations at Site I North. Except for a single relatively intact drum at Site G, the buried drums encountered during test trenching were found to be crushed, split, heavily damaged, or without a lid. Some damaged drums contained solid contents, while others were empty. One damaged drum encountered at Site I and six damaged drums at Site L contained tar-like substances or other high viscosity liquids. In GSI's opinion, tar-like substances or other high viscosity liquids would not be considered liquids constituting principal threat wastes. These materials are not highly mobile and would tend to be retained in the fine-grained soils that characterize the shallow hydrogeologic unit. The following paragraphs discuss the key findings regarding buried drums at Sites G, H, I South, L, and N.

Site G – A total of 15 drums were found in the trenches at Site G. With the exception of one relatively intact drum, the drums found in the trenches at Site G were crushed, split, heavily damaged, or without a lid. The one relatively intact drum, which contained solid materials, was overpacked and removed. All the other drums described and photographed at this site contained solid materials or were empty. One damaged drum that contained solid materials began to smoke when it was uncovered.

Site H - The only evidence of drums in the trenches at Site H was two partial drums along with drum fragments and lids.

Site I South - A total of 14 damaged drums were found at Site I South. Ten drums were found in the interior trench excavated in 2000. Five of these drums were described in the field notes as "fairly intact," but further investigation of the drum that appeared to be in the best shape showed that it had two large holes on the bottom side. The five "fairly intact" drums contained a solid material that resembled wood.

A total of four drums were found in four exploratory trenches excavated by Tetra Tech in July 2002. One drum that was in "very poor condition" contained a "nonvolatile tar-like substance." A waste sample of this substance was submitted for laboratory analysis of VOCs, SVOCs, metals, pesticides, and PCBs. As noted by Tetra Tech (Tetra Tech, 2003a), analytical results did not exceed USEPA Risk-Based Concentrations (RBCs).

Site L - A total of 22 damaged or crushed drums were found in two trenches at Site L. Drums were found in the Interior Trench excavated by O'Brien & Gere in February 2000. The field notes described 18 damaged drums that were found in this trench. Four of the drums appeared to be leaking a "black tar-like substance," and one drum appeared to be leaking a "tanish-brown flowable material." The high viscosity of these materials would make them relatively immobile in the fine-grained soils of the shallow hydrogeologic unit. Therefore, these high viscosity materials would not constitute principal threat waste.

The end of the field notes for the Interior Trench excavated by O'Brien & Gere included a statement that "additional drums may be buried in the southside wall." This possibility was investigated by USEPA in March 2003 at trench T1, which was immediately south of the location of the February 2000 Interior Trench (see Figure 4-1). Four damaged drums were found in the western part of trench T1. One of the four damaged drums was reported to contain a black oily liquid and a yellowish semi-solid the

consistency of paint. Waste samples were collected from this drum and another drum that contained a white solid with a mothball-like odor. Analytical results indicate that these waste materials contained relatively low concentrations of VOCs and SVOCs (Tetra Tech, 2003b). The drums from trench T1 are not principal threat drums, based on the physical state of the wastes (solids or high-viscosity liquids) and the relatively low concentrations of VOCs and SVOCs detected in the materials. The results from trench T1 confirm that there is no cache of buried drums of liquid wastes in the area south of the February 2000 Interior Trench.

Site N – Site N had the most drums of any site, 31, but all were found to be crushed or badly damaged. White material was visible in or on several of the drums. One of the crushed drums contained some paint-like sludge. The white material and paint-like sludge could have been painting waste, which would be consistent with the former use of Site N for disposal of construction debris. Site N is located on property formerly owned by the H. Hall Construction Company.

It is GSI's opinion that none of the drums found at Sites G, H, I South, L, and N contained liquids constituting principal threat waste.

Review of Historical Aerial Photos – GSI reviewed historical aerial photos to look for evidence of drums of tanks. The photos came from two sources: the 1988 Ecology and Environment report titled "Expanded Site Investigation, Dead Creek Project Sites at Cahokia/Sauget, Illinois"; and a collection of historical aerial photos taken from an October 2002 report prepared by Mary Sitton for the Department of Justice. GSI received digital copies of the historical aerial photos for independent analysis but did not read or review the Department of Justice report.

Historical aerial photos included in the 1988 Ecology and Environment report show the Cahokia/Sauget area for the years 1937, 1950, 1955, 1962, 1973, 1978, and 1985 (a total of 7 aerial photos). In its analysis of the aerial photos, Ecology and Environment did not mention observations of large caches of drums on any of the photos. The collection of historical aerial photos taken from the Department of Justice report included a total of 19 aerial photos from the period 1940 to 1993. GSI examined these photos and saw no large caches of drums.

Key Findings – The key findings from "Evaluation of Buried Drums" (GSI, 2006b) were as follows:

- None of the buried drums found during test trenching at Sites G, H, I South, L, and N contained liquids constituting principal threat waste.
- There do not appear to be large caches of drums containing liquid wastes or highly mobile source material in the areas previously investigated for principal threat material at Sites G, H, I South, L, and N.
- No large caches of drums were seen in historical aerial photos.

5.2.3.2 Principal Threat Waste Evaluation – Mobile Source Material

Mobile source material can be principal threat waste. Mobile source material includes surface soil or subsurface soil containing high concentrations of contaminants of concern that are mobile or potentially

mobile due to wind entrainment, volatilization, surface runoff, or sub-surface transport (EPA, 1991). Based on existing surface conditions at the Sauget Area 1 sites, there is no significant risk of wind entrainment, volatilization, or surface runoff of high concentrations of contaminants of concern from surface soil or subsurface soil.

Pooled DNAPL is a source material and may be considered a principal threat waste liquid. However, DNAPL trapped by capillary forces in pore spaces within the unsaturated zone or aquifer matrix (residual DNAPL) is not considered a mobile source material. Typically, the majority of DNAPL mass migrating from a source area is trapped by capillary forces within the alluvial aquifer pore space as residual DNAPL in small, discrete blobs and ganglia. Residual DNAPL is not believed to be mobile, and is expected to dissolve relatively slowly. As stated by Pankow and Cherry (1996), "Once the release of liquid waste into the subsurface ceases, subsurface movement of DNAPL also ceases soon thereafter, perhaps within weeks or months…". With industrial disposal ceasing in 1957 at Sites H and I and in 1966 at Site G, residual DNAPL at these sites is not likely to be mobile.

Although residual DNAPL is not itself a mobile source material, it is considered to be a significant source of on-going contamination to groundwater.

5.2.3.3 Principal Threat Waste Evaluation – Highly Toxic Source Materials

Another type of principal threat waste is highly toxic source material, such as buried drummed non-liquid wastes, underground tanks containing non-liquid wastes, or soils containing significant concentrations of highly toxic materials (EPA, 1991).

ENSR conducted a toxicity evaluation to identify whether waste materials and soils within Sites G, H, I, L, and N may be defined as principal threat wastes. Results of the evaluation were presented in the Disposal Area Waste Toxicity Evaluation (ENSR, 2008).

Disposal Area Waste Toxicity Evaluation - Because the wastes are present in the subsurface, ENSR's evaluation focused on potential risks in Sites G, H, I, and L for a construction worker potentially exposed to waste in the subsurface via ingestion, dermal contact, and inhalation of dusts derived from subsurface soil. The data were evaluated to determine whether wastes present potential risks to human health greater than a cancer risk level of 10^{-3}. Because the sites are known areas of waste disposal, appropriate safeguards (i.e., air monitoring and personal protective equipment) would likely be used when excavating in waste areas. However, the use of such safeguards was not assumed when identifying the exposure factors used in the risk assessment.

The evaluation was conducted on analytical data from subsurface soil and waste samples collected during the following work programs:

- EE/CA and RI/FS waste characterization (O'Brien & Gere, 2001; Ecology and Environment, 1998)
- DNAPL investigation (GSI, 2006c)
- Supplemental investigations (Tetra Tech, 2003a, 2003b, 2003c)

The dataset from the EE/CA and RI/FS waste characterization was evaluated in the Human Health Risk Assessment (ENSR, 2001), and all potential risks from ingestion, dermal contact, and inhalation of surface soil were below a cancer risk of 10^{-3}, which indicated that these materials are not principal threat wastes. A review of dose-response factors was performed in 2008 as part of ENSR's evaluation to ensure that significant changes had not occurred which would elevate potential risks above 10^{-3}. The updated dose-response assessment did not result in potential risks above 10^{-3} (ENSR, 2008).

The dataset from the DNAPL Characterization and Remediation Report (GSI, 2006c) and the dataset from the supplemental investigations (Tetra Tech, 2003a, b, c) were summarized and evaluated in the Disposal Area Waste Toxicity Evaluation (ENSR, 2008). The samples collected during the DNAPL investigation that were from within the site boundaries and collected from the thickness of the fill were included in the evaluation. The samples collected during the DNAPL investigation that taken were from within the site boundaries and that were collected from depths greater than the fill thickness were not included in the evaluation. In addition, surface soil samples and all samples collected from outside the site boundaries were not included in the evaluation.

A toxicity screen was performed on the datasets in accordance with USEPA Region 5 guidance (USEPA, 1998a) and IEPA regulations (IEPA, 1998). The constituents that had maximum detected concentrations greater than the screening levels were identified as Constituents of Potential Concern (COPCs) and were carried through the quantitative risk assessment process.

Toxicity information was obtained for the oral and inhalation routes of exposure for the COPCs classified by USEPA as potential carcinogens for these routes of exposure. Oral toxicity values were also used to assess dermal exposures, with appropriate adjustments. Exposure dose equations were used to obtain potential exposure doses for each COPC via each route/pathway by which the receptor is assumed to be exposed. As noted above, the potential exposure scenarios were for an on-site construction/utility worker potentially exposed to COPCs in subsurface soil and waste via incidental ingestion and dermal contact, and via inhalation of particulates suspended during excavation activity.

Total potential carcinogenic risk to construction worker was found to be 8.9×10^{-6} for the dataset from the DNAPL investigation and 1×10^{-4} for the dataset from the supplemental investigations performed by Tetra Tech. These values are below USEPA's principal threat waste threshold of 1×10^{-3}.

Utility Corridor Evaluation – Site H at one time was connected to Site I South and together they were known to be part of the Sauget Monsanto Landfill, which operated from approximately 1931 to 1957. To evaluate risks to utility workers, a subsurface investigation was performed in the utility corridor along Queeny Avenue between Sites H and I South (Golder, 2008).

ENSR conducted a toxicity evaluation of the data collected in the utility corridor investigation and identified potential risks greater than 10^{-3} in the utility corridor, south of Queeny Avenue, adjacent to Site H (ENSR, 2008). Constituents with risks above 10^{-3} include PCBs and 2,3,7,8-TCDD-TEQ. These wastes are therefore defined as principal threat wastes. Therefore, action will be needed to prevent exposure to the soils in the utility corridor adjacent to Site H, or to reduce the concentrations to acceptable levels.

5.2.4 DNAPL Evaluation

5.2.4.1 Residual DNAPL

The DNAPL characterization and remediation study, which was discussed in Section 4.2.1.3, included soil sampling and testing at 19 piezometer locations. One objective of the DNAPL characterization and remediation study was to determine the volume of fill materials and aquifer matrix containing residual DNAPL.

Soil sampling and testing and core testing were conducted to obtain data that could be used to estimate the volume of fill materials and aquifer matrix containing residual DNAPL. A total of 199 soil samples from the unsaturated zone and aquifer matrix were submitted for laboratory analysis of VOCs and SVOCs. A total of 16 undisturbed frozen cores were submitted for laboratory testing of pore fluid saturations and physical properties and for evaluation of DNAPL mobility using a modified centrifuge test procedure.

Three methods were considered for estimating the volume of fill materials and aquifer matrix containing residual DNAPL, as described below.

Equilibrium Partitioning - The first method was to compare detected soil concentrations with concentrations that would be expected based on equilibrium partitioning from a DNAPL sample. This method, which is detailed in the 1992 U.S. EPA publication 93554-07FS ("Estimating Potential for Occurrence of DNAPL at Superfund Sites"), uses a partitioning coefficient (K_d) to convert the effective solubility of contaminants to sorbed concentration (USEPA, 1992). Using this method, there is potential for DNAPL in a soil sample if constituents that are detected in the DNAPL sample are present in the soil sample at sorbed concentrations that exceed calculated equilibrium partitioning values.

The soil analytical data for VOCs and SVOCs indicates that the Sauget Area 1 DNAPL source materials were very heterogeneous from a chemical perspective. However, BR-I was the only location where DNAPL could be sampled and analyzed. Because of insufficient knowledge of DNAPL mole fraction composition across the Sauget Area 1 sites, the equilibrium partitioning method was not considered a reliable method for determining the presence or absence of DNAPL in soil at Sauget Area 1.

Pore Fluid Saturation Data - The second potential method was to compare pore fluid saturation results from core testing with total VOC and total SVOC analytical data from soil samples. NAPL pore fluid saturations for fifteen undisturbed core samples from Sauget Area 1 were plotted against concentrations of total VOCs plus total SVOCs for the soil samples closest in depth to the undisturbed cores. The overall correlation was poor ($r^2 < 0.5$), indicating that this method could not be applied accurately. The poor correlation could be a result of the heterogeneous nature of the DNAPL source materials at Sauget Area 1.

Soil Core Field Screening Results - The third method, and the one that was selected for determining volume of residual DNAPL at Sauget Area 1, was to use a combination of visual indicators of NAPL presence and laboratory data for total VOCs and total SVOCs. Either the visual presence of NAPL in a core sample, or a positive indicator from the Sudan IV vial test kits, were used to determine the presence

of NAPLs in a soil boring. However, some locations where NAPL was indicated had very low concentrations of total VOCs and total SVOCs, and thus would probably not represent significant on-going sources of constituents to site groundwater. Therefore a further classification was used, where NAPL in soil (as indicated based on field screening of cores) was classified as “low-strength” NAPL if both total VOC and total SVOC concentrations in soil were less than 1 mg/kg. This “low-strength” NAPL in soil was excluded from the volume of residual DNAPL. NAPL in soil (as indicated based on field screening of cores) was classified as “moderate to high-strength” NAPL and was included in the volume of residual DNAPL if either total VOC or total SVOC concentrations in soil were greater than or equal to 1 mg/kg.

Volume Estimates - DNAPL areas were determined for the SHU, MHU, and DHU and are presented in the DNAPL Characterization and Remediation Report (GSI, 2006c). Borings with “low-strength” NAPL were excluded from the DNAPL areas, and borings with “moderate to high-strength” NAPL were included in the DNAPL areas.

For the fill / SHU, two separate DNAPL areas were defined, with a total area of approximately 15 acres (see Figure 17 of the DNAPL Characterization and Remediation Report, GSI, 2006c). Assuming a thickness of 30 ft, the volume of residual DNAPL for the fill/SHU was originally estimated to be 750,000 yd^3. The DNAPL area in the Fill / SHU at Sites G, H, and I South has since been reduced from 15 acres to 13.6 acres based on the revised Site G fill area boundary shown on Figure 5-1A. Assuming a thickness of 30 ft and an area of 13.6 acres, the revised volume of residual DNAPL for the fill/SHU is estimated to be 660,000 yd^3.

The MHU and DHU both had DNAPL areas of approximately 8 acres (see Figure 5-1B), and a combined volume of aquifer matrix with residual DNAPL of 950,000 yd^3 (assuming thickness of 40 feet for the middle hydrogeologic unit and 35 feet for the deep hydrogeologic unit). As shown on Figure 5-1B residual DNAPL is present in the MHU and DHU underlying portions of Sites G, H, and I South. There was no indication of the presence of residual DNAPL in the MHU and DHU beneath Site L, based on results of the DNAPL boring A1-04, which is located in the center of Site L.

The total volume was originally estimated at 1,700,000 yd^3 based but has been revised to 1,620,000 yd^3based on the revised DNAPL area in the fill / SHU at Site G. These estimates were based on the assumption that the entire thickness of the shallow, middle, or deep hydrogeologic unit is affected by DNAPL if any interval within the unit shows evidence of DNAPL. Therefore, the value of 1,620,000 yd^3 represents an upper-bound estimate of the volume of fill and aquifer matrix with residual DNAPL. However, this conservative estimate is appropriate for planning purposes when evaluating the feasibility of various DNAPL treatment technologies for the Sauget Area 1 Sites.

Alternative Volume Estimates - As requested by USEPA, an alternative estimate of the volume was calculated by applying the estimated thickness of DNAPL-affected soil and aquifer matrix observed in each boring to a designated area surrounding each boring (see Figures 20, 21, and 22 of the DNAPL Characterization and Remediation Report, GSI, 2006c). The resulting volumes were then summed to obtain DNAPL-affected volumes for the SHU, MHU, and DHU. For the fill / SHU, the estimate thickness of DNAPL-affected media ranges from 5 to 25 feet across a total area of approximately 15 acres, and the calculated volume of DNAPL-affected media is approximately 420,000 yd^3. For the MHU, the estimated thickness of DNAPL-affected aquifer matrix ranges from 20 to 40 feet across a total area of approximately

8 acres, and the calculated volume of DNAPL-affected aquifer matrix is approximately 400,000 yd^3. For the DHU, the estimated thickness of DNAPL-affected aquifer matrix ranges from 10 to 45 feet across a total area of approximately 8 acres, and the calculated volume of DNAPL-affected aquifer matrix is approximately 350,000 yd^3. Using this alternate approach, the total volume of fill and aquifer matrix affected by residual DNAPL is approximately 1,200,000 yd^3.

5.2.4.2 Pooled DNAPL

As discussed in Section 4.2.1.3, well surveys for LNAPL and pooled DNAPL were performed in 2004-2005 at 57 existing wells and at the 19 piezometers installed during the DNAPL characterization and remediation study. Well survey results indicate that pooled DNAPL is not widespread at Sauget Area 1.

At Site I South, the presence of pooled DNAPL was confirmed at bedrock well BR-I and an adjacent DNAPL piezometer, A1-19, which is located 10 feet from BR-I. Recovery tests indicate that BR-I is a low-yield well. After fluids stored in the 4-inch diameter PVC casing were pumped out, the yield stabilized at approximately 0.05 gpm of total fluids at a drawdown greater than 100 ft below the static water level. After each recovery test, it took several days for the water level in BR-I to return to static conditions. Weekly DNAPL recovery at BR-I for 15 weeks resulted in recovery of 299 gallons of total fluids, including approximately 49 gallons of DNAPL. This is equivalent to an average DNAPL recovery rate of 3.3 gallons per week, or 0.5 gallons per day. DNAPL recovery has been performed at BR-I every other week as an interim remedial measure since October 2008.

At Site G, some evidence of pooled DNAPL was noted during NAPL surveys at well BR-G, but no DNAPL was recovered during three separate recovery tests performed at BR-G. Therefore, recovery of DNAPL by pumping at BR-G does not appear feasible.

Also at Site G, results of the NAPL survey performed in May 2004 indicated the presence of LNAPL in well EE-11, which is screened in the SHU. LNAPL was recovered during a recovery test performed in May 2004, but a subsequent recovery test performed in October 2004 recovered only small globs of LNAPL. Therefore, further recovery of LNAPL at EE-11 by pumping does not appear feasible.

There was no indication of pooled DNAPL in any of the wells or piezometers at Site H or Site L.

5.3 Groundwater at and Downgradient of the Source Areas

Groundwater flowing beneath Sauget Area 1 ultimately discharges to the Mississippi River, approximately 5,700 feet downgradient of its western boundary. Groundwater in the alluvial aquifer underlying Sauget Area 1 flows west and northwest toward the Mississippi River at an estimated velocity of 29.6 feet/year in the SHU and 296 feet/year in the MHU/DHU (assuming a porosity of 0.35). Groundwater is the most important migration pathway from the Sauget Area 1 source areas because it has the potential to discharge site-related constituents to the Mississippi River. Potential impact could result from groundwater discharge into the river if the constituents detected in groundwater downgradient of the Sauget Area 1 source areas migrate that far. Part of the Sauget Area 1 plume is intercepted by the GMCS at Sauget Area 2 Site R.

Review of groundwater data collected during the SSP revealed that the distributions of VOCs and SVOCs downgradient of Site I South and Sites G, H and L were representative of the extent of chemical constituents present above regulatory levels. Generally speaking, herbicide and pesticide distributions parallel the VOC and SVOC data. Concentrations of PCBs, dioxin TEQs and metals occur sporadically and at comparatively low concentrations both upgradient and downgradient of disposal areas, throughout the aquifer saturated thickness. Therefore, the summary of the downgradient groundwater investigation presented in Section 3.3.2 focused on VOCs and SVOCs. The summary of groundwater conditions beneath the source areas presented in Section 3.2.6 also focused on VOCs and SVOCs because they are good indicators of contaminant transport at Sauget Area 1.

This section uses summary statistics, isoconcentration cross sections, and isoconcentration maps to illustrate the extent of the nine Sauget Area 1 indicator constituents in groundwater at and downgradient of the Sauget Area 1 source areas. The nine indicator constituents include six VOCs (benzene, chlorobenzene, tetrachloroethene, trichloroethene, 1,2-DCE, vinyl chloride), two SVOCs (1,4-dichlorobenzene and 4-chloroaniline), and the herbicide 2-4-D.

The isoconcentration cross sections for benzene, chlorobenzene, 1,4-dichlorobenzene, and 4-chloroaniline are from the Sauget Area 2 Remedial Investigation Report (URS, 2009). New isoconcentration cross sections were prepared for the other indicator constituents, including tetrachloroethene, trichloroethene, cis-1,2-DCE, vinyl chloride, and 2,4-D.

The nine isoconcentration cross sections that extend from Site I South to the Mississippi River, Figures 5-3 through 5-11, correspond to line B-B' on the cross section location map, Figure 5-2. The nine isoconcentration cross sections that extend from Sites G and H to the River, Figures 5-12 through 5-20, correspond to line C-C' on Figure 5-2.

Figures 5-21 through 5-47 are isoconcentration maps for the SHU, MHU, and DHU for the nine Sauget Area 1 indicator constituents. The exceedance areas in the SHU, MHU, and DHU in the Sauget region that shown on Figures 5-48, 5-49, and 5-50 are based on exceedances of any of 14 of the Sauget Area 2 indicator constituents, which include the nine Sauget Area 1 indicator constituents listed above plus nitrobenzene; 2,4-dichlorophenol; 2,4,6-trichlorophenol; 1,2-dichloroethane; and arsenic.

Tables 5-1 through 5-4 present all groundwater testing results that exceed MCLs (or EPA Regional Screening Levels when MCLs are not available) for the SHU, MHU, DHU, and for samples from residential areas, respectively.

5.3.1 Groundwater at and Downgradient of Sites I South and North

A total of seven groundwater samples were collected in the alluvial aquifer beneath Site I South . Constituents detected in the samples from Site I South included 6 VOCs, 31 SVOCs, 11 pesticides, 2 herbicides, PCBs, dioxin, and metals. Summary statistics (minimum, average, and maximum concentrations) for constituents detected in groundwater beneath Site I South are presented on Table 3-28A.

One groundwater sample was collected in the alluvial aquifer beneath Site I North. Constituents detected in the sample from Site I North included 1 pesticide, 1 herbicide, dioxin, and metals. Summary statistics (minimum, average, and maximum concentrations) for constituents detected in groundwater beneath Site I North are presented on Table 3-28B.

Frequency of detection (FOD) and maximum detected concentrations of the nine indicator constituents in the alluvial aquifer beneath the Site I South source area are summarized below. No indicator constituents were detected in the groundwater sample from Site I North.

	Site I South Source Area	
Indicator Constituent	FOD (%)	Maximum Concentration (ug/l)
Benzene	50	750
Chlorobenzene	50	3,800
Tetrachloroethene	ND	ND
Trichloroethene	ND	ND
1,2-Dichlorothene	13	160
Vinyl Chloride	ND	ND
1,4-Dichlorobenzene	88	14,000
4-Chloroaniline	25	1,800
2,4-D	ND	ND

Twenty-nine groundwater samples were collected in the alluvial aquifer downgradient of Site I and all of these samples were located downgradient of Site I South. Constituents detected in the samples downgradient of Site I South included 11 VOCs, 36 SVOCs, 16 pesticides, 6 herbicides, PCBs, dioxins, metals, and total cynanide. Summary statistics for constituents detected in groundwater downgradient of Site I South are presented on Table 3-29. Frequency of detection and maximum detected concentrations of the nine indicator constituents in groundwater downgradient of Site I South are summarized below:

	Downgradient of Site I South	
Indicator Constituent	FOD (%)	Maximum Concentration (ug/l)
Benzene	86	620
Chlorobenzene	97	34,000
Tetrachloroethene	24	83
Trichloroethene	17	180
1,2-Dichlorothene	38	1,400
Vinyl Chloride	38	970
1,4-Dichlorobenzene	90	10,000
4-Chloroaniline	86	4,100
2,4-D	24	10.5

Chlorobenzene, 1,4-Dichlorobenzene, and Benzene

As shown on Figures 5-4 and 5-5, the highest downgradient chlorobenzene and 1,4-dichlorobenzene concentrations occurred in the MHU and DHU at sampling station AA-I-S1, which is located 100 feet downgradient of Site I South.

MAXIMUM DETECTED CONCENTRATIONS DOWNGRADIENT OF SITE I SOUTH (ug/L) CHLOROBENZENE			
Sampling Station	AA-I-S1	AA-I-S2	AA-I-S3
Distance from Source Area	100 ft.	650 ft.	1,200 ft.
Shallow Hydrogeologic Unit	8,700	3,200	ND
Middle Hydrogeologic Unit	20,000	19,000	1,800
Deep Hydrogeologic Unit	34,000	11,000	5,500
1,4-DICHLOROBENZENE			
Shallow Hydrogeologic Unit	4,400	4,200	ND
Middle Hydrogeologic Unit	10,000	4,900	1,500
Deep Hydrogeologic Unit	9,700	5,300	3,200

These comparatively high concentrations of chlorobenzene and 1,4-dichlorobenzene are most likely due to dissolution and downgradient transport of DNAPL trapped in the alluvial aquifer matrix and/or pooled on bedrock beneath Site I South. Following vertical migration of liquid waste and/or leaching of dissolved constituents into the hydrogeologic units below Site I, more constituent migration occurred in the MHU and DHU downgradient of the disposal area because their higher hydraulic conductivities resulted in a significantly higher mass flux. Concentrations of chlorobenzene and 1,4-dichlorobenzene decrease between AA-I-S1 and AA-I-S3, which is approximately 1100 feet west of AA-I-S1.

Figure 5-3 shows the profile of the benzene plume at and downgradient of Site I South. Benzene concentrations in groundwater downgradient of Site I South are significantly lower than chlorobenzene and 1,4-dichlorobenzene concentrations.

MAXIMUM DETECTED CONCENTRATIONS DOWNGRADIENT OF SITE I SOUTH (ug/L) BENZENE			
Sampling Station	AA-I-S1	AA-I-S2	AA-I-S3
Distance from Source Area	100 ft.	650 ft.	1,200 ft.
Shallow Hydrogeologic Unit	620	120	<1
Middle Hydrogeologic Unit	190	300	74
Deep Hydrogeologic Unit	140	120	72

As indicated on Figures 5-3, 5-4, 5-5, and 5-21 through 5-29, there are other sources of chlorobenzene, 1,4-dichlorobenzene, and benzene in the region crossgradient and downgradient of Sauget Area 1 that contribute to these plumes.

Chlorinated Ethenes

The tetrachloroethene and trichloroethene concentrations in groundwater (Figures 5-6, 5-7, and 5-30 through 5-35) at and downgradient of Site I South are discontinuous and relatively dilute.

1,2-DCE and vinyl chloride are daughter products generated during reductive dechlorination of tetrachloroethene and trichloroethene. The plumes of 1-2-DCE (Figures 5-8, 5-36, 5-37, and 5-38) vinyl

chloride (Figures 5-9, 5-39, 5-40, and 5-41) had significantly higher concentrations compared to concentrations of tetrachloroethene and trichloroethene, and this suggests that most of the tetrachloroethene and trichoroethene in the alluvial aquifer has already degraded to 1,2-DCE and vinyl chloride.

MAXIMUM DETECTED CONCENTRATIONS DOWNGRADIENT OF SITE I SOUTH (ug/L) 1,2-DCE			
Sampling Station	**AA-I-S1**	**AA-I-S2**	**AA-I-S3**
Distance from Source Area	**100 ft.**	**650 ft.**	**1,200 ft.**
Shallow Hydrogeologic Unit	**1,200**	**300**	**<5**
Middle Hydrogeologic Unit	**310**	**160**	**1,400**
Deep Hydrogeologic Unit	**<1,000**	**<120**	**<250**
VINYL CHLORIDE			
Shallow Hydrogeologic Unit	**970**	**240**	**<10**
Middle Hydrogeologic Unit	**320**	**<1000**	**190**
Deep Hydrogeologic Unit	**<2,000**	**<250**	**130**

4-Chloroaniline and 2,4-D

The 4-chloroaniline plume (Figures 5-10, 5-42, 5-43, and 5-44) is present at AA-I-S1 and AA-I-S3. At AA-I-S1, the maximum concentration was 4100 ug/L in a sample from the SHU. At AA-I-S3, the maximum concentration was 170 ug/L in a sample from the MHU. The isoconcentration cross section indicates the presence of a separate plume of 4-chloroaniline associated with sources downgradient of Sauget Area 1.

MAXIMUM DETECTED CONCENTRATIONS DOWNGRADIENT OF SITE I SOUTH (ug/L) 4-CHLOROANILINE			
Sampling Station	**AA-I-S1**	**AA-I-S2**	**AA-I-S3**
Distance from Source Area	**100 ft.**	**650 ft.**	**1,200 ft.**
Shallow Hydrogeologic Unit	**4,100**	**680**	**<20**
Middle Hydrogeologic Unit	**1,700**	**340**	**170**
Deep Hydrogeologic Unit	**18**	**58**	**100**

The 2,4-D plume (Figures 5-11, 5-45, 5-46, and 5-47) is relatively small and dilute. The only detections of 2,4-D were in the DHU at AA-I-S1, with a maximum concentration of 11 ug/L.

5.3.2 Groundwater at and Downgradient of Sites G and H

Two groundwater samples were collected in the alluvial aquifer beneath the Site G source area. Detected constituents included 11 VOCs, 13 SVOCs, 11 pesticides, 6 herbicides, dioxin, and metals. Nine groundwater samples were collected in the alluvial aquifer beneath the Site H source area. Detected constituents included 12 VOCs, 33 SVOCs, 16 pesticides, 5 herbicides, PCBs, dioxin, metals, and total cyanide. Summary statistics for constituents detected in groundwater beneath the Site G and Site H source areas are presented on Tables 3-27 and 3-28. Frequency of detection and maximum detected concentrations of the nine indicator constituents in groundwater beneath the Site G and Site H source areas I are summarized below:

	Site G Source Area		Site H Source Area	
Indicator Constituent	**FOD (%)**	**Maximum Concentration (ug/l)**	**FOD (%)**	**Maximum Concentration (ug/l)**

Benzene	**100**	**3,700**	**78**	**2,250**
Chlorobenzene	**100**	**4,300**	**100**	**4,350**
Tetrachloroethene	**50**	**170**	**ND**	**ND**
Trichloroethene	**100**	**200**	**33**	**49.5**
1,2-Dichlorothene	**100**	**190**	**33**	**17**
Vinyl Chloride	**50**	**41**	**ND**	**ND**
1,4-Dichlorobenzene	**100**	**850**	**100**	**14,000**
4-Chloroaniline	**100**	**23,000**	**67**	**1,800**
2,4-D	**50**	**120**	**33**	**180**

Thirty groundwater samples were collected in the alluvial aquifer downgradient of the Site G source area. Because of the proximity of Sites G, H, and L, the plume downgradient of Site G potentially receives contributions from these three sites. Detected constituents included a total of 9 VOCs, 19 SVOCs, 6 pesticides, 2 herbicides, PCBs, dioxins, and metals. Summary statistics for constituents detected in groundwater downgradient of Sites G, H, and L are presented on Table 3-30. Frequency of detection and maximum detected concentrations of the nine indicator constituents are summarized below:

	Downgradient of Sites G and H	
Indicator Constituent	**FOD (%)**	**Maximum Concentration (ug/l)**
Benzene	**7**	**2.2**
Chlorobenzene	**70**	**270**
Tetrachloroethene	**17**	**13**
Trichloroethene	**20**	**2.5**
1,2-Dichlorothene	**37**	**20**
Vinyl Chloride	**3**	**7.3**
1,4-Dichlorobenzene	**33**	**9.5**
4-Chloroaniline	**7**	**14**
2,4-D	**ND**	**ND**

Chlorobenzene, 1,4-Dichlorobenzene, and Benzene

As shown on Figures 5-12, 5-13, 5-14, and 5-21 through 5-29, elevated concentrations of benzene, chlorobenzene and 1,4-dichlorobenzene were detected in groundwater beneath the Site G source area at wells EEG-107 and EE-01. The maximum concentrations of benzene and chlorobenzene were detected at EEG-107, which is screened in the SHU beneath Site G. The concentrations of benzene and chlorobenzene at EEG-107 were 3,300 ug/L and 2,600 ug/L, respectively. The maximum concentration of 1,4-dichlorobenzene, 5,300 ug/L, was detected in a groundwater sample from EE-01, which is screened in the SHU and is located between Site G and Site H.

Where not captured by the GMCS, the chlorobenzene, 1,4-dichlorobenzene, and benzene plumes reach the Mississippi River, as shown on the isoconcentration maps. As indicated on the isoconcentration cross sections and maps, there are source(s) of benzene, chlorobenzene, and 1,4-dichlorobenzene in the region that are crossgradient and downgradient of Sauget Area 1.

Chlorinated Ethenes

The isoconcentration cross sections and maps for the chlorinated ethenes (Figures 5-15 through 5-18 and 5-30 through 5-41) indicate that there are relatively small plumes of tetrachloroethene, trichloroethene, and 1,2-DCE associated with the Site G source area. The maximum concentrations were detected in the groundwater sample from well EEG-107, which is screened in the SHU beneath Site G. The concentrations of tetrachloroethene, trichloroethene, and 1,2-DCE at EEG-107 were 280 ug/L, and 390 ug/L, and 240 ug/L, respectively. There were no detections of tetrachloroethene, trichloroethene, or 1,2-DCE in the groundwater samples from TCMW-5 and TCMW-6, which are the next downgradient wells shown on these cross sections. There were no detections of vinyl chloride at any of the sampling locations shown on the vinyl chloride cross section (Figure 5-18).

4-Chloroaniline and 2,4-D

The maximum concentration of 4-chloroaniline shown on the isoconcentration cross section was 15,000 ug/L at well EEG-107, which is screened in the SHU beneath Site G (Figure 5-19). The 4-chloroaniline plume extends approximately 2900 feet downgradient of Site G, but does not reach the Mississippi River. In the downgradient portion of the plume, the maximum concentrations were found in samples from the DHU. As indicated on Figure 5-19, there are source(s) of 4-chloroaniline in the region downgradient of Sauget Area 1.

The isoconcentration cross section for 2,4-D (Figure 5-20) indicates that there is a relatively small plume of 2,4-D associated with the Site G source area. A concentration of 1,200 ug/L of 2,4-D was detected in the groundwater sample from well EEG-107, which is screened in the SHU beneath Site G, and this is the only detection of 2,4-D on this cross section.

5.4 Site Conditions After Completion of Sediment and Creek Bottom Soil Removal Actions

Solutia remediated Creek Segments B, C, D, E and F by removing 46,000 cubic yards of sediments in 2001-2002 and 12,400 cubic yards of sediments and creek bottom soil in 2005-2006. Excavated sediments and soils were transferred to a RCRA and TSCA-compliant on-site containment cell constructed adjacent to the west bank of Creek Segment B just north of Judith Lane (Figure 1-4). Creek bottom soils represent the natural creek bottom material that was present beneath the sediments.

No sediments remained in Creek Segments B, C, D, E, and F after completion of the sediment removal action in 2001-2002, thereby eliminating any potential adverse ecological impacts associated with sediments that were present prior to that time.

By agreement with USEPA, risk-based concentrations (RBCs) for protection of forage fish in Dead Creek were developed for residual concentrations of known bioaccumulative compounds (Total DDT, Dieldrin, gamma-Chlordane, Total PCBs, Dioxin TEQ and Mercury), and site-specific metals (Copper, Lead and Zinc), and Bis(2-ethylhexyl)phthalate. Following the sediment removal efforts within Creek Segments B, C, D, E and F in 2001-2002, the remaining creek bottom soils were sampled and compared against the RBCs. In areas where the RBCs were exceeded, the creek soils were excavated in 2005-2006 and the soils were transferred to the containment cell.

Creek Segments B, C, D and E are not considered to be habitats conducive to sustainable fish populations because these creek segments are periodically dewatered to control mosquitoes. Creek Segment F and the Borrow Pit Lake are habitats conducive to sustainable fish population. The sediment excavation in Borrow Pit Lake in 2005-2006 and the creek bed soil removal in Creek Segment F in 2005-2006 removed concentrations exceeding the RBCs for protection of forage fish.

Based on completion of these remedial actions for sediment and creek bottom soil, Dead Creek is no longer considered an on-going source area.

5.5 Floodplain Soil

As discussed in Section 3.5.2, surface and subsurface soil sampling was conducted at transects adjacent to Dead Creek in both developed and undeveloped areas of its floodplain. The results of the floodplain soil sampling indicate that SVOCs, PCBs, dioxins, and copper were found most often at concentrations below or similar to background concentrations. There was no identifiable relationship between concentrations and distance from Dead Creek, indicating that migration of sediment contaminants to adjoining floodplain soils had not occurred.

5.6 Air

5.6.1 Source Area Ambient Air

As discussed in Section 3.2.5, upwind and downwind air sampling was performed at Sites G, H, I, and L to evaluate the potential for release and migration of constituents. Transport pathways of potential interest include direct volatilization and potential airborne transport of particulate matter containing constituents. Summary statistics for upwind and downwind samples collected at Sites G, H, I and L are presented in Tables 3-17 to 3-24.

The following table lists the chemicals whose maximum downwind concentration was at least two times higher than the concentration in the upwind sample. The table focuses on chemicals that are considered the most likely to be site-related constituents.

Chemicals Whose Maximum Downwind Concentration was at Least Two Times the Upwind Concentration

VOC Constituents	Site G Downwind ug/m3	Site H Downwind ug/m3	Site I Downwind ug/m3	Site L Downwind ug/m3
Acetone	717	24	ND	ND
2-Butanone	16.8	24.7	ND	30.5
Ethylbenzene	13.3	1.82	1.69	ND
Dichloromethane	2420	11	2090	890
4-Methyl-2-pentanone	61.9	ND	ND	ND
Styrene	15.9	ND	ND	ND
Tetrachloroethene	2.92	0.909	ND	ND
Toluene	159	ND	ND	ND
1,1,1 Trichloroethane	ND	6.37	ND	ND
Trichloroethene	ND	3.44	ND	ND

SVOC Constituents	Site G ug/m3	Site H ug/m3	Site I ug/m3	Site L ug/m3
1,2 Dichlorobenzene	ND	ND	0.259	ND
1,4 Dichlorobenzene	ND	<2 x upwind	0.42	0.024
2-Nitroaniline	ND	ND	0.0294	ND

The HHRA included a short-term and chronic screening assessment of 24-hour ambient air sample data collected at Sites G, H, I, and L. This approach and completed evaluation were approved by USEPA in the HHRA Work plan (ENSR, 1999) and the HHRA (ENSR, 2001), respectively. The air samples were not used in the calculation of risks in the HHRA because they were 24-hour air samples collected at a single time point. Downwind air sample concentrations were compared to upwind sample concentrations and to risk-based screening levels based on chronic and subchronic/acute exposure scenarios. USEPA Region 9 Preliminary Remediation Goals (PRGs) (1999), which were current at the time the HHRA was conducted, were used as the risk-based screening levels for chronic exposure.

Further evaluation of potential for exposure to constituents that may be present in ambient air is provided in Section 8.2.1 of this report.

5.6.2 Vapor Intrusion

As discussed in Section 4.4, a vapor intrusion investigation that was conducted in 2006 included collection of soil vapor samples from three locations at the Wiese facility, three locations at the Sauget Village Hall, three locations at the Cerro Flow Products control center, and one location at a guard shack at the entrance to the Cerro truck parking area (Figure 4-6). The soil vapor samples that were collected during this work program were submitted for laboratory analysis of VOCs. Results are summarized below:

Maximum Detected Concentrations of VOCs in Soil Vapor Samples at Wiese Property, Cerro, and Sauget Village Hall

	Wiese Building	Cerro Control Center	Cerro Guard House	Sauget Village Hall
Constituent	Maximum Concentration (ppbv)	Maximum Concentration (ppbv)	Maximum Concentration (ppbv)	Maximum Concentration (ppbv)
Acetone	ND	12	15	43
Benzene	13,000	1.1	8.2	7.6
1,3-Butadiene	ND	0.22	2.5	4.3
2-Butanone (MEK)	ND	0.81	2.8	9.9
Butylbenzene	ND	1.7	ND	ND
Carbon disulfide	260	1.1	35	8.9
Carbon Tetrachloride	ND	ND	ND	0.15
Chlorobenzene	70,000	ND	ND	140
Chloroethane	ND	ND	0.28	ND
Chloroform	ND	4.1	ND	ND
Chloromethane	ND	0.27	0.2	0.54
Cumene	ND	ND	ND	1.4
Cyclohexane	760	1.8	16	160
1,2-Dichlorobenzene	8,100	ND	ND	0.61
1,3-Dichlorobenzene	600	ND	ND	1.5
1,4-Dichlorobenzene	6,900	ND	ND	7.5
1,1-Dichloroethane	ND	5.5	1.7	ND
1,1-Dichloroethene	ND	0.26	ND	ND
cis-1,2-Dichloroethene	2,800	25	ND	ND
trans-1,2-Dichloroethene	78	ND	ND	ND
Ethanol	ND	1.7	ND	35
Ethyl Acetate	ND	10	ND	ND
Ethylbenzene	680	0.87	1.3	2.9
4-Ethyltoluene	16	0.3	0.49	2.7
Freon 11	ND	0.27	0.28	0.38
Freon 12	ND	0.57	0.49	0.56
Freon 113	ND	0.18	0.2	0.15

Heptane	650	2	7.1	18
Hexane	2,200	3.8	25	140
Methylene Chloride	ND	ND	ND	44
Naphthalene	3,200	ND	21	ND
4-Methyl-2-pentanone	ND	0.23	0.61	ND
2-Propanol	ND	1.0	ND	2.8
Propylbenzene	ND	ND	0.14	0.79
Styrene	ND	ND	0.22	0.66
1,1,2,2-Tetrachloroethane	ND	0.036	ND	ND
Tetrachloroethene	5,700	31	0.28	1.6
Toluene	7,200	7.7	8.7	35
1,2,4-Trichlorobenzene	170	ND	ND	ND
1,1,1-Trichloroethane	ND	9.9	3.6	ND
Trichloroethene	1,800	22	0.54	3.7
1,2,4-Trimethylbenzene	ND	0.53	0.85	3.2
1,3,5-Trimethylbenzene	ND	0.24	0.45	1
2,2,4-Trimethylpentane	4,600	ND	ND	ND
Vinyl Chloride	9,400	3	ND	0.51
m,p-Xylene	640	2.4	2	9.7
o-Xylene	210	0.59	0.83	3.3

Data from the vapor intrusion investigation were evaluated in the Vapor Intrusion HHRA (ENSR, 2009).

6.0 CONTAMINANT FATE AND TRANSPORT

6.1 Sources and Routes of Contaminant Migration

6.1.1 Source Areas

Solutia remediated Dead Creek by removing 46,000 cubic yards of sediments from Segments B, C, D, E and F in 2001-2002 and 12,400 cubic yards of sediments and creek bottom soil in 2005-2006 from Creek Segments B, D, E, F, and Borrow Pit Lake. Excavated sediments and soils were transferred to a RCRA and TSCA-compliant on-site containment cell constructed adjacent to the west bank of Creek Segment B just north of Judith Lane (Figure 1-4).

The remaining contaminant source areas at Sauget Area 1 are the disposal areas at Sites G, H, I South, and L. These disposal areas contain municipal and industrial waste materials, including crushed or partially crushed drums, drum fragments, uncontained soil and liquid wastes, wood, glass, paper, construction debris, and miscellaneous trash. There is residual DNAPL in the aquifer matrix underlying portions of Sites G, H, and I South, and the dissolution of residual DNAPL in the MHU and DHU beneath the Site G, H, and I South source areas represents an on-going source of constituents to downgradient groundwater.

Site I North and Site N are not considered to be contaminant source areas. Site I North contains inert fill materials such as bricks, pieces of concrete, large concrete slabs, rebar, sheet metal, wood, fill soil, and gravel. Site N, which is located on property formerly owned by the H. Hall Construction Company, was primarily used for disposal of construction debris. The waste materials found in Site N included soil, brick, concrete, metal, tires, and wood as well as some crushed drums, including a few that contained a pasty whitish material that could have been painting waste.

6.1.2 Routes of Contaminant Migration

Based on the nature and extent of the source areas at Sauget Area 1, the potential routes of contaminant migration include the following: i) leaching of source materials to groundwater, ii) groundwater transport and discharge to the Mississippi River and the GMCS, iii) volatilization of source materials to ambient air or to indoor air where buildings are present, and iv) erosion and release of source materials. The following paragraphs discuss these four potential routes of contaminant migration.

6.1.2.1 Leaching to Groundwater

The potential for the source material at the Sauget Area 1 sites to leach to groundwater is based on the leachability of the source material, the age of the source material, the relative amount of leaching that has already occurred, and the type of surface cover. The source material observed in the Sauget Area 1 sites includes constituents that are relatively leachable. Due to the nature of the waste materials present in Sites G, H, I, and L, there is most likely some constituent migration from these fill areas into the underlying aquifer. Section 6.2 summarizes results of mass flux calculations for leaching of unsaturated source materials at Site I South and mass flux from groundwater flushing in the alluvial aquifer beneath Site I South and applies the conclusions to Sites G, H, and L.

6.1.2.2 Groundwater Flow and Discharge to the Mississippi River and the GMCS

The Mississippi River is located approximately one mile downgradient of Sauget Area 1 Sites G, H, I, and L. In 2003-2004 a Groundwater Migration Control System (GMCS) was installed at Sauget Area 2 Site R, approximately 300 feet from the River and downgradient of Sauget Area 1 sites G, H, I, and L. The GMCS includes a 3,300 ft long, "U"-shaped, fully penetrating barrier wall located downgradient of Site R and three groundwater extraction wells on the upgradient side of the barrier wall.

Groundwater flow to the Mississippi River and the performance of the GMCS have been extensively studied and modeled, and there is evidence that natural attenuation processes remove a significant portion of the mass flux from the Sauget Area 1 plumes before they reach the GMCS and the River. These topics are covered in Sections 6.3, 6.4, and 6.5 of this report.

6.1.2.3 Volatilization

Volatile constituents present in the subsurface may potentially volatilize to ambient air or, where buildings are present, to the indoor air of overlying buildings (i.e., vapor intrusion). The potential for constituents to volatilize from soil or groundwater to ambient air is dependent on the physical and chemical properties of the constituents, the soil characteristics, and the depth of the constituents.

VOCs have been detected in soil, waste, and/or groundwater samples collected at Sites G, H, I South, and L, and there is potential for those constituents to migrate to ambient air. This potential pathway is evaluated in the Human Health Risk Assessment, which is summarized in Section 8 of this report.

The Wiese building is located at Site G, and there are several occupied buildings at or near Site I South, including the Sauget Vilage Hall adjacent to Site I South, the Cerro Guard House at Site I, and the Cerro Control Center west of Site I South. Soil gas data collected at these locations in 2006 was summarized in Section 4.4 and was evaluated in a technical memorandum referred to as the Vapor Intrustion Human Health Risk Assessment (ENSR, 2008a).

6.1.2.4 Erosion and Release

The potential for erosion and release of source materials from the Sauget Area 1 fill areas is limited because the Sauget Area 1 fill areas are protected by the Mississippi River levee system.

6.2 Mass Flux from Source Areas Due to Leaching and Lateral Groundwater Flow

Leachate recovery at Sites G, H, I South, and L is a component in remedial alternative arrays for Sauget Area 1. However, USEPA has acknowledged that leachate recovery is largely an issue related to satisfying State ARARs and may not reduce the time to meet remedial goals.

GSI performed mass flux calculations to estimate mass flux of chlorobenzene, 1,4-dichlorobenzene, and benzene due to: i) groundwater flushing in the alluvial aquifer beneath Site I; ii) leaching of unsaturated Site I South source zone materials prior to installation of a low permeability cover; and iii) leaching of unsaturated Site I South source zone materials after installation of a low permeability cover. A technical

memo, "Mass Flux Estimates, Sauget Area 1" (GSI, 2005) was prepared to document calculation procedures, input parameters, and results. This section summarizes the results of the source area mass flux calculations.

6.2.1 Background Information

The calculations were performed for Site I, which has the largest surface area of the four sites and generally has the highest concentrations of COCs. Therefore, the findings of this evaluation for Site I are considered applicable to Sites G, H, and L.

The northern portion of Site I, now known as Site I North, was used primarily for disposal of wastes such as broken concrete, bricks, and other construction debris. Test trenches and borings confirm the presence of construction wastes and fill soils at Site I North. Based on waste characterization data and analytical data from the DNAPL study (GSI, 2005), VOC and SVOC concentrations are significantly lower in fill samples collected from Site I North compared to waste samples collected from Site I South.

The source area is an important variable in the calculation of mass flux of COCs due to leaching of unsaturated source materials. In the mass flux evaluation that was performed in 2005 (GSI, 2005), the mass flux calculations for leaching were performed using the following three alternate assumptions for source area:

- Case 1: Area of residual DNAPL (6.43 acres, see Figure 6-43)
- Case 2: Southern area of Site I interpreted from 1964 air photo (9.47 acres)
- Case 3: Entire area of Site I (19 acres)

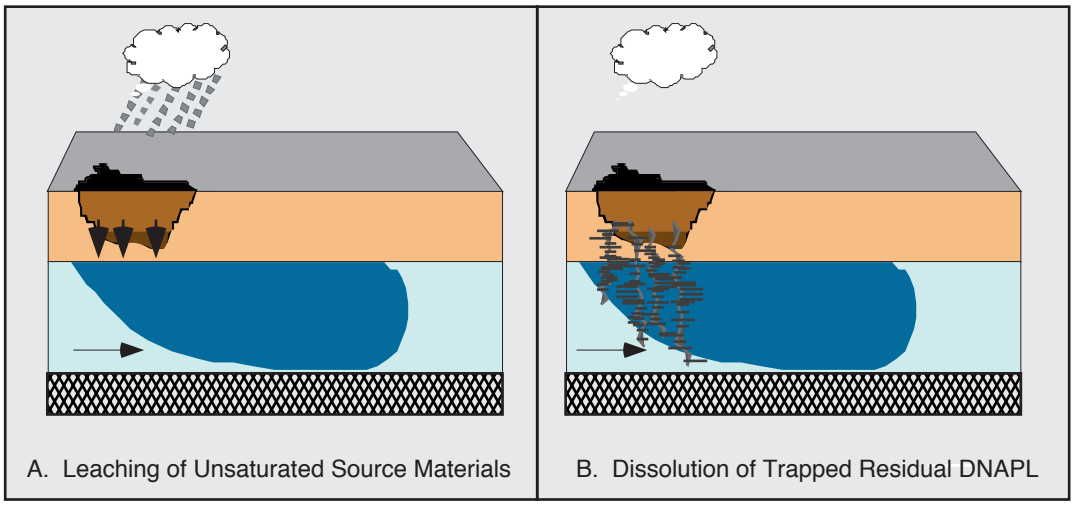
Note that the surface areas for Case 2 and Case 3 that were used in the EPA-approved 2005 mass flux evaluation report were overly conservative based on the current understanding of fill boundaries at Site I. Site I South has an area of 8.79 acres, which is approximately 7% lower than the area of 9.47 acres that was used for Case 2 in the 2005 report. Site I North has an area of 5.87 acres, and the entire area of Site I is approximately 14.66 acres, which is approximately 23% lower than the area of 19 acres that was used for Case 3 in the 2005 report. Therefore, the mass flux of COCs due to leaching from unsaturated source materials using the updated areas for Case 2 and Case 3 would be approximately 7% and 23% lower, respectively, than the corresponding values in the 2005 report. However, this does not affect the overall results of the 2005 report because the mass flux of COCs from the unsaturated source materials is very small compared to the mass flux of COCs due to lateral flow in the alluvial aquifer.

Chlorobenzene and 1,4-dichlorobenzene were initially selected for the mass flux evaluation based on the presence of elevated concentrations of these COCs in groundwater to the west (i.e., downgradient) of Site I and elevated concentrations in Toxicity Characteristic Leaching Procedure (TCLP) samples collected from unsaturated source materials. Benzene was later added to the mass flux evaluation based on USEPA comments to a draft version of the mass flux tech memo. Benzene was the only other COC detected in groundwater downgradient of Site I that was also detected in the TCLP samples collected from the source materials.

The mass flux calculations were performed for two VOCs (chlorobenzene and benzene) and one SVOC (1,4-dichlorobenzene) that are found in Sauget Area 1 waste materials, are prevalent in groundwater underlying Sauget Area 1, and are considered relatively mobile in groundwater. Since the findings of the mass flux evaluation apply to major COCs that are relatively mobile in groundwater, they should also apply to other COCs that are present at Sauget Area 1.

6.2.2 Source Release Mechanisms

Knowledge of which source mechanisms are active at a site is important for developing an accurate conceptual model of constituent fate and transport, and for developing appropriate remedial responses. Two source mechanisms that have the potential to be active at Sauget Area 1 are leaching of unsaturated source materials and residual DNAPL dissolution in the alluvial aquifer resulting in mass flux of COCs through lateral groundwater flow.



Two Potential Groundwater Source Mechanisms

Leaching of unsaturated source materials (see Panel A above) results from infiltration of rainfall through near-surface waste materials and contaminated unsaturated soils. Residual DNAPL dissolution (see Panel B above) occurs when soluble organic constituents dissolve from trapped residual DNAPL fingers and pools that entered the subsurface when the source area was active.

Mass flux of COCs in groundwater flowing beneath the unsaturated source materials can be calculated from COC concentration data for the groundwater downgradient of the source materials and groundwater flow rates determined using Darcy's Law and aquifer parameters. These calculations are summarized below and are discussed in more detail in Section 5.0 of the Mass Flux Estimates tech memo (GSI, 2005).

Mass flux of COCs due to leaching of unsaturated source materials can be calculated using TCLP data from waste samples collected in the source materials, predicted rates of leachate generation determined

by the Hydrologic Evaluation of Landfill Performance (HELP) model, and the estimated surface area of the source materials. These calculations are summarized below in Section 6.2.1.4 and are discussed in more detail in Section 6.0 of the Mass Flux Estimates tech memo (GSI, 2005).

6.2.3 Mass Discharge Rate Due to Lateral Groundwater Flow

The mass flux of COCs due to lateral groundwater flow is calculated by multiplying the estimated groundwater flowrate through the DNAPL source zone by the COC concentrations in groundwater immediately downgradient of the DNAPL source zone.

The groundwater flowrate is calculated from Darcy's Law, which describes the rate of movement of water through a porous medium, and can be expressed in general terms as follows:

Flowrate = (Hydraulic conductivity) x (Hydraulic gradient) x (Cross sectional area of flow)

The cross sectional area of flow is determined by multiplying the thickness of the water-bearing unit, as determined from borings, and the width of a specified flow area, as measured perpendicular to the groundwater flow direction. For these calculations, the area of interest is the DNAPL source zone within the water-bearing unit, so the width term is referred to as the source width.

Aquifer Thickness: The hydrogeologic conceptual model divides the unconsolidated water-bearing unit into three hydrogeologic units (shallow, middle, and deep). The SHU is generally 0-30 ft below grade, the MHU is generally 30-70 ft below grade, and the DHU is generally 70-110 ft below grade. Depth to water is typically about 15 ft, which means that only the lower 15 ft of the SHU is saturated. Therefore, the assumed saturated thicknesses for the SHU, MHU, and DHU are 15 ft, 40 ft, and 40 ft, respectively.

Hydraulic Conductivity: Separate hydraulic conductivity estimates were developed for the SHU, MHU, and DHU. Estimates of hydraulic conductivity are available from: 1) literature reports (Ritchey and Schicht, 1982), and 2) preliminary analysis of RI/FS slug test data. As requested by USEPA, the site-specific hydraulic conductivity values calculated from the Site I slug tests were used in the mass flux calculations.

Hydraulic Conductivity Values from Slug Test Results at Site I Wells

Hydrogeologic Unit	Site I Well	Hydraulic Conductivity (cm/sec)
SHU	ST-I-S	4.5×10^{-3}
MHU	ST-I-M	5.1×10^{-2}
DHU	ST-I-D	1.3×10^{-1}

Hydraulic Gradient: Based on review of potentiometric surface maps, the hydraulic gradients selected for use in the mass flux calculations for the SHU, MHU, and DHU were 0.001 ft/ft, 0.001 ft/ft, and 0.001 ft/ft, respectively.

Source Widths: Source widths at Site I for the SHU, MHU, and DHU were based on DNAPL areas at Site I identified by the DNAPL Characterization and Remediation Study (GSI, 2005). The Site I source widths are 800 ft for the SHU, 700 ft for the MHU, and 700 ft for the DHU, as shown on Figures 6-44 and 6-45.

Groundwater Flow Rates: Groundwater flow rates through the SHU, MHU, and DHU source zones were obtained using Darcy's Law and the values for hydraulic conductivity, hydraulic gradient, aquifer thickness, and source width as discussed above. The calculated groundwater flux values for the SHU, MHU, and DHU were 0.8 gpm, 21.0 gpm, and 53.6 gpm, respectively.

Groundwater Concentrations Downgradient of Site I: Average chlorobenzene, 1,4-dichlorobenzene, and benzene concentrations in the SHU, MHU, and DHU immediately downgradient of Site I were determined based on average concentrations in groundwater samples from the 0-30 ft, 30-70 ft, and 70-110 ft intervals, respectively, at groundwater sampling location AA-I-S1.

Average Concentrations in Groundwater at AA-I-S1 Downgradient of Site I			
Hydrogeologic Unit	Chlorobenzene (mg/L)	1,4-Dichlorobenzene (mg/L)	Benzene (mg/L)
SHU	5.2	2.2	0.46
MHU	12.3	7.7	0.081
DHU	11.5	6.6	0.088

To estimate mass flux due to lateral groundwater flow beneath Site I, average concentration in groundwater immediately downgradient of Site I was multiplied by groundwater flow rate through the source zone. The mass flux calculations assumed uniform source concentrations in the SHU, the MHU, and the DHU throughout the Site I source zone.

Mass Flux of Three Key Constituents Due to Lateral Groundwater Flow Beneath Site I			
Hydrogeologic Unit	Chlorobenzene (kg/yr)	1,4-Dichlorobenzene (kg/yr)	Benzene (kg/yr)
SHU	8.2	3.5	0.7
MHU	515	322	3.4
DHU	1226	704	9.4

The mass flux values for chlorobenzene, 1,4-dichorobenzene ,and benzene in the SHU, MHU, and DHU are shown on Figures 6-46 and 6-47. Chlorobenzene and 1,4-dichlorobenzene have significantly higher estimated mass flux rates in groundwater than benzene, especially in the MHU and DHU.

Most of the mass flux is in the MHU and DHU. The total mass flux in the MHU and DHU for chlorobenzene, 1,4-dichlorobenzene, and benzene is **2,780 kg/year.**

6.2.4 Estimated Rate of Mass Flux by Leaching at Site I

The equation used for calculating mass flux of each COC due to leaching of unsaturated source materials can be expressed as follows:

Mass Flux = (Leachate concentration) x (Percolation rate) x (Surface area of source materials)

Leachate concentration (in units of mg/L) for each COC was based on laboratory results of TCLP analyses of four waste samples collected in 1999 from the Site I source materials. As documented in Section 6.2 of the Mass Flux Tech Memo (GSI, 2005), the median concentrations for chlorobenzene, benzene, and 1,4-dichlorobenzene in the TCLP leachate were 1.2 mg/L, 0.14 mg/L, and 1.1 mg/L, respectively.

Estimated percolation rates, or leachate generation rates (in units of inches/year), were determined using the Hydrologic Evaluation of Landfill Performance (HELP) model. The HELP model was used to predict the percolation rates at Site I under two scenarios: i) existing conditions; and ii) after installation of a low permeability cover. As documented in Attachment 5 of the Mass Flux Tech Memo (GSI, 2005), output from the HELP model indicates that average annual percolation through the unsaturated waste and fill materials at Site I is approximately 7.3 inches/year under existing conditions. After the low permeability cover is installed, average annual leakage through the bottom layer of the low permeability cover is estimated at approximately 8 x 10^{-2} inches/year.

The surface area in the above equation refers to the surface footprint of the waste materials at Site I. The total area of Site I is approximately 19 acres, but it has been reported that the northern portion of Site I was used primarily for disposal of construction wastes. It is possible that the mass flux of COCs leached from the fill/waste materials in the northern portion of Site I is small compared to the mass flux of COCs from the southern portion of Site I. Therefore, the mass flux calculations were performed using three alternate values for source area.

- Case 1: Area of residual DNAPL from Figure 1 in DNAPL Report (6.43 acres, see Figure 6-23)
- Case 2: Southern area of Site I interpreted from 1964 air photo (9.47 acres)
- Case 3: Entire area of Site I (19 acres).

Using the equation presented above and the three alternate values for the Site I source area, calculated mass flux from leaching of unsaturated source materials was as follows:

Mass Flux of Key Constituents from Leaching of Source Materials at Site I Assuming 6.43-Acre Source Area

Scenario	Chlorobenzene (kg/yr)	1,4-Dichlorobenzene (kg/yr)	Benzene (kg/yr)
Existing Conditions	5.8	5.3	0.7
Low-K Cover	0.007	0.006	0.001

Mass Flux of Key Constituents from Leaching of Source Materials at Site I Assuming 9.47-Acre Source Area

Scenario	Chlorobenzene (kg/yr)	1,4-Dichlorobenzene (kg/yr)	Benzene (kg/yr)
Existing Conditions	9	8	1.0
Low-K Cover	0.01	0.01	0.001

Mass Flux of Key Constituents from Leaching of Source Materials at Site I Assuming 19-Acre Source Area

Scenario	Chlorobenzene (kg/yr)	1,4-Dichlorobenzene (kg/yr)	Benzene (kg/yr)
Existing Conditions	17	16	2.0
Low-K Cover	0.02	0.02	0.002

Without a low permeability cover, estimated mass flux values for chlorobenzene, 1,4-dichlorobenzene, and benzene due to leaching of unsaturated source materials at the Site I source zone are 17 kg/yr, 16 kg/yr, and 2 kg/yr, respectively (see Figure 6-26), assuming a source area of 19 acres.

After installation of a low permeability cover, mass flux values for chlorobenzene, 1,4-dichlorobenzene, and benzene due to leaching decrease significantly, and are estimated to be 0.02 kg/yr, 0.02 kg/yr, and 0.002 kg/yr, respectively (see Figure 6-27), again assuming a 19 acre source area.

As noted in Section 6.2.1, the surface areas for Case 2 and Case 3 that were used in the EPA-approved 2005 mass flux evaluation report were overly conservative based on the current understanding of fill boundaries at Site I. The mass flux of COCs due to leaching from unsaturated source materials using the updated areas for Case 2 and Case 3 would be approximately 7% and 23% lower, respectively, than the corresponding values in the 2005 report. However, this does not affect the overall results of the 2005 report because the mass flux of COCs from the unsaturated source materials is very small compared to the mass flux of COCs due to lateral flow in the alluvial aquifer.

6.2.5 Comparison of Mass Flux Estimates Due to Leaching and Lateral Groundwater Flow

As summarized on Figures 6-26 and 6-27, estimated mass flux of chlorobenzene, 1,4-dichlorobenzene, and benzene from leaching of unsaturated Site I source materials is small compared to estimated mass flux of these three COCs by lateral groundwater flow in the alluvial aquifer underlying Site I. Mass flux ratios were calculated by dividing the mass flux due to leaching from unsaturated source materials by the mass flux due to lateral groundwater flow through the MHU and DHU.

These results indicate that interior leachate recovery would remove only a relatively small mass of chlorobenzene, 1,4-dichlorobenzene, and benzene at Site I and therefore would not significantly reduce the time to meet remedial goals.

6.3 Biodegradation of the Indicator Constituents in Groundwater

6.3.1 Natural Attenuation Processes

The fate and transport of an organic compound in groundwater is controlled by the compound's physical and chemical properties and the physical, chemical, and biological nature of the subsurface media through which the compound migrates. Several processes are known to cause a reduction in the concentration and/or mass of organic compounds dissolved in groundwater. Those processes that result in a change in a constituent's aqueous-phase concentration but not of the total mass in the system are termed nondestructive. Those processes that result in the reduction of constituent mass are referred to as destructive. Nondestructive processes include advection, hydrodynamic dispersion (mechanical dispersion and diffusion), sorption, dilution, and volatilization. Destructive processes include biodegradation and hydrolysis. Key processes active at Sauget Area 1 are advection, dispersion, sorption, and biodegradation. These four processes are discussed in more detail below.

Advection - Advection refers to the transport of solutes by the bulk movement of groundwater. Advection is the most important process driving the downgradient migration of aqueous-phase constituents in

groundwater. The rate at which advective transport influences dissolved phase constituent migration is referred to as the seepage velocity. Seepage velocity is a key parameter in natural attenuation studies because it can be used to estimate constituent travel time.

Dispersion - Hydrodynamic dispersion is the process whereby a groundwater plume spreads out from the primary direction of groundwater flow. Dispersion results in reduced constituent concentrations as a result of mixing with groundwater cross gradient and downgradient of groundwater flow. Dispersion occurs as a result of two processes: mechanical dispersion and molecular diffusion. Mechanical dispersion is the dominant dispersion process at typical groundwater velocities. At very low groundwater velocities, molecular diffusion may become the dominant dispersion process. Molecular diffusion is generally ignored for most natural attenuation studies.

Dispersion is a function of groundwater seepage velocity and dispersivity occurs in the longitudinal, transverse, and vertical directions relative to groundwater flow. For most organic compounds, the amount of attenuation provided by dispersion is generally low compared to other attenuation processes such as sorption, biodegradation, and hydrolysis. The amount of attenuation resulting from dispersion is typically estimated using computer models such as BIOCHLOR (Aziz et al., 1999).

Sorption - Sorption is a non-destructive process in which organic compounds partition from groundwater and sorb to the aquifer matrix. Sorption of dissolved constituents onto the aquifer matrix results in slowing, or retardation, of the constituent relative to the groundwater seepage velocity and a reduction of aqueous phase concentrations.

The effect of sorption on the transport of organic compounds is represented by the retardation factor. The retardation factor quantifies two processes: 1) the degree to which a particular compound moves slower than the groundwater seepage velocity, and 2) the ratio of total constituent mass per volume of aquifer matrix to the volume of dissolved constituents. As shown in the following table, several of the indicator constituents for Sauget Area 1 have significant retardation factors.

Constituent	Soil-Water Distribution Coefficient, K_d (L/kg)	Retardation Factor, R (unitless)
Chlorobenzene	3.5×10^{-1}	3.0
1,4-Dichlorobenzene	9.9×10^{-1}	6.6
Benzene	9.4×10^{-2}	1.5
Tetrachloroethene	2.5×10^{-1}	2.4
Trichloroethene	2.7×10^{-1}	2.5
cis-1,2-DCE	5.7×10^{-2}	1.3
Vinyl Chloride	3.0×10^{-2}	1.2
4-Chloroaniline	1.1×10^{-1}	1.6
2,4-D	7.2×10^{-1}	5.1

Notes:
1. **Retardation factor, R = 1 + (bulk density x K_{oc} x f_{oc} / porosity)**
2. **K_{oc} values for each constituent taken from TACO standard (35 IAC 742, Appendix C)**
3. **f_{oc} = 0.0016 based on (URS, 2004)**

4. **Bulk density = 1.7 g/mL and porosity = 0.3 based on typical values**

Biodegradation - Biodegradation is a microbial-mediated destructive attenuation process. Transformation of an organic compound proceeds via one of two biochemical reaction pathways: 1) use of the compound as a primary growth substrate (i.e., electron donor or electron acceptor) or 2) co-metabolism. The use of the organic constituent as a primary growth substrate is the dominant mechanism resulting in degradation of constituents and occurs when microorganisms gain energy for growth by transferring electrons from an electron donor to an electron acceptor. Co-metabolism is typically less important under naturally occurring conditions (Wiedemeier et al., 1999) as co-metabolic biodegradation rates are much lower than growth-promoting pathways.

Depending on the geochemical characteristics of the hydrogeologic unit, organic compounds can either serve as the electron donor or the electron acceptor in microbial metabolism. Growth-promoting biological oxidation of organic compounds occurs when the microorganism uses the compound as an electron donor in a coupled oxidation-reduction reaction. Biological oxidation may occur under both aerobic and anaerobic conditions. Many organic compounds can be used as electron donors in microbial metabolism, including petroleum-related hydrocarbons (e.g., BTEX), and the less oxidized chlorinated compounds such as dichloroethene (DCE), vinyl chloride, chlorobenzene, and the dichlorobenzene isomers. The most preferable electron acceptor utilized during biological oxidation of organic compounds is oxygen. Use of oxygen as an electron acceptor results in high energy yield for the microorganism; therefore, oxidation of organic compounds occurs relatively quickly in aerobic environments. Once oxygen has been depleted by aerobic bacteria, anaerobic consortia utilize alternate electron acceptors (e.g., nitrate, Fe(III), sulfate, carbon dioxide) during the oxidation of organic compounds.

Growth-promoting biological reduction of chlorinated organic compounds occurs when microorganisms utilize the chlorinated constituent as an electron acceptor during reductive dechlorination (or halorespiration). Reductive dechlorination occurs only under anaerobic conditions. The key electron donor in the reductive dechlorination process is hydrogen, which is produced during the fermentation of organic substrates, such as naturally occurring organic matter or co-contaminants such as BTEX.

6.3.2 Biodegradation of Chlorobenzenes

Chlorobenzenes can be degraded by a variety of both aerobic and anaerobic bacteria. Biodegradation generally proceeds faster aerobically (Wenderoth et al. 2003), and oxygen availability is a common rate-limiting factor for microbial-mediated chlorobenzene transformation.

Aerobic Biodegradation of Chlorobenzenes – Chlorobenzene and the DCB isomers, have been shown to be biodegradable under aerobic conditions. Several studies have shown that aerobic microorganisms utilize chlorobenzene (Reineke and Knackmuss, 1988; van der Meer et al., 1998; Rittman and McCarty, 2001) and the DCB isomers (Reineke and Knackmuss, 1988; van der Meer, 1991; Nielsen and Christensen, 1994; Rittman and McCarty, 2001) as growth-promoting substrates. These and other studies have further indicated the microorganisms capable of carrying out such degradation reactions are commonly encountered at contaminated sites.

The pathway for aerobic biodegradation of chlorobenzene is similar to that observed for BTEX degradation (van der Meer et al., 1998), and results in complete mineralization of chlorobenzene to chloride, carbon dioxide, and water. A similar pathway for the aerobic biodegradation of the DCB isomers has been proposed by van der Meer et al. (1991). Due to complete mineralization, the aerobic biodegradation of chlorobenzenes does not result in the production or accumulation of "daughter" products.

Anaerobic Biodegradation of Chlorobenzenes - Several reports have documented the anaerobic biodegradation of chlorobenzenes (e.g., Sims et al., 1991; Middeldorp et al., 1997; Heidrich et al., 2004; Kaschl et al., 2005). There are two energy-yielding processes by which chlorinated compounds undergo anaerobic biodegradation: 1) reductive dechlorination and 2) direct oxidation (Wiedemeier et al., 1999). The specific degradation pathway depends on several factors including: i) the number of chlorine atoms on the molecule; ii) the geochemical conditions; and iii) the microbial consortia. In general, the more highly chlorinated compounds are only susceptible to reductive dechlorination, while the less chlorinated compounds are susceptible to both reductive dechlorination and direct anaerobic oxidation (U.S. EPA, 1998).

The reductive dechlorination pathway for chlorobenzenes proceeds via the sequential removal of a chlorine atom from the molecule. Reductive dechlorination of the DCB isomers to chlorobenzene has been well documented through both laboratory experiments (Ramanand et al., 1993; Nowak et al., 1996; Middeldorp et al., 1997) and in-situ field demonstrations (Heidrich et al., 2004). Further reduction of chlorobenzene to benzene has been suggested based on field and laboratory observations (Nowak et al., 1996; Kaschl et al., 2005), but isolation of microorganisms that carry out this reaction has not been documented.

Mineralization of chlorobenzene via direct anaerobic oxidation has also been suggested (Kaschl et al., 2005). This reaction, analogous to the direct anaerobic oxidation of vinyl chloride, likely proceeds via a pathway similar to that observed for anaerobic benzene oxidation. Similar to aerobic oxidation, direct anaerobic oxidation of chlorobenzene results in complete mineralization to chloride, carbon dioxide, and water without the production or accumulation of daughter products.

Anaerobic degradation of chlorobenzene proceeds slowly relative to anaerobic degradation of the DCB isomers. As a result, the chlorobenzene plumes are more persistent than the DCB plumes at the Sauget sites.

Geochemical Conditions for Biodegradation of Chlorobenzenes - For the aerobic biodegradation of chlorobenzenes, the most important geochemical condition is the presence of dissolved oxygen. The presence of abundant electron donor, such as within a contaminant plume, often leads to the rapid depletion of dissolved oxygen. Dissolved oxygen is replenished through recharge of groundwater from upgradient of the source, infiltration of rain water, and groundwater mixing at the fringes of the plume.

There are two pathways for the biodegradation of chlorobenzene and DCB isomers under anaerobic conditions: reductive dechlorination and direct oxidation. Reductive dechlorination predominantly occurs under sulfate-reducing or methanogenic conditions, once other electron acceptors (i.e., oxygen, nitrate,

and Fe(III)) have been depleted. Reductive dechlorination has also been observed under nitrate-reducing and iron-reducing conditions, but reaction rates are typically lower. Therefore geochemical conditions indicative of reductive dechlorination include:

- low dissolved oxygen concentrations,
- low nitrate concentrations,
- low sulfate concentrations,
- elevated Fe(II) concentrations,
- elevated methane concentrations, and
- elevated chloride concentrations.

The direct anaerobic oxidation of chlorobenzenes has not been widely studied. However, the process is likely analogous to the anaerobic oxidation of similar contaminants that have been well documented, such as vinyl chloride and BTEX. The anaerobic oxidation of these compounds has been observed under a variety of geochemical conditions including nitrate-reducing, iron-reducing, sulfate-reducing, and methanogenic (Wiedemeier et al., 1999).

6.3.3 Biodegradation of Chloroethenes

Chloroethenes include the compounds tetrachloroethene, trichloroethene, cis-1,2-DCE, trans-1,2-DCE, 1,1-dichloroethene (1,1-DCE) and vinyl chloride. Tetrachloroethene, trichloroethene, 1,2-DCE, and vinyl chloride are indicator constituents at Sauget Area 1. In anaerobic environments, the highly chlorinated solvents undergo reductive dechlorination in a process that is thermodynamically favorable because of the relatively high oxidation state of the carbon in these compounds (see reviews in Christ et al., 2005; Loffler and Edwards, 2006). The reaction involves the transfer of electrons to the chlorinated solvent compound coupled with the release of chloride, yielding lesser chlorinated metabolites. Consequently, reductive dechlorination is a stepwise process, with tetrachloroethene dechlorinated to trichloroethene, DCE (primarily the cis-1,2-DCE isomer), vinyl chloride, and finally to ethene. In general, each of these successive reactions occurs at a slower rate than the preceding step in the reaction.

In many cases, the microbes that mediate these reactions can use one or more of the chlorinated solvents as an electron acceptor in an energy-conserving process (halorespiration). In a subsurface setting, reductive dechlorination will occur once more favorable electron acceptors (i.e., oxygen, nitrate, iron/manganese, sulfate) are largely depleted, although reductive dechlorination often proceeds in conjunction with sulfate-reduction and methanogenesis, albeit at a slower rate. Stimulating dechorination activity requires adequate concentrations of both the electron acceptor (the chlorinated solvent) and electron donor (typically a hydrogen-generating fermentable carbon compound). In some cases, DCE and vinyl chloride can accumulate because reductive dechlorination of these compounds requires more strongly reducing environments (relative to tetrachloroethene and trichloroethene). Alternate reaction pathways, including anaerobic oxidation of DCE and vinyl chloride to carbon dioxide, are known to exist but the contribution of these pathways to attenuation relative to reductive dechloriation is largely unknown.

Highly chlorinated solvents tend to be recalcitrant in aerobic environments because reductive dechlorination is not energetically favorable and dechlorinating microbes are inhibited by oxygen. However, oxidation of lesser chlorinated metabolites, including vinyl chloride and, to a lesser extent, DCE readily occurs as long as there is a co-substrate (e.g., methane, propane) present to stimulate aerobic organisms. Vinyl chloride is also known to serve as a primary substrate (electron donor) for a number of aerobic microbes. Trichloroethene tends to be slowly degraded in aerobic conditions, while tetrachloroethene is not known to oxidize in oxygen-rich groundwater. In all of these oxidation reactions, the end products are carbon dioxide, water, and chloride; organic intermediates formed during these reactions are generally extremely short-lived.

6.3.4 Biodegradation of Benzene

Benzene can be rapidly mineralized in aerobic conditions by a number of different types of indigenous microbes (Alvarez and Vogel, 1991; Borden et al., 1994). Using data from 26 lab and field studies of aerobic benzene degradation, Rifai and Suarez (1999) determined that the median half-life was approximately 3.5 days. It is generally accepted that this type of microbial metabolic capacity is widespread in nature. Therefore, significant benzene biodegradation activity (i.e., at levels which will affect the size of the plume) typically exists or can be stimulated (i.e., through addition of oxygen and/or nutrients) at a given site. Benzene can serve as a sole carbon and energy source during this oxidation reaction for a variety of organisms, though not all organisms that catalyze the reaction are capable of coupling it to a growth-supporting process. The metabolic strategy involves a succession of attacks by oxygenase enzymes to make the compound more susceptible to ring cleavage. This degradation results in complete mineralization to CO_2 and water, and accumulation of organic intermediates is generally not observed.

Benzene is also biodegradable in anaerobic environments (Bolt et al., 2002; Lovley, 2000; Johnson et al., 2003; Foght, 2008), such as iron-reducing (Anderson et al., 1998), sulfate-reducing (Lovley et al., 1995), nitrate-reducing (Burland and Edwards, 1999), and methanogenic conditions (Weiner and Lovley, 1998). Because depletion of all available oxygen can occur rapidly following a release, the overall contribution of the anaerobic reactions to fuel hydrocarbon degradation is believed to be significant at some sites (Foght, 2008). However, the occurrence of anaerobic benzene degradation appears to be highly site-specific, with lag times prior to the initiation of degradation and/or inhibition when other fuel hydrocarbons are present. In general, reaction rates for anaerobic degradation are lower than those observed for aerobic biodegradation.

Benzene serves the same metabolic function (carbon and energy source) in both aerobic and anaerobic degradation, although different microbial populations are responsible in each case. Pathways for anaerobic biodegradation of benzene are still being elucidated (Foght, 2008), but the mineralization process yields the same products as those generated in aerobic respiration (CO_2, water, and biomass), along with the reduced species of the electron acceptor.

6.3.5 Biodegradation of 4-Chloroaniline

The degradation of 4-chloroaniline under both aerobic and anaerobic conditions has been reported (Bollag and Russel, 1976; Zeyer et al., 1985; Radianingtyas et al., 2003; McLaughlin et al., 2006; Vangnai and Petchkroh, 2007; Tongarun et al., 2008), although the relative reaction rates are not well documented. The majority of studies have focused on aerobic degradation using pure cultures or enrichments from soils where chloroaniline is present. In some cases, 4-chloroaniline has been shown to support growth of microbes that mediate the degradation reactions, while others rely on aniline as a growth substrate during degradation of 4-chloroaniline. Aerobic degradation of 4-chloroaniline has been observed to occur first by oxgenase attack to produce 4-chlorocatechol, followed by a meta-cleavage or modified ortho-cleavage pathway that eventually results in mineralization (i.e., CO_2). A recent study on reductive dechlorination of chlorinated anilines suggests that anaerobic degradation of 4-chloroaniline is limited (Tas et al., 2007).

6.3.6 Biodegradation of 2,4-D

The herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) is readily biodegradable in aerobic conditions (Estrella et al., 1992; Ka et al., 1994). During this degradation process, it can serve as a sole carbon and energy source for a variety of organisms (Ka et al., 1994). While 2,4-D degradation activity appears to be widespread and has been observed in soils with no history of 2,4-D exposure (Kamagata et al., 1997), a lag time has been observed before the onset of degradation, presumably following growth of a suitable microbial population. The degradation pathway generally proceeds through removal of the phenoxy group and possibly one of the chloride ions, followed by oxygenase and hydroxlyase mediated reactions to make the compound more susceptible to ring cleavage (Kitagawa et al., 2002). This degradation results in complete mineralization to CO_2, and accumulation of intermediates has not been widely reported. Anaerobic degradation of 2,4-D has not been extensively studied, but reductive dechlorination to 4-chlorophenol is known to occur in anaerobic conditions (Mikesell and Boyd, 1985), and anaerobic mineralization of this compound is well documented (Haggeblom and Young, 1995).

6.4 Regional Groundwater Flow and Contaminant Transport Model

6.4.1 Background and Objectives

The southern portion of the American Bottoms aquifer is or has the potential to be affected by constituents originating from several facilities and waste management sites. Although several previous modeling efforts have focused on the American Bottoms aquifer, there was no single integrated flow and fate and transport model that could evaluate all sites of interest on a regional scale.

GSI was retained by URS Corporation to develop a regional groundwater flow and contaminant transport model covering the southern portion of the American Bottoms aquifer. The study area includes the Sauget Area 1 sites, the Sauget Area 2 sites, and the Krummrich facility in and around the Village of Sauget and the Village of Cahokia in St. Clair County, Illinois. Other sites of interest include ConocoPhillips East St. Louis Terminal and Clayton Chemical facility.

The objectives of the modeling project, as stated in the Groundwater Modeling Plan (GSI, 2006a), were to upgrade/enhance the GSI 2001-2005 groundwater model into a regional model encompassing the Sauget/Cahokia areas such that

1) the modeled flow paths can be validated using actual plume measurements made during the RI phase;
2) a sensitivity analysis can be performed to assess how groundwater flow and contaminant nature and extent respond under various remedial alternatives during the FS phase;
3) the capture zone of the Sauget Area 2 GMCS can be further defined; and
4) the vertical mass flux of chemicals can be evaluated from both a site-specific and a regional perspective.

In addition, the model can be calibrated to explain constituents at locations identified as locations of concern by the USEPA. Development and calibration of the flow and contaminant transport model are summarized below and are described in more detail in the groundwater model report (GSI, 2008b).

6.4.2 Groundwater Flow Model

6.4.2.1 Description of Groundwater Flow Model

The MODFLOW groundwater flow model was developed using data from previous hydrogeologic characterization projects, existing groundwater models (Geraghty and Miller, 1993; Clark, 1997; and GSI, 2002-2005), and new data developed as part of the Sauget Area 1, Sauget Area 2, and Krummrich site investigations.

The model domain measured 8 miles by 8 miles. A non-uniform finite-difference grid with 60 ft by 60 ft cells in the vicinity of the Sauget Area 2 GMCS was used with cell size gradually increasing with distance from Site R. The Mississippi River served as the boundary condition on the western edge of the model. Constant head cells were used in the model to represent the eastern boundary of the model domain (the bluff line). Because flow is primarily east to west, the northern and southern boundaries of the model domain were represented as no-flow boundaries.

The three hydrogeologic units at the site were each represented by a separate layer. The top layer, corresponding to the SHU, was simulated as an unconfined unit. The second layer, corresponding to the MHU, was simulated as a convertible confined/unconfined unit. The bottom layer, representing the DHU, was simulated as a confined unit. Top and bottom elevations of the model layers were based on information from several sources, including USGS topographic data, stratigraphic elevation data from cross sections, and bedrock elevations from previous studies. Initial hydraulic conductivity values for the SHU were based on previous modeling studies and were assumed to be a single value across the model domain. Values of hydraulic conductivity for the MHU and DHU were taken from a detailed analysis of American Bottoms aquifer test data.

An initial surface infiltration rate of 7.8 inches per year was used throughout the entire model domain to represent infiltration from rainfall. This infiltration rate was based on data from the previous modeling studies.

The Mississippi River was modeled using MODFLOW's river package. Each river cell was assigned a river stage, river bottom elevation, and conductance. River stage was based on a gauging station near Site R and was assumed constant for all river cells in the model. River bottom elevations for each cell were based on bathymetric data from U.S. Army Corps of Engineers.

A regional pumping center, assumed to be withdrawing groundwater from all three layers, was established in the model to represent ongoing highway dewatering projects in the East St. Louis area. The Sauget Area 2 GMCS was also incorporated into the model. The GMCS system consists of a "U"-shaped slurry wall (3 ft wide, 3,300 ft long, 140 ft deep) located between Sauget Area 2 Site R and the Mississippi River and three groundwater extraction wells between the slurry wall and Site R.

A total of 126 head observation wells were imported into the model at locations where heads were measured during the July 6-8, 2005 static water level survey for comparison of simulated to measured heads.

Key model attributes, assumptions, input data for the MODFLOW model are listed on Table 6.1 and are described in detail in Section 6 of Part 1 of the modeling report (GSI, 2008).

6.4.2.2 Calibration of Groundwater Flow Model

The groundwater model was calibrated so that the simulated water levels in the model were representative of several actual potentiometric (water level) maps of data collected in 1962, 1990, and 2005. During calibration, model inputs such as river conductance, boundary conditions, pumping rates from wells, Mississippi River stage, and hydraulic conductivity were adjusted to reduce the difference between measured and simulated groundwater levels.

During the development of the contaminant transport model, changes were made to the groundwater flow model in an attempt to meet the goals stated above in Section 6.1.1.

The final model simulates the regional aquifer system with an overall root mean squared (RMS) error of 0.7 ft and mean residual (MR) error of 0.06 ft for the model calibration to July 2005 water level data. Individual RMS errors of 0.8 ft, 0.6 ft, and 0.6 ft were obtained for the Shallow Hydrogeologic Unit (SHU), Middle Hydrogeologic Unit (MHU), and Deep Hydrogeologic Unit (DHU), respectively. Individual MR errors of 0.1 ft, 0.01 ft, and –0.06 ft were obtained for the SHU, MHU, and DHU, respectively. These RMS error values indicate that, in general, simulated water levels closely match actual water levels.

6.4.3 Groundwater Contaminant Transport Model

6.4.3.1 Description of Groundwater Contaminant Transport Model

The American Bottoms Regional Groundwater Contaminant Transport model was developed using data from previous hydrogeologic characterization projects, existing groundwater models, and data developed as part of the Sauget Area 1 sites, Sauget Area 2 sites, and Krummrich facility investigations.

The MT3D mass transport code (Waterloo Hydrogeologic, 2006) was used to evaluate the movement of dissolved chlorobenzene, 1,4-dichlorobenzene, and 2,4-dichlorophenoxyacetic acid (2,4-D) migrating in the groundwater. A first-order biodegradation decay rate for dissolved constituents (i.e., biodegradation of plumes rather than sources) was used to model chlorobenzene, 1,4-dichlorobenzene, and 2,4-D.

The RT3D mass transport code (Clement, 1997), with sequential decay, was used to evaluate the migration and degradation pathways of the dissolved chlorinated solvents tetrachloroethene, trichloroethene, cis-1,2-dichloroethene (1,2-DCE), and vinyl chloride migrating in the groundwater. Visual MODFLOW Premium Version 4.2 was used as the pre- and post- processor and as the user interface to the MT3D/RT3D codes.

Calibration of the fate and transport model was based on chlorobenzene for VOCs, 1,4-dichlorobenzene for SVOCs, 2,4-D for herbicides, and tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, and vinyl chloride for chlorinated solvents.

Source Areas - Initial Krummrich source areas were assigned using DNAPL and sorbed concentration maps from the RCRA Corrective Measures Study. Sauget Area 1 source areas were assigned using DNAPL maps from the DNAPL Characterization and Remediation Study. Clayton source areas were assigned based on existing groundwater data and source location and strength. Sauget Area 2 source areas were based on existing well concentrations located in Sites O, P, Q, R, and/or S.

Source Concentrations and Source Decay - An Access database was created containing concentration data from 1983 to 2006. Source concentrations over time in the Shallow, Middle, and Deep Hydrogeologic Units were estimated using data on constituent concentrations at specific wells and at specific times. The vertical mass flux of constituents from within the unsaturated zone into the aquifer was incorporated into the model as decaying-concentration source zones in the SHU.

Initially, source concentrations were assumed to be equal to observed average concentrations within a source zone. Historical and future source concentrations were estimated by projecting source concentrations backward and forward in time assuming a conservative first-order source decay half-life of 40 years. Note that this approach for modeling the source strength vs. time *does not* mean that all the sources in the model were assumed to be attenuated within 40 years. Rather, this approach assumed the sources were decaying relatively slowly, with the source concentration falling by 50% every 40 years. Because most of the source zones had high starting concentrations relative to the groundwater protection standards, all these sources persisted in the model for more than 40 years.

Initial Concentrations - Sources at the site began potentially in the 1920s. Assuming a general travel time of 10-30 years from sources to discharge points, a model start time of 1950 was selected as a conservative value. During the calibration process, using a starting time of 1960 instead of 1950 decreased the model run time without a significant impact to the calibration statistics. Therefore, all runs after the initial calibration runs had a simulation start time of 1960.

Since Visual MODFLOW does not permit a barrier wall to turn on and off, the initial simulation was run in two segments. The first segment was from 1960 to 2003 and did not include the GMCS. Concentrations

from this segment were then used as starting concentrations for the next segment. The second segment was from 2003 to 2006 and included the GMCS.

Source locations and strengths for this initial period were adjusted until the concentrations predicted by the MT3D/RT3D model were within reasonable agreement with observed concentrations. This 46-year concentration distribution was then used as the initial condition for all subsequent mass transport modeling.

Biodegradation and Sorption - Biodegradation kinetics of all dissolved constituents were assumed to be first-order. Initial dissolved-phase biodegradation rates for each COC were obtained from Illinois Tiered Approach to Corrective Action Objectives (TACO) (35 IAC 742) standard. These rates for chlorobenzene were adjusted during calibration so that the predicted concentrations were in reasonable agreement with observed concentrations at the site. The adjusted biodegradation rates used in the model are conservative relative to TACO rates as discussed in detail in the calibration section of the modeling report (GSI, 2008).

Adsorption of organic species was assumed to be linear. Retardation factors for simulating sorption of dissolved constituents to aquifer media were calculated from distribution coefficients calculated using K_{oc} taken from the TACO standard and assuming a fraction organic carbon (f_{oc}) of 0.0016.

Dispersion - Initially, a longitudinal dispersivity value of 32 ft was used in the model based on the Xu and Eckstein (1995) equation. A transverse/longitudinal dispersivity ratio of 0.1 and a vertical/longitudinal dispersivity ratio of 0.01 were used in the model.

Hydraulic Conductivity - Although varying the horizontal hydraulic conductivity was evaluated during the calibration of the contaminant transport model, it did not result in an improved calibration. Therefore, the horizontal and vertical hydraulic conductivities in the final model remained unchanged from the flow model.

Concentration Observation Wells - Concentration observation wells for each COC were imported into the model at locations where concentrations were measured during the 2005-2006 Supplemental Investigation for comparison of simulated to measured concentrations. For some constituents (such as the chlorinated ethenes), the observed plumes were relatively small and had only a few wells with detectable values.

6.4.3.2 Calibration of Groundwater Contaminant Transport Model

As discussed in the groundwater model report (GSI, 2008b), the model was calibrated so that groundwater concentrations simulated in the model were representative of measured groundwater concentrations observed in 2005 and 2006. During calibration, model inputs such as source concentrations, biodegradation rates, dispersion, recharge, pumping rates from certain identified wells, and horizontal hydraulic conductivity were adjusted to reduce the difference between simulated and observed concentration levels. The calibration resulted in a conservative model that may overpredict the impacts of some site constituents.

Two fate and transport models (RT3D for chlorinated solvents and MT3D for all other constituents) were used to simulate the movement of groundwater plumes from the source zones in the model domain. Simulations started in the 1950 to 1960 time period and were adjusted (calibrated) to match observed groundwater plumes in 2005/2006. The models were then used to simulate potential plume status up to the year 2038.

The following steps were included in the development and calibration of the fate and transport model:

1) Using the calibrated flow model to account for groundwater flow conditions for the periods of interest;
2) Using chlorobenzene as key constituent to develop the model due to the breadth and detailed coverage of the chlorobenzene database;
3) Compiling source data to determine size, strength, and temporal patterns in source concentrations;
4) Entering source concentration vs. time data in the fate and transport model;
5) Building a database of observed concentration data for the calibration period (2005/2006);
6) Running the entire model (flow model + fate and transport model) from 1950 to 2003 (period when the GMCS was not active);
7) Taking the resulting 2003 plume concentrations and entering these concentrations in a new model for the 2003 to 2005/2006 timeframe (period when the GMCS was active);
8) Comparing the modeled concentrations to observed concentrations;
9) Changing the model parameters in an attempt to improve the match; and
10) Repeating steps 3-9 for other constituents of concern: 1,4-dichlorobenzene, 2,4-D, tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, and vinyl chloride.

In 2011 IEPA provided updated pumping rates for the on-going highway dewatering projects located in the East St. Louis area (IEPA, 2011). Based on the IEPA memorandum, the 2008 regional groundwater flow and transport model was updated in 2012 to include certain revisions to the historical pumping rates. In addition, the highway dewatering system was assumed to stay on for the duration of the modeling (i.e., through 2038) rather than terminating in 2010, as simulated in the 2008 groundwater model. The updated model was used to determine the percent of dissolved constituent mass flux captured by the Sauget Area 2 GMCS (GSI, 2012).

Section 6.4.3.3 describes results of the calibration of the groundwater contaminant transport model as documented in the original groundwater model report (GSI, 2008b). Section 6.4.3.4 describes results of the 2012 update of the model (GSI, 2012). Section 6.4.3.5 discusses modeled isoconcentration contour maps for the seven Sauget Area 1 indicator constituents.

6.4.3.3 Key Results from Calibration of Groundwater Contaminant Transport Model (GSI, 2008b)

The 2008 groundwater model report (GSI, 2008b) provides detailed discussion of calibration results. Key results from the calibration efforts are summarized below:

- Historical industrial and highway dewatering activities have had significant effects on the distribution of the observed contaminant plumes today;

- Due to a lack of detailed flow records for industrial and highway dewatering wells, it is impossible to match the current observed plumes precisely. Nevertheless, a model that generally matched the key features of the groundwater plumes was constructed. This model can be used to meet the objectives presented earlier.

- Calibration efforts focused on evaluating the model response to a number of variables, including dispersivity (related to groundwater mixing), biodegradation rates, source decay rates, infiltration, industrial pumping well location and pumping rates, and highway dewatering well flowrates over time. After evaluating these parameters, a "Base Case" was developed that represented the best match that was achieved by manipulation of model variables.

- Key features of the existing chlorobenzene plume were matched with the model. These features included i) higher observed concentrations associated with the Krummrich, Sauget Area 1, and Sauget Area 2 source zones and sources associated with Clayton Chemical; ii) a portion of the Deep Hydrogeologic Unit (DHU) chlorobenzene dissolved plume extending to the northern portion of Site P, north of the main source zone; and iii) the Site R plume and portions of other plumes being captured by the GMCS.

- When all modeled constituents were included, over 94% of the total plume mass flux (mass discharge rate) is predicted to be captured by the GMCS. The total plume mass flux refers to the combined mass flux from all Sauget source areas, including the Sauget Area 1 sites, the Sauget Area 2 sites, the Krummrich facility, and Clayton. There is considerable variation in the capture efficiency for each constituent. For example:

    - Approximately 99% of the total 2,4-D mass flux (~11,000 kilograms per year) is predicted to be captured by the GMCS in 2038.
    - Approximately 91% of the vinyl chloride is predicted to be captured by the GMCS in 2038.
    - Approximately 88% of the chlorobenzene mass flux is predicted to be captured by the GMCS in 2038.
    - Although only 48% of the trichloroethene mass flux is predicted to be captured by the GMCS in 2038, this is a comparatively small plume compared to the mass flux of the other constituents (total mass flux of 17 kilograms per year of trichloroethene going to the river or the GMCS compared to ~21,000 kilograms per year for all seven constituents).

  When the highway dewatering system in East St. Louis is shut down as planned in 2010 (as assumed in the 2008 groundwater model), groundwater flow from the aquifer to the river will increase, increasing the overall mass flux to the river. Eventually, however, the mass flux to the river will decrease as the effects of slow source decay overcome the effects of increased river discharge. By the time the system reaches steady state (predicted by the model to be about

2020), the mass flux to the river will be decreasing steadily and will continue to decrease as the source is depleted.

- Overall, the model likely presents a conservative estimate of actual conditions present at the site. For example,
    - The model predicts the presence of chlorobenzene in some portions of the Middle Hydrogeologic Unit (MHU) where the actual plume data shows no plume.
    - Based on calibration results, the model uses a lower (slower) biodegradation rate than the Illinois Tiered Approach to Corrective Action Objectives (TACO) (35 IAC 742) standard.
    - Maximum detected concentrations from 1980s to 2006 were used to calculate source concentrations over time for the slow source decay term. For some constituents, this resulted in higher 2006 concentrations than actual measured values.

As noted above, the regional groundwater fate and transport model was calibrated for the following seven constituents: chlorobenzene, 1,4-dichlorobenzene, tetrachloroethene, trichloroethene, cis-1,2-DCE, vinyl chloride, and 2,4-D. All seven are Sauget Area 1 indicator constituents. Benzene and 4-chloroaniline are the two Sauget Area 1 indicator constituents that were not included in the model calibration.

6.4.3.4 Updated Groundwater Model (GSI, 2012)

Based on the IEPA memorandum (IEPA, 2011), the following changes were made to the groundwater model:

- Pumping rates for the pumping centers representing ongoing highway dewatering projects in the East St. Louis area, assumed to be withdrawn from all three layers, were revised as requested by IEPA. As a conservative estimate, total industrial pumping rates (including highway dewatering projects) from 1960 through 1994 were obtained from historical published records. Pumping rates from 1995 through 2038 were obtained from the IEPA memorandum (IEPA, 2011). Additionally, the IEPA ratio of pumping between pumping centers was retained for the entire modeling period (1960 through 2038), with respect to installation years for the various dewatering centers.

- The highway dewatering system was assumed to stay on for the duration of the modeling (i.e. through 2038) rather than terminating in 2010, as simulated in the 2008 groundwater model.

Modifying pumping rates can have a considerable impact on model calibration, resulting in significant changes to future predictions. Therefore, the following actions were taken to determine the impact changing dewatering system pumping rates have on model calibration.

1. The model was re-run for the constituents of interest: chlorobenzene; 1,4-dichlorobenzene; 2,4-D; PCE; TCE; 1,2-DCE; and vinyl chloride, and

2. Root mean square (RMS) and mean residual errors of the updated model were then compared to the errors obtained from the 2008 model to determine whether the updated pumping rates had any impacts on model calibration. This work demonstrated that the model did not need to be re-calibrated (GSI, 2012).

The updated regional groundwater flow and transport model was then used to determine the percent of dissolved constituent mass flux captured by the GMCS (GSI, 2012).

The MODFLOW model was run under transient conditions from 1960 to 2038 (GSI, 2008b). RMS and residual errors for each of the seven COI were compared to errors obtained for the 2008 model. Overall, updating highway dewatering well pumping rates improved the calibration of the groundwater fate and transport model for chlorobenzene and 1,4-dichlorobenzene, while the calibrations for 2,4-D; PCE; TCE; DCE; and vinyl chloride remained relatively unchanged.

6.4.3.5 Modeled Isoconcentration Contour Maps for 2006 and 2038

Figures 6-1 through 6-42 show modeled isoconcentration contour maps for 2006 and 2038 for the seven calibrated constituents, with separate maps for each constituent for the SHU, MHU, and DHU. Each figure includes a map showing the modeled isoconcentration contours for the updated model (GSI, 2012) and the original model (GSI, 2008b).

Chlorobenzene is the most widespread of the seven calibrated constituents. The core of the modeled chlorobenzene plume in the MHU and DHU from the Sauget Area 1 sources is a 10 mg/L isoconcentration contour that extends west of Sauget Area 1 onto Lot F (see Figures 6-3 through 6-6). Comparison of the modeled 2006 and 2038 plumes show that the chlorobenzene plume core from Sauget Area 1 sources is relatively stable. The results are similar for 1,4-dichlorobenzene, except that the modeled plume concentrations are lower compared to chlorobenzene (Figures 6-9 through 6-12).

The modeled chlorinated ethene plumes (Figures 6-19 through 6-42) are relatively dilute except in the SHU at the Sauget Area 1 source areas. The plume core for chlorinated ethenes is represented by the 0.1 mg/L isoconcentration contour for 1,2-DCE in the MHU (see Figures 6-33 and 6-34). The modeled results for 2006 and 2038 predict dowgradient expansion of relatively dilute trichloroethene and 1,2-DCE plumes from Site G in the MHU and DHU during that time period (see Figures 6-27 through 6-30 and Figures 6-33 through 6-36).

The modeled results for 2,4-D (Figures 6-13 through 6-18) show a very small plume in the SHU in the immediate vicinity of Site G in 2006 that persists to 2038. However, the modeled results show no plume of 2,4-D in the MHU or DHU.

6.5 Mass Flux to Mississippi River and Mass Flux Removed by Natural Attenuation

6.5.1 Mass Flux Discharged to Mississippi River

The 2012 updated regional groundwater flow and transport model (GSI, 2012) was used to quantify the percent of dissolved constituent mass flux captured by the GMCS for each source area in the Sauget region. For this purpose, all other source areas were removed and the 2003 to 2038 segment of the model was run with a) the GMCS in place and b) the GMCS off. Quantitative predictions were made using the model for all source areas, for Sauget Area 1 source areas only, for Sauget Area 2 sources only (combined), Sauget Area 2 source areas (Site R only), Sauget Area 2 source areas (Site O only), Clayton Chemical source areas only, and Krummrich source areas only. Results of the quantitative predictions are presented in the 2012 memo regarding the updated groundwater model (GSI, 2012). For Sauget

Area 1 sources only, overall, when all modeled constituents are included, 73% of the total plume mass flux that would have discharged to the river in 2038 without the GMCS is predicted to be captured by the GMCS. Benzene and 4-chloroaniline were the only Sauget Area 1 indicator constituents that were not included in the calibration, so the mass flux predictions do not included those two constituents.

Based on results presented in the 2012 update of the groundwater model (GSI, 2012), the mass flux from the Sauget Area 1 sources to the Mississippi River is a relatively small percentage of the mass flux to the River from non-Sauget Area 1 sources (e.g., Sauget Area 2 and Krummrich). The tables below were taken from the 2012 update of the groundwater model (GSI, 2012) and summarize the modeled mass flux from the Sauget Area 1 plumes to the Mississippi River with the GMCS off and with the GMCS on.

	Modeled Mass Flux To River from Sauget Area 1 Plumes with GMCS OFF (kg/yr)							
	All 7 COCs	2,4-D	CB	1,2-DCE	DCB	VC	TCE	PCE
2006	236	0	120	16	13	88	0	0
2010	206	0	94	24	10	74	3	0.4
2020	232	0	81	55	9	79	7	0.7
2030	201	0	70	47	8	69	6	0.6
2038	181	0	63	42	7	62	6	0.5

CB = chlorobenzene; DCB = 1,4-dichlorobenzene; 2,4-D = 2,4-Dichlorophenoxyacetic acid; PCE = tetrachloroethene; TCE = trichloroethene; 1,2-DCE = cis-1,2-Dichloroethene; VC = vinyl chloride; kg/yr = kilograms per year.

	Modeled Mass Flux To River from Sauget Area 1 Plumes with GMCS ON (kg/yr)							
	All 7 COCs	2,4-D	CB	1,2-DCE	DCB	VC	TCE	PCE
2006	94	0	37	8	3	46	0	0
2010	72	0	30	6	2	34	0.06	0.009
2020	62	0	26	6	2	27	0.2	0.02
2030	55	0	23	6	2	24	0.2	0.01
2038	50	0	21	5	2	22	0.2	0.01

	Percent Mass Flux from Sauget Area 1 Plumes Captured by GMCS (%)							
With GMCS ON	All 7 COCs	2,4-D	CB	1,2-DCE	DCB	VC	TCE	PCE
2006	60	100	69	50	76	48	100	100
2010	65	97	68	75	76	54	98	98
2020	73	98	67	88	77	66	97	98
2030	73	98	67	88	76	65	97	98
2038	73	98	67	88	77	65	97	98

Modeled mass flux results for all seven constituents in the Sauget Area 1 plumes were as follows:

Mass Flux for Sauget Area 1 Plumes Based on Groundwater Flow and Contaminant Transport Model	
	All 7 COCs (kg/yr)
Modeled Mass Flux To River in 2006 with GMCS OFF	236
Modeled Mass Flux To River in 2006 with GMCS ON	94
Mass Flux Removed by GMCS in 2006	142

Key Point
For all seven modeled constituents, modeled mass flux to the Mississippi River in 2006 with the GMCS on was 94 kg/year, and mass flux removed by the GMCS in 2006 was 142 kg/year. These calculations are for the Sauget Area 1 plumes only and are based on the updated groundwater model (GSI, 2012).

6.5.2 Calculated Mass Removal by Natural Attenuation in 2006

For the Sauget Area 1 plumes, mass removal by natural attenuation in 2006 can be estimated based on the calculated mass flux in the MHU and DHU at the Site I source area (see Section 6.2.1.3) and modeled mass fluxes as discussed in the previous section:

Calculated Mass Removal by Natural Attenuation for the Sauget Area 1 Plumes in 2006	
	Mass Flux (kg/yr)
A: Calculated Mass Flux from Site I Source Area *(GSI, 2005)*	2,780
B: Modeled Mass Flux To River in 2006 with GMCS On	94
C: Modeled Mass Flux Removed by GMCS in 2006	142
Estimated Mass Removal by Natural Attenuation in 2006 (= A - B - C)	2,554

Based on this calculation, the rate of mass removal by natural attenuation in 2006 is estimated to have been 2,554 kg/year.

7.0 CONCEPTUAL SITE MODEL

The Conceptual Site Model for Sauget Area 1 is based on findings of the Remedial Investigation and focuses on source areas and groundwater. The Conceptual Site Model is described below and illustrated on Figures 7-1 and 7-2.

Source Areas – The disposal areas at Sites G, H, I South, and L are contaminant source areas and contain municipal and industrial waste materials, including crushed or partially crushed drums, drum fragments, uncontained soil and liquid wastes, wood, glass, paper, construction debris, and miscellaneous trash.

Site I North and Site N are not considered to be contaminant source areas. Site I North contains inert fill materials such as brick, pieces of concrete, large concrete slabs, rebar, sheet metal, wood, fill soil, and gravel. Site N, which is located on property formerly owned by the H. Hall Construction Company, was primarily used for disposal of construction debris. The waste materials found in Site N included soil, brick, concrete, metal, tires, and wood, as well as some crushed drums and drum fragments, including a few that contained a pasty whitish material that could have been painting waste.

Sites G, H, I South, I North, L, and N cover an area of 27.91 acres broken down as follows: Site G, including G West - 3.32 acres, Site H - 4.87 acres, Site I South - 8.79 acres, Site I North – 5.87 acres, Site L - 1.08 acres, and Site N –3.98 acres.

Based on the findings of the DNAPL characterization study, the upper-bound estimate of the volume of DNAPL-containing waste and aquifer matrix is approximately 1.7 million cubic yards, within a total area of approximately 15 acres at portions of Sites G, H, and I South. Pooled DNAPL and/or LNAPL are or may be present in waste materials at portions of Sites G and I South. Pooled DNAPL is present at the alluvial aquifer/bedrock interface beneath a portion of Site I South near well BR-I and is potentially present beneath a portion of Site G near well BR-G.

Residual DNAPL is or may be present as small, discreet blobs and/or ganglia in the unsaturated zone and in the SHU, MHU, and DHU underlying portions of Sites G, H, and I South. Constituents that may be the result of DNAPL dissolution are present in the Alluvial Aquifer beneath and/or downgradient of Sites G, H, I South and/or L.

Solutia remediated Dead Creek Segments B, C, D, E and F by removing 46,000 cubic yards of sediments in 2001-2002 and 12,400 cubic yards of sediments and creek bottom soil in 2005-2006. Dead Creek, Borrow Pit Lake, and the floodplain soils along Dead Creek are not ongoing sources to groundwater, and other pathways for these areas are assessed in the human health risk assessments and ecological risk assessments that are summarized in Sections 8.0 and 9.0 of this report.

Groundwater – Groundwater in the Alluvial Aquifer moves to the west toward the Mississippi River. VOC and SVOCs are the principal contaminants in groundwater. As the plumes from Sauget Area 1 move toward the west, they combine with plumes originating from sources at other sites in the Sauget region, including Sauget Area 2 Sites, Clayton Chemical, and the W.G. Krummrich facility.

Mass flux of site constituents from the Sauget Area 1 source areas due to groundwater flow was estimated to be 2,780 kg/year based on a mass flux study at Site I South. The same study indicated that mass flux due to leaching of unsaturated source materials is relatively small (1% for chlorobenzene and 1.5% for 1,4-dichlorobenzene) compared to the mass flux of these constituents from the source area due to groundwater flow.

The plume from Site I South and the plume from Sites G, H, and L are intercepted by the GMCS at Site R, located approximately 5200 feet downgradient of the western boundary of the Sauget Area 1 sources. Based on fate and transport modeling, mass flux removed by the GMCS in 2006 from the Sauget Area 1 plumes was 142 kg/year, and mass flux to the Mississippi River in 2006 from the Sauget Area 1 plumes was 94 kg/year. Natural attenuation processes removed an estimated 2,554 kg/yr of site constituents in 2006. Based on results presented in the groundwater modeling report (GSI, 2008), the mass flux from the Sauget Area 1 sources to the Mississippi River is a relatively small percentage of the mass flux to the River from non-Sauget Area 1 sources (e.g., Sauget Area 2 and Krummrich).

8.0 SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

This section presents a summary of the various human health risk assessments conducted for Sauget Area 1. Section 8.1 presents a summary of the documents, Section 8.2 presents a summary of the conceptual site model based on all of the documents, and Section 8.3 presents a summary of the risk assessment results and conclusions based on all of the documents.

8.1 Summary of Risk Assessment Documents

Human health risk assessment (HHRA) activities have been ongoing at Sauget Area 1 for a number of years. The following provides a brief description of the various documents. Note that the consulting firm ENSR became AECOM on November 10, 2008. Documents submitted prior to that date are cited as ENSR, while documents submitted after that date are cited as AECOM.

Site-Wide HHRA. A site-wide human health risk assessment (site-wide HHRA) was conducted for the Sauget Area 1 Sites (G, H, I, L, N) and seven residential transects (Transects 1-7) in 2001 (ENSR, 2001). Site M was not included in the HHRA because it was subject to remediation (see below). The site-wide HHRA also evaluated portions of Dead Creek Segment F not subject to remediation (see below) and the Borrow Pit Lake. The HHRA was approved by USEPA on November 13, 2001.

Dead Creek Bottom Soils HHRA. A Supplemental Unilateral Administrative Order (UAO) was issued on May 30, 2000 that required removal of sediment from Dead Creek Segments B, C, D, E, a portion of Creek Segment F, and Site M to address ecological risk and potential flooding concerns. Confirmation samples were collected and evaluated in the Dead Creek Bottom Soils HHRA (CBS HHRA, ENSR, 2006). The Dead Creek Bottom Soils HHRA was approved by USEPA on September 18, 2012.

Vapor Intrusion HHRA. The site-wide HHRA (ENSR, 2001) included an evaluation of potential risks to an indoor worker based on volatilization of constituents in groundwater to indoor air of an overlying hypothetical building. Due to the evolving science of vapor intrusion, the vapor intrusion evaluation was updated using a tiered approach and soil gas data collected in November 2006, in a technical memorandum in 2008-2009, referred to as the Vapor Intrusion HHRA (VI HHRA, AECOM, 2009a). USEPA submitted comments on a previous version of this document, and a second memorandum was submitted outlining chemical usage in the Wiese Building (AECOM, 2009b). In August 2009, the Wiese memorandum was approved by USEPA and the VI HHRA (AECOM, 2009a) was revised and re-submitted, including the Wiese memorandum as Attachment E. The VI HHRA was approved by USEPA on September 30, 2009.

Utility Corridor HHRA. An investigation of existing utility lines that are in or adjacent to the sites was conducted in 2007-2008. The results of that investigation (Solutia, 2007, Section 4.0 revised 2008) indicated that the one utility that is located within a waste disposal area is a water supply line that runs through Site I to the Sauget Village Hall. All of the other utility lines are either overhead

power lines or underground lines that are outside of the limits of waste placement. The one water supply line running through Site I will be relocated outside of the waste boundary.

The only other utility lines where utility workers could potentially be exposed to wastes are those running along Queeny Avenue between Sites H and I. Review of historical aerial photographs show that these two areas were connected prior to approximately 1949 or 1950. At that time, Queeny Avenue was relocated southwards from what is now the Cerro Flow Products facility to its present position. Although the boundary test trench excavated in this area demonstrated that the waste stops well short of Queeny Avenue, it was unclear if all of the waste under the new road alignment was removed prior to building the road. Accordingly, the Sampling Plan for Utility Corridor Investigations (Solutia, 2007; Section 4.0 revised 2008) proposed an investigation to address that question. Data collected during the investigation were evaluated in the Utility Corridor HHRA (ENSR, 2008) which was approved by USEPA on September 10, 2008. The results of the Utility Corridor Investigation and HHRA indicated waste between Sites H and I (ENSR, 2008). In addition, the Utility Corridor HHRA concluded that the total potential risk for a utility worker exceeds USEPA's target risk range of 10^{-6} to 10^{-4} under the RME scenario on the Utility Corridor adjacent to Site H (south of Queeny Avenue). The total potential risk for a utility worker adjacent to Site I was within the target range of 10^{-6} to 10^{-4} under the RME scenario and was below the range in the MLE scenario. The Utility Corridor HHRA was approved by USEPA on September 10, 2008.

8.2 Conceptual Site Model

To guide identification of appropriate exposure pathways for evaluation in the risk assessment, a Conceptual Site Model (CSM) for human health was developed as part of the scoping activities in the HHRA Workplan (Solutia, 1999). The purpose of the CSM is to identify source areas, potential migration pathways of constituents from source areas to environmental media where exposure can occur, and to identify potential human receptors. The CSM is meant to be a "living" model that can be updated and modified as additional data become available.

The CSM and the selection of exposure pathways has been updated based the various documents noted above. Table 8-1 presents the selection of exposure pathways for the various receptors and areas (the CSM in tabular format) and is based on both the CSM and the selection of Constituents of Potential Concern (COPCs) in each document. The site-wide HHRA presents a detailed discussion of the CSM in Section 5.1 (ENSR, 2001). A summary of the CSM is presented below, combining the information from the documents discussed above. The CSM is presented for the Sites, Dead Creek and the Borrow Pit Area, and the residential transects.

8.2.1 Sites

The Sauget Area 1 Sites (G, H, I, L, N), shown in Figure 1-2, have been used for industrial purposes for many years (since the 1930s or earlier) and use of these areas is expected to remain industrial. The Sites within Sauget Area 1 are zoned commercial/industrial and it is likely that the sites will continue to be used well into the reasonably foreseeable future for commercial/industrial purposes. Therefore, the Sites were evaluated for non-residential use scenarios in the site-wide

HHRA (ENSR, 2001). However, at the request of USEPA, Site N was evaluated for both a nonresidential as well as a hypothetical future residential scenario. There is a residential area located to the east of Sites H and I. However, Sites H and I were not evaluated for an off-site residential exposure scenario because there are no complete exposure pathways for these off-site residents. The HHRA was conducted using validated data collected during 1999-2000 for the Remedial Investigation (RI). These data are summarized in Section 3.0 of this report. In addition, USEPA has requested the evaluation of the potential for exposure to constituents that may be present in air in off-site residential areas that are present in the vicinity of the Sites; the closest area is located to the east of Sites H and I. Potential exposure could occur via inhalation of constituents from the Sites that may be present in air that could be transported to the off-site residential area. An evaluation of this pathway is provided below.

Evaluation of Ambient Air The HHRA included a short-term and chronic screening assessment of 24-hour ambient air sample data collected at Sites G, H, I, and L. This approach and completed evaluation were approved by USEPA in the HHRA Workplan (ENSR, 1999) and the HHRA (ENSR, 2001), respectively. The air samples were not used in the calculation of risks in the HHRA because they were 24-hour air samples collected at a single time point. Downwind air sample concentrations were compared to upwind sample concentrations and to risk-based screening levels based on chronic and subchronic/acute exposure scenarios.

USEPA Region 9 Preliminary Remediation Goals (PRGs) (1999), which were current at the time the HHRA was conducted, were used as the risk-based screening levels for chronic exposure. As discussed in the HHRA, the Massachusetts Department of Environmental Protection's (MADEP) approach for conducting a short-term screening assessment (MADEP, 1995) was used due to the limited available guidance for conducting short-term evaluations. MADEP recommends that the average concentration be compared to 100-times the screening level. Therefore, for the short-term evaluation, the Region 9 PRGs were multiplied by a factor of 100, as discussed in the HHRA. The following table summarizes the compounds that were detected above both the chronic screening levels and upwind concentrations in Areas G, H, I, and L:

	Ambient Air Pathway			
Constituent	**G**	**H**	**I**	**L**
4-Methyl-2-pentanone	X	--	--	--
Acetone	X	--	--	--
Methylene chloride	X	X	X	X
Trichloroethene	--	X	--	--
Cadmium	--	--	X	--
Total:	**3**	**2**	**2**	**1**

X – Constituent detected above screening level and upwind concentration.
-- Constituent not detected above screening level and/or upwind concentration.

Sites G and L are located at a distance from any off-site residential areas. Therefore, ambient air concentrations detected in samples collected in Sites G and L are expected to attenuate before reaching the off-site residential areas. Sites H and I are located closer to the off-site residential areas. At Site H, methylene chloride and trichloroethene were detected in one of the two ambient

air samples at concentrations above risk-based screening levels based on a $1x10^{-6}$ risk level. Neither of these compounds was detected in the other air sample. However, the detected air concentrations of both of these compounds are below the screening level based on a $1x10^{-5}$ risk level. Therefore, the potential risk posed to residential receptor from ambient air concentrations of constituents in Site H are within USEPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$. In addition, in the HHRA, an on-site outdoor worker at Site H was evaluated for potential exposure to COPCs that may be suspended as dusts from site soils (no volatile COPCs were identified in site soils). The outdoor air exposure point concentrations estimated in the HHRA based on soil concentrations for evaluation of this pathway are lower than the Region 9 PRGs for ambient air (1999) based on a $1x10^{-6}$ risk level. Therefore, the potential risk posed to on-site and off-site residents via inhalation of constituents in outdoor air that originated from soil at Site H are below USEPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$.

At Site I, methylene chloride was detected in both air samples above risk-based screening levels based on a $1x10^{-6}$ risk level. However, the methylene chloride concentration in one of the air samples was detected below the associated upgradient air concentration at a much lower concentration. In addition, methylene chloride was not identified as a COPC in soil or groundwater. Therefore, laboratory contamination is the most likely source of the methylene chloride in the Site I air samples, as methylene chloride is known as a common laboratory contaminant. In addition, in the HHRA, an on-site outdoor worker at Site I was evaluated for potential exposure to COPCs that may be suspended as dusts from soils (no volatile COPCs were identified in site soils). The outdoor air exposure point concentrations estimated in the HHRA based on soil concentrations for evaluation of this pathway are lower than the Region 9 PRGs for ambient air (1999) based on a $1x10^{-6}$ risk level. Therefore, the potential risk posed to on-site and off-site residents via inhalation of constituents in outdoor air that originated from soil at Site I are below USEPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$.

Cadmium was also detected in ambient air at a concentration above the risk-based screening level at Site I in one of the two air samples, but not the other. Although the detected cadmium concentration was above the risk-based screening level associated with a $1x10^{-6}$ risk level, the detected concentration is below the screening level based on a $1x10^{-4}$ risk level. Therefore, the potential risk posed to a residential receptor from ambient air concentrations of cadmium within Site I is within USEPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$.

The results of the short-term evaluation showed that there were no constituents exceeding subchronic screening levels in Site H. Methylene chloride was the only compound with an arithmetic mean concentration above the subchronic screening level in Site I. However, as discussed for the chronic evaluation, it is believed that methylene chloride concentrations are due to laboratory contamination. In addition, it is expected that ambient air concentrations for all detected constituents in the off-site residential area would be lower than those measured on Sites H and I.

Based on the above discussion of ambient air, the potential risk and HI posed to on-site and off-site residents via inhalation of constituents in outdoor air at Sites H and I are below or within USEPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$. Therefore, no COCs are identified in ambient air.

Receptors were identified for the sites based on the CSM and the COPCs identified in media in the Sites. COPCs were identified in soils, leachate, and groundwater in Sites G, H, I, and L. COPCs were identified in Site N surface soil for the residential scenario only.

A **resident receptor** was evaluated in the site-wide HHRA (ENSR, 2001) for potential exposure to COPCs in surface soils via incidental ingestion and dermal contact, and via inhalation of COPCs that may be suspended as dusts from soils in Site N. Inspection of the area indicated that some residences have vegetable gardens. As COPCs may be taken up by plant material and subsequently ingested, a produce consumption pathway was included in the HHRA; however, COPCs for this pathway were not identified in Site N.

An **on-site outdoor industrial worker** and a **trespassing teenager** were evaluated in the site-wide HHRA (ENSR, 2001) for potential exposure to COPCs in surface soil via incidental ingestion and dermal contact, and via inhalation of COPCs that may be suspended as dusts from soils (no volatile COPCs were identified in site soils) and to COPCs that may volatilize into outdoor air from underlying groundwater.

An **on-site construction/utility worker** was evaluated in the site-wide HHRA (ENSR, 2001) for potential exposure to COPCs in surface and subsurface soil via incidental ingestion and dermal contact, and via inhalation of particulates suspended during excavation activity. Construction/utility work is assumed to occur up to depths of 30 feet below ground surface (bgs). Due to the shallow depth of groundwater, the construction/utility worker may contact groundwater or leachate during excavation. Therefore, the construction worker is assumed to be exposed to COPCs in groundwater and leachate via incidental ingestion and dermal contact, and via inhalation of COPCs volatilized from standing water in an excavation trench. Because the sites are areas of known waste disposal, it is assumed that appropriate safeguards are used when excavating in waste areas (gas monitoring, appropriate personal protective equipment).

Data used in the construction worker scenario include the surface soil and groundwater data summarized in Section 3.0 of this report and historical data for subsurface soil and leachate. Subsurface samples collected in the Sites in support of the RI were analyzed using toxicity characteristic leaching procedure (TCLP), not total constituent concentrations. Therefore, historical data collected for other investigations were employed to evaluate potential construction worker contact with COPCs in the subsurface. These data were obtained from the following: Sauget Area 1 Data Tables/Maps, Ecology and Environmental, Inc., February 1998, prepared for USEPA Region 5 Office of Superfund, Chicago, IL, ARCS Contract No. 68-W8-0086, Work Assignment No. 47-5N60. The historical data are unvalidated, and detection limits were not available for the majority of results reported as not detected. TCLP data from subsurface samples collected in the sites were used to represent leachate concentrations, i.e., concentrations in groundwater within the fill material. Additionally, one leachate sample collected from Site G on April 26, 2000 and one leachate sample collected from Site I on April 25, 2000 were used in this evaluation. This evaluation is separate from, and in addition to, the evaluation of the construction worker receptor's exposure to groundwater using data collected during the RI.

Due to the presence of volatiles in the subsurface of the Sites, an **on-site indoor industrial worker** was evaluated in the VI HHRA (AECOM, 2009a) for potential exposure to COPCs via inhalation of volatile constituents present in indoor air due to vapor intrusion based on a tiered evaluation. The Sauget Village Hall adjacent to Site I, the Cerro Guard House in Site I, the Cerro Control Center west of Site I, and the Weise building west of Site G were included in the evaluation. These buildings are shown in Figure 4-6. Soil gas data collected in November and December 2006 and summarized in Section 4.4 were used in the VI HHRA. It is unlikely that the indoor worker receptor would be exposed to soils to the same extent as an outdoor worker, therefore, this pathway was concluded to be insignificant and was not quantitatively evaluated in the risk assessment for the indoor worker.

Due to the potential presence of waste materials in the utility corridor that runs along Queeny Avenue adjacent to Sites H and I, shown in Figure 4-7, a **utility worker** was evaluated for potential exposure to COPCs in soils and wastes via incidental ingestion and dermal contact, and inhalation of particulates and volatiles suspended during excavation activity in the Utility Corridor HHRA (ENSR, 2008). The data used in this evaluation were collected in June 2007 and are summarized in Section 4.5. The area where wastes may extend into the utility corridor is currently underneath pavement (Queeny Avenue). The pavement prevents direct-contact with materials that may be present. However, due to the presence of utility lines in the area, it is possible that at some point in the future, utility work will require excavation in this area. The existing utility adjacent to Site H is an Explorer Pipeline, which is a 14-inch diameter pipe at a depth of 3 1/2 feet bgs. The existing utility line along Site I is a 4-inch steel line gas line at a depth of 2 1/2 feet bgs. Therefore, there is a potential for human contact (utility worker) with the soils via incidental ingestion, dermal contact, and inhalation. Contact with groundwater is not expected because the depth to groundwater is about 7 feet deeper than the depth of the utilities. Groundwater levels were measured on March 27, 2008 in nearby wells (Judith Lane Containment Cell monitoring wells), as indicated below:

- TCMW-2 had a groundwater level at 10.36 ft bgs
- TCMW-3S had a groundwater level at 11.26 ft bgs
- TCMW-3M had a groundwater level at 11.26 ft bgs

The wells are measured from the top of the casing and each well has a three foot stick up. The groundwater levels were adjusted to ground surface using the available survey data. Groundwater was not encountered during sampling, which confirms the assumption that groundwater would not be contacted during future utility work.

Table 8-1 presents a summary of the exposure pathway selection for each receptor and Site.

8.2.2 Dead Creek, Site M, and Borrow Pit Lake

The Borrow Pit Lake is located on private property, and access is uncontrolled. Recreational fishing may occur in Borrow Pit Lake. Borrow Pit Lake and the majority of Creek Segment F that were not included in the sediment removal action conducted in 2000-2001 were evaluated as one area in the site-wide HHRA (ENSR, 2001). These areas are indicated on Figure 1-3.

COPCs were identified in sediment but not in surface water. Therefore, a **recreational receptor** (i.e., teenager) could be exposed to COPCs in sediment of Creek Segment F and the Borrow Pit Lake while wading or swimming. This scenario was evaluated in the site-wide HHRA (ENSR, 2001).

One COPC was identified in fish tissue collected from Borrow Pit Lake. Therefore, a **recreational fisher receptor** potentially exposed to COPCs in sediment while wading and via ingestion of fish was evaluated in the site-wide HHRA (ENSR, 2001).

Creek bottom soils in Site M and Creek Segments B through F were collected and analyzed after the UAO sediment removal action conducted in 2000-2001 was complete; these areas are indicated on Figure 1-3. Data were collected between October 2001 and February 2002 and are summarized in Section 2.3.2. These data were evaluated in the Creek Bottom Soils HHRA (ENSR, 2006). COPCs were identified in creek bottom soil in Creek Segments B, D, E, F, and Site M.

Access to Dead Creek is generally uncontrolled except for Creek Segment B, which is secured with a fence. As sediment was removed from Site M, it was backfilled with soil from an adjoining property, regraded to drain to Creek Segment B, vegetated and surrounded by a fence. Therefore, a recreational receptor (i.e., child or teenager) could be exposed to COPCs in creek bottom soil of Creek Segment B through Creek Segment F. Given that access to Site M is limited, it is unlikely that any recreational receptor would gain access. However, it was assumed that a recreational teenager could climb the fence and could be exposed to creek bottom soils in Site M. It was assumed that a recreational child could not access Site M. Due to the presence of underground utility lines in several of the Creek Segments, it is possible that excavation work may occur in the future. Therefore, a construction worker receptor could be exposed to COPCs in creek bottom soil of Site M, and Creek Segment B through Creek Segment F during excavation.

Table 8-1 presents a summary of the exposure pathway selection for each receptor and area.

8.2.3 Transect Areas

Floodplain soil samples were collected from the residential transects and were used to evaluate the residential transect areas in the site-wide HHRA (ENSR, 2001); these data are summarized in Section 3.0. The transect areas, which are shown in Figure 3-10, consist of residential, commercial and undeveloped land. Therefore, both residential and non-residential exposure scenarios were evaluated for these areas in the site-wide HHRA (ENSR, 2001). COPCs for a residential scenario were identified in surface soil in Transects 3 through 7 and Site N. COPCs for an industrial scenario were identified in surface soil in Transects 3, 4, 6, and 7, and in subsurface soil in

Transects 4 and 6. The only COPC identified in groundwater in the transect area was lead in a non-potable use well (DW-MCDO), closest to Transect 1.

An **outdoor industrial worker** was evaluated in the site-wide HHRA (ENSR, 2001) for potential exposure to COPCs in surface soil via incidental ingestion and dermal contact, and via inhalation of COPCs that may be suspended as dusts from soils.

A **construction worker receptor** was evaluated in the site-wide HHRA (ENSR, 2001) for potential exposure to COPCs in surface and subsurface soil via incidental ingestion and dermal contact, and via inhalation of particulates suspended during excavation activity. Construction/utility work is assumed to occur up to depths of 30 feet bgs. Due to the shallow depth of groundwater, the construction/utility worker may contact groundwater during excavation. Therefore, the construction worker was assumed to be exposed to COPCs in groundwater via incidental ingestion and dermal contact with standing water in an excavation trench. Volatile inhalation was not included as no volatiles were identified as COPCs in soil groundwater in the transect area. As noted previously, lead was the only COPC identified in groundwater, in well DW-MCDO, closest to Transect 1.

A **resident receptor** was evaluated in the site-wide HHRA (ENSR, 2001) for potential exposure to COPCs in surface soils via incidental ingestion and dermal contact, and via inhalation of COPCs that may be suspended as dusts from soils (volatile inhalation was not included as no volatile COPCs were identified). Inspection of the area indicated that some residences have vegetable gardens. As COPCs may be taken up by plant material and subsequently ingested, a produce consumption pathway was included in the HHRA. A trespassing teenager receptor was not evaluated in the transects and Site N due to the inclusion of the residential scenario in these areas; the residential scenario provides a more conservative evaluation.

Groundwater is not used as a source of drinking water in the area. However, there are some private wells in the area that may be used for outdoor household activities. As shown on Figure 2-27, none of the residential wells are located within the Sauget Area 1 plumes. As noted above, a single COPC, lead, was identified in a non-potable use well near Transect 1. Therefore, potential exposure to groundwater via incidental ingestion and dermal contact during outdoor use of water from a well was evaluated in the site-wide HHRA (ENSR, 2001).

Table 8-1 presents a summary of the exposure pathway selection for each receptor and transect.

8.3 Summary of Risk Assessment Results and Conclusions

A summary of the results and conclusions of the HHRA for each area is presented below. Total potential risks and hazards for each receptor are presented by area in the following tables:

- Table 8-2 total potential carcinogenic risks for each site and receptor;
- Table 8-3 total potential hazard index for each site and receptor;
- Table 8-4 total potential carcinogenic risks for each transect and receptor;

- Table 8-5 total potential hazard index for each transect and receptor;
- Table 8-6 total potential carcinogenic risks for Dead Creek, Borrow Pit Lake, and Site M and each receptor;
- Table 8-7 total potential hazard index for Dead Creek, Borrow Pit Lake, and Site M and each receptor.

Table 8-8 presents a summary of the potential cancer and non-cancer risks for the COCs for both the RME and MLE scenarios. Remedial Goal Options (RGOs) were derived for several receptor scenarios. RGOs were not derived for the construction worker scenario. In most cases, there are several COCs identified for the construction worker scenario in a variety of media and for a number of pathways. RGOs should take into account total risk from all constituents, media, and pathways; therefore, there are a range of RGOs that can be calculated where more than one COC has been identified. This is complicated even further when more than one COC has been identified for more than one toxic endpoint in more than one medium, as is the case here. Furthermore, institutional controls rather than numerical RGOs may be more applicable to the construction worker scenario. Therefore, specific RGOs have not been calculated for the construction worker scenario. However, construction worker COCs should be considered when making remedial decisions.

8.3.1 Sites

Potential risks and hazards for the sites were evaluated in the site-wide HHRA (ENSR, 2001). Potential vapor intrusion risks were evaluated in the Vapor Intrusion HHRA (AECOM, 2009a). The utility corridor between Sites H and I was evaluated in the Utility Corridor HHRA (ENSR, 2008). The results for each site are summarized below and in Tables 8-2 and 8-3. COPCs causing an exceedance of the USEPA target risk range of 10^{-4} to 10^{-6} or a hazard index of one on a toxic endpoint basis are identified as Constituents of Concern (COC) and are presented on Table 8-8.

8.3.1.1 Site G

As shown in Table 8-2, all potential risks calculated for both the RME and MLE receptor scenarios in Site G are within or below the USEPA target risk range of 10^{-4} to 10^{-6}. However, due to uncertainties related to the vapor intrusion pathway, USEPA requested additional information regarding chemical use at buildings where potential risks exceeded 10^{-5}. Therefore, a memorandum was submitted to USEPA outlining chemical usage at the Wiese Building (AECOM, 2009b). USEPA indicated that if hazardous vapor forming chemicals with risk properties similar or higher than site-related COCs contributing to vapor risk are being used as part of routine operations, the existing HHRA VI analysis (ENSR, 2008a) is sufficient because USEPA expects that the contribution from subsurface vapor intrusion to the indoor air concentrations is unlikely to be distinguishable from workplace-related vapors, which are already regulated by other entities. The information supplied to USEPA in the memorandum indicated that similar chemicals to those constituting to the potential carcinogenic risk are being used in the Wiese Building.

As shown in Table 8-3, all potential HIs calculated for both the RME and MLE receptor scenarios for Site G are below the target HI of 1, with the exception of the RME (50.2) and MLE (5.74) construction worker.

Because these HIs were calculated by summing all HIs for all pathways, a toxic endpoint analysis was conducted for the construction worker in Appendix R of the site-wide HHRA (ENSR, 2001). Based on the toxic endpoint analyses, benzene, chlorobenzene, naphthalene, phosphorus, and Polychlorinated Biphenyls (PCBs) are identified as COCs for the construction worker.

Table 8-8 presents a summary of the potential cancer and non-cancer risks for the COCs for both the RME and MLE scenarios.

Site G Conclusions

Based on the results of the site-wide HHRA (ENSR, 2001), the following COCs have been identified for the construction worker in Site G:

- Benzene (inhalation of excavation air from groundwater and leachate)
- Chlorobenzene (inhalation of excavation air from leachate)
- Naphthalene (inhalation of excavation air from groundwater and leachate)
- Phosphorus (ingestion and dermal contact with subsurface soil)
- PCBs (ingestion and dermal contact with subsurface soil)

As noted previously, RGOs were not developed for the construction worker scenario. Table 8-8 presents a summary of the potential cancer and non-cancer risks for the above listed COCs.

8.3.1.2 Site H

As shown in Table 8-2, all potential risks calculated for both the RME and MLE receptor scenarios in Site H are within or below the USEPA target risk range of 10^{-4} to 10^{-6}, with the exception of the RME (1.58×10^{-2}) and MLE (4.61×10^{-4}) utility worker. Potential risks are driven by ingestion and dermal contact with 2,3,7,8-TCDD-TEQ, 4,4-DDD, 4,4-DDT, and dieldrin which are therefore identified as COCs.

As shown in Table 8-3, all potential HIs calculated for both the RME and MLE receptor scenarios for Site H are below the target HI of 1, with the exception of the following (HIs are noted):

- The RME(167) and MLE (10.4) construction worker
- The RME (628) and MLE (66.3) utility worker

Because these HIs were calculated by summing all HIs for all pathways, a toxic endpoint analysis was conducted for the construction worker in Appendix R of the site-wide HHRA (ENSR, 2001) and

in Table 6-1 of the Utility Corridor HHRA (ESNR, 2008). Based on the toxic endpoint analyses, the following constituents are identified as COCs:

- Benzene, cadmium, chloroform, manganese, and PCBs for the construction worker
- PCBs, 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalent concentration (2,3,7,8-TCDD-TEQ), 4,4-DDD, 4,4-DDT, chlorobenzene, dieldrin and barium for the utility worker

Table 8-8 presents a summary of the potential cancer and non-cancer risks for the COCs for both the RME and MLE scenarios.

Site H Conclusions

Based on the results of the site-wide HHRA (ENSR, 2001), the following COCs have been identified for Site H:

- 2,3,7,8-TCDD-TEQ (ingestion, dermal contact, and inhalation of excavation air from soil and waste for the utility worker)
- 4,4-DDD (ingestion and dermal contact with soil and waste for the utility worker)
- 4,4-DDT (ingestion, dermal contact, and inhalation of excavation air from soil and waste for the utility worker)
- Barium (inhalation of excavation air from soil and waste for the utility worker)
- Benzene (inhalation of excavation air from groundwater and leachate for the construction worker)
- Cadmium (ingestion and dermal contact with leachate for the construction worker)
- Chlorobenzene (inhalation of excavation air from soil and waste for the utility worker)
- Chloroform (inhalation of excavation air from groundwater for the construction worker)
- Dieldrin (ingestion, dermal contact, and inhalation of excavation air from soil and waste for the utility worker)
- Manganese (inhalation of excavation air from subsurface soil for the construction worker)
- PCBs (ingestion and dermal contact with PCBs from subsurface soil for the construction worker and ingestion, dermal contact, and inhalation of excavation air from soil and waste for the utility worker)

RGOs were derived for the utility worker in Table 7-2 of the Utility Corridor HHRA (ENSR, 2008). As noted previously, RGOs were not developed for the construction worker scenario. Table 8-8 presents a summary of the potential cancer and non-cancer risks for the above listed COCs, as well as the RGOs, where applicable.

8.3.1.3 Site I

As shown in Table 8-2, all potential risks calculated for both the RME and MLE receptor scenarios in Site I are within or below the USEPA target risk range of 10^{-4} to 10^{-6}, with the exception of the RME outdoor industrial worker receptor. The potential risk for this receptor is 1.66×10^{-4}. The potential risk is driven by potential incidental ingestion and dermal contact with 2,3,7,8-TCDD-TEQ in soils. Therefore, 2,3,7,8-TCDD-TEQ is identified as a COC for Site I soils.

As shown in Table 8-3, all potential HIs calculated for both the RME and MLE receptor scenarios for Site I are below the target HI of 1, with the exception of the following (HIs are noted):

- The RME outdoor industrial worker (2.15);
- The RME (48.1) and MLE (7.8) construction worker.

Because these HIs were calculated by summing all HIs for all pathways, a toxic endpoint analysis was conducted for each receptor in Appendix R of the site-wide HHRA (ENSR, 2001). Based on the toxic endpoint analyses, the following constituents are identified as COCs:

- PCBs in surface soil for the outdoor industrial worker and construction worker scenarios.
- Antimony, chlorobenzene, chloroform, 2-(2-Methyl-4-chlorophenoxy)propionic acid (MCPP), naphthalene, and PCBs for the construction worker.

Table 8-8 presents a summary of the potential cancer and non-cancer risks for the COCs for both the RME and MLE scenarios.

Site I Conclusions and Remedial Goals

Based on the results of the site-wide HHRA (ENSR, 2001), the following COCs have been identified for Site I:

- 2,3,7,8-TCDD-TEQ (ingestion and dermal contact with surface soil for the outdoor industrial worker)
- PCBs (ingestion and dermal contact with surface soil for the outdoor industrial worker and ingestion and dermal contact with surface soil, subsurface soil, and leachate for the construction worker)
- Antimony (ingestion and dermal contact with subsurface soil for the construction worker)
- Chlorobenzene (inhalation of excavation air from leachate for the construction worker)
- Chloroform (inhalation of excavation air from leachate for the construction worker)
- MCPP (ingestion and dermal contact with leachate for the construction worker)
- Naphthalene (inhalation of excavation air from leachate for the construction worker)

RGOs were derived for the outdoor industrial worker in the site-wide HHRA (ENSR, 2001). As noted previously, RGOs were not developed for the construction worker scenario. Table 8-8 presents a summary of the potential cancer and non-cancer risks for the above listed COCs, as well as the RGOs, where applicable.

8.3.1.4 Site I North and South

The HHRA evaluated Site I as one area. In the RI, Site I was divided into two areas, Site I North and Site I South, as discussed in Section 2.1.3 of this RI report. Summary statistics, including the frequency of detection, and minimum, mean, and maximum detected concentrations, were re-calculated for sampled media in Site I North and Site I South separately. These data summaries are presented in Section 3 of this RI report. An evaluation of Sites I North and South was performed to determine how the results of the HHRA may change based on the division of Site I into two distinct exposure areas.

The majority of the samples collected in Site I are located in Site I South, including 7 of 8 of the groundwater samples from the alluvial aquifer, 2 of the 4 source area surface soil samples, and 2 of the 4 source area subsurface soil samples. The exposure point concentrations (EPCs) evaluated for Site I in the HHRA are equal to the maximum detected constituent concentrations, which were all from samples within Site I South. Therefore, the risk results of the HHRA based on Site I South are expected to be consistent with those presented in the HHRA.

As discussed in Section 2.1.3 of this RI report, Site I North was an undisturbed tract at the time Site I South ceased operations. Therefore, an evaluation of the potential risk and HI associated with media at Site I North was performed for COCs identified in Site I in the HHRA to determine if they would be COCs in Site I North. In addition, subsurface soil samples collected as part of the DNAPL Characterization Study in 2004, following the completion and approval of the HHRA, were evaluated to determine if these data would result in the identification of COCs at Site I North. The evaluation of Site I North is presented in a technical memorandum in Appendix A. This evaluation concludes that there are no COCs identified in Site I North.

8.3.1.5 Site L

As shown in Table 8-2, all potential risks calculated for both the RME and MLE receptor scenarios in Site L are within or below the USEPA target risk range of 10^{-4} to 10^{-6}.

As shown in Table 8-3, all potential HIs calculated for both the RME and MLE receptor scenarios for Site L are below the target HI of 1, with the exception of the following (HIs are noted):

- The RME (5.21) and MLE (1.1) construction worker

Because these HIs were calculated by summing all HIs for all pathways, a toxic endpoint analysis was conducted for each receptor in Appendix R of the site-wide HHRA (ENSR, 2001). Based on the toxic endpoint analyses, PCBs in subsurface soil are identified as a COC based on the exposure point concentration of 500 mg/kg, which is the maximum detected concentration in the

historical dataset (Table 3-15). Detected PCB concentrations in subsurface soil range from 16 mg/kg to 500 mg/kg, with a mean concentration of 258 mg/kg. The HIs associated with the minimum detected, average, and maximum detected concentrations are 0.14, 2.2, and 4.2, respectively. Note that under the MLE scenario, the HI is below one on a target endpoint basis.

Table 8-8 presents a summary of the potential cancer and non-cancer risks for the COCs for both the RME and MLE scenarios.

Site L Conclusions and Remedial Goals

Based on the results of the site-wide HHRA (ENSR, 2001), the following COCs have been identified for Site L:

- PCBs (ingestion and dermal contact with subsurface soil for the construction worker)

As noted previously in Section 8.3, RGOs were not developed for the construction worker scenario. As discussed in Section 8.3, due to the range of RGOs that can be calculated, institutional controls rather than numerical RGOs may be more applicable to the construction worker scenario. Therefore, it is recommended that remedial alternatives addressing exposure to PCBs in subsurface soil at Site L by construction workers be considered in the Feasibility Study. Table 8-8 presents a summary of the potential cancer and non-cancer risks for the above listed COCs.

8.3.1.6 Site N

As shown in Table 8-2, all potential risks calculated for both the RME and MLE receptor scenarios in Site N are within or below the USEPA target risk range of 10^{-4} to 10^{-6}.

As shown in Table 8-3, all potential HIs calculated for both the RME and MLE receptor scenarios for Site N are below the target HI of 1.

Site N Conclusions

Based on the results of the site-wide HHRA (ENSR, 2001), no COCs have been identified for Site N.

8.3.2 Transects

Potential risks and hazards for the transects were evaluated in the site-wide HHRA (ENSR, 2001). No COPCs were identified in Transect 2. As indicated in Tables 8-4 and 8-5, there were no exceedances of the USEPA target risk range of 10^{-4} to 10^{-6} or the target HI of 1. Additionally, the lead modeling indicated that no adverse health effects are expected due to exposure to groundwater in well DW-MCDO (closest to Transect 1) for a construction worker or a residential child. Therefore, no COCs are identified for the transect areas.

8.3.3 Dead Creek, Borrow Pit Lake, and Site M

Potential risks and hazards for portions of Dead Creek Segment F and the Borrow Pit Lake not subject to the UAO issued in June 1999 and modified in May 2000 were evaluated in the site-wide HHRA (ENSR, 2001). In August 2001, the UAO was amended to include sediments in these areas of Dead Creek Segment F and the Borrow Pit Lake and the sediment removal within these areas was completed in February 2002. Potential risks and hazards for Dead Creek Segments B, C, D, E, and portions of F and Site M were evaluated in the Creek Bottom Soils HHRA (ENSR, 2006). No COPCs were identified in Creek Segment C. As indicated in Table 8-6, there were no exceedances of the USEPA target risk range of 10^{-4} to 10^{-6}. In addition, potential risks to the recreational fisherman and the recreational teen, which are below and within USEPA's target risk range of 10^{-4} to 10^{-6}, respectively, as presented on Table 8-6, were estimated based on sediment data collected prior to the sediment removal action conducted in 2000-2001 for the purposes of addressing ecological risk. As a result of the sediment removal action, potential risks to the recreational fisherman and recreational teen are expected to be lower than those estimated in the HHRA (ENSR, 2001).

As indicated in Table 8-7, potential HIs are below 1 for all areas except Creek Segment B. The total HI for both the recreational child and the construction worker exceeds 1 under the RME scenario.

For the construction worker, the HI is below 1 on a target endpoint basis and therefore no COCs are identified for the construction worker scenario.

For the recreational child, the HI exceeds 1 on a target endpoint basis for PCBs. The samples in Creek Segment B driving the Total PCB exceedance are CBS-CSB-T0-C and CBS-CSB-T3-E. Both of these sampling locations were excavated as part of the creek bottom soil removal action underway at the time the Creek Bottom Soils HHRA (ENSR, 2006) was being conducted. CSB-TO-C was excavated to a depth of two (2) feet and CSB-T3-E was excavated to a depth of five (5) feet. In order to further evaluate the potential HI associated with Total PCBs in Creek Segment B, the HI was re-calculated using samples remaining after excavation as well as the samples collected in December 2005 as part of the verification sampling conducted after the excavation, as described in ENSR, 2006. This results in an HI for PCBs of 0.009, well below one. Therefore, the HI using data remaining after excavation is below one, and there is no longer a potential HI exceedance for PCBs in Creek Segment B. In addition, an armored, impermeable liner was installed throughout the entire length of Creek Segment B in 2008. Therefore, there is no longer a potential exposure PCBs in Creek Segment B, and no COCs are identified.

8.3.4 Summary

In summary, risks and hazards were within or below USEPA's target risk range of 10^{-4} to 10^{-6} and a target hazard index of one on a target endpoint basis and, therefore, no COCs were identified for the following:

- Site N and Site M

- Residential Transects
- Dead Creek Segments and Borrow Pit Lake

Some risks or hazards exceeded USEPA's target risk range of 10^{-4} to 10^{-6} and/or a target hazard index of one on a target endpoint basis and, therefore, COCs were identified for the following Sites, as shown in Table 8-8:

- Site G – construction worker receptor
- Site H – utility worker and construction worker receptors
- Site I – outdoor industrial worker and construction worker receptors
- Site L – construction worker receptor

Remedial Goal Options (RGOs) were derived for the utility worker receptor for Site H and the outdoor industrial worker receptor for Site I.

RGOs were not derived for the construction worker scenario, as noted in the beginning of Section 8.3. For this receptor, institutional controls rather than numerical RGOs may be more applicable. However, construction worker COCs should be considered when making remedial decisions.

8.4 References

AECOM. 2009a. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Tier 2 Evaluation. September 2009. USEPA Approved (September 30, 2009).

AECOM. 2009b. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Evaluation of Chemical Use at the Wiese Building. January 2009. USEPA Approved (August 2009).

ENSR. 1999. Sauget Area 1 Human Health Risk Assessment Work Plan. Sauget and Cahokia, Illinois. June 25, 1999 (and August 6, 1999 revised pages). Sauget Area 1 EE/CA and RI/FS Support Sampling Plan Volume 1B. USEPA Approved.

ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).

ENSR. 2006. Sauget Area 1 Dead Creek Final Remedy. Creek Bottom Soil Engineering Evaluation/Cost Analysis. April 2006.

ENSR. 2008. Sauget Area 1 Utility Corridor Evaluation Human Health Risk Assessment. August 2008. USEPA Approved (September 10, 2008).

MADEP. 1995. Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan. Interim Final. Massachusetts Department of Environmental Protection. Bureau of Waste Site Cleanup and Office of Research and Standards.

Solutia. 1999. EE/CA and RI/FS, Support Sampling Plan. Sauget Area 1. Solutia, Inc., St. Louis, MO. June 25, 1999.

Solutia. 2007. Sauget Area 1 Engineering Evaluation/Cost Analysis. Sampling Plan for Utility Corridor Investigations. Sauget, Illinois. March 22, 2007. Section 4 revised February 20, 2008.

9.0 SUMMARY OF ECOLOGICAL RISK ASSESSMENTS

Menzie-Cura & Associates performed two ERAs for Sauget Area 1 (Menzie-Cura & Associates, 2001; 2002). The 2001 ERA focused on floodplain soils, surface water, and sediments associated with Creek Segment F, including Borrow Pit Lake, and floodplain soils associated with upstream segments of Dead Creek and the disposal areas. Terrestrial receptors (plants, invertebrates, birds, and mammals) were evaluated within the floodplain soils and aquatic receptors (plants, invertebrates, fish, birds, and mammals) were evaluated within Dead Creek and Borrow Pit Lake

Solutia excavated 46,000 cubic yards of sediments from Creek Segments B, C, D, E and F in 2001/2002. Following sediment removal efforts in 2001/2002, the 2002 ERA was conducted to evaluate potential impacts to fish and aquatic wildlife due to exposure to residual constituent concentrations in creek bottom soils. The 2002 ERA also included the development of site-specific, risk-based concentrations (RBCs) for protection of fish in Dead Creek. By agreement with USEPA, RBCs were developed for residual concentrations of known bioaccumulative compounds (Total DDT, Dieldrin, gamma-Chlordane, Total PCBs, Dioxin TEQ and Mercury), Bis(2-ethylhexyl)phthalate and site-specific metals (Copper, Lead and Zinc). To achieve these RBCs within the creek, additional remediation was conducted in 2005/2006 that included the removal of 12,400 cubic yards of creek bottom soils from Segments B, D, E, and F and sediments from Borrow Pit Lake.

Following the sediment removal efforts and the de-watering of portions of Dead Creek, ENSR updated the 2001 floodplain soil terrestrial evaluation and conducted a terrestrial evaluation of the de-watered creek bottom soils of Segments C, D, and E (ENSR, 2009). Since these creek segments were de-watered to protect public health (mosquito control) they no longer provide aquatic habitat, but could be considered terrestrial habitat for plants, soil invertebrates, and terrestrial wildlife. Terrestrial organism screening was not performed for Creek Segment B, Creek Segment F, and Borrow Pit Lake, because an armored, HDPE liner was installed in Creek Segment B (completed in December 2008) and Creek Segment F and Borrow Pit Lake are aquatic habitats that were remediated to site-specific, risk-based concentrations in 2005/2006.

The floodplain data set evaluated in the 2001 and 2009 terrestrial evaluations represents samples collected from upland areas which drain into Dead Creek Segments B, C, D, and E and could be subject to flooding during periods of high water flow. Segment A was remediated under Illinois EPA oversight in the early 1990's by removing sediments and filling this portion of the creek with clean soil. Segment A of Dead Creek was eliminated at that time and the former creek area is now used as a truck parking lot by a local industry. Therefore, floodplain soils were not collected from this area. Towards the end of Segment E, the creek flows into a culvert consisting of a 48 inch corrugated pipe which runs under the old Parks Airport College and eventually discharges just north of Route 157. As the creek flows under Route 157 and becomes Segment F, it becomes a small, shallow ditch. It is expected that, if flooding were to occur, it would occur prior to the culvert and north of Route 157. Since flooding is not expected within Segment F, floodplain soils were not collected from adjacent to this segment.

A summary of the ERA activities is provided below:

Study Area	Receptors Evaluated	Summary of Results
Creek Segment A	No ERA activities conducted	Approximately 27,500 tons of sediments were excavated by Cerro Flow Products in 1990/1991. After installation of an HDPE vapor barrier, Creek Segment A was backfilled and covered with crushed gravel.
Creek Segment B	Warmwater fish [2] Aquatic wildlife [2]	Sediments excavated in 2001/2002. Creek bottom soils did not present a risk to river otter or great blue heron. Minimal risks identified for forage fish (zinc and PCBs). Creek bottom soils excavated in 2005/2006 to meet RBCs derived for forage fish. No further evaluation warranted since concentrations were below RBCs and armored, HDPE liner has been installed.
Creek Segment C	Warmwater fish [2] Aquatic wildlife [2] Terrestrial plants [3] Terrestrial invertebrates [3] Birds [3] Mammals [3]	Sediments excavated in 2001/2002. Creek bottom soils did not present a risk to river otter or great blue heron. Minimal risks identified for forage fish (aluminum – consistent with regional levels so not Site-related). Creek bottom soils not excavated in 2005/2006 since concentrations were not elevated relative to forage fish RBCs. After de-watering, data were evaluated against soil screening values. Concentrations of most constituents were below screening values and/or background. Maximum exposure point concentrations (EPCs) of six inorganic constituents were elevated above soil screening values and background. Additional evaluation/remedial action is not recommended since physical creek conditions limit the available habitat and represent substantial stressors for ecological receptors.
Creek Segment D	Warmwater fish [2] Aquatic wildlife [2] Terrestrial plants [3] Terrestrial invertebrates [3] Birds [3] Mammals [3]	Sediments excavated in 2001/2002. Creek bottom soils did not present a risk to river otter or great blue heron. Minimal risks identified for forage fish (aluminum – consistent with regional levels so not Site-related). Creek bottom soils excavated in 2005/2006 to meet RBCs derived for forage fish. After de-watering, data were evaluated against soil screening values. Concentrations of most constituents were below screening values and/or background. Maximum EPCs of 12 inorganic and organic constituents were elevated above soil screening values and background. Post-excavation results are only available for a sub-set of constituents so there is some uncertainty regarding current concentrations of some constituents; however, they are expected to be lower than the evaluated data suggest. Additional evaluation/remedial action is not recommended since physical creek conditions limit the available habitat and represent substantial stressors for ecological receptors.

Study Area	Receptors Evaluated	Summary of Results
Creek Segment E	Warmwater fish [2] Aquatic wildlife [2] Terrestrial plants [3] Terrestrial invertebrates [3] Birds [3] Mammals [3]	Sediments excavated in 2001/2002. Creek bottom soils did not present a risk to river otter or great blue heron. Minimal risks identified for forage fish (aluminum – consistent with regional levels so not Site-related). Creek bottom soils excavated in 2005/2006 to meet RBCs derived for forage fish. After de-watering, data were evaluated against soil screening values. Concentrations of most constituents were below screening values and/or background. Maximum EPCs of nine inorganic constituents were elevated above soil screening values and background. Post-excavation results are only available for a sub-set of constituents so there is some uncertainty regarding current concentrations of some constituents; however, they are expected to be lower than the evaluated data suggest. Additional evaluation/remedial action is not recommended since physical creek conditions limit the available habitat and represent substantial stressors for ecological receptors.
Creek Segment F and Borrow Pit Lake	Warmwater fish [1,2] Aquatic wildlife [1,2] Bald Eagles [1]	No risks to river otter or great blue heron in Segment F. Potential risks to benthic invertebrates, mallards, muskrats, and tree swallows due to exposure to Segment F sediments using conservative assumptions, Potential risks to benthic invertebrates, fish, river otter, great blue heron, mallards, muskrats, and tree swallows due to exposure to Borrow Pit Lake sediments using conservative assumptions, Sediments in Creek Segment F excavated in 2001/2002. Creek bottom soils did not present a risk to river otter or great blue heron. Minimal risks identified for forage fish (zinc). Creek bottom soils in Creek Segment F and sediments in Borrow Pit Lake excavated in 2005/2006 to meet RBCs derived for forage fish. No further evaluation warranted since post-excavation sampling confirmed concentrations were below RBCs.
Floodplains (adjacent to Creek Segments B, C, D, and E)	Terrestrial plants [1,3] Terrestrial invertebrates [1,3] Birds [1,3] Mammals [1,3]	Concentrations of most constituents were below screening values and/or background in 2001 and 2009 evaluations. Few concentrations exceeded both screening values and background concentrations. The scattered nature of the exceedances does not appear related to Dead Creek and is unlikely to result in significant risk to terrestrial receptors. No further evaluation/remedial action is warranted.

Notes:
1) Menzie-Cura & Associates, 2001
2) Menzie-Cura & Associates, 2002
3) ENSR, 2009

Constituent concentrations above terrestrial soil screening values and background levels exist in the 2009 terrestrial evaluation of creek bottom soils in Segments C, D, and E. However, the extent of these areas is more limited than the data suggest because sediment excavation efforts have removed many samples with exceedances, thus reducing the potential for risk to terrestrial receptors. Sediments were excavated from within portions Creek Segments D and E in 2005/2006 to achieve RBCs for the protection of fish. Although post-excavation sampling was only conducted for a limited set of constituents with RBCs, it is likely that these excavations reduced creek bottom soil concentrations of other constituents as well.

In addition, the need for further evaluation or remedial action should recognize that the creek is an actively maintained stormwater drainage ditch receiving runoff from a variety of developed properties. In several locations along the creek, drainage swales discharge runoff from properties including residential areas, a car wash, a junkyard, a restaurant, and several roadways. These discharges occur following rain events and the resulting increase in water flow may rapidly change conditions within the de-watered portions of the creek from dry to flooded until the water either drains or is pumped out. Depending on the duration of the rain event, water may remain in portions of the creek for several days at a time. This change in water regime (e.g., generally dry conditions with periods of standing water) limits the available habitat for terrestrial organisms and the presence of ecological receptors in the creek.

Although some exceedances of ecological screening values likely remain in certain areas after the completion of significant removal actions, the site-specific ecological evaluation does not indicate that additional remedial action alternatives should be considered within the creek. The use of Creek Segments C, D and E for stormwater conveyance from a variety of upland sources and the variable water level conditions within the creek result in an area that does not provide significant suitable habitat for terrestrial organisms. Since these conditions limit the available habitat and represent substantial stressors for ecological receptors, additional remedial action for the creek bottom soils is not recommended.

ENSR, 2009. Sauget Area 1 Update of Terrestrial Screening. Provided as Appendix 7 of the Ecological Risk Assessment Addendum prepared for Solutia Inc and submitted to USEPA on June 3, 2009.

Menzie-Cura & Associates, 2001. Ecological Risk Assessment for Sauget Area 1 Rev. 2: Report Prepared for Solutia Inc. and submitted to USEPA on June 30, 2001.

Menzie-Cura & Associates, 2002. Ecological Risk Assessment on Dead Creek Bottom Soil: Report prepared for Soluia Inc. and submitted to USEPA on June 21, 2002.

10.0 EVALUATION OF AREAS REQUIRING REMEDIAL ACTION AND IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES AND ARARS

This section includes a summary evaluation of Sauget Area 1 sites including those carried forward to the Feasibility Study (FS) that require remedial action as well as those sites that do not require active remedial action and are not carried forward. This section also identifies the Remedial Action Objectives (RAO) and the Applicable or Relevant and Appropriate Requirements (ARARs) for Sauget Area 1 sites.

10.1 Evaluation of Areas and Media to Be Carried Forward in Feasibility Study

The results of the Human Health Risk Assessment (HHRA) reports and Ecological Risk Assessment (ERA) reports (summarized in Sections 8.0 and 9.0, respectively) have been used to screen the Sauget Area 1 sites to determine which sites are candidates for remedial alternative development in the FS. Constituent concentrations in Sauget Area 1 sites have been evaluated to determine whether environmental media pose a potential risk and/ or hazard above USEPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$ or target hazard index of 1. Sites where current conditions pose potential risk and/or hazard above target levels (referred to as "excess risk" in the remainder of this section) to potential human or ecological receptors have been carried forward in the FS for remedial action development. The screening process for sites in Sauget Area 1 is summarized below and the results of the screening are summarized on Table 10-1.

10.2 Development of Remedial Action Objectives

Remedial Action Objectives (RAOs) are broad, qualitative goals for protecting human and environmental health based on site-specific contaminants, the magnitude of contamination, affected media and potential exposure pathways. RAOs are developed to aid in the identification and screening of appropriate remedial technology alternatives to mitigate existing and future potential threats to human health and the environment. The optimal remedial technology for each Site will address RAOs for the COCs in affected media in the most effective and efficient manner.

For the Sauget Area 1 sites, RAOs have been developed based on the findings of the Remedial Investigation, HHRA and ERA reports as well as the ARARs identified for the sites. This section identifies the sites subject to remedial action alternative screening and the RAOs specific to these sites. Sites where one or more affected media present excess risk to human health and where development of remedial alternatives and RAOs is required include:

- Site G
- Site H
- Site I South
- Site L

Figure 10-1 shows the areas of waste / affected soils at Sites G, H, I South, and L as well as the areas of DNAPL residual in the aquifer matrix underlying Sites G, H, and I South. Figure 10-2 shows the locations of existing and conceptual fencing for access control at these sites. None of sites in Sauget Area 1 posed a potential threat to ecological receptors; therefore, none of the RAOs specifically address ecological risk.

Site G:

- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from inhalation of COCs found in groundwater and leachate during excavation work.
- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from ingestion and dermal contact with subsurface soils during excavation work.
- Prevent human exposure to vapor intrusion into indoor air at levels that result in unacceptable risk from COCs in waste material, soils, or groundwater.
- Prevent unacceptable risk related to landfill gas generation.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Minimize migration of principal threat waste / mobile source material.

Site H

- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from inhalation of COCs found in groundwater, leachate and subsurface soils during excavation work.
- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from ingestion and dermal contact with leachate and subsurface soils during excavation work.
- Prevent unacceptable risks to human receptors (i.e., utility workers) resulting from inhalation of COCs found in soil vapor and waste during excavation work on utility lines.
- Prevent unacceptable risks to human receptors (i.e., utility workers) resulting from ingestion or dermal exposure to COCs found in waste materials and soil during excavation work on utility lines.
- Prevent human exposure to vapor intrusion into indoor air at levels that result in unacceptable risk from COCs in waste material, soils, or groundwater.
- Prevent unacceptable risk related to landfill gas generation.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Minimize migration of principal threat waste / mobile source material.

Site I South

- Prevent unacceptable risks to human receptors (i.e., outdoor industrial/construction workers) resulting from ingestion or dermal exposure to COCs found in surface soils.
- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from ingestion or dermal exposure to COCs found in surface and subsurface soils and leachate during excavation work.
- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from inhalation of COCs found in leachate during excavation work.
- Prevent human exposure to vapor intrusion into indoor air at levels that result in unacceptable risk from COCs in waste material, soils, or groundwater.
- Prevent unacceptable risk related to landfill gas generation.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Minimize migration of principal threat waste / mobile source material.

Site L

- Prevent unacceptable risks to human receptors (i.e., construction workers) resulting from ingestion or dermal exposure to COCs found in subsurface soils during excavation work.

Area-Wide Groundwater

- Prevent ingestion of groundwater exceeding federal MCLs and Illinois Class I drinking water standards.
- To the extent practicable, restore groundwater quality affected by releases from the Sauget Area 1 sites to federal MCLs and Illinois Class I drinking water standards within a reasonable amount of time.
- Prevent groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in unacceptable, adverse impact to the Mississippi River.

10.3 Areas and Media That Require Remedial Action

Site G

Site G is a roughly 3.3-acre parcel that was operated as a waste disposal site from sometime after 1940 to 1966, with potentially some intermittent dumping through 1982, when most of the site was fenced. Site G was subject to a removal action in 1995. Surface and subsurface soil sampling data from the Remedial Investigation were used to evaluate exposure pathways in the site-wide HHRA (ENSR, 2001) and the Vapor Intrusion (VI) HHRA (AECOM, 2009a). At the request of USEPA, additional information regarding chemical use at the Wiese Building located on the site was presented in a memorandum in 2009 (AECOM, 2009b). A summary of the Site G scenarios and risk screening processes are provided in Tables 8-1 through 8-8.

Because the property is currently zoned for commercial/industrial use, the scenarios investigated in the HHRA include potential commercial/industrial receptors. Potentially complete exposure pathways for Site G include inhalation pathways for indoor and outdoor workers, construction workers and trespassers, and ingestion/dermal contact exposure for outdoor workers, trespassers, and construction workers. The HHRA identified benzene, chlorobenzene, and naphthalene as COCs for the inhalation pathway from groundwater and leachate, and phosphorous and PCBs for ingestion and dermal contact with subsurface soils. Site G is carried forward for development of remedial alternatives in the FS based on exceedences of target risk levels for the construction worker scenario.

There are several other reasons to carry forward Site G that are based on potential ARARs for the Sauget Area 1 sites. For Site G these include the need to minimize leaching of COCs from soil and waste to groundwater, the need to control migration of dissolved phase constituents from residual DNAPL in the aquifer matrix, the potential risk from vapors and landfill gas, and to the extent practicable, restore groundwater quality affected by releases from the Sauget Area 1 sites to federal MCLs and Illinois Class I drinking water standards.

Site H

Site H is an approximately 4.9-acre tract that used to be connected to Site I South (Figure 10-1). Site H and Site I South together were known to be part of the “Sauget Landfill", which was originally used as a sand and gravel pit and then received industrial and municipal wastes from approximately 1931 to 1957. Site H and Site I South are separated at ground level by Queeny Avenue (see Figure 10-1). Queeny Avenue was constructed at its present location in 1949 or 1950.

During a subsurface utility corridor investigation in 2008, waste was observed in three of the four borings in the utility corridor at Site H on the south side of Queeny Avenue and two of the four borings in the utility corridor at Site I South on the north side of Queeny Avenue (Golder, 2008). Based on these observations, there is no conclusive evidence to indicate that waste does not also exist at some locations beneath Queeny Avenue between Site H and Site I South. For the

purpose of site screening, the utility corridor along Site H and Site I South was included in the risk assessment results.

The site-wide HHRA (ENSR, 2001) evaluated potentially complete exposure pathways for outdoor, construction and utility workers as well as the teenage trespasser scenarios. The Utility Corridor HHRA (ENSR, 2008) evaluated potentially complete exposure pathways for utility workers. Potential risks calculated for Site H show exceedences of the USEPA target risk range for the utility worker and exceedences of the target HI for the construction and utility worker scenarios. The following constituents were identified as COCs for Site H: benzene, cadmium, chloroform, manganese and PCBs for the construction worker and PCBs, 2,3,7,8-TCDD-TEQ, 4,4-DDD, 4,4-DDT, chlorobenzene, dieldrin, and barium for the utility worker. Environmental media that present excess risk/hazard include soil, waste, subsurface soil, and excavation air from soil, groundwater and leachate. Site H has been carried forward for remedial action alternative screening in the FS based on exceedences of target risk levels for the construction worker and utility worker scenarios.

Results of a toxicity evaluation identified potential risks greater than the USEPA's principal threat waste toxicity threshold of 10^{-3} in waste samples from the utility corridor south of Queeny Avenue at Site H (ENSR, 2008). Constituents with potential risks above 10^{-3} include PCBs and 2,3,7,8-TCDD-TEQ.

Based on potential ARARs for the Sauget Area 1 sites, other reasons to carry forward Site H include the need to minimize leaching of COCs from soil and waste to groundwater, the need to control migration of dissolved phase constituents from residual DNAPL in the aquifer matrix, the potential risk from vapors and landfill gas, and to the extent practicable, restore groundwater quality affected by releases from the Sauget Area 1 sites to federal MCLs and Illinois Class I drinking water standards.

Site I South

Site I South consists of approximately 8.8 acres and used to be connected to Site H. Site H and Site I South together were known to be part of the "Sauget Landfill", which was originally used as a sand and gravel pit and then received industrial and municipal wastes from approximately 1931 to 1957. Site H and Site I South are separated at ground level by Queeny Avenue (see Figure 10-1), which was constructed at its present location in 1949 or 1950. Site I South is located on an active industrial facility and is within the fenced area of the facility (Figure 10-2).

The site-wide HHRA (ENSR, 2001) evaluated potentially complete exposure pathways for the outdoor and construction worker and trespasser scenarios. The Utility Corridor HHRA (ENSR 2008) evaluated potentially complete exposure pathways for utility workers. The VI HHRA (AECOM, 2009a) extended the analysis to indoor workers in a building adjacent to Site I South. Potential risks calculated for Site I South show exceedences of the USEPA target risk range for the outdoor industrial worker and exceedences of the target HI for the construction worker and outdoor industrial worker scenarios. The following COCs were identified: 2,3,7,8-TCDD-TEQ and PCBs for the outdoor industrial worker and PCBs, antimony, chlorobenzene, chloroform, MCPP, and naphthalene for the construction worker. Environmental media that present excess risk/hazard include surface soil, subsurface soil and leachate, as well as excavation air from leachate. Based on the results of the HHRA, Site I South is included in development of remedial alternatives in the FS based on exceedences of target risk levels for the construction worker scenario and the outdoor industrial worker scenario.

Pooled DNAPL is present at bedrock well BR-I, which is located at Site I South. Pooled DNAPL is a source material and may be considered a principal threat waste liquid.

Based on potential ARARs for the Sauget Area 1 sites, other reasons to carry forward Site I South include the need to minimize leaching of COCs from soil and waste to groundwater, the need to control migration of dissolved phase constituents from residual DNAPL in the aquifer matrix, the potential risk from vapors and landfill gas, and to the extent practicable, restore groundwater quality affected by releases from the Sauget Area 1 sites to federal MCLs and Illinois Class I drinking water standards.

Site L

Site L comprises roughly 7,600 square feet and is located immediately east of Dead Creek (Figure 10-1). The Site was used for the disposal of wash-water from truck cleaning operations between 1971 and 1981.

The HHRA evaluated potentially complete exposure pathways for the outdoor worker, construction worker, and trespasser scenarios. Based on the results of the HHRA (ENSR, 2001) PCBs in the subsurface soil are identified as the only COC. PCBs were found to pose a potential HI above the USEPA target level for ingestion of or dermal contact with subsurface soils for the construction worker scenario. Therefore, Site L is included in development of remedial alternatives in the FS based on exceedences of target risk levels for the construction worker scenario.

Area-Wide Groundwater

Groundwater in the Alluvial Aquifer flowing beneath Sauget Area 1 moves to the west and ultimately discharges to the Mississippi River, approximately 5,700 feet downgradient of the western boundary of Sauget Area 1. Three hydrogeologic units can be identified at Sauget Area 1: the Shallow Hydrogeologic Unit (SHU), Middle Hydrogeologic Unit (MHU), and Deep Hydrogeologic Unit (DHU).

VOCs and SVOCs are the principal contaminants in groundwater. As the plumes from Sauget Area 1 move toward the west, they combine with plumes originating from sources at other sites in the Sauget region, including Sauget Area 2 sites, Clayton Chemical, and the W.G. Krummrich facility. Approximately 73% of the Sauget Area 1 plume that reaches the area near the River is intercepted by the GMCS at Sauget Area 2 Site R.

Figures 10-3, 10-4, and 10-5 show the approximate extent of detected constituents that exceed the federal MCLs and Illinois Class I drinking water standards in the SHU, MHU, and DHU, respectively.

There are a total of nine indicator constituents for groundwater at and downgradient of the Sauget Area 1 source areas. The nine indicator constituents include six VOCs (benzene, chlorobenzene, tetrachloroethene, trichloroethene, 1,2-DCE, vinyl chloride), two SVOCs (1,4-dichlorobenzene and 4-chloroaniline), and one herbicide (2,4-D).

A recommendation for consideration of remedial options for area-wide groundwater is based on the following considerations: i) the need to ensure no ingestion of groundwater exceeding federal MCLs and Class I drinking water standards; ii) the need to eventually restore groundwater quality to federal MCLs and Illinois Class I drinking water standards, to the extent practicable; and iii) the need to prevent groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in unacceptable, adverse impacts to the Mississippi River.

10.4 Sites Screened from Active Remediation

The sites described below are not carried forward in the FS for active remediation. However, the remedial alternatives for Sauget Area 1 do include long-term operation and maintenance (O&M) and institutional controls for the Judith Lane Containment Cell.

Dead Creek and Borrow Pit Lake

Segment A: Dead Creek includes Segments A, B, C, D, E, and F and the Borrow Pit Lake. (Site M is discussed in the next section.) Dead Creek Segment A was remediated under an IEPA-approved plan during 1990 and 1991. Remedial activities for Segment A consisted of excavating creek bed soils to 10 to 15 feet in depth, then covering and backfilling the area with crushed gravel. The excavated soils from Segment A were taken to various Waste Management disposal facilities. Remedial activities for Segment A are detailed in a 1991 report (Cerro Copper Products, 1991). Segment A is within the fenced area of the Cerro Flow Products facility (Figure 10-2).

The potentially responsible parties (PRPs) plan to voluntarily place institutional controls on Segment A. The institutional controls could include maintenance of the existing fence at the Cerro Flow Products facility and filing of deed notices or restrictions.

Segments B through F and Borrow Pit Lake: Segments B through F and the Borrow Pit Lake were the subject of the Unilateral Administrative Order (UAO) issued in 1999 and amended in 2000 and 2001 authorizing a time-critical removal action. Under the order, 46,000 cubic yards of sediments were removed from the creek bed. In 2005-2006, additional remediation was conducted that resulted in removal of 12,400 cubic yards of creek bottom soils and sediments from Borrow Pit Lake exceeding the site-specific RBCs protective of forage fish. An armored impermeable liner was installed throughout Creek Segment B in 2008. Details of sediment concentrations and excavation activities for the Dead Creek Site including the Borrow Pit Lake are provided in Section 2.3.

As noted in Section 9, although some exceedances of ecological screening values likely remain in certain areas after the completion of the removal actions, the site-specific ecological evaluation does not indicate that additional remedial action alternatives should be considered within Dead Creek. The use of Creek Segments C, D and E for stormwater conveyance from a variety of upland sources and the variable water level conditions within the creek result in an area that does not provide significant suitable habitat for terrestrial organisms. Since these conditions limit the available habitat and represent substantial stressors for ecological receptors, additional remedial action for the creek bottom soils is not recommended.

Segment B is protected by a fence (Figure 10-2) and, as noted above, has an armored impermeable liner throughout its entire length. The PRPs plan to voluntarily place institutional controls on Segment B. The institutional controls could include maintenance of the existing fence and filing of deed notices or restrictions.

Judith Lane Containment Cell: Excavated sediments and soils from Creek Segments B through F and the Borrow Pit Lake were transferred to the Judith Lane Containment Cell ("Containment Cell") shown on Figure 10-1. The Containment Cell was constructed to meet RCRA and TSCA requirements. There are currently plans to add PCB-affected soils (excavated at the W.G. Krummrich facility) to utilize unused Containment Cell capacity. After these soils are added, the final engineered cover for the Containment Cell will be placed. Once the final cover has been placed, the cell will require long-term O&M including inspections, sampling of primary and secondary leachate, collection and treatment of leachate, sampling and testing of groundwater monitoring wells, and maintenance and repairs as needed.

A Remedial Action Project Plan (RAPP) that is being reviewed by the RCRA division of Illinois EPA provides detailed information on the construction of the final cover, the Groundwater Monitoring Plan, Emergency and Contingency Plan, Closure and Post Closure Plan, and other details regarding the Judith Lane Containment Cell. Once comments are received from Illinois EPA, the RAPP application will be modified and submitted for approval. After all approvals are obtained, the PCB-affected soils will be placed into the Containment Cell and the final cap will be installed.

Containment Cell O&M has been included as a remedy component in the remedial alternatives developed for Sauget Area 1. Institutional controls such as fencing and deed notices or restrictions will also be needed for the Containment Cell. The long-term Illinois EPA RCRA requirements will be incorporated into an appropriate CERCLA enforceable document, and at that point Illinois EPA plans to turn the oversight of the long-term site operations over to CERCLA.

Site M

Site M is a historic borrow pit that was connected to Dead Creek through an opening at its southwest corner, allowing water from the Creek to enter the pit. Contaminated sediments were removed from Site M in 2000-2001 as part of the UAO Time-Critical Removal Action. Site M has been backfilled as part of the removal action, and access to the site is currently restricted by a fence. Due to the previous remedial activities conducted under the UAO, Site M is not considered for further remedial action in the FS.

Site I North

Site I North comprises approximately 5.9 acres and is within the fenced area of the Cerro Flow Products facility. Site I North was not part of the “Sauget Landfill” operations described above (regarding Site H and Site I South). Historically, inert fill materials (e.g., brick, concrete, and other construction debris) were used to fill low areas and maintain grades at Site I North. An evaluation of potential risks associated with Site I North is presented in a technical memorandum found in Appendix A. While low levels of COCs were detected in Site I North samples, concentrations in this area are below levels that trigger excess risk or hazard. Based on the technical memorandum in Appendix A, no COCs are associated with Site I North and, therefore, Site I North is not included for remedial action development in the FS.

Site N

Site N is an approximately 4-acre historic borrow pit formerly owned by the H. Hall Construction Company. The borrow pit was primarily used to dispose of construction and demolition debris and may have contained some painting or chemical wastes. Access to Site N is currently limited by a fence. Site sampling results indicated very low levels of VOCs and SVOCs in soils. At the request of USEPA, Site N was evaluated for both commercial/industrial as well as a hypothetical future residential scenario. Based on the results of site-wide HHRA, potential risks and HIs calculated for Site N are all below USEPA targets for both commercial/industrial and residential receptors. Site N is not carried forward in the FS.

Residential Transects

Floodplain soil samples were collected from residential transects and subsequently used to assess risk in the site-wide HHRA (ENSR, 2001) for residential areas near Sauget Area 1. The transect areas are shown in Figure 3-10, and include both residential and commercial property as well as undeveloped land. Both residential and commercial/industrial scenarios were evaluated for these areas. Results of the HHRA for the transects indicate no exceedances of target risk or

hazard levels for potential residential or non-residential receptors in these areas. Therefore, areas along the transects are not included in remedial alternative development in the FS.

10.5 Identification of Applicable or Relevant and Appropriate Requirements (ARARs)

As part of the FS process, remedial action technologies must be identified that achieve a level or standard of control that attains each legally applicable or relevant standard for every medium that may pose excess risk. ARARs provide the regulatory context in which the RAOs are developed. ARARs are federal and state regulatory requirements related to human and ecological health that are used to 1) evaluate the appropriate extent of site cleanup, 2) help scope and formulate the remedial alternatives to be screened, and 3) influence the implementation and operation of the selected remedial action.

In addition to ARARs, other non-promulgated advisories or guidance known as 'To Be Considered' (TBC) criteria can be proposed to supplement the ARARs. TBCs are issued by federal or state governments and can be used in determining the necessary level of cleanup to achieve protection of potential receptors. The TBCs are not legally binding, but can be effective methods to derive appropriate end-points for cleanup. Both potential ARARs and TBCs have been identified for the Sauget Area 1 sites and are listed in Table 10-2

EPA Guidance for RI/FS (EPA, 1988) describes three functional groups of ARARs that must be evaluated:

Chemical Specific ARARs

Chemical-specific ARARs are health-based or risk-based values that define acceptable exposure concentrations or water quality standards. These requirements can provide numerical cleanup standards for different media. Chemical-specific ARARs govern the extent of remediation required for a specific medium by providing either a numerical standard or a basis for the calculation of a standard (such as a tiered approach). Remedial technologies for a site can be screened based on the level of cleanup specified by the ARAR. The future success of the remedial alternative may be judged relative to these standards.

Location-Specific ARARs

Location-specific ARARs may restrict remediation activities at sensitive or hazard-prone locations such as active fault zones, wildlife habitats, flood zones or wetlands. Location-specific ARARs define standards for permitted hazardous waste transfer, treatment, storage and disposal (TSD) and put limitations on TSD facilities in areas that may pose seismic or flooding hazard or harm to sensitive habitat or archeological resources. These ARARs place restrictions on concentrations of hazardous substances or the conduct of certain activities solely based on the site's characteristics and location.

Action-Specific ARARs

Action-specific requirements may control other activities or technologies associated with design, installation and implementation of the remedial options. Action-specific ARARs address the technology and activities of treatment, transportation, and disposal of hazardous waste. This category of ARAR is generally associated with performance and/or design standards, controls, or restrictions on the technologies associated with the remedial action alternatives.

Table 10-2 lists 70 potential ARARs identified for the Sauget Area 1 Sites. ARARs are discussed in more detail in Section 13.0. Table 13-1 provides the classification and rationale for classification for each ARAR and provides a demonstration of compliance as part of the detailed evaluation of five remedial action alternatives. The ARAR classifications used on Table 13-1

include Applicable, Not Applicable, Relevant and Appropriate, Relevant but Not Appropriate, and To Be Considered. Waivers of ARARs are not anticipated to be required for Sauget Area 1.

11.0 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

This section identifies general response actions and identifies and screens remedial technologies that may be applicable to the Sauget Area 1 sites.

11.1 General Response Actions

The first step in determining applicable technologies for remediation is the identification of the types of response actions that will satisfy the RAOs developed in Section 10. General response actions (GRAs) are general methods by which COCs may be controlled, contained, removed, treated, and/or disposed to mitigate risks to human health and the environment. GRAs include the following approaches (EPA, 1985):

- **No action** – The status quo is maintained; no remedial action is performed. The CERCLA process requires this GRA for comparative purposes.
- **Institutional controls only** – Institutional controls are used to limit access to the affected media. Examples of institutional controls are deed recordation, fencing, signs, and other methods to limit site access.
- **Containment / Capping / Covering** – Physical barriers are used to prevent contact with the affected media. Containment may consist of surface barriers such as paving or capping with soil, and/or subsurface barriers, such as slurry walls or sheet piling. Containment for affected groundwater can also be achieved hydraulically with groundwater extraction.
- **Excavation / Removal** – The affected medium is removed for treatment and/or disposal at another location, thereby preventing contact with potential receptors.
- **Treatment** – The volume, concentration, mobility, and/or toxicity of the affected medium are reduced by transforming or destroying the COCs through treatment. Treatment may be completed in-situ (in place) or ex-situ (after removal from its original location).
- **Disposal** – The affected medium is placed in a secure location where contact with potential receptors is prevented, such as an on-site or an off-site landfill.

11.2 Identification and Screening of Remedial Technologies

For each GRA there may be several general technology categories potentially applicable to the site. During remedial process alternative screening, these general technologies are identified and several specific process options under each technology may be considered. For example, under the treatment GRA, biological treatment represents a class of potentially applicable treatment processes. Under biological treatment, ex-situ biological slurry treatment would be one specific process option. Once identified and defined, technologies and process options are screened to eliminate options that do not fulfill the following basic screening criteria:

- **Effectiveness**: Short-term and long-term effectiveness and reductions in toxicity, mobility, or volume are assessed under this criterion.
- **Implementability**: Technical and administrative feasibility are considered under this criterion. A careful consideration of the technical feasibility of various options is performed given the existing hydrogeologic setting, site improvements, and site COCs. Technical feasibility is defined as the ability to construct, reliably operate, and meet regulatory, O&M, and monitoring requirements. If a technology has not been sufficiently developed, it is considered to be infeasible for the purpose of the feasibility study. Administrative feasibility evaluates the effect of non-technical issues on the implementability of alternatives. These non-technical issues include obtaining regulatory approval or permits.
- **Relative Cost**: Relative cost is the relative capital and O&M costs associated with a process option. Costs are estimated using engineering judgment and are presented as

higher than average, average, or lower than average. Cost comparisons are performed between process options that are in the same technology type. Relative cost is used to eliminate options that are substantially more expensive than other process options.

Remedial technologies were identified from the Remediation Technologies Screening Matrix and Reference Guide (Federal Remediation Technology Roundtable, 2006) and USEPA guidance manuals. Technologies were limited to those that are proven effective; technologies at the research stage or those that have not been successfully implemented in the field were not considered.

The initial identification of potential technologies and process options for soil and waste is shown on Table 11-1 and for leachate and groundwater on Table 11-2. The tables provide a brief description of each process option and a qualitative evaluation of its effectiveness, implementability, and relative cost. The table also provides a rationale for elimination of technologies and process options that have been screened out. At this preliminary stage, technologies are screened based mainly on effectiveness and implementability, with relative cost being used only to eliminate those process options that are clearly not cost competitive with other options within a technology category.

The information presented on Tables 11-1 and 11-2 is sufficient for identification and initial screening of various technologies that may be applicable to the Sauget Area 1 sites (e.g., engineered covers, excavation and disposal, groundwater extraction and treatment, monitored natural attenuation), and these commonly used technologies are not discussed further in this section of the FS. Section 11.3 provides additional discussion for initial screening of potential technologies for addressing the residual DNAPL source areas in the Alluvial Aquifer, including surfactant treatment, thermal treatment, chemical oxidation, and enhanced bioremediation.

11.3 Evaluation of Potential DNAPL Source Depletion Technologies

11.3.1 Results of Treatability Evaluations Performed During the DNAPL Characterization and Remedation Study

As discussed in Section 4.2.1.4, the DNAPL characterization and remediation study included treatability evaluations for three potential DNAPL source depletion technologies: surfactant flushing, thermal treatment, and chemical oxidation. As discussed below, these technologies are screened out from further consideration for Sauget Area 1.

Surfactant Treatability Evaluation - Surfactant flushing (with or without cosolvent) has been developed as an aggressive remediation technology for DNAPL contamination in the subsurface (Yin and Allen, 1999). Results of a surfactant treatability test using a DNAPL sample from Sauget Area 1 showed no consistent enhancements in solubilization of COCs. This suggests that surfactant-enhanced solubilization is not an appropriate technology selection for Sauget Area 1.

Thermal Treatment Evaluation - Thermal treatment is a general term for a variety of approaches designed to destroy or mobilize constituent mass *in situ*. Most methods involve the injection of heat (often in the form of steam) to vaporize and strip volatile compounds. It is not practical to dewater or completely boil off all water within the saturated zone at Sauget Area 1. One thermal treatment approach that does not require dewatering of the saturated zone is a combination of Dynamic Underground Stripping and Hydrous Pyrolysis Oxidation (DUS/HPO). The DUS/HPO process involves the continuous injection of steam and oxygen to heat the aquifer to the boiling point of water and mobilize a portion of the contamination through volatilization and stripping. Recovery of volatilized constituents requires a series of extraction wells. Hydraulic control is used to recover a portion of the overall mass, including mobilized free product and aqueous phase constituents.

Laboratory analysis of the DNAPL sample from BR-I indicated that the principal constituents by mass fraction were 1,2,4-trichlobenzene (14%); hexachlorobenzene (1%); and 1,4-dichlorobenzene (0.8%). These chemicals have minimum boiling points of 416°F, 630°F, and 346°F, respectively. Distillation test results using DNAPL from BR-I indicate that only 5% of the DNAPL has a boiling point at or below 432°F. The remaining 83% of the sample volume recovered had a boiling point that fell within the relatively narrow range of 432 to 530°F. These laboratory results are documented in Appendix C of the DNAPL Characterization and Remediation Report (GSI, 2006c)

Based on results from the BR-I DNAPL sample, the DNAPL constituents within the fill materials and Alluvial Aquifer matrix at Sauget Area 1 have relatively high boiling points, which indicates that volatilization is not likely to be the predominant source removal mechanism during thermal treatment using the DUS/HPO technology. Instead the predominant mass removal mechanism would likely be pumping of free product, based on results from the Visalia site, a well-documented site located in Visalia, California, where DUS/HPO thermal treatment technology was applied (US DOE, 2000). Heating of the fill materials and aquifer matrix at Sauget Area 1 would reduce interfacial tension and viscosity of residual DNAPL, thereby increasing the potential for DNAPL to move through the fill and aquifer matrix and be removed by pumping from recovery wells.

Due to the thickness and permeability of the Alluvial Aquifer at Sauget Area 1, it would take a very large amount of electrical energy to heat the aquifer to the boiling point of water, even for a small pilot-scale project. Due to high capital costs and very high energy costs, it would be cost prohibitive to scale up in-situ thermal treatment technology for the entire source areas at Sites G, H, and I South. Therefore, in-situ thermal treatment technology was screened from further consideration.

Chemical Oxidation Treatability Evaluation - Chemical oxidation acts to deplete source mass via a chemical reaction between a strong oxidant with a reduced constituent with the goal of directly converting the compound to CO_2. Common chemicals used for this purpose include hydrogen peroxide (H_2O_2), chloride dioxide (ClO_2), and potassium permanganate ($KMnO_4$). Potassium permanganate has been used for removing drinking water pollutants for several decades, and it has been applied in field demonstrations for removing DNAPL at the Borden site (Schnarr et al., 1998) and at the Portsmouth Gaseous Diffusion Plant in Ohio (U.S. DOE). On this basis, potassium permanganate was the chemical oxidant that was selected for further evaluation at Sauget Area 1.

Results of a chemical oxidation treatability test on a DNAPL sample from the W.G. Krummrich facility showed that the test was not successful in converting all VOCs to carbon dioxide. The tests yielded ratios ranging from 15.7 to 148.3 grams of permanganate needed per gram of VOC oxidized, in part because the oxidation reaction was kinetically limited and non-selective. Because the Krummrich DNAPL is generally similar in composition to that recovered at Sauget Area 1 (chlorinated benzenes), it is not expected that chemical oxidation would be an effective source depletion technology at Sauget Area 1.

11.3.2 Evaluation of Enhanced Bioremediation for DNAPL Source Depletion

Enhanced bioremediation technologies involve increasing the rate of biodegradation of organic contaminants by stimulating the activity of naturally occurring microbes. Enhanced bioremediation can be performed under aerobic conditions or anaerobic conditions.

Enhanced aerobic bioremediation involves the addition of air, oxygen, or an oxygen-releasing compound to increase the oxygen content in the saturated zone and promote aerobic biodegradation. Chlorobenzene and 1,4-dichlorobenzene, which are present at elevated

concentrations in the residual DNAPL source areas, are the COCs with the highest concentrations and greatest extent at Sauget Area 1. Both are readily degradable under aerobic conditions. As discussed in Section 6.3, benzene, vinyl chloride, p-chloroaniline, and 2,4-D are also aerobically degradable.

PCE, TCE, and 1,2-DCE do not readily degrade in aerobic environments. In anaerobic environments they undergo reductive dechlorination in a stepwise process, with PCE dechlorinated to TCE, DCE (primarily the cis-1,2-DCE isomer), vinyl chloride, and finally ethene. PCE, TCE, and 1,2-DCE tend to be recalcitrant in aerobic environments because reductive dechlorination is not energetically favorable and dechlorinating microbes are inhibited by oxygen.

Enhanced anaerobic bioremediation involves addition of a degradable substrate (e.g., vegetable oil) to the saturated zone that ferments and produces hydrogen, which is used in reductive dechlorination of COCs. Enhanced anaerobic biodegradation would be effective for addressing PCE, TCE, and 1,2-DCE. Chlorobenzene, 1,4-dichlorobenzene, and benzene can also degrade anaerobically. However, anaerobic biodegradation pathways often involve potentially harmful intermediates, and further transformation of these intermediates can be limited relative to the parent COCs due to a variety of factors (e.g., lack of organisms that perform subsequent steps in the degradation pathway, less energy available, chemical structure is difficult to attack). Examples include accumulation of benzene from chlorobenzene/dichlorobenzene dechlorination (Furg et al, 2009) and accumulation of cis-1,2-DCE from PCE/TCE dechlorination (Hendrickson et al., 2002).

Enhanced aerobic biodegradation is generally preferable to implement compared to enhanced anaerobic biodegradation because a gas (pure oxygen or air) is easier to deliver and distribute in the Alluvial Aquifer than a liquid organic substrate (e.g., vegetable oil). Due to the thickness and permeability of the Alluvial Aquifer at Sauget Area 1, it would take a very large volume of a liquid organic substrate to promote enhanced anaerobic bioremediation of the Sauget Area 1 residual DNAPL source areas. Furthermore, adding a large volume of degradable substrate could degrade the general water quality of the Alluvial Aquifer in the areas where the material was injected. Consideration of these negative impacts on secondary water quality is included in guidance documents on enhanced anaerobic bioremediation (AFCEE, 2004; ITRC, 2008) and it represents a significant enough problem that the Department of Defense continues to fund several major research projects to better understand this topic (SERDP, 2011a, 2011b). Therefore, enhanced anaerobic bioremediation was screened from further consideration.

Enhanced aerobic bioremediation could potentially be an effective source depletion technology for reducing the mass of COCs in the residual DNAPL source areas at Sauget Area 1 and is retained for further evaluation. Enhanced aerobic bioremediation would not address PCE, TCE, or 1,2-DCE. However, these are not the principal constituents in the residual DNAPL source areas at Sauget Area 1.

Air sparging is a technology that can be used to add oxygen to the saturated zone. Air sparging involves the injection of air into an aquifer through vertical or horizontal wells, and it can remove COCs by volatilization and by in-situ aerobic biodegradation. Air sparging systems are coupled with soil vapor extraction (SVE) systems in situations where vapor migration could cause adverse impacts. Biosparging is a particular mode of air sparging operation that emphasizes aerobic biodegradation over volatilization. Biosparging systems are typically designed to operate without an SVE system.

Pure oxygen can also be sparged into the saturated zone. Pure oxygen sparging has the advantage of delivering much higher concentrations of oxygen to the subsurface compared to air sparging, but it is more costly and may have health and safety concerns regarding oxygen accumulation below buildings.

11.4 Initially Retained Technologies

Initially retained technologies from Table 11-1 for soil and waste include landfill caps and excavation with off-site disposal. Initially retained technologies and process options from Table 11-2 for leachate and groundwater include monitored natural attenuation, air sparging with soil vapor extraction, biosparging, and groundwater pump and treat. Based on the discussion in Section 11.3, air sparging with SVE and biosparging are the initially retained technologies for reducing source mass in the residual DNAPL areas within the Alluvial Aquifer.

Initially retained technologies from Table 11-2 for ex-situ treatment of produced water include oil-water separation, air stripping, granular activated carbon, and precipitation/ coagulation/ flocculation. Initially retained technologies from Table 11-2 for ex-situ treatment of recovered vapors include oxidation and vapor-phase carbon adsorption.

12.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES

This section develops a range of potential remedial alternatives for Sauget Area 1 using the technologies and process options that were retained after the screening and evaluation completed in Section 11. Each alternative consists of multiple technologies and supporting elements that form a complete approach to accomplishing the RAOs for each media.

This section also includes an initial screening of the potential remedial alternatives based on effectiveness, implementability, and relative cost.

12.1 Development of Remedial Alternatives

12.1.1 Descriptions of General Process Options and Technologies

The following general response actions and technologies retained from screening in Section 11 were used in development of the alternatives for Sauget Area 1.

No Action – As required by CERCLA, a No Action alternative must be included as a remedial alternative to provide a baseline for evaluation of the remedial alternatives. The No Action alternative does not involve any treatment, removal, or monitoring.

Institutional Controls – Institutional controls are a component of each alternative developed for Sauget Area 1 except the No Action alternative. Institutional controls are access restrictions or land use restrictions designed to control access to the sites, manage construction or other intrusive activities that may disturb soil or waste, and minimize potential exposure to COCs.

Engineered Covers – Engineered covers include landfill covers, caps, or other barriers to minimize the potential for exposure to COCs in soils and waste in covered areas. The types of engineered covers selected for a remedial alternative will vary depending on the existing uses of the sites and the types of fill or waste materials that are present at the sites. The cover designs will also vary depending on whether or not the alternative includes technologies that introduce air into the saturated zone beneath the covered area (e.g., air sparging or biosparging). Permeable covers are more appropriate in these situations.

The types of engineered covers that were considered in potential remedial alternatives for Sauget Area 1 include RCRA Subtitle C covers, asphalt covers, soil covers, and crushed rock covers.

RCRA Subtitle C covers are multi-layer caps that promote surface water drainage and minimize surface water infiltration. They include a low permeability layer underlain by a gas collection layer and overlain by a drainage layer and protective soil cover and vegetative layer. At traffic areas, the surface layer of a RCRA Subtitle C cap can be constructed of alternate materials such as crushed rock or asphalt pavement.

Asphalt covers include a prepared subgrade, aggregate base, and asphalt surface layer. The thickness of these layers can be tailored to site-specific conditions.

Soil covers utilize a layer of clean soil to minimize potential for contact with COCs in the underlying affected soil and waste. Vegetation is established on the soil cover to minimize the potential for erosion. The soil covers that are included in the alternatives for Sauget Area 1 would meet the requirements in Illinois Administrative Code Title 35 Part 807 (35 IAC 807) for solid waste landfill covers. The principal requirement is installation of a compacted layer of not less than two feet of suitable material.

Crushed rock covers use granular material to cover an area and minimize potential for exposure to COCs in soil and waste. The granular material can be free-draining or less permeable material, depending on site-specific conditions (i.e., traffic vs. non-traffic areas).

Each type of engineered cover described above would require long-term inspection and maintenance. In addition, the Judith Lane Containment Cell will require long-term O&M.

Excavation and Off-Site Disposal – This process option would involve excavation of soil and waste materials from Sites G, H, I South, and L, transportation to an approved and permitted off-site facility, and treatment and/or disposal at the off-site facility. Since PCBs are present in some of the waste materials, the disposal facility may need to be permitted to dispose of PCB-contaminated materials. Source area waste volumes were estimated in Section 3.2.3.3. As summarized below, the total in-place and loose volumes for Sites G, H, I South, and L total 636,000 cubic yards and 827,000 cubic yards, respectively. The estimated loose volumes were calculated using a multiplier of 1.3.

Disposal Area	Estimated In-Place Volume (cubic yards)	Estimated Loose Volume (cubic yards)
Site G + Site G West	107,000	139,000
Site H	157,000	204,000
Site I South	355,000	461,000
Site L	17,500	23,000
Total	636,000	827,000

Utility Relocation – Utilities can be relocated to prevent unacceptable risks to utility workers during excavation work on utilities. This remedy component is included in the alternatives for Sauget Area 1 to prevent utility workers from potentially coming into contact with wastes in the utility corridor along Queeny Avenue adjacent to Site H. The waste materials in the Site H utility corridor were found to be principal threat wastes based on a toxicity evaluation, as discussed in Section 5.2.3.3 and Section 8.0. Utility relocation will also involve relocation of a municipal water line that crosses Site I South.

Recovery of Pooled DNAPL – This is a removal technology that involves recovery of an accumulation of DNAPL that is pooled at the base of a water-bearing zone. The DNAPL is pumped from an extraction well and collected in a tank. When a sufficient volume has accumulated in the tank, the DNAPL is transported off-site for disposal at a permitted facility. Off-site incineration is a typical disposal method for DNAPL.

The pooled DNAPL that is present at well BR-I at Site I South is considered a principal threat material. The pooled DNAPL recovery component will address this principal threat material and reduce the mass of COCs in the source area at Site I South.

Monitored Natural Attenuation – Natural attenuation refers to natural subsurface processes, such as advection, dispersion, sorption, and biodegradation, which result in reductions in the concentration and/or mass of COCs dissolved in groundwater. Natural attenuation processes are typically occurring at all sites, but to varying degrees of effectiveness depending on the types and concentrations of COCs present and the physical, chemical, and biological characteristics of the soil and groundwater.

Demonstrations of the effectiveness of natural attenuation typically involve long-term groundwater sampling and testing to evaluate COC concentrations over time and to determine if geochemical conditions are suitable for biodegradation of COCs. Microbiological data is also sometimes

collected as evidence to support the occurrence of biodegradation. Section 6.3 summarizes available information regarding biodegradation of the indicator constituents in groundwater at Sauget Area 1. The report in Appendix G provides a more detailed evaluation of MNA at Sauget Area 1.

Groundwater Pump and Treat – This remedial technology includes pumping of groundwater from extraction wells followed by above ground treatment of the water using a treatment technology appropriate for the COCs that are present in the produced groundwater. Groundwater pump & treat technology can be used for hydraulic containment of a plume and/or removal of COC mass from the plume core. This technology can also be adapted for other uses such as leachate control at waste disposal sites.

Air Sparging with Soil Vapor Extraction – Air sparging involves the injection of atmospheric air into an aquifer through vertical or horizontal wells. This technology can remove COCs by volatilization as well as by in-situ aerobic biodegradation, due to the increased concentration of dissolved oxygen. Air sparging systems are coupled with soil vapor extraction (SVE) systems in situations where vapor migration could cause adverse impacts.

An SVE system removes gases from the unsaturated zone using a network of closely spaced extraction wells under vacuum pressure. The gases leaving the SVE system are typically treated using oxidation or granular activated carbon. If COC concentrations are low enough, the gases may be vented directly to the atmosphere, depending on local and state air discharge regulations.

Biosparging – Biosparging is a particular mode of air sparging operation that emphasizes aerobic biodegradation over volatilization. Biosparging systems are typically designed to operate without an SVE system. Air injection is controlled such that an SVE system and the associated vapor treatment equipment would not be required.

12.1.2 Discussion Regarding Bioventing

Bioventing involves delivery of air to unsaturated soils by extraction or injection to stimulate aerobic biodegradation of COCs such as benzene, chlorobenzene, and dichlorobenzenes. This technology only addresses the unsaturated zone, which is not the main source of COCs to groundwater at Sauget Area 1. Results of mass flux calculations for Sauget Area 1 indicate that mass flux of COCs to groundwater at Sauget Area 1 is primarily due to movement of the groundwater through residual DNAPL sources in the aquifer matrix beneath Sites G, H, and I South, and not from leaching of unsaturated source materials (see discussion in Section 6.2).

Bioventing of fill materials and unsaturated soils is not included in any of the potential alternative arrays for Sauget Area 1 due to the limited benefit of this technology for the Sauget Area 1 sites. However, treatment of the saturated zone by air sparging with SVE or by biosparging would result in some movement of air through the unsaturated zone, thus allowing some aerobic treatment to occur in the unsaturated fill materials and soil.

12.1.3 Discussion Regarding the Sauget Area 2 Groundwater Migration Control System

As discussed in Section 2.4, the Sauget Area 2 Groundwater Migration Control System (GCMS) includes a 3,300 ft long “U”-shaped, fully penetrating barrier wall located downgradient of Sauget Area 2 Site R and three groundwater extraction wells on the upgradient side of the barrier wall. The groundwater extraction wells have been in operation since July 2003, and construction of the barrier wall was completed in 2004.

The Sauget Area 2 GMCS was designed to abate adverse impacts on the Mississippi River resulting from the discharge of affected groundwater from the Sauget Area 2 sites, the Sauget

Area 1 sites, the southern portion of the W.G. Krummrich Facility, and other industries in the Sauget area.

The Sauget Area 2 GMCS does capture a portion of the mass flux from the Sauget Area 1 plumes, as discussed in Section 6.5 and summarized in Section 12.2.1. Thus, the GMCS does offer some benefit for Sauget Area 1 relative to the remedial action objective of preventing groundwater discharges to the River that result in unacceptable, adverse effects on the River. However, since the need to operate the Sauget Area 2 GMCS is largely based on the treatment needs of Sauget Area 2, the Sauget Area 2 GMCS is not included as a component in any of the potential alternative arrays developed for Sauget Area 1.

12.1.4 Development of Site-Specific Alternatives

Potential remedial alternatives developed for Sauget Area 1 are presented and summarized below. These alternatives address affected soil and waste, leachate, soil vapors, principal threat materials, and groundwater.

Potential Alternative	Components
Alternative 1	No action
Alternative 2	- Institutional Controls - Containment Cell Operation and Maintenance (O&M) – See Note below - Monitored Natural Attenuation (MNA)
Alternative 3	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L
Alternative 4	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L - Leachate Control at Sites G, H, and I South
Alternative 5	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Soil or Crushed Rock Covers at Sites G, H, I South and L - Pulsed Air Biosparging at Residual DNAPL Areas at Sites G, H, and I South
Alternative 6	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Soil or Crushed Rock Covers at Sites G, H, I South and L - Air Sparging with SVE at Residual DNAPL Areas at Sites G, H, and I South
Alternative 7	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L - Hydraulic Containment Downgradient of Sites G, H, and I South

Potential Alternative	Components
Alternative 8	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L - Groundwater Removal at Source Areas at Sites G, H, and I South - Hydraulic Containment Downgradient of Sites G, H, and I South
Alternative 9	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Excavation and Off-Site Disposal of Wastes at Sites G, H, I South, and L

Note: There are currently plans to add PCB-affected soils (excavated at the W.G. Krummrich facility) to utilize unused Containment Cell capacity. After these soils are added the final engineered cover for the Containment Cell will be installed. Installation of the Containment Cell final cover is required by the May 31, 2000 Unilateral Administrative Order related to the sediment and soils removal action, and is not part of the Sauget Area 1 FS.

Alternative 1, the No Action alternative, does not involve any treatment, removal, or monitoring.

Alternative 2 includes institutional controls, Containment Cell O&M, and MNA.

The following five technologies are common to Alternatives 3 through 9: institutional controls; MNA; Containment Cell O&M; utility relocation; and pooled DNAPL recovery at well BR-I.

Alternative 3 includes the five common technologies listed above plus engineered covers consisting of RCRA Subtitle C caps for Sites G, H, I South, and L.

Alternative 4 includes the same components as Alternative 3 plus leachate recovery. Leachate recovery would be performed at a grid of leachate recovery wells screened in the fill and waste materials at Sites G, H, and I South. The recovered leachate would be treated on site and discharged to the American Bottoms Regional Treatment Facility.

Alternatives 5 and 6 include the five common technologies listed above plus a remedy component that provides source treatment in the areas of residual DNAPL in the MHU and DHU at Sites G, H, and I South. The source treatment technologies in these alternatives are pulsed air biosparging (Alternative 5) and continuous air sparging with soil vapor extraction (Alternative 6). Both technologies would involve installation of a grid of sparge wells screened in the MHU and DHU and vent wells screened in the fill and waste and upper few feet of the MHU. Vapors recovered from the pulsed air biosparging (PABS) system would be captured by passive vent wells and treated using drums of granular activated carbon. Vapors from the continuous air sparging system would be captured by an SVE system of closely spaced wells and treated using oxidation or granular activated carbon, depending on the vapor concentrations. A pilot test would be required for either alternative prior to full-scale implementation. The pilot test would be conducted to determine operational parameters, measure performance characteristics, and verify the optimal well spacing. Alternatives 5 and 6 include soil or crushed rock covers instead of RCRA Subtitle C caps.

Alternative 7 includes the same components as Alternative 3 plus hydraulic containment of the plume downgradient of Sites G, H, and I South. The hydraulic containment remedy component would involve installation and operation of groundwater extraction wells located at the downgradient edge of the Sauget Area 1 study area. As discussed in Section 12.3, hydraulic containment of the Sauget Area 1 plumes at the downgradient edge of the Sauget Area 1 study area would require installation of five groundwater extraction wells operating at 350 to 400 gpm

each, with a total system flowrate of 1850 gpm. Extracted groundwater would be routed to the Sauget Physical/Chemical Wastewater Treatment Plant (the "PChem Plant") for preliminary and primary treatment and then to the American Bottoms Regional Wastewater Treatment Facility (the "American Bottoms Plant") for secondary treatment.

Alternative 8 includes the same components as Alternative 7 plus groundwater removal at the residual DNAPL areas at Sites G, H, and I South as a source removal / treatment component. This alternative would involve installation and operation of groundwater extraction wells located at the residual DNAPL source areas at Sites G, H, and I South and extraction wells located along the downgradient boundary edge of the Sauget Area 1 study area. For remedy screening purposes, it is assumed that a total of 8 high-capacity extraction wells would be installed, including three in the source areas and five along the downgradient edge of Sauget Area 1 and that the system would be operated at a total flowrate of 2,800 gpm, which is 50% higher than the flowrate for Alternative 7. Recovered groundwater would be routed to the PChem Plant for preliminary and primary treatment and then to the American Bottoms Plant for secondary treatment.

Alternative 9 includes the five common technologies listed above plus excavation and off-site disposal of wastes and fill materials at Sites G, H, I South, and L, with a total loose volume of approximately 827,000 cubic yards. The excavated areas would be backfilled with clean imported fill soil.

12.2 Discussion Regarding Monitored Natural Attenuation and Point of Compliance Monitoring Along the River

12.2.1 Evaluation of Monitored Natural Attenuation

Mass removal by natural attenuation in 2006 in the Sauget Area 1 plumes can be estimated based on the calculated mass flux in the MHU and DHU at the Site I source area as discussed in Section 6.2.1.3 and modeled mass flux (also called mass discharge) calculations using the groundwater fate and transport model, as discussed in Section 6.5.1. The results are summarized in the table below, which was presented in Section 6.5.2.

Calculated Mass Removal by Natural Attenuation for the Sauget Area 1 Plumes in 2006	
	Mass Flux (kg/yr)
A: Calculated Mass Flux from Site I Source Area *(GSI, 2005)*	2,780
B: Modeled Mass Flux To River in 2006 with GMCS On	94
C: Modeled Mass Flux Removed by GMCS in 2006	142
Estimated Mass Removal by Natural Attenuation in 2006 (= A - B - C)	2,554

As shown on the table above, in 2006 there was an estimated 2780 kg/yr of mass flux of COCs leaving the Sauget Area 1 source areas and an estimated 2554 kg/yr was removed by natural attenuation processes before reaching the area near the Mississippi River. Based on these estimates, natural attenuation processes cause an estimated 92% reduction in the mass flux of COCs in groundwater between the Sauget Area 1 source areas and the Mississippi River.

There is considerable uncertainty in these mass flux estimates. The key assumptions used in developing the groundwater flow and transport model are discussed in Section 6.4, in the groundwater modeling report (GSI, 2008b) and in the model update memorandum (GSI, 2012).

Section 6.3 presents a general discussion of natural attenuation processes and the potential for the biodegradation of the Sauget Area 1 indicator constituents. The Sauget Area 1 indicator

constituents that are biodegradable under aerobic conditions include chlorobenzene, 1,4-dichlorbenzene, benzene, vinyl chloride, 4-chloroaniline, and 2,4-D.

Anaerobic biodegradation of 1,4-dichlorobenzene is well documented. Chlorobenzene and benzene are biodegradable in anaerobic environments, but the reaction rates are much slower than in aerobic environments. Anaerobic biodegradation of 2,4-D has not been extensively studied but is known to occur. Anaerobic degradation of 4-chloroaniline is limited.

Tetrachloethene and trichloroethene undergo reductive dechlorination in anaerobic environments but tend to be recalcitrant in aerobic environments. Cis-1,2-DCE is also relatively recalcitrant in aerobic environments.

The report in Appendix G, "Evaluation of Monitored Natural Attenuation," provides a site-specific evaluation of MNA for Sauget Area 1 based on existing COC and geochemical data, groundwater fate and transport modeling, and mass flux calculations.

Source remediation technologies that introduce air into the Alluvial Aquifer (i.e., air sparging or pulsed air biosparging) would remove volatile constituents but would also increase the concentration of dissolved oxygen in the aquifer and facilitate aerobic biodegradation of the indicator constituents that can degrade aerobically.

12.2.2 Conceptual Groundwater Monitoring Program for MNA

An MNA response action would require installation and monitoring of a network of wells screened in the SHU, MHU, and DHU at the Sauget Area 1 source areas and at upgradient and downgradient locations. The number and location of wells in the groundwater monitoring network would be established during the remedial design phase. Section 13.3.1 and Appendix G discuss a conceptual groundwater monitoring program for evaluating the performance of MNA at Sauget Area 1.

12.2.3 Conceptual Point of Compliance Locations along the River

Based on Illinois ARARs for landfill closures, point of compliance (POC) wells for Sauget Area 1 are needed along the River, since Illinois Class I groundwater standards will eventually need to be met in that area. The POC wells would also be used as sentinel wells to monitor the concentrations of site constituents discharging to the River.

Groundwater fate and transport modeling results indicate that the mass flux from the Sauget Area 1 sources to the Mississippi River is a relatively small percentage of the mass flux to the River from non-Sauget Area 1 sources. As discussed in Section 6.5.1, modeled mass flux results indicate that for all seven modeled COCs, the modeled mass flux to the Mississippi River from the Sauget Area 1 plumes in 2006 was 236 kg/year with the GMCS off and 94 kg/year with the GMCS on. To the extent that it occurs, the mass flux to the River from the Sauget Area 1 plumes would occur north of the barrier wall. Plumes originating from other sources (i.e., Sauget Area 2 and the Krummrich facility) also impact the groundwater north of the barrier wall along the River.

The number and location of POC wells along the River for the Sauget Area 1 plumes would be established during the remedial design phase. Conceptually, monitoring wells BSA-MW-5D and CPA-MW-5D could be suitable locations for POC wells for the Sauget Area 1 plumes (see well locations on Figure 10-5). These wells, which are located 1200 feet north and 2400 feet north of the barrier wall, respectively, are already included in the groundwater monitoring program for the Krummrich facility.

Appendix B provides a tabulation of all available groundwater monitoring data for BSA-MW-5D and CPA-MW-5D. Appendix B also includes a summary table that lists all VOCs and SVOCs that have been detected in these wells, the mean concentrations in each well, the Illinois Class I groundwater standards or other groundwater screening levels, and the aquatic life criteria for surface water.

12.3 Evaluation of Hydraulic Containment for Sauget Area 1 Plumes

Alternative 7 includes groundwater extraction at the downgradient boundary of the Sauget Area 1 study area for hydraulic containment of the Sauget Area 1 plumes. To evaluate this alternative, groundwater pumping simulations were performed using the regional groundwater flow and transport model to evaluate the number of extraction wells and flow rate required to cut off the Sauget Area 1 plumes at the downgradient boundary of the Sauget Area 1 study area. The chlorobenzene plume, which is the largest of the Sauget Area 1 plumes, was used in the analysis. The groundwater pumping simulations are documented in Appendix H.

The modeled extraction wells were assumed to begin operation in 2015. Simulations were initially conducted using extraction wells located immediately east of Illinois Route 3. However, groundwater extraction from wells along Route 3 was unable to achieve hydraulic containment of the Sauget Area 1 chlorobenzene plume. Simulations were then conducted using wells located along the boundary between the Sauget Area 1 study area and the W.G. Krummrich facility. Model simulation results for wells along that boundary indicate that hydraulic containment of the Sauget Area 1 plumes could be achieved using five groundwater extraction wells operating at a combined flowrate of 1850 gpm. The locations of the modeled extraction wells are shown on Figure 1 in Appendix H. The modeled extraction wells would capture the portion of the Sauget Area 1 plume that is located between the residual DNAPL source areas at Sites G, H, and I South and the southern boundary of the W.G. Krummrich facility.

The modeled extraction wells would cut off the portion of the Sauget Area 1 plume located between the modeled extraction wells and the River. If only Sauget Area 1 sources were active, then concentrations in this portion of the Sauget Area 1 plume would attenuate to MCLs relatively quickly, assuming that the modeled extraction wells continued operating. However, the Sauget Area 1 sources are not the only active sources. There are source areas at the Krummrich facility and at Sauget Area 2 that would result in continued impacts to groundwater in the area between the modeled extraction wells and the River.

The groundwater extraction system would have a high annual cost and would have to continue operating for hundreds of years to maintain hydraulic containment of the groundwater between the residual DNAPL source areas and the line of modeled extraction wells along the southern boundary of the W.G. Krummrich facility. The groundwater treatment fees would include an estimated $1.50 per 1,000 gallons at the PChem Plant and an estimated $3.74 per 1,000 gallons at the American Bottoms Plant, for a total treatment fee of approximately $5.24 per 1,000 gallons. Based on a flowrate of 1850 gpm, the annual cost for water treatment would be approximately $5.1 million per year. Overall, the O&M cost for Alternative 7 would be approximately **$5.5 million per year.**

The major capital costs for Alternative 7 include installation of groundwater extraction wells and pumps, installation of a pipeline to route the water to the sewer line, installation of caps at Sites G, H, I South, and L, relocation of phone, water, and fuel lines, and installation of monitoring wells. Appendix H includes a worksheet that lists all estimated capital costs, O&M costs (including treatment fees), and a calculation of present value costs. The estimated present value cost for Alternative 7 for 30 years of operation is **$78.9 million.**

Alternative 8 is similar to Alternative 7 but includes three additional extraction wells at Sites G, H, and I South, and an overall flowrate of 2,800 gpm. Based on the treatment fee of $5.24 per 1,000 gallons, the annual cost for water treatment would be approximately $7.7 million per year. Overall, the O&M cost for Alternative 8 would be approximately **$8.2 million per year.**

Appendix H includes a worksheet for Alternative 8 that lists all estimated capital costs, O&M costs (including treatment fees), and a calculation of present value costs. The estimated present value cost for Alternative 8 for 30 years of operation is **$113 million.**

12.4 Discussion Regarding Time to Clean Estimates

The technical memorandum in Appendix D provides a time to clean evaluation for the MHU and DHU for two key COCs, chlorobenzene and 1,4-dichlorobenzene. The regional groundwater flow and transport model was used to develop the time to clean estimates for a hypothetical monitoring well located 2300 ft downgradient of Site I South, approximately halfway between the Sauget Area 1 sources and the Mississippi River. Time to clean (i.e., time to reach the MCLs) was estimated for four scenarios: i) MNA alone; ii) 50% source mass reduction in year 2015 plus MNA; iii) 75% source mass reduction in 2015 plus MNA; iv) 90% source mass reduction in 2015 plus MNA. Source mass reduction could potentially be achieved by implementing a source treatment technology such as pulsed air biosparging (Alternative 5) or air sparging with SVE (Alternative 6). Source mass reduction could also be achieved by groundwater extraction in the Sauget Area 1 source areas and hydraulic containment at the downgradient boundary of the Sauget Area 1 study area (Alternative 8).

Calculated Results for Time to Clean in Years after 2015
(i.e., after date of source remediation)

	MNA Only (years after 2015)	MNA with 50% Source Reduction (years after 2015)	MNA with 75% Source Reduction (years after 2015)	MNA with 90% Source Reduction (years after 2015)
Chlorobenzene				
MHU	292	252	215	159
DHU	279	239	202	146
1,4-Dichlorobenzene				
MHU	169	127	85	30
DHU	172	130	88	33

There is considerable uncertainty in these calculated results. The following table shows the calculated results and the estimated range when an uncertainty factor of +/- 2 is applied for chlorobenzene in the MHU, which has the longest time to clean in the table above.

Time to Clean Estimates for Chlorobenzene in MHU

	Calculated Result (years from 2015)	Estimated Range (years from 2015)
MNA only	290	150-580
50% source mass reduction plus MNA	250	130-500
75% source mass reduction plus MNA	220	110-440
90% source mass reduction plus MNA	160	80-320

1) Estimates are rounded to nearest ten years.

As indicated on the table above, it will likely require on the order of >150 years to reach the MCL for chlorobenzene at the hypothetical monitoring well in the MHU even if source mass reduction is achieved by implementing a treatment technology.

Two Sauget Area 1 indicator constituents, benzene and 4-chloroaniline, were detected at concentrations exceeding regulatory levels in groundwater samples collected upgradient of the Sauget Area 1 source areas. As noted in Section 3.2.6.1, benzene was detected at a concentration of 6.55 ppb in the DHU upgradient of Sites G and H. As shown on Figures 5-22 and 5-43, benzene and 4-chloroaniline were detected at concentrations of 230 ppb and 4700 ppb, respectively, in the MHU upgradient of Site I South. These upgradient exceedances for benzene and 4-chloroaniline are not associated with Sauget Area 1 sources but contribute to the Sauget Area 1 plumes and could potentially result in increased time to achieve compliance with MCLs and Class I standards for benzene and 4-chloroaniline.

12.5 Discussion Regarding Why MCLs Can't Be Achieved within 50 to 100 Years

The time to clean estimates indicate that a 30-year time to clean is not feasible for the Sauget Area 1 plume. Monitored natural attenuation will ultimately restore groundwater quality downgradient of the Sauget Area 1 sites, but the time to achieve compliance with MCLs and Class I standards is in the range of several hundred years even if source mass reduction is achieved by implementing a treatment technology such as pulsed air biosparging (Alternative 5), air sparging with SVE (Alternative 6), or groundwater extraction in the source areas plus hydraulic containment (Alternative 8).

Source area treatments such as sparging (Alternative 5 and Alternative 6) may be capable of reducing the source area contaminant mass by an order of magnitude under optimal conditions. This 90% value was the upper bound for source mass reduction that was used in the time to clean estimates. While removing 90% of the mass may be accompanied by a similar (i.e., 90%) reduction in the groundwater concentration immediately downgradient of the source area, it does not result in a similar reduction in the time to clean, as summarized in Section 12.4. These results clearly demonstrate that the mass flux remaining following source treatment is still sufficiently high to sustain groundwater concentrations above the target criteria at Sauget Area 1 for over a hundred years.

Using groundwater extraction wells within the source areas (Alternative 8) may be able to significantly reduce mass flux from the source areas. However, this is only effective when the groundwater extraction system is operating, and it is unlikely that all mass would be removed during the conceptual 30-year operating period. The time to clean estimates demonstrate that the remaining mass would be sufficient to sustain groundwater concentrations above the target criteria for over a hundred years. Further, this alternative does not address the mass that has already migrated away from the source areas, which would not be removed until reaching the hydraulic contaminant wells at the downgradient boundary of the Sauget Area 1 study area. As with the source area extraction wells, these downgradient hydraulic containment wells are only effective when operating. As containment wells, they will not accelerate the time to clean the source areas or the portion of the plume located between the source areas and the containment wells. Furthermore, Alternative 8 has a very high cost. The estimated present value cost for Alternative 8 for 30 years of operation is $113 million.

12.6 Screening of Remedial Alternatives

The nine potential remedial alternatives presented above were screened on the basis of effectiveness, implementability, and relative cost, which were the same criteria used to screen out remedial technologies in Section 11. Table 12-1 documents the screening process for the nine alternatives.

Alternatives 1 through 5 are retained for detailed evaluation and are described in more detail in Section 13.0. Alternatives 6 through 9 were screened out from further consideration.

Alternative 6 (soil or crushed rock covers and air sparging with SVE) was screened out because it would have similar performance compared to Alternative 5 (PABS) but much higher cost and energy usage. The technical memorandum in Appendix C presents a planning-level comparison of the performance and cost of air sparging and PABS. The cost would be higher for Alternative 6 compared to Alternative 5 due to the need for continuous operation of the air sparging system as well as installation and operation of numerous closely spaced SVE wells and the associated vapor treatment system. The energy usage would be higher for Alternative 6 compared to Alternative 5 because the air compressors would be in continuous operation, whereas in Alternative 5 the compressors would be operated intermittently for pulsed sparging.

Monitoring and control of emissions would be important with either Alternative 6 or Alternative 5 and would be investigated during a pilot test. However, Alternative 6, which involves continuous sparging, would have a greater potential for unacceptable risks to indoor workers in nearby buildings compared to Alternative 5. The nearby buildings and their approximate distances from the closest probable locations for sparge well pairs include: Sauget Village Hall, 200 ft southeast; Cerro Flow Products, 150 ft west; Wiese Engineering building, 400 ft west; and Metro Construction Equipment, 150 ft east (relative to Site G).

As noted above, Alternative 5 is retained for detailed evaluation in Section 13 and Alternative 6 is screened out.

Alternatives 7 and 8 were screened out because Alternative 5 achieves source zone mass reduction at far less cost and does not require consumption of large quantities of electrical power and other resources to pump and treat groundwater for hundreds of years as would be required for Alternatives 7 and 8.

Alternative 7 (RCRA caps and hydraulic containment) includes 5 high-capacity extraction wells with a total flowrate of 1850 gpm. The estimated O&M cost for Alternative 7 is $5.5 million per year, and the estimated present value cost for Alternative 7, including capital costs and 30 years of operation, is $78.9 million.

Alternative 8 (RCRA caps, groundwater extraction in source areas, and hydraulic containment) includes 8 high-capacity extraction wells with a total flowrate of 2800 gpm. The estimated O&M cost for Alternative 8 is $8.2 million per year, and the estimated present value cost for Alternative 8, including capital costs and 30 years of operation, is $113 million.

Alternative 9 would involve excavation and off-site disposal of approximately 827,000 loose cubic yards of waste and affected soils from Sites G, H, I South, and L. This alternative was screened out because it would be very expensive and difficult to implement and would involve significant short-terms risks to workers and the community during implementation.

13.0 DETAILED EVALUATION OF ALTERNATIVES

This section presents the detailed evaluation of remedial action alternatives developed for Sauget Area 1 sites. The alternatives developed for evaluation are as follows:

Alternative	Components
Alternative 1	- No action
Alternative 2	- Institutional Controls - Containment Cell Operation and Maintenance (O&M) - Monitored Natural Attenuation (MNA)
Alternative 3	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L
Alternative 4	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L - Leachate Control at Sites G, H, and I South
Alternative 5	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Soil or Crushed Rock Covers at Sites G, H, I South and L - Pulsed Air Biosparging at Residual DNAPL Areas at Sites G, H, and I South

The alternatives are evaluated on the basis of criteria outlined in the USEPA document "Guidance for Conducting Remedial Investigations and Feasibility Studies" (USEPA, 1988). The assessment criteria are listed and described in Section 13.1. Alternatives 1 through 5 are evaluated in Sections 13.2 through 13.6. A comparative analysis of the five alternatives is provided in Section 13.7.

13.1 CRITERIA FOR DETAILED EVALUATION OF THE ALTERNATIVES

Several evaluation criteria have been developed to support assessment of the various remedial alternatives and to support final selection of remedial actions. The evaluation criteria are outlined in FS guidance (USEPA, 1988) and include the following:

Threshold Criteria

Threshold criteria are the requirements that each alternative must meet in order to be eligible for selection. The two threshold criteria include:

- Overall protection of human health and the environment
- Compliance with ARARs

Balancing Criteria

Balancing criteria are used to compare relative effectiveness between alternatives so that the strengths and weaknesses of each alternative can be evaluated. The five balancing criteria include:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria

The modifying criteria are State acceptance and community acceptance of the remedial option. USEPA will consider and address both State and community acceptance of an alternative when making a recommendation and in the final selection of a remedy. Consequently, these criteria are not addressed in this report.

The two threshold criteria and five balancing criteria are briefly described in the following paragraphs.

Overall Protection of Human Health and the Environment - The analysis of each alternative with respect to overall protection of human health and the environment evaluates how the alternative reduces or eliminates short-term and long-term risk by controlling or eliminating exposures to COCs at concentrations that may produce harmful effects. Concentrations of COCs must be controlled at or below levels resulting in the excess risk. Appropriate remedies control, eliminate or reduce risks posed by each exposure pathway through treatment, engineering or institutional controls.

Compliance with ARARs - This assessment criterion is used to determine whether each alternative will meet all of its federal and state ARARs, which are defined as the laws, rules, regulations, or standards that need to be considered during design or implementation of a remedy. Table 13-1 presents the classification of the ARARs and provides a demonstration of compliance as part of the detailed evaluation of remedial action alternatives.

Long-Term Effectiveness and Permanence - Long-term effectiveness and permanence are evaluated with regard to i) the magnitude of residual risk remaining after source containment and/or treatment are complete; and ii) the adequacy and reliability of controls, if any, that are used to manage treatment residuals or untreated wastes that remain at the site. The magnitude of residual risk of the remaining waste upon completion of remedial activities is based upon the persistence, toxicity, mobility of the residuals and their propensity to bio-accumulate. Adequacy and reliability of controls are considered under this criterion. Alternatives that address long-term effectiveness are those that maintain protection of human health and the environment after response objectives have been met.

Reduction of Toxicity, Mobility, or Volume through Treatment - The statutory preference is to select a remedy that uses treatment to permanently and significantly reduce the toxicity, mobility, or volume of the COCs. The detailed evaluation of the alternatives against this criterion assesses the performance of each alternative in achieving these goals. Relevant factors in this criterion include review of the specific treatment process the remedy will employ and the materials it will treat; the amount of hazardous materials that will be destroyed or treated, including how principal threats will be addressed; the degree of expected reduction in toxicity, mobility, or volume; and the degree to which treatment is used as a principal element of the alternative.

Short-Term Effectiveness - The short-term effectiveness criterion addresses the effects to human health and the environment that the alternative will have during construction and

implementation. Some factors considered in this evaluation are protection of workers, risks to the community, environmental impacts, and time until RAOs are achieved.

Implementability - The analysis of implementability deals with the technical and administrative feasibility of implementing the alternatives, and the availability of the services and materials needed for implementing the alternative. Technical feasibility includes such issues as the technical difficulties and unknowns associated with construction and operation of the components of the alternatives; the likelihood of technical problems associated with implementation that will lead to schedule delays; and the ability to monitor the effectiveness of the remedy. Administrative feasibility pertains to obtaining permits or regulatory approval from other offices or agencies.

Cost - The cost analysis involves development of planning-level cost estimates for each alternative to provide an accuracy of minus 30% to plus 50%. The cost estimates for the Sauget Area 1 alternatives are presented in Appendix F. The estimates were developed using USEPA guidance (USEPA, 2000), vendor quotations, RACER cost estimating software, cost information from prior projects, and engineering judgment. Finally, a discount rate was used in calculating present worth costs for the Sauget Area 1 alternatives.

The cost estimates include capital and annual O&M costs. Capital costs include direct costs for construction of remedy components as well as indirect costs such as remedial design, project management, overhead, and implementation of institutional controls. Annual O&M costs include environmental sampling and testing and the O&M of any remediation equipment or systems that remain in operation after remedy construction is complete. A contingency was applied to capital costs and annual O&M costs based on the degree of uncertainty in the scope of work (due to incomplete design) and to account for construction contingency.

Sections 13.2 through 13.6 present the description and detailed evaluation of the five alternatives for the criteria listed above.

13.2 DESCRIPTION AND DETAILED EVALUATION OF ALTERNATIVE 1

Alternative 1 is a No Action alternative that is included for comparative purposes. It does not include any additional investigation, remediation, or monitoring.

Overall Protection of Human Health and the Environment - The No Action alternative does not include any measures to prevent potential exposures to affected soils or waste and therefore does not meet the RAOs. This alternative is not protective of human health and the environment.

Compliance with ARARs - This alternative does not satisfy ARARs.

Long-Term Effectiveness and Permanence - This alternative is not effective in the long term at meeting the RAOs.

Reduction of Toxicity, Mobility or Volume through Treatment - This alternative does not accomplish any reduction of toxicity, mobility, or volume of the COCs through treatment. Some reductions of COCs in groundwater will occur due to natural attenuation processes, but this alternative does not include any monitoring of plume conditions over time.

Short-Term Effectiveness - This alternative will not have any effects to human health and the environment or risks to the community during implementation because no technologies are implemented.

Implementability and Cost - This alternative is implementable since no remedial actions are required for this alternative. There is no cost associated with this alternative.

13.3 DESCRIPTION AND DETAILED EVALUATION OF ALTERNATIVE 2

13.3.1 Description of Alternative 2

Alternative 2 includes the following components:

- Institutional Controls
- Containment Cell O&M
- Monitored Natural Attenuation

Institutional Controls – Institutional controls, which are included as a remedy component in Alternatives 2, 3, 4, and 5, are designed to control access to the site, manage construction or other intrusive activities that may disturb soil or waste, and minimize potential exposure to COCs. Institutional controls that could be implemented include deed restrictions, zoning restrictions, and access restrictions such as fences or warning signs. A detailed description of the institutional controls for Sauget Area 1 will be developed in an Institutional Controls Implementation Plan to be prepared during the remedial design process.

As discussed in Section 10.3, Sites G, H, I South, and L are carried forward for active remediation in the FS, and all are considered as candidates for institutional controls. As discussed in Section 10.4, remediation of Dead Creek Segments A through F and the Borrow Pit Lake has been completed and, therefore, they are not carried forward for active remediation in the FS. The PRPs plan to voluntarily place institutional controls on Dead Creek Segments A and B.

There are municipal ordinances in place prohibiting use of groundwater as potable water in the Village of Sauget and the Village of Cahokia. Existing access restrictions at Sauget Area 1 include fencing and posting at Site G, at Site I (including Creek Segment A), and at Creek Segment B.

Additional access restrictions that could be established include installation of fences at Site H and Site L and a plan for the inspection and maintenance of the proposed fences at Site H and Site L and the existing fences at Site G and Site I (i.e., the fence at the Cerro Flow Products facility). Additional institutional controls that could be applied at Sites G, H, I South and L include the following: i) filing of deed notices or restrictions to limit future property uses to activities consistent with final closure measures, such as prohibiting disturbance of fill areas and prohibiting construction of new buildings on the fill areas without vapor controls; ii) filing of deed notices or restrictions to specify commercial/industrial land use; and iii) posting of information to describe required personal protective equipment (PPE) and monitoring for construction workers during any future excavation activities that may be necessary.

Containment Cell O&M - Containment Cell O&M is included in Alternatives 2, 3, 4, and 5. The existing Containment Cell is a RCRA and TSCA-compliant containment cell that was constructed in 2001 and is located immediately west of Creek Segment B and south of Site G. The materials that were placed in the Containment Cell included sediments and creek-bottom soils excavated from Dead Creek and the Borrow Pit Lake. There are currently plans to add PCB-affected soils (excavated at the W.G. Krummrich facility) to utilize unused Containment Cell capacity.

The required O&M of the Containment Cell is detailed in the Operation and Maintenance Plan (Golder, 2008). The O&M activities include the following: i) regular inspections of the cap; ii) sampling of primary and secondary leachate with analysis for pH, specific conductance, PCBs, and chlorinated VOCs; iii) collection and treatment of leachate; iv) quarterly sampling of treatment system effluent with analysis for VOCs, SVOCs, PCBs, and metals; v) quarterly sampling of

selected monitoring wells with analysis for VOCs, PCBs, and metals; and vi) maintenance and repairs as needed (e.g., replacement or repair of pumps and mowing, fertilizing and re-seeding).

Monitored Natural Attenuation (MNA) - The MNA component is included in Alternatives 2, 3, 4, and 5. Natural attenuation refers to natural subsurface processes, such as advection, dispersion, sorption, and biodegradation, which result in reductions in the concentration and/or mass of COCs dissolved in groundwater. Natural attenuation processes are typically occurring at all sites, but to varying degrees of effectiveness depending on the types and concentrations of COCs present and the physical, chemical, and biological characteristics of the soil and groundwater.

Demonstrations of the effectiveness of natural attenuation typically involve long-term groundwater sampling and testing to evaluate COC concentrations over time and to determine if geochemical conditions are suitable for biodegradation of COCs. Microbiological data is also sometimes collected as evidence to support the occurrence of biodegradation. Sections 6.3 and 12.2.1 summarize available information regarding biodegradation of the indicator constituents in groundwater at Sauget Area 1, and the report in Appendix G provides a more detailed evaluation of MNA at Sauget Area 1.

Implementation of MNA at Sauget Area 1 would involve installation of a monitoring well network and periodic groundwater sampling and testing for VOCs, SVOCs, and selected geochemical parameters. The number and location of wells in the groundwater monitoring network will be established during the remedial design phase. The conceptual monitoring well network is shown on Figure 13-1 and includes well clusters at thirteen locations. Locations 1 through 8, which are upgradient or immediately downgradient of the fill areas, include wells screened in the SHU, MHU, and DHU. Locations 9 through 13, which are farther downgradient of the source areas, include wells screened in the MHU and DHU but not the SHU.

In addition, as discussed in Section 12.2.3, point of compliance (POC) wells will be placed along the Mississippi River to satisfy Illinois ARARs for landfill closures. The number and location of POC wells along the River for the Sauget Area 1 plumes would be established during the remedial design phase. Conceptually, monitoring wells BSA-MW-5D and CPA-MW-5D appear to be suitable locations for POC wells for the Sauget Area 1 plumes (see Figure 10-5). These wells are already included in the groundwater monitoring program for the Krummrich facility.

13.3.2 Detailed Evaluation of Alternative 2

Overall Protection of Human Health and the Environment - Alternative 2 does not include engineered covers (e.g., RCRA caps, soil covers, or crushed rock covers) or another remedy component to prevent potential exposure to COCs in surface soil, subsurface soil, or waste at Sites G, H, I South, and L. Therefore, Alternative 2 does not address the RAOs for surface soil, subsurface soil, waste, and/or leachate and does not provide overall long-term protection of human health and the environment for several relevant exposure pathways. Institutional controls alone are not considered sufficient to prevent potential exposure to soils or wastes at the sites with the possible exception of Site I South, which is located at an active industrial facility and has very little potential for the general public to be exposed to COCs.

Alternative 2 achieves the soil vapor RAO that calls for preventing unacceptable risks to indoor workers resulting from exposure to COCs found in soil vapor at the source areas. Results of the vapor intrusion HHRA summarized in Section 8 indicate that concentrations of COCs found in soil vapor at the source areas do not pose an unacceptable risk to human receptors in existing buildings located at or near the source areas. Alternative 2 includes institutional controls that will prevent construction of new buildings on the Sauget Area 1 source areas without vapor controls.
Alternative 2 meets the groundwater RAO that calls for preventing the ingestion of groundwater with COC concentrations exceeding MCLs and Class I standards. Groundwater is not used as a

source of drinking water in the area. There are some private wells (see Figure 2-27) that may be used for outdoor household activities, but none are located within or downgradient of the Sauget Area 1 groundwater plumes. The existing ordinances in the Villages of Sauget and Cahokia prohibiting the use of groundwater as a potable water source provide appropriate protection of human health.

Alternative 2 meets the groundwater RAO that calls for restoration of groundwater quality to MCLs and Illinois Class I drinking water standards, to the extent practicable. A 30-year time to clean is not feasible for the Sauget Area 1 plume. Based on time to clean calculations in Appendix D, groundwater quality will ultimately be restored through MNA processes alone, although the time to achieve compliance with MCLs and Class I standards downgradient of the Sauget Area 1 sites is in the range of several hundred years.

Alternative 2 addresses the groundwater RAO that requires preventing groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in an unacceptable, adverse ecological impact to the River. As discussed in Section 6.5, the updated regional groundwater flow and transport model (GSI, 2012) was used to quantify the mass flux to the Mississippi River from the Sauget Area 1 plumes with the GMCS off and with the GMCS on for seven COCs (i.e., chlorobenzene; 1,4-dichlorobenzene; PCE; TCE; 1,2-DCE; vinyl chloride; and 2,4-D). Modeled mass flux results for the year 2020 and beyond indicate that, for all 7 COCs, the GMCS will capture approximately 73% of the modeled mass flux from Sauget Area 1 that reaches the area near the Mississippi River. To the extent that it occurs, the mass flux to the River from the Sauget Area 1 plumes would be located north of the barrier wall in an area that is within the plume areas from other sources, including Sauget Area 2 and the Krummrich plant. Groundwater concentrations along the River north of the barrier wall can be monitored for the Sauget Area 1 COCs using two conceptual point-of-compliance well locations discussed in Section 12.2.3.

Compliance with ARARs – The ARARs identified for the Sauget Area 1 remedial alternatives are listed in Table 13-1. The table also provides the classification for each ARAR, the rationale for the classification, and a discussion regarding compliance with the ARAR.

ARARs that govern the closure and post-closure requirements related to landfills include 35 IAC 807, which contains the standards for solid waste landfills, and 35 IAC 724, which contains the standards for owners and operators of hazardous waste treatment, storage and disposal facilities. Alternative 2 does not satisfy identified relevant and appropriate ARARs for soil and waste due to the absence of an engineered cover or other technology to prevent potential exposure to affected soils and wastes present in the fill areas at Sites G, H, I South, and L.

Alternative 2 satisfies ARARs relating to groundwater quality standards. One of the ARARs relating to groundwater quality is in 35 IAC 620.405, which prohibits a person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedance of groundwater quality standards. Another ARAR related to groundwater quality standards is 35 IAC 620.410, which contains the Illinois Class 1 groundwater standards. Alternative 2 meets the requirements of 35 IAC 620.405 and 35 IAC 620.410. At the end of the remedial action for Alternative 2 there will not be releases of COCs to groundwater that would result in exceedances of groundwater quality standards, and the Class I groundwater standards would be met by Monitored Natural Attenuation (MNA).

Alternative 2 also satisfies various ARARs that address the requirements for groundwater monitoring by owners and operators of hazardous waste disposal facilities. These ARARs include 35 IAC 724.191 through 35 IAC 724.197 and 35 IAC 724.199. The substantive requirements of these ARARs will be met for Alternative 2 by the MNA groundwater monitoring program and by groundwater monitoring of point-of-compliance wells located along the Mississippi River.

Long-Term Effectiveness and Permanence - Alternative 2 does not address the RAOs for soil waste, and/or leachate at Sites G, H, I South, and L and does not reduce the risks to potential human receptors at those areas. Institutional controls alone are not considered sufficient to prevent potential exposure to soils or wastes at any of the sites with the possible exception of Site I South, which is located at an active industrial facility and has very little potential for the general public to be exposed to COCs.

Alternative 2 addresses the three RAOs for groundwater, although the time to achieve MCLs or Illinois Class I standards will likely be several hundred years.

Reduction of Toxicity, Mobility or Volume through Treatment - Alternative 2 does not include treatment of soil, waste, or leachate within the fill areas and does not include treatment of residual DNAPL within the MHU and DHU or pooled DNAPL at well BR-I. In the long term, Alternative 2 reduces the toxicity and volume of the COCs in groundwater by monitored natural attenuation.

Short-Term Effectiveness - Short-term risks associated with implementation of Alternative 2 are minimal. Implementation of Alternative 2 involves installation and sampling of monitoring wells and performance of routine O&M activities at the Containment Cell. These actions will not involve any significant risks to the community. The potential risks to site workers (i.e., drilling crew and sampling technicians) can be managed by requiring adequate PPE and routine safety procedures that will be specified in a health and safety plan to be developed during remedial design.

Implementability - Alternative 2 is readily implementable. Institutional controls are common and easily implementable. Construction of monitoring wells and performance of Containment Cell O&M activities are implementable at the site using locally available resources and equipment. Monitoring the performance of these technologies is technically feasible.

Cost - The estimated present value cost for Alternative 2 is **$3.1 million.** Table F-2 presents a summary of capital costs, O&M costs, and a calculation of present value costs for Alternative 2.

13.4 DESCRIPTION AND DETAILED EVALUATION OF ALTERNATIVE 3

13.4.1 Description of Alternative 3

Alternative 3 includes the following components:

- Institutional Controls
- Containment Cell O&M
- Monitored Natural Attenuation
- Utility relocation
- Pooled DNAPL Recovery at BR-I
- Capping Site G, Site H, Site I South, and Site L

Institutional controls, Containment Cell O&M, and monitored natural attenuation were described under Alternative 2 in Section 13.3. The additional components of Alternative 3 are described below.

Utility Relocation - This component is in Alternatives 3, 4, and 5 and includes the following: i) relocation of a water supply line that runs through Site I South to the Sauget Village Hall; ii) relocation of a 14-inch diameter fuel pipeline that is located in the utility corridor along Queeny Avenue adjacent to Site H; and iii) relocation of a buried telephone cable located in the utility

corridor along Queeny Avenue adjacent to Site H. The replacement water line and fuel pipeline will be placed along alternative corridors routed around the fill areas. The replacement telephone line will either be placed along an alternative corridor routed around the fill areas or installed on overhead poles.

Relocation of these utilities will prevent utility workers from potentially coming into contact with wastes in Site I South and the principal threat waste that was encountered in the utility corridor adjacent to Site H. Relocation of the utilities will also prevent future disturbance of the engineered caps to be installed at Site I South and Site H. Preventing disturbance of the engineered caps is required to meet ARARs.

Pooled DNAPL Recovery at BR-I - Pooled DNAPL recovery at BR-I is included in Alternatives 3, 4, and 5 and has been performed on an every-other-week schedule since November 2008. BR-I is screened in bedrock and has a low yield (Figure 13-2). It is equipped with an electric-powered Blackhawk piston pump and control panel. A 500-gallon dual-wall poly tank is located adjacent to BR-I for storage of produced fluids. DNAPL is recovered by activating the piston pump and evacuating DNAPL and water until the pump discharge rate slows substantially, indicating that the well has effectively gone dry. Electric power is not available at BR-I, so a portable generator is used to activate the pump. A two-week period of more frequent DNAPL pumping conducted in June 2009 indicated that a DNAPL recovery rate of up to 2 to 3 gallons per day could possibly be achieved, at least initially.

Implementation of this remedy component will involve bringing power to BR-I, programming the pump controller for automated operation, and obtaining a larger tank for storage of the recovered fluids. Initially, the pump will be operated once per day. When the rate of DNAPL recovery has diminished sufficiently that daily operation appears to have limited effectiveness, the pump will be operated twice per week. When the rate of DNAPL recovery has diminished sufficiently, the pump will be activated once per week. When recovery using the weekly schedule has reached its limit of effectiveness, the DNAPL removal will be conducted once per month. When the limit of practicable recovery has been reached, the DNAPL recovery will be discontinued. Fluid levels will be monitored at BR-I and at a nearby well A1-19. Recovered DNAPL and water will be transported to an approved off-site facility for incineration.

The extent of pooled DNAPL in bedrock in the area surrounding BR-I should be investigated during the remedial design phase of the project. Recovery of pooled DNAPL from additional bedrock wells in the area near BR-I should be performed if they are productive based on results of this investigation.

Capping of Sites G, H, I South, and L– Capping of Sites G, H, I South, and L is included as a component of Alternatives 3 and 4. This component involves installation of low-permeability caps whose designs will vary depending on the current and future uses of the sites. Capping mitigates the potential for direct contact with or release of waste at these sites, mitigates the potential for leachate generation where leachable waste is present in the unsaturated zone, and mitigates the potential for leachate from the unsaturated zone to continue to contaminate underlying groundwater above numerical standards specified in ARARs.

At Site G, a RCRA Subtitle C cover would be installed at the northern portion of the fenced area as shown on Figure 13-3. The conceptual footprint of the RCRA Subtitle C cover within the fenced area corresponds to the approximate extent of waste and fill based on boundary trenching conducted during the RI. Waste was not found in the southern portion of the fenced area at Site G, and therefore the cap does not cover that area. The cross section of the RCRA Subtitle C cover for Site G is shown on Figure 13-5 and includes a low permeability layer underlain by a gas collection layer, and overlain by a drainage layer and protective soil cover and vegetative layer. The minimum slope of 2% provides for surface water drainage. Unclassified fill will need to be placed on top of the waste to achieve the required contours. At Site G West, asphalt pavement would be installed to cap the parking area

surrounding the Wiese Engineering building. The new asphalt pavement surrounding the Wiese building would include a flexible membrane liner to be consistent with RCRA Subtitle C liner requirements.

At Site H, which is an undeveloped property, capping would involve installation of a RCRA Subtitle C cover for the entire area of Site H as shown on Figure 13-3. The conceptual cross section is shown on Figure 13-5.

Site I South is located at an active industrial facility, Cerro Flow Products. Site I South is used for truck trailer parking and has two plant roads, a rail spur, truck scales, and a guard shack within its boundary (see Figure 13-4). In addition, the eastern side of Cerro's employee parking lot is located within the boundary of Site I South. The site is covered by clean, purchased stone or surplus concrete that was placed to fill depressions and maintain grades for truck trailer parking.

The RCRA Subtitle C cover at Site I South would need to incorporate the existing features of the site (e.g., truck scale and guard shack). New asphalt pavement would need to be installed at the portion of the employee parking lot where the cap is located. The new asphalt pavement would include a flexible membrane liner to be consistent with RCRA Subtitle C liner requirements. Considering the present and future use of Site I South for truck trailer parking, the final surface layer would be crushed rock instead of a protective soil cover and vegetated layer. Figure 13-4 illustrates the conceptual cover area and Figure 13-6 depicts conceptual cross section of the RCRA Subtitle C cover at Site I South.

At Site L, capping would involve installation of a RCRA Subtitle C cover at an area immediately east of Dead Creek Segment B, as shown on Figure 13-3. Figure 13-5 shows the conceptual cross section for the RCRA Subtitle C cover at Site L.

The cap designs for Sites G, H, I South, and L would need to provide for the management of stormwater runoff. This issue would be addressed during remedial design.

13.4.2 Estimated Mass of Sauget Area 1 COCs Removed by DNAPL Pumping at BR-I

The mass of key COCs removed by pumping DNAPL at BR-I can be estimated based on the specific gravity and chemical composition of the DNAPL and the average DNAPL pumping rate. During the DNAPL characterization and remediation study a sample of the pooled DNAPL from BR-I was found to have a specific gravity of 1.42. Extensive testing was conducted to determine the chemical composition of the BR-I DNAPL (see Appendix C.2 of GSI, 2006c).

As discussed in Section 13.4.1, implementation of pooled DNAPL recovery at BR-I would initially involve automated pumping of the well once per day. When the rate of DNAPL recovery has diminished sufficiently that daily operation appears to have limited effectiveness, the pump will be operated twice per week, followed by reductions to once per week and once per month, as the rate of DNAPL recovery continues to diminish.

As discussed in Section 4.2.2.2, pumping of BR-I every other day for two weeks in June 2009 resulted in an average recovery of 2.9 gallons of DNAPL per event. However, this recovery rate would likely diminish during daily pumping over a longer time frame. Therefore, an assumed pumping rate of one gallon of DNAPL per day was used to estimate the mass of Sauget Area 1 COCs that would be removed by pooled DNAPL recovery at BR-I for one year.

The following table lists the weight fractions of the key COCs in the DNAPL and the calculated mass of the COCs that would be removed by DNAPL pumping at an assumed rate of one gallon of DNAPL per day for one year.

Estimated Mass of Key COCs in DNAPL Pumped from Well BR-I

	Weight Fraction of COC in Sample of BR-I DNAPL	Calculated Mass of COC in One Gallon of DNAPL (kg)	Calculated Mass of COC in 365 Gallons of DNAPL (kg)
Chlorobenzene	0.022 %	0.00118	0.43
1,4-Dichlorobenzene	0.84 %	0.0451	16.5
Benzene	0.0019 %	0.000102	0.037
1,2,4-Trichlorobenzene	14 %	0.752	274.6

If the average pumping rate at BR-I is one gallon of DNAPL per day, then the estimated masses of chlorobenzene, 1,4-dichlorobenzene, and benzene that would be recovered during one year of pumping are 0.43 kg, 16.5 kg, and 0.037 kg, respectively.

1,2,4-trichlorobenzene is not one of the indicator COCs for Sauget Area 1. However, 1,2,4-trichlorobenzene was included in the above table because it is the predominant COC in the BR-I DNAPL by weight fraction (14%), and it is known to biodegrade to form dichlorobenzenes. As shown in the table, an estimated 274.6 kg of 1,2,4-trichlorobenzene would be recovered by daily pumping of one gallon of DNAPL for one year.

13.4.3 Discussion Regarding the Limited Benefits of RCRA Subtitle C Covers

Installation of RCRA Subtitle C covers at Sites G, H, and I South would reduce the potential mobility of COCs in soil and waste by reducing infiltration of rainwater through the fill areas. However, reducing the infiltration of rainwater through the fill areas (and the associated mass flux from source materials in the unsaturated zone) will not reduce the mass flux due to lateral groundwater flow in the MHU and DHU and will therefore have no significant effect on time to restore groundwater quality downgradient of the Sauget Area 1 source areas.

Section 6.2 summarized the results of mass flux calculations at the Sauget Area 1 source areas that were presented in a previous technical memorandum (GSI, 2005). The calculations estimated the mass flux of chlorobenzene, 1,4-dichlorobenzene, and benzene due to i) groundwater flushing in the Alluvial Aquifer beneath Site I; ii) leaching of unsaturated source zone materials prior to installation of a low permeability cover; and iii) leaching of unsaturated source zone materials after installation of a low permeability cover.

The overall results of the 2005 mass flux estimates are shown on Figures 6-46 and 6-47 and summarized on the tables below. As indicated in the tables below, the mass flux of COCs from the unsaturated source materials, with or without a low permeability cover, is very small compared to the mass flux of COCs due to lateral groundwater flow through the MHU and DHU.

ESTIMATED MASS FLUX AT SITE I SOURCE ZONE ASSUMING A CRUSHED ROCK COVER AND A 19-ACRE SOURCE ZONE			
	Mass Flux due to Leaching from Unsaturated Source Materials (kg/yr)	Mass Flux due to Lateral Groundwater Flow in MHU and DHU (kg/yr)	(Mass Flux from Leaching) / (Mass Flux from Lateral GW Flow)
Chlorobenzene	**17**	**1,741**	**1.0%**
1,4-Dichlorobenzene	**16**	**1,026**	**1.5%**
Benzene	**2.0**	**12.8**	**15.6%**

ESTIMATED MASS FLUX AT SITE I SOURCE ZONE ASSUMING A RCRA CAP AND A 19-ACRE SOURCE ZONE			
	Mass Flux due to Leaching from Unsaturated Source Materials (kg/yr)	Mass Flux due to Lateral Groundwater Flow in MHU and DHU (kg/yr)	(Mass Flux from Leaching) / (Mass Flux from Lateral GW Flow)
Chlorobenzene	0.02	1,741	0.001%
1,4-Dichlorobenzene	0.02	1,026	0.002%
Benzene	0.002	12.8	0.018%

The calculations were performed for Site I South, which has the largest surface area of the four sites and generally has the highest concentrations of COCs. Therefore, the conclusions from the mass flux estimates are also considered applicable to the other sites.

Installing RCRA Subtitle C covers at Sites G, H, and I South, with or without leachate control, would have no significant effect on time to achieve MCLs and Class I standards in groundwater downgradient of the Sauget Area 1 source areas. This finding is relevant to the detailed evaluation of Alternative 3, which includes RCRA Subtitle C covers, and also to the detailed evaluation of Alternative 4, which includes RCRA Subtitle C covers and leachate control.

RCRA Subtitle C covers would not be appropriate for Alternative 5, which includes pulsed air biosparging. The soil or crushed rock or covers included in Alternative 5 are more appropriate to site conditions since they would allow some air movement through the waste.

13.4.4 Detailed Evaluation of Alternative 3

Overall Protection of Human Health and the Environment - Alternative 3 is protective of human health and the environment. It addresses all of the potential risks to human receptors identified in the HHRA.

The engineered covers in Alternative 3 include RCRA Subtitle C covers at Sites G, H, I South, and L and asphalt pavement at Site G West. These engineered covers, in conjunction with institutional controls, address the RAO for surface and subsurface soil and the RAO for waste and leachate by minimizing the potential for human exposure to COCs in those media.

Alternative 3 also achieves the soil vapor RAO. Results of the vapor intrusion HHRA indicate that concentrations of COCs found in soil vapor do not pose an unacceptable risk to human receptors in existing buildings, and Alternative 3 includes institutional controls that will prevent construction of new buildings on the source areas without vapor control.

Alternative 3 meets all three groundwater RAOs. Groundwater is not used as a source of drinking water in the area. Although there are some private wells that may be used for outdoor household activities, none are located within or downgradient of the Sauget Area 1 groundwater plumes. The existing ordinances in the Villages of Sauget and Cahokia prohibiting the use of groundwater as a potable water source provide appropriate protection of human health.

As discussed in Section 12.2, a 30-year time to clean is not feasible for the Sauget Area 1 plume. Based on time to clean calculations in Appendix D, groundwater quality will ultimately be restored through MNA, although the time to achieve compliance with MCLs and Class I standards downgradient of the Sauget Area 1 sites is in the range of several hundred years.

Alternative 3 addresses the groundwater RAO that requires preventing groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in an unacceptable, adverse ecological impact to the River. As discussed in Section 6.5, the updated regional groundwater flow and transport model (GSI, 2012) was used to quantify the mass flux to the Mississippi River from the Sauget Area 1 plumes with the GMCS off and with the GMCS on. Modeled mass flux results for the year 2020 and beyond indicate that, for all 7 COCs, the GMCS

will capture approximately 73% of the modeled mass flux from Sauget Area 1 that reaches the area near the Mississippi River. To the extent that it occurs, the mass flux to the River from the Sauget Area 1 plumes would be located north of the barrier wall in an area that is within the plume areas from other sources, including Sauget Area 2 and the Krummrich plant. Groundwater concentrations along the River north of the barrier wall can be monitored for the Sauget Area 1 COCs using two conceptual point-of-compliance well locations discussed in Section 12.2.3.

Compliance with ARARs - The ARARs identified for the Sauget Area 1 remedial alternatives are listed in Table 13-1. ARARs that govern the closure and post-closure requirements related to landfills include 35 IAC 807, which contains the standards for solid waste landfills, and 35 IAC 724, which contains the standards for owners and operators of hazardous waste treatment, storage and disposal facilities. Although the 35 IAC 807 standards are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions. The engineered covers included in Alternative 3 satisfy identified ARARs for soil and waste present in the fill areas at Sites G, H, I South, and L.

The closure and post-closure care requirements in 35 IAC 724.410a defines the following minimum requirements for hazardous waste landfill covers:

1) Provide long-term minimization of migration of liquids through the closed landfill
2) Function with minimal maintenance
3) Promote drainage and minimize erosion or abrasion of the cover
4) Accommodate settling and subsidence so that the cover's integrity is maintained

Items 2 through 4 are relevant and appropriate for Sauget Area 1. Item 1 is relevant but not appropriate to site conditions. The caps included in Alternative 3 either comply with or are substantially equivalent to items 2 through 4.

The caps in Alternative 3 would provide long-term minimization of migration of liquids through the fill areas. However, long-term minimization of migration of liquids through the fill areas is not appropriate for Sauget Area 1 based on the following factors:

- Results from a mass flux evaluation of Site I indicates that estimated mass flux of key COCs from leaching of unsaturated source materials is small compared to estimated mass flux of the COCs due to lateral groundwater flow. (For detailed discussion of the mass flux evaluation see Section 13.4.3.)
- Average estimated waste thicknesses at Sites G, H, and I South are 20 ft, 20 ft, and 25 ft, respectively. Under typical conditions the lower portion of the waste at these sites is below the water table, and the water table can fluctuate by several feet over time based on measurements in monitoring wells near the Judith Lane Containment Cell. Installation of caps to minimize infiltration of rainwater at Sauget Area 1 would not address flushing effects from the rising and falling water table.
- No principal threat liquids or mobile source materials were identified in the wastes above the water table at the Sauget Area 1 sites.
- Impacted groundwater at Sauget Area 1 is addressed by MNA and the Sauget Area 2 GMCS.

Alternative 3 provides a closure which either complies with or meets the substantive requirements of 35 IAC 724.211(b), which requires that the closure controls, minimizes, or eliminates to the extent necessary to adequately protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous decomposition products to the ground or surface waters or to the atmosphere.

The caps in Alternative 3 can be constructed to require minimal maintenance, which meets the substantive requirement of 35 IAC 724.211(a). Periodic maintenance as described in the O&M Plan would be implemented to correct any settling or subsidence and to facilitate any needed repairs to the caps.

Alternative 3 satisfies ARARs relating to groundwater quality standards, including 35 IAC 620.405, which prohibits a person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedance of groundwater quality standards, and 35 IAC 620.410, which contains the Illinois Class 1 groundwater standards. At the end of the remedial action for Alternative 3 there will not be releases of COCs to groundwater that would result in exceedances of groundwater quality standards, and the Class I groundwater standards would be met by MNA.

Alternative 3 also satisfies various ARARs that address the requirements for groundwater monitoring by owners and operators of hazardous waste disposal facilities. These ARARs include 35 IAC 724.191 through 35 IAC 724.197 and 35 IAC 724.199. The substantive requirements of these ARARs will be met for Alternative 3 by the MNA groundwater monitoring program and by groundwater monitoring of point-of-compliance wells located along the Mississippi River.

Long-Term Effectiveness and Permanence - Alternative 3 is an effective, permanent remedial approach that meets the RAOs for Sauget Area 1. The residual risk at Sauget Area 1 following implementation of Alternative 3 is small since the potential for exposure to COCs in soils and waste is significantly reduced. Installation of the engineered covers would be effective at minimizing the potential for human exposure to the soil, waste, and leachate and at preventing erosion of the fill areas. Alternative 3 addresses the three RAOs for groundwater, although the time to achieve MCLs or Illinois Class I standards will likely be several hundred years.

The institutional controls will remain in place permanently. The engineered covers, including the Containment Cell, will require long-term maintenance to ensure their effectiveness. The DNAPL recovery system at BR-I will also require long-term maintenance as long as this well continues to produce DNAPL.

Reduction of Toxicity, Mobility or Volume through Treatment - Alternative 3 includes recovery of pooled DNAPL at well BR-I and off-site incineration of the DNAPL at an approved TSD facility. This remedy component will reduce the volume of pooled DNAPL at well BR-I, thereby removing source mass and addressing this principal threat material. As discussed in Section 13.4.2, daily removal of one gallon of DNAPL from BR-I for one year would result in removal of approximately 0.43 kg of chlorobenzene; 16.5 kg of 1,4-dichlorobenzene; 0.037 kg of benzene; and 275 kg of 1,2,4-trichlorobenzene.

Alternative 3 does not include treatment of soil, waste, or leachate within the fill areas and does not include treatment of residual DNAPL within the MHU and DHU. In the long term, Alternative 3 reduces the toxicity and volume of the COCs in groundwater by monitored natural attenuation.

Short-Term Effectiveness - Short-term risks associated with implementation of Alternative 3 are typical of a construction project that involves construction of engineered covers. These risks include general risks to construction workers as well as risks to the community due to significant truck traffic needed to bring the large volume of fill and cover material to Sites G, H, I South, and L. Other risks include the potential for dust emissions or stormwater runoff from areas of affected soils or waste during construction of the cover.

The potential risks to the community due to dust emissions and stormwater runoff can be managed through measures that will be developed during remedial design. The potential risks to site workers during remedy implementation can be managed by requiring adequate PPE and

routine safety procedures that will be specified in a health and safety plan to be developed during remedial design.

Alternative 3 would require an estimated 140,600 cubic yards of fill material and soil to be transported to the sites, which would require >7,000 truck loads and would result in the release of approximately 234,000 pounds of carbon dioxide to the atmosphere (Table 13-2).

Implementability – Alternative 3 could be implemented at Sites G, H, and L. However, Site I South is located at the Cerro Flow Products property, which is an active industrial facility and construction of a RCRA Subtitle C cover at Site I South would be difficult to implement and disruptive to current operations. Site I South is used for truck trailer parking and has two roads; a rail spur, truck scales, and a guard shack within its boundary (see Figure 13-4). In addition, the eastern side of the facility's employee parking lot is located within the boundary of Site I South. Installation of a RCRA Subtitle C cover at Site I South would significantly change the topography of the site and would likely result in a reduction of the usable area of the site available for truck trailer parking.

Cerro uses Site I South (and Site I North) as a trailer parking and staging area. The truck traffic at this trailer parking area includes trailers of raw material entering the facility, trailers of product leaving the facility, and moves of the trailers between the trailer parking area and the main operating areas. The amount of traffic in the facility varies during the year, but the traffic levels for February 2012 are typical. During February 2012 a total of 155 raw material trailers and 227 product trailers were managed by the facility. As part of standard operations, each trailer is moved into or out of the trailer parking area a total of 4 times. Therefore, during February 2012 there were a total of 1528 moves. In February there were 22 operating days (i.e., Monday through Friday), so there were an average of 69 moves per operating day during the month. This traffic would be difficult to manage during construction of a RCRA Subtitle C cover at Site I South.

Institutional controls are common and easily implementable. Construction and O&M of the engineered covers the other remedy components of Alternative 3 are implementable at the site using locally available resources and equipment. Monitoring the performance of these technologies is technically feasible.

Cost - The estimated present value cost for Alternative 3 is **$12.8 million.** Table F-3 presents a summary of capital costs, O&M costs, and a calculation of present value costs for Alternative 3. Costs for Alternative 3 are sensitive to the proximity of suitable borrow materials for the cover system, the quantity of fill required to establish the base contours, and the degree to which existing features at Site I South such as the rail spur, truck scales, and employee parking lot may need to be modified to accommodate the change in elevation.

13.5 DESCRIPTION AND DETAILED EVALUATION OF ALTERNATIVE 4

13.5.1 Description of Alternative 4

Alternative 4 includes the following components:

- Institutional Controls
- Containment Cell O&M
- Monitored Natural Attenuation
- Utility relocation
- Pooled DNAPL Recovery at BR-I
- Capping Site G, Site H, Site I South, and Site L
- Leachate Control at Sites G, H, and I South

Institutional controls, Containment Cell O&M, and monitored natural attenuation were described under Alternative 2 in Section 13.3. Utility relocation, pooled DNAPL recovery, and the engineered covers were described under Alternative 3 in Section 13.4. The additional component in Alternative 4 is leachate control at Sites G, H, and I South.

Leachate Control - The leachate control component would be implemented following, or in conjunction with, the installation of the RCRA Subtitle C caps at Sites G, H, and I South. It conceptually would include installation of a grid of 4-inch diameter wells and installation of pre-treatment systems at Sites G, H, and I South to treat recovered leachate prior to discharging it to the American Bottoms Regional Treatment Facility.

Care would be required during design and installation to prevent extraction of fluids from the underlying SHU or MHU rather than leachate from within the waste matrix. The leachate recovery wells would be installed to the base of the waste layer or the base of the SHU, whichever is shallower. A pre-design investigation would be required to identify any areas where the base of the waste is above the saturated zone. Leachate recovery wells would not be installed in areas where the waste is above the water table unless a perched water zone is discovered above the water table. Considering the heterogeneous nature of the disposal areas, the radius of influence of an individual leachate recovery well may be limited. The leachate recovery wells are assumed to be placed on approximate 100-foot centers with a typical depth of 25 feet below grade. Based on 100-ft spacing, a total of 79 leachate recovery wells would be installed, including 19 at Site G, 21 at Site H, and 39 at Site I South (Figure 13-7).

The leachate recovery wells would be screened across the entire saturated thickness of the fill areas and will be equipped with air-activated recovery pumps that operate only when fluids are present. For planning purposes, the flow rate is estimated to be 1 gpm per well. The conceptual designs for the pre-treatment systems at Sites G, H, and I South include an oil-water separator, sand filter, bag filters, and vessels of granular activated carbon.

13.5.2 Detailed Evaluation of Alternative 4

Overall Protection of Human Health and the Environment - Alternative 4 is protective of human health and the environment. This alternative addresses all of the potential risks to human receptors identified in the HHRA. However, the leachate control system included in Alternative 4 does not provide any significant enhancement to the overall protection of human health and the environment.

The engineered covers in Alternative 4 include RCRA Subtitle C covers at Sites G, H, I South, and L and asphalt pavement with a flexible membrane liner at Site G West. These engineered covers address the RAO for surface and subsurface soil and the RAO for waste and leachate. These covers, in conjunction with the institutional controls, minimize the potential for human exposure to COCs at the fill areas and prevent erosion of the fill areas.

Alternative 4 also achieves the soil vapor RAO. Results of the vapor intrusion HHRA indicate that concentrations of COCs found in soil vapor do not pose an unacceptable risk to human receptors in existing buildings. This alternative includes institutional controls that will prevent construction of new buildings on the source areas without vapor control.

Alternative 4 meets all three groundwater RAOs. Groundwater is not used as a source of drinking water in the area. Although there are some private wells that may be used for outdoor household activities, none are located within or downgradient of the Sauget Area 1 groundwater plumes. The existing ordinances in the Villages of Sauget and Cahokia prohibiting the use of groundwater as a potable water source provide appropriate protection of human health.

As discussed in Section 12.2, a 30-year time to clean is not feasible for the Sauget Area 1 plume, and implementation of the engineered covers and leachate control system would not significantly reduce the time to restore groundwater quality. Groundwater quality will ultimately be restored through monitored natural attenuation, although the time to achieve compliance with MCLs and Class I standards downgradient of the Sauget Area 1 sites is in the range of several hundred years.

Alternative 4 addresses the groundwater RAO that requires preventing groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in an unacceptable, adverse ecological impact to the River. As discussed in Section 6.5, the updated regional groundwater flow and transport model (GSI, 2012) was used to quantify the mass flux to the Mississippi River from the Sauget Area 1 plumes with the GMCS off and with the GMCS on. Modeled mass flux results for the year 2020 and beyond indicate that, for all 7 COCs, the GMCS will capture approximately 73% of the modeled mass flux from Sauget Area 1 that reaches the area near the Mississippi River. To the extent that it occurs, the mass flux to the River from the Sauget Area 1 plumes would be located north of the barrier wall in an area that is within the plume areas from other sources, including Sauget Area 2 and the Krummrich plant. Groundwater concentrations along the River north of the barrier wall can be monitored for the Sauget Area 1 COCs using two conceptual point-of-compliance well locations discussed in Section 12.2.3.

Compliance with ARARs - The ARARs identified for the Sauget Area 1 remedial alternatives are listed in Table 13-1. ARARs that govern the closure and post-closure requirements related to landfills include 35 IAC 807, which contains the standards for solid waste landfills, and 35 IAC 724, which contains the standards for owners and operators of hazardous waste treatment, storage and disposal facilities. Although the 35 IAC 807 standards are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions. The engineered covers included in Alternative 4 satisfy identified ARARs for soil and waste present in the fill areas at Sites G, H, I South, and L.

The closure and post-closure care requirements in 35 IAC 724.410a define the following minimum requirements for hazardous waste landfill covers:

1) Provide long-term minimization of migration of liquids through the closed landfill
2) Function with minimal maintenance
3) Promote drainage and minimize erosion or abrasion of the cover
4) Accommodate settling and subsidence so that the cover's integrity is maintained

Items 2 through 4 are relevant and appropriate for Sauget Area 1. Item 1 is relevant but not appropriate to site conditions. The caps included in Alternative 4 either comply with or are substantially equivalent to items 2 through 4.

The caps and leachate collection systems included in Alternative 4 would provide long-term minimization of migrations of liquids through the fill areas. However, long-term minimization of migration of liquids through the fill areas is not appropriate for site conditions at Sauget Area 1 based on the following factors:

- Results from a mass flux evaluation of Site I indicates that estimated mass flux of key COCs from leaching of unsaturated source materials is small compared to estimated mass flux of the COCs due to lateral groundwater flow. (For detailed discussion of the mass flux evaluation see Section 13.4.3.)
- Average estimated waste thicknesses at Sites G, H, and I South are 20 ft, 20 ft, and 25 ft, respectively. Under typical conditions the lower portion of the waste at these sites is below the water table, and the water table can fluctuate by several feet over time based on measurements in monitoring wells near the Judith Lane Containment Cell. Installation of caps to minimize infiltration of rainwater at Sauget Area 1 would not address flushing effects from the rising and falling water table.
- No principal threat liquids or mobile source materials were identified in the wastes above the water table at the Sauget Area 1 sites.
- Impacted groundwater at Sauget Area 1 is addressed by MNA and the Sauget Area 2 GMCS.

Alternative 4 provides a closure which either complies with or meets the substantive requirements of 35 IAC 724.211(b), which requires that the closure controls, minimizes, or eliminates to the extent necessary to adequately protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous decomposition products to the ground or surface waters or to the atmosphere.

The caps in Alternative 4 can be constructed to require minimal maintenance, which meets the substantive requirement of 35 IAC 724.211(a). Periodic maintenance as described in the O&M Plan would be implemented to correct any settling or subsidence and to facilitate any needed repairs to the caps.

Alternative 4 satisfies ARARs relating to groundwater quality standards, including 35 IAC 620.405, which prohibits a person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedance of groundwater quality standards, and 35 IAC 620.410, which contains the Illinois Class 1 groundwater standards. At the end of the remedial action for Alternative 4 there will not be releases of COCs to groundwater that would result in exceedances of groundwater quality standards, and the Class I groundwater standards would be met by MNA.

Alternative 4 also satisfies various ARARs that address the requirements for groundwater monitoring by owners and operators of hazardous waste disposal facilities. These ARARs include 35 IAC 724.191 through 35 IAC 724.197 and 35 IAC 724.199. The substantive requirements of these ARARs will be met for Alternative 4 by the MNA groundwater monitoring program and by groundwater monitoring of point-of-compliance wells located along the Mississippi River.

Long-Term Effectiveness and Permanence - Alternative 4 is an effective, permanent remedial action that meets the RAOs. The residual risk following implementation of Alternative 4 is small since potential exposure to COCs in soils and waste is significantly reduced. Installation of the

engineered covers would be effective at minimizing the potential for human exposure to the soil, waste, and leachate and preventing erosion of the fill areas.

The low-permeability covers reduce the potential mobility of COCs in soil and waste by substantially reducing infiltration of rainwater through the fill areas, and leachate control component removes and treats leachate. However, as discussed in Section 13.4.3, low permeability covers and leachate control will not have any significant effect on time to achieve MCLs and Class I standards in groundwater downgradient of the Sauget Area 1 source areas. Alternative 4 addresses the three RAOs for groundwater, although the time to achieve MCLs or Illinois Class I standards will likely be several hundred years.

The institutional controls will remain in place permanently. The engineered covers, including the Containment Cell, will require long-term maintenance to ensure their effectiveness. The DNAPL recovery system at BR-I will require long-term maintenance as long as this well continues to produce DNAPL. The long-term O&M of the leachate recovery and pre-treatment systems at Sites G, H, and I South will likely require significant investments of labor and resources for system monitoring, backwashing of sand filters, replacement of granular activated carbon, and other maintenance tasks.

Reduction of Toxicity, Mobility or Volume through Treatment - Alternative 4 includes two components that involve treatment: i) off-site incineration of the pooled DNAPL recovered from BR-I; and ii) treatment of leachate pumped from the grid of leachate recovery wells.

Pooled DNAPL recovery at BR-I and off-site incineration will reduce the volume of pooled DNAPL at well BR-I, thereby removing source mass and addressing this principal threat material. As discussed in Section 13.4.2, daily removal of one gallon of DNAPL from BR-I for one year would result in removal of approximately 0.43 kg of chlorobenzene; 16.5 kg of 1,4-dichlorobenzene; 0.037 kg of benzene; and 275 kg of 1,2,4-trichlorobenzene.

Leaching of COCs from wastes in the disposal areas represents a historic source of impact to groundwater and a potential ongoing source in the future. The leachate control component provides a relatively limited reduction in the volume and mass of COCs within the fill areas and will not significantly reduce the time to meet the remedial goals for groundwater downgradient of the Sauget Area 1 source areas.

In the long term, Alternative 4 reduces the toxicity and volume of the COCs in groundwater by monitored natural attenuation.

Short-Term Effectiveness - Short-term risks associated with implementation of this alternative are typical of an engineered cover construction project. These risks include general risks to construction workers as well as significant truck traffic needed to bring the large volume of fill and cover material for construction of the engineered covers. Other risks include the potential for dust emissions or stormwater runoff from areas of affected soils or waste during construction of the covers. There are also risks to workers due to potential contact with wastes during drilling and installation of leachate recovery wells at Sites G, H, and I South.

The potential risks to the community due to dust emissions and stormwater runoff can be managed through measures that will be developed during remedial design. The potential risks to site workers during remedy implementation can be managed by requiring adequate PPE and routine safety procedures that will be specified in a health and safety plan to be developed during remedial design.

Alternative 4 would require an estimated 140,600 cubic yards of fill material and soil to be transported to the sites, which would require >7,000 truck loads and would result in the release of approximately 234,000 pounds of carbon dioxide to the atmosphere (Table 13-2).

Implementability - Alternative 4 could be implemented at Sites G, H, and L. However, at Site I South the construction of a RCRA Subtitle C cover and installation of an extensive grid of leachate recovery wells would be difficult to implement and disruptive to current operations.

As previously noted, Site I South is located at an active industrial facility and is used for truck trailer parking. It has two roads, a rail spur, truck scales, and a guard shack within its boundary, and the eastern side of the facility's employee parking lot is located within the boundary (see Figure 13-4). As discussed in Section 13.4.3, the truck traffic at Site I includes trailers of raw material entering the facility, trailers of product leaving the facility, and moves of the trailers between the trailer parking area (i.e., Site I) and the main operating areas. In February 2012 (a typical month), there were an average of 69 moves per operating day. This traffic would be difficult to manage during construction of a RCRA Subtitle C cover and leachate recovery wells and piping at Site I South.

Installation of a RCRA Subtitle C cover at Site I South would significantly change the topography of the site and would likely result in a reduction of the usable area of the site available for truck trailer parking. The leachate recovery wells would require heavy-duty subsurface vaults to prevent truck traffic from damaging the wells.

Another challenge for implementation of the leachate control component involves installation of underground piping. A network of underground piping would be needed to deliver compressed air to the air-powered pumps at the leachate recovery wells and to route recovered leachate to centrally located pre-treatment systems. The trenching and piping installation activities will be disruptive to current operations at Site I South during the construction period.

Institutional controls are common and easily implementable. Construction and O&M of the engineered covers and the other remedy components of Alternative 4 can be performed using locally available resources and equipment. The long-term O&M of the leachate recovery and pre-treatment systems would likely require significant investments of time and resources for system monitoring, backwashing of sand filters, replacement of granular activated carbon, and other maintenance tasks.

Cost - The estimated present value cost for this alternative is **$22.5 million.** Table F-4 presents a summary of capital costs, O&M costs, and a calculation of present value costs for this alternative.

Costs for this alternative are sensitive to the proximity of suitable borrow materials for the cover system, the quantity of fill required to establish the base contours, the degree to which existing features at Site I South may need to be modified to accommodate the change in elevation, the level of O&M needed for the leachate recovery and pre-treatment systems, and the volume of pre-treated leachate that is sent to the American Bottoms treatment facility for disposal.

13.6 DESCRIPTION AND DETAILED EVALUATION OF ALTERNATIVE 5

13.6.1 Description of Alternative 5

Alternative 5 includes the following components:

- Institutional Controls
- Containment Cell O&M
- Monitored Natural Attenuation
- Utility relocation
- Pooled DNAPL Recovery at BR-I
- Soil or Crushed Rock Covers at Sites G, H, I South, and L
- Pulsed Air Biosparging at Residual DNAPL Areas at Sites G, H, and I South

Institutional controls, Containment Cell O&M, and monitored natural attenuation were described under Alternative 2 in Section 13.3. Utility relocation and pooled DNAPL recovery at BR-I were described under Alternative 3 in Section 13.4. The additional components in Alternative 5 are pulsed air biosparging at the residual DNAPL areas at Sites G, H, and I South and installation of soil or crushed rock covers at Sites G, H, I South, and L.

Pulsed Air Biosparging at Residual DNAPL Areas at Sites G, H, and I South – The operation of the pulsed air biosparging (PABS) systems would be characterized by high flow rate pulsed sparging of atmospheric air to promote in-situ aerobic biodegradation and thereby reduce the mass of COCs in the MHU and DHU. Each system would include a grid of nested injection well pairs screened in the MHU and DHU and connected to a compressor to supply atmospheric air. The well grids would be located in the areas of residual DNAPL in the MHU and DHU that were identified at Sites G, H, and I South during the DNAPL characterization and remediation study, as shown on Figure 13-10.

For planning purposes, the injection well spacing was set at 60 feet (i.e., radial zone of influence of 30 feet), which is consistent with the well spacing discussed in the CH2M Hill tech memo, “Preliminary Options for Oxygen Addition at Sauget Area 1 DNAPL Residual Areas” dated October 7, 2008. Based on 60-ft spacing, a total of 82 well clusters would be installed, including 12 at Site G, 15 at Site H, and 55 at Site I South (see Figure 13-10). It is estimated that a compressor can service 10-15 injection wells. Therefore, the conceptual layout shown on Figure 13-10 includes one PABS system at Site G, one system at Site H, and several separate systems at Site I South. The DNAPL area at Site I South extends beneath former Creek Segment A and into an area of the Cerro facility where several buildings are located. These locations are not suitable for implementation of PABS systems due to the presence of the buildings and the presence of an impermeable liner at the base of former Creek Segment A, which was closed and remediated in 1990-1991.

For planning purposes, it is estimated that pulsed injections of air would occur twice per week for a few hours each event. At the location of each sparge well pair there would also be a passive vent well to recover vapors that would be treated in drums of granular activated carbon. Each drum of granular activated carbon would serve several passive vent wells. Figure 13-11 shows a biosparging conceptual cross section that illustrates well depths and the conceptual zone of subsurface airflow during operation of a PABS system.

Recent performance data from a deep (50 to 150 ft below water table) air sparging system showed that the zone of influence of a sparge well increases with injection depth (Klinchuch, 2007). This suggests the possibility of a zone of influence greater than 30 ft at Sauget Area 1 and consequently a reduced number of injection well pairs required for the PABS systems.

To evaluate the feasibility and effectiveness of full-scale operations, a pilot test would be conducted for a period of approximately one year to determine operational parameters, measure performance characteristics, and verify the optimal spacing of the biosparge well pairs, if the PABS alternative is selected. A draft preliminary pilot test workplan is included in Appendix E.

The pilot test would be conducted at a location to be determined (probably at Site I South) and would include the following: baseline soil and groundwater sampling and testing; installation of four sparge well pairs with passive vent wells; installation of groundwater monitoring wells at and near the pilot test area; construction of the pilot system and piping; operation of the pilot test for one year; and post-test soil and groundwater sampling to estimate COC mass removal. The pilot test would include monitoring and control of emissions from the passive vent wells that are co-located with the sparge well pairs. If appropriate, passive vent wells could also be installed next to key buildings for monitoring during the pilot test.

Following completion of the pilot test and prior to full-scale design of the PABS systems at Sites G, H, and I South, additional soil boring investigations would be needed to more precisely delineate the extent of the residual DNAPL areas shown on Figure 13-10.

Soil or Crushed Rock Covers at Sites G, H, and I South – Alternative 5 includes soil or crushed rock covers at Sites G, H, I South, and L to prevent exposure to the waste and affected soils while providing permeability for air transfer and infiltration of moisture. Soil or crushed rock covers are more appropriate for use with the PABS systems than impermeable RCRA Subtitle C caps. Soil vapors would accumulate in the waste and fill materials in the unsaturated zone beneath the impermeable caps.

The soil or crushed rock covers would meet the requirement of 35 IAC 807. The conceptual footprint of the soil or crushed rock covers at Sites G, H, I South, and L are shown on Figures 13-3 and 13-4.

At Site G, the soil or crushed rock cover would be constructed at the northern portion of the fenced area as shown on Figure 13-3. The conceptual footprint of the soil or crushed rock cover within the fenced area corresponds to the approximate extent of waste and fill based on boundary trenching conducted during the RI. Waste was not found in the southern portion of the fenced area at Site G and, therefore, the soil or crushed rock cover does not include that area. The cross sections of the soil or crushed rock cover for Site G are shown on Figures 13-8 and 13-9, respectively. At Site G West, asphalt pavement would be installed to cap the parking area surrounding the Wiese Engineering building. A soil or crushed rock cover in the Wiese Engineering parking area is not necessary because the PABS system at Site G is located relatively far (~400 feet) from Site G West (see Figure 13-10).

At Site H, which is an undeveloped property, the soil or crushed rock cover would include the entire area of Site H as shown on Figure 13-3. Figures 13-8 and 13-9 show the conceptual cross sections for the soil cover or crushed rock cover at Site H.

At Site I South a crushed rock cover would be constructed instead of a soil cover so that Site I South can continue to be used for truck trailer parking. Site I South is already covered by clean, purchased stone or surplus concrete that was placed to fill depressions and maintain grades for truck trailer parking. A pre-design investigation would be performed to determine the thickness of the existing clean surface materials at Site I South (in order to determine the amount and location of new material required to be added to achieve a minimum of two feet of clean material). The crushed rock cover at Site I South will need to incorporate the existing features of the site, and in some locations the existing pavement may need to serve as the final cover. The conceptual footprint of the Site I South crushed rock cover is shown on Figure 13-4. The cross section of the crushed rock cover for Site I South is shown on Figure 13-9.

At Site L the soil or crushed rock cover would be placed on an area immediately east of Dead Creek Segment B, as shown on Figure 13-3. Figures 13-8 and 13-9 show the conceptual cross sections for the soil or crushed rock cover at Site L.

13.6.2 Performance of Pulsed Air Biosparging

Until a pilot test is performed, it is not possible to precisely estimate the source mass removal that can be achieved in the MHU and DHU using operation of a PABS system. However, some studies have shown that under different circumstances than those in Sauget, source mass removal can result in as much as 75% to 90% mass reduction (Brown et al., 1998; Machackova; Sale et al., 2008; Sperry et al., 2001).

The technical memorandum in Appendix C provides a comparison of i) air sparging with SVE and ii) PABS systems for the Sauget Area 1 sites. The analysis was a planning-level effort based on guidance documents and limited site-specific data (i.e., soil and groundwater concentrations). The memorandum includes an evaluation of performance for a PABS system.

Mass removal processes were modeled based on equations presented in the Air Sparging Design Paradigm (Leeson et al., 2002). Key model inputs and assumptions were:

- The model input value for initial soil contaminant concentration was the highest mean concentration of total VOCs plus total SVOCs at the DNAPL characterization borings. The mean concentration for each boring was calculated using results for samples from within the MHU and DHU. The highest mean concentration of total VOCs plus total SVOCs was 346 mg/kg at A1-14.
- The model input value for initial groundwater contaminant concentration was the highest observed groundwater contaminant concentration for chlorobenzene (i.e., 34,000 ug/L at location AA-I-S1 in the sample from 77-81 ft below grade).
- Biodegradation was assumed to be the only contaminant removal mechanism for the PABS system, with a negligible mass removal contribution from contaminant volatilization into the unsaturated zone.

A pore space air saturation of 5% trapped air can continue to deliver oxygen to the groundwater for at least one day and probably longer after each injection event (Leeson et atl, 2002). Therefore, the PABS systems would be operated for sufficient duration during each pulse to achieve 5% pore space air saturation.

Preliminary modeling of the anticipated performance metrics of the PABS system indicates that the estimated time to achieve source mass removal of 75% is approximately 3.5 years and the estimated time to achieve source mass removal of 90% is approximately 6.5 years. As noted above, it is difficult to predict the actual performance of a source treatment project prior to its application in the field (ESTCP, 2008).

13.6.3 Generation and Management of Soil Vapors During Pulsed Air Biosparging

The limited injection duration (conceptually several hours twice per week) that is characteristic of a PABS system greatly reduces, but does not eliminate, the volume of air that reaches the unsaturated zone, compared to a continuously operated air sparging system. Controlling the volume and frequency of air sparging will be required in order to prevent the vapors generated by the PABS systems from becoming unacceptable risks to indoor workers in nearby buildings. The nearby buildings and their approximate distances from the closest PABS well pairs include: Sauget Village Hall, 200 ft southeast; Cerro Flow Products, 150 ft west; Wiese Engineering building, 400 ft west; and Metro Construction Equipment, 150 ft east (relative to Site G).

Generation of Soil Vapors - Compressed atmospheric air that is sparged into the MHU/DHU well pairs during the twice-weekly pulsed biosparge events will form air channels that extend into the MHU and DHU. The air channels will eventually reach the base of the SHU, as illustrated on the conceptual cross section on Figure 13-11. When the sparging is terminated, the air channels will collapse, forming trapped air bubbles in pore spaces within the MHU and DHU.

The pulsed sparging will be performed using atmospheric air, which contains (by volume) approximately 78% nitrogen, 21% oxygen, and small amounts of other gases, including water vapor. The oxygen fraction in the trapped air bubbles in the MHU and DHU will diffuse into the groundwater and be utilized for biodegradation. However, most of the nitrogen in the trapped air bubbles will not diffuse into groundwater. The trapped air bubbles are likely to be mobilized during subsequent pulsed sparging events and will eventually reach the base of the SHU.

Due to volatilization of COCs in the MHU and DHU during pulsed biosparging events, the air that reaches the SHU will contain measurable concentrations of volatile COCs, especially during the first few months of operation. After this initial period of operation, COC mass removal will be dominated by biodegradation in the MHU and DHU resulting from diffusion of oxygen from trapped air bubbles.

Some of the air bubbles that reach the base of the SHU will move into the fill and waste materials, especially at locations where the waste and fill materials extend to depths at or below the base of the SHU. Some air will also likely accumulate at the base of the SHU, which has a lower permeability than the MHU and DHU.

Management of Soil Vapors - As shown on Figure 13-11, the passive vent wells co-located with the sparge well pairs will be screened to a depth of 35 feet through the fill and waste and into the upper few feet of the MHU. These vent wells are intended as exit points for air bubbles that accumulate at the base of the SHU as well as air bubbles that enter the waste and fill zone. However, most of the air that enters the waste and fill is expected to vent directly through the permeable soil or crushed rock covers that are included as a remedy component of Alternative 5. The volume and frequency of the pulsed air additions will be controlled such that air emissions at the surface do not result in a significant risk. Determining the amount and frequency of pulsed air sparging will be investigated in more detail during the one-year PABS pilot test.

13.6.4 COCs Susceptible to Aerobic Degradation and Estimated Concentrations in Groundwater at Source Areas Before and After Biosparging Treatment

As discussed in Section 6.3, five of the nine indicator COCs in groundwater at Sauget Area 1 are readily degradable under aerobic conditions, including chlorobenzene, 1,4-dichlorobenzene, benzene, vinyl chloride, and 2,4-D. Aerobic degradation of 4-chloroaniline has also been reported. Tetrachloroethene, trichloroethene, and, to a lesser extent, 1,2-DCE, tend to be recalcitrant in aerobic environments.

The technical memo in Appendix D provides a time to clean evaluation for the MHU and DHU for two key COCs, chlorobenzene and 1,4-dichlorobenzene. The regional groundwater flow model was used to develop the time to clean estimates for four scenarios: i) MNA alone; ii) 50% source mass reduction in 2015 plus MNA; iii) 75% source mass reduction in 2015 plus MNA; and iv) 90% source mass reduction in 2015 plus MNA.

The following table lists modeled source area concentrations in 2038 assuming MNA only or MNA plus 50%, 75% or 90% modeled source reduction that occurs in 2015 due to implementation of a source remediation technology (e.g., pulsed air biosparging). The modeled concentrations in the table below were taken directly from Figures A.2, A.3, A.5, and A.6 of the time to clean memo in Appendix D.

MODELED CONCENTRATIONS OF CHLOROBENZENE AND 1,4-DICHLOROBENZENE IN 2038 (ug/L)				
	MNA alone	MNA plus 50% Source Reduction	MNA plus 75% Source Reduction	MNA plus 90% Source Reduction
Site G				
Chlorobenzene (MHU)	2,230	1,100	556	223
Chlorobenzene (DHU)	2,230	1,100	556	223
1,4-Dichlorobenzene (MHU)	NA	NA	NA	NA
1,4-Dichlorobenzene (DHU)	NA	NA	NA	NA
Site H				
Chlorobenzene (MHU)	1,240	621	311	124
Chlorobenzene (DHU)	2,380	1,190	595	238
1,4-Dichlorobenzene (MHU)	3,110	1,550	776	311
1,4-Dichlorobenzene (DHU)	7,250	3,620	1,810	725
Site I South				
Chlorobenzene (MHU)	62,100	31,100	15,500	6,210
Chlorobenzene (DHU)	52,800	26,400	13,200	5,280
1,4-Dichlorobenzene (MHU)	7,250	3,620	1,810	725
1,4-Dichlorobenzene (DHU)	4,220	2,110	1,060	422

1) NA = Not applicable. The regional groundwater model does not have a source concentration term for 1,4-dichlorobenzene at Site G in the MHU and DHU.

13.6.5 Estimated Mass of Principal COCs in Source Areas Before and After Biosparging Treatment

The purpose of the pulsed air biosparing system included in Alternative 5 is to promote in-situ aerobic biodegradation of COCs within the MHU and DHU at the residual DNAPL source zones at Sites G, H, and I South, thereby reducing the mass of COCs in those areas. The total masses of key COCs such as chlorobenzene, 1,4-dichlorobenzene, and benzene in the MHU and DHU within the residual DNAPL source zones can be estimated based on the areas of the source zones (see Figure I-1 in Attachment I), the thickness of MHU and DHU (80 ft), the bulk density of the aquifer material, and the average concentrations of the COCs within the MHU and DHU.

The average concentrations of chlorobenzene, 1,4-dichlorobenzene, and benzene in the MHU and DHU at each source area can be estimated based on analytical results of samples from borings that were advanced during the DNAPL characterization and remediation study (GSI, 2006c). Samples of soil and aquifer matrix were collected at a typical frequency of one sample per 10-ft core.

Appendix I includes a table of analytical results for soil samples collected from borings A1-02, A1-08, A1-09, A1-14, and A1-19, which are located in the residual DNAPL source areas at Sites G, H, and I South. The table also shows the average concentrations of the key COCs at each boring and the estimated mass of COCs for the surrounding residual DNAPL areas that are represented by each boring.

The calculated results were then divided by three and multiplied by three to give a range of potential masses. The following table shows the calculated mass of the key COCs before treatment, the estimated mass range before treatment, and estimated ranges for mass that could be removed assuming 50%, 75%, and 90% source mass reduction.

ESTIMATED MASS REMOVED IN KG ASSUMING 50%, 75% OR 90% MASS REMOVAL					
	Calculated Mass Before Treatment (kg)	Estimated Mass Range Before Treatment (kg)	50% of Mass (kg)	75% of Mass (kg)	90% of Mass (kg)
Benzene	1,100	360 - 3,300	180 - 1,600	270 - 2,500	330 - 2,900
Chlorobenzene	10,200	3,400 - 30,700	1,700 –15,300	2,600 –23,000	3,100 –27,600
1,4-Dichlorobenzene	75,400	25,100 – 226,000	12,600-113,000	18,900-170,000	22,600-204,000

The values for calculated mass before treatment are based on a limited number of soil borings, and conditions in the subsurface are likely to be heterogeneous. Therefore, there is considerable uncertainty in these calculated values.

13.6.6 Detailed Evaluation of Alternative 5

Overall Protection of Human Health and the Environment - Alternative 5 can be implemented in a manner that is protective of human health and the environment.

The engineered covers in Alternative 5 include soil or crushed rock covers at Sites G, H, L; a crushed rock cover at Site I South; and asphalt pavement in the parking areas at Site G West. These engineered covers address the RAO for surface and subsurface soil and the RAO for waste and leachate. These covers, in conjunction with the institutional controls, minimize the potential for human exposure to COCs at the fill areas and prevent erosion of the fill areas.

Alternative 5 can achieve the soil vapor RAO provided that the soil vapors generated during operation of the PABS systems are carefully monitored and managed so as to prevent potential unacceptable risks to indoor workers in nearby buildings. This alternative includes institutional controls that will prevent construction of new buildings on the source areas without vapor controls.

Alternative 5 meets all three groundwater RAOs. Groundwater is not used as a source of drinking water in the area. Although there are some private wells that may be used for outdoor household activities, none are located within or downgradient of the Sauget Area 1 groundwater plumes. The existing ordinances in the Villages of Sauget and Cahokia prohibiting the use of groundwater as a potable water source provide appropriate protection of human health.

As discussed in Section 12.2, a 30-year time to clean is not feasible for the Sauget Area 1 plume. This is the case even if PABS (or any other treatment technology) is implemented and is successful at reducing source mass by 50%, 75%, or even 90%. As documented in Appendix D, if a 90% source mass reduction in the MHU and DHU is assumed to occur in 2015 due to implementation of a treatment technology, it will still probably take >150 years to achieve the MCL for chlorobenzene in the MHU at the conceptual monitoring well location described in Section 13.2.2.

Alternative 5 addresses the groundwater RAO that requires preventing groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in an unacceptable, adverse ecological impact to the River. As discussed in Section 6.5, the updated regional groundwater flow and transport model (GSI, 2012) was used to quantify the mass flux to the Mississippi River from the Sauget Area 1 plumes with the GMCS off and with the GMCS on. Modeled mass flux results for the year 2020 and beyond indicate that, for all 7 COCs, the GMCS will capture approximately 73% of the modeled mass flux from Sauget Area 1 that reaches the area near the Mississippi River. To the extent that it occurs, the mass flux to the River from the Sauget Area 1 plumes would be located north of the barrier wall in an area that is within the plume areas from other sources, including Sauget Area 2 and the Krummrich plant. Groundwater concentrations along the River north of the barrier wall can be monitored for the Sauget Area 1 COCs using two conceptual point-of-compliance well locations discussed in Section 12.2.3.

Compliance with ARARs - The ARARs identified for the Sauget Area 1 remedial alternatives are listed in Table 13-1. ARARs that govern the closure and post-closure requirements related to landfills include 35 IAC 807, which contains the standards for solid waste landfills, and 35 IAC 724, which contains the standards for owners and operators of hazardous waste treatment, storage and disposal facilities. Although the 35 IAC 807 standards are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions. The engineered covers included in Alternative 5 satisfy identified ARARs for soil and waste present in the fill areas at Sites G, H, I South, and L.

The closure and post-closure care requirements in 35 IAC 724.410a defines the following minimum requirements for hazardous waste landfill covers:

1) Provide long-term minimization of migration of liquids through the closed landfill
2) Function with minimal maintenance
3) Promote drainage and minimize erosion or abrasion of the cover
4) Accommodate settling and subsidence so that the cover's integrity is maintained

Items 2 through 4 are relevant and appropriate for Sauget Area 1. Item 1 is relevant but not appropriate to site conditions. The engineered covers in Alternative 5 either comply with or are substantially equivalent to items 2 through 4. Engineered covers that provide for long-term minimization of migration of liquids are not appropriate for Sauget Area 1 because:

- Results from a mass flux evaluation of Site I indicates that estimated mass flux of key COCs from leaching of unsaturated source materials is small compared to estimated mass flux of the COCs due to lateral groundwater flow. (For detailed discussion of the mass flux evaluation see Section 13.4.3.)
- Average estimated waste thicknesses at Sites G, H, and I South are 20 ft, 20 ft, and 25 ft, respectively. Under typical conditions the lower portion of the waste at these sites is below the water table, and the water table can fluctuate by several feet over time based on measurements in monitoring wells near the Judith Lane Containment Cell. Installation of caps to minimize infiltration of rainwater at Sauget Area 1 would not address flushing effects from the rising and falling water table.
- No principal threat liquids or mobile source materials were identified in the wastes above the water table at the Sauget Area 1 sites.
- Impacted groundwater at Sauget Area 1 is addressed by MNA and the Sauget Area 2 GMCS.

Alternative 5 provides a closure which either complies with or meets the substantive requirements of 35 IAC 724.211(b), which requires that the closure controls, minimizes, or eliminates to the extent necessary to adequately protect human health and the environment, post-closure escape

of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous decomposition products to the ground or surface waters or to the atmosphere.

The soil or crushed rock covers in Alternative 5 can be constructed to require minimal maintenance, which meets the substantive requirement of 35 IAC 724.211(a). Periodic maintenance as described in the O&M Plan would be implemented to correct any settling or subsidence. These covers should provide adequate protection of human health and the environment and will facilitate the operation of the PABS systems for source mass removal in the MHU and DHU.

Alternative 5 satisfies ARARs relating to groundwater quality standards, including 35 IAC 620.405, which prohibits a person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedance of groundwater quality standards, and 35 IAC 620.410, which contains the Illinois Class 1 groundwater standards. At the end of the remedial action for Alternative 5 there will not be releases of COCs to groundwater that would result in exceedances of groundwater quality standards, and the Class I groundwater standards would be met by MNA.

Alternative 5 also satisfies various ARARs that address the requirements for groundwater monitoring by owners and operators of hazardous waste disposal facilities. These ARARs include 35 IAC 724.191 through 35 IAC 724.197 and 35 IAC 724.199. The substantive requirements of these ARARs will be met for Alternative 5 by the MNA groundwater monitoring program and by groundwater monitoring of point-of-compliance wells located along the Mississippi River.

Long-Term Effectiveness and Permanence – Alternative 5 is an effective, permanent remedy that meets the RAOs for Sauget Area 1.

Reduction of Toxicity, Mobility or Volume through Treatment - Alternative 5 includes two components that involve treatment: i) off-site incineration of the pooled DNAPL recovered from BR-I; and ii) in-situ aerobic biodegradation of COCs in the MHU and DHU by PABS.

Pooled DNAPL recovery at BR-I and off-site incineration will reduce the volume of pooled DNAPL at well BR-I, thereby removing source mass and addressing this principal threat material. As discussed in Section 13.4.2, daily removal of one gallon of DNAPL from BR-I for one year would result in removal of approximately 0.43 kg of chlorobenzene; 16.5 kg of 1,4-dichlorobenzene; 0.037 kg of benzene; and 275 kg of 1,2,4-trichlorobenzene.

The PABS systems are designed to achieve source mass removal through in-situ treatment in the areas where residual DNAPL was encountered in the MHU and DHU. Outcomes for source mass removal are likely to be bracketed between 75% and 90% mass reduction, based on review of various studies (Brown et al., 1998; Machackova; Sale et al., 2008; Sperry et al., 2001). However, a lower mass removal percentage (e.g., 50% mass reduction) is also considered to be a possible outcome. Section 13.6.5 lists estimated ranges for mass removal of chlorobenzene, 1,4-dichlorobenzene, and benzene and discusses the calculation method for estimating the mass prior to treatment. There is considerable uncertainty in these mass estimates.

Short-Term Effectiveness - Short-term risks associated with implementation of Alternative 5 include risks associated with construction of the engineered covers and risks associated with construction and operation of the PABS systems.

The risks associated with construction of the engineered covers include general risks to construction workers as well as significant truck traffic needed to bring the large volume of cover material. Other risks include the potential for dust emissions or stormwater runoff from areas of affected soils or waste during construction of the covers. The potential risks to the community due

to dust emissions and stormwater runoff can be managed through measures that will be developed during remedial design.

The risks associated with construction and operation of the PABS systems include: i) risks to workers due to potential contact with wastes during drilling and installation of injection well pairs and vent wells at Sites G, H, and I South; and ii) potential risks to indoor workers at nearby buildings due to the potential for intrusion of soil vapors generated during operation of the PABS systems.

The potential risks to site workers during construction of the engineered covers and during construction and operation of the PABS systems can be managed by requiring adequate PPE and routine safety procedures that will be specified in a health and safety plan to be developed during remedial design.

The potential risks to indoor workers will be addressed by operating and monitoring the PABS systems to control soil vapors and prevent unacceptable risks to indoor workers.

Alternative 5 would require an estimated 93,000 cubic yards of fill material and soil to be transported to the sites, which would require >4,600 truck loads and would result in the release of approximately 155,000 pounds of carbon dioxide to the atmosphere (Table 13-2).

Implementability - Alternative 5 could be implemented at Sites G, H, and L. However, implementing Alternative 5 at Site I South would be difficult and disruptive to current operations, especially the installation of the PABS systems, which include numerous sparge well clusters, extensive underground piping networks, and several equipment enclosures to house the compressors, controls, and drums of granular activated carbon (see Figure 13-10).

As previously noted, Site I South is used for truck trailer parking and has two roads, a rail spur, truck scales, and a guard shack within its boundary. The eastern side of the facility's employee parking lot is located within the boundary of Site I South and is within the area where sparge well pairs would be installed.

Implementation of the PABS component involves installation of underground piping. The PABS system would require a network of underground piping to deliver compressed air to the sparge wells and to route recovered vapors from the passive vapor wells to centrally located equipment compounds. The excavation activities would be disruptive to current operations at Site I South.

As discussed in Section 13.4.3, the truck traffic at Site I includes trailers of raw material entering the facility, trailers of product leaving the facility, and moves of the trailers between the trailer parking area (i.e., Site I) and the main operating areas. In February 2012 (a typical month), there were an average of 69 moves per operating day. This traffic would be difficult to manage during construction of the crushed rock cover and PABS systems at Site I South.

Installation of the cover at Site I South would change the topography of the site and may result in a reduction of the usable area of the site available for truck trailer parking. The biosparge well clusters would require heavy-duty subsurface vaults to prevent damage from truck traffic.

Institutional controls are common and easily implementable. Construction and O&M of the engineered covers and the other remedy components of Alternative 5 can be performed using locally available resources and equipment. The long-term O&M of the PABS systems would likely require significant investments of time and resources for system monitoring and maintenance tasks.

Cost - The estimated present value cost for Alternative 5 is **$14.8 million.** Table F-5 presents a summary of capital costs, O&M costs, and a calculation of present value costs for this alternative. Costs for Alternative 5 are sensitive to the proximity of suitable borrow materials for the cover systems, the degree to which existing features at Site I South may need to be modified to accommodate the change in elevation, and the level of O&M for the PABS systems.

13.7 COMPARATIVE ANALYSIS OF ALTERNATIVES 1 THROUGH 5

The alternatives that were described and evaluated in Sections 13.2 through 13.6 included:

Alternative	Components
Alternative 1	- No action
Alternative 2	- Institutional Controls - Containment Cell Operation and Maintenance (O&M) - Monitored Natural Attenuation (MNA)
Alternative 3	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L
Alternative 4	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L - Leachate Control at Sites G, H, and I South
Alternative 5	- Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Soil or Crushed Rock Covers at Sites G, H, I South and L - Pulsed Air Biosparging at Residual DNAPL Areas at Sites G, H, and I South

Overall Protection of Human Health and the Environment - Alternatives 1 and 2 are not protective of human health or the environment because they do not meet the RAOs developed for the affected soils and waste at Sites G, H, and I South.

The engineered covers included in Alternatives 3, 4, and 5 achieve the RAO for surface and subsurface soil and the RAO for waste and leachate. These engineered covers, in conjunction with the institutional controls, minimize the potential for human exposure to COCs at the fill areas and prevent erosion of the fill areas.

Alternatives 1 through 4 achieve the soil vapor RAO. Alternative 5 can achieve the soil vapor RAO provided that soil vapors generated during operation of the PABS systems are carefully monitored and the PABS operations are managed so as to prevent potential unacceptable risks to indoor workers in nearby buildings.
Alternatives 2, 3, 4, and 5 provide the same level of overall protection of human health and the environment with respect to i) preventing ingestion of groundwater exceeding regulatory standards; and ii) preventing groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in unacceptable adverse ecological impacts to the Mississippi River.

Alternatives 2, 3, 4, and 5 achieve the groundwater RAO that calls for restoring groundwater quality affected by releases from the Sauget Area1 sites to MCLs and Class I standards, to the extent practicable. However, a 30-year time to clean for the Sauget Area 1 plume is not feasible for any of the alternatives.

Alternatives 2, 3, and 4 rely on MNA for restoring groundwater quality. The time to achieve compliance with MCLs and Class I standards is in the range of several hundred years. Alternative 5 includes MNA as well as source area treatment in the MHU and DHU using PABS. Even if a 90% source mass reduction (the best case) could be achieved in the MHU and DHU in 2015 due to implementation of PABS, it would still be expected to take >150 years to reach the MCL for chlorobenzene in the MHU downgradient of the Sauget Area 1 sites.

Alternatives 2, 3, 4, and 5 address the groundwater RAO that requires preventing groundwater discharges to the Mississippi River from the Sauget Area 1 source areas that result in an unacceptable, adverse ecological impact to the River. As discussed in Section 6.5, the updated regional groundwater flow and transport model (GSI, 2012) was used to quantify the mass flux to the Mississippi River from the Sauget Area 1 plumes with the GMCS off and with the GMCS on. Modeled mass flux results for the year 2020 and beyond indicate that, for all 7 COCs, the GMCS will capture approximately 73% of the modeled mass flux from Sauget Area 1 that reaches the area near the Mississippi River. To the extent that it occurs, the mass flux to the River from the Sauget Area 1 plumes would be located north of the barrier wall in an area that is within the plume areas from other sources, including Sauget Area 2 and the Krummrich plant. Groundwater concentrations along the River north of the barrier wall can be monitored for the Sauget Area 1 COCs using two conceptual point-of-compliance well locations discussed in Section 12.2.3.

Compliance with ARARs – Alternatives 1 and 2 do not comply with ARARs relating to closure and post-closure requirements for landfills due to the absence of an engineered cover or other technology to prevent potential exposure to affected soil and waste present in the fill areas at Sites G, H, I South, and L.

The engineered covers in Alternatives 3, 4, and 5 can be designed and implemented to comply with ARARs relating to closure and post-closure requirements for landfills, specifically 35 IAC 724, which contains the standards for owners and operators of hazardous waste treatment, storage and disposal facilities. Although the 35 IAC 807 standards for solid waste landfills are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.

The engineered covers in Alternatives 3, 4, and 5 would function with minimal maintenance, would promote drainage and minimize erosion of the cover, and could accommodate settling and subsidence so that the cover's integrity is maintained. Engineered covers that provide for long-term minimization of migration of liquids are not appropriate for Sauget Area 1 because:

- Results from a mass flux evaluation of Site I indicates that estimated mass flux of key COCs from leaching of unsaturated source materials is small compared to estimated mass flux of the COCs due to lateral groundwater flow. (For detailed discussion of the mass flux evaluation see Section 13.4.3.)
- Average estimated waste thicknesses at Sites G, H, and I South are 20 ft, 20 ft, and 25 ft, respectively. Under typical conditions the lower portion of the waste at these sites is below the water table, and the water table can fluctuate by several feet over time based on measurements in monitoring wells near the Judith Lane Containment Cell. Installation of caps to minimize infiltration of rainwater at Sauget Area 1 would not address flushing effects from the rising and falling water table.
- No principal threat liquids or mobile source materials were identified in the wastes above the water table at the Sauget Area 1 sites.

- Impacted groundwater at Sauget Area 1 is addressed by MNA and the Sauget Area 2 GMCS.

Alternatives 3, 4, and 5 provide a closure which either complies with or meets the substantive requirements of 35 IAC 724.211(b), which requires that the closure controls, minimizes, or eliminates to the extent necessary to adequately protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous decomposition products to the ground or surface waters or to the atmosphere.

Alternatives 2, 3, 4, and 5 satisfy ARARs relating to groundwater quality standards, including 35 IAC 620.405, which prohibits a person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedance of groundwater quality standards, and 35 IAC 620.410, which contains the Illinois Class 1 groundwater standards. At the end of the remedial action for Alternatives 2, 3, 4, or 5 there will not be releases of COCs to groundwater that would result in exceedances of groundwater quality standards, and the Class I groundwater standards would be met by MNA.

Alternatives 2, 3, 4, and 5 also satisfy various ARARs that address the requirements for groundwater monitoring by owners and operators of hazardous waste disposal facilities. These ARARs include 35 IAC 724.191 through 35 IAC 724.197 and 35 IAC 724.199. The substantive requirements of these ARARs will be met for Alternatives 2, 3, 4, and 5 by the MNA groundwater monitoring program and by groundwater monitoring of point-of-compliance wells located along the Mississippi River.

Long-Term Effectiveness and Permanence – Alternatives 3, 4, and 5 are effective, permanent remedial alternatives that meet the RAOs for Sauget Area 1. Alternatives 3 and 4 provide a similar measure of long-term effectiveness and permanence after construction of the engineered covers is complete. Alternative 5 provides a somewhat higher degree of long-term effectiveness by reducing COC concentrations in the MHU and DHU underlying the source areas.

Reduction of Toxicity, Mobility or Volume through Treatment – Alternative 2 provides no reduction of toxicity, mobility, or volume through treatment, except for reduction of toxicity and volume of the COCs in groundwater due to MNA. Alternative 3 includes off-site incineration of the pooled DNAPL recovered from BR-I, which can be considered treatment of this principal threat material.

Alternative 4 includes off-site incineration of the pooled DNAPL recovered from BR-I and treatment of leachate pumped from the grid of leachate wells. As demonstrated during the Remedial Investigation, leachate recovery and treatment will provide a relatively limited reduction in mobility and volume of COCs in the fill areas at Sites G, H, and I South, and will not significantly reduce the time to meet remedial goals for groundwater downgradient of the source areas.

Alternative 5 provides a significantly higher degree of treatment compared to Alternatives 2, 3, and 4. It includes off-site incineration of the pooled DNAPL recovered from BR-I and extensive in-situ aerobic biodegradation of COCs using PABS systems targeting the residual DNAPL areas in the MHU and DHU. Outcomes for source mass removal for the PABS systems are likely to be bracketed between 75% and 90% mass reduction, based on review of various studies (Brown et al., 1998; Machackova; Sale et al., 2008; Sperry et al., 2001), although a lower mass removal (e.g., 50% source mass reduction) is also possible. However, even with the additional cost and complexity of the PABS operations, it would still be expected to take >150 years to reach the MCL for chlorobenzene in the MHU downgradient of the Sauget Area 1 sites.

Short-Term Effectiveness – Alternative 2 has minimal short-term risks to the community and to workers. Alternatives 3, 4, and 5 have similar levels of short-term risks associated with construction of engineered covers, such as truck traffic and the potential for dust emissions and stormwater runoff, which are risks that can be managed.

Alternatives 3 and 4 would require an estimated 140,600 cubic yards of fill material and soil to be transported to the sites, which would require >7,000 truck loads and would result in the release of approximately 234,000 pounds of carbon dioxide to the atmosphere. Alternative 5 would require an estimated 93,000 cubic yards of fill material and soil to be transported to the sites, which would require >4,600 truck loads and would result in the release of approximately 155,000 pounds of carbon dioxide to the atmosphere.

Alternatives 4 and 5 also involve drilling and installation of wells in the fill areas, with associated risks to workers due to potential contact with wastes. These risks can be mitigated using procedures outlined in a health and safety plan that will be developed during remedial design.

In Alternative 5, the risks associated with operation of the PABS systems include potential for risks to indoor workers at nearby buildings due to intrusion of soil vapors generated during operation of the PABS systems. The potential risks to indoor workers will need to be addressed by operating and monitoring the PABS systems to control soil vapors and prevent their migration to nearby buildings.

Implementability – Alternative 2 is readily implementable. The engineered covers in Alternatives 3, 4, and 5 will be difficult to implement at Site I South because of the use of the site for truck trailer parking and because of existing features (e. g., railroad spur, plant road, truck scales). For the same reasons, it will be disruptive to existing operation and difficult to implement leachate control (Alternative 4) or PABS (Alternative 5) at Site I South. These remedy components both require installation of numerous wells, extensive networks of underground piping, and several enclosures for treatment systems and/or compressors.

Cost - The estimated present value costs for the five alternatives are:

- Alternative 1: $0
- Alternative 2: $3.1 million
- Alternative 3: $12.8 million
- Alternative 4: $22.5 million
- Alternative 5: $14.8 million

The following table lists each alternative and indicates the following: i) whether or not the alternative achieves RAOs; ii) whether or not the alternative meets threshold evaluation criteria (i.e., overall protection of human health and the environment and compliance with ARARs); and iii) the estimated present value cost of the alternative, including capital costs and 30 years of O&M.

Summary of the Detailed Evaluation of Alternatives 1 through 5

Alternative	Meets RAOs	Meets Threshold Evaluation Criteria	Estimated 30-Year Present Value Cost ($ million)
Alternative 1 - No Action	No	No	$0
Alternative 2 - Institutional Controls, Containment Cell O&M, MNA	No	No	$3.1
Alternative 3 - Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South and L	Yes	Yes	$12.8
Alternative 4 - Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Capping Sites G, H, I South, and L - Leachate Control at Sites G, H, and I South	Yes	Yes	$22.5
Alternative 5 - Institutional Controls, Containment Cell O&M, MNA - Utility Relocation, Pooled DNAPL Recovery at BR-I - Soil or Crushed Rock Covers at Sites G, H, I South and L - Pulsed Air Biosparging at Residual DNAPL Areas at Sites G, H, and I South	Yes	Yes	$14.8

1) RAOs = Remedial Action Objectives
2) Threshold evaluation criteria include: i) overall protection of human health and the environment; and ii) compliance with Applicable or Relevant and Appropriate Requirements (ARARs).

14.0 REFERENCES

14.1 General and Site-Specific References

Advent, 2000. Sauget Area 1 EE/CA and RI/FS Support Sampling Plan, Leachate Treatability Tests: The Advent Group, November 2000

AFCEE, 2004. Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents, Air Force Center for Environmental Excellence (AFCEE), August 2004.

Aziz, C.E., C.J. Newell, J.R. Gonzales, P.E. Haas, T.P. Clement, and Y. Sun, 2000. BIOCHLOR Natural Attenuation Decision Support System, User's Manual Version 1.1, United States Environmental Protection Agency, Office of Research and Development, EPA/600/R-00/008, www.epa.gov/ada/csmos/models.html.

AECOM, 2009a. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Tier 2 Evaluation: AECOM, September 2009. USEPA approved (September 30, 2009).

AECOM, 2009b. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Evaluation of Chemical Use at the Wiese Building: AECOM, January 2009. USEPA approved (August 2009).

Bruin, Jack and H.F. Smith, 1953. Preliminary Investigation of Groundwater Resources in the American Bottom in Madison and St. Clair Counties, Illinois: Report of Investigation No. 17, Illinois Department of Registration and Education, State Water Survey Division.

Cerro Copper Products, 1991. Final Report for the Removal of Contaminated Creek Sediment At Dead Creek Segment A, Sauget, Illinois: Cerro Copper Products Co., June 6, 1991, with minor revisions on June 17, 1991.

Clark, G.R., 1997. *American Bottoms Regional Ground-Water Flow Model*, Illinois Department of Natural Resources, Office of Water Resources, Springfield, Illinois.

Clement, T.P. 1997. *RT3D - A Modular Computer Code for Simulating Reactive Multi-Species Transport in 3-Dimensional Groundwater Aquifers*. Pacific Northwest National Laboratory, Richland, WA, USA. PNNL-11720

Ecology and Environment, 1988. Expanded Site Investigation, Dead Creek Project Sites at Cahokia/Sauget, Illinois: Ecology and Environment, Inc., May 1988.

Ecology and Environment, 1998. Sauget Area 1 Data Tables/Maps, Volume 1: Ecology and Environment, Inc., February 1998.

ENSR, 1999. Sauget Area 1 Human Health Risk Assessment Work Plan, Sauget and Cahokia, Illinois : ENSR, June 25, 1999 (and August 6, 1999 revised pages). Sauget Area 1 EE/CA and RI/FS Support Sampling Plan Volume 1B. USEPA approved.

ENSR, 2001. Sauget Area 1 Human Health Risk Assessment, Sauget and Cahokia, Illinois : ENSR, June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA approved (November 13, 2001).

ENSR, 2002. Sauget Area 1 - Dead Creek Final Remedy Creek Bottom Soil Engineering Evaluation/Cost Analysis, Volume II: Human Health Risk Assessment: ENSR, June 21, 2002.

ENSR, 2006. Sauget Area 1 Dead Creek Final Remedy, Creek Bottom Soil Engineering Evaluation/Cost Analysis: ENSR, April 2006.

ENSR, 2008a. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Tier 2 Evaluation: ENSR, January 2008.

ENSR, 2008b. Sauget Area 1 Utility Corridor Evaluation Human Health Risk Assessment: ENSR, August 2008. USEPA approved (September 10, 2008).

ENSR, 2008c. Sauget Area 1 Disposal Area Waste Toxicity Evaluation: ENSR Corporation, May 2008. USEPA approved (September 26, 2008).

ENSR, 2009. Sauget Area 1 Update of Terrestrial Screening. Provided as Appendix 7 of the Ecological Risk Assessment Addendum prepred for Solutia Inc. and submitted to USEPA on June 3, 2009.

ESTCP, 2008. Frequently Asked Questions Regarding Management of Chlorinated Solvents in Soils and Groundwater. Developed for the Environmental Security Technology Certification Program (ESTCP) by Tom Sale, Charles Newell, Hans Stroo, Robert Hinchee, and Paul Johnson, July 2008.

Geraghty and Miller, 1993. "Development of a Three-Dimensional Ground-Water Flow Model for Sauget Site R, Sauget, Illinois", Plainview, New York, February, 1993.

Geraghty & Miller, 1994. Remedial Investigation at Sauget Site R, Monsanto Company, Sauget, Illinois: Geraghty & Miller, Inc., August 1994.

Geraghty & Miller, 1994. Remedial Investigation for the Expanded Study Area, Sauget, Illinois: Geraghty & Miller, Inc., August 1994.

Golder Associates, 2004. Site G Material Characterization Sampling, Sauget Area 1, Sauget, Illinois: Golder Associates Inc., July 12, 2004.

Golder Associates, 2007a. Soil Vapor Investigation, Sauget Area 1, Sauget, Illinois: Golder Associates Inc., March 2007.

Golder Associates, 2007b. Dead Creek Soil-Groundwater Leaching Investigation, Sauget Area 1, Sauget, Illinois: Golder Associates Inc., October 2007.

Golder Associates, 2008. Subsurface Investigation, Queeny Utility Corridor Investigation, Sauget, Illinois: Golder Associates Inc., March 2008.

GSI, 2004. Work Plan for DNAPL Characterization and Remediation Study, Sauget Area 1 Sites, Sauget, Illinois: Groundwater Services, Inc., April 1, 2004.

GSI, 2005. Mass Flux Estimates, Sauget Area 1, Sauget and Cahokia, Illinois: Groundwater Services, Inc., November 15, 2005.

GSI, 2006a. "Groundwater Modeling Plan", Prepared for URS Corporation by Groundwater Services, Inc., Houston, Texas, March 27, 2006.

GSI, 2006b. Evaluation of Buried Drums, Sauget Area 1, Sauget and Cahokia, Illinois: Groundwater Services, Inc., August 24, 2006.

GSI, 2006c. Results of DNAPL Characterization and Remediation Study, Revision 1, Sauget Area 1, Sauget and Cahokia, Illinois: Groundwater Services, Inc., August 28, 2006.

GSI, 2008a. Results of DNAPL Recovery Study at BR-I, Revision 1, Sauget Area 1, Sauget and Cahokia, Illinois: GSI Environmental Inc., March 6, 2008.

GSI, 2008b. Regional Groundwater Flow and Contaminant Transport Model, American Bottoms Aquifer: GSI Environmental Inc., April 14, 2008.

GSI, 2009. Summary of DNAPL Recovery at BR-I, October 2008 to November 2009. GSI Environmental Inc., December 18, 2009.

GSI, 2012. 2012 Update of Regional Groundwater Flow and Transport Model, American Bottoms Aquifer. GSI Environmental Inc., February 24, 2012.

IEPA, 1998. Tiered Approach to Corrective Action Objectives. Title 35, Subtitle G, Chapter I, Subchapter J, Part 742. As amended June 8, 1998. Illinois Environmental Protection Agency.

ITRC, 2008. In Situ Bioremediation of Chlorinated Ethene: DNAPL Source Zones. Interstate Technology and Regulatory Council (ITRC), June 2008.

MADEP, 1995. Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan, Interim Final. Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup and Office of Research and Standards.

Menzie-Cura, 2001. Ecological Risk Assessment for Sauget Area I: Menzie-Cura & Associates, Inc., January 2001.

Menzie-Cura, 2002. Ecological Risk Assessment on Dead Creek Bottom Soil: Menzie-Cura & Associates, Inc., June 21, 2002

Newell, C.J. and D.T. Adamson, 2004. "Planning-level source decay models to evaluate impact of source depletion on remediation timeframe", Submitted to *Environmental Science and Technology*, October, 2004.

NOAA, 1998. Local Climatological Data, St. Louis, Missouri (STL): National Oceanographic and Atmospheric Administration, 1998.

NCDC, 2000. National Climatic Data Center Web Site (http://www.4.ncdc.gov): National Oceanographic and Atmospheric Administration, November 2000.

O'Brien & Gere, 2000a. Sauget Area 1 Site, Support Sampling Project, Data Validation Report: O'Brien & Gere Engineers, Inc., August 2000.

O'Brien & Gere, 2000b. Soil, Ground Water, Surface Water, Sediment, and Air Sampling Field Sampling Report: O'Brien & Gere Engineers, Inc., September 2000.

O'Brien & Gere, 2001. Sauget Area 1 EE/CA and RI/FS Support Sampling Plan Data Report: O'Brien & Gere Engineers, Inc., January 2001.

Pankow, J.F. and J.A. Cherry, 1996. *Dense Chlorinated Solvents and other DNAPLs in Groundwater*, Waterloo Press, Waterloo, Ontario.

Ritchey, J.D. and R.J. Schicht, 1982. Ground-Water Management in the American Bottoms, Illinois: Proceedings of the Sixth National Ground-Water Quality Symposium; State, County, Regional and Municipal Jurisdiction of Ground-Water Protection. Atlanta, Georgia. September 22-24, 1982.

Roux Associates and Solutia, 2001. EE/CA and RI/FS, Revision 1, Sauget Area 1, Sauget and Cahokia, Illinois: Roux Associates, Inc., and Solutia Inc., June 8, 2001.

Sale, T.C., and D.B. McWhorter, 2001. Steady state mass transfer from single-component dense non-aqueous phase liquids in uniform flow fields. *Water Resources Research*, 37(2): 393-404.

Schicht, R.J., J.D. Ritchey, and L.S. Weiss, 1984. Ground Water Level Analysis by Computer Modeling: American Bottoms Ground Water Study, Part A. Ground Water Levels and Pumpage: Illinois Department of Energy and Natural Resources, State Water Survey Division, Ground Water Section. June 1984.

Schnarr, M., C. Truax, G. Farquhar, E. Hood, T. Gonullu, and B. Stickney, 1998. "Laboratory and Controlled Field Experiments using Potassium Permanganate to Remediate Trichloroethylene and Perchloroethylene DNAPLs in Porous Media", Journal of Contaminant Hydrology, Vol. 29, p. 205-224.

SERDP, 2011a. Secondary Impacts of In Situ Remediation on Groundwater Quality and Post-Treatment Management Strategies. Fact Sheet ER-2129. SERDP, 2011.

SERDP, 2011b. Numerical Modeling of Post-Remediation Impacts of Anaerobic Bioremediation on Groundwater Quality. Fact Sheet ER-2131. SERDP, 2011.

Solutia, 1999. Sauget Area 1 EE/CA and RI/FS Support Sampling Plan: Solutia Inc., St. Louis, MO. June 25, 1999 (revised August 1999).

Solutia, 2000. Description of Current Conditions, W. G. Krummrich Plant, Sauget, Illinois: Solutia Inc. September 1, 2000.

Solutia, 2007. Sauget Area 1, Sampling Plan for Utility Corridor Investigations, March 22, 2007. Section 4 revised February 20, 2008.

Solutia, 2008a. 2007 Annual Report, Sauget Area 2 Groundwater Migration Control System: Solutia Inc., June 16, 2008.

Solutia, 2008b. Sauget Area 1 Ecological Risk Assessment Addendum: Solutia Inc., October 31, 2008.

Tetra Tech, 2003a. Letter Report, Sauget Sites H and I, Sauget, St. Clair County, Illinois: Tetra Tech EM Inc., March 26, 2003.

Tetra Tech, 2003b. Site Investigation Report, Sauget Site L, Sauget, St. Clair County, Illinois: Tetra Tech EM Inc., June 16, 2003.

Tetra Tech, 2003c. Site Investigation Report, Sauget Sites I and N, Sauget, St. Clair County, Illinois: Tetra Tech EM Inc., November 25, 2003.

URS, 2009. Remedial Investigation Report, Revision 4, Sauget Area 2, Sauget, Illinois: URS Corporation, January, 2009

U.S. Department of Energy, 2000. "Hydrous Pyrolysis Oxidation/Dynamic Underground Stripping", Innovative Technology Summary Report. DOE/EM-0504.

USEPA, 1989. Guidance on Conducting Remedial Investigations and Feasibility Studies under CERCLA: EPA540-G-89-004

USEPA, 1991. "A Guide to Principal Threat and Low Level Threat Wastes", Superfund Publication 9380.3-06FS, November 1991.

USEPA, 1992. "Estimating Potential for Occurrence of DNAPL at Superfund Sites", U.S. EPA publication 93554-07FS

USEPA, 1993. Guidance on Conducting Non-Time Critical Removal Actions under CERCLA: EPA540-R-93-057

USEPA, 1995. Federal On-Scene Coordinator's Report, Removal Action at the Dead Creek Area G Landfill (Site G), Sauget, St. Clair County, Illinois, March 29 – September 30, 1995.

USEPA, 1998. USEPA Region 5, Model QAPP (Quality Assurance and Project Plan). May 1998.

USEPA, 1999a. Administrative Order by Consent In The Matter Of Sauget Area 1 Site, Sauget and Cahokia, Illinois: United States Environmental Protection Agency, Region 5. Respondents: Monsanto Co. and Solutia Inc. January 21, 1999.

USEPA, 1999b. Unilateral Administrative Order In The Matter Of Sauget Area 1 Superfund Site, Sauget and Cahokia, Illinois: United States Environmental Protection Agency, Region 5. Respondents: Monsanto Co. and Solutia Inc. June 21, 1999.

USEPA, 2000. A Guide to Developing and Documenting Cost Estimates during the Feasibility Study: EPA 540 R-00-002, July 2000.

USEPA, 2008. E-mail from Leah Evison of USEPA to Steve Smith of Solutia to say that USEPA has no comments on the AECOM memo dated September 5, 2008 regarding dose-response data for the 2006 Creek Bottom Soil Risk Assessment. The e-mail is dated September 22, 2008.

Yin, Y. and H.E. Allen, 1999. "In Situ Chemical Treatment", Technology Evaluation Report prepared for Groundwater Remediation Technlogy Analysis Center, Pittsburgh, PA.

14.2 Biodegradation References

Adrian, L., U. Szewzyk, J. Wecke, and H. Gorisch H, 2000. Bacterial dehalorespiration with chlorinated benzenes. *Nature*, 408:580-583.

Adrian, L., and H. Goerisch, 2002. Microbial transformation of chlorinated benzenes under anaerobic conditions. *Research in Microbiology*, 153(3): 131-137.**Alvarez, P.J.J., and T.M. Vogel, 1991.** Kinetics of Aerobic Benzene and Toluene in Sandy Aquifer Material. *Biodegradation,* 2(1): 43-51.

Anderson, R.T., J.N. Varga-Rooney, C.V. Gaw, and D.R. Lovley, 1998. Anaerobic benzene oxidation in the Fe(III) reduction zone of petroleum-contaminated aquifers. *Environmental Science and Technology*, 32(9): 1222-1229/

Aziz, C.E., C.J. Newell, J.R. Gonzales, P.E. Haas, T.P. Clement, and Y. Sun, 2000. BIOCHLOR Natural Attenuation Decision Support System, User's Manual Version 1.1, United States Environmental Protection Agency, Office of Research and Development, EPA/600/R-00/008, www.epa.gov/ada/csmos/models.html.

Balcke, G.U., L.P. Turunen, R. Geyer, D.F. Wenderoth, and D. Schlosser, 2004. Chlorobenzene biodegradation under consecutive aerobic-anaerobic conditions. *FEMS Microbiol. Ecol.,* 49:109-120.

Bollag, J.-M., and S. Russel, 1976. Aerobic vs. Anaerobic metabolism of halogenated anilines by a *Paracoccus* sp. *Microb. Ecol.*, 3: 65-73.

Bolt, M., G. Fuchs, and J. Heider, 2002. Anaerobic oxidation of aromatic compounds and hydrocarbons. *Current Opinion in Chemical Biology*, 6(5): 604-611.

Borden, R.C., 1994. Natural Bioremediation of Hydrocarbon-Contaminated Groundwater. In *Handbook of Bioremediation*. Ed. R.D. Norris et al., Boca Raton, FL: Lewis Publishers, 1994. 177-199.

Burland, S.M., and E.A. Edwards, 1999. Anaerobic Benzene Biodegradation Linked to Nitrate Reduction. *Applied and Environmental Microbiology*, 65(2): 529-533.

Christ, J.A., C.A. Ramsburg, L.M. Abriola, K.D. Pennell, and F.E. Loffler, 2005. Coupling Aggressive Mass Removal with Microbial Reductive Dechlorination for Remediation of DNAPL Source Zones: A Review and Assessment. *Environmental Health Perspectives*, 113(4): 465-477.

Dermietzel, J., A. Vieth, 2002. Chloroaromatics in groundwater: chances of bioremediation. *Environ. Geol.*, 41:683-689.

Estrella, M.R., M.L. Brusseau, R.S. Maier, I.L. Pepper, P.J. Wierenga, and R.M. Miller, 1993. Biodegradation, Sorption, and Transport of 2,4-Dichlorophenoxyacetic Acid in Saturated and Unsaturated Soils. *Applied and Environmental Microbiology*, 59(12): 4266-4273.**Field, J.A., R. Sierra-Alvarez, 2007.** Microbial degradation of chlorinated benzenes. *Biodegradation*, 19(4): 463-480.

Foght, J., 2008. Anaerobic Biodegradation of Aromatic Hydrocarbons: Pathways and Prospects. *Journal of Molecular Microbiology and Biotechnology*, 15(2-3): 93-120.

Fung, J.M., B.P. Weisenstein, E.E. Mack, J.E. Vidumsky, T.A. El, and S.H. Zinder, 2009. Reductive Dehalogenation of Dichlorobenzenes and Monochlorobenzene to Benzene in Microcosms. Environmental Science and Technology, April 2009. 43(7): 2302-2307.

Haggblom, M.M., and L.Y. Young, 1995. Anaerobic degradation of halogenated phenols by sulfate-reducing consortia. *Applied and Environmental Microbiology*, 61(4): 1546-1550.

Heidrich, S., H. Weiss, and A. Kaschl, 2004. "Attenuation reactions in a multiple contaminated aquifer in Bitterfeld (Germany)," *Environmental Pollution*, 129:277-288.

Hendrickson, E.R., J.A. Payne, R.M. Young, M.G. Starr, M.P. Perry, S. Fahnestock, D.E. Ellis, and R.C. Ebersole, 2002. Molecular Analysis of Dehalococcoides 16S Ribosomal DNAPL from Chloroethene-Contaminated Sites throughout North America and Europe. Applied and Environmental Microbiology, February 2002, 68(2): 485-495.

Johnson, S.L., K.J. Woolhouse, H. Prommer, D.A. Barry, and N. Chistofi, 2003. Contribution of anaerobic microbial activity to natural attenuation of benzene in groundwater. *Engineering Geology*, 70(3-4): 343-349.

Ka, J.O., W.E. Holben, and J.M. Tiedje, 1994. Genetic and phenotypic diversity of 2,4-dichlorophenoxyacetic acid-degrading bacteria isolated from 2,4-D-treated soils. *Applied and Environmental Microbiology*, 60: 1106-1115.

Kamagata, Y., R.R. Fulthorpe, K. Tamura, L.J. Forney, and J.M. Tiedje, 1997. Pristine environments harbor a new group of oligotrophic 2,4-dichlorophenoxyacetic acid-degrading bacteria. *Applied and Environmental Microbiology*, 63(6): 2266-2272.

Kaschl, A., C. Vogt, S. Uhlig, I. Nijenhuis, H. Weiss, M. Kästner, and H.H. Richnow, 2005. "Isotopic Fractionation Indicates Anaerobic Monochlorobenzene Biodegradation," *Environmental Toxicology and Chemistry*, 24(6), in press.

Kitagawa, W. S. Takami, K. Miyauchi, E. Masai, Y. Kamagata, J.M. Tiedje, and M. Fukada, 2002. Novel 2,4-Dichlorophenoxyacetic Acid Degradation Genes from Oligotrophic Bradyrhizobium sp. Strain HW13 Isolated from a Pristine Environment. *Journal of Bacteriology*, 184(2): 509-518.

Loffler, F.E., and E.A. Edwards, 2006. Harnessing microbial activities for environmental cleanup. *Current Opinion in Biotechnology*, 17: 274-284.

Lorbeer H., S. Starke, M. Gozan, A. Tiehm, and P. Werner, 2002. Bioremediation of Chlorobenzene-contaminated groundwater on granular activated carbon barriers. *Water, Air, & Soil Pollution Focus,* 2:183-193.

Lovley, D.R., 2000. Anaerobic benzene degradation. *Biodegradation*, 11(2-3): 107-116.

Lovley, D.R., J.D. Coates, J.C. Woodward, and E.J.P. Phillips, 1995. Benzene oxidation coupled to sulfate-reduction, *Applied and Environmental Microbiology*, 61(3): 953-958.

McLaughlin, H., A. Farrell, and B. Quilty, 2006. Bioaugmentation of Activated Sludge with Two Pseudomonas putida strains for the Degradation of 4-Chlorophenol. *Journal of Environmental Science and Health*, 41(5): 763-777.

Middeldorp, P.J.M., J. de Wolf, A.J.B. Zehnder, and G. Schraa, 1997. "Enrichment and Properties of a 1,2,4-Trichlorobenzene-Dechlorinating Methanogenic Microbial Consortium," *Applied and Environmental Microbiology*, 63(4):1225-1229.

Mikesell, M.D., and S.A. Boyd, 1985. Reductive dechlorination of the Pesticides 2,4-D, 2,4,5-T, and Pentachlorophenol in Anaerobic Sludges. *Journal of Environmental Quality*, 14: 337-340

Newell, C.J., H.S. Rifai, J.T. Wilson, J.A. Connor, J.A. Aziz, M.P. Suarez, 2002. *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies*. United States Environmental Protection Agency, National Risk Management Research Laboratory, EPA/540/S-02/500, November 2002.

Nielsen, P.H., and T.H. Christensen, 1994. "Variability of biological degradation of aromatic hydrocarbons in an aerobic aquifer determined by laboratory batch experiments," Journal of Contaminant Hydrology, 15:305-320.

Nowak, J., N.H. Kirsch, W. Hegemann, and H.J. Stan, 1996. "Total reductive dechlorination of chlorobenzenes to benzene by a methanogenic mixed culture enriched from Saale river sediment," *Applied Microbiology and Biotechnology*, 45(5):700-709.

Nowak, J., N.H. Kirsch, W. Hegemann, and H.-J. Stan, 1996. Total reductive dechlorination of chlorobenzenes to benzene by a methanogenic mixed culture enriched from Saale river sediment. *Applied Microbiology and Biotechnology*, 45(5): 700-709.

Radianingtyas, H., G.K. Robinson, and A.T. Bull, 2003. Characterization of a soil-derived bacterial consortium degrading 4-chloroaniline. *Microbiology*, 149(11): 3279-3287.

Ramanand K., M.T. Balba, and J. Duffy, 1993. "Reductive dehalogenation of chlorinated benzenes and toluenes under methanogenic conditions," *Applied and Environmental Microbiology*, 59(12):3266-3272.

Reineke, W. and H.J. Knackmuss, 1988. "Microbial Degradation of Haloaromatics," *Annual Review of Microbiology*, 42:263-287.

Rittman, B.E. and P.L. McCarty, 2001. *Environmental Biotechnology: Principles and Practices*, McGraw Hill, New York.

Sims, J.L., J.M. Sulfita, and H.H. Russell, 1991. *Reductive Dehalogenation of Organic Contaminants in Soils and Groundwater*. United States Environmental Protection Agency, Office of Research and Development, Washington DC, EPA/540/4-90/054, January 1991.

Suarez, M.P., and H.S. Rifai, 1999. Biodegradation Rates for Fuel Hydrocarbons and Chlorinated Solvents in Groundwater. *Bioremediation Journal*, 3(4): 337-362.

Tas, D.O., and S.G. Pavlostathis, 2007. The influence of iron reduction on the reductive biotransformation of pentachloronitrobenzene. *European Journal of Soil Biology*, 43(5-6): 264-275.

Tongarun, R. E. Luepromchai, and A.S. Vangnai, 2007. Natural Attenuation, Biostimulation, and Bioaugmentation in 4-Chloroaniline-Contaminated Soil. *Current Microbiology*, 56(2): 182-188.

Vangnai, A.S., and W. Petchkroh, 2007. Biodegradation of 4-chloroaniline by bacteria enriched from soil. *FEMS Microbiology Letters*, 268(2): 209-216.

U.S. EPA, 1998. *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*. United States Environmental Protection Agency, Office of Research and Development, Washington DC, EPA/600/R-98/128, September 1998.

U.S. EPA, 1999. *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, OSWER Directive 9200.4-17P, April 1999 (draft issued December 1997).

van der Meer, J.R., C. Werlen, S.F. Nishino, and J.C. Spain, 1998. "Evolution of a Pathway for Chlorobenzene Metabolism Leads to Natural Attenuation in Contaminated Groundwater," *Applied and Environmental Microbiology*, 64(11):4185-4193.

van der Meer, J.R., A.R.W. Van Neerven, E.J. De Vries, W.M. De Vos, and A.J.B. Zehnder, 1991. "Cloning and Characterization of Plasmid-Encoded Genes for the Degradation of 1,2-Dichloro-, 1,4-Dichloro-, and 1,2,4-Trichlorobenzene of *Pseudomonas* sp. Strain P51," *Applied and Environmental Microbiology*, 173(1):6-15.

Vogt, C., A. Alfreider, H. Lorbeer, J. Ahlheim, B. Feist, O. Boehme, H. Weiss, W. Babel, and L. Wuensche, 2002. Two pilot plant reactors designed for the in situ bioremediation of chlorobenzene-contaminated ground water: Hydrogeological and chemical characteristics and bacterial consortia. *Water, Air, & Soil Pollution Focus*, 2:161-170.

Vogt, C., A. Alfreider, H. Lorbeerb, D. Hoffmanna, L. Wuenschea, and W. Babel, 2004. Bioremediation of chlorobenzene-contaminated ground water in an in situ reactor mediated by hydrogen peroxide. *J. Contam. Hydrol.*, 68:121-141.

Weiner, J.M., and D.R. Lovley, 1998. Rapid Benzene Degradation in Methanogenic Sediments from a Petroleum-Contaminated Aquifer. *Applied and Environmental Microbiology*, 64(5): 1937-1939.

Wenderoth, D.F., P. Rosenbrock, W.R. Abraham, D.H. Pieper, and M.G. Hofle, 2003. Bacterial community dynamics during biostimulation and bioaugmentation experiments aiming at chlorobenzene degradation in groundwater. *Microbial Ecology*, 46:161-176.

Wiedemeier, T.H., H.S. Rifai, C.J. Newell, and J.W. Wilson, 1999. *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface*, John Wiley & Sons, New York.

Yaws, C.L., 1999. Chemical Properties Handbook, McGraw-Hill, New York.

Zeyer, J., A. Wasserfallen, and K.N. Timmis, 1985. Microbial mineralization of ring-substituted anilines through an ortho-cleavage pathway. *Applied and Environmental Microbiology*, 50(2): 447-453.

Table 1-1
General Site Timeline

Various Actions (1982 to 2001)	***Date***
Fencing of Site G pursuant to a USEPA removal action	1982
Expanded Site Investigation (Ecology and Environment, 1988)	1988
Consent Decree for Dead Creek Segment A	5-Jul-1990
Dead Creek Segment A remedial action (Cerro, 1991)	1990-1991
Screening Site Inspection (SSI) of the Sauget Area 1 sites conducted by IEPA	Sept-1992
Site G removal action, which included soil sampling, solidification of two oil pits, and placement of 18-30 inches of clean soil cover (USEPA, 1995)	1995
Report with summary maps and tables from 1988 investigation (Ecology and Environment, 1998)	1998
AOC for EE/CA (sediment, soil, source areas) and RI/FS (groundwater)	21-Jan-1999
Proposed NPL listing (Federal Register Notice). USEPA had first attempted to list the Sauget Area 1 sites in 1996.	13-Sept-2001
Dead Creek, Site M, Borrow Pit Lake, Biota, Floodplain Soils (1999 to 2008)	
UAO for Dead Creek removal action (culvert replacement) to address flooding concerns	21-Jun-1999
Multi-media sampling for EE/CA & RI/FS, which included sampling of surface water, sediment, biota, floodplain soils, fill area soils, groundwater, and air.	1999-2000
Culvert replacement at Cargill Road and Terminal Railroad Embankment	1999-2000
UAO modification to add sediment removal for Dead Creek Segments B, C, D, and E	31-May-2000
Installation of sediment dewatering system	Nov-2000
Construction of Judith Lane containment cell	2001

Table 1-1
General Site Timeline

UAO amendment to add sediment removal for Dead Creek Segment F including Borrow Pit Lake to address ecological risk	29-Aug-2001
Removal of sediment from Dead Creek Segments B, C, D, E, and F and Site M. Backfilling of Site M.	2001-2002
Post-sediment removal creek bottom soil sampling in Creek Segments B, C, D, E, and F.	2001-2002
Sediment sampling in Borrow Pit Lake to characterize extent of mercury concentrations greater than the RBC.	May-2003
Removal of creek bottom soils exceeding RBCs from Dead Creek Segments B, D, and F. Removal of soils exceeding soil-to-groundwater leaching criteria from Segment E. Confirmation soil sampling following soil removal.	2005-2006
Removal of sediment from grid cells in Borrow Pit Lake where concentrations of mercury exceeded the RBC. Post-sediment removal sampling from excavation areas to demonstrate that residual concentrations of mercury were less than the RBC.	2006
Installation of armored liner in Dead Creek Segment B	2007-2008
Fill Areas, Groundwater, Air (1999-2008)	
Multi-media sampling for EE/CA & RI/FS, which included sampling of surface water, sediment, biota, floodplain soils, fill area soils, groundwater, and air.	1999-2000
EE/CA and RI/FS report submitted in Mar-2001 (Solutia), Revision 1, Jun-2001 (Solutia), and Revision 2, Sept-2001 (US Army Corps of Engineers)	2001
Construction and startup of Sauget Area 2 Groundwater Migration Control System	2003
Investigations of Sites H, I, L, N (Tetra Tech, 2003a, b, c)	2002-2003
DNAPL characterization & remediation study at Sites G, H, I, and L (GSI, 2006)	2004-2005
Sampling at Site G of waste materials uncovered at two discrete locations during a geophysical survey (Golder, 2004)	Jun-2004

Table 1-1
General Site Timeline

"Mass Flux Estimates" report (GSI, 2005)	Nov-2005
Groundwater sampling for Regional Groundwater Model (URS, 2006)	2005-2006
Soil vapor investigation (Golder, 2007)	2006
Utility corridor investigation (Golder Associates, 2008)	2007
Dead Creek soil to groundwater leaching investigation (Golder Associates, 2007)	2007
DNAPL recovery study at well BR-I at Site I (GSI, 2008)	2007-2008
Regional Groundwater Modeling Report (GSI, 2008)	Apr-2008
Human Health Risk Assessments	
Site-wide HHRA for Sites G, H, I, L, and N and the residential transects (ENSR, 2001)	2001
Creek bottom soil HHRA (ENSR, 2006)	2006
Vapor intrusion HHRA (ENSR, 2008a)	2008
Utility corridor HHRA (ENSR, 2008b)	2008
Baseline Ecological Risk Assessments	
Ecological risk assessment for Sauget Area 1 (Menzie-Cura, 2001)	2001
Ecological risk assessment for creek bottom soil (Menzie-Cura, 2002)	2002
Ecological risk assessment addendum, including update of terrestrial screening	2009

Table 3-1
Number of Samples Collected for the Sauget Area 1 Support Sampling Plan

Sampled Environmental Media	Number of Samples	Number of Analytes	QA/QC Samples	Number of Analytes	Number of Trip Blanks	Number of Analytes	Total No. of Analyses
Source Area Surface Soil	20	9	8	9	9	1	**261**
Source Area Subsurface Soil	25	12	15	12	13	1	**493**
Source Area Subsurface Soil - Physical Properties	20	3	0	0	0	0	**60**
Source Area Groundwater - SHU	28	9	12	9	12	1	**372**
Source Area Groundwater - MHU and DHU	11	9	6	9	6	1	**159**
Source Area Groundwater - Bedrock	3	9	3	9	2	1	**56**
Source Area Ambient Air	13	5	0	0	1	1	**66**
Downgradient Groundwater	89	8	29	8	34	1	**978**
Downgradient Groundwater - Dioxin	27	1	14	1	0	0	**41**
Downgradient Groundwater - Physical Properties	15	1	0	0	0	0	**15**
Residential Area Groundwater - SHU	6	9	2	9	2	1	**74**
Residential Area Groundwater - Time Series	6	9	2	9	3	1	**75**
Residential Area Groundwater - Domestic Wells	4	9	3	9	1	1	**64**
Background Soil Sampling	6	9	3	9	4	1	**85**
Undeveloped Area Floodplain Surface Soil	45	11	13	8	11	1	**610**
Undeveloped Area Floodplain Surface Soil - Dioxin	9	1	7	1	0	0	**16**
Undeveloped Area Floodplain Subsurface Soil	45	8	13	8	12	1	**476**
Undeveloped Area Floodplain Subsurface Soil - Dioxin	9	1	7	1	0	0	**16**
Developed Area Floodplain Surface Soil	20	9	5	9	1	1	**226**
Developed Area Floodplain Surface Soil - Dioxin	20	1	5	1	0	0	**25**
Developed Area Floodplain Subsurface Soil	20	8	3	8	3	1	**187**
Developed Area Floodplain Subsurface Soil - Dioxin	4	1	2	1	0	0	**6**
Surface Water	20	16	8	16	5	1	**453**
Industry-Specific Sediment	97	7	17	7	0	0	**798**
Broad-Scan Sediment	23	12	7	12	10	1	**370**
Dead Creek Sediment	2	12	3	12	1	1	**61**
Borrow Pit Lake Sediment	8	7	1	7	0	0	**63**
Benthic Community	69	1	0	0	0	0	**69**
Plant Tissue	15	7	0	0	0	0	**105**
Macroinvertebrate Tissue	10	7	0	0	0	0	**70**
Shrimp Tissue	6	7	0	0	0	0	**42**
Forage Fish Tissue	9	7	0	0	0	0	**63**
Whole Gamefish	7	7	1	1	0	0	**50**
Gamefish Fillets	7	7	1	1	0	0	**50**
Bottom-Feeding Fish Tissue	7	7	0	0	0	0	**49**
Sediment Bioassays	23	1	8	1	0	0	**31**
TOTAL	**748**	**247**	**198**	**187**	**130**	**18**	**6635**

Table 3-2
Site G Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Pesticides					
4,4'-DDT	3 : 4	75	8.45E-05	1.15E-04	1.60E-04
Alpha Chlordane	2 : 4	50	1.20E-04	1.90E-04	2.60E-04
delta-BHC	3 : 4	75	5.80E-05	6.53E-05	7.00E-05
Dieldrin	1 : 4	25	6.20E-05	6.20E-05	6.20E-05
Endosulfan I	1 : 4	25	2.20E-04	2.20E-04	2.20E-04
Endosulfan II	1 : 4	25	3.40E-04	3.40E-04	3.40E-04
Endosulfan sulfate	2 : 4	50	1.20E-04	1.50E-04	1.80E-04
Endrin	2 : 4	50	1.40E-04	1.48E-04	1.55E-04
Endrin aldehyde	2 : 4	50	1.20E-04	3.95E-04	6.70E-04
Endrin ketone	2 : 4	50	1.10E-04	4.50E-04	7.90E-04
Gamma Chlordane	3 : 4	75	7.70E-05	2.02E-04	3.10E-04
Heptachlor epoxide	1 : 4	25	2.20E-04	2.20E-04	2.20E-04
Methoxychlor	1 : 4	25	9.40E-04	9.40E-04	9.40E-04
PCBs					
Total PCBs	2 : 4	50	1.57E-02	4.93E-02	8.30E-02
Dioxin					
Dioxin TEQ-HH	4 : 4	100	2.00E-06	5.02E-06	1.15E-05
Metals					
Aluminum	4 : 4	100	9.30E+03	1.30E+04	1.50E+04
Antimony	2 : 4	50	6.50E-01	6.85E-01	7.20E-01
Arsenic	4 : 4	100	6.50E+00	7.19E+00	8.05E+00
Barium	4 : 4	100	7.90E+01	1.17E+02	1.40E+02
Beryllium	4 : 4	100	5.10E-01	5.89E-01	6.40E-01
Cadmium	4 : 4	100	1.80E-01	2.60E-01	3.90E-01
Calcium	4 : 4	100	5.10E+03	9.73E+03	1.40E+04
Chromium	4 : 4	100	1.50E+01	1.93E+01	2.20E+01
Cobalt	4 : 4	100	5.80E+00	7.32E+00	8.60E+00
Copper	4 : 4	100	1.00E+02	1.83E+02	2.90E+02
Iron	4 : 4	100	1.60E+04	1.84E+04	2.00E+04
Lead	4 : 4	100	1.10E+01	1.36E+01	1.60E+01
Magnesium	4 : 4	100	3.30E+03	4.09E+03	4.95E+03
Manganese	4 : 4	100	2.60E+02	5.44E+02	7.40E+02
Mercury	4 : 4	100	1.50E-02	2.45E-02	2.90E-02
Molybdenum	4 : 4	100	3.80E-01	5.19E-01	7.80E-01
Nickel	4 : 4	100	1.70E+01	1.89E+01	2.15E+01
Potassium	4 : 4	100	1.20E+03	1.45E+03	1.70E+03
Vanadium	4 : 4	100	3.20E+01	3.58E+01	4.00E+01
Zinc	4 : 4	100	5.60E+01	6.09E+01	6.95E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.

Table 3-2
Site G Surface Soil Analytical Data Summary

VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-3
Site H Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Hexanone	1 : 4	25	5.70E-03	5.70E-03	5.70E-03
Carbon disulfide	1 : 4	25	4.30E-03	4.30E-03	4.30E-03
Tetrachloroethene	1 : 4	25	1.70E-02	1.70E-02	1.70E-02
SVOCs					
Benzo(a)anthracene	3 : 4	75	9.50E-02	1.08E-01	1.30E-01
Benzo(a)pyrene	3 : 4	75	1.00E-01	1.17E-01	1.40E-01
Benzo(b)fluoranthene	3 : 4	75	1.00E-01	1.20E-01	1.40E-01
Benzo(g,h,i)perylene	1 : 4	25	3.70E-01	3.70E-01	3.70E-01
Benzo(k)fluoranthene	3 : 4	75	8.20E-02	9.90E-02	1.30E-01
bis(2-Ethylhexyl)phthalate	2 : 4	50	1.10E-01	1.15E-01	1.20E-01
Chrysene	3 : 4	75	1.10E-01	1.80E-01	3.00E-01
Fluoranthene	3 : 4	75	1.40E-01	1.97E-01	2.40E-01
Indeno(1,2,3-cd)pyrene	2 : 4	50	8.70E-02	9.35E-02	1.00E-01
Phenanthrene	1 : 4	25	1.10E-01	1.10E-01	1.10E-01
Pyrene	3 : 4	75	1.60E-01	1.80E-01	1.90E-01
Pesticides					
4,4'-DDE	3 : 4	75	6.90E-03	4.53E-02	8.60E-02
4,4'-DDT	3 : 4	75	8.70E-03	5.96E-02	1.10E-01
Aldrin	2 : 4	50	1.00E-02	1.55E-02	2.10E-02
Endosulfan II	1 : 4	25	7.20E-03	7.20E-03	7.20E-03
Endrin ketone	3 : 4	75	1.40E-03	3.28E-02	8.20E-02
Gamma Chlordane	2 : 4	50	2.70E-02	2.85E-02	3.00E-02
Heptachlor	1 : 4	25	2.00E-03	2.00E-03	2.00E-03
Heptachlor epoxide	3 : 4	75	5.90E-04	2.15E-02	4.40E-02
Methoxychlor	2 : 4	50	3.30E-02	8.15E-02	1.30E-01
Herbicides					
2,4-DB	2 : 4	50	8.40E-03	9.05E-03	9.70E-03
Pentachlorophenol	1 : 4	25	4.10E-02	4.10E-02	4.10E-02
PCBs					
Total PCBs	3 : 4	75	7.54E-02	9.54E-01	1.52E+00
Dioxin					
Dioxin TEQ-HH	4 : 4	100	6.03E-05	5.30E-04	1.28E-03
Metals					
Aluminum	4 : 4	100	4.30E+03	7.95E+03	1.40E+04
Antimony	4 : 4	100	6.90E-01	1.57E+00	2.30E+00
Arsenic	4 : 4	100	6.50E+00	2.28E+01	6.40E+01
Barium	4 : 4	100	9.90E+01	1.12E+02	1.20E+02
Beryllium	4 : 4	100	7.30E-01	1.52E+00	3.80E+00
Cadmium	4 : 4	100	2.70E+00	9.02E+00	2.20E+01
Calcium	4 : 4	100	5.90E+03	1.76E+04	4.20E+04
Chromium	4 : 4	100	1.50E+01	1.95E+01	2.30E+01
Cobalt	4 : 4	100	5.20E+00	1.00E+01	2.00E+01
Copper	4 : 4	100	2.00E+02	3.75E+02	4.80E+02
Iron	4 : 4	100	1.40E+04	1.63E+04	1.80E+04
Lead	4 : 4	100	5.30E+01	1.46E+02	2.30E+02
Magnesium	4 : 4	100	6.90E+02	2.02E+03	2.50E+03

Table 3-3
Site H Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Manganese	4 : 4	100	9.80E+01	4.37E+02	7.20E+02
Mercury	4 : 4	100	6.40E-02	2.83E-01	7.70E-01
Molybdenum	4 : 4	100	9.80E-01	4.95E+00	1.10E+01
Nickel	4 : 4	100	2.00E+01	3.40E+01	7.00E+01
Potassium	4 : 4	100	8.30E+02	1.16E+03	1.60E+03
Selenium	3 : 4	75	4.20E-01	1.92E+00	4.70E+00
Silver	3 : 4	75	5.10E-01	1.67E+00	2.70E+00
Sodium	4 : 4	100	1.10E+02	2.48E+02	3.90E+02
Thallium	1 : 4	25	2.50E+00	2.50E+00	2.50E+00
Vanadium	4 : 4	100	2.00E+01	3.00E+01	4.50E+01
Zinc	4 : 4	100	3.50E+02	1.28E+03	3.60E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-4a
Site I South Source Area Surface Soil Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs						
1,2,4-Trichlorobenzene	120-82-1	1 : 2	50	1.80E-01	1.80E-01	1.80E-01
1,4-Dichlorobenzene	106-46-7	1 : 2	50	4.60E-02	4.60E-02	4.60E-02
2,4-Dichlorophenol	120-83-2	1 : 2	50	8.20E-02	8.20E-02	8.20E-02
2-Nitroaniline	88-74-4	1 : 2	50	1.60E-01	1.60E-01	1.60E-01
4-Chloroaniline	106-47-8	1 : 2	50	1.80E+01	1.80E+01	1.80E+01
Benzo(a)anthracene	56-55-3	1 : 2	50	7.80E-02	7.80E-02	7.80E-02
Benzo(a)pyrene	50-32-8	1 : 2	50	7.00E-02	7.00E-02	7.00E-02
Benzo(b)fluoranthene	205-99-2	1 : 2	50	1.00E-01	1.00E-01	1.00E-01
Benzo(g,h,i)perylene	191-24-2	1 : 2	50	1.10E-01	1.10E-01	1.10E-01
Benzo(k)fluoranthene	207-08-9	1 : 2	50	5.50E-02	5.50E-02	5.50E-02
Chrysene	218-01-9	1 : 2	50	9.90E-02	9.90E-02	9.90E-02
Fluoranthene	206-44-0	2 : 2	100	1.20E-01	1.45E-01	1.70E-01
Hexachlorobenzene	118-74-1	1 : 2	50	1.10E-01	1.10E-01	1.10E-01
Pentachlorophenol	87-86-5	1 2	50	2.00E+00	2.00E+00	2.00E+00
Phenanthrene	85-01-8	2 2	100	5.00E-02	6.05E-02	7.10E-02
Pyrene	129-00-0	2 2	100	1.40E-01	1.55E-01	1.70E-01
Pesticides						
4,4'-DDD	72-54-8	1 : 2	50	2.00E-01	2.00E-01	2.00E-01
4,4'-DDE	72-55-9	1 : 2	50	3.00E-01	3.00E-01	3.00E-01
4,4'-DDT	50-29-3	1 : 2	50	4.60E-01	4.60E-01	4.60E-01
Aldrin	309-00-2	1 : 2	50	2.50E-01	2.50E-01	2.50E-01
Dieldrin	60-57-1	1 : 2	50	2.00E-01	2.00E-01	2.00E-01
Endosulfan I	959-98-8	1 : 2	50	2.60E-01	2.60E-01	2.60E-01
Endosulfan II	33213-65-9	1 : 2	50	6.00E-01	6.00E-01	6.00E-01
Endrin	72-20-8	1 : 2	50	2.40E-01	2.40E-01	2.40E-01
Endrin aldehyde	7421-93-4	1 : 2	50	1.50E+00	1.50E+00	1.50E+00
Endrin ketone	53494-70-5	1 : 2	50	7.00E-01	7.00E-01	7.00E-01
Gamma Chlordane	5103-74-2	1 : 2	50	3.80E-01	3.80E-01	3.80E-01
Heptachlor	76-44-8	1 : 2	50	6.90E-02	6.90E-02	6.90E-02
Heptachlor epoxide	1024-57-3	1 : 2	50	1.40E-01	1.40E-01	1.40E-01
Methoxychlor	72-43-5	1 : 2	50	3.00E+00	3.00E+00	3.00E+00
Herbicides						
Pentachlorophenol	87-86-5	2 : 2	100	6.20E-04	6.50E-01	1.30E+00
PCBs						
Total PCBs	1366-36-3	1 : 2	50	1.21E+02	1.21E+02	1.21E+02
Dioxin						
Dioxin TEQ-HH	1746-01-6	2 : 2	100	1.13E-04	6.93E-03	1.37E-02
Metals						
Aluminum	7429-90-5	2 : 2	100	5.20E+03	5.40E+03	5.60E+03
Antimony	7440-36-0	2 : 2	100	2.90E+00	5.65E+00	8.40E+00
Arsenic	7440-38-2	2 : 2	100	4.90E+00	7.30E+00	9.70E+00
Barium	7440-39-3	2 : 2	100	1.10E+02	4.25E+02	7.40E+02
Beryllium	7440-41-7	2 : 2	100	7.10E-01	7.40E-01	7.70E-01
Cadmium	7440-43-9	2 : 2	100	2.20E+00	1.66E+01	3.10E+01
Calcium	7440-70-2	2 : 2	100	9.20E+04	1.41E+05	1.90E+05
Chromium	7440-47-3	2 : 2	100	1.80E+01	2.75E+01	3.70E+01
Cobalt	7440-48-4	2 : 2	100	4.80E+00	1.89E+01	3.30E+01
Copper	7440-50-8	2 : 2	100	2.00E+03	6.00E+03	1.00E+04
Metals (cont.)						
Iron	7439-89-6	2 : 2	100	1.00E+04	1.10E+04	1.20E+04
Lead	7439-92-1	2 : 2	100	2.20E+02	8.60E+02	1.50E+03
Magnesium	7439-95-4	2 : 2	100	7.60E+03	9.30E+03	1.10E+04
Manganese	7439-96-5	2 : 2	100	1.60E+02	1.75E+02	1.90E+02
Mercury	7439-97-6	2 : 2	100	5.70E-02	1.03E+00	2.00E+00
Molybdenum	7439-98-7	2 : 2	100	2.70E+00	5.10E+00	7.50E+00
Nickel	7440-02-0	2 : 2	100	2.00E+01	3.10E+01	4.20E+01
Potassium	7440-09-7	2 : 2	100	1.10E+03	1.20E+03	1.30E+03

Table 3-4a
Site I South Source Area Surface Soil Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Selenium	7782-49-2	1 : 2	50	1.60E+00	1.60E+00	1.60E+00
Silver	7440-22-4	2 : 2	100	3.10E+00	7.05E+00	1.10E+01
Sodium	7440-23-5	2 : 2	100	7.60E+02	8.15E+02	8.70E+02
Vanadium	7440-62-2	2 : 2	100	1.70E+01	1.90E+01	2.10E+01
Zinc	7440-66-6	2 : 2	100	1.20E+03	2.00E+03	2.80E+03

Notes:
2,4-DB - 4-(2,4-Dichlorophenoxy) butyric acid.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-4b
Site I North Source Area Surface Soil Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs						
Toluene	108-88-3	1 : 2	50	3.80E-03	3.80E-03	3.80E-03
SVOCs						
4-Chloroaniline	106-47-8	1 : 2	50	2.40E-01	2.40E-01	2.40E-01
Anthracene	120-12-7	2 : 2	100	2.85E-02	3.79E-01	7.30E-01
Benzo(a)anthracene	56-55-3	2 : 2	100	2.40E-01	1.22E+00	2.20E+00
Benzo(a)pyrene	50-32-8	2 : 2	100	1.95E-01	1.20E+00	2.20E+00
Benzo(b)fluoranthene	205-99-2	2 : 2	100	2.60E-01	1.53E+00	2.80E+00
Benzo(g,h,i)perylene	191-24-2	2 : 2	100	1.45E-01	8.73E-01	1.60E+00
Benzo(k)fluoranthene	207-08-9	2 : 2	100	1.31E-01	5.46E-01	9.60E-01
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 2	50	9.00E-02	9.00E-02	9.00E-02
Carbazole	86-74-8	1 : 2	50	3.20E-01	3.20E-01	3.20E-01
Chrysene	218-01-9	2 : 2	100	2.55E-01	1.23E+00	2.20E+00
Dibenzo(a,h)anthracene	53-70-3	2 : 2	100	2.90E-02	1.95E-01	3.60E-01
Dibenzofuran	132-64-9	1 : 2	50	1.00E-01	1.00E-01	1.00E-01
Di-n-butylphthalate	84-74-2	1 : 2	50	5.20E-02	5.20E-02	5.20E-02
Fluoranthene	206-44-0	2 2	100	3.65E-01	3.18E+00	6.00E+00
Fluorene	86-73-7	1 2	50	2.30E-01	2.30E-01	2.30E-01
Indeno(1,2,3-cd)pyrene	193-39-5	2 2	100	1.50E-01	8.75E-01	1.60E+00
Phenanthrene	85-01-8	2 2	100	1.10E-01	1.71E+00	3.30E+00
Pyrene	129-00-0	2 2	100	3.85E-01	2.54E+00	4.70E+00
Pesticides						
4,4'-DDD	72-54-8	2 : 2	100	3.10E-04	3.68E-04	4.25E-04
4,4'-DDE	72-55-9	2 : 2	100	1.55E-03	4.48E-03	7.40E-03
4,4'-DDT	50-29-3	1 : 2	50	2.50E-03	2.50E-03	2.50E-03
Aldrin	309-00-2	2 : 2	100	8.20E-04	2.16E-03	3.50E-03
Alpha Chlordane	5103-71-9	1 : 2	50	2.65E-03	2.65E-03	2.65E-03
Dieldrin	60-57-1	2 : 2	100	1.70E-03	5.65E-03	9.60E-03
Endosulfan I	959-98-8	2 : 2	100	7.20E-04	3.21E-03	5.70E-03
Endosulfan II	33213-65-9	2 : 2	100	2.25E-03	8.63E-03	1.50E-02
Endosulfan sulfate	1031-07-8	1 : 2	50	8.80E-03	8.80E-03	8.80E-03
Endrin	72-20-8	2 : 2	100	9.10E-04	3.36E-03	5.80E-03
Endrin aldehyde	7421-93-4	2 : 2	100	4.70E-03	2.24E-02	4.00E-02
Endrin ketone	53494-70-5	2 : 2	100	3.20E-03	1.26E-02	2.20E-02
Gamma Chlordane	5103-74-2	2 : 2	100	5.55E-03	7.28E-03	9.00E-03
Heptachlor	76-44-8	1 : 2	50	8.55E-04	8.55E-04	8.55E-04
Heptachlor epoxide	1024-57-3	2 : 2	100	9.40E-04	2.82E-03	4.70E-03
Methoxychlor	72-43-5	2 2	100	1.60E-02	4.15E-02	6.70E-02
Herbicides						
2,4-DB	94-82-6	1 : 2	50	5.40E-02	5.40E-02	5.40E-02
Pentachlorophenol	87-86-5	2 : 2	100	1.10E-03	5.40E-03	9.70E-03
PCBs						
Total PCBs	1366-36-3	2 : 2	100	4.10E-01	1.91E+00	3.42E+00
Dioxin						
Dioxin TEQ-HH	1746-01-6	2 : 2	100	7.03E-05	2.71E-04	4.72E-04
Metals						
Aluminum	7429-90-5	2 : 2	100	3.75E+03	5.88E+03	8.00E+03
Antimony	7440-36-0	2 : 2	100	4.55E+00	6.48E+00	8.40E+00
Arsenic	7440-38-2	2 : 2	100	4.55E+00	8.28E+00	1.20E+01
Barium	7440-39-3	2 : 2	100	8.30E+01	1.37E+02	1.90E+02
Beryllium	7440-41-7	2 : 2	100	4.60E-01	1.08E+00	1.70E+00
Cadmium	7440-43-9	2 : 2	100	2.40E+00	5.80E+00	9.20E+00
Calcium	7440-70-2	2 : 2	100	1.10E+05	1.73E+05	2.35E+05
Chromium	7440-47-3	2 : 2	100	1.30E+01	3.90E+01	6.50E+01
Cobalt	7440-48-4	2 : 2	100	2.00E+00	5.20E+00	8.40E+00
Copper	7440-50-8	2 : 2	100	1.65E+03	7.33E+03	1.30E+04
Metals (cont.)						
Iron	7439-89-6	2 : 2	100	5.35E+03	1.07E+04	1.60E+04

Table 3-4b
Site I North Source Area Surface Soil Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Lead	7439-92-1	2 : 2	100	2.30E+02	5.30E+02	8.30E+02
Magnesium	7439-95-4	2 : 2	100	1.20E+04	1.55E+04	1.90E+04
Manganese	7439-96-5	2 : 2	100	1.60E+02	2.30E+02	3.00E+02
Mercury	7439-97-6	2 : 2	100	4.75E-02	1.79E-01	3.10E-01
Molybdenum	7439-98-7	2 : 2	100	4.75E+00	6.63E+00	8.50E+00
Nickel	7440-02-0	2 : 2	100	1.45E+01	3.98E+01	6.50E+01
Potassium	7440-09-7	2 : 2	100	1.05E+03	1.28E+03	1.50E+03
Selenium	7782-49-2	2 : 2	100	6.35E-01	1.12E+00	1.60E+00
Silver	7440-22-4	2 : 2	100	1.75E+00	1.04E+01	1.90E+01
Sodium	7440-23-5	2 : 2	100	4.40E+02	4.55E+02	4.70E+02
Vanadium	7440-62-2	2 : 2	100	1.07E+01	1.84E+01	2.60E+01
Zinc	7440-66-6	2 : 2	100	4.05E+02	8.53E+02	1.30E+03

Notes:
2,4-DB - 4-(2,4-Dichlorophenoxy) butyric acid.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-5
Site L Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Toluene	1 : 4	25	1.30E-02	1.30E-02	1.30E-02
SVOCs					
2-Methylnaphthalene	1 : 4	25	1.40E-01	1.40E-01	1.40E-01
Acenaphthene	2 : 4	50	1.40E-01	8.70E-01	1.60E+00
Anthracene	3 : 4	75	1.60E-01	1.37E+00	3.60E+00
Benzo(a)anthracene	3 : 4	75	6.40E-01	3.38E+00	7.80E+00
Benzo(a)pyrene	3 : 4	75	5.50E-01	3.05E+00	7.00E+00
Benzo(b)fluoranthene	3 : 4	75	5.80E-01	2.89E+00	6.60E+00
Benzo(g,h,i)perylene	3 : 4	75	3.40E-01	1.75E+00	3.80E+00
Benzo(k)fluoranthene	3 : 4	75	4.60E-01	3.02E+00	6.80E+00
bis(2-Ethylhexyl)phthalate	2 : 4	50	1.80E-01	2.45E-01	3.10E-01
Carbazole	3 : 4	75	1.40E-01	6.10E-01	1.50E+00
Chrysene	3 : 4	75	7.60E-01	3.49E+00	7.80E+00
Dibenzo(a,h)anthracene	2 : 4	50	4.20E-01	8.60E-01	1.30E+00
Dibenzofuran	1 : 4	25	7.50E-01	7.50E-01	7.50E-01
Fluoranthene	3 : 4	75	1.60E+00	7.67E+00	1.80E+01
Fluorene	2 : 4	50	1.00E-01	7.50E-01	1.40E+00
Indeno(1,2,3-cd)pyrene	3 : 4	75	3.20E-01	2.07E+00	4.80E+00
Naphthalene	1 : 4	25	3.20E-01	3.20E-01	3.20E-01
Phenanthrene	3 : 4	75	1.00E+00	4.80E+00	1.20E+01
Pyrene	3 : 4	75	1.30E+00	5.67E+00	1.30E+01
Pesticides					
4,4'-DDE	3 : 4	75	1.00E-02	1.40E-02	2.00E-02
4,4'-DDT	1 : 4	25	1.60E-02	1.60E-02	1.60E-02
Aldrin	1 : 4	25	5.50E-03	5.50E-03	5.50E-03
beta-BHC	1 : 4	25	3.70E-03	3.70E-03	3.70E-03
Dieldrin	1 : 4	25	1.20E-02	1.20E-02	1.20E-02
Endrin ketone	3 : 4	75	9.50E-03	1.58E-02	2.80E-02
Gamma Chlordane	3 : 4	75	1.00E-02	1.50E-02	2.10E-02
Heptachlor epoxide	3 : 4	75	4.40E-03	7.50E-03	9.20E-03
Methoxychlor	2 : 4	50	2.40E-02	3.50E-02	4.60E-02
Herbicides					
Pentachlorophenol	1 : 4	25	4.00E-02	4.00E-02	4.00E-02
PCBs					
Total PCBs	2 : 4	50	4.58E-01	8.15E-01	1.17E+00
Dioxin					
Dioxin TEQ-HH	4 : 4	100	1.03E-04	3.47E-04	7.54E-04
Metals					
Aluminum	4 : 4	100	3.50E+03	5.75E+03	7.60E+03
Antimony	4 : 4	100	2.00E+00	3.28E+00	5.40E+00
Arsenic	4 : 4	100	3.00E+01	3.33E+01	3.70E+01
Barium	4 : 4	100	6.30E+01	1.71E+02	2.50E+02
Beryllium	4 : 4	100	1.40E+00	1.48E+00	1.60E+00
Cadmium	4 : 4	100	7.10E-01	5.60E+00	1.00E+01
Calcium	4 : 4	100	2.80E+03	2.00E+04	2.90E+04
Chromium	4 : 4	100	1.70E+01	4.53E+01	7.90E+01

Table 3-5
Site L Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Cobalt	4 : 4	100	1.10E+01	1.38E+01	1.70E+01
Copper	4 : 4	100	1.90E+02	1.76E+03	4.70E+03
Cyanide, Total	1 : 4	25	1.60E+00	1.60E+00	1.60E+00
Iron	4 : 4	100	7.10E+03	2.30E+04	3.20E+04
Lead	4 : 4	100	6.40E+01	3.69E+02	9.40E+02
Magnesium	4 : 4	100	3.40E+02	2.49E+03	4.20E+03
Manganese	4 : 4	100	2.30E+01	3.51E+02	6.50E+02
Mercury	4 : 4	100	3.90E-02	3.22E-01	5.60E-01
Molybdenum	4 : 4	100	9.30E+00	1.45E+01	2.30E+01
Nickel	4 : 4	100	3.80E+01	4.68E+01	5.50E+01
Potassium	4 : 4	100	5.00E+02	1.09E+03	1.70E+03
Selenium	4 : 4	100	1.80E+00	3.08E+00	4.30E+00
Silver	3 : 4	75	7.00E-01	9.00E-01	1.20E+00
Sodium	4 : 4	100	2.10E+02	3.45E+02	5.40E+02
Thallium	4 : 4	100	1.60E+00	1.85E+00	2.10E+00
Vanadium	4 : 4	100	3.90E+01	4.43E+01	4.90E+01
Zinc	4 : 4	100	1.60E+02	5.10E+02	8.70E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-6
Site N Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
Anthracene	3 : 4	75	3.60E-02	4.70E-02	5.80E-02
Benzo(a)anthracene	4 : 4	100	7.00E-02	1.68E-01	2.70E-01
Benzo(a)pyrene	4 : 4	100	7.20E-02	1.87E-01	3.30E-01
Benzo(b)fluoranthene	4 : 4	100	5.90E-02	1.65E-01	3.20E-01
Benzo(g,h,i)perylene	1 : 4	25	3.00E-01	3.00E-01	3.00E-01
Benzo(k)fluoranthene	4 : 4	100	8.00E-02	2.17E-01	3.60E-01
bis(2-Ethylhexyl)phthalate	1 : 4	25	1.30E-01	1.30E-01	1.30E-01
Chrysene	4 : 4	100	8.80E-02	2.00E-01	3.10E-01
Dibenzo(a,h)anthracene	2 : 4	50	8.10E-02	9.55E-02	1.10E-01
Fluoranthene	4 : 4	100	1.70E-01	3.92E-01	6.10E-01
Indeno(1,2,3-cd)pyrene	3 : 4	75	8.00E-02	1.60E-01	2.50E-01
Phenanthrene	4 : 4	100	8.00E-02	1.76E-01	2.60E-01
Pyrene	4 : 4	100	1.50E-01	3.41E-01	5.50E-01
Pesticides					
4,4'-DDT	1 : 4	25	2.70E-03	2.70E-03	2.70E-03
Aldrin	1 : 4	25	1.60E-03	1.60E-03	1.60E-03
Alpha Chlordane	1 : 4	25	1.10E-03	1.10E-03	1.10E-03
beta-BHC	1 : 4	25	4.00E-04	4.00E-04	4.00E-04
Dieldrin	1 : 4	25	2.40E-03	2.40E-03	2.40E-03
Gamma Chlordane	1 : 4	25	1.85E-03	1.85E-03	1.85E-03
Methoxychlor	1 : 4	25	5.50E-02	5.50E-02	5.50E-02
Herbicides					
Pentachlorophenol	4 : 4	100	2.60E-03	3.52E-02	1.30E-01
PCBs					
Total PCBs	1 : 4	25	1.78E-01	1.78E-01	1.78E-01
Dioxin					
Dioxin TEQ-HH	4 : 4	100	7.91E-06	1.17E-04	3.96E-04
Metals					
Aluminum	4 : 4	100	7.50E+03	8.75E+03	1.10E+04
Antimony	1 : 4	25	7.10E-01	7.10E-01	7.10E-01
Arsenic	4 : 4	100	5.50E+00	6.33E+00	7.30E+00
Barium	4 : 4	100	1.40E+02	5.93E+02	1.20E+03
Cadmium	4 : 4	100	3.00E-01	8.46E-01	1.50E+00
Calcium	4 : 4	100	1.60E+04	5.73E+04	1.09E+05
Chromium	4 : 4	100	1.20E+01	1.65E+01	1.80E+01
Cobalt	4 : 4	100	5.60E+00	5.84E+00	6.15E+00
Copper	4 : 4	100	1.60E+01	5.01E+01	1.10E+02
Iron	4 : 4	100	1.30E+04	1.43E+04	1.50E+04
Lead	4 : 4	100	1.90E+01	1.38E+02	4.10E+02
Magnesium	4 : 4	100	5.20E+03	7.18E+03	1.15E+04
Manganese	4 : 4	100	2.80E+02	3.74E+02	4.10E+02
Mercury	4 : 4	100	3.10E-02	6.78E-02	9.50E-02
Molybdenum	4 : 4	100	7.00E-01	1.03E+00	1.45E+00
Nickel	4 : 4	100	1.50E+01	1.61E+01	1.70E+01
Potassium	4 : 4	100	1.20E+03	1.40E+03	1.60E+03
Selenium	1 : 4	25	6.80E-01	6.80E-01	6.80E-01

Table 3-6
Site N Surface Soil Analytical Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Vanadium	4 : 4	100	2.10E+01	2.38E+01	2.90E+01
Zinc	4 : 4	100	6.20E+01	1.49E+02	2.50E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-7
Site G Subsurface Soil and Waste Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
PCBs					
Total PCBs	4 : 4	100	1.88E+01	1.14E+02	3.25E+02
Metals					
Cyanide, Total	2 : 4	50	2.40E+00	2.60E+00	2.80E+00

Notes:
PCB - Polychlorinated Biphenyl.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-8
Site H Subsurface Soil and Waste Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
PCBs					
Total PCBs	5 : 5	100	1.23E-01	2.99E+02	1.19E+03

Notes:
PCB - Polychlorinated Biphenyl.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-9a
Site I South Source Area Subsurface Soil and Waste Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
PCBs						
Total PCBs	1366-36-3	3 : 3	100	1.14E+01	6.97E+02	2.06E+03
Metals						
Cyanide, Total	57-12-5	2 : 3	67	6.50E-01	8.75E-01	1.10E+00

Notes:
CAS - Chemical Abstract Service.
PCB - Polychlorinated Biphenyl.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-9b
Site I North Source Area Subsurface Soil and Waste Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
PCBs						
Total PCBs	1366-36-3	1 : 1	100	4.61E+00	4.61E+00	4.61E+00

Notes:
CAS - Chemical Abstract Service.
PCB - Polychlorinated Biphenyl.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-10
Site L Subsurface Soil and Waste Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 1	100	1.10E-02	1.10E-02	1.10E-02
4-Methyl-2-pentanone (MIBK)	1 : 1	100	2.20E-02	2.20E-02	2.20E-02
Acetone	1 : 1	100	9.10E-02	9.10E-02	9.10E-02
Benzene	1 : 1	100	2.60E-02	2.60E-02	2.60E-02
Carbon disulfide	1 : 1	100	3.30E-02	3.30E-02	3.30E-02
Chlorobenzene	1 : 1	100	2.40E-02	2.40E-02	2.40E-02
Ethylbenzene	1 : 1	100	2.30E-03	2.30E-03	2.30E-03
Toluene	1 : 1	100	4.30E-02	4.30E-02	4.30E-02
Xylenes, Total	1 : 1	100	5.50E-03	5.50E-03	5.50E-03
PCBs					
Total PCBs	3 : 4	75	3.99E+00	4.97E+01	9.26E+01

Notes:
PCB - Polychlorinated Biphenyl.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-11
Site N Subsurface Soil and Waste Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Benzene	1 : 4	25	1.30E-02	1.30E-02	1.30E-02
Trichloroethene	1 : 4	25	2.40E-03	2.40E-03	2.40E-03
Dioxin					
Dioxin TEQ	4 : 4	100	1.02E-06	1.25E-06	1.53E-06
Metals					
Barium	4 : 4	100	6.80E-01	1.04E+00	1.80E+00
Lead	3 : 4	75	1.90E-02	3.22E-02	4.60E-02

Notes:
PCB - Polychlorinated Biphenyl.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-12
Site G Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
VOCs				
1,1,2,2-Tetrachloroethane	1	5.81E-01	5.81E-01	5.81E-01
1,2-Dichloroethane	1	4.35E-01	4.35E-01	4.35E-01
1,2-Dichloroethene (trans)	1	7.00E-01	7.00E-01	7.00E-01
2-Butanone	11	2.20E-02	7.39E+00	1.78E+01
4-Methyl-2-pentanone	4	6.35E-01	2.99E+00	6.00E+00
Acetone	11	3.20E-02	5.66E+00	1.54E+01
Benzene	6	3.00E-03	1.53E+01	4.53E+01
Chlorobenzene	8	1.07E-01	1.08E+02	5.38E+02
Chloroform	1	1.16E+01	1.16E+01	1.16E+01
Dichloromethane	11	3.00E-03	1.63E+00	7.11E+00
Ethylbenzene	6	1.64E-01	6.80E+00	1.69E+01
Tetrachloroethene	8	9.00E-03	1.88E+01	5.86E+01
Toluene	6	4.06E-01	4.85E+01	1.18E+02
Trichloroethylene	4	7.62E-01	1.94E+00	3.85E+00
Xylenes, Total	6	9.20E-02	1.64E+01	4.15E+01
SVOCs				
1,2,4-Trichlorobenzene	4	7.87E+00	6.16E+01	1.20E+02
1,4-Dichlorobenzene	2	2.38E+00	2.97E+00	3.56E+00
2,4,6-Trichlorophenol	1	4.95E+01	4.95E+01	4.95E+01
2,4-Dichlorophenol	3	1.41E+01	6.45E+01	1.41E+02
2,4-Dinitrophenol	1	1.40E+01	1.40E+01	1.40E+01
2-Chlorophenol	1	8.76E+00	8.76E+00	8.76E+00
2-Methylnaphthalene	4	8.71E+00	1.84E+01	3.71E+01
2-Methylphenol	1	3.56E+00	3.56E+00	3.56E+00
4-Chloroaniline	3	5.97E+00	8.16E+01	2.31E+02
Acenaphthene	1	2.67E+00	2.67E+00	2.67E+00
Anthracene	1	8.49E+00	8.49E+00	8.49E+00
Benzyl alcohol	1	6.10E+00	6.10E+00	6.10E+00
Benzyl Butyl Phthalate	1	2.33E+01	2.33E+01	2.33E+01
Chrysene	1	2.29E+01	2.29E+01	2.29E+01
Dibenzofuran	2	4.30E+00	1.91E+01	3.38E+01
Diethyl Phthalate	1	2.29E+01	2.29E+01	2.29E+01
Di-n-butylphthalate	4	2.79E-01	8.92E+00	1.76E+01
Fluoranthene	1	6.59E+00	6.59E+00	6.59E+00
Fluorene	1	1.13E+01	1.13E+01	1.13E+01
Hexachlorobenzene	2	2.79E+01	3.43E+01	4.06E+01
Naphthalene	7	4.83E+00	8.93E+02	5.43E+03
N-Nitrosodiphenylamine	1	1.78E+02	1.78E+02	1.78E+02
Phenanthrene	4	1.29E+01	2.84E+01	5.14E+01
Phenol	1	1.78E+02	1.78E+02	1.78E+02
Pyrene	2	7.56E+00	1.33E+01	1.91E+01
Pesticides				
4,4'-DDE	4	3.07E+00	4.88E+01	1.35E+02
Herbicides				
Pentachlorophenol	5	2.35E+01	1.32E+03	4.77E+03

Table 3-12
Site G Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
PCBs				
Total PCBs	7	1.30E-01	9.08E+02	4.43E+03
Metals				
Aluminum	13	9.66E+02	8.17E+03	1.87E+04
Arsenic	5	2.50E+00	5.52E+00	1.11E+01
Barium	13	1.17E+02	5.00E+03	4.59E+04
Cadmium	3	2.00E+00	7.00E+00	1.40E+01
Calcium	2	1.61E+04	1.73E+04	1.85E+04
Chromium	13	5.00E+00	9.36E+01	9.85E+02
Cobalt	6	8.70E+00	2.05E+01	5.60E+01
Copper	20	8.00E+00	1.73E+02	2.22E+03
Iron	22	4.06E+03	1.35E+04	5.37E+04
Lead	18	3.00E+00	2.41E+02	3.12E+03
Magnesium	2	7.16E+03	7.31E+03	7.46E+03
Manganese	11	4.30E+01	2.09E+02	4.61E+02
Mercury	4	2.00E-02	8.66E+00	3.43E+01
Nickel	19	8.00E+00	5.13E+01	3.99E+02
Phosphorus	9	1.83E+02	5.37E+02	1.34E+03
Potassium	2	1.47E+03	1.59E+03	1.70E+03
Silver	1	1.20E+01	1.20E+01	1.20E+01
Tin	2	2.60E+01	5.30E+01	8.00E+01
Vanadium	11	1.40E+01	1.49E+02	1.32E+03
Zinc	19	2.70E+01	4.75E+02	4.26E+03

Notes:
(a) - Only concentrations reported as detected by the laboratory were entered into the database for use in the calculation of statistics for subsurface soil. Therefore, the total number of samples and the percent detected is not presented for this dataset.

Table 3-13
Site H Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
VOCs				
1,2-Dichloroethane	1	1.20E-02	1.20E-02	1.20E-02
2-Butanone	5	3.30E-02	1.26E+01	2.72E+01
4-Methyl-2-pentanone	4	9.00E-03	2.33E+00	7.85E+00
Acetone	11	1.50E-02	4.85E+00	2.11E+01
Benzene	7	4.00E-03	1.52E+01	6.13E+01
Chlorobenzene	6	2.40E-02	9.76E+01	4.52E+02
Chloroform	2	5.30E-02	1.23E-01	1.92E-01
Dichloromethane	11	6.00E-03	6.34E+00	5.56E+01
Ethylbenzene	3	4.38E+00	9.06E+00	1.28E+01
Tetrachloroethene	1	5.65E+00	5.65E+00	5.65E+00
Toluene	5	1.45E-01	2.28E+01	7.65E+01
Trichloroethylene	1	1.00E-02	1.00E-02	1.00E-02
Xylenes, Total	3	1.51E+00	1.48E+01	2.36E+01
SVOCs				
1,2,4-Trichlorobenzene	6	6.10E-02	1.33E+03	7.58E+03
1,2-Dichlorobenzene	3	5.48E-01	6.48E+03	1.94E+04
1,3-Dichlorobenzene	3	7.65E+00	8.76E+01	2.42E+02
1,4-Dichlorobenzene	5	6.20E-02	6.32E+03	3.06E+04
2,4,6-Trichlorophenol	2	1.79E-01	3.07E+02	6.13E+02
2,4-Dichlorophenol	5	1.67E-01	1.50E+02	7.42E+02
2,4-Dimethylphenol	1	9.20E-02	9.20E-02	9.20E-02
2-Methylnaphthalene	3	1.56E-01	1.16E+02	3.47E+02
4-Methylphenol	1	1.72E-01	1.72E-01	1.72E-01
4-Nitroaniline	1	1.83E+03	1.83E+03	1.83E+03
Acenaphthylene	3	1.30E-01	1.26E+02	3.78E+02
Anthracene	4	1.29E-01	1.70E+02	6.80E+02
Benzo(a)anthracene	3	5.54E-01	1.26E+02	3.78E+02
Benzo(a)pyrene	2	7.80E-01	1.36E+02	2.72E+02
Benzo(b)fluoranthene	3	4.42E-01	7.10E+01	2.11E+02
Benzo(g,h,I)perylene	2	4.94E-01	5.69E+01	1.13E+02
Benzoic acid	2	1.41E+00	2.02E+00	2.64E+00
Benzyl alcohol	1	7.92E+00	7.92E+00	7.92E+00
bis(2-ethylhexyl)phthalate	4	2.51E-01	4.28E-01	6.14E-01
Chrysene	3	7.50E-01	1.12E+02	3.32E+02
Dibenzo(a,h)anthracene	1	3.17E+01	3.17E+01	3.17E+01
Dibenzofuran	4	1.43E-01	1.55E+01	6.04E+01
Di-n-butylphthalate	8	3.43E-01	4.03E+00	2.57E+01
Fluoranthene	4	1.45E-01	3.33E+02	1.33E+03
Fluorene	3	2.47E-01	1.61E+02	4.83E+02
Hexachlorobenzene	1	7.14E-01	7.14E-01	7.14E-01
Indeno(1,2,3-cd)pyrene	1	1.36E+02	1.36E+02	1.36E+02
Naphthalene	4	4.40E-02	5.67E+02	2.27E+03
N-Nitrosodiphenylamine	1	1.00E-07	1.00E-07	1.00E-07
Phenanthrene	6	4.70E-02	3.53E+02	2.11E+03
Phenol	1	4.22E-01	4.22E-01	4.22E-01
Pyrene	3	9.35E-01	2.22E+02	6.64E+02

Table 3-13
Site H Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
Pesticides				
4,4'-DDD	1	4.31E-01	4.31E-01	4.31E-01
4,4'-DDE	2	5.04E-01	6.42E-01	7.80E-01
4,4'-DDT	2	7.80E-01	8.52E-01	9.23E-01
PCBs				
Total PCBs	7	2.51E-01	2.73E+03	1.80E+04
Metals				
Aluminum	11	4.50E+02	3.85E+03	1.21E+04
Arsenic	2	3.00E+00	1.45E+01	2.60E+01
Barium	11	3.80E+01	6.05E+02	3.24E+03
Cadmium	4	5.00E+00	1.88E+02	2.94E+02
Chromium	8	4.00E+00	4.21E+01	1.00E+02
Cobalt	5	3.00E+00	3.64E+01	1.05E+02
Copper	8	3.00E+00	5.36E+02	2.44E+03
Cyanide, Total	2	2.00E+00	2.00E+00	2.00E+00
Iron	11	5.10E+02	2.32E+04	8.45E+04
Lead	2	4.00E+00	5.77E+02	1.15E+03
Manganese	11	7.00E+00	3.86E+03	3.65E+04
Mercury	3	8.00E-01	2.03E+00	3.90E+00
Nickel	10	4.00E+00	1.77E+03	1.51E+04
Selenium	1	2.00E+00	2.00E+00	2.00E+00
Silver	2	9.00E+00	2.65E+01	4.40E+01
Thallium	1	1.00E+00	1.00E+00	1.00E+00
Tin	3	1.40E+01	5.50E+01	1.11E+02
Vanadium	6	7.00E+00	3.23E+01	9.50E+01
Zinc	11	8.00E+00	4.74E+03	3.95E+04

Notes:
(a) - Only concentrations reported as detected by the laboratory were entered into the database for use in the calculation of statistics for subsurface soil. Therefore, the total number of samples and the percent detected is not presented for this dataset.

Table 3-14
Site I Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
VOCs				
1,1,1-Trichloroethane	2	4.32E-01	1.06E+00	1.69E+00
1,2-Dichloroethene (trans)	1	3.00E-03	3.00E-03	3.00E-03
2-Butanone	15	1.20E-02	6.86E+00	1.69E+01
4-Methyl-2-pentanone	2	1.00E-03	2.08E+00	4.16E+00
Acetone	16	5.49E-01	6.66E+00	1.69E+01
Benzene	10	2.30E-02	3.81E+00	2.41E+01
Chlorobenzene	12	1.00E-02	3.47E+01	1.27E+02
Dichloromethane	16	7.00E-03	1.52E+00	6.77E+00
Ethylbenzene	10	9.60E-02	4.65E+00	1.51E+01
Tetrachloroethene	5	6.12E-01	2.57E+00	5.27E+00
Toluene	11	4.80E-02	1.13E+01	7.79E+01
Trichloroethylene	2	6.48E-01	2.23E+00	3.81E+00
Xylenes, Total	10	8.00E-02	4.96E+00	1.92E+01
SVOCs				
1,2,4-Trichlorobenzene	8	6.71E+00	1.40E+03	8.26E+03
1,2-Dichlorobenzene	6	2.68E+00	8.29E+01	3.24E+02
1,3-Dichlorobenzene	2	1.89E+01	4.45E+01	7.01E+01
1,4-Dichlorobenzene	8	1.60E+00	2.55E+02	1.84E+03
2,4-Dichlorophenol	1	9.00E+00	9.00E+00	9.00E+00
2-Methylnaphthalene	7	1.70E+00	3.85E+01	1.69E+02
4-Chloroaniline	1	4.32E+01	4.32E+01	4.32E+01
Acenaphthene	1	1.40E+01	1.40E+01	1.40E+01
Anthracene	2	2.31E+01	1.13E+02	2.03E+02
Benzo(a)anthracene	2	2.47E+00	4.59E+00	6.72E+00
Benzo(a)pyrene	1	2.47E+00	2.47E+00	2.47E+00
Benzo(b)fluoranthene	2	1.51E+00	1.70E+01	3.24E+01
Benzoic acid	1	6.21E+01	6.21E+01	6.21E+01
Benzyl Butyl Phthalate	1	1.39E+02	1.39E+02	1.39E+02
bis(2-ethylhexyl)phthalate	7	2.38E+00	3.49E+01	1.31E+02
Chrysene	2	3.97E+00	4.78E+00	5.59E+00
Dibenzofuran	1	5.59E+00	5.59E+00	5.59E+00
Diethyl Phthalate	1	1.69E+01	1.69E+01	1.69E+01
Di-n-butylphthalate	8	1.34E-01	3.71E+01	2.03E+02
Fluoranthene	3	8.91E+00	7.69E+01	2.03E+02
Fluorene	3	3.08E+00	1.49E+01	3.54E+01
Hexachlorobenzene	7	3.23E+01	2.58E+02	1.27E+03
Hexachloroethane	1	3.01E+00	3.01E+00	3.01E+00
Naphthalene	7	1.10E+00	9.81E+01	5.15E+02
N-Nitrosodiphenylamine	2	4.59E+01	7.31E+01	1.00E+02
Phenanthrene	5	1.32E+00	3.43E+01	1.02E+02
Phenol	2	1.52E+01	2.11E+01	2.70E+01
Pyrene	4	2.21E+00	1.96E+01	4.93E+01
Pesticides				
4,4'-DDD	2	6.64E+00	1.82E+01	2.97E+01
4,4'-DDT	1	4.31E+00	4.31E+00	4.31E+00
Toxaphene	1	4.93E+02	4.93E+02	4.93E+02

Table 3-14
Site I Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
Herbicides				
Pentachlorophenol	1	1.92E+02	1.92E+02	1.92E+02
PCBs				
Total PCBs	5	2.04E+01	1.81E+02	3.43E+02
Metals				
Aluminum	16	1.01E+03	4.17E+03	1.35E+04
Antimony	3	1.40E+01	2.23E+03	6.66E+03
Arsenic	9	1.00E+00	6.56E+00	1.40E+01
Barium	10	8.00E+00	9.83E+02	3.60E+03
Beryllium	1	1.53E+03	1.53E+03	1.53E+03
Cadmium	7	2.00E+00	5.57E+00	1.30E+01
Chromium	14	4.00E+00	7.61E+01	7.31E+02
Cobalt	7	1.30E+01	3.89E+01	1.40E+02
Copper	8	2.30E+01	2.98E+02	6.30E+02
Cyanide, Total	3	2.00E+00	1.06E+03	3.18E+03
Iron	16	5.43E+02	1.17E+04	4.15E+04
Lead	15	3.00E+00	2.06E+03	2.33E+04
Manganese	1	9.80E+01	9.80E+01	9.80E+01
Mercury	5	5.00E-01	1.70E+00	3.20E+00
Nickel	12	9.00E-01	3.35E+02	2.41E+03
Selenium	1	1.32E+03	1.32E+03	1.32E+03
Tin	9	2.00E+00	1.92E+01	5.50E+01
Vanadium	7	1.80E+01	1.07E+02	5.53E+02
Zinc	16	1.30E+01	6.24E+02	6.33E+03

Notes:
(a) - Only concentrations reported as detected by the laboratory were entered into the database for use in the calculation of statistics for subsurface soil. Therefore, the total number of samples and the percent detected is not presented for this dataset.

Table 3-15
Site L Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
VOCs				
2-Butanone	3	1.60E-02	3.34E+00	1.00E+01
4-Methyl-2-pentanone	4	8.00E-03	7.30E-02	1.67E-01
Acetone	6	1.50E-02	1.01E+00	4.56E+00
Benzene	5	4.00E-03	2.01E+00	5.70E+00
Chlorobenzene	8	1.20E-02	1.25E+00	5.30E+00
Chloroform	3	4.90E-02	6.80E+00	2.03E+01
Dichloromethane	5	5.00E-03	4.89E-01	2.28E+00
Ethylbenzene	1	4.00E-02	4.00E-02	4.00E-02
Toluene	7	5.00E-02	6.65E+01	4.00E+02
Xylenes, Total	4	1.79E-01	3.10E+00	1.10E+01
SVOCs				
1,2,4-Trichlorobenzene	3	5.50E+00	5.25E+01	7.90E+01
1,2-Dichlorobenzene	4	1.00E-02	3.50E+00	7.70E+00
1,3-Dichlorobenzene	1	4.30E+00	4.30E+00	4.30E+00
1,4-Dichlorobenzene	9	1.80E-02	2.34E+01	1.00E+02
2,4,6-Trichlorophenol	1	1.50E+00	1.50E+00	1.50E+00
2,4-Dichlorophenol	2	2.40E+00	6.70E+00	1.10E+01
2-Chlorophenol	3	1.30E-02	1.59E+00	2.60E+00
2-Methylnaphthalene	6	2.10E-01	1.42E+00	3.10E+00
3&4-Methylphenol	4	1.00E-01	1.43E-01	1.90E-01
4-Chloroaniline	6	4.30E-02	9.87E+01	2.70E+02
4-Methylphenol	5	8.80E-02	3.40E+00	7.10E+00
Acenaphthene	3	4.40E-02	1.08E+00	3.10E+00
Acenaphthylene	1	2.80E-01	2.80E-01	2.80E-01
Anthracene	3	2.80E-02	1.46E+00	4.20E+00
Benzo(a)anthracene	4	7.50E-02	2.46E+00	8.60E+00
Benzo(a)pyrene	3	2.20E-02	1.80E+00	5.30E+00
Benzo(b)fluoranthene	3	5.80E-02	1.88E+00	5.40E+00
Benzo(g,h,I)perylene	1	2.70E-02	2.70E-02	2.70E-02
Benzo(k)fluoranthene	1	4.60E+00	4.60E+00	4.60E+00
Benzoic acid	2	4.90E-02	1.62E+00	3.20E+00
Benzyl Butyl Phthalate	1	5.40E+00	5.40E+00	5.40E+00
bis(2-ethylhexyl)phthalate	6	1.70E-02	9.21E-01	2.20E+00
Chrysene	4	7.60E-02	2.20E+00	8.20E+00
Dibenzofuran	2	4.20E-02	1.52E+00	3.00E+00
Diethyl Phthalate	2	3.10E-01	6.55E-01	1.00E+00
Di-n-butylphthalate	4	1.71E-01	1.28E+00	2.78E+00
Fluoranthene	4	1.30E-01	4.27E+00	1.60E+01
Fluorene	2	7.90E-02	2.54E+00	5.00E+00
Hexachlorobenzene	1	4.80E+00	4.80E+00	4.80E+00
Hexachloroethane	1	4.90E-02	4.90E-02	4.90E-02
Indeno(1,2,3-cd)pyrene	2	1.10E-01	1.51E+00	2.90E+00
Naphthalene	4	9.60E-02	2.02E+00	7.30E+00
Phenanthrene	5	9.10E-02	5.18E+00	2.30E+01
Phenol	5	3.46E-01	8.77E+00	1.60E+01
Pyrene	4	1.30E-01	5.96E+00	2.30E+01

Table 3-15
Site L Historical Subsurface Soil and Waste Data Summary

Constituent	Number of Detects (a)	Minimum (mg/kg)	Mean (mg/kg)	Maximum (mg/kg)
Herbicides				
Pentachlorophenol	4	1.15E+01	3.17E+01	5.82E+01
PCBs				
Total PCBs	2	1.60E+01	2.58E+02	5.00E+02
Metals				
Aluminum	11	1.12E+03	5.80E+03	1.28E+04
Antimony	1	3.20E+01	3.20E+01	3.20E+01
Arsenic	10	4.90E+00	5.36E+01	1.72E+02
Barium	15	1.30E+00	3.00E+02	1.44E+03
Cadmium	6	1.90E-02	8.03E+00	4.20E+01
Calcium	6	1.55E+04	2.81E+04	7.55E+04
Chromium	10	3.00E+00	1.16E+01	2.70E+01
Cobalt	7	5.90E+00	7.70E+00	9.00E+00
Copper	10	9.70E+00	9.27E+01	3.08E+02
Cyanide, Total	1	4.60E-01	4.60E-01	4.60E-01
Iron	11	1.40E+03	9.96E+03	2.40E+04
Lead	13	2.20E-01	7.46E+01	6.64E+02
Magnesium	6	3.84E+02	4.91E+03	9.44E+03
Manganese	11	1.00E+01	2.19E+02	7.82E+02
Mercury	7	1.00E-02	3.09E-01	1.80E+00
Nickel	10	2.10E+01	3.78E+02	2.39E+03
Potassium	6	9.75E+02	1.31E+03	2.28E+03
Vanadium	9	7.70E+00	3.23E+01	1.31E+02
Zinc	11	6.40E+00	5.34E+02	4.24E+03

Notes:
(a) - Only concentrations reported as detected by the laboratory were entered into the database for use in the calculation of statistics for subsurface soil. Therefore, the total number of samples and the percent detected is not presented for this dataset.

Table 3-16
Site N Historical Subsurface Soil and Waste Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone	1 : 2	50	1.40E-02	1.40E-02	1.40E-02
4-Methyl-2-pentanone	1 : 2	50	4.00E-03	4.00E-03	4.00E-03
Acetone	2 : 2	100	1.10E-02	2.80E-02	4.50E-02
Dichloromethane	2 : 2	100	4.00E-03	5.00E-03	6.00E-03
SVOCs					
Benzo(a)anthracene	1 : 2	50	2.63E-01	2.63E-01	2.63E-01
Benzo(a)pyrene	1 : 2	50	2.11E-01	2.11E-01	2.11E-01
Benzo(b)fluoranthene	2 : 2	100	1.52E-01	2.20E-01	2.89E-01
bis(2-Ethylhexyl)phthalate	2 : 2	100	9.34E-01	1.10E+00	1.27E+00
Chrysene	1 : 2	50	2.76E-01	2.76E-01	2.76E-01
Fluoranthene	2 : 2	100	2.53E-01	4.69E-01	6.84E-01
Phenanthrene	2 : 2	100	2.03E-01	3.19E-01	4.34E-01
Pyrene	2 : 2	100	2.15E-01	3.84E-01	5.53E-01
Metals					
Aluminum	2 : 2	100	1.92E+03	3.34E+03	4.76E+03
Arsenic	2 : 2	100	2.00E+00	2.50E+00	3.00E+00
Barium	2 : 2	100	4.60E+01	8.80E+01	1.30E+02
Chromium	2 : 2	100	5.00E+00	6.50E+00	8.00E+00
Cobalt	2 : 2	100	3.00E+00	3.50E+00	4.00E+00
Copper	2 : 2	100	5.00E+00	7.50E+00	1.00E+01
Iron	2 : 2	100	8.20E+02	3.54E+03	6.25E+03
Lead	2 : 2	100	2.40E+01	2.90E+01	3.40E+01
Manganese	2 : 2	100	8.20E+01	1.23E+02	1.64E+02
Mercury	1 : 2	50	9.00E+00	9.00E+00	9.00E+00
Nickel	1 : 2	50	1.10E+01	1.10E+01	1.10E+01
Zinc	2 : 2	100	4.20E+01	5.35E+01	6.50E+01

Notes:
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.
(d) Samples were collected in 1986 by Ecology & Environment, Inc.

`

Table 3-17
Site G Upwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
Ethylbenzene	2 : 4	50	ug/m3	1.79E+00	2.29E+00	2.79E+00
Methylene chloride (Dichloromethane)	1 : 4	25	ug/m3	1.46E+02	1.46E+02	1.46E+02
SVOCs						
1,4-Dichlorobenzene	1 : 2	50	ug/m3	1.62E-02	1.62E-02	1.62E-02
2-Methylnaphthalene	2 : 2	100	ug/m3	1.04E-01	1.12E-01	1.20E-01
Acenaphthene	1 : 2	50	ug/m3	2.03E-02	2.03E-02	2.03E-02
bis(2-Ethylhexyl)phthalate	1 : 2	50	ug/m3	7.00E-02	7.00E-02	7.00E-02
Dibenzofuran	2 : 2	100	ug/m3	2.01E-02	2.12E-02	2.23E-02
Diethylphthalate	1 : 2	50	ug/m3	4.87E-02	4.87E-02	4.87E-02
Dimethylphthalate	2 : 2	100	ug/m3	4.87E-02	5.10E-02	5.33E-02
Fluorene	1 : 2	50	ug/m3	1.72E-02	1.72E-02	1.72E-02
Phenanthrene	2 : 2	100	ug/m3	1.79E-02	2.24E-02	2.70E-02
Dioxin						
Dioxin TEQ-HH	2 : 2	100	pg/m3	1.02E-02	1.25E-02	1.48E-02
Metals						
Aluminum	1 : 2	50	mg/m3	9.80E-04	9.80E-04	9.80E-04
Cadmium	2 : 2	100	mg/m3	2.20E-05	2.70E-05	3.20E-05
Calcium	2 : 2	100	mg/m3	5.11E-04	5.36E-04	5.61E-04
Copper	1 : 2	50	mg/m3	1.08E-04	1.08E-04	1.08E-04
Lead	2 : 2	100	mg/m3	2.33E-04	2.70E-04	3.07E-04
Magnesium	2 : 2	100	mg/m3	5.61E-05	6.21E-05	6.82E-05

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-18
Site G Downwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
2-Butanone (MEK)	1 : 4	25	ug/m3	1.68E+01	1.68E+01	1.68E+01
4-Methyl-2-pentanone (MIBK)	1 : 4	25	ug/m3	6.19E+01	6.19E+01	6.19E+01
Acetone	1 : 4	25	ug/m3	7.17E+02	7.17E+02	7.17E+02
Ethylbenzene	2 : 4	50	ug/m3	1.45E+00	7.36E+00	1.33E+01
Methylene chloride (Dichloromethane)	2 : 4	50	ug/m3	6.81E+01	1.24E+03	2.42E+03
Styrene	1 : 4	25	ug/m3	1.59E+01	1.59E+01	1.59E+01
Tetrachloroethene	1 : 4	25	ug/m3	2.92E+00	2.92E+00	2.92E+00
Toluene	1 : 4	25	ug/m3	1.59E+02	1.59E+02	1.59E+02
SVOCs						
2-Methylnaphthalene	2 : 2	100	ug/m3	1.13E-01	1.28E-01	1.44E-01
Acenaphthene	2 : 2	100	ug/m3	1.82E-02	2.10E-02	2.37E-02
bis(2-Ethylhexyl)phthalate	2 : 2	100	ug/m3	6.29E-02	7.27E-02	8.25E-02
Dibenzofuran	2 : 2	100	ug/m3	1.85E-02	2.20E-02	2.54E-02
Diethylphthalate	1 : 2	50	ug/m3	2.54E-02	2.54E-02	2.54E-02
Dimethylphthalate	2 : 2	100	ug/m3	3.16E-02	3.90E-02	4.64E-02
Fluorene	2 : 2	100	ug/m3	1.72E-02	2.05E-02	2.37E-02
Phenanthrene	2 : 2	100	ug/m3	2.75E-02	2.99E-02	3.23E-02
Dioxin						
Dioxin TEQ-HH	2 : 2	100	pg/m3	8.34E-03	2.52E-02	4.21E-02
Metals						
Cadmium	2 : 2	100	mg/m3	2.72E-05	2.83E-05	2.93E-05
Calcium	1 : 2	50	mg/m3	4.67E-04	4.67E-04	4.67E-04
Copper	1 : 2	50	mg/m3	1.02E-04	1.02E-04	1.02E-04
Lead	2 : 2	100	mg/m3	2.72E-04	2.78E-04	2.85E-04
Magnesium	2 : 2	100	mg/m3	4.67E-05	4.68E-05	4.68E-05

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-19
Site H Upwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
1,1-Dichloroethene	1 : 2	50	ug/m3	2.71E+01	2.71E+01	2.71E+01
SVOCs						
1,4-Dichlorobenzene	1 : 1	100	ug/m3	4.94E-02	4.94E-02	4.94E-02
2-Methylnaphthalene	1 : 1	100	ug/m3	8.95E-02	8.95E-02	8.95E-02
Acenaphthene	1 : 1	100	ug/m3	2.10E-02	2.10E-02	2.10E-02
bis(2-Ethylhexyl)phthalate	1 : 1	100	ug/m3	5.25E-02	5.25E-02	5.25E-02
Dibenzofuran	1 : 1	100	ug/m3	2.07E-02	2.07E-02	2.07E-02
Diethylphthalate	1 : 1	100	ug/m3	2.28E-02	2.28E-02	2.28E-02
Dimethylphthalate	1 : 1	100	ug/m3	4.32E-02	4.32E-02	4.32E-02
Fluorene	1 : 1	100	ug/m3	1.91E-02	1.91E-02	1.91E-02
Phenanthrene	1 : 1	100	ug/m3	4.01E-02	4.01E-02	4.01E-02
Dioxin						
Dioxin TEQ-HH	1 : 1	100	pg/m3	2.60E-03	2.60E-03	2.60E-03
Metals						
Copper	1 : 1	100	mg/m3	7.50E-04	7.50E-04	7.50E-04
Lead	1 : 1	100	mg/m3	2.29E-05	2.29E-05	2.29E-05

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-20
Site H Downwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
1,1,1-Trichloroethane	1 : 4	25	ug/m3	6.37E+00	6.37E+00	6.37E+00
1,1-Dichloroethene	1 : 4	25	ug/m3	2.20E+01	2.20E+01	2.20E+01
2-Butanone (MEK)	1 : 4	25	ug/m3	2.47E+01	2.47E+01	2.47E+01
Acetone	1 : 4	25	ug/m3	2.40E+01	2.40E+01	2.40E+01
Ethylbenzene	1 : 4	25	ug/m3	1.82E+00	1.82E+00	1.82E+00
Methylene chloride (Dichloromethane)	1 : 4	25	ug/m3	1.10E+01	1.10E+01	1.10E+01
Tetrachloroethene	1 : 4	25	ug/m3	9.09E-01	9.09E-01	9.09E-01
Trichloroethene	1 : 4	25	ug/m3	3.44E+00	3.44E+00	3.44E+00
SVOCs						
1,4-Dichlorobenzene	2 : 2	100	ug/m3	4.14E-02	5.26E-02	6.38E-02
2-Methylnaphthalene	2 : 2	100	ug/m3	8.58E-02	9.91E-02	1.12E-01
Acenaphthene	2 : 2	100	ug/m3	1.78E-02	2.01E-02	2.25E-02
Dibenzofuran	2 : 2	100	ug/m3	1.75E-02	1.94E-02	2.13E-02
Dimethylphthalate	2 : 2	100	ug/m3	3.25E-02	5.27E-02	7.29E-02
Fluorene	2 : 2	100	ug/m3	1.51E-02	1.76E-02	2.01E-02
Phenanthrene	2 : 2	100	ug/m3	2.72E-02	2.88E-02	3.04E-02
Dioxin						
Dioxin TEQ-HH	2 : 2	100	pg/m3	5.65E-03	1.09E-02	1.61E-02
Metals						
Calcium	2 : 2	100	mg/m3	5.42E-04	7.28E-04	9.14E-04
Copper	2 : 2	100	mg/m3	3.36E-04	4.60E-04	5.83E-04
Lead	2 : 2	100	mg/m3	2.37E-05	2.52E-05	2.67E-05
Magnesium	2 : 2	100	mg/m3	7.89E-05	8.94E-05	1.00E-04
Manganese	1 : 2	50	mg/m3	5.40E-06	5.40E-06	5.40E-06

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-21
Site I Upwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
2-Butanone (MEK)	1 : 2	50	ug/m3	2.40E+01	2.40E+01	2.40E+01
Acetone	1 : 2	50	ug/m3	2.29E+02	2.29E+02	2.29E+02
Methylene chloride (Dichloromethane)	1 : 2	50	ug/m3	2.95E+02	2.95E+02	2.95E+02
Trichloroethene	1 : 2	50	ug/m3	4.80E+00	4.80E+00	4.80E+00
SVOCs						
1,4-Dichlorobenzene	1 : 1	100	ug/m3	8.46E-02	8.46E-02	8.46E-02
2-Methylnaphthalene	1 : 1	100	ug/m3	1.36E-01	1.36E-01	1.36E-01
Dimethylphthalate	1 : 1	100	ug/m3	3.93E-02	3.93E-02	3.93E-02
Phenanthrene	1 : 1	100	ug/m3	3.32E-02	3.32E-02	3.32E-02
Dioxin						
Dioxin TEQ-HH	1 : 1	100	pg/m3	6.35E-02	6.35E-02	6.35E-02
Metals						
Calcium	1 : 1	100	mg/m3	6.25E-04	6.25E-04	6.25E-04
Copper	1 : 1	100	mg/m3	3.13E-04	3.13E-04	3.13E-04
Lead	1 : 1	100	mg/m3	2.21E-05	2.21E-05	2.21E-05
Magnesium	1 : 1	100	mg/m3	5.83E-05	5.83E-05	5.83E-05

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-22
Site I Downwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
Ethylbenzene	1 : 4	25	ug/m3	1.69E+00	1.69E+00	1.69E+00
Methylene chloride (Dichloromethane)	2 : 4	50	ug/m3	1.12E+01	1.05E+03	2.09E+03
SVOCs						
1,2-Dichlorobenzene	2 : 2	100	ug/m3	8.31E-02	1.71E-01	2.59E-01
1,4-Dichlorobenzene	2 : 2	100	ug/m3	2.86E-01	3.53E-01	4.20E-01
2-Methylnaphthalene	2 : 2	100	ug/m3	1.02E-01	1.12E-01	1.22E-01
2-Nitroaniline	1 : 2	50	ug/m3	2.94E-02	2.94E-02	2.94E-02
Acenaphthene	2 : 2	100	ug/m3	3.08E-02	3.46E-02	3.85E-02
bis(2-Ethylhexyl)phthalate	2 : 2	100	ug/m3	6.99E-02	7.19E-02	7.38E-02
Dibenzofuran	2 : 2	100	ug/m3	3.38E-02	3.62E-02	3.85E-02
Dimethylphthalate	2 : 2	100	ug/m3	3.29E-02	4.57E-02	5.85E-02
Fluorene	2 : 2	100	ug/m3	2.62E-02	2.93E-02	3.25E-02
Phenanthrene	2 : 2	100	ug/m3	4.31E-02	5.13E-02	5.94E-02
Dioxin						
Dioxin TEQ-HH	2 : 2	100	pg/m3	2.37E-02	2.96E-02	3.54E-02
Metals						
Cadmium	1 : 2	50	mg/m3	2.08E-05	2.08E-05	2.08E-05
Calcium	1 : 2	50	mg/m3	5.00E-04	5.00E-04	5.00E-04
Copper	2 : 2	100	mg/m3	1.50E-04	1.79E-04	2.08E-04
Lead	2 : 2	100	mg/m3	2.04E-05	2.33E-05	2.63E-05
Magnesium	2 : 2	100	mg/m3	5.83E-05	6.25E-05	6.67E-05
Manganese	2 : 2	100	mg/m3	6.25E-06	6.25E-06	6.25E-06
Sodium	1 : 2	50	mg/m3	5.42E-04	5.42E-04	5.42E-04

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-23
Site L Upwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
Ethylbenzene	1 : 2	50	ug/m3	1.31E+00	1.31E+00	1.31E+00
SVOCs						
2-Methylnaphthalene	1 : 1	100	ug/m3	1.54E-01	1.54E-01	1.54E-01
Acenaphthene	1 : 1	100	ug/m3	3.36E-02	3.36E-02	3.36E-02
bis(2-Ethylhexyl)phthalate	1 : 1	100	ug/m3	7.38E-02	7.38E-02	7.38E-02
Dibenzofuran	1 : 1	100	ug/m3	3.69E-02	3.69E-02	3.69E-02
Diethylphthalate	1 : 1	100	ug/m3	2.38E-02	2.38E-02	2.38E-02
Dimethylphthalate	1 : 1	100	ug/m3	3.09E-02	3.09E-02	3.09E-02
Fluorene	1 : 1	100	ug/m3	2.89E-02	2.89E-02	2.89E-02
Phenol	1 : 1	100	ug/m3	6.04E-02	6.04E-02	6.04E-02
Dioxin						
Dioxin TEQ-HH	1 : 1	100	pg/m3	3.29E-02	3.29E-02	3.29E-02
Metals						
Cadmium	1 : 1	100	mg/m3	2.92E-05	2.92E-05	2.92E-05
Calcium	1 : 1	100	mg/m3	1.29E-03	1.29E-03	1.29E-03
Iron	1 : 1	100	mg/m3	5.00E-04	5.00E-04	5.00E-04
Lead	1 : 1	100	mg/m3	3.00E-04	3.00E-04	3.00E-04
Magnesium	1 : 1	100	mg/m3	3.00E-04	3.00E-04	3.00E-04
Nickel	1 : 1	100	mg/m3	5.83E-06	5.83E-06	5.83E-06

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-24
Site L Downwind Ambient Air Data Summary

Constituent	FOD (a)	%FOD (b)	Units	Minimum (c)	Mean (c)	Maximum (c)
VOCs						
2-Butanone (MEK)	1 : 4	25	ug/m3	3.05E+01	3.05E+01	3.05E+01
Methylene chloride (Dichloromethane)	1 : 4	25	ug/m3	8.90E+02	8.90E+02	8.90E+02
SVOCs						
1,4-Dichlorobenzene	2 : 2	100	ug/m3	1.73E-02	2.07E-02	2.40E-02
2-Methylnaphthalene	2 : 2	100	ug/m3	1.23E-01	1.36E-01	1.49E-01
Acenaphthene	2 : 2	100	ug/m3	2.33E-02	2.82E-02	3.31E-02
bis(2-Ethylhexyl)phthalate	1 : 2	50	ug/m3	7.77E-02	7.77E-02	7.77E-02
Dibenzofuran	2 : 2	100	ug/m3	2.80E-02	3.26E-02	3.72E-02
Diethylphthalate	1 : 2	50	ug/m3	3.24E-02	3.24E-02	3.24E-02
Dimethylphthalate	2 : 2	100	ug/m3	2.80E-02	3.43E-02	4.05E-02
Fluorene	2 : 2	100	ug/m3	2.30E-02	2.64E-02	2.97E-02
Phenanthrene	1 : 2	50	ug/m3	3.67E-02	3.67E-02	3.67E-02
Dioxin						
Dioxin TEQ-HH	2 : 2	100	pg/m3	7.17E-02	8.07E-02	8.98E-02
Metals						
Cadmium	2 : 2	100	mg/m3	2.68E-05	2.74E-05	2.81E-05
Lead	2 : 2	100	mg/m3	2.68E-04	2.74E-04	2.81E-04
Magnesium	2 : 2	100	mg/m3	4.68E-05	5.74E-05	6.80E-05
Silver	1 : 2	50	mg/m3	3.57E-05	3.57E-05	3.57E-05
Sodium	2 : 2	100	mg/m3	5.10E-04	5.32E-04	5.53E-04

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-25
Upgradient Groundwater Data Summary

Constituent (d)	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
Benzene	71-43-2	3 : 9	33	4.70E-01	2.67E+00	**6.55E+00**
Carbon disulfide	75-15-0	1 : 9	11	1.30E+01	1.30E+01	1.30E+01
Ethylbenzene	100-41-4	1 : 9	11	1.60E+00	1.60E+00	1.60E+00
Trichloroethene	79-01-6	1 : 9	11	5.70E-01	5.70E-01	5.70E-01
Xylenes, Total	1330-20-7	1 : 9	11	1.10E+01	1.10E+01	1.10E+01
SVOCs						
Acenaphthene	83-32-9	1 : 9	11	8.00E+00	8.00E+00	8.00E+00
Benzo(a)anthracene	56-55-3	1 : 9	11	**9.70E-01**	**9.70E-01**	**9.70E-01**
Benzo(g,h,i)perylene	191-24-2	1 : 9	11	8.20E-01	8.20E-01	8.20E-01
Chrysene	218-01-9	1 : 9	11	1.30E+00	1.30E+00	1.30E+00
Dibenzofuran	132-64-9	1 : 9	11	3.60E-01	3.60E-01	3.60E-01
Diethylphthalate	84-66-2	1 : 9	11	3.50E-01	3.50E-01	3.50E-01
Fluorene	86-73-7	1 : 9	11	2.40E-01	2.40E-01	2.40E-01
Naphthalene	91-20-3	1 : 9	11	**9.90E+01**	**9.90E+01**	**9.90E+01**
N-Nitrosodiphenylamine	122-39-4	1 : 9	11	2.50E-01	2.50E-01	2.50E-01
Pesticides						
delta-BHC	319-86-8	2 : 9	22	1.50E-03	4.13E-03	6.75E-03
Endosulfan sulfate	1031-07-8	1 : 9	11	1.00E-03	1.00E-03	1.00E-03
Endrin ketone	53494-70-5	1 : 9	11	2.10E-03	2.10E-03	2.10E-03
gamma-BHC (Lindane)	58-89-9	1 : 9	11	6.20E-04	6.20E-04	6.20E-04
Heptachlor	76-44-8	2 : 9	22	9.90E-04	9.95E-04	1.00E-03
Heptachlor epoxide	1024-57-3	1 : 9	11	1.60E-03	1.60E-03	1.60E-03
Herbicides						
2,4,5-T	93-76-5	1 : 9	11	2.10E-01	2.10E-01	2.10E-01
2,4,5-TP (Silvex)	93-72-1	1 : 9	11	1.60E-01	1.60E-01	1.60E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	6 : 9	67	3.26E-06	8.21E-06	1.90E-05
Metals						
Aluminum	7429-90-5	6 : 9	67	**4.60E+02**	**8.31E+03**	**2.40E+04**
Arsenic	7440-38-2	4 : 9	44	3.80E+00	**1.03E+01**	**1.60E+01**
Barium	7440-39-3	9 : 9	100	1.10E+02	5.46E+02	9.70E+02
Beryllium	7440-41-7	2 : 9	22	9.60E-01	9.65E-01	9.70E-01
Calcium	7440-70-2	9 : 9	100	1.00E+05	1.71E+05	3.30E+05
Chromium	7440-47-3	8 : 9	89	2.90E+00	6.81E+01	**1.80E+02**
Cobalt	7440-48-4	4 : 9	44	4.70E+00	**1.12E+01**	**1.80E+01**
Copper	7440-50-8	6 : 9	67	1.40E+00	1.72E+01	5.20E+01
Iron	7439-89-6	9 : 9	100	7.30E+01	**2.57E+04**	**8.00E+04**
Lead	7439-92-1	3 : 9	33	6.10E+00	**1.64E+01**	**2.20E+01**
Magnesium	7439-95-4	9 : 9	100	2.30E+04	4.33E+04	6.20E+04
Manganese	7439-96-5	9 : 9	100	**7.40E+01**	**9.07E+02**	**1.60E+03**
Molybdenum	7439-98-7	5 : 9	56	2.80E+00	1.83E+01	4.90E+01
Nickel	7440-02-0	8 : 9	89	5.10E+00	4.17E+01	1.75E+02
Potassium	7440-09-7	9 : 9	100	2.50E+03	2.58E+04	1.70E+05
Sodium	7440-23-5	9 : 9	100	8.50E+03	3.79E+04	1.00E+05
Vanadium	7440-62-2	6 : 9	67	2.60E+00	2.21E+01	5.40E+01
Zinc	7440-66-6	6 : 9	67	1.60E+01	2.10E+02	1.00E+03

Table 3-25
Upgradient Groundwater Data Summary

Notes:
2,4,5-T - 2,4,5-Trichlorophenoxy acetic acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-26
Site G Source Area Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
4-Methyl-2-pentanone (MIBK)	108-10-1	1 : 2	50	1.30E+03	1.30E+03	1.30E+03
Acetone	67-64-1	1 : 2	50	5.90E+02	5.90E+02	5.90E+02
Benzene	71-43-2	2 : 2	100	1.10E+02	1.91E+03	3.70E+03
Chlorobenzene	108-90-7	2 : 2	100	6.20E+02	2.46E+03	4.30E+03
Cis/Trans-1,2-Dichloroethene	540-59-0	2 : 2	100	4.20E+01	1.16E+02	1.90E+02
Ethylbenzene	100-41-4	1 : 2	50	3.20E+01	3.20E+01	3.20E+01
Tetrachloroethene	127-18-4	1 : 2	50	1.70E+02	1.70E+02	1.70E+02
Toluene	108-88-3	2 : 2	100	9.70E+02	4.74E+03	8.50E+03
Trichloroethene	79-01-6	2 : 2	100	1.80E+01	1.09E+02	2.00E+02
Vinyl chloride	75-01-4	1 : 2	50	4.10E+01	4.10E+01	4.10E+01
Xylenes, Total	1330-20-7	1 : 2	50	1.30E+02	1.30E+02	1.30E+02
SVOCs						
1,2,4-Trichlorobenzene	120-82-1	2 : 2	100	1.60E+00	9.08E+01	1.80E+02
1,2-Dichlorobenzene	95-50-1	2 : 2	100	5.70E+00	1.53E+02	3.00E+02
1,3-Dichlorobenzene	541-73-1	1 : 2	50	1.90E+00	1.90E+00	1.90E+00
1,4-Dichlorobenzene	106-46-7	2 : 2	100	1.60E+01	4.33E+02	8.50E+02
2,4-Dichlorophenol	120-83-2	2 : 2	100	3.10E+00	1.80E+03	3.60E+03
2-Chlorophenol	95-57-8	2 : 2	100	3.80E+01	3.34E+02	6.30E+02
2-Methylphenol (o-cresol)	95-48-7	2 : 2	100	2.60E+01	1.28E+02	2.30E+02
3-Methylphenol/4-Methylphenol	106-44-5	2 : 2	100	1.30E+02	1.27E+03	2.40E+03
4-Chloroaniline	106-47-8	2 : 2	100	1.60E+03	1.23E+04	2.30E+04
4-Nitroaniline	100-01-6	1 : 2	50	8.40E+00	8.40E+00	8.40E+00
Diethylphthalate	84-66-2	1 : 2	50	7.10E+00	7.10E+00	7.10E+00
Naphthalene	91-20-3	2 : 2	100	3.90E+02	1.25E+03	2.10E+03
Phenol	108-95-2	2 : 2	100	3.80E+02	7.19E+03	1.40E+04
Pesticides						
4,4'-DDD	72-54-8	1 : 2	50	2.40E-02	2.40E-02	2.40E-02
4,4'-DDE	72-55-9	1 : 2	50	1.40E-03	1.40E-03	1.40E-03
alpha-BHC	319-84-6	2 : 2	100	2.40E-02	3.01E+00	6.00E+00
delta-BHC	319-86-8	2 : 2	100	3.60E-01	8.68E+00	1.70E+01
Dieldrin	60-57-1	1 : 2	50	2.00E-02	2.00E-02	2.00E-02
Endrin	72-20-8	1 : 2	50	2.40E-02	2.40E-02	2.40E-02
Endrin aldehyde	7421-93-4	1 : 2	50	9.20E-02	9.20E-02	9.20E-02
Gamma Chlordane	5103-74-2	1 : 2	50	8.00E-03	8.00E-03	8.00E-03
Heptachlor	76-44-8	1 : 2	50	2.60E-02	2.60E-02	2.60E-02
Heptachlor epoxide	1024-57-3	1 : 2	50	2.40E-02	2.40E-02	2.40E-02
Methoxychlor	72-43-5	1 : 2	50	6.90E-02	6.90E-02	6.90E-02
Herbicides						
2,4,5-T	93-76-5	1 : 2	50	2.40E+01	2.40E+01	2.40E+01
2,4,5-TP (Silvex)	93-72-1	1 : 2	50	3.90E+02	3.90E+02	3.90E+02
2,4-D	94-75-7	1 : 2	50	1.20E+02	1.20E+02	1.20E+02
Dichloroprop	120-36-5	1 : 2	50	4.70E+01	4.70E+01	4.70E+01
Pentachlorophenol	87-86-5	1 : 2	50	1.90E+01	1.90E+01	1.90E+01
Pentachlorophenol	87-86-5	1 : 1	100	2.00E+03	2.00E+03	2.00E+03
Dioxin						
Dioxin TEQ-HH	1746-01-6	2 : 2	100	2.21E-04	1.90E-03	3.57E-03

Table 3-26
Site G Source Area Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals						
Aluminum	7429-90-5	1 : 2	50	6.10E+02	6.10E+02	6.10E+02
Antimony	7440-36-0	1 : 2	50	8.60E+00	8.60E+00	8.60E+00
Arsenic	7440-38-2	2 : 2	100	1.40E+01	2.95E+01	4.50E+01
Barium	7440-39-3	2 : 2	100	4.00E+02	4.10E+02	4.20E+02
Cadmium	7440-43-9	1 : 2	50	2.60E+00	2.60E+00	2.60E+00
Calcium	7440-70-2	2 : 2	100	2.70E+05	3.95E+05	5.20E+05
Chromium	7440-47-3	1 : 2	50	2.20E+01	2.20E+01	2.20E+01
Cobalt	7440-48-4	2 : 2	100	7.00E+00	7.35E+01	1.40E+02
Copper	7440-50-8	1 : 2	50	1.10E+01	1.10E+01	1.10E+01
Iron	7439-89-6	2 : 2	100	4.60E+04	1.58E+05	2.70E+05
Lead	7439-92-1	1 : 2	50	2.40E+01	2.40E+01	2.40E+01
Magnesium	7439-95-4	2 : 2	100	4.90E+04	5.05E+04	5.20E+04
Manganese	7439-96-5	2 : 2	100	1.10E+03	3.60E+03	6.10E+03
Molybdenum	7439-98-7	2 : 2	100	5.60E+01	2.53E+02	4.50E+02
Nickel	7440-02-0	2 : 2	100	5.90E+00	6.30E+01	1.20E+02
Potassium	7440-09-7	2 : 2	100	3.50E+03	1.58E+04	2.80E+04
Selenium	7782-49-2	1 : 2	50	5.00E+00	5.00E+00	5.00E+00
Sodium	7440-23-5	2 : 2	100	5.90E+04	1.05E+05	1.50E+05
Vanadium	7440-62-2	2 : 2	100	3.70E+00	1.67E+02	3.30E+02
Zinc	7440-66-6	1 : 2	50	1.30E+03	1.30E+03	1.30E+03

Notes:
2,4-D - 2,4-Dichlorophenoxy acetic acid.
2,4,5-T - 2,4,5-Trichlorophenoxy acetic acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-27
Site H Source Area Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
1,1,2,2-Tetrachloroethane	79-34-5	1 : 9	11	1.20E+01	1.20E+01	1.20E+01
1,1-Dichloroethene	75-35-4	1 : 9	11	3.70E+00	3.70E+00	3.70E+00
4-Methyl-2-pentanone (MIBK)	108-10-1	1 : 9	11	2.60E+01	2.60E+01	2.60E+01
Acetone	67-64-1	1 : 9	11	4.90E+02	4.90E+02	4.90E+02
Benzene	71-43-2	7 : 9	78	1.30E+00	5.60E+02	2.25E+03
Chlorobenzene	108-90-7	9 : 9	100	1.40E+01	7.38E+02	4.35E+03
Chloroform	67-66-3	3 : 9	33	9.70E-01	1.44E+02	4.25E+02
Cis/Trans-1,2-Dichloroethene	540-59-0	3 : 9	33	1.11E+00	6.74E+00	1.70E+01
Ethylbenzene	100-41-4	6 : 9	67	2.35E+00	3.07E+02	1.80E+03
Toluene	108-88-3	8 : 9	89	6.30E-01	2.13E+02	1.55E+03
Trichloroethene	79-01-6	3 : 9	33	1.80E+00	1.79E+01	4.95E+01
Xylenes, Total	1330-20-7	6 : 9	67	3.75E+00	4.67E+01	2.00E+02
SVOCs						
1,2,4-Trichlorobenzene	120-82-1	8 : 9	89	1.90E+01	5.98E+02	2.50E+03
1,2-Dichlorobenzene	95-50-1	9 : 9	100	2.20E+00	2.46E+02	7.20E+02
1,3-Dichlorobenzene	541-73-1	7 : 9	78	3.60E-01	5.40E+01	1.40E+02
1,4-Dichlorobenzene	106-46-7	9 : 9	100	2.00E+01	2.65E+03	1.40E+04
2,4,5-Trichlorophenol	95-95-4	6 : 9	67	4.10E+00	4.89E+01	1.90E+02
2,4,6-Trichlorophenol	88-06-2	6 : 9	67	1.50E+00	1.33E+02	4.65E+02
2,4-Dichlorophenol	120-83-2	7 : 9	78	7.50E-01	8.33E+01	3.70E+02
2-Chloronaphthalene	91-58-7	1 : 9	11	1.20E+01	1.20E+01	1.20E+01
2-Chlorophenol	95-57-8	6 : 9	67	9.80E-01	1.76E+01	7.30E+01
2-Methylnaphthalene	91-57-6	2 : 9	22	1.80E+00	4.90E+00	8.00E+00
2-Methylphenol (o-cresol)	95-48-7	2 : 9	22	2.80E+01	2.90E+01	3.00E+01
2-Nitroaniline	88-74-4	1 : 9	11	1.35E+01	1.35E+01	1.35E+01
3-Methylphenol/4-Methylphenol	106-44-5	4 : 9	44	7.60E-01	7.06E+01	2.15E+02
4,6-Dinitro-2-methylphenol	534-52-1	1 : 9	11	1.40E+01	1.40E+01	1.40E+01
4-Chloro-3-methylphenol	59-50-7	1 : 9	11	1.00E+00	1.00E+00	1.00E+00
4-Chloroaniline	106-47-8	6 : 9	67	2.40E+00	4.48E+02	1.80E+03
Acenaphthene	83-32-9	1 : 9	11	2.20E+00	2.20E+00	2.20E+00
bis(2-Ethylhexyl)phthalate	117-81-7	6 : 9	67	7.40E-01	7.17E+00	3.20E+01
Carbazole	86-74-8	4 : 9	44	1.15E+00	2.89E+00	5.20E+00
Dibenzofuran	132-64-9	2 : 9	22	3.10E-01	7.05E-01	1.10E+00
Diethylphthalate	84-66-2	2 : 9	22	2.10E+00	1.16E+01	2.10E+01
Dimethylphthalate	131-11-3	1 : 9	11	3.65E+00	3.65E+00	3.65E+00
Di-n-butylphthalate	84-74-2	4 : 9	44	2.60E-01	3.73E-01	5.20E-01
Di-n-octylphthalate	117-84-0	1 : 9	11	3.90E-01	3.90E-01	3.90E-01
Fluorene	86-73-7	7 : 9	78	5.80E-01	6.60E+00	3.00E+01
Hexachlorobenzene	118-74-1	4 : 9	44	3.70E-01	6.96E+00	2.10E+01
Isophorone	78-59-1	1 : 9	11	7.50E-01	7.50E-01	7.50E-01
Naphthalene	91-20-3	4 : 9	44	3.20E+00	6.31E+02	2.30E+03
Nitrobenzene	98-95-3	1 : 9	11	5.65E+01	5.65E+01	5.65E+01
N-Nitrosodiphenylamine	122-39-4	1 : 9	11	7.60E+00	7.60E+00	7.60E+00
Pentachlorophenol (8270)	87-86-5svoc	3 : 3	100	3.00E+00	1.66E+03	4.30E+03
Phenanthrene	85-01-8	2 : 9	22	2.90E+00	3.85E+00	4.80E+00
Phenol	108-95-2	3 : 9	33	2.70E+01	1.38E+02	3.15E+02

Table 3-27
Site H Source Area Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Pesticides						
4,4'-DDD	72-54-8	6 : 9	67	4.10E-02	2.61E-01	9.00E-01
4,4'-DDE	72-55-9	5 : 9	56	2.10E-02	7.06E-02	1.60E-01
4,4'-DDT	50-29-3	6 : 9	67	2.95E-02	1.01E+00	4.40E+00
Aldrin	309-00-2	3 : 9	33	2.60E-02	4.83E-02	6.60E-02
Alpha Chlordane	5103-71-9	3 : 9	33	1.90E-02	8.16E-01	2.40E+00
alpha-BHC	319-84-6	4 : 9	44	1.00E-02	1.43E-01	4.95E-01
delta-BHC	319-86-8	4 : 9	44	6.20E-02	1.08E-01	1.50E-01
Dieldrin	60-57-1	1 : 9	11	5.00E-03	5.00E-03	5.00E-03
Endosulfan I	959-98-8	2 : 9	22	1.70E-02	2.60E-02	3.50E-02
Endrin	72-20-8	2 : 9	22	1.30E-02	1.87E-01	3.60E-01
Endrin aldehyde	7421-93-4	1 : 9	11	7.40E-01	7.40E-01	7.40E-01
Gamma Chlordane	5103-74-2	4 : 9	44	8.00E-03	4.33E-02	1.40E-01
gamma-BHC (Lindane)	58-89-9	1 : 9	11	3.80E-02	3.80E-02	3.80E-02
Heptachlor	76-44-8	2 : 9	22	2.30E-02	3.35E-02	4.40E-02
Heptachlor epoxide	1024-57-3	4 : 9	44	7.10E-03	1.13E+00	4.40E+00
Methoxychlor	72-43-5	2 : 9	22	3.60E-01	7.80E-01	1.20E+00
Herbicides						
2,4,5-T	93-76-5	1 : 9	11	3.50E+01	3.50E+01	3.50E+01
2,4-D	94-75-7	3 : 9	33	1.80E+00	6.43E+01	1.80E+02
MCPP	7085-19-0	5 : 9	56	1.50E+02	1.97E+03	4.25E+03
Pentachlorophenol	87-86-5	8 : 9	89	1.20E+00	4.15E+02	2.40E+03
Pentachlorophenol	87-86-5	3 : 6	50	3.75E+01	2.81E+02	7.10E+02
PCBs						
Total PCBs	1366-36-3	6 : 9	67	1.90E+00	5.28E+00	1.22E+01
Dioxin						
Dioxin TEQ-HH	1746-01-6	9 : 9	100	4.12E-06	7.78E-04	4.72E-03
Metals						
Aluminum	7429-90-5	5 : 9	56	4.10E+01	9.08E+02	2.10E+03
Antimony	7440-36-0	5 : 9	56	5.90E+00	5.53E+01	1.50E+02
Arsenic	7440-38-2	9 : 9	100	2.80E+01	3.46E+02	1.25E+03
Barium	7440-39-3	9 : 9	100	6.35E+01	2.47E+02	7.30E+02
Cadmium	7440-43-9	1 : 9	11	2.20E+00	2.20E+00	2.20E+00
Calcium	7440-70-2	9 : 9	100	1.70E+05	3.22E+05	7.20E+05
Chromium	7440-47-3	4 : 9	44	3.00E+00	3.38E+01	1.10E+02
Cobalt	7440-48-4	4 : 9	44	2.70E+00	4.46E+01	1.30E+02
Copper	7440-50-8	5 : 9	56	6.30E+00	2.03E+01	4.20E+01
Cyanide, Total	57-12-5	1 : 9	11	1.80E+01	1.80E+01	1.80E+01
Iron	7439-89-6	9 : 9	100	6.40E+03	3.35E+04	8.90E+04
Lead	7439-92-1	2 : 9	22	1.90E+00	5.05E+00	8.20E+00
Magnesium	7439-95-4	9 : 9	100	3.70E+04	4.94E+04	7.90E+04
Manganese	7439-96-5	9 : 9	100	4.40E+02	1.80E+03	8.80E+03
Mercury	7439-97-6	2 : 9	22	9.00E-02	1.45E-01	2.00E-01
Molybdenum	7439-98-7	7 : 9	78	3.20E+00	2.97E+01	1.30E+02
Nickel	7440-02-0	8 : 9	89	5.40E+00	3.36E+02	7.20E+02
Potassium	7440-09-7	9 : 9	100	5.50E+03	1.25E+04	2.70E+04
Selenium	7782-49-2	1 : 9	11	7.15E+00	7.15E+00	7.15E+00

Table 3-27
Site H Source Area Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)						
Sodium	7440-23-5	9 : 9	100	1.30E+04	4.07E+04	9.80E+04
Thallium	7440-28-0	1 : 9	11	5.10E+00	5.10E+00	5.10E+00
Vanadium	7440-62-2	4 : 9	44	3.50E+00	5.72E+00	6.80E+00
Zinc	7440-66-6	3 : 9	33	6.05E+01	5.14E+02	1.00E+03

Notes:
2,4-D - 2,4-Dichlorophenoxy acetic acid.
2,4,5-T - 2,4,5-Trichlorophenoxy acetic acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
MCPP - 2-(2-Methyl-4-chlorophenoxy)propionic acid.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-28a
Site I South Source Area Groundwater Data Summary (a)

Constituent	CAS No.	FOD (b)	%FOD (c)	Minimum (d) (ug/L)	Mean (d) (ug/L)	Maximum (d) (ug/L)
VOCs						
Benzene	71-43-2	4 : 7	57	3.20E+01	3.90E+02	7.50E+02
Chlorobenzene	108-90-7	4 : 7	57	1.10E+00	1.30E+03	3.80E+03
Cis/Trans-1,2-Dichloroethene	540-59-0	1 : 7	14	1.60E+02	1.60E+02	1.60E+02
Ethylbenzene	100-41-4	3 : 7	43	4.60E+00	4.52E+01	8.30E+01
Toluene	108-88-3	3 : 7	43	7.20E-01	1.59E+01	4.20E+01
Xylenes, Total	1330-20-7	2 : 7	29	1.40E+01	1.60E+01	1.80E+01
SVOCs		:				
1,2,4-Trichlorobenzene	120-82-1	2 : 7	29	5.50E-01	2.55E+02	5.10E+02
1,2-Dichlorobenzene	95-50-1	3 : 7	43	3.90E+00	1.72E+02	5.00E+02
1,3-Dichlorobenzene	541-73-1	5 : 7	71	4.20E-01	2.21E+01	5.15E+01
1,4-Dichlorobenzene	106-46-7	7 : 7	100	3.00E+00	2.06E+03	1.40E+04
2,4,5-Trichlorophenol	95-95-4	1 : 7	14	1.60E+00	1.60E+00	1.60E+00
2,4,6-Trichlorophenol	88-06-2	1 : 7	14	1.50E+01	1.50E+01	1.50E+01
2,4-Dichlorophenol	120-83-2	1 : 7	14	3.80E+00	3.80E+00	3.80E+00
2-Chlorophenol	95-57-8	2 : 7	29	1.00E+01	1.85E+01	2.70E+01
2-Methylnaphthalene	91-57-6	2 : 7	29	4.20E+00	4.90E+00	5.60E+00
2-Methylphenol (o-cresol)	95-48-7	2 : 7	29	3.90E-01	1.07E+01	2.10E+01
3-Methylphenol/4-Methylphenol	106-44-5	2 : 7	29	4.80E+00	5.74E+01	1.10E+02
4-Chloroaniline	106-47-8	2 : 7	29	1.40E+03	1.60E+03	1.80E+03
Acenaphthene	83-32-9	1 : 7	14	2.10E+00	2.10E+00	2.10E+00
Benzo(a)anthracene	56-55-3	1 : 7	14	2.30E+00	2.30E+00	2.30E+00
Benzo(a)pyrene	50-32-8	2 : 7	29	5.80E-01	1.99E+00	3.40E+00
Benzo(b)fluoranthene	205-99-2	2 : 7	29	4.20E-01	2.11E+00	3.80E+00
Benzo(g,h,i)perylene	191-24-2	1 : 7	14	3.00E+00	3.00E+00	3.00E+00
Benzo(k)fluoranthene	207-08-9	1 : 7	14	4.00E+00	4.00E+00	4.00E+00
bis(2-Ethylhexyl)phthalate	117-81-7	7 : 7	100	7.90E-01	2.01E+00	3.80E+00
Butylbenzylphthalate	85-68-7	2 : 7	29	5.30E-01	5.27E+00	1.00E+01
Carbazole	86-74-8	2 : 7	29	3.50E+00	1.48E+01	2.60E+01
Chrysene	218-01-9	1 : 7	14	3.10E+00	3.10E+00	3.10E+00
Dibenzo(a,h)anthracene	53-70-3	1 : 7	14	3.00E+00	3.00E+00	3.00E+00
Di-n-butylphthalate	84-74-2	4 : 7	57	2.90E-01	5.75E-01	1.40E+00
Di-n-octylphthalate	117-84-0	1 : 7	14	2.40E+00	2.40E+00	2.40E+00
Fluoranthene	206-44-0	1 : 7	14	4.10E-01	4.10E-01	4.10E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 7	14	9.20E-01	9.20E-01	9.20E-01
Naphthalene	91-20-3	4 : 7	57	1.90E+00	3.61E+02	1.40E+03
N-Nitrosodiphenylamine	122-39-4	1 : 7	14	2.30E+01	2.30E+01	2.30E+01
Pentachlorophenol (8270)	87-86-5svoc	1 : 2	50	5.00E+02	5.00E+02	5.00E+02
Phenol	108-95-2	3 : 7	43	2.10E+00	1.27E+01	1.90E+01
Pesticides						
4,4'-DDE	72-55-9	2 : 7	29	1.80E-01	1.19E+00	2.20E+00
alpha-BHC	319-84-6	2 : 7	29	1.10E+00	1.75E+00	2.40E+00
beta-BHC	319-85-7	1 : 7	14	1.00E+00	1.00E+00	1.00E+00
Endosulfan II	33213-65-9	1 7	14	2.00E+00	2.00E+00	2.00E+00
Endrin ketone	53494-70-5	2 : 7	29	1.10E-01	9.55E-01	1.80E+00
Gamma Chlordane	5103-74-2	2 : 7	29	2.50E-01	1.88E+00	3.50E+00
Pesticides (cont.)						
gamma-BHC (Lindane)	58-89-9	1 : 7	14	4.00E-01	4.00E-01	4.00E-01
Heptachlor	76-44-8	1 : 7	14	2.50E+00	2.50E+00	2.50E+00
Heptachlor epoxide	1024-57-3	2 : 7	29	6.80E-01	3.14E+00	5.60E+00
Methoxychlor	72-43-5	2 : 7	29	2.20E-01	1.51E+00	2.80E+00

Table 3-28a
Site I South Source Area Groundwater Data Summary (a)

Constituent	CAS No.	FOD (b)	%FOD (c)	Minimum (d) (ug/L)	Mean (d) (ug/L)	Maximum (d) (ug/L)
Herbicides						
2,4,5-TP (Silvex)	93-72-1	2 : 7	29	1.90E-01	3.20E-01	4.50E-01
Pentachlorophenol	87-86-5	2 : 7	29	6.70E-02	8.00E+01	1.60E+02
PCBs						
Total PCBs	1366-36-3	1 : 7	14	8.80E-01	8.80E-01	8.80E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	7 : 7	100	4.96E-06	5.83E-04	3.18E-03
Metals						
Aluminum	7429-90-5	6 : 7	86	1.10E+02	1.95E+03	4.90E+03
Arsenic	7440-38-2	2 : 7	29	9.70E+00	1.29E+01	1.60E+01
Barium	7440-39-3	7 : 7	100	5.40E+02	8.49E+02	1.20E+03
Cadmium	7440-43-9	1 : 7	14	9.60E-01	9.60E-01	9.60E-01
Calcium	7440-70-2	7 : 7	100	1.30E+05	1.99E+05	4.80E+05
Chromium	7440-47-3	4 : 7	57	7.30E+00	2.12E+01	4.15E+01
Cobalt	7440-48-4	4 : 7	57	1.90E+00	2.94E+00	4.00E+00
Copper	7440-50-8	3 : 7	43	1.00E+01	1.37E+01	1.90E+01
Iron	7439-89-6	7 : 7	100	1.40E+04	3.31E+04	6.40E+04
Lead	7439-92-1	4 : 7	57	1.60E+00	8.05E+00	2.20E+01
Magnesium	7439-95-4	7 : 7	100	2.90E+04	5.10E+04	1.10E+05
Manganese	7439-96-5	7 : 7	100	3.40E+02	1.62E+03	6.80E+03
Mercury	7439-97-6	2 : 7	29	1.30E-01	1.55E-01	1.80E-01
Molybdenum	7439-98-7	4 : 7	57	3.80E+00	8.83E+00	1.50E+01
Nickel	7440-02-0	2 : 7	29	9.50E+00	7.98E+01	1.50E+02
Potassium	7440-09-7	7 : 7	100	7.30E+03	1.13E+04	2.60E+04
Sodium	7440-23-5	7 : 7	100	2.00E+04	7.06E+04	2.40E+05
Vanadium	7440-62-2	4 : 7	57	4.70E+00	1.06E+01	2.20E+01
Zinc	7440-66-6	5 : 7	71	9.30E+01	2.18E+02	4.35E+02

Notes:
2,4,5-T - 2,4,5-Trichlorophenoxy acetic acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Alluvial Aquifer Groundwater Wells.
(b) Number of samples detected: Total number of samples.
(c) Percent detected.
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-28b
Site I North Source Area Groundwater Data Summary (a)

Constituent	CAS No.	FOD (b)	%FOD (c)	Minimum (d) (ug/L)	Mean (d) (ug/L)	Maximum (d) (ug/L)
Pesticides						
delta-BHC	319-86-8	1 : 1	100	2.10E-02	2.10E-02	2.10E-02
Herbicides						
Pentachlorophenol	87-86-5	1 : 1	100	6.60E-02	6.60E-02	6.60E-02
Dioxin						
Dioxin TEQ-HH	1746-01-6	1 : 1	100	4.88E-05	4.88E-05	4.88E-05
Metals						
Aluminum	7429-90-5	1 : 1	100	1.50E+03	1.50E+03	1.50E+03
Barium	7440-39-3	1 : 1	100	1.70E+02	1.70E+02	1.70E+02
Calcium	7440-70-2	1 : 1	100	1.50E+05	1.50E+05	1.50E+05
Chromium	7440-47-3	1 : 1	100	2.50E+00	2.50E+00	2.50E+00
Cobalt	7440-48-4	1 : 1	100	4.10E+00	4.10E+00	4.10E+00
Copper	7440-50-8	1 : 1	100	3.80E+00	3.80E+00	3.80E+00
Iron	7439-89-6	1 : 1	100	2.10E+03	2.10E+03	2.10E+03
Magnesium	7439-95-4	1 : 1	100	3.10E+04	3.10E+04	3.10E+04
Manganese	7439-96-5	1 : 1	100	3.20E+02	3.20E+02	3.20E+02
Nickel	7440-02-0	1 : 1	100	1.10E+01	1.10E+01	1.10E+01
Potassium	7440-09-7	1 : 1	100	7.60E+03	7.60E+03	7.60E+03
Sodium	7440-23-5	1 : 1	100	3.70E+04	3.70E+04	3.70E+04
Vanadium	7440-62-2	1 : 1	100	5.00E+00	5.00E+00	5.00E+00
Zinc	7440-66-6	1 : 1	100	1.00E+01	1.00E+01	1.00E+01

Notes:
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Alluvial Aquifer Groundwater Wells.
(b) Number of samples detected: Total number of samples.
(c) Percent detected.
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-29
Site I South Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
1,1-Dichloroethane	75-34-3	11 : 29	38	3.20E+00	1.54E+02	9.60E+02
1,1-Dichloroethene	75-35-4	6 : 29	21	2.10E+00	7.52E+01	3.30E+02
Benzene	71-43-2	25 : 29	86	2.50E+00	1.26E+02	6.20E+02
Chlorobenzene	108-90-7	28 : 29	97	6.80E-01	7.00E+03	3.40E+04
Cis/Trans-1,2-Dichloroethene	540-59-0	11 : 29	38	1.00E+00	3.86E+02	1.40E+03
Ethylbenzene	100-41-4	12 : 29	41	8.60E+00	1.96E+02	8.70E+02
Tetrachloroethene	127-18-4	7 : 29	24	9.55E-01	4.21E+01	8.30E+01
Toluene	108-88-3	7 : 29	24	5.20E-01	1.93E+01	8.60E+01
Trichloroethene	79-01-6	5 : 29	17	6.55E-01	6.00E+01	1.80E+02
Vinyl chloride	75-01-4	11 : 29	38	1.20E+00	1.92E+02	9.70E+02
Xylenes, Total	1330-20-7	3 : 29	10	1.00E+01	1.57E+01	2.30E+01
SVOCs						
1,2,4-Trichlorobenzene	120-82-1	4 : 29	14	2.60E+00	8.79E+02	2.50E+03
1,2-Dichlorobenzene	95-50-1	24 : 29	83	1.10E+00	9.04E+01	4.45E+02
1,3-Dichlorobenzene	541-73-1	23 : 29	79	1.10E+01	1.12E+02	2.90E+02
1,4-Dichlorobenzene	106-46-7	26 : 29	90	2.00E+01	3.49E+03	1.00E+04
2,4,5-Trichlorophenol	95-95-4	1 : 29	3	1.80E+00	1.80E+00	1.80E+00
2,4-Dichlorophenol	120-83-2	14 : 29	48	1.60E+00	1.95E+01	4.70E+01
2-Chlorophenol	95-57-8	21 : 29	72	3.00E+00	2.25E+01	8.40E+01
2-Methylnaphthalene	91-57-6	1 : 29	3	1.30E+00	1.30E+00	1.30E+00
2-Methylphenol (o-cresol)	95-48-7	1 : 29	3	3.00E+00	3.00E+00	3.00E+00
3-Methylphenol/4-Methylphenol	106-44-5	1 : 29	3	1.70E+00	1.70E+00	1.70E+00
4-Chloro-3-methylphenol	59-50-7	1 : 29	3	1.50E+00	1.50E+00	1.50E+00
4-Chloroaniline	106-47-8	25 : 29	86	3.00E+00	5.06E+02	4.10E+03
Acenaphthene	83-32-9	1 : 29	3	3.30E-01	3.30E-01	3.30E-01
Benzo(a)anthracene	56-55-3	3 : 29	10	3.60E-01	7.50E-01	1.30E+00
Benzo(a)pyrene	50-32-8	5 : 29	17	4.50E-01	1.01E+00	2.00E+00
Benzo(b)fluoranthene	205-99-2	2 : 29	7	3.00E-01	1.00E+00	1.70E+00
Benzo(g,h,i)perylene	191-24-2	3 : 29	10	9.40E-01	1.81E+00	2.50E+00
Benzo(k)fluoranthene	207-08-9	3 : 29	10	7.40E-01	1.38E+00	2.20E+00
bis(2-Chloroethyl)ether	111-44-4	2 : 29	7	1.10E+00	5.40E+00	9.70E+00
bis(2-Ethylhexyl)phthalate	117-81-7	3 : 29	10	5.10E-01	1.13E+00	2.19E+00
Carbazole	86-74-8	5 : 29	17	1.40E+00	8.88E+00	1.30E+01
Chrysene	218-01-9	2 : 29	7	7.30E-01	1.12E+00	1.50E+00
Dibenzo(a,h)anthracene	53-70-3	5 : 29	17	8.50E-01	1.37E+00	1.70E+00
Dibenzofuran	132-64-9	1 : 29	3	1.90E+01	1.90E+01	1.90E+01
Diethylphthalate	84-66-2	2 : 29	7	1.50E+00	3.30E+00	5.10E+00
Di-n-butylphthalate	84-74-2	2 : 29	7	3.40E-01	4.25E-01	5.10E-01
Di-n-octylphthalate	117-84-0	1 : 29	3	5.00E-01	5.00E-01	5.00E-01
Dinoseb	88-85-7	1 : 29	3	2.70E-01	2.70E-01	2.70E-01
Fluoranthene	206-44-0	1 : 29	3	2.20E+01	2.20E+01	2.20E+01
Fluorene	86-73-7	2 : 29	7	5.80E-01	2.99E+00	5.40E+00
Hexachlorobenzene	118-74-1	1 : 29	3	1.00E+00	1.00E+00	1.00E+00
Indeno(1,2,3-cd)pyrene	193-39-5	2 : 29	7	6.60E-01	7.60E-01	8.60E-01
Naphthalene	91-20-3	20 : 29	69	5.70E-01	1.41E+01	6.60E+01
N-Nitrosodiphenylamine	122-39-4	10 : 29	34	4.70E-01	1.13E+01	2.80E+01

Table 3-29
Site I South Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
SVOCs (cont.)						
Phenanthrene	85-01-8	4 : 29	14	4.70E-01	2.28E+01	8.90E+01
Phenol	108-95-2	3 : 29	10	2.00E+00	4.13E+00	6.00E+00
Pesticides						
4,4'-DDD	72-54-8	5 : 29	17	3.60E-03	2.47E-02	4.20E-02
4,4'-DDE	72-55-9	1 : 29	3	2.40E-03	2.40E-03	2.40E-03
4,4'-DDT	50-29-3	4 : 29	14	2.20E-03	4.93E-02	1.10E-01
Aldrin	309-00-2	3 : 29	10	2.00E-03	3.40E-03	5.50E-03
Alpha Chlordane	5103-71-9	1 : 29	3	1.10E-02	1.10E-02	1.10E-02
alpha-BHC	319-84-6	12 : 29	41	6.10E-03	1.16E+01	7.20E+01
beta-BHC	319-85-7	8 : 29	28	2.40E-02	8.02E+00	4.60E+01
delta-BHC	319-86-8	16 : 29	55	3.30E-03	3.60E-01	3.80E+00
Dieldrin	60-57-1	3 : 29	10	3.90E-03	6.43E-03	7.70E-03
Endosulfan II	33213-65-9	3 : 29	10	1.00E-03	2.07E-02	3.90E-02
Endrin	72-20-8	1 : 29	3	2.70E-03	2.70E-03	2.70E-03
Endrin ketone	53494-70-5	2 : 29	7	3.70E-03	4.05E-03	4.40E-03
Gamma Chlordane	5103-74-2	1 : 29	3	6.80E-03	6.80E-03	6.80E-03
gamma-BHC (Lindane)	58-89-9	8 : 29	28	1.90E-03	5.41E-02	3.10E-01
Heptachlor	76-44-8	12 : 29	41	3.80E-03	2.04E-02	9.60E-02
Heptachlor epoxide	1024-57-3	8 : 29	28	2.70E-03	1.31E-02	3.70E-02
Herbicides						
2,4,5-T	93-76-5	2 : 29	7	3.70E+00	4.75E+00	5.80E+00
2,4,5-TP (Silvex)	93-72-1	4 : 29	14	8.40E-02	4.29E-01	1.10E+00
2,4-D	94-75-7	7 : 29	24	1.40E-01	2.58E+00	1.05E+01
Dicamba	1918-00-9	1 : 29	3	1.40E-01	1.40E-01	1.40E-01
MCPP	7085-19-0	4 : 29	14	6.20E+01	2.77E+02	4.95E+02
Pentachlorophenol	87-86-5	3 : 29	10	1.30E-01	2.42E-01	3.55E-01
PCBs						
Total PCBs	1366-36-3	11 : 29	38	3.40E-01	5.52E-01	7.70E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	7 : 10	70	1.68E-06	3.44E-06	6.42E-06
Metals						
Aluminum	7429-90-5	19 : 29	66	9.20E+01	3.79E+03	1.30E+04
Antimony	7440-36-0	1 : 29	3	5.70E+01	5.70E+01	5.70E+01
Arsenic	7440-38-2	18 : 29	62	4.60E+00	2.55E+01	1.40E+02
Barium	7440-39-3	29 : 29	100	4.70E+01	4.44E+02	1.20E+03
Beryllium	7440-41-7	2 : 29	7	5.70E-01	1.14E+00	1.70E+00
Cadmium	7440-43-9	5 : 29	17	7.20E-01	1.67E+01	7.00E+01
Calcium	7440-70-2	29 : 29	100	1.50E+05	2.24E+05	5.20E+05
Chromium	7440-47-3	15 : 29	52	1.70E+00	5.63E+01	2.00E+02
Cobalt	7440-48-4	15 : 29	52	2.30E+00	1.56E+01	4.70E+01
Copper	7440-50-8	9 : 29	31	8.45E+00	4.13E+02	3.25E+03
Cyanide, Total	57-12-5	3 : 29	10	1.00E+01	2.27E+01	4.80E+01
Iron	7439-89-6	27 : 29	93	1.80E+04	4.26E+04	1.90E+05
Lead	7439-92-1	9 : 29	31	2.80E+00	4.53E+02	3.85E+03
Magnesium	7439-95-4	29 : 29	100	3.30E+04	5.99E+04	2.10E+05
Manganese	7439-96-5	29 : 29	100	4.00E+02	1.98E+03	7.70E+03

Table 3-29
Site I South Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)						
Mercury	7439-97-6	2 : 29	7	1.20E-01	3.25E-01	5.30E-01
Molybdenum	7439-98-7	21 : 29	72	2.70E+00	9.74E+00	3.60E+01
Nickel	7440-02-0	21 : 29	72	4.90E+00	1.91E+03	2.70E+04
Potassium	7440-09-7	29 : 29	100	6.15E+03	1.69E+04	1.70E+05
Silver	7440-22-4	1 : 29	3	1.95E+01	1.95E+01	1.95E+01
Sodium	7440-23-5	29 : 29	100	2.10E+04	8.06E+04	6.00E+05
Vanadium	7440-62-2	16 : 29	55	2.50E+00	1.39E+01	5.00E+01
Zinc	7440-66-6	12 : 29	41	2.71E+01	4.04E+03	3.30E+04

Notes:
2,4-D - 2,4-Dichlorophenoxy acetic acid.
2,4,5-T - 2,4,5-Trichlorophenoxy acetic acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dicamba - 2-Methoxy-3,6-dichlorobenzoic acid.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
MCPP - 2-(2-Methyl-4-chlorophenoxy)propionic acid.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-30
Site G, H and L Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
Acetone	67-64-1	1 : 30	3	1.00E+01	1.00E+01	1.00E+01
Benzene	71-43-2	2 : 30	7	4.90E-01	1.35E+00	2.20E+00
Chlorobenzene	108-90-7	21 : 30	70	8.90E-01	3.14E+01	2.70E+02
Cis/Trans-1,2-Dichloroethene	540-59-0	11 : 30	37	5.50E-01	5.41E+00	2.00E+01
Ethylbenzene	100-41-4	1 : 30	3	2.25E+00	2.25E+00	2.25E+00
Tetrachloroethene	127-18-4	5 : 30	17	1.20E+00	6.43E+00	1.30E+01
Toluene	108-88-3	5 : 30	17	5.40E-01	6.97E-01	9.70E-01
Trichloroethene	79-01-6	6 : 30	20	5.00E-01	1.51E+00	2.50E+00
Vinyl chloride	75-01-4	1 : 30	3	7.30E+00	7.30E+00	7.30E+00
SVOCs						
1,2,4-Trichlorobenzene	120-82-1	1 : 30	3	1.30E+00	1.30E+00	1.30E+00
1,2-Dichlorobenzene	95-50-1	11 : 30	37	7.80E-01	5.08E+00	2.10E+01
1,3-Dichlorobenzene	541-73-1	2 : 30	7	1.09E+00	1.24E+00	1.40E+00
1,4-Dichlorobenzene	106-46-7	10 : 30	33	9.20E-01	4.17E+00	9.50E+00
2-Chlorophenol	95-57-8	5 : 30	17	4.40E-01	1.64E+00	5.60E+00
4-Chloroaniline	106-47-8	2 : 30	7	1.00E+00	7.50E+00	1.40E+01
Anthracene	120-12-7	1 : 30	3	3.90E-01	3.90E-01	3.90E-01
Benzo(a)anthracene	56-55-3	1 : 30	3	1.90E+00	1.90E+00	1.90E+00
Benzo(a)pyrene	50-32-8	2 : 30	7	5.00E-01	3.10E+00	5.70E+00
Benzo(b)fluoranthene	205-99-2	2 : 30	7	5.20E-01	2.11E+00	3.70E+00
Benzo(g,h,i)perylene	191-24-2	3 : 30	10	9.00E-01	3.00E+00	5.90E+00
Benzo(k)fluoranthene	207-08-9	1 : 30	3	5.90E+00	5.90E+00	5.90E+00
bis(2-Ethylhexyl)phthalate	117-81-7	3 : 30	10	8.00E-01	1.71E+00	2.73E+00
Chrysene	218-01-9	1 : 30	3	2.40E+00	2.40E+00	2.40E+00
Dibenzo(a,h)anthracene	53-70-3	1 : 30	3	4.80E+00	4.80E+00	4.80E+00
Di-n-butylphthalate	84-74-2	6 : 30	20	2.60E-01	4.27E-01	6.50E-01
Fluoranthene	206-44-0	1 : 30	3	5.20E-01	5.20E-01	5.20E-01
Indeno(1,2,3-cd)pyrene	193-39-5	2 : 30	7	1.80E+00	3.70E+00	5.60E+00
Phenanthrene	85-01-8	1 : 30	3	6.90E-01	6.90E-01	6.90E-01
Pesticides						
delta-BHC	319-86-8	11 : 30	37	2.40E-03	1.08E-02	3.20E-02
Dieldrin	60-57-1	1 : 30	3	1.15E-02	1.15E-02	1.15E-02
Endrin aldehyde	7421-93-4	1 : 30	3	6.00E-03	6.00E-03	6.00E-03
gamma-BHC (Lindane)	58-89-9	14 : 30	47	1.10E-03	1.16E-02	3.40E-02
Heptachlor	76-44-8	7 : 30	23	3.00E-03	1.24E-02	3.70E-02
Heptachlor epoxide	1024-57-3	1 : 30	3	4.30E-02	4.30E-02	4.30E-02
Herbicides						
2,4,5-TP (Silvex)	93-72-1	2 : 30	7	4.80E-02	3.84E-01	7.20E-01
Pentachlorophenol	87-86-5	6 : 30	20	4.00E-02	1.13E-01	2.95E-01
PCBs						
Total PCBs	1366-36-3	6 : 30	20	3.40E-01	4.10E-01	5.80E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	4 : 9	44	4.01E-07	5.79E-07	7.94E-07
Metals						
Aluminum	7429-90-5	22 : 30	73	2.80E+01	5.05E+03	3.30E+04
Antimony	7440-36-0	2 : 30	7	5.30E+00	6.60E+00	7.90E+00

Table 3-30
Site G, H and L Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)						
Arsenic	7440-38-2	10 : 30	33	3.70E+00	1.03E+01	3.40E+01
Barium	7440-39-3	30 : 30	100	8.70E+01	3.26E+02	9.80E+02
Beryllium	7440-41-7	3 : 30	10	1.10E+00	1.50E+00	1.80E+00
Cadmium	7440-43-9	1 : 30	3	1.60E+00	1.60E+00	1.60E+00
Calcium	7440-70-2	30 : 30	100	1.10E+05	1.64E+05	2.10E+05
Chromium	7440-47-3	18 : 30	60	1.20E+00	7.94E+01	5.70E+02
Cobalt	7440-48-4	18 : 30	60	1.80E+00	9.15E+00	3.40E+01
Copper	7440-50-8	6 : 30	20	2.30E+00	5.04E+01	1.00E+02
Iron	7439-89-6	30 : 30	100	2.00E+02	2.35E+04	1.10E+05
Lead	7439-92-1	11 : 30	37	1.80E+00	1.42E+01	4.50E+01
Magnesium	7439-95-4	30 : 30	100	2.20E+04	4.28E+04	8.60E+04
Manganese	7439-96-5	30 : 30	100	4.10E+01	1.38E+03	2.90E+03
Molybdenum	7439-98-7	21 : 30	70	2.60E+00	1.26E+01	7.10E+01
Nickel	7440-02-0	22 : 30	73	5.20E+00	2.77E+01	1.50E+02
Potassium	7440-09-7	30 : 30	100	3.00E+03	8.21E+03	1.40E+04
Sodium	7440-23-5	30 : 30	100	7.30E+03	2.66E+04	1.00E+05
Vanadium	7440-62-2	11 : 30	37	3.80E+00	2.63E+01	9.10E+01
Zinc	7440-66-6	9 : 30	30	7.90E+00	1.31E+02	4.70E+02

Notes:
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-31
Creek Segment B Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
1,1-Dichloroethene	75-35-4	2 : 33	6	5.70E-01	6.85E-01	8.00E-01
Acetone	67-64-1	1 : 33	3	2.80E+01	2.80E+01	2.80E+01
Benzene	71-43-2	3 : 33	9	6.00E-01	2.30E+00	3.30E+00
Chlorobenzene	108-90-7	11 : 33	33	9.30E-01	1.01E+01	3.40E+01
Cis/Trans-1,2-Dichloroethene	540-59-0	6 : 33	18	4.40E-01	7.97E-01	1.40E+00
Toluene	108-88-3	4 : 33	12	5.40E-01	7.87E-01	9.90E-01
Trichloroethene	79-01-6	5 : 33	15	3.20E-01	4.76E-01	7.50E-01
Xylenes, Total	1330-20-7	1 : 33	3	3.70E+00	3.70E+00	3.70E+00
SVOCs						
1,2-Dichlorobenzene	95-50-1	9 : 33	27	5.30E-01	2.98E+00	5.80E+00
1,4-Dichlorobenzene	106-46-7	9 : 33	27	9.50E-01	6.26E+00	1.10E+01
2-Chlorophenol	95-57-8	1 : 33	3	2.50E-01	2.50E-01	2.50E-01
4-Chloroaniline	106-47-8	2 : 33	6	1.20E+00	3.25E+00	5.30E+00
Diethylphthalate	84-66-2	2 : 33	6	4.80E-01	4.85E-01	4.90E-01
Di-n-butylphthalate	84-74-2	3 : 33	9	2.70E-01	3.40E-01	4.30E-01
Phenanthrene	85-01-8	1 : 33	3	4.20E-01	4.20E-01	4.20E-01
Pesticides						
4,4'-DDE	72-55-9	1 : 33	3	3.90E-03	3.90E-03	3.90E-03
alpha-BHC	319-84-6	4 : 33	12	8.00E-04	3.15E-03	4.80E-03
delta-BHC	319-86-8	12 : 33	36	1.90E-03	4.70E-03	1.20E-02
Dieldrin	60-57-1	1 : 33	3	2.60E-03	2.60E-03	2.60E-03
Endosulfan II	33213-65-9	1 : 33	3	6.90E-03	6.90E-03	6.90E-03
Endrin aldehyde	7421-93-4	1 : 33	3	1.10E-02	1.10E-02	1.10E-02
Endrin ketone	53494-70-5	1 : 33	3	9.30E-03	9.30E-03	9.30E-03
Gamma Chlordane	5103-74-2	1 : 33	3	7.50E-04	7.50E-04	7.50E-04
gamma-BHC (Lindane)	58-89-9	3 : 33	9	8.50E-04	3.88E-03	7.40E-03
Heptachlor	76-44-8	4 : 33	12	1.10E-03	3.38E-03	5.30E-03
Herbicides						
2,4,5-TP (Silvex)	93-72-1	2 : 33	6	5.10E-02	1.31E-01	2.10E-01
2,4-D	94-75-7	2 : 33	6	1.80E-01	2.40E-01	3.00E-01
2,4-DB	94-82-6	1 : 33	3	4.10E-01	4.10E-01	4.10E-01
Dicamba	1918-00-9	1 : 33	3	1.20E-01	1.20E-01	1.20E-01
Pentachlorophenol	87-86-5	5 : 33	15	4.40E-02	4.75E-01	1.40E+00
PCBs						
Total PCBs	1366-36-3	7 : 33	21	6.80E-01	7.40E-01	7.80E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	12 : 12	100	2.41E-06	6.41E-06	2.43E-05
Metals						
Aluminum	7429-90-5	27 : 33	82	3.10E+01	7.32E+03	3.20E+04
Arsenic	7440-38-2	18 : 33	55	4.10E+00	1.37E+01	3.30E+01
Barium	7440-39-3	33 : 33	100	1.30E+02	4.69E+02	1.10E+03
Beryllium	7440-41-7	4 : 33	12	1.00E+00	1.20E+00	1.60E+00
Calcium	7440-70-2	33 : 33	100	8.60E+04	1.41E+05	2.00E+05
Chromium	7440-47-3	13 : 33	39	1.90E+01	1.51E+02	4.10E+02
Cobalt	7440-48-4	22 : 33	67	1.60E+00	1.14E+01	4.10E+01
Copper	7440-50-8	24 : 33	73	1.00E+00	1.80E+01	7.30E+01

Table 3-31
Creek Segment B Downgradient Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)						
Iron	7439-89-6	33 : 33	100	1.00E+02	2.79E+04	1.10E+05
Lead	7439-92-1	13 : 33	39	2.60E+00	1.70E+01	4.20E+01
Magnesium	7439-95-4	33 : 33	100	1.50E+04	3.50E+04	5.20E+04
Manganese	7439-96-5	33 : 33	100	1.30E+02	1.14E+03	3.70E+03
Molybdenum	7439-98-7	20 : 33	61	3.10E+00	1.99E+01	6.90E+01
Nickel	7440-02-0	29 : 33	88	4.90E+00	3.49E+01	1.60E+02
Potassium	7440-09-7	33 : 33	100	3.50E+03	7.35E+03	1.40E+04
Sodium	7440-23-5	33 : 33	100	4.80E+03	1.34E+04	2.70E+04
Vanadium	7440-62-2	19 : 33	58	2.20E+00	2.59E+01	8.80E+01
Zinc	7440-66-6	14 : 33	42	1.10E+01	2.05E+02	5.10E+02

Notes:
2,4-D - 2,4-Dichlorophenoxy acetic acid.
2,4-DB - 4-(2,4-Dichlorophenoxy) butyric acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dicamba - 2-Methoxy-3,6-dichlorobenzoic acid.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-32
Non-Potable Domestic Well Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
Carbon disulfide	75-15-0	2 : 4	50	1.50E+00	6.75E+00	1.20E+01
Toluene	108-88-3	1 : 4	25	6.35E-01	6.35E-01	6.35E-01
SVOCs						
Fluoranthene	206-44-0	2 : 4	50	3.60E-01	3.73E-01	3.85E-01
Phenanthrene	85-01-8	1 : 4	25	3.80E-01	3.80E-01	3.80E-01
Pesticides						
delta-BHC	319-86-8	2 : 4	50	2.85E-03	3.43E-03	4.00E-03
Dioxin						
Dioxin TEQ-HH	1746-01-6	3 : 4	75	3.43E-06	4.41E-06	5.97E-06
Metals						
Arsenic	7440-38-2	2 : 4	50	6.40E+00	1.77E+01	2.90E+01
Barium	7440-39-3	4 : 4	100	1.30E+02	1.99E+02	2.65E+02
Cadmium	7440-43-9	1 : 4	25	1.00E+00	1.00E+00	1.00E+00
Calcium	7440-70-2	4 : 4	100	1.00E+05	1.50E+05	1.80E+05
Cobalt	7440-48-4	2 : 4	50	3.00E+00	3.55E+00	4.10E+00
Copper	7440-50-8	4 : 4	100	1.10E+00	6.25E+00	1.85E+01
Iron	7439-89-6	4 : 4	100	1.90E+03	7.85E+03	1.70E+04
Lead	7439-92-1	3 : 4	75	2.70E+00	4.87E+01	1.29E+02
Magnesium	7439-95-4	4 : 4	100	2.20E+04	3.50E+04	4.10E+04
Manganese	7439-96-5	4 : 4	100	5.75E+02	9.34E+02	1.20E+03
Nickel	7440-02-0	2 : 4	50	6.20E+00	2.96E+01	5.30E+01
Potassium	7440-09-7	4 : 4	100	4.05E+03	5.56E+03	6.80E+03
Sodium	7440-23-5	4 : 4	100	9.55E+03	2.11E+04	2.90E+04
Vanadium	7440-62-2	1 : 4	25	2.50E+00	2.50E+00	2.50E+00
Zinc	7440-66-6	4 : 4	100	7.50E+01	1.30E+03	4.05E+03

Notes:
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-33
Walnut Street Shallow Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Pesticides						
4,4'-DDD	72-54-8	1 : 3	33	4.00E-03	4.00E-03	4.00E-03
Alpha Chlordane	5103-71-9	1 : 3	33	1.40E-03	1.40E-03	1.40E-03
alpha-BHC	319-84-6	2 : 3	67	2.10E-03	2.65E-03	3.20E-03
beta-BHC	319-85-7	1 : 3	33	6.40E-03	6.40E-03	6.40E-03
Dieldrin	60-57-1	2 : 3	67	1.30E-03	2.25E-03	3.20E-03
Endosulfan I	959-98-8	1 : 3	33	1.10E-03	1.10E-03	1.10E-03
Endrin aldehyde	7421-93-4	1 : 3	33	3.20E-03	3.20E-03	3.20E-03
Gamma Chlordane	5103-74-2	1 : 3	33	2.20E-03	2.20E-03	2.20E-03
gamma-BHC (Lindane)	58-89-9	3 : 3	100	3.40E-03	9.42E-03	2.08E-02
Heptachlor	76-44-8	1 : 3	33	1.90E-03	1.90E-03	1.90E-03
Heptachlor epoxide	1024-57-3	2 : 3	67	1.00E-03	1.20E-03	1.40E-03
Methoxychlor	72-43-5	1 : 3	33	5.40E-03	5.40E-03	5.40E-03
Herbicides						
2,4,5-TP (Silvex)	93-72-1	1 : 3	33	8.60E-02	8.60E-02	8.60E-02
PCBs						
Total PCBs	1366-36-3	1 : 3	33	5.60E-02	5.60E-02	5.60E-02
Dioxin						
Dioxin TEQ-HH	1746-01-6	3 : 3	100	3.39E-06	2.84E-05	7.72E-05
Metals						
Aluminum	7429-90-5	3 : 3	100	7.00E+02	5.62E+03	1.22E+04
Arsenic	7440-38-2	3 : 3	100	1.30E+01	2.48E+01	4.40E+01
Barium	7440-39-3	3 : 3	100	2.50E+02	4.13E+02	5.40E+02
Beryllium	7440-41-7	1 : 3	33	1.10E+00	1.10E+00	1.10E+00
Calcium	7440-70-2	3 : 3	100	8.00E+04	1.08E+05	1.30E+05
Chromium	7440-47-3	3 : 3	100	4.40E+00	2.61E+01	5.60E+01
Cobalt	7440-48-4	3 : 3	100	4.20E+00	1.03E+01	1.46E+01
Copper	7440-50-8	3 : 3	100	2.10E+00	1.87E+01	4.30E+01
Iron	7439-89-6	3 : 3	100	7.60E+03	1.65E+04	3.00E+04
Lead	7439-92-1	3 : 3	100	3.40E+00	1.46E+01	2.55E+01
Magnesium	7439-95-4	3 : 3	100	8.80E+03	1.59E+04	2.50E+04
Manganese	7439-96-5	3 : 3	100	8.50E+02	1.25E+03	1.70E+03
Mercury	7439-97-6	1 : 3	33	3.80E-01	3.80E-01	3.80E-01
Molybdenum	7439-98-7	3 : 3	100	2.90E+00	7.27E+00	9.70E+00
Nickel	7440-02-0	3 : 3	100	1.00E+01	2.67E+01	4.30E+01
Potassium	7440-09-7	3 : 3	100	6.40E+03	1.00E+04	1.60E+04
Sodium	7440-23-5	3 : 3	100	1.30E+04	1.57E+04	1.90E+04
Vanadium	7440-62-2	3 : 3	100	3.80E+00	1.93E+01	4.00E+01
Zinc	7440-66-6	3 : 3	100	1.20E+01	5.95E+01	1.16E+02

Notes:
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and

Table 3-33
Walnut Street Shallow Groundwater Data Summary

the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-34
Walnut Street Time-Series Sampling Groundwater Data (0 Hour)

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Dioxin						
Dioxin TEQ-HH	1746-01-6	1 : 1	100	3.93E-07	3.93E-07	3.93E-07
Metals						
Aluminum	7429-90-5	1 : 1	100	4.30E+03	4.30E+03	4.30E+03
Arsenic	7440-38-2	1 : 1	100	1.10E+01	1.10E+01	1.10E+01
Barium	7440-39-3	1 : 1	100	4.30E+02	4.30E+02	4.30E+02
Calcium	7440-70-2	1 : 1	100	1.80E+05	1.80E+05	1.80E+05
Chromium	7440-47-3	1 : 1	100	9.70E+00	9.70E+00	9.70E+00
Cobalt	7440-48-4	1 : 1	100	1.40E+01	1.40E+01	1.40E+01
Iron	7439-89-6	1 : 1	100	1.40E+04	1.40E+04	1.40E+04
Lead	7439-92-1	1 : 1	100	1.40E+01	1.40E+01	1.40E+01
Magnesium	7439-95-4	1 : 1	100	3.90E+04	3.90E+04	3.90E+04
Manganese	7439-96-5	1 : 1	100	1.70E+03	1.70E+03	1.70E+03
Mercury	7439-97-6	1 : 1	100	9.00E-02	9.00E-02	9.00E-02
Nickel	7440-02-0	1 : 1	100	3.40E+01	3.40E+01	3.40E+01
Potassium	7440-09-7	1 : 1	100	6.20E+03	6.20E+03	6.20E+03
Sodium	7440-23-5	1 : 1	100	1.70E+04	1.70E+04	1.70E+04
Vanadium	7440-62-2	1 : 1	100	1.20E+01	1.20E+01	1.20E+01
Zinc	7440-66-6	1 : 1	100	4.90E+01	4.90E+01	4.90E+01

Notes:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-35
Walnut Street Time-Series Sampling Groundwater Data (12 Hour)

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
SVOCs						
1,4-Dichlorobenzene	106-46-7	1 : 1	100	3.70E-01	3.70E-01	3.70E-01
Di-n-butylphthalate	84-74-2	1 : 1	100	3.70E-01	3.70E-01	3.70E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	1 : 1	100	1.52E-05	1.52E-05	1.52E-05
Metals						
Arsenic	7440-38-2	1 : 1	100	1.08E+01	1.08E+01	1.08E+01
Barium	7440-39-3	1 : 1	100	2.75E+02	2.75E+02	2.75E+02
Calcium	7440-70-2	1 : 1	100	1.50E+05	1.50E+05	1.50E+05
Cobalt	7440-48-4	1 : 1	100	2.40E+00	2.40E+00	2.40E+00
Iron	7439-89-6	1 : 1	100	5.55E+03	5.55E+03	5.55E+03
Magnesium	7439-95-4	1 : 1	100	2.90E+04	2.90E+04	2.90E+04
Manganese	7439-96-5	1 : 1	100	1.40E+03	1.40E+03	1.40E+03
Mercury	7439-97-6	1 : 1	100	8.50E-02	8.50E-02	8.50E-02
Nickel	7440-02-0	1 : 1	100	4.80E+00	4.80E+00	4.80E+00
Potassium	7440-09-7	1 : 1	100	4.85E+03	4.85E+03	4.85E+03
Sodium	7440-23-5	1 : 1	100	1.70E+04	1.70E+04	1.70E+04

Notes:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-36
Walnut Street Time-Series Sampling Groundwater Data (24 Hour)

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
SVOCs						
1,4-Dichlorobenzene	106-46-7	1 : 1	100	3.20E-01	3.20E-01	3.20E-01
Acenaphthylene	208-96-8	1 : 1	100	8.70E-01	8.70E-01	8.70E-01
Benzo(a)anthracene	56-55-3	1 : 1	100	5.20E-01	5.20E-01	5.20E-01
Benzo(a)pyrene	50-32-8	1 : 1	100	4.90E-01	4.90E-01	4.90E-01
Benzo(b)fluoranthene	205-99-2	1 : 1	100	4.40E-01	4.40E-01	4.40E-01
Benzo(g,h,i)perylene	191-24-2	1 : 1	100	1.10E+00	1.10E+00	1.10E+00
Chrysene	218-01-9	1 : 1	100	7.00E-01	7.00E-01	7.00E-01
Fluorene	86-73-7	1 : 1	100	1.60E+00	1.60E+00	1.60E+00
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 1	100	6.60E-01	6.60E-01	6.60E-01
Herbicides						
2,4,5-TP (Silvex)	93-72-1	1 : 1	100	9.80E-02	9.80E-02	9.80E-02
Pentachlorophenol	87-86-5	1 : 1	100	7.70E-02	7.70E-02	7.70E-02
Dioxin						
Dioxin TEQ-HH	1746-01-6	1 : 1	100	2.93E-07	2.93E-07	2.93E-07
Metals						
Arsenic	7440-38-2	1 : 1	100	1.30E+01	1.30E+01	1.30E+01
Barium	7440-39-3	1 : 1	100	2.70E+02	2.70E+02	2.70E+02
Calcium	7440-70-2	1 : 1	100	1.50E+05	1.50E+05	1.50E+05
Cobalt	7440-48-4	1 : 1	100	2.20E+00	2.20E+00	2.20E+00
Iron	7439-89-6	1 : 1	100	5.40E+03	5.40E+03	5.40E+03
Magnesium	7439-95-4	1 : 1	100	2.90E+04	2.90E+04	2.90E+04
Manganese	7439-96-5	1 : 1	100	1.40E+03	1.40E+03	1.40E+03
Mercury	7439-97-6	1 : 1	100	9.00E-02	9.00E-02	9.00E-02
Potassium	7440-09-7	1 : 1	100	4.70E+03	4.70E+03	4.70E+03
Sodium	7440-23-5	1 : 1	100	1.70E+04	1.70E+04	1.70E+04
Zinc	7440-66-6	1 : 1	100	1.30E+01	1.30E+01	1.30E+01

Notes:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-37
Judith Lane Shallow Groundwater Data Summary

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Pesticides						
4,4'-DDE	72-55-9	1 : 3	33	2.00E-03	2.00E-03	2.00E-03
beta-BHC	319-85-7	1 : 3	33	2.00E-03	2.00E-03	2.00E-03
Gamma Chlordane	5103-74-2	1 : 3	33	1.20E-03	1.20E-03	1.20E-03
gamma-BHC (Lindane)	58-89-9	2 : 3	67	1.70E-03	3.80E-03	5.90E-03
Herbicides						
2,4-DB	94-82-6	1 : 3	33	6.60E-01	6.60E-01	6.60E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	2 : 3	67	1.38E-08	2.77E-08	4.16E-08
Metals						
Aluminum	7429-90-5	3 : 3	100	2.00E+03	3.27E+03	4.60E+03
Arsenic	7440-38-2	1 : 3	33	4.70E+00	4.70E+00	4.70E+00
Barium	7440-39-3	3 : 3	100	2.30E+02	3.47E+02	4.30E+02
Calcium	7440-70-2	3 : 3	100	1.40E+05	1.57E+05	1.70E+05
Chromium	7440-47-3	3 : 3	100	7.20E+00	9.13E+00	1.10E+01
Cobalt	7440-48-4	3 : 3	100	7.20E+00	8.90E+00	1.00E+01
Copper	7440-50-8	3 : 3	100	4.10E+00	4.90E+00	5.90E+00
Iron	7439-89-6	3 : 3	100	5.20E+03	6.77E+03	8.40E+03
Lead	7439-92-1	3 : 3	100	4.50E+00	4.83E+00	5.30E+00
Magnesium	7439-95-4	3 : 3	100	2.70E+04	3.00E+04	3.60E+04
Manganese	7439-96-5	3 : 3	100	3.50E+02	1.05E+03	1.60E+03
Molybdenum	7439-98-7	1 : 3	33	6.70E+00	6.70E+00	6.70E+00
Nickel	7440-02-0	3 : 3	100	1.60E+01	1.83E+01	2.20E+01
Potassium	7440-09-7	3 : 3	100	4.80E+03	6.07E+03	7.80E+03
Sodium	7440-23-5	3 : 3	100	1.80E+04	2.10E+04	2.60E+04
Vanadium	7440-62-2	3 : 3	100	6.90E+00	1.06E+01	1.40E+01
Zinc	7440-66-6	3 : 3	100	1.70E+01	2.43E+01	3.00E+01

Notes:
2,4-DB - 4-(2,4-Dichlorophenoxy) butyric acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-38
Judith Lane Time-Series Sampling Groundwater Data (0 Hour)

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Dioxin						
Dioxin TEQ-HH	1746-01-6	1 : 1	100	3.04E-08	3.04E-08	3.04E-08
Metals						
Aluminum	7429-90-5	1 : 1	100	1.50E+03	1.50E+03	1.50E+03
Arsenic	7440-38-2	1 : 1	100	8.50E+00	8.50E+00	8.50E+00
Barium	7440-39-3	1 : 1	100	2.90E+02	2.90E+02	2.90E+02
Calcium	7440-70-2	1 : 1	100	1.50E+05	1.50E+05	1.50E+05
Chromium	7440-47-3	1 : 1	100	3.30E+00	3.30E+00	3.30E+00
Cobalt	7440-48-4	1 : 1	100	2.30E+00	2.30E+00	2.30E+00
Iron	7439-89-6	1 : 1	100	8.70E+03	8.70E+03	8.70E+03
Lead	7439-92-1	1 : 1	100	2.20E+00	2.20E+00	2.20E+00
Magnesium	7439-95-4	1 : 1	100	3.00E+04	3.00E+04	3.00E+04
Manganese	7439-96-5	1 : 1	100	1.50E+03	1.50E+03	1.50E+03
Mercury	7439-97-6	1 : 1	100	9.00E-02	9.00E-02	9.00E-02
Nickel	7440-02-0	1 : 1	100	4.80E+00	4.80E+00	4.80E+00
Potassium	7440-09-7	1 : 1	100	7.20E+03	7.20E+03	7.20E+03
Sodium	7440-23-5	1 : 1	100	2.40E+04	2.40E+04	2.40E+04
Vanadium	7440-62-2	1 : 1	100	3.80E+00	3.80E+00	3.80E+00
Zinc	7440-66-6	1 : 1	100	1.60E+01	1.60E+01	1.60E+01

Notes:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-39
Judith Lane Time-Series Sampling Groundwater Data (12 Hour)

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs						
Trichloroethene	79-01-6	1 : 1	100	6.40E-01	6.40E-01	6.40E-01
Dioxin						
Dioxin TEQ-HH	1746-01-6	1 : 1	100	1.83E-09	1.83E-09	1.83E-09
Metals						
Arsenic	7440-38-2	1 : 1	100	7.10E+00	7.10E+00	7.10E+00
Barium	7440-39-3	1 : 1	100	2.30E+02	2.30E+02	2.30E+02
Calcium	7440-70-2	1 : 1	100	1.50E+05	1.50E+05	1.50E+05
Iron	7439-89-6	1 : 1	100	6.90E+03	6.90E+03	6.90E+03
Magnesium	7439-95-4	1 : 1	100	2.90E+04	2.90E+04	2.90E+04
Manganese	7439-96-5	1 : 1	100	1.50E+03	1.50E+03	1.50E+03
Potassium	7440-09-7	1 : 1	100	6.60E+03	6.60E+03	6.60E+03
Sodium	7440-23-5	1 : 1	100	2.40E+04	2.40E+04	2.40E+04

Notes:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-40
Judith Lane Time-Series Sampling Groundwater Data (24 Hour)

Constituent	CAS No.	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
SVOCs						
Acenaphthylene	208-96-8	1 : 1	100	6.50E-01	6.50E-01	6.50E-01
Benzo(a)anthracene	56-55-3	1 : 1	100	3.70E-01	3.70E-01	3.70E-01
Benzo(g,h,i)perylene	191-24-2	1 : 1	100	7.20E-01	7.20E-01	7.20E-01
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 1	100	7.00E-01	7.00E-01	7.00E-01
Chrysene	218-01-9	1 : 1	100	4.50E-01	4.50E-01	4.50E-01
Fluorene	86-73-7	1 : 1	100	1.30E+00	1.30E+00	1.30E+00
Metals						
Arsenic	7440-38-2	1 : 1	100	7.20E+00	7.20E+00	7.20E+00
Barium	7440-39-3	1 : 1	100	2.20E+02	2.20E+02	2.20E+02
Calcium	7440-70-2	1 : 1	100	1.40E+05	1.40E+05	1.40E+05
Iron	7439-89-6	1 : 1	100	6.80E+03	6.80E+03	6.80E+03
Magnesium	7439-95-4	1 : 1	100	2.80E+04	2.80E+04	2.80E+04
Manganese	7439-96-5	1 : 1	100	1.40E+03	1.40E+03	1.40E+03
Mercury	7439-97-6	1 : 1	100	1.00E-01	1.00E-01	1.00E-01
Potassium	7440-09-7	1 : 1	100	6.30E+03	6.30E+03	6.30E+03
Sodium	7440-23-5	1 : 1	100	2.30E+04	2.30E+04	2.30E+04

Notes:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.

(a) Number of samples detected: Total number of samples.
(b) Percent detected.
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Shading indicates an exceedence of the USEPA Maximum Contaminant Level (MCL) (2006) or the USEPA Regional Screening Level (RSL) (April, 2009) if an MCL is not available. The source of the screening criteria used for each constituent is presented on Table 3-89.

Table 3-41
Creek Segment B Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Acetone	2 : 3	67	1.40E+01	1.60E+01	1.80E+01
Chlorobenzene	1 : 3	33	2.80E+00	2.80E+00	2.80E+00
Pesticides					
4,4'-DDD	1 : 3	33	5.20E-03	5.20E-03	5.20E-03
4,4'-DDT	1 : 3	33	4.00E-03	4.00E-03	4.00E-03
Aldrin	1 : 3	33	3.70E-03	3.70E-03	3.70E-03
alpha-BHC	2 : 3	67	1.10E-02	1.65E-02	2.20E-02
beta-BHC	2 : 3	67	1.90E-02	1.95E-02	2.00E-02
delta-BHC	3 : 3	100	5.00E-03	8.87E-03	1.50E-02
Dieldrin	1 : 3	33	3.50E-03	3.50E-03	3.50E-03
Endosulfan II	1 : 3	33	5.30E-03	5.30E-03	5.30E-03
Endrin aldehyde	1 : 3	33	2.50E-03	2.50E-03	2.50E-03
Gamma Chlordane	2 : 3	67	2.70E-03	4.05E-03	5.40E-03
gamma-BHC (Lindane)	2 : 3	67	3.80E-03	2.19E-02	4.00E-02
Heptachlor	2 : 3	67	1.60E-03	3.20E-03	4.80E-03
Heptachlor epoxide	2 : 3	67	1.60E-03	4.65E-03	7.70E-03
Herbicides					
Pentachlorophenol	1 : 3	33	1.00E+00	1.00E+00	1.00E+00
Dioxin					
Dioxin TEQ-HH	3 : 3	100	8.20E-06	1.49E-05	2.17E-05
Metals					
Aluminum	3 : 3	100	3.50E+01	4.73E+01	6.60E+01
Antimony	1 : 3	33	7.00E+00	7.00E+00	7.00E+00
Arsenic	2 : 3	67	5.20E+00	5.80E+00	6.40E+00
Barium	3 : 3	100	1.70E+02	2.33E+02	3.00E+02
Cadmium	1 : 3	33	9.10E-01	9.10E-01	9.10E-01
Calcium	3 : 3	100	5.10E+04	1.24E+05	1.80E+05
Copper	3 : 3	100	4.60E+01	7.83E+01	1.30E+02
Iron	1 : 3	33	4.30E+02	4.30E+02	4.30E+02
Lead	3 : 3	100	3.00E+00	4.60E+00	6.60E+00
Magnesium	3 : 3	100	6.00E+03	1.53E+04	2.30E+04
Manganese	3 : 3	100	6.80E+00	2.23E+01	3.40E+01
Molybdenum	3 : 3	100	1.20E+01	2.27E+01	3.20E+01
Nickel	3 : 3	100	9.60E+00	1.25E+01	1.50E+01
Potassium	3 : 3	100	4.80E+03	6.60E+03	7.70E+03
Sodium	3 : 3	100	2.80E+04	3.97E+04	5.40E+04
Zinc	3 : 3	100	4.50E+01	8.50E+01	1.30E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-41
Creek Segment B Surface Water Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-42
Creek Segment D Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Acetone	3 : 3	100	1.10E+01	1.32E+01	1.70E+01
Pesticides					
4,4'-DDT	3 : 3	100	2.30E-03	4.47E-03	7.10E-03
Aldrin	2 : 3	67	2.00E-03	2.15E-03	2.30E-03
alpha-BHC	3 : 3	100	4.30E-03	8.93E-03	1.64E-02
beta-BHC	3 : 3	100	1.00E-02	2.75E-02	4.50E-02
delta-BHC	3 : 3	100	3.70E-03	6.68E-03	1.25E-02
Endosulfan I	1 : 3	33	5.10E-04	5.10E-04	5.10E-04
Endosulfan II	1 : 3	33	6.30E-03	6.30E-03	6.30E-03
Endosulfan sulfate	3 : 3	100	3.50E-03	8.70E-03	1.70E-02
Endrin	2 : 3	67	2.10E-03	3.75E-03	5.40E-03
Gamma Chlordane	1 : 3	33	5.00E-03	5.00E-03	5.00E-03
gamma-BHC (Lindane)	3 : 3	100	1.00E-02	2.35E-02	4.54E-02
Heptachlor	3 : 3	100	6.40E-03	8.78E-03	1.20E-02
Heptachlor epoxide	3 : 3	100	1.10E-02	1.40E-02	1.70E-02
PCBs					
Total PCBs	1 : 3	33	5.50E-02	5.50E-02	5.50E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	1.64E-05	1.70E-05	1.77E-05
Metals					
Aluminum	3 : 3	100	3.30E+02	6.90E+02	1.40E+03
Arsenic	1 : 3	33	5.00E+00	5.00E+00	5.00E+00
Barium	3 : 3	100	1.60E+02	1.68E+02	1.75E+02
Calcium	3 : 3	100	4.80E+04	4.92E+04	5.00E+04
Chromium	1 : 3	33	5.70E+00	5.70E+00	5.70E+00
Copper	3 : 3	100	1.50E+01	1.88E+01	2.60E+01
Iron	3 : 3	100	9.60E+02	1.29E+03	1.80E+03
Lead	3 : 3	100	6.60E+00	1.05E+01	1.60E+01
Magnesium	3 : 3	100	6.00E+03	6.38E+03	6.60E+03
Manganese	3 : 3	100	4.60E+01	6.08E+01	8.20E+01
Molybdenum	3 : 3	100	3.30E+00	4.42E+00	5.20E+00
Nickel	3 : 3	100	1.70E+01	1.90E+01	2.20E+01
Potassium	3 : 3	100	5.00E+03	5.70E+03	6.30E+03
Selenium	1 : 3	33	4.60E+00	4.60E+00	4.60E+00
Sodium	3 : 3	100	8.10E+03	9.23E+03	1.10E+04
Vanadium	3 : 3	100	4.15E+00	5.15E+00	7.00E+00
Zinc	3 : 3	100	5.00E+01	8.38E+01	1.50E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-42
Creek Segment D Surface Water Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-43
Creek Segment E Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
SVOCs					
Fluoranthene	1 : 1	100	1.20E+00	1.20E+00	1.20E+00
Phenanthrene	1 : 1	100	6.70E-01	6.70E-01	6.70E-01
Pyrene	1 : 1	100	8.70E-01	8.70E-01	8.70E-01
Pesticides					
alpha-BHC	1 : 1	100	3.50E-03	3.50E-03	3.50E-03
beta-BHC	1 : 1	100	1.20E-02	1.20E-02	1.20E-02
delta-BHC	1 : 1	100	2.80E-02	2.80E-02	2.80E-02
gamma-BHC (Lindane)	1 : 1	100	2.80E-03	2.80E-03	2.80E-03
Dioxin					
Dioxin TEQ-HH	1 : 1	100	2.95E-06	2.95E-06	2.95E-06
Metals					
Barium	1 : 1	100	6.60E+01	6.60E+01	6.60E+01
Calcium	1 : 1	100	4.40E+04	4.40E+04	4.40E+04
Copper	1 : 1	100	9.20E+00	9.20E+00	9.20E+00
Iron	1 : 1	100	1.20E+03	1.20E+03	1.20E+03
Magnesium	1 : 1	100	1.50E+04	1.50E+04	1.50E+04
Manganese	1 : 1	100	1.40E+02	1.40E+02	1.40E+02
Potassium	1 : 1	100	4.80E+03	4.80E+03	4.80E+03
Sodium	1 : 1	100	2.30E+04	2.30E+04	2.30E+04
Zinc	1 : 1	100	7.30E+01	7.30E+01	7.30E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-44
Creek Segment F Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Benzene	1 : 3	33	1.70E+00	1.70E+00	1.70E+00
SVOCs					
Fluoranthene	1 : 3	33	7.00E-01	7.00E-01	7.00E-01
Phenanthrene	1 : 3	33	7.00E-01	7.00E-01	7.00E-01
Dioxin					
Dioxin TEQ-HH	3 : 3	100	1.95E-06	4.39E-06	9.16E-06
Metals					
Aluminum	3 : 3	100	3.90E+01	2.46E+02	5.50E+02
Arsenic	2 : 3	67	3.20E+00	4.05E+00	4.90E+00
Barium	3 : 3	100	1.20E+02	1.27E+02	1.30E+02
Calcium	3 : 3	100	5.20E+04	5.27E+04	5.30E+04
Copper	3 : 3	100	1.60E+00	5.20E+00	1.20E+01
Iron	3 : 3	100	5.00E+02	6.83E+02	1.00E+03
Lead	2 : 3	67	2.20E+00	2.95E+00	3.70E+00
Magnesium	3 : 3	100	3.00E+04	3.20E+04	3.30E+04
Manganese	3 : 3	100	8.20E+01	1.07E+02	1.40E+02
Molybdenum	1 : 3	33	2.80E+00	2.80E+00	2.80E+00
Nickel	3 : 3	100	6.90E+00	1.36E+01	2.10E+01
Potassium	3 : 3	100	6.40E+03	6.60E+03	6.90E+03
Sodium	3 : 3	100	2.10E+04	2.13E+04	2.20E+04
Vanadium	1 : 3	33	3.00E+00	3.00E+00	3.00E+00
Zinc	3 : 3	100	7.30E+00	3.91E+01	7.50E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-45
Site M Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Pesticides					
Aldrin	1 : 1	100	1.40E-03	1.40E-03	1.40E-03
alpha-BHC	1 : 1	100	9.10E-04	9.10E-04	9.10E-04
beta-BHC	1 : 1	100	2.70E-04	2.70E-04	2.70E-04
delta-BHC	1 : 1	100	3.50E-04	3.50E-04	3.50E-04
gamma-BHC (Lindane)	1 : 1	100	3.60E-03	3.60E-03	3.60E-03
4,4'-DDE	1 : 1	100	3.40E-03	3.40E-03	3.40E-03
Endrin aldehyde	1 : 1	100	2.50E-03	2.50E-03	2.50E-03
Heptachlor	1 : 1	100	3.50E-03	3.50E-03	3.50E-03
Heptachlor epoxide	1 : 1	100	8.00E-03	8.00E-03	8.00E-03
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.59E-05	1.59E-05	1.59E-05
Metals					
Aluminum	1 : 1	100	7.80E+01	7.80E+01	7.80E+01
Barium	1 : 1	100	2.10E+02	2.10E+02	2.10E+02
Calcium	1 : 1	100	4.80E+04	4.80E+04	4.80E+04
Copper	1 : 1	100	4.60E+01	4.60E+01	4.60E+01
Iron	1 : 1	100	1.90E+03	1.90E+03	1.90E+03
Lead	1 : 1	100	7.00E+00	7.00E+00	7.00E+00
Magnesium	1 : 1	100	4.80E+03	4.80E+03	4.80E+03
Manganese	1 : 1	100	1.70E+02	1.70E+02	1.70E+02
Molybdenum	1 : 1	100	1.00E+01	1.00E+01	1.00E+01
Nickel	1 : 1	100	1.20E+01	1.20E+01	1.20E+01
Potassium	1 : 1	100	4.20E+03	4.20E+03	4.20E+03
Sodium	1 : 1	100	2.70E+04	2.70E+04	2.70E+04
Zinc	1 : 1	100	3.00E+01	3.00E+01	3.00E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-46
Borrow Pit Lake Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Acetone	3 : 3	100	1.30E+01	1.50E+01	1.80E+01
Pesticides					
alpha-BHC	2 : 3	67	4.70E-04	7.35E-04	1.00E-03
beta-BHC	3 : 3	100	9.60E-03	1.39E-02	2.00E-02
delta-BHC	2 : 3	67	1.30E-04	1.17E-03	2.20E-03
Dieldrin	1 : 3	33	1.00E-03	1.00E-03	1.00E-03
Endosulfan I	2 : 3	67	1.50E-03	1.95E-03	2.40E-03
Endosulfan sulfate	1 : 3	33	3.20E-03	3.20E-03	3.20E-03
Endrin	1 : 3	33	9.50E-04	9.50E-04	9.50E-04
Endrin aldehyde	2 : 3	67	1.60E-03	2.40E-03	3.20E-03
Endrin ketone	1 : 3	33	2.70E-03	2.70E-03	2.70E-03
gamma-BHC (Lindane)	2 : 3	67	2.40E-03	3.10E-03	3.80E-03
Heptachlor	3 : 3	100	2.20E-03	2.57E-03	2.90E-03
Heptachlor epoxide	2 : 3	67	9.00E-04	9.30E-04	9.60E-04
Dioxin					
Dioxin TEQ-HH	3 : 3	100	8.69E-07	9.82E-07	1.16E-06
Metals					
Aluminum	3 : 3	100	6.50E+02	1.59E+03	3.40E+03
Arsenic	3 : 3	100	7.90E+00	1.16E+01	1.50E+01
Barium	3 : 3	100	4.50E+01	1.62E+02	3.20E+02
Calcium	3 : 3	100	4.70E+04	6.37E+04	8.90E+04
Chromium	1 : 3	33	4.10E+00	4.10E+00	4.10E+00
Cobalt	1 : 3	33	1.50E+00	1.50E+00	1.50E+00
Copper	3 : 3	100	3.60E+00	5.27E+00	7.40E+00
Iron	3 : 3	100	1.30E+03	3.87E+03	8.70E+03
Lead	3 : 3	100	2.00E+00	8.30E+00	2.00E+01
Magnesium	3 : 3	100	2.60E+04	2.90E+04	3.10E+04
Manganese	3 : 3	100	1.30E+02	6.67E+02	1.70E+03
Molybdenum	2 : 3	67	3.50E+00	3.75E+00	4.00E+00
Nickel	3 : 3	100	7.70E+00	1.16E+01	1.50E+01
Potassium	3 : 3	100	5.10E+03	6.57E+03	7.60E+03
Sodium	3 : 3	100	2.10E+04	2.23E+04	2.40E+04
Vanadium	3 : 3	100	5.10E+00	1.00E+01	1.40E+01
Zinc	3 : 3	100	1.70E+01	3.07E+01	4.80E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-47
Prairie du Pont Creek Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Benzene	1 : 2	50	3.00E-01	3.00E-01	3.00E-01
SVOCs					
Benzo(a)anthracene	1 : 2	50	6.20E-01	6.20E-01	6.20E-01
Benzo(a)pyrene	2 : 2	100	7.70E-01	9.35E-01	1.10E+00
Benzo(b)fluoranthene	2 : 2	100	6.60E-01	8.05E-01	9.50E-01
Benzo(k)fluoranthene	2 : 2	100	7.60E-01	1.23E+00	1.70E+00
bis(2-Ethylhexyl)phthalate	2 : 2	100	5.10E-01	6.75E-01	8.40E-01
Chrysene	1 : 2	50	7.40E-01	7.40E-01	7.40E-01
Dibenzo(a,h)anthracene	2 : 2	100	8.10E-01	1.00E+00	1.20E+00
Di-n-butylphthalate	2 : 2	100	3.00E-01	3.00E-01	3.00E-01
Di-n-octylphthalate	1 : 2	50	1.10E+00	1.10E+00	1.10E+00
Dioxin					
Dioxin TEQ-HH	2 : 2	100	4.95E-06	5.64E-06	6.34E-06
Metals					
Aluminum	2 : 2	100	1.65E+03	2.13E+03	2.60E+03
Arsenic	1 : 2	50	5.10E+00	5.10E+00	5.10E+00
Barium	2 : 2	100	1.70E+02	1.75E+02	1.80E+02
Calcium	2 : 2	100	9.90E+04	9.95E+04	1.00E+05
Cobalt	2 : 2	100	1.60E+00	1.75E+00	1.90E+00
Iron	2 : 2	100	2.65E+03	3.33E+03	4.00E+03
Lead	1 : 2	50	1.90E+00	1.90E+00	1.90E+00
Magnesium	2 : 2	100	4.00E+04	4.00E+04	4.00E+04
Manganese	2 : 2	100	5.75E+02	6.03E+02	6.30E+02
Molybdenum	2 : 2	100	3.25E+00	3.48E+00	3.70E+00
Nickel	1 : 2	50	5.00E+00	5.00E+00	5.00E+00
Potassium	2 : 2	100	7.50E+03	7.50E+03	7.50E+03
Sodium	2 : 2	100	7.90E+04	1.25E+05	1.70E+05
Zinc	2 : 2	100	2.15E+01	2.18E+01	2.20E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-48
Reference Area Surface Water Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Acetone	1 : 4	25	2.60E+01	2.60E+01	2.60E+01
Pesticides					
4,4'-DDE	1 : 4	25	1.50E-03	1.50E-03	1.50E-03
4,4'-DDT	1 : 4	25	5.70E-03	5.70E-03	5.70E-03
Aldrin	2 : 4	50	2.40E-03	3.20E-03	4.00E-03
Alpha Chlordane	2 : 4	50	1.90E-03	7.45E-03	1.30E-02
alpha-BHC	1 : 4	25	1.55E-03	1.55E-03	1.55E-03
beta-BHC	4 : 4	100	4.80E-03	1.10E-02	1.50E-02
delta-BHC	1 : 4	25	7.00E-03	7.00E-03	7.00E-03
Dieldrin	2 : 4	50	2.10E-03	2.85E-03	3.60E-03
Endosulfan I	4 : 4	100	1.70E-03	4.10E-03	1.10E-02
Endosulfan II	1 : 4	25	1.00E-04	1.00E-04	1.00E-04
Endosulfan sulfate	3 : 4	75	2.80E-03	4.63E-03	7.00E-03
Endrin	2 : 4	50	4.80E-04	2.94E-03	5.40E-03
Endrin aldehyde	1 : 4	25	2.30E-03	2.30E-03	2.30E-03
Endrin ketone	2 : 4	50	4.70E-03	7.85E-03	1.10E-02
Gamma Chlordane	2 : 4	50	8.20E-04	1.96E-03	3.10E-03
gamma-BHC (Lindane)	4 : 4	100	1.00E-03	4.58E-03	6.60E-03
Heptachlor	1 : 4	25	3.50E-03	3.50E-03	3.50E-03
Heptachlor epoxide	4 : 4	100	4.70E-03	5.93E-03	8.20E-03
Dioxin					
Dioxin TEQ-HH	4 : 4	100	1.11E-05	2.15E-05	2.70E-05
Metals					
Aluminum	4 : 4	100	9.40E+03	1.32E+04	1.95E+04
Arsenic	4 : 4	100	9.30E+00	1.46E+01	1.70E+01
Barium	4 : 4	100	3.20E+02	3.59E+02	4.10E+02
Beryllium	2 : 4	50	6.65E-01	7.48E-01	8.30E-01
Calcium	4 : 4	100	5.00E+04	5.86E+04	7.20E+04
Chromium	4 : 4	100	1.10E+01	1.54E+01	2.25E+01
Cobalt	4 : 4	100	4.70E+00	5.70E+00	7.60E+00
Copper	4 : 4	100	9.70E+00	1.23E+01	1.85E+01
Iron	4 : 4	100	1.10E+04	1.64E+04	2.55E+04
Lead	4 : 4	100	2.00E+01	2.58E+01	3.20E+01
Magnesium	4 : 4	100	2.30E+04	2.68E+04	3.50E+04
Manganese	4 : 4	100	1.50E+03	1.98E+03	2.90E+03
Molybdenum	4 : 4	100	3.20E+00	5.36E+00	6.55E+00
Nickel	4 : 4	100	1.30E+01	1.74E+01	2.45E+01
Potassium	4 : 4	100	7.00E+03	8.50E+03	1.10E+04
Sodium	4 : 4	100	1.60E+04	1.90E+04	2.30E+04
Vanadium	4 : 4	100	3.10E+01	4.24E+01	5.25E+01
Zinc	4 : 4	100	4.20E+01	7.59E+01	1.30E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
SVOC - Semivolatile organic compound.

Table 3-48
Reference Area Surface Water Data Summary

TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-49
Creek Segment B Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
2-Hexanone	1 : 3	33	2.10E-02	2.10E-02	2.10E-02
Chlorobenzene	3 : 3	100	2.00E-02	3.25E-02	5.15E-02
Toluene	1 : 3	33	2.00E-02	2.00E-02	2.00E-02
SVOCs					
1,2,4-Trichlorobenzene	1 : 3	33	7.70E-01	7.70E-01	7.70E-01
1,2-Dichlorobenzene	1 : 3	33	3.70E-01	3.70E-01	3.70E-01
1,4-Dichlorobenzene	2 : 3	67	5.20E-01	7.60E-01	1.00E+00
4-Chloroaniline	1 : 3	33	8.30E-01	8.30E-01	8.30E-01
Benzo(a)anthracene	3 : 3	100	6.80E-01	7.77E-01	8.70E-01
Benzo(a)pyrene	3 : 3	100	7.30E-01	1.02E+00	1.20E+00
Benzo(b)fluoranthene	3 : 3	100	1.10E+00	1.50E+00	2.00E+00
Benzo(g,h,i)perylene	3 : 3	100	7.90E-01	1.18E+00	1.60E+00
Benzo(k)fluoranthene	3 : 3	100	9.20E-01	1.24E+00	1.60E+00
bis(2-Ethylhexyl)phthalate	1 : 3	33	3.00E+00	3.00E+00	3.00E+00
Chrysene	3 : 3	100	1.10E+00	1.40E+00	1.80E+00
Fluoranthene	3 : 3	100	1.80E+00	1.90E+00	2.00E+00
Indeno(1,2,3-cd)pyrene	2 : 3	67	1.00E+00	1.15E+00	1.30E+00
Naphthalene	1 : 3	33	3.80E-01	3.80E-01	3.80E-01
Phenanthrene	3 : 3	100	8.10E-01	8.83E-01	9.30E-01
Pyrene	3 : 3	100	2.00E+00	2.20E+00	2.40E+00
Pesticides					
4,4'-DDD	1 : 3	33	1.50E-01	1.50E-01	1.50E-01
Aldrin	3 : 3	100	4.10E-01	8.30E-01	1.10E+00
Endosulfan sulfate	3 : 3	100	8.40E-02	1.04E-01	1.30E-01
Endrin aldehyde	1 : 3	33	5.20E-01	5.20E-01	5.20E-01
Gamma Chlordane	1 : 3	33	7.20E-01	7.20E-01	7.20E-01
Heptachlor	1 : 3	33	5.00E-01	5.00E-01	5.00E-01
Herbicides					
Pentachlorophenol	3 : 3	100	4.65E-02	1.08E-01	2.20E-01
PCBs					
Total PCBs	3 : 3	100	6.97E+01	1.32E+02	2.26E+02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	4.46E-03	9.39E-03	1.34E-02
Metals					
Aluminum	3 : 3	100	6.55E+03	8.95E+03	1.20E+04
Antimony	3 : 3	100	6.30E+00	7.33E+00	8.90E+00
Arsenic	3 : 3	100	2.50E+01	3.20E+01	3.80E+01
Barium	3 : 3	100	7.50E+02	1.92E+03	3.30E+03
Cadmium	3 : 3	100	1.50E+01	2.17E+01	2.50E+01
Calcium	3 : 3	100	8.70E+04	1.22E+05	1.80E+05
Chromium	3 : 3	100	4.15E+01	6.52E+01	7.80E+01
Cobalt	3 : 3	100	6.95E+00	9.62E+00	1.20E+01
Copper	3 : 3	100	4.85E+03	7.52E+03	1.10E+04
Iron	3 : 3	100	1.30E+04	2.23E+04	2.90E+04
Lead	3 : 3	100	5.60E+02	7.70E+02	1.00E+03
Magnesium	3 : 3	100	1.00E+04	1.37E+04	2.00E+04

Table 3-49
Creek Segment B Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)					
Manganese	3 : 3	100	2.10E+02	2.28E+02	2.45E+02
Mercury	3 : 3	100	7.60E-01	1.22E+00	1.50E+00
Molybdenum	3 : 3	100	4.30E+00	5.37E+00	7.00E+00
Nickel	3 : 3	100	7.75E+01	3.19E+02	5.00E+02
Potassium	3 : 3	100	1.65E+03	1.92E+03	2.40E+03
Selenium	3 : 3	100	2.90E+00	3.83E+00	5.10E+00
Silver	3 : 3	100	6.70E+00	1.02E+01	1.50E+01
Thallium	1 : 3	33	2.10E+00	2.10E+00	2.10E+00
Vanadium	3 : 3	100	2.75E+01	3.52E+01	4.10E+01
Zinc	3 : 3	100	1.80E+03	4.83E+03	7.90E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-50
Creek Segment C Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
2-Butanone (MEK)	3 : 3	100	2.80E-02	3.20E-02	3.70E-02
Acetone	3 : 3	100	9.60E-02	1.09E-01	1.30E-01
SVOCs					
Benzo(a)anthracene	2 : 3	67	5.30E-01	7.10E-01	8.90E-01
Benzo(a)pyrene	1 : 3	33	1.40E+00	1.40E+00	1.40E+00
Benzo(b)fluoranthene	3 : 3	100	6.00E-01	1.09E+00	2.00E+00
Benzo(g,h,i)perylene	1 : 3	33	1.40E+00	1.40E+00	1.40E+00
Benzo(k)fluoranthene	2 : 3	67	3.90E-01	7.95E-01	1.20E+00
Chrysene	3 : 3	100	5.00E-01	8.80E-01	1.50E+00
Fluoranthene	3 : 3	100	7.80E-01	1.26E+00	2.20E+00
Phenanthrene	3 : 3	100	3.20E-01	5.63E-01	8.40E-01
Pyrene	3 : 3	100	6.60E-01	1.20E+00	2.00E+00
Pesticides					
4,4'-DDD	1 : 3	33	2.80E-02	2.80E-02	2.80E-02
4,4'-DDE	1 : 3	33	5.10E-02	5.10E-02	5.10E-02
Aldrin	3 : 3	100	2.50E-02	4.37E-02	6.40E-02
Alpha Chlordane	3 : 3	100	3.70E-02	7.03E-02	1.20E-01
delta-BHC	1 : 3	33	1.80E-02	1.80E-02	1.80E-02
Endosulfan sulfate	2 : 3	67	9.00E-03	1.25E-02	1.60E-02
Gamma Chlordane	3 : 3	100	1.10E-01	1.67E-01	2.50E-01
Heptachlor	2 : 3	67	9.10E-03	9.40E-03	9.70E-03
Herbicides					
Pentachlorophenol	3 : 3	100	7.40E-03	1.78E-02	2.30E-02
PCBs					
Total PCBs	3 : 3	100	2.70E-01	2.60E+00	4.60E+00
Dioxin					
Dioxin TEQ-HH	3 : 3	100	9.40E-04	1.95E-03	3.17E-03
Metals					
Aluminum	3 : 3	100	9.70E+03	1.22E+04	1.50E+04
Antimony	3 : 3	100	1.30E+00	1.77E+00	2.20E+00
Arsenic	3 : 3	100	1.60E+01	2.03E+01	2.80E+01
Barium	3 : 3	100	4.70E+02	6.50E+02	8.00E+02
Cadmium	3 : 3	100	1.60E+01	1.83E+01	2.00E+01
Calcium	3 : 3	100	2.30E+04	3.27E+04	4.70E+04
Chromium	3 : 3	100	4.70E+01	6.33E+01	9.30E+01
Cobalt	3 : 3	100	9.70E+00	1.29E+01	1.70E+01
Copper	3 : 3	100	1.40E+03	1.90E+03	2.20E+03
Iron	3 : 3	100	2.10E+04	2.40E+04	2.70E+04
Lead	3 : 3	100	2.70E+02	3.60E+02	4.80E+02
Magnesium	3 : 3	100	3.60E+03	5.17E+03	6.40E+03
Manganese	3 : 3	100	2.40E+02	2.87E+02	3.30E+02
Mercury	3 : 3	100	5.80E-01	6.27E-01	6.60E-01
Molybdenum	2 : 3	67	2.20E+00	2.80E+00	3.40E+00
Nickel	3 : 3	100	3.70E+02	5.00E+02	5.80E+02
Potassium	3 : 3	100	2.10E+03	2.50E+03	3.00E+03
Silver	3 : 3	100	1.20E+00	1.53E+00	1.80E+00

Table 3-50
Creek Segment C Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)					
Vanadium	3 : 3	100	3.40E+01	3.93E+01	4.80E+01
Zinc	3 : 3	100	2.90E+03	3.57E+03	4.50E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-51
Creek Segment D Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
2-Butanone (MEK)	3 : 3	100	3.00E-02	5.03E-02	6.50E-02
Acetone	3 : 3	100	8.40E-02	1.48E-01	1.90E-01
SVOCs					
Benzo(a)anthracene	1 : 3	33	4.20E-01	4.20E-01	4.20E-01
Benzo(a)pyrene	1 : 3	33	5.60E-01	5.60E-01	5.60E-01
Benzo(b)fluoranthene	3 : 3	100	7.80E-01	8.87E-01	9.70E-01
Benzo(g,h,i)perylene	1 : 3	33	6.60E-01	6.60E-01	6.60E-01
Benzo(k)fluoranthene	3 : 3	100	5.20E-01	5.97E-01	6.60E-01
bis(2-Ethylhexyl)phthalate	1 : 3	33	1.20E+00	1.20E+00	1.20E+00
Chrysene	3 : 3	100	6.70E-01	7.33E-01	7.90E-01
Fluoranthene	3 : 3	100	1.00E+00	1.13E+00	1.20E+00
Phenanthrene	1 : 3	33	4.10E-01	4.10E-01	4.10E-01
Pyrene	3 : 3	100	9.50E-01	1.01E+00	1.10E+00
Pesticides					
4,4'-DDE	3 : 3	100	4.40E-03	1.28E-02	2.00E-02
Aldrin	3 : 3	100	2.70E-03	7.77E-03	1.10E-02
Alpha Chlordane	2 : 3	67	1.40E-02	2.00E-02	2.60E-02
delta-BHC	2 : 3	67	1.50E-03	8.75E-03	1.60E-02
Endrin aldehyde	1 : 3	33	1.60E-02	1.60E-02	1.60E-02
Endrin ketone	1 : 3	33	5.50E-03	5.50E-03	5.50E-03
Gamma Chlordane	3 : 3	100	6.70E-03	2.82E-02	4.90E-02
Herbicides					
Dicamba	1 : 3	33	1.30E-02	1.30E-02	1.30E-02
Pentachlorophenol	1 : 3	33	3.90E-03	3.90E-03	3.90E-03
PCBs					
Total PCBs	3 : 3	100	6.97E-01	9.59E-01	1.15E+00
Dioxin					
Dioxin TEQ-HH	3 : 3	100	4.54E-04	6.11E-04	7.17E-04
Metals					
Aluminum	3 : 3	100	1.30E+04	1.40E+04	1.60E+04
Arsenic	3 : 3	100	1.00E+01	1.43E+01	1.70E+01
Barium	3 : 3	100	3.10E+02	3.63E+02	4.00E+02
Cadmium	3 : 3	100	1.00E+01	1.27E+01	1.50E+01
Calcium	3 : 3	100	2.60E+04	2.80E+04	3.00E+04
Chromium	3 : 3	100	5.60E+01	6.10E+01	6.70E+01
Cobalt	3 : 3	100	8.80E+00	1.09E+01	1.20E+01
Copper	3 : 3	100	3.20E+02	5.97E+02	7.40E+02
Iron	3 : 3	100	1.90E+04	2.20E+04	2.50E+04
Lead	3 : 3	100	1.70E+02	2.20E+02	2.60E+02
Magnesium	3 : 3	100	6.60E+03	6.93E+03	7.50E+03
Manganese	3 : 3	100	2.50E+02	2.80E+02	3.20E+02
Mercury	3 : 3	100	3.50E-01	4.23E-01	5.00E-01
Nickel	3 : 3	100	1.50E+02	2.23E+02	2.60E+02
Potassium	3 : 3	100	2.70E+03	2.93E+03	3.20E+03
Vanadium	3 : 3	100	3.70E+01	4.40E+01	5.10E+01
Zinc	3 : 3	100	1.80E+03	2.33E+03	2.70E+03

Table 3-51
Creek Segment D Broad-Scan Sediment Data Summary

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-52
Creek Segment E Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
2-Butanone (MEK)	1 : 3	33	5.20E-01	5.20E-01	5.20E-01
Acetone	1 : 3	33	1.20E+00	1.20E+00	1.20E+00
SVOCs					
Benzo(a)anthracene	3 : 3	100	1.00E-01	1.87E-01	3.40E-01
Benzo(a)pyrene	3 : 3	100	1.50E-01	2.47E-01	4.20E-01
Benzo(b)fluoranthene	3 : 3	100	1.70E-01	3.17E-01	5.20E-01
Benzo(g,h,i)perylene	3 : 3	100	1.40E-01	2.20E-01	3.50E-01
Benzo(k)fluoranthene	2 : 3	67	1.70E-01	3.85E-01	6.00E-01
bis(2-Ethylhexyl)phthalate	2 : 3	67	2.50E-01	2.55E-01	2.60E-01
Chrysene	3 : 3	100	1.90E-01	3.57E-01	6.60E-01
Fluoranthene	3 : 3	100	3.20E-01	6.37E-01	1.20E+00
Indeno(1,2,3-cd)pyrene	3 : 3	100	1.30E-01	2.37E-01	4.30E-01
Phenanthrene	3 : 3	100	1.20E-01	2.53E-01	5.10E-01
Pyrene	3 : 3	100	2.50E-01	5.20E-01	1.00E+00
Pesticides					
4,4'-DDE	3 : 3	100	3.40E-03	7.57E-03	1.50E-02
4,4'-DDT	1 : 3	33	9.30E-03	9.30E-03	9.30E-03
Alpha Chlordane	3 : 3	100	2.50E-03	4.43E-03	6.90E-03
delta-BHC	1 : 3	33	1.30E-03	1.30E-03	1.30E-03
Dieldrin	3 : 3	100	1.70E-03	5.50E-03	9.40E-03
Endosulfan II	2 : 3	67	2.30E-03	7.15E-03	1.20E-02
Endosulfan sulfate	1 : 3	33	1.00E-02	1.00E-02	1.00E-02
Endrin	1 : 3	33	4.60E-03	4.60E-03	4.60E-03
Endrin aldehyde	2 : 3	67	3.60E-03	1.28E-02	2.20E-02
Endrin ketone	2 : 3	67	6.80E-03	1.19E-02	1.70E-02
Gamma Chlordane	3 : 3	100	5.10E-03	8.33E-03	1.40E-02
Heptachlor	1 : 3	33	5.30E-04	5.30E-04	5.30E-04
Heptachlor epoxide	1 : 3	33	5.20E-03	5.20E-03	5.20E-03
Methoxychlor	1 : 3	33	3.90E-02	3.90E-02	3.90E-02
Herbicides					
2,4-D	1 : 3	33	7.30E-02	7.30E-02	7.30E-02
2,4-DB	1 : 3	33	1.50E-01	1.50E-01	1.50E-01
Pentachlorophenol	2 : 3	67	3.80E-03	7.90E-03	1.20E-02
PCBs					
Total PCBs	1 : 3	33	1.04E+00	1.04E+00	1.04E+00
Dioxin					
Dioxin TEQ-HH	3 : 3	100	1.21E-04	3.10E-04	4.81E-04
Metals					
Aluminum	3 : 3	100	1.10E+04	1.30E+04	1.50E+04
Antimony	2 : 3	67	2.00E+00	2.35E+00	2.70E+00
Arsenic	3 : 3	100	9.30E+00	1.24E+01	1.60E+01
Barium	3 : 3	100	1.90E+02	2.73E+02	3.40E+02
Beryllium	2 : 3	67	7.50E-01	7.95E-01	8.40E-01
Cadmium	3 : 3	100	7.70E+00	1.09E+01	1.40E+01
Calcium	3 : 3	100	2.60E+04	4.97E+04	8.00E+04

Table 3-52
Creek Segment E Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)					
Chromium	3 : 3	100	3.10E+01	5.03E+01	7.10E+01
Cobalt	3 : 3	100	7.40E+00	8.87E+00	1.00E+01
Copper	3 : 3	100	1.50E+02	3.57E+02	5.70E+02
Iron	3 : 3	100	1.70E+04	2.03E+04	2.40E+04
Lead	3 : 3	100	1.40E+02	2.13E+02	3.10E+02
Magnesium	3 : 3	100	7.40E+03	9.87E+03	1.30E+04
Manganese	3 : 3	100	1.70E+02	2.67E+02	3.20E+02
Mercury	3 : 3	100	3.00E-01	3.70E-01	5.10E-01
Molybdenum	3 : 3	100	1.60E+00	2.47E+00	3.20E+00
Nickel	3 : 3	100	5.10E+01	1.24E+02	1.90E+02
Potassium	3 : 3	100	2.40E+03	2.70E+03	3.10E+03
Silver	2 : 3	67	6.70E-01	8.85E-01	1.10E+00
Thallium	1 : 3	33	1.90E+00	1.90E+00	1.90E+00
Vanadium	3 : 3	100	3.70E+01	4.27E+01	5.10E+01
Zinc	3 : 3	100	9.80E+02	1.69E+03	2.30E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-53
Creek Segment F Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Ethylbenzene	1 : 3	33	1.10E-02	1.10E-02	1.10E-02
SVOCs					
Chrysene	1 : 3	33	7.40E-02	7.40E-02	7.40E-02
Fluoranthene	2 : 3	67	1.20E-01	1.25E-01	1.30E-01
Pesticides					
4,4'-DDD	1 : 3	33	3.80E-03	3.80E-03	3.80E-03
4,4'-DDE	3 : 3	100	2.50E-03	7.20E-03	1.10E-02
4,4'-DDT	1 : 3	33	4.50E-03	4.50E-03	4.50E-03
Aldrin	1 : 3	33	4.10E-03	4.10E-03	4.10E-03
Alpha Chlordane	3 : 3	100	8.40E-04	3.58E-03	5.30E-03
delta-BHC	1 : 3	33	3.40E-04	3.40E-04	3.40E-04
Dieldrin	2 : 3	67	9.90E-04	5.14E-03	9.30E-03
Endosulfan I	3 : 3	100	1.20E-03	2.97E-03	5.70E-03
Endosulfan II	3 : 3	100	1.80E-03	5.13E-03	8.10E-03
Endosulfan sulfate	1 : 3	33	2.80E-03	2.80E-03	2.80E-03
Endrin	2 : 3	67	1.70E-03	1.70E-03	1.70E-03
Endrin aldehyde	3 : 3	100	3.60E-03	8.87E-03	1.40E-02
Endrin ketone	3 : 3	100	3.80E-03	7.00E-03	1.00E-02
Gamma Chlordane	3 : 3	100	2.40E-03	8.97E-03	1.70E-02
Heptachlor	1 : 3	33	9.30E-04	9.30E-04	9.30E-04
Heptachlor epoxide	2 : 3	67	5.10E-04	2.96E-03	5.40E-03
Methoxychlor	3 : 3	100	7.30E-03	1.51E-02	2.40E-02
Herbicides					
2,4-D	1 : 3	33	2.30E-02	2.30E-02	2.30E-02
PCBs					
Total PCBs	2 : 3	67	8.30E-02	8.30E-02	8.30E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	1.52E-04	2.27E-04	3.50E-04
Metals					
Aluminum	3 : 3	100	7.80E+03	1.29E+04	1.70E+04
Antimony	2 : 3	67	2.50E+00	2.55E+00	2.60E+00
Arsenic	3 : 3	100	8.00E+00	1.40E+01	1.90E+01
Barium	3 : 3	100	1.50E+02	2.23E+02	2.70E+02
Beryllium	3 : 3	100	5.30E-01	7.57E-01	8.90E-01
Cadmium	3 : 3	100	7.40E+00	2.28E+01	4.70E+01
Calcium	3 : 3	100	1.10E+04	1.17E+04	1.30E+04
Chromium	3 : 3	100	1.90E+01	2.90E+01	3.80E+01
Cobalt	3 : 3	100	5.50E+00	9.83E+00	1.30E+01
Copper	3 : 3	100	1.60E+02	2.70E+02	4.10E+02
Iron	3 : 3	100	1.40E+04	2.07E+04	2.60E+04
Lead	3 : 3	100	1.10E+02	1.80E+02	3.20E+02
Magnesium	3 : 3	100	4.10E+03	5.40E+03	6.80E+03
Manganese	3 : 3	100	1.70E+02	3.03E+02	5.10E+02
Mercury	3 : 3	100	3.00E-01	6.17E-01	1.10E+00
Molybdenum	3 : 3	100	7.00E-01	1.72E+00	3.70E+00
Nickel	3 : 3	100	9.00E+01	2.20E+02	3.90E+02

Table 3-53
Creek Segment F Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)					
Potassium	3 : 3	100	1.60E+03	2.40E+03	2.90E+03
Vanadium	3 : 3	100	2.50E+01	3.90E+01	5.10E+01
Zinc	3 : 3	100	9.50E+02	2.08E+03	3.70E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-54
Borrow Pit Lake Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Pesticides					
4,4'-DDE	3 : 3	100	1.11E-03	1.97E-03	3.20E-03
4,4'-DDT	2 : 3	67	1.14E-03	1.27E-03	1.40E-03
Alpha Chlordane	3 : 3	100	4.75E-04	1.62E-03	3.20E-03
Dieldrin	2 : 3	67	2.55E-04	3.78E-04	5.00E-04
Endosulfan I	3 : 3	100	3.80E-04	1.39E-03	2.80E-03
Endosulfan sulfate	2 : 3	67	9.40E-04	1.17E-03	1.40E-03
Endrin aldehyde	3 : 3	100	1.20E-03	1.58E-03	2.20E-03
Endrin ketone	1 : 3	33	7.15E-04	7.15E-04	7.15E-04
Gamma Chlordane	2 : 3	67	7.35E-04	1.87E-03	3.00E-03
gamma-BHC (Lindane)	1 : 3	33	1.60E-04	1.60E-04	1.60E-04
Heptachlor epoxide	1 : 3	33	2.00E-04	2.00E-04	2.00E-04
Herbicides					
2,4-D	2 : 3	67	6.10E-03	8.55E-03	1.10E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	1.48E-05	2.42E-05	3.54E-05
Metals					
Aluminum	3 : 3	100	1.10E+04	1.37E+04	1.60E+04
Antimony	2 : 3	67	1.50E+00	1.70E+00	1.90E+00
Arsenic	3 : 3	100	1.30E+01	1.55E+01	1.70E+01
Barium	3 : 3	100	2.40E+02	3.48E+02	4.20E+02
Beryllium	3 : 3	100	5.80E-01	7.13E-01	8.20E-01
Cadmium	3 : 3	100	1.60E+00	2.08E+00	2.70E+00
Calcium	3 : 3	100	1.10E+04	1.45E+04	1.65E+04
Chromium	3 : 3	100	1.80E+01	2.17E+01	2.60E+01
Cobalt	3 : 3	100	7.10E+00	8.92E+00	1.00E+01
Copper	3 : 3	100	3.60E+01	4.85E+01	6.40E+01
Iron	3 : 3	100	2.80E+04	3.38E+04	3.80E+04
Lead	3 : 3	100	3.40E+01	4.78E+01	5.80E+01
Magnesium	3 : 3	100	3.60E+03	4.67E+03	5.60E+03
Manganese	3 : 3	100	9.40E+02	1.20E+03	1.40E+03
Mercury	3 : 3	100	1.01E-01	1.24E-01	1.60E-01
Molybdenum	3 : 3	100	3.70E-01	5.95E-01	9.20E-01
Nickel	3 : 3	100	3.50E+01	4.72E+01	5.40E+01
Potassium	3 : 3	100	1.50E+03	1.95E+03	2.20E+03
Silver	1 : 3	33	7.90E-01	7.90E-01	7.90E-01
Vanadium	3 : 3	100	2.80E+01	3.48E+01	4.00E+01
Zinc	3 : 3	100	2.50E+02	3.08E+02	3.70E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-54
Borrow Pit Lake Broad-Scan Sediment Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-55
Prairie du Pont Creek Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Acetone	2 : 2	100	4.10E-02	4.40E-02	4.70E-02
Toluene	1 : 2	50	6.40E-03	6.40E-03	6.40E-03
Dioxin					
Dioxin TEQ-HH	2 : 2	100	5.66E-06	6.03E-06	6.40E-06
Metals					
Aluminum	2 : 2	100	9.80E+03	1.09E+04	1.20E+04
Arsenic	2 : 2	100	7.00E+00	7.10E+00	7.20E+00
Barium	2 : 2	100	1.35E+02	1.38E+02	1.40E+02
Beryllium	2 : 2	100	4.80E-01	5.20E-01	5.60E-01
Calcium	2 : 2	100	3.65E+03	4.48E+03	5.30E+03
Chromium	2 : 2	100	1.50E+01	1.60E+01	1.70E+01
Cobalt	2 : 2	100	6.70E+00	7.13E+00	7.55E+00
Copper	2 : 2	100	1.40E+01	1.43E+01	1.45E+01
Iron	2 : 2	100	1.60E+04	1.65E+04	1.70E+04
Lead	2 : 2	100	1.55E+01	1.58E+01	1.60E+01
Magnesium	2 : 2	100	2.70E+03	2.80E+03	2.90E+03
Manganese	2 : 2	100	4.30E+02	5.18E+02	6.05E+02
Mercury	2 : 2	100	2.30E-02	2.40E-02	2.50E-02
Molybdenum	2 : 2	100	4.50E-01	5.40E-01	6.30E-01
Nickel	2 : 2	100	1.50E+01	1.58E+01	1.65E+01
Potassium	2 : 2	100	1.20E+03	1.28E+03	1.35E+03
Sodium	2 : 2	100	7.55E+01	8.38E+01	9.20E+01
Vanadium	2 : 2	100	2.50E+01	2.80E+01	3.10E+01
Zinc	2 : 2	100	5.80E+01	5.95E+01	6.10E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-56
Reference Area Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
2-Butanone (MEK)	3 : 4	75	1.10E-02	2.17E-02	4.00E-02
Acetone	3 : 4	75	3.80E-02	8.33E-02	1.60E-01
Herbicides					
2,4-D	1 : 4	25	1.20E-02	1.20E-02	1.20E-02
Pentachlorophenol	1 : 4	25	1.90E-03	1.90E-03	1.90E-03
Dioxin					
Dioxin TEQ-HH	4 : 4	100	6.73E-06	7.83E-06	9.02E-06
Metals					
Aluminum	4 : 4	100	1.20E+04	1.45E+04	1.90E+04
Antimony	2 : 4	50	1.00E+00	1.15E+00	1.30E+00
Arsenic	4 : 4	100	6.70E+00	7.17E+00	8.00E+00
Barium	4 : 4	100	1.65E+02	2.06E+02	2.30E+02
Beryllium	4 : 4	100	6.20E-01	7.80E-01	1.00E+00
Cadmium	4 : 4	100	2.90E-01	4.15E-01	6.50E-01
Calcium	4 : 4	100	1.20E+04	1.35E+04	1.80E+04
Chromium	4 : 4	100	1.70E+01	2.00E+01	2.50E+01
Cobalt	4 : 4	100	7.10E+00	8.60E+00	1.00E+01
Copper	4 : 4	100	1.60E+01	1.90E+01	2.30E+01
Iron	4 : 4	100	1.75E+04	2.06E+04	2.40E+04
Lead	4 : 4	100	1.65E+01	2.19E+01	2.60E+01
Magnesium	4 : 4	100	3.25E+03	5.14E+03	6.50E+03
Manganese	4 : 4	100	5.70E+02	7.08E+02	7.70E+02
Mercury	4 : 4	100	4.00E-02	4.80E-02	6.30E-02
Molybdenum	4 : 4	100	3.70E-01	4.45E-01	5.30E-01
Nickel	4 : 4	100	1.75E+01	2.14E+01	2.60E+01
Potassium	4 : 4	100	1.60E+03	2.10E+03	2.60E+03
Vanadium	4 : 4	100	2.95E+01	3.49E+01	4.40E+01
Zinc	4 : 4	100	5.90E+01	8.30E+01	9.60E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-57
Site M Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs					
Benzene	1 : 1	100	1.70E-02	1.70E-02	1.70E-02
Carbon Disulfide	1 : 1	100	4.90E-02	4.90E-02	4.90E-02
Chlorobenzene	1 : 1	100	1.00E-01	1.00E-01	1.00E-01
SVOCs					
4-Chloroaniline	1 : 1	100	2.40E+00	2.40E+00	2.40E+00
Benzo(a)anthracene	1 : 1	100	1.30E+00	1.30E+00	1.30E+00
Benzo(a)pyrene	1 : 1	100	1.50E+00	1.50E+00	1.50E+00
Benzo(b)fluoranthene	1 : 1	100	1.50E+00	1.50E+00	1.50E+00
Benzo(g,h,i)perylene	1 : 1	100	1.30E+00	1.30E+00	1.30E+00
Benzo(k)fluoranthene	1 : 1	100	1.80E+00	1.80E+00	1.80E+00
Bis(2-ethylhexyl)phthalate	1 : 1	100	1.40E+00	1.40E+00	1.40E+00
Chrysene	1 : 1	100	1.60E+00	1.60E+00	1.60E+00
Fluoranthene	1 : 1	100	3.00E+00	3.00E+00	3.00E+00
Napthalene	1 : 1	100	1.10E+00	1.10E+00	1.10E+00
Pentachlorophenol	1 : 1	100	5.20E-02	5.20E-02	5.20E-02
Phenanthrene	1 : 1	100	1.30E+00	1.30E+00	1.30E+00
Pyrene	1 : 1	100	2.20E+00	2.20E+00	2.20E+00
PCBs					
Total PCBs	1 : 1	100	1.22E+01	1.22E+01	1.22E+01
Pesticides					
4,4'-DDE	1 : 1	100	1.10E-01	1.10E-01	1.10E-01
4,4'-DDE	1 : 1	100	4.40E-02	4.40E-02	4.40E-02
Aldrin	1 : 1	100	1.20E-01	1.20E-01	1.20E-01
Endosulfan sulfate	1 : 1	100	5.00E-02	5.00E-02	5.00E-02
Endrin ketone	1 : 1	100	2.00E-01	2.00E-01	2.00E-01
Gamma Chlordane	1 : 1	100	1.40E-01	1.40E-01	1.40E-01
Heptachlor	1 : 1	100	5.90E-02	5.90E-02	5.90E-02
Dioxin					
Dioxin TEQ-HH	1 : 1	100	4.00E-03	4.00E-03	4.00E-03
Metals					
Aluminum	1 : 1	100	8.90E+03	8.90E+00	8.90E+00
Antimony	1 : 1	100	6.60E+00	6.60E+00	6.60E+00
Arsenic	1 : 1	100	3.50E+01	3.50E+01	3.50E+01
Barium	1 : 1	100	7.00E+02	7.00E+02	7.00E+02
Cadmium	1 : 1	100	1.70E+01	1.70E+01	1.70E+01
Calcium	1 : 1	100	1.00E+05	1.00E+05	1.00E+05
Chromium	1 : 1	100	4.80E+01	4.80E+01	4.80E+01
Cobalt	1 : 1	100	1.50E+01	1.50E+01	1.50E+01
Copper	1 : 1	100	4.20E+03	4.20E+03	4.20E+03
Iron	1 : 1	100	3.40E+04	3.40E+04	3.40E+04
Lead	1 : 1	100	5.30E+02	5.30E+02	5.30E+02
Magnesium	1 : 1	100	7.40E+03	7.40E+03	7.40E+03
Manganese	1 : 1	100	3.70E+02	3.70E+02	3.70E+02
Mercury	1 : 1	100	1.00E+00	1.00E+00	1.00E+00
Molybdenum	1 : 1	100	1.70E+01	1.70E+01	1.70E+01

Table 3-57
Site M Broad-Scan Sediment Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
Metals (cont.)					
Nickel	1 : 1	100	1.90E+02	1.90E+02	1.90E+02
Potassium	1 : 1	100	2.00E+03	2.00E+03	2.00E+03
Selenium	1 : 1	100	3.80E+00	3.80E+00	3.80E+00
Silver	1 : 1	100	7.30E+00	7.30E+00	7.30E+00
Vanadium	1 : 1	100	4.50E+01	4.50E+01	4.50E+01
Zinc	1 : 1	100	2.40E+03	2.40E+03	2.40E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-58
Site M Bottom Soil TCLP Extraction and Analysis Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (ug/L)	Mean (c) (ug/L)	Maximum (c) (ug/L)
VOCs			**(mg/l)**	**(mg/l)**	**(mg/l)**
Benzene	3 : 4	75	1.10E-03	1.17E-03	1.20E-03
Chlorobenzene	4 : 4	100	1.20E-03	5.94E-02	1.50E-01
Trichloroethene	3 : 4	100	1.20E-03	1.01E-02	2.10E-02
SVOCs			**(mg/l)**	**(mg/l)**	**(mg/l)**
1,4-Dichlorobenzene	4 : 4	100	9.50E-03	1.54E-02	3.10E-02
PCBs			**(mg/kg)**	**(mg/kg)**	**(mg/kg)**
Total PCBs	3 : 4	75	4.31E+01	4.76E+01	5.20E+01
Dioxin			**(mg/l)**	**(mg/l)**	**(mg/l)**
Dioxin TEQ	4 : 4	100	2.13E-06	5.70E-05	2.63E-04
Metals			**(mg/l)**	**(mg/l)**	**(mg/l)**
Arsenic	1 : 4	25	3.30E-01	3.30E-01	3.30E-01
Barium	4 : 4	100	1.80E+00	2.08E+00	2.30E+00

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-59
Background Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Hexanone	1 : 3	33	1.80E-02	1.80E-02	1.80E-02
Methylene chloride (Dichloromethane)	2 : 3	67	1.70E-03	6.85E-03	1.20E-02
SVOCs					
Anthracene	1 : 3	33	8.00E-02	8.00E-02	8.00E-02
Benzo(a)anthracene	2 : 3	67	7.70E-02	1.24E-01	1.70E-01
Benzo(a)pyrene	2 : 3	67	7.00E-02	1.10E-01	1.50E-01
Benzo(b)fluoranthene	2 : 3	67	6.90E-02	8.95E-02	1.10E-01
Benzo(g,h,i)perylene	2 : 3	67	4.50E-02	6.35E-02	8.20E-02
Benzo(k)fluoranthene	2 : 3	67	6.00E-02	1.00E-01	1.40E-01
bis(2-Ethylhexyl)phthalate	2 : 3	67	1.10E-01	2.65E-01	4.20E-01
Carbazole	1 : 3	33	3.20E-02	3.20E-02	3.20E-02
Chrysene	2 : 3	67	9.70E-02	1.49E-01	2.00E-01
Diethylphthalate	3 : 3	100	6.00E-02	9.33E-02	1.10E-01
Di-n-butylphthalate	2 : 3	67	1.30E-01	1.85E-01	2.40E-01
Fluoranthene	2 : 3	67	2.00E-01	3.20E-01	4.40E-01
Phenanthrene	2 : 3	67	1.00E-01	1.95E-01	2.90E-01
Pyrene	2 : 3	67	1.80E-01	2.70E-01	3.60E-01
Pesticides					
4,4'-DDE	1 : 3	33	2.00E-02	2.00E-02	2.00E-02
4,4'-DDT	1 : 3	33	1.70E-02	1.70E-02	1.70E-02
Herbicides					
2,4,5-TP (Silvex)	3 : 3	100	5.80E-03	9.93E-03	1.30E-02
MCPA	3 : 3	100	4.30E+00	7.25E+00	1.30E+01
MCPP	3 : 3	100	2.50E+00	4.98E+00	6.55E+00
Pentachlorophenol	2 : 3	67	2.10E-02	3.30E-02	4.50E-02
PCBs					
Total PCBs	2 : 3	67	1.40E-01	9.23E-01	1.71E+00
Dioxin					
Dioxin TEQ-HH	3 : 3	100	9.46E-06	7.66E-05	2.03E-04
Metals					
Aluminum	3 : 3	100	8.10E+03	1.27E+04	1.90E+04
Antimony	1 : 3	33	1.90E+00	1.90E+00	1.90E+00
Arsenic	3 : 3	100	6.60E+00	9.57E+00	1.30E+01
Barium	3 : 3	100	1.10E+02	1.82E+02	2.35E+02
Beryllium	3 : 3	100	4.50E-01	7.53E-01	1.10E+00
Cadmium	3 : 3	100	5.20E-01	4.32E+00	9.40E+00
Calcium	3 : 3	100	4.00E+03	1.68E+04	4.00E+04
Chromium	3 : 3	100	1.70E+01	1.97E+01	2.50E+01
Cobalt	3 : 3	100	5.50E+00	7.77E+00	1.04E+01
Copper	3 : 3	100	3.50E+01	1.05E+02	1.90E+02
Iron	3 : 3	100	1.50E+04	1.90E+04	2.50E+04
Lead	3 : 3	100	2.40E+01	9.25E+01	1.80E+02
Magnesium	3 : 3	100	3.20E+03	8.62E+03	1.70E+04
Manganese	3 : 3	100	3.90E+02	4.42E+02	5.35E+02
Mercury	3 : 3	100	4.40E-02	8.87E-02	1.40E-01
Molybdenum	3 : 3	100	7.20E-01	1.01E+00	1.40E+00

Table 3-59
Background Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Nickel	3 : 3	100	1.50E+01	2.13E+01	2.80E+01
Potassium	3 : 3	100	1.30E+03	2.37E+03	3.50E+03
Silver	2 : 3	67	3.25E-01	7.13E-01	1.10E+00
Sodium	1 : 3	33	7.50E+02	7.50E+02	7.50E+02
Vanadium	3 : 3	100	2.80E+01	3.45E+01	4.45E+01
Zinc	3 : 3	100	8.20E+01	4.04E+02	8.20E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-60
Background Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Acetone	1 : 3	33	5.50E-03	5.50E-03	5.50E-03
Methylene chloride (Dichloromethane)	1 : 3	33	1.40E-03	1.40E-03	1.40E-03
SVOCs					
Benzo(a)anthracene	1 : 3	33	2.60E-02	2.60E-02	2.60E-02
Benzo(g,h,i)perylene	1 : 3	33	3.40E-02	3.40E-02	3.40E-02
Chrysene	1 : 3	33	4.20E-02	4.20E-02	4.20E-02
Diethylphthalate	2 : 3	67	6.30E-02	8.65E-02	1.10E-01
Fluoranthene	1 : 3	33	4.20E-02	4.20E-02	4.20E-02
Herbicides					
2,4,5-TP (Silvex)	1 : 3	33	5.80E-03	5.80E-03	5.80E-03
MCPP	2 : 3	67	2.90E+00	2.95E+00	3.00E+00
Dioxin					
Dioxin TEQ-HH	2 : 3	67	3.33E-07	1.09E-06	1.85E-06
Metals					
Aluminum	3 : 3	100	8.40E+03	1.01E+04	1.20E+04
Antimony	1 : 3	33	1.20E+00	1.20E+00	1.20E+00
Arsenic	3 : 3	100	6.80E+00	8.70E+00	1.20E+01
Barium	3 : 3	100	1.70E+02	1.87E+02	2.00E+02
Beryllium	3 : 3	100	5.00E-01	6.33E-01	7.20E-01
Cadmium	3 : 3	100	1.10E-01	3.44E+00	8.90E+00
Calcium	3 : 3	100	3.80E+03	8.07E+03	1.20E+04
Chromium	3 : 3	100	1.30E+01	1.63E+01	1.80E+01
Cobalt	3 : 3	100	6.40E+00	6.97E+00	7.70E+00
Copper	3 : 3	100	1.10E+01	7.73E+01	1.80E+02
Iron	3 : 3	100	1.40E+04	1.67E+04	1.80E+04
Lead	3 : 3	100	8.50E+00	7.12E+01	1.60E+02
Magnesium	3 : 3	100	3.10E+03	4.67E+03	5.70E+03
Manganese	3 : 3	100	3.70E+02	4.00E+02	4.20E+02
Mercury	3 : 3	100	4.10E-03	2.80E-02	6.00E-02
Molybdenum	3 : 3	100	5.00E-01	8.73E-01	1.50E+00
Nickel	3 : 3	100	1.60E+01	1.87E+01	2.00E+01
Potassium	3 : 3	100	1.80E+03	2.10E+03	2.30E+03
Silver	1 : 3	33	9.80E-01	9.80E-01	9.80E-01
Sodium	1 : 3	33	4.10E+02	4.10E+02	4.10E+02
Vanadium	3 : 3	100	2.50E+01	2.90E+01	3.10E+01
Zinc	3 : 3	100	4.20E+01	3.21E+02	7.70E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-60
Background Subsurface Soil Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-61
UAS Transect 1 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Hexanone	1 : 7	14	6.60E-03	6.60E-03	6.60E-03
Acetone	2 : 7	29	3.50E-01	3.95E-01	4.40E-01
Benzene	1 : 7	14	3.00E-03	3.00E-03	3.00E-03
Chlorobenzene	1 : 7	14	4.00E-03	4.00E-03	4.00E-03
Toluene	1 : 7	14	3.20E-03	3.20E-03	3.20E-03
Trichloroethene	3 : 7	43	3.80E-03	4.67E-03	6.20E-03
SVOCs					
Fluoranthene	1 : 7	14	3.70E-02	3.70E-02	3.70E-02
Pesticides					
4,4'-DDE	5 : 7	71	8.60E-05	2.33E-04	4.00E-04
4,4'-DDT	5 : 7	71	6.50E-05	3.07E-04	7.00E-04
Dieldrin	2 : 7	29	8.90E-05	1.14E-04	1.40E-04
Endosulfan sulfate	4 : 7	57	9.30E-05	2.61E-04	4.50E-04
Endrin ketone	7 : 7	100	1.20E-04	2.66E-04	4.90E-04
Heptachlor epoxide	6 : 7	86	6.40E-05	1.86E-04	3.50E-04
Methoxychlor	5 : 7	71	1.20E-03	2.06E-03	2.90E-03
Herbicides					
Dicamba	2 : 7	29	1.80E-03	2.10E-03	2.40E-03
MCPA	4 : 7	57	2.70E+00	5.05E+00	7.40E+00
Pentachlorophenol	7 : 7	100	1.30E-03	3.29E-03	6.60E-03
PCBs					
Total PCBs	7 : 7	100	9.60E-02	1.35E-01	2.44E-01
Dioxin					
Dioxin TEQ-HH	2 : 2	100	3.17E-06	4.68E-06	6.18E-06
Metals					
Aluminum	7 : 7	100	6.25E+03	1.13E+04	1.50E+04
Antimony	7 : 7	100	9.00E-01	1.97E+00	2.60E+00
Arsenic	7 : 7	100	5.75E+00	8.14E+00	1.00E+01
Barium	7 : 7	100	1.65E+02	2.02E+02	2.40E+02
Beryllium	7 : 7	100	4.15E-01	6.95E-01	9.40E-01
Cadmium	7 : 7	100	1.70E+00	2.96E+00	4.80E+00
Calcium	7 : 7	100	4.20E+03	5.63E+03	8.70E+03
Chromium	7 : 7	100	1.15E+01	2.16E+01	4.90E+01
Cobalt	7 : 7	100	4.95E+00	7.22E+00	9.20E+00
Copper	7 : 7	100	7.65E+01	1.52E+02	2.30E+02
Iron	7 : 7	100	1.15E+04	1.71E+04	2.20E+04
Lead	7 : 7	100	4.00E+01	7.61E+01	1.20E+02
Magnesium	7 : 7	100	4.10E+03	4.48E+03	5.30E+03
Manganese	7 : 7	100	1.90E+02	3.65E+02	5.50E+02
Mercury	7 : 7	100	3.10E-02	6.12E-02	9.90E-02
Molybdenum	7 : 7	100	3.50E-01	5.16E-01	8.60E-01
Nickel	7 : 7	100	1.40E+01	2.03E+01	2.50E+01
Potassium	7 : 7	100	1.40E+03	2.24E+03	2.80E+03
Selenium	2 : 7	29	7.20E-01	7.65E-01	8.10E-01
Silver	6 : 7	86	2.10E-01	3.50E-01	5.90E-01
Thallium	1 : 7	14	8.00E-01	8.00E-01	8.00E-01

Table 3-61
UAS Transect 1 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Vanadium	7 : 7	100	2.05E+01	3.16E+01	4.10E+01
Zinc	7 : 7	100	1.80E+02	4.44E+02	1.40E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-62
UAS Transect 1 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Methylene chloride (Dichloromethane)	1 : 7	14	2.40E-03	2.40E-03	2.40E-03
Trichloroethene	3 : 7	43	2.80E-03	5.03E-03	7.40E-03
SVOCs					
bis(2-Ethylhexyl)phthalate	2 : 7	29	6.90E-02	1.35E-01	2.00E-01
Pesticides					
4,4'-DDE	2 : 7	29	1.40E-04	1.80E-04	2.20E-04
4,4'-DDT	1 : 7	14	2.70E-04	2.70E-04	2.70E-04
Alpha Chlordane	1 : 7	14	1.60E-04	1.60E-04	1.60E-04
Dieldrin	1 : 7	14	1.20E-04	1.20E-04	1.20E-04
Endrin ketone	2 : 7	29	1.80E-04	2.25E-04	2.70E-04
Heptachlor epoxide	3 : 7	43	5.70E-05	1.82E-04	3.50E-04
Methoxychlor	2 : 7	29	1.60E-03	2.10E-03	2.60E-03
PCBs					
Total PCBs	3 : 7	43	1.90E-02	1.96E-02	2.01E-02
Metals					
Aluminum	7 : 7	100	3.80E+03	8.39E+03	1.70E+04
Antimony	5 : 7	71	5.90E-01	6.86E-01	8.40E-01
Arsenic	7 : 7	100	4.00E+00	6.19E+00	8.70E+00
Barium	7 : 7	100	1.40E+02	2.00E+02	2.60E+02
Beryllium	7 : 7	100	2.50E-01	5.08E-01	9.30E-01
Cadmium	6 : 7	86	1.00E-01	2.95E-01	5.30E-01
Calcium	7 : 7	100	1.04E+04	1.41E+04	1.80E+04
Chromium	7 : 7	100	7.80E+00	1.41E+01	2.50E+01
Cobalt	7 : 7	100	4.30E+00	6.39E+00	1.10E+01
Copper	7 : 7	100	4.00E+00	1.42E+01	2.40E+01
Iron	7 : 7	100	8.70E+03	1.38E+04	2.20E+04
Lead	7 : 7	100	5.40E+00	1.02E+01	1.50E+01
Magnesium	7 : 7	100	4.40E+03	6.34E+03	8.30E+03
Manganese	7 : 7	100	1.70E+02	3.86E+02	9.80E+02
Mercury	7 : 7	100	5.90E-03	2.74E-02	7.00E-02
Molybdenum	7 : 7	100	2.00E-01	4.04E-01	7.60E-01
Nickel	7 : 7	100	1.10E+01	1.75E+01	3.30E+01
Potassium	7 : 7	100	7.60E+02	1.58E+03	2.70E+03
Vanadium	7 : 7	100	1.40E+01	2.52E+01	4.50E+01
Zinc	7 : 7	100	2.80E+01	7.71E+01	2.50E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-62
UAS Transect 1 Floodplain Subsurface Soil Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-63
UAS Transect 2 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	4 : 6	67	2.20E-02	2.77E-02	3.40E-02
2-Hexanone	1 : 6	17	4.80E-03	4.80E-03	4.80E-03
Acetone	4 : 6	67	2.20E-01	3.48E-01	4.50E-01
SVOCs					
Benzo(a)anthracene	1 : 6	17	7.20E-02	7.20E-02	7.20E-02
Benzo(a)pyrene	1 : 6	17	7.20E-02	7.20E-02	7.20E-02
Benzo(b)fluoranthene	1 : 6	17	7.20E-02	7.20E-02	7.20E-02
Benzo(g,h,i)perylene	1 : 6	17	4.00E-02	4.00E-02	4.00E-02
Benzo(k)fluoranthene	1 : 6	17	5.30E-02	5.30E-02	5.30E-02
bis(2-Ethylhexyl)phthalate	1 : 6	17	9.40E-02	9.40E-02	9.40E-02
Chrysene	1 : 6	17	8.90E-02	8.90E-02	8.90E-02
Fluoranthene	1 : 6	17	1.50E-01	1.50E-01	1.50E-01
Phenanthrene	1 : 6	17	6.10E-02	6.10E-02	6.10E-02
Pyrene	1 : 6	17	1.20E-01	1.20E-01	1.20E-01
Pesticides					
4,4'-DDE	3 : 6	50	2.40E-04	3.80E-04	4.80E-04
4,4'-DDT	4 : 6	67	1.40E-04	4.52E-04	6.10E-04
Endosulfan sulfate	3 : 6	50	1.10E-04	3.30E-04	4.70E-04
Endrin ketone	4 : 6	67	1.30E-04	5.95E-04	1.30E-03
Gamma Chlordane	1 : 6	17	2.00E-04	2.00E-04	2.00E-04
Heptachlor epoxide	2 : 6	33	1.50E-04	1.70E-04	1.90E-04
Methoxychlor	2 : 6	33	1.30E-03	4.30E-03	7.30E-03
Herbicides					
Dicamba	1 : 6	17	3.10E-03	3.10E-03	3.10E-03
MCPA	1 : 6	17	5.50E+00	5.50E+00	5.50E+00
MCPP	1 : 6	17	7.60E+00	7.60E+00	7.60E+00
Pentachlorophenol	2 : 6	33	1.40E-03	1.50E-03	1.60E-03
PCBs					
Total PCBs	6 : 6	100	3.70E-02	9.32E-02	1.64E-01
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.02E-05	1.02E-05	1.02E-05
Metals					
Aluminum	6 : 6	100	9.80E+03	1.30E+04	1.80E+04
Antimony	6 : 6	100	6.70E-01	1.28E+00	1.70E+00
Arsenic	6 : 6	100	6.60E+00	8.15E+00	1.00E+01
Barium	6 : 6	100	1.60E+02	1.98E+02	2.30E+02
Beryllium	4 : 6	67	6.20E-01	8.45E-01	1.10E+00
Cadmium	6 : 6	100	1.90E+00	2.40E+00	2.80E+00
Calcium	6 : 6	100	3.50E+03	5.10E+03	8.80E+03
Chromium	6 : 6	100	1.50E+01	1.87E+01	2.50E+01
Cobalt	6 : 6	100	6.50E+00	8.03E+00	1.10E+01
Copper	6 : 6	100	6.90E+01	9.25E+01	1.40E+02
Iron	6 : 6	100	1.50E+04	1.85E+04	2.40E+04
Lead	6 : 6	100	4.80E+01	6.57E+01	7.90E+01
Magnesium	6 : 6	100	3.40E+03	4.38E+03	5.20E+03
Manganese	6 : 6	100	3.40E+02	4.68E+02	6.90E+02

Table 3-63
UAS Transect 2 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Mercury	6 : 6	100	4.50E-02	6.10E-02	7.70E-02
Molybdenum	6 : 6	100	4.60E-01	7.65E-01	1.30E+00
Nickel	6 : 6	100	1.80E+01	2.17E+01	2.70E+01
Potassium	6 : 6	100	1.70E+03	2.67E+03	3.80E+03
Selenium	2 : 6	33	6.10E-01	8.05E-01	1.00E+00
Silver	6 : 6	100	2.30E-01	3.07E-01	4.10E-01
Thallium	2 : 6	33	7.30E-01	8.65E-01	1.00E+00
Vanadium	6 : 6	100	2.80E+01	3.37E+01	4.60E+01
Zinc	6 : 6	100	1.90E+02	2.53E+02	3.10E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-64
UAS Transect 2 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
bis(2-Ethylhexyl)phthalate	5 : 6	83	4.50E-02	9.02E-02	1.60E-01
Dioxin					
Dioxin TEQ-HH	1 : 1	100	5.01E-05	5.01E-05	5.01E-05
Metals					
Aluminum	6 : 6	100	4.50E+03	6.65E+03	1.10E+04
Antimony	1 : 6	17	6.70E-01	6.70E-01	6.70E-01
Arsenic	6 : 6	100	4.00E+00	5.03E+00	7.00E+00
Barium	6 : 6	100	1.40E+02	1.82E+02	2.20E+02
Beryllium	1 : 6	17	3.70E-01	3.70E-01	3.70E-01
Cadmium	6 : 6	100	1.10E-01	2.03E-01	3.20E-01
Calcium	6 : 6	100	9.20E+03	1.30E+04	1.50E+04
Chromium	6 : 6	100	8.60E+00	1.08E+01	1.50E+01
Cobalt	6 : 6	100	4.60E+00	5.58E+00	8.30E+00
Copper	6 : 6	100	5.90E+00	9.97E+00	1.60E+01
Iron	6 : 6	100	9.10E+03	1.13E+04	1.60E+04
Lead	6 : 6	100	6.40E+00	8.58E+00	1.20E+01
Magnesium	6 : 6	100	4.30E+03	5.70E+03	6.80E+03
Manganese	6 : 6	100	1.70E+02	2.63E+02	4.80E+02
Mercury	6 : 6	100	5.80E-03	1.38E-02	2.90E-02
Molybdenum	6 : 6	100	1.90E-01	5.52E-01	7.70E-01
Nickel	6 : 6	100	1.10E+01	1.35E+01	2.00E+01
Potassium	6 : 6	100	8.70E+02	1.36E+03	2.00E+03
Selenium	1 : 6	17	5.10E-01	5.10E-01	5.10E-01
Vanadium	6 : 6	100	1.50E+01	2.00E+01	2.80E+01
Zinc	6 : 6	100	3.00E+01	4.13E+01	5.70E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-65
UAS Transect 3 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	6 : 7	86	2.50E-02	3.65E-02	4.70E-02
2-Hexanone	1 : 7	14	6.90E-03	6.90E-03	6.90E-03
Acetone	6 : 7	86	2.80E-01	4.93E-01	6.70E-01
Benzene	1 : 7	14	2.10E-03	2.10E-03	2.10E-03
Toluene	3 : 7	43	2.50E-03	3.90E-03	5.30E-03
SVOCs					
Anthracene	1 : 7	14	5.10E-02	5.10E-02	5.10E-02
Benzo(a)anthracene	2 : 7	29	2.30E-02	2.52E-01	4.80E-01
Benzo(a)pyrene	1 : 7	14	8.60E-01	8.60E-01	8.60E-01
Benzo(b)fluoranthene	3 : 7	43	2.70E-02	3.42E-01	9.70E-01
Benzo(g,h,i)perylene	2 : 7	29	4.90E-02	4.40E-01	8.30E-01
Benzo(k)fluoranthene	1 : 7	14	1.00E+00	1.00E+00	1.00E+00
bis(2-Ethylhexyl)phthalate	1 : 7	14	6.10E-02	6.10E-02	6.10E-02
Carbazole	1 : 7	14	8.80E-02	8.80E-02	8.80E-02
Chrysene	4 : 7	57	2.80E-02	2.69E-01	9.80E-01
Dibenzo(a,h)anthracene	1 : 7	14	2.50E-01	2.50E-01	2.50E-01
Fluoranthene	3 : 7	43	3.70E-02	5.29E-01	1.50E+00
Indeno(1,2,3-cd)pyrene	1 : 7	14	6.90E-01	6.90E-01	6.90E-01
Phenanthrene	1 : 7	14	5.30E-01	5.30E-01	5.30E-01
Pyrene	1 : 7	14	1.40E+00	1.40E+00	1.40E+00
Pesticides					
4,4'-DDE	3 : 7	43	1.10E-04	1.63E-04	2.40E-04
4,4'-DDT	2 : 7	29	4.00E-04	5.72E-04	7.45E-04
beta-BHC	1 : 7	14	7.50E-04	7.50E-04	7.50E-04
Dieldrin	1 : 7	14	2.60E-04	2.60E-04	2.60E-04
Endrin ketone	2 : 7	29	1.70E-04	4.60E-04	7.50E-04
Gamma Chlordane	1 : 7	14	1.80E-04	1.80E-04	1.80E-04
Methoxychlor	1 : 7	14	2.60E-03	2.60E-03	2.60E-03
Herbicides					
2,4-DB	1 : 7	14	4.10E-02	4.10E-02	4.10E-02
MCPA	2 : 7	29	1.80E+00	2.90E+00	4.00E+00
MCPP	2 : 7	29	4.40E+00	6.05E+00	7.70E+00
Pentachlorophenol	1 : 7	14	1.30E-03	1.30E-03	1.30E-03
PCBs					
Total PCBs	6 : 7	86	3.00E-02	8.05E-02	1.16E-01
Dioxin					
Dioxin TEQ-HH	1 : 1	100	3.27E-06	3.27E-06	3.27E-06
Metals					
Aluminum	7 : 7	100	3.30E+03	1.07E+04	1.70E+04
Antimony	4 : 7	57	9.00E-01	1.28E+00	1.90E+00
Arsenic	7 : 7	100	2.60E+00	6.29E+00	9.40E+00
Barium	7 : 7	100	4.00E+01	1.66E+02	2.20E+02
Beryllium	6 : 7	86	1.80E-01	7.38E-01	1.10E+00
Cadmium	7 : 7	100	1.50E+00	2.38E+00	3.80E+00
Calcium	7 : 7	100	3.50E+03	4.05E+04	2.50E+05
Chromium	7 : 7	100	1.10E+01	1.61E+01	2.30E+01

Table 3-65
UAS Transect 3 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Cobalt	7 : 7	100	2.30E+00	6.70E+00	1.00E+01
Copper	7 : 7	100	4.80E+01	6.44E+01	7.90E+01
Iron	7 : 7	100	4.10E+03	1.49E+04	2.20E+04
Lead	7 : 7	100	3.55E+01	4.98E+01	6.40E+01
Magnesium	7 : 7	100	3.00E+03	6.33E+03	1.80E+04
Manganese	7 : 7	100	1.20E+02	3.72E+02	6.10E+02
Mercury	7 : 7	100	4.20E-02	6.49E-02	9.30E-02
Molybdenum	7 : 7	100	3.80E-01	8.12E-01	1.40E+00
Nickel	7 : 7	100	1.40E+01	1.87E+01	2.60E+01
Potassium	7 : 7	100	1.20E+03	2.38E+03	3.70E+03
Selenium	2 : 7	29	6.00E-01	1.90E+00	3.20E+00
Silver	1 : 7	14	3.80E-01	3.80E-01	3.80E-01
Vanadium	7 : 7	100	1.30E+01	2.85E+01	4.20E+01
Zinc	7 : 7	100	1.59E+02	2.83E+02	4.60E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-66
UAS Transect 3 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 7	14	2.40E-02	2.40E-02	2.40E-02
Acetone	1 : 7	14	1.80E-01	1.80E-01	1.80E-01
SVOCs					
Benzo(g,h,i)perylene	1 : 7	14	5.30E-02	5.30E-02	5.30E-02
bis(2-Ethylhexyl)phthalate	1 : 7	14	1.20E-01	1.20E-01	1.20E-01
PCBs					
Total PCBs	1 : 7	14	9.50E-03	9.50E-03	9.50E-03
Dioxin					
Dioxin TEQ-HH	1 : 1	100	2.10E-08	2.10E-08	2.10E-08
Metals					
Aluminum	7 : 7	100	2.10E+03	8.34E+03	1.40E+04
Antimony	4 : 7	57	6.70E-01	7.58E-01	7.90E-01
Arsenic	7 : 7	100	1.90E+00	5.59E+00	8.50E+00
Barium	7 : 7	100	4.50E+01	1.81E+02	2.50E+02
Beryllium	2 : 7	29	7.30E-01	8.10E-01	8.90E-01
Cadmium	6 : 7	86	1.70E-01	3.36E-01	5.70E-01
Calcium	7 : 7	100	2.40E+03	1.10E+04	1.80E+04
Chromium	7 : 7	100	5.60E+00	1.34E+01	2.10E+01
Cobalt	7 : 7	100	2.80E+00	6.11E+00	8.10E+00
Copper	7 : 7	100	2.80E+00	1.27E+01	1.90E+01
Iron	7 : 7	100	5.00E+03	1.35E+04	1.90E+04
Lead	7 : 7	100	4.50E+00	1.06E+01	1.70E+01
Magnesium	7 : 7	100	1.70E+03	5.72E+03	7.70E+03
Manganese	7 : 7	100	9.20E+01	2.99E+02	5.50E+02
Mercury	7 : 7	100	2.90E-03	2.73E-02	7.80E-02
Molybdenum	7 : 7	100	2.50E-01	5.78E-01	9.50E-01
Nickel	7 : 7	100	7.40E+00	1.57E+01	2.20E+01
Potassium	7 : 7	100	4.90E+02	1.75E+03	2.70E+03
Vanadium	7 : 7	100	7.70E+00	2.37E+01	3.80E+01
Zinc	7 : 7	100	2.40E+01	8.11E+01	2.60E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-67
UAS Transect 4 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
2-Methylnaphthalene	2 : 7	29	3.30E-02	5.25E-02	7.20E-02
Acenaphthene	4 : 7	57	5.70E-02	3.85E-01	1.20E+00
Acenaphthylene	3 : 7	43	2.40E-02	4.93E-02	7.50E-02
Anthracene	5 : 7	71	3.00E-02	6.33E-01	2.30E+00
Benzo(a)anthracene	7 : 7	100	3.40E-02	9.52E-01	4.30E+00
Benzo(a)pyrene	4 : 7	57	2.80E-01	1.37E+00	3.50E+00
Benzo(b)fluoranthene	4 : 7	57	2.40E-01	1.35E+00	3.50E+00
Benzo(g,h,i)perylene	3 : 7	43	4.10E-01	1.08E+00	2.20E+00
Benzo(k)fluoranthene	4 : 7	57	2.30E-01	1.20E+00	3.30E+00
Carbazole	4 : 7	57	6.20E-02	3.28E-01	1.00E+00
Chrysene	7 : 7	100	3.50E-02	9.78E-01	4.40E+00
Dibenzo(a,h)anthracene	1 : 7	14	8.10E-01	8.10E-01	8.10E-01
Dibenzofuran	3 : 7	43	4.50E-02	3.12E-01	7.70E-01
Fluoranthene	7 : 7	100	4.10E-02	2.20E+00	1.00E+01
Fluorene	4 : 7	57	4.40E-02	4.32E-01	1.40E+00
Indeno(1,2,3-cd)pyrene	3 : 7	43	3.10E-01	9.57E-01	2.00E+00
Naphthalene	2 : 7	29	4.10E-02	5.45E-02	6.80E-02
Phenanthrene	6 : 7	86	7.50E-02	2.16E+00	9.20E+00
Pyrene	6 : 7	86	1.60E-01	2.17E+00	8.50E+00
Pesticides					
4,4'-DDE	3 : 7	43	9.00E-04	1.20E-03	1.50E-03
4,4'-DDT	4 : 7	57	9.20E-04	1.78E-03	3.00E-03
Alpha Chlordane	4 : 7	57	1.00E-03	1.82E-03	3.10E-03
beta-BHC	4 : 7	57	1.00E-04	6.63E-04	1.30E-03
delta-BHC	1 : 7	14	2.40E-04	2.40E-04	2.40E-04
Dieldrin	5 : 7	71	1.60E-03	3.92E-03	1.00E-02
Endrin ketone	3 : 7	43	1.30E-03	2.53E-03	4.00E-03
Gamma Chlordane	4 : 7	57	9.60E-04	3.09E-03	6.60E-03
Heptachlor	2 : 7	29	3.40E-04	4.90E-04	6.40E-04
Heptachlor epoxide	3 : 7	43	1.90E-04	1.08E-03	2.30E-03
Methoxychlor	4 : 7	57	9.30E-04	5.73E-03	9.70E-03
Herbicides					
Pentachlorophenol	7 : 7	100	2.05E-03	9.15E-03	4.00E-02
PCBs					
Total PCBs	3 : 7	43	2.46E-02	4.29E-02	5.80E-02
Dioxin					
Dioxin TEQ-HH	2 : 2	100	5.93E-06	8.65E-06	1.14E-05
Metals					
Aluminum	7 : 7	100	5.10E+03	8.53E+03	1.00E+04
Arsenic	7 : 7	100	3.40E+00	5.71E+00	8.00E+00
Barium	7 : 7	100	7.70E+01	2.99E+02	1.20E+03
Beryllium	7 : 7	100	2.70E-01	5.17E-01	6.50E-01
Cadmium	7 : 7	100	4.60E-01	1.24E+00	2.30E+00
Calcium	7 : 7	100	6.00E+03	6.98E+04	1.50E+05
Chromium	7 : 7	100	1.10E+01	1.76E+01	2.90E+01
Cobalt	7 : 7	100	3.40E+00	5.52E+00	6.80E+00

Table 3-67
UAS Transect 4 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Copper	7 : 7	100	2.55E+01	6.48E+01	1.80E+02
Iron	7 : 7	100	7.70E+03	1.40E+04	1.90E+04
Lead	7 : 7	100	2.80E+01	1.12E+02	2.60E+02
Magnesium	7 : 7	100	3.90E+03	9.20E+03	2.10E+04
Manganese	7 : 7	100	1.80E+02	3.75E+02	4.40E+02
Mercury	7 : 7	100	2.70E-02	1.39E-01	5.70E-01
Molybdenum	7 : 7	100	3.20E-01	1.11E+00	2.30E+00
Nickel	7 : 7	100	1.20E+01	1.66E+01	1.90E+01
Potassium	7 : 7	100	1.20E+03	1.67E+03	2.10E+03
Silver	1 : 7	14	2.40E-01	2.40E-01	2.40E-01
Vanadium	7 : 7	100	1.50E+01	2.40E+01	2.90E+01
Zinc	7 : 7	100	7.60E+01	2.14E+02	5.50E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-68
UAS Transect 4 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 7	14	5.70E-03	5.70E-03	5.70E-03
Acetone	3 : 7	43	7.20E-03	4.31E-02	8.60E-02
SVOCs					
2-Methylnaphthalene	1 : 7	14	1.60E-01	1.60E-01	1.60E-01
Acenaphthene	1 : 7	14	1.00E+00	1.00E+00	1.00E+00
Acenaphthylene	1 : 7	14	7.20E-01	7.20E-01	7.20E-01
Anthracene	2 : 7	29	2.60E-02	2.71E+00	5.40E+00
Benzo(a)anthracene	4 : 7	57	3.30E-02	3.04E+00	1.20E+01
Benzo(a)pyrene	1 : 7	14	5.60E+00	5.60E+00	5.60E+00
Benzo(b)fluoranthene	1 : 7	14	9.80E+00	9.80E+00	9.80E+00
Benzo(g,h,i)perylene	1 : 7	14	3.30E-01	3.30E-01	3.30E-01
Benzo(k)fluoranthene	1 : 7	14	6.30E+00	6.30E+00	6.30E+00
bis(2-Ethylhexyl)phthalate	1 : 7	14	8.70E+00	8.70E+00	8.70E+00
Carbazole	1 : 7	14	8.20E-01	8.20E-01	8.20E-01
Chrysene	4 : 7	57	3.90E-02	2.79E+00	1.10E+01
Dibenzo(a,h)anthracene	1 : 7	14	1.90E+00	1.90E+00	1.90E+00
Dibenzofuran	1 : 7	14	1.10E+00	1.10E+00	1.10E+00
Fluoranthene	3 : 7	43	5.40E-02	7.74E+00	2.30E+01
Fluorene	1 : 7	14	2.00E+00	2.00E+00	2.00E+00
Indeno(1,2,3-cd)pyrene	1 : 7	14	3.50E+00	3.50E+00	3.50E+00
Naphthalene	1 : 7	14	6.40E-02	6.40E-02	6.40E-02
Phenanthrene	3 : 7	43	3.60E-02	4.71E+00	1.40E+01
Pyrene	3 : 7	43	5.60E-02	6.06E+00	1.80E+01
Pesticides					
beta-BHC	1 : 7	14	1.40E-04	1.40E-04	1.40E-04
Dieldrin	1 : 7	14	1.30E-03	1.30E-03	1.30E-03
Methoxychlor	1 : 7	14	7.60E-03	7.60E-03	7.60E-03
Herbicides					
2,4,5-TP (Silvex)	1 : 7	14	1.50E-03	1.50E-03	1.50E-03
Pentachlorophenol	4 : 7	57	1.80E-03	3.60E-03	5.90E-03
PCBs					
Total PCBs	4 : 7	57	1.71E-02	3.72E-02	5.39E-02
Dioxin					
Dioxin TEQ-HH	1 : 2	50	1.80E-08	1.80E-08	1.80E-08
Metals					
Aluminum	7 : 7	100	3.30E+03	6.50E+03	9.00E+03
Arsenic	7 : 7	100	3.30E+00	4.79E+00	6.00E+00
Barium	7 : 7	100	8.75E+01	1.55E+02	2.10E+02
Beryllium	7 : 7	100	1.95E-01	3.74E-01	5.00E-01
Cadmium	4 : 7	57	1.30E-01	4.50E-01	1.00E+00
Calcium	7 : 7	100	6.45E+03	3.00E+04	1.30E+05
Chromium	7 : 7	100	1.00E+01	1.33E+01	1.70E+01
Cobalt	7 : 7	100	4.20E+00	4.95E+00	5.90E+00
Copper	7 : 7	100	3.70E+00	1.26E+01	3.00E+01
Iron	7 : 7	100	7.85E+03	1.13E+04	1.60E+04
Lead	7 : 7	100	6.45E+00	3.02E+01	1.30E+02

Table 3-68
UAS Transect 4 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Magnesium	7 : 7	100	2.90E+03	6.41E+03	1.10E+04
Manganese	7 : 7	100	1.35E+02	2.52E+02	3.50E+02
Mercury	7 : 7	100	5.30E-03	1.66E-02	3.90E-02
Molybdenum	7 : 7	100	1.70E-01	3.80E-01	7.60E-01
Nickel	7 : 7	100	1.20E+01	1.44E+01	1.80E+01
Potassium	7 : 7	100	6.35E+02	1.30E+03	1.70E+03
Sodium	1 : 7	14	3.80E+02	3.80E+02	3.80E+02
Vanadium	7 : 7	100	1.20E+01	2.01E+01	2.60E+01
Zinc	7 : 7	100	2.65E+01	6.71E+01	1.90E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-69
UAS Transect 5 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	4 : 6	67	1.40E-02	2.27E-02	3.40E-02
Acetone	4 : 6	67	1.60E-01	2.42E-01	4.60E-01
SVOCs					
Benzo(a)anthracene	3 : 6	50	3.60E-02	6.83E-02	9.60E-02
Benzo(a)pyrene	1 : 6	17	1.30E-01	1.30E-01	1.30E-01
Benzo(b)fluoranthene	3 : 6	50	8.60E-02	9.80E-02	1.15E-01
Benzo(g,h,i)perylene	1 : 6	17	1.30E-01	1.30E-01	1.30E-01
Benzo(k)fluoranthene	1 : 6	17	1.40E-01	1.40E-01	1.40E-01
bis(2-Ethylhexyl)phthalate	1 : 6	17	5.30E-02	5.30E-02	5.30E-02
Chrysene	3 : 6	50	4.90E-02	1.10E-01	1.60E-01
Dibenzo(a,h)anthracene	2 : 6	33	4.80E-02	1.04E-01	1.60E-01
Diethylphthalate	1 : 6	17	3.90E-02	3.90E-02	3.90E-02
Di-n-butylphthalate	1 : 6	17	3.20E-02	3.20E-02	3.20E-02
Fluoranthene	2 : 6	33	2.00E-01	2.23E-01	2.45E-01
Indeno(1,2,3-cd)pyrene	3 : 6	50	7.90E-02	1.20E-01	1.90E-01
Phenanthrene	3 : 6	50	2.30E-02	6.40E-02	9.50E-02
Pyrene	2 : 6	33	1.60E-01	1.75E-01	1.90E-01
Pesticides					
4,4'-DDE	1 : 6	17	3.60E-04	3.60E-04	3.60E-04
4,4'-DDT	1 : 6	17	3.50E-04	3.50E-04	3.50E-04
Alpha Chlordane	1 : 6	17	1.60E-04	1.60E-04	1.60E-04
beta-BHC	1 : 6	17	1.00E-04	1.00E-04	1.00E-04
Endrin aldehyde	2 : 6	33	2.40E-04	4.25E-04	6.10E-04
Endrin ketone	1 : 6	17	3.90E-04	3.90E-04	3.90E-04
Heptachlor epoxide	1 : 6	17	9.10E-05	9.10E-05	9.10E-05
Methoxychlor	2 : 6	33	1.30E-03	1.65E-03	2.00E-03
Herbicides					
Dicamba	1 : 6	17	2.90E-03	2.90E-03	2.90E-03
MCPA	2 : 6	33	2.90E+00	3.65E+00	4.40E+00
MCPP	6 : 6	100	2.20E+00	4.05E+00	6.80E+00
Pentachlorophenol	2 : 6	33	1.60E-03	2.00E-03	2.40E-03
PCBs					
Total PCBs	6 : 6	100	2.69E-02	9.73E-02	1.73E-01
Dioxin					
Dioxin TEQ-HH	1 : 1	100	4.41E-06	4.41E-06	4.41E-06
Metals					
Aluminum	6 : 6	100	7.65E+03	9.63E+03	1.10E+04
Antimony	3 : 6	50	6.20E-01	7.18E-01	9.05E-01
Arsenic	6 : 6	100	6.00E+00	6.72E+00	7.60E+00
Barium	6 : 6	100	1.70E+02	1.79E+02	1.90E+02
Beryllium	6 : 6	100	5.20E-01	5.76E-01	6.60E-01
Cadmium	6 : 6	100	2.30E+00	3.43E+00	8.40E+00
Calcium	6 : 6	100	3.80E+03	7.90E+03	2.05E+04
Chromium	6 : 6	100	1.40E+01	1.59E+01	1.85E+01
Cobalt	6 : 6	100	5.40E+00	6.11E+00	6.90E+00
Copper	6 : 6	100	3.80E+01	5.04E+01	8.45E+01

Table 3-69
UAS Transect 5 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Iron	6 : 6	100	1.30E+04	1.46E+04	1.60E+04
Lead	6 : 6	100	4.50E+01	7.13E+01	1.70E+02
Magnesium	6 : 6	100	3.00E+03	3.88E+03	5.00E+03
Manganese	6 : 6	100	2.80E+02	3.48E+02	3.90E+02
Mercury	6 : 6	100	4.90E-02	6.62E-02	1.15E-01
Molybdenum	6 : 6	100	2.20E-01	4.03E-01	6.80E-01
Nickel	6 : 6	100	1.50E+01	1.71E+01	1.90E+01
Potassium	6 : 6	100	1.50E+03	1.85E+03	2.40E+03
Selenium	1 : 6	17	4.80E-01	4.80E-01	4.80E-01
Silver	1 : 6	17	5.45E-01	5.45E-01	5.45E-01
Vanadium	6 : 6	100	2.50E+01	2.73E+01	2.90E+01
Zinc	6 : 6	100	2.30E+02	3.58E+02	9.80E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-70
UAS Transect 5 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 6	17	1.30E-02	1.30E-02	1.30E-02
Acetone	1 : 6	17	1.40E-01	1.40E-01	1.40E-01
Benzene	1 : 6	17	9.80E-04	9.80E-04	9.80E-04
Toluene	1 : 6	17	1.80E-03	1.80E-03	1.80E-03
SVOCs					
Benzo(b)fluoranthene	1 : 6	17	5.50E-02	5.50E-02	5.50E-02
bis(2-Ethylhexyl)phthalate	3 : 6	50	1.20E-01	1.20E-01	1.20E-01
Dibenzo(a,h)anthracene	1 : 6	17	1.40E-01	1.40E-01	1.40E-01
Di-n-octylphthalate	1 : 6	17	1.40E-01	1.40E-01	1.40E-01
Indeno(1,2,3-cd)pyrene	1 : 6	17	1.30E-01	1.30E-01	1.30E-01
Herbicides					
MCPA	1 : 6	17	2.30E+00	2.30E+00	2.30E+00
MCPP	2 : 6	33	2.90E+00	2.90E+00	2.90E+00
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.05E-07	1.05E-07	1.05E-07
Metals					
Aluminum	6 : 6	100	4.80E+03	6.78E+03	9.60E+03
Arsenic	6 : 6	100	3.50E+00	4.99E+00	6.40E+00
Barium	6 : 6	100	9.30E+01	1.66E+02	2.10E+02
Beryllium	6 : 6	100	2.80E-01	3.98E-01	5.60E-01
Cadmium	6 : 6	100	8.40E-02	1.92E-01	3.30E-01
Calcium	6 : 6	100	3.50E+03	1.28E+04	1.90E+04
Chromium	6 : 6	100	1.05E+01	1.39E+01	2.00E+01
Cobalt	6 : 6	100	3.90E+00	5.04E+00	6.10E+00
Copper	6 : 6	100	5.70E+00	9.38E+00	1.60E+01
Iron	6 : 6	100	8.50E+03	1.13E+04	1.50E+04
Lead	6 : 6	100	6.20E+00	8.06E+00	1.10E+01
Magnesium	6 : 6	100	2.60E+03	5.37E+03	7.40E+03
Manganese	6 : 6	100	1.40E+02	2.39E+02	3.20E+02
Mercury	6 : 6	100	1.00E-02	2.90E-02	8.60E-02
Molybdenum	5 : 6	83	1.60E-01	2.06E-01	2.50E-01
Nickel	6 : 6	100	1.20E+01	1.43E+01	1.70E+01
Potassium	6 : 6	100	9.50E+02	1.32E+03	1.80E+03
Vanadium	6 : 6	100	1.60E+01	2.05E+01	2.60E+01
Zinc	6 : 6	100	3.10E+01	4.11E+01	5.60E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-70
UAS Transect 5 Floodplain Subsurface Soil Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-71
UAS Transect 6 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
Acenaphthene	1 : 5	20	1.60E-02	1.60E-02	1.60E-02
Anthracene	2 : 5	40	3.20E-02	3.35E-02	3.50E-02
Benzo(a)anthracene	5 : 5	100	2.50E-02	9.54E-02	1.60E-01
Benzo(b)fluoranthene	5 : 5	100	3.40E-02	9.98E-02	1.60E-01
bis(2-Ethylhexyl)phthalate	1 : 5	20	2.90E-02	2.90E-02	2.90E-02
Chrysene	5 : 5	100	3.00E-02	1.20E-01	2.00E-01
Dibenzo(a,h)anthracene	2 : 5	40	2.60E-02	4.75E-02	6.90E-02
Fluoranthene	5 : 5	100	4.20E-02	2.04E-01	3.60E-01
Indeno(1,2,3-cd)pyrene	3 : 5	60	5.10E-02	9.03E-02	1.10E-01
Phenanthrene	4 : 5	80	5.50E-02	1.19E-01	1.60E-01
Pyrene	4 : 5	80	9.70E-02	2.12E-01	3.10E-01
Pesticides					
4,4'-DDD	1 : 5	20	6.40E-03	6.40E-03	6.40E-03
4,4'-DDE	3 : 5	60	7.80E-04	1.13E-02	1.80E-02
4,4'-DDT	3 : 5	60	1.60E-03	9.05E-02	1.40E-01
Alpha Chlordane	1 : 5	20	5.00E-04	5.00E-04	5.00E-04
Dieldrin	1 : 5	20	1.80E-03	1.80E-03	1.80E-03
Gamma Chlordane	1 : 5	20	9.40E-04	9.40E-04	9.40E-04
Herbicides					
MCPP	1 : 5	20	4.50E+00	4.50E+00	4.50E+00
Pentachlorophenol	3 : 5	60	2.90E-03	5.80E-03	9.90E-03
PCBs					
Total PCBs	4 : 5	80	5.91E-02	1.43E-01	3.85E-01
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.59E-05	1.59E-05	1.59E-05
Metals					
Aluminum	5 : 5	100	7.50E+03	8.80E+03	9.70E+03
Antimony	3 : 5	60	6.50E-01	7.20E-01	7.70E-01
Arsenic	5 : 5	100	4.00E+00	6.00E+00	9.20E+00
Barium	5 : 5	100	8.90E+01	1.46E+02	1.90E+02
Beryllium	4 : 5	80	4.90E-01	5.98E-01	8.60E-01
Cadmium	5 : 5	100	8.10E-01	1.02E+00	1.60E+00
Calcium	5 : 5	100	1.00E+04	6.64E+04	1.40E+05
Chromium	5 : 5	100	1.30E+01	1.50E+01	1.80E+01
Cobalt	5 : 5	100	4.00E+00	6.24E+00	9.20E+00
Copper	5 : 5	100	1.80E+01	2.36E+01	3.10E+01
Iron	5 : 5	100	1.00E+04	1.42E+04	1.90E+04
Lead	5 : 5	100	2.90E+01	4.34E+01	7.80E+01
Magnesium	5 : 5	100	4.90E+03	9.58E+03	1.80E+04
Manganese	5 : 5	100	3.10E+02	4.22E+02	6.60E+02
Mercury	5 : 5	100	3.90E-02	5.78E-02	8.60E-02
Molybdenum	5 : 5	100	2.80E-01	9.86E-01	3.20E+00
Nickel	5 : 5	100	1.30E+01	1.72E+01	2.30E+01
Potassium	5 : 5	100	1.30E+03	1.80E+03	2.40E+03
Selenium	1 : 5	20	6.80E-01	6.80E-01	6.80E-01
Vanadium	5 : 5	100	2.40E+01	2.84E+01	3.30E+01

Table 3-71
UAS Transect 6 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Zinc	5 : 5	100	8.20E+01	1.10E+02	1.60E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-72
UAS Transect 6 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Hexanone	1 : 5	20	3.50E-03	3.50E-03	3.50E-03
Toluene	1 : 5	20	2.80E-03	2.80E-03	2.80E-03
SVOCs					
Acenaphthene	2 : 5	40	4.10E-02	1.01E-01	1.60E-01
Acenaphthylene	1 : 5	20	4.90E-02	4.90E-02	4.90E-02
Anthracene	3 : 5	60	6.60E-02	1.73E-01	3.60E-01
Benzo(a)anthracene	4 : 5	80	3.30E-02	3.53E-01	9.40E-01
Benzo(a)pyrene	2 : 5	40	2.70E-01	5.75E-01	8.80E-01
Benzo(b)fluoranthene	3 : 5	60	1.50E-01	3.50E-01	6.40E-01
Benzo(g,h,i)perylene	1 : 5	20	6.30E-01	6.30E-01	6.30E-01
Benzo(k)fluoranthene	2 : 5	40	2.20E-01	6.60E-01	1.10E+00
bis(2-Ethylhexyl)phthalate	3 : 5	60	1.20E-01	1.70E-01	2.70E-01
Carbazole	2 : 5	40	3.60E-02	1.03E-01	1.70E-01
Chrysene	4 : 5	80	4.20E-02	4.06E-01	1.10E+00
Dibenzo(a,h)anthracene	2 : 5	40	9.20E-02	1.81E-01	2.70E-01
Dibenzofuran	1 : 5	20	1.20E-01	1.20E-01	1.20E-01
Fluoranthene	4 : 5	80	7.90E-02	8.97E-01	2.50E+00
Fluorene	2 : 5	40	3.60E-02	8.30E-02	1.30E-01
Indeno(1,2,3-cd)pyrene	3 : 5	60	1.00E-01	2.73E-01	5.70E-01
Naphthalene	2 : 5	40	4.10E-02	4.50E-02	4.90E-02
Phenanthrene	4 : 5	80	5.70E-02	6.67E-01	1.90E+00
Pyrene	3 : 5	60	3.10E-01	1.06E+00	2.30E+00
Herbicides					
MCPP	1 : 5	20	3.00E+00	3.00E+00	3.00E+00
Pentachlorophenol	2 : 5	40	1.40E-03	2.95E-03	4.50E-03
PCBs					
Total PCBs	1 : 5	20	4.30E-03	4.30E-03	4.30E-03
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.92E-06	1.92E-06	1.92E-06
Metals					
Aluminum	5 : 5	100	6.60E+03	9.08E+03	1.20E+04
Antimony	2 : 5	40	1.10E+00	1.85E+00	2.60E+00
Arsenic	5 : 5	100	5.50E+00	6.36E+00	7.80E+00
Barium	5 : 5	100	1.80E+02	1.94E+02	2.20E+02
Beryllium	5 : 5	100	4.30E-01	5.32E-01	6.30E-01
Cadmium	5 : 5	100	2.30E-01	6.46E-01	9.60E-01
Calcium	5 : 5	100	1.70E+04	3.18E+04	6.40E+04
Chromium	5 : 5	100	1.20E+01	1.68E+01	2.10E+01
Cobalt	5 : 5	100	5.10E+00	6.80E+00	8.60E+00
Copper	5 : 5	100	1.20E+01	2.34E+01	3.50E+01
Iron	5 : 5	100	1.20E+04	1.50E+04	1.80E+04
Lead	5 : 5	100	8.30E+00	1.13E+02	2.40E+02
Magnesium	5 : 5	100	4.80E+03	5.80E+03	6.90E+03
Manganese	5 : 5	100	2.70E+02	3.54E+02	4.00E+02
Mercury	5 : 5	100	2.50E-02	7.34E-02	1.90E-01
Molybdenum	5 : 5	100	2.70E-01	7.16E-01	1.10E+00

Table 3-72
UAS Transect 6 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Nickel	5 : 5	100	1.40E+01	1.84E+01	2.40E+01
Potassium	5 : 5	100	1.20E+03	1.50E+03	2.00E+03
Vanadium	5 : 5	100	2.10E+01	2.68E+01	3.30E+01
Zinc	5 : 5	100	4.50E+01	1.04E+02	1.60E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-73
UAS Transect 7 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	3 : 7	43	9.10E-03	2.20E-02	3.70E-02
Acetone	3 : 7	43	6.80E-02	2.79E-01	5.00E-01
Benzene	1 : 7	14	2.10E-03	2.10E-03	2.10E-03
Carbon disulfide	1 : 7	14	2.70E-03	2.70E-03	2.70E-03
Toluene	2 : 7	29	3.40E-03	7.70E-03	1.20E-02
Trichloroethene	1 : 7	14	2.60E-03	2.60E-03	2.60E-03
SVOCs					
2-Methylnaphthalene	1 : 7	14	6.50E-02	6.50E-02	6.50E-02
Anthracene	1 : 7	14	4.10E-02	4.10E-02	4.10E-02
Benzo(a)anthracene	7 : 7	100	3.60E-02	9.72E-02	3.60E-01
Benzo(a)pyrene	7 : 7	100	4.40E-02	1.07E-01	3.60E-01
Benzo(b)fluoranthene	7 : 7	100	4.00E-02	1.25E-01	4.30E-01
Benzo(g,h,i)perylene	7 : 7	100	4.00E-02	9.31E-02	2.70E-01
Benzo(k)fluoranthene	7 : 7	100	3.70E-02	8.84E-02	3.10E-01
bis(2-Ethylhexyl)phthalate	3 : 7	43	4.20E-02	5.33E-02	6.40E-02
Butylbenzylphthalate	1 : 7	14	5.80E-02	5.80E-02	5.80E-02
Carbazole	1 : 7	14	5.80E-02	5.80E-02	5.80E-02
Chrysene	7 : 7	100	4.80E-02	1.44E-01	5.30E-01
Dibenzo(a,h)anthracene	1 : 7	14	1.00E-01	1.00E-01	1.00E-01
Di-n-butylphthalate	7 : 7	100	4.00E-02	8.60E-02	1.70E-01
Fluoranthene	7 : 7	100	8.40E-02	2.42E-01	9.70E-01
Indeno(1,2,3-cd)pyrene	2 : 7	29	5.20E-02	1.51E-01	2.50E-01
Phenanthrene	7 : 7	100	3.70E-02	1.01E-01	4.30E-01
Pyrene	7 : 7	100	7.20E-02	1.82E-01	7.00E-01
Pesticides					
4,4'-DDE	6 : 7	86	3.00E-04	1.38E-02	5.40E-02
4,4'-DDT	5 : 7	71	1.10E-03	9.80E-03	2.90E-02
Dieldrin	2 : 7	29	2.70E-04	1.64E-03	3.00E-03
Endosulfan II	1 : 7	14	1.00E-03	1.00E-03	1.00E-03
Endrin ketone	4 : 7	57	1.70E-04	1.01E-03	1.90E-03
Gamma Chlordane	3 : 7	43	1.00E-04	1.03E-03	2.20E-03
Heptachlor epoxide	1 : 7	14	2.60E-04	2.60E-04	2.60E-04
Methoxychlor	4 : 7	57	9.90E-04	2.67E-03	4.20E-03
Herbicides					
Dicamba	1 : 7	14	2.65E-03	2.65E-03	2.65E-03
Pentachlorophenol	2 : 7	29	2.00E-03	2.40E-03	2.80E-03
PCBs					
Total PCBs	7 : 7	100	4.01E-02	6.02E-02	9.00E-02
Dioxin					
Dioxin TEQ-HH	1 : 1	100	2.95E-06	2.95E-06	2.95E-06
Metals					
Aluminum	7 : 7	100	6.90E+03	8.40E+03	1.20E+04
Antimony	1 : 7	14	7.30E-01	7.30E-01	7.30E-01
Arsenic	7 : 7	100	6.20E+00	1.08E+01	3.40E+01
Barium	7 : 7	100	1.30E+02	1.66E+02	2.00E+02
Beryllium	1 : 7	14	8.25E-01	8.25E-01	8.25E-01

Table 3-73
UAS Transect 7 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Cadmium	7 : 7	100	1.50E+00	3.19E+00	6.10E+00
Calcium	7 : 7	100	5.95E+03	1.21E+04	2.60E+04
Chromium	7 : 7	100	1.20E+01	1.45E+01	1.75E+01
Cobalt	7 : 7	100	6.00E+00	6.59E+00	7.80E+00
Copper	7 : 7	100	2.10E+01	4.64E+01	1.30E+02
Iron	7 : 7	100	1.30E+04	1.48E+04	1.75E+04
Lead	7 : 7	100	3.60E+01	6.79E+01	1.50E+02
Magnesium	7 : 7	100	2.80E+03	5.40E+03	1.10E+04
Manganese	7 : 7	100	2.70E+02	3.34E+02	4.35E+02
Mercury	7 : 7	100	4.40E-02	8.72E-02	1.60E-01
Molybdenum	6 : 7	86	6.50E-01	9.33E-01	1.80E+00
Nickel	7 : 7	100	1.50E+01	2.24E+01	5.50E+01
Potassium	7 : 7	100	1.60E+03	2.09E+03	2.85E+03
Selenium	6 : 7	86	4.90E-01	7.77E-01	1.10E+00
Silver	4 : 7	57	2.10E-01	3.23E-01	4.40E-01
Vanadium	7 : 7	100	2.10E+01	2.51E+01	3.25E+01
Zinc	7 : 7	100	1.50E+02	3.32E+02	6.40E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-74
UAS Transect 7 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	2 : 7	29	7.00E-03	9.50E-03	1.20E-02
Acetone	1 : 7	14	1.40E-01	1.40E-01	1.40E-01
Carbon disulfide	1 : 7	14	5.00E-03	5.00E-03	5.00E-03
Chlorobenzene	1 : 7	14	4.00E-03	4.00E-03	4.00E-03
SVOCs					
Benzo(a)anthracene	2 : 7	29	3.60E-02	3.65E-02	3.70E-02
Benzo(a)pyrene	2 : 7	29	3.40E-02	3.60E-02	3.80E-02
Benzo(b)fluoranthene	2 : 7	29	2.80E-02	3.25E-02	3.70E-02
Benzo(g,h,i)perylene	2 : 7	29	3.50E-02	3.55E-02	3.60E-02
Benzo(k)fluoranthene	1 : 7	14	3.60E-02	3.60E-02	3.60E-02
bis(2-Ethylhexyl)phthalate	6 : 7	86	7.50E-02	1.57E+00	7.60E+00
Chrysene	2 : 7	29	4.30E-02	4.55E-02	4.80E-02
Di-n-butylphthalate	6 : 7	86	4.55E-02	8.11E-02	1.20E-01
Fluoranthene	2 : 7	29	7.80E-02	7.95E-02	8.10E-02
Phenanthrene	2 : 7	29	3.10E-02	3.65E-02	4.20E-02
Pyrene	1 : 7	14	6.00E-02	6.00E-02	6.00E-02
Pesticides					
4,4'-DDE	2 : 7	29	3.40E-04	1.02E-03	1.70E-03
Herbicides					
Pentachlorophenol	2 : 7	29	1.80E-03	1.85E-03	1.90E-03
PCBs					
Total PCBs	1 : 7	14	8.40E-03	8.40E-03	8.40E-03
Dioxin					
Dioxin TEQ-HH	1 : 1	100	8.40E-08	8.40E-08	8.40E-08
Metals					
Aluminum	7 : 7	100	6.00E+03	9.39E+03	2.20E+04
Antimony	1 : 7	14	5.60E-01	5.60E-01	5.60E-01
Arsenic	7 : 7	100	4.50E+00	5.98E+00	1.10E+01
Barium	7 : 7	100	1.70E+02	1.99E+02	2.90E+02
Beryllium	1 : 7	14	1.20E+00	1.20E+00	1.20E+00
Cadmium	7 : 7	100	2.65E-01	1.11E+00	5.40E+00
Calcium	7 : 7	100	6.00E+03	1.24E+04	1.70E+04
Chromium	7 : 7	100	1.10E+01	2.27E+01	5.00E+01
Cobalt	7 : 7	100	5.10E+00	6.57E+00	1.10E+01
Copper	7 : 7	100	8.10E+00	1.43E+01	3.30E+01
Iron	7 : 7	100	1.10E+04	1.42E+04	2.60E+04
Lead	7 : 7	100	9.00E+00	1.63E+01	3.70E+01
Magnesium	7 : 7	100	4.30E+03	6.09E+03	7.10E+03
Manganese	7 : 7	100	2.20E+02	2.55E+02	3.00E+02
Mercury	7 : 7	100	1.50E-02	6.06E-02	2.90E-01
Molybdenum	4 : 7	57	4.50E-01	6.11E-01	7.85E-01
Nickel	7 : 7	100	1.30E+01	2.15E+01	4.20E+01
Potassium	7 : 7	100	1.30E+03	1.88E+03	4.00E+03
Sodium	1 : 7	14	1.50E+02	1.50E+02	1.50E+02
Vanadium	7 : 7	100	1.90E+01	2.59E+01	5.00E+01
Zinc	7 : 7	100	4.30E+01	3.05E+02	1.80E+03

Table 3-74
UAS Transect 7 Floodplain Subsurface Soil Data Summary

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-75
DAS Transect 1 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	2 : 3	67	1.90E-02	2.55E-02	3.20E-02
Acetone	3 : 3	100	2.40E-01	3.20E-01	3.90E-01
Carbon disulfide	1 : 3	33	2.60E-03	2.60E-03	2.60E-03
Methylene chloride (Dichloromethane)	2 : 3	67	1.80E-03	1.95E-03	2.10E-03
Toluene	1 : 3	33	2.30E-03	2.30E-03	2.30E-03
SVOCs					
bis(2-Ethylhexyl)phthalate	1 : 3	33	1.60E-01	1.60E-01	1.60E-01
Pesticides					
4,4'-DDE	2 : 3	67	4.00E-04	4.82E-04	5.65E-04
Dieldrin	1 : 3	33	1.50E-03	1.50E-03	1.50E-03
Herbicides					
2,4-D	1 : 3	33	3.60E-03	3.60E-03	3.60E-03
Dicamba	2 : 3	67	1.20E-03	1.45E-03	1.70E-03
Pentachlorophenol	2 : 3	67	2.10E-03	2.77E-03	3.45E-03
PCBs					
Total PCBs	3 : 3	100	2.80E-02	4.50E-02	7.20E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	6.15E-06	9.44E-06	1.56E-05
Metals					
Aluminum	3 : 3	100	5.80E+03	6.53E+03	7.80E+03
Arsenic	3 : 3	100	7.50E+00	8.00E+00	8.70E+00
Barium	3 : 3	100	1.20E+02	1.37E+02	1.60E+02
Beryllium	3 : 3	100	4.60E-01	4.77E-01	5.00E-01
Cadmium	3 : 3	100	1.70E+00	2.20E+00	3.00E+00
Calcium	3 : 3	100	5.10E+03	6.57E+03	7.80E+03
Chromium	3 : 3	100	1.10E+01	1.23E+01	1.40E+01
Cobalt	3 : 3	100	5.80E+00	6.50E+00	7.80E+00
Copper	3 : 3	100	7.30E+01	8.52E+01	9.75E+01
Iron	3 : 3	100	1.20E+04	1.33E+04	1.50E+04
Lead	3 : 3	100	5.00E+01	6.52E+01	9.55E+01
Magnesium	3 : 3	100	3.20E+03	4.22E+03	5.05E+03
Manganese	3 : 3	100	3.05E+02	3.65E+02	4.70E+02
Mercury	3 : 3	100	5.40E-02	6.53E-02	8.20E-02
Molybdenum	3 : 3	100	4.15E-01	4.72E-01	5.00E-01
Nickel	3 : 3	100	1.60E+01	1.75E+01	1.90E+01
Potassium	3 : 3	100	1.30E+03	1.43E+03	1.60E+03
Silver	3 : 3	100	2.80E-01	3.72E-01	4.95E-01
Thallium	3 : 3	100	7.90E-01	8.70E-01	9.80E-01
Vanadium	3 : 3	100	1.80E+01	2.07E+01	2.50E+01
Zinc	3 : 3	100	2.30E+02	2.58E+02	2.95E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.

Table 3-75
DAS Transect 1 Floodplain Surface Soil Data Summary

VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-76
DAS Transect 1 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 3	33	2.50E-02	2.50E-02	2.50E-02
Acetone	1 : 3	33	2.40E-01	2.40E-01	2.40E-01
Pesticides					
4,4'-DDD	1 : 3	33	5.30E-04	5.30E-04	5.30E-04
Dieldrin	1 : 3	33	1.20E-03	1.20E-03	1.20E-03
Heptachlor	1 : 3	33	2.60E-04	2.60E-04	2.60E-04
Herbicides					
Dicamba	1 : 3	33	1.30E-03	1.30E-03	1.30E-03
MCPA	1 : 3	33	1.70E+00	1.70E+00	1.70E+00
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.62E-07	1.62E-07	1.62E-07
Metals					
Aluminum	3 : 3	100	3.50E+03	4.97E+03	5.80E+03
Arsenic	3 : 3	100	3.80E+00	4.93E+00	5.90E+00
Barium	3 : 3	100	1.20E+02	1.50E+02	1.90E+02
Beryllium	3 : 3	100	2.40E-01	3.43E-01	4.00E-01
Cadmium	3 : 3	100	1.60E-01	2.47E-01	3.10E-01
Calcium	3 : 3	100	6.20E+03	1.03E+04	1.60E+04
Chromium	3 : 3	100	6.50E+00	8.70E+00	9.90E+00
Cobalt	3 : 3	100	4.10E+00	5.03E+00	5.70E+00
Copper	3 : 3	100	5.40E+00	9.80E+00	1.30E+01
Iron	3 : 3	100	8.30E+03	1.04E+04	1.20E+04
Lead	3 : 3	100	5.50E+00	8.03E+00	1.10E+01
Magnesium	3 : 3	100	4.10E+03	4.87E+03	6.10E+03
Manganese	3 : 3	100	2.40E+02	2.87E+02	3.50E+02
Molybdenum	3 : 3	100	2.70E-01	3.83E-01	4.70E-01
Nickel	3 : 3	100	1.10E+01	1.33E+01	1.50E+01
Potassium	3 : 3	100	7.50E+02	1.05E+03	1.30E+03
Vanadium	3 : 3	100	1.20E+01	1.57E+01	1.80E+01
Zinc	3 : 3	100	2.50E+01	3.73E+01	5.00E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-77
DAS Transect 2 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	2 : 3	67	1.20E-02	2.00E-02	2.80E-02
Acetone	2 : 3	67	2.00E-01	2.35E-01	2.70E-01
Methylene chloride (Dichloromethane)	1 : 3	33	2.00E-03	2.00E-03	2.00E-03
Toluene	1 : 3	33	3.40E-03	3.40E-03	3.40E-03
SVOCs					
Benzo(a)anthracene	1 : 3	33	4.60E-02	4.60E-02	4.60E-02
Benzo(a)pyrene	1 : 3	33	5.60E-02	5.60E-02	5.60E-02
Benzo(b)fluoranthene	2 : 3	67	3.20E-02	3.70E-02	4.20E-02
Benzo(k)fluoranthene	1 : 3	33	6.30E-02	6.30E-02	6.30E-02
bis(2-Ethylhexyl)phthalate	2 : 3	67	5.70E-02	5.90E-02	6.10E-02
Chrysene	2 : 3	67	2.90E-02	4.90E-02	6.90E-02
Di-n-butylphthalate	1 : 3	33	1.20E-01	1.20E-01	1.20E-01
Fluoranthene	1 : 3	33	1.10E-01	1.10E-01	1.10E-01
Phenanthrene	1 : 3	33	5.20E-02	5.20E-02	5.20E-02
Pyrene	1 : 3	33	1.00E-01	1.00E-01	1.00E-01
Pesticides					
4,4'-DDD	1 : 3	33	5.60E-04	5.60E-04	5.60E-04
4,4'-DDT	1 : 3	33	1.40E-02	1.40E-02	1.40E-02
Dieldrin	1 : 3	33	1.30E-03	1.30E-03	1.30E-03
Herbicides					
Dicamba	1 : 3	33	1.30E-03	1.30E-03	1.30E-03
MCPA	1 : 3	33	2.00E+00	2.00E+00	2.00E+00
Pentachlorophenol	2 : 3	67	1.40E-03	2.00E-03	2.60E-03
PCBs					
Total PCBs	2 : 3	67	1.20E-02	2.65E-02	4.10E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	2.76E-06	6.11E-06	1.20E-05
Metals					
Aluminum	3 : 3	100	7.20E+03	1.04E+04	1.30E+04
Arsenic	3 : 3	100	6.00E+00	7.53E+00	9.00E+00
Barium	3 : 3	100	1.60E+02	1.80E+02	1.90E+02
Beryllium	3 : 3	100	5.50E-01	6.77E-01	7.60E-01
Cadmium	3 : 3	100	1.10E+00	2.03E+00	2.60E+00
Calcium	3 : 3	100	1.10E+04	1.43E+04	1.60E+04
Chromium	3 : 3	100	1.30E+01	2.67E+01	4.80E+01
Cobalt	3 : 3	100	6.40E+00	7.20E+00	8.30E+00
Copper	3 : 3	100	5.30E+01	8.57E+01	1.10E+02
Iron	3 : 3	100	1.60E+04	2.00E+04	2.50E+04
Lead	3 : 3	100	2.40E+01	6.27E+01	8.80E+01
Magnesium	3 : 3	100	4.80E+03	6.70E+03	9.50E+03
Manganese	3 : 3	100	4.30E+02	7.30E+02	1.20E+03
Mercury	3 : 3	100	7.60E-02	8.53E-02	9.40E-02
Molybdenum	3 : 3	100	5.50E-01	7.70E-01	9.40E-01
Nickel	3 : 3	100	1.80E+01	2.20E+01	2.40E+01
Potassium	3 : 3	100	1.90E+03	2.27E+03	2.50E+03
Selenium	1 : 3	33	5.50E-01	5.50E-01	5.50E-01

Table 3-77
DAS Transect 2 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Silver	2 : 3	67	4.30E-01	4.55E-01	4.80E-01
Thallium	2 : 3	67	7.10E-01	1.00E+00	1.30E+00
Vanadium	3 : 3	100	2.40E+01	5.93E+01	1.20E+02
Zinc	3 : 3	100	1.40E+02	2.30E+02	2.90E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-78
DAS Transect 2 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 3	33	3.00E-02	3.00E-02	3.00E-02
Acetone	2 : 3	67	2.60E-02	1.03E-01	1.80E-01
Pesticides					
Dieldrin	1 : 3	33	4.10E-04	4.10E-04	4.10E-04
Dioxin					
Dioxin TEQ-HH	1 : 1	100	1.28E-07	1.28E-07	1.28E-07
Metals					
Aluminum	3 : 3	100	2.80E+03	3.52E+03	4.90E+03
Arsenic	3 : 3	100	3.40E+00	3.95E+00	5.00E+00
Barium	3 : 3	100	9.95E+01	1.27E+02	1.70E+02
Beryllium	3 : 3	100	1.90E-01	2.50E-01	3.60E-01
Cadmium	3 : 3	100	1.10E-01	1.73E-01	2.70E-01
Calcium	3 : 3	100	4.90E+03	8.60E+03	1.50E+04
Chromium	3 : 3	100	6.05E+00	7.15E+00	8.90E+00
Cobalt	3 : 3	100	4.00E+00	4.45E+00	5.30E+00
Copper	3 : 3	100	3.70E+00	5.98E+00	1.00E+01
Iron	3 : 3	100	7.75E+03	8.88E+03	1.10E+04
Lead	3 : 3	100	5.25E+00	6.28E+00	8.10E+00
Magnesium	3 : 3	100	3.25E+03	4.18E+03	5.80E+03
Manganese	3 : 3	100	1.40E+02	1.83E+02	2.50E+02
Molybdenum	3 : 3	100	1.60E-01	2.75E-01	4.20E-01
Nickel	3 : 3	100	1.00E+01	1.14E+01	1.40E+01
Potassium	3 : 3	100	5.80E+02	7.65E+02	1.10E+03
Thallium	1 : 3	33	6.30E-01	6.30E-01	6.30E-01
Vanadium	3 : 3	100	1.15E+01	1.32E+01	1.60E+01
Zinc	3 : 3	100	2.35E+01	2.82E+01	3.60E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-79
DAS Transect 3 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
Anthracene	1 : 3	33	2.60E-02	2.60E-02	2.60E-02
Benzo(a)anthracene	3 : 3	100	3.50E-02	6.53E-02	8.20E-02
Benzo(a)pyrene	3 : 3	100	4.30E-02	6.83E-02	8.20E-02
Benzo(b)fluoranthene	3 : 3	100	4.50E-02	7.03E-02	8.40E-02
Benzo(g,h,i)perylene	3 : 3	100	3.80E-02	5.77E-02	7.50E-02
Benzo(k)fluoranthene	3 : 3	100	3.80E-02	6.07E-02	8.30E-02
bis(2-Ethylhexyl)phthalate	3 : 3	100	1.00E-01	2.17E-01	4.30E-01
Chrysene	3 : 3	100	4.60E-02	8.20E-02	1.00E-01
Fluoranthene	3 : 3	100	8.60E-02	1.65E-01	2.20E-01
Phenanthrene	3 : 3	100	2.40E-02	6.97E-02	9.30E-02
Pyrene	2 : 3	67	1.30E-01	1.45E-01	1.60E-01
Pesticides					
4,4'-DDE	2 : 3	67	9.20E-04	1.31E-03	1.70E-03
4,4'-DDT	2 : 3	67	1.30E-03	1.55E-03	1.80E-03
Alpha Chlordane	2 : 3	67	1.20E-03	3.50E-03	5.80E-03
Dieldrin	3 : 3	100	6.70E-04	8.77E-04	9.90E-04
Gamma Chlordane	2 : 3	67	1.50E-03	3.30E-03	5.10E-03
Herbicides					
Dicamba	2 : 3	67	1.60E-03	1.70E-03	1.80E-03
Pentachlorophenol	1 : 3	33	1.50E-03	1.50E-03	1.50E-03
PCBs					
Total PCBs	3 : 3	100	1.30E-02	1.87E-02	3.00E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	3.17E-06	3.80E-06	4.38E-06
Metals					
Aluminum	3 : 3	100	5.50E+03	6.63E+03	8.50E+03
Arsenic	3 : 3	100	6.20E+00	7.43E+00	9.70E+00
Barium	3 : 3	100	1.40E+02	1.63E+02	2.00E+02
Beryllium	3 : 3	100	4.10E-01	4.70E-01	5.90E-01
Cadmium	3 : 3	100	2.00E+00	2.23E+00	2.50E+00
Calcium	3 : 3	100	1.20E+04	1.47E+04	1.70E+04
Chromium	3 : 3	100	1.20E+01	1.57E+01	2.00E+01
Cobalt	3 : 3	100	5.40E+00	6.03E+00	7.10E+00
Copper	3 : 3	100	6.30E+01	6.83E+01	7.20E+01
Iron	3 : 3	100	1.20E+04	1.33E+04	1.60E+04
Lead	3 : 3	100	5.30E+01	6.53E+01	9.00E+01
Magnesium	3 : 3	100	5.30E+03	6.07E+03	7.30E+03
Manganese	3 : 3	100	3.60E+02	3.93E+02	4.20E+02
Mercury	3 : 3	100	5.00E-02	5.77E-02	6.80E-02
Molybdenum	3 : 3	100	3.70E-01	5.63E-01	7.10E-01
Nickel	3 : 3	100	1.60E+01	1.83E+01	2.30E+01
Potassium	3 : 3	100	1.30E+03	1.70E+03	2.10E+03
Silver	3 : 3	100	2.00E-01	2.70E-01	3.50E-01
Thallium	3 : 3	100	7.80E-01	1.03E+00	1.40E+00
Vanadium	3 : 3	100	2.00E+01	2.27E+01	2.50E+01
Zinc	3 : 3	100	2.20E+02	2.40E+02	2.60E+02

Table 3-79
DAS Transect 3 Floodplain Surface Soil Data Summary

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-80
DAS Transect 3 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
Benzo(g,h,i)perylene	3 : 3	100	7.00E-02	8.57E-02	1.10E-01
bis(2-Ethylhexyl)phthalate	3 : 3	100	5.70E-02	7.23E-02	8.80E-02
Dibenzo(a,h)anthracene	1 : 3	33	8.70E-02	8.70E-02	8.70E-02
Indeno(1,2,3-cd)pyrene	1 : 3	33	9.20E-02	9.20E-02	9.20E-02
Herbicides					
Pentachlorophenol	2 : 3	67	1.70E-03	2.00E-03	2.30E-03
Metals					
Aluminum	3 : 3	100	3.30E+03	5.03E+03	6.10E+03
Arsenic	3 : 3	100	3.60E+00	4.80E+00	5.70E+00
Barium	3 : 3	100	1.70E+02	1.90E+02	2.00E+02
Beryllium	3 : 3	100	2.30E-01	3.57E-01	4.20E-01
Cadmium	3 : 3	100	1.50E-01	2.23E-01	2.80E-01
Calcium	3 : 3	100	1.30E+04	1.63E+04	1.90E+04
Chromium	3 : 3	100	6.80E+00	8.93E+00	1.00E+01
Cobalt	3 : 3	100	4.10E+00	5.13E+00	5.70E+00
Copper	3 : 3	100	4.40E+00	9.13E+00	1.20E+01
Iron	3 : 3	100	8.50E+03	1.08E+04	1.20E+04
Lead	3 : 3	100	5.50E+00	7.57E+00	8.90E+00
Magnesium	3 : 3	100	5.00E+03	6.03E+03	7.20E+03
Manganese	3 : 3	100	1.80E+02	2.67E+02	3.50E+02
Mercury	3 : 3	100	8.00E-03	1.67E-02	2.30E-02
Molybdenum	3 : 3	100	3.00E-01	4.13E-01	5.20E-01
Nickel	3 : 3	100	1.00E+01	1.33E+01	1.60E+01
Potassium	3 : 3	100	7.20E+02	1.14E+03	1.40E+03
Sodium	3 : 3	100	1.20E+02	1.47E+02	1.60E+02
Vanadium	3 : 3	100	1.30E+01	1.67E+01	1.90E+01
Zinc	3 : 3	100	2.60E+01	3.50E+01	4.10E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-81
DAS Transect 4 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 3	33	2.45E-02	2.45E-02	2.45E-02
Acetone	2 : 3	67	2.95E-01	3.78E-01	4.60E-01
Toluene	1 : 3	33	4.50E-03	4.50E-03	4.50E-03
SVOCs					
Acenaphthene	1 : 3	33	4.30E-02	4.30E-02	4.30E-02
Anthracene	1 : 3	33	8.40E-02	8.40E-02	8.40E-02
Benzo(a)anthracene	1 : 3	33	2.00E-01	2.00E-01	2.00E-01
Benzo(a)pyrene	1 : 3	33	1.60E-01	1.60E-01	1.60E-01
Benzo(b)fluoranthene	1 : 3	33	8.00E-02	8.00E-02	8.00E-02
Benzo(g,h,i)perylene	1 : 3	33	1.00E-01	1.00E-01	1.00E-01
Benzo(k)fluoranthene	1 : 3	33	1.40E-01	1.40E-01	1.40E-01
bis(2-Ethylhexyl)phthalate	1 : 3	33	6.60E-02	6.60E-02	6.60E-02
Carbazole	1 : 3	33	4.50E-02	4.50E-02	4.50E-02
Chrysene	2 : 3	67	3.50E-02	7.48E-02	1.15E-01
Fluoranthene	2 : 3	67	4.20E-02	1.41E-01	2.39E-01
Indeno(1,2,3-cd)pyrene	1 : 3	33	8.90E-02	8.90E-02	8.90E-02
Phenanthrene	1 : 3	33	3.90E-01	3.90E-01	3.90E-01
Pyrene	1 : 3	33	3.70E-01	3.70E-01	3.70E-01
Pesticides					
4,4'-DDE	1 : 3	33	7.30E-04	7.30E-04	7.30E-04
4,4'-DDT	1 : 3	33	9.75E-04	9.75E-04	9.75E-04
delta-BHC	2 : 3	67	8.20E-05	1.26E-04	1.70E-04
Dieldrin	1 : 3	33	1.15E-03	1.15E-03	1.15E-03
Endosulfan sulfate	2 : 3	67	1.00E-04	1.20E-04	1.40E-04
Endrin ketone	1 : 3	33	1.70E-04	1.70E-04	1.70E-04
Methoxychlor	1 : 3	33	1.50E-03	1.50E-03	1.50E-03
Herbicides					
2,4-DB	1 : 3	33	6.50E-02	6.50E-02	6.50E-02
Dicamba	2 : 3	67	1.50E-03	1.63E-03	1.75E-03
MCPA	3 : 3	100	2.15E+00	2.68E+00	3.70E+00
Pentachlorophenol	3 : 3	100	2.00E-03	2.23E-03	2.50E-03
PCBs					
Total PCBs	2 : 3	67	4.22E-02	5.49E-02	6.75E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	3.27E-06	5.04E-06	6.04E-06
Metals					
Aluminum	3 : 3	100	7.25E+03	1.14E+04	1.40E+04
Antimony	1 : 3	33	6.50E-01	6.50E-01	6.50E-01
Arsenic	3 : 3	100	8.50E+00	9.20E+00	1.00E+01
Barium	3 : 3	100	1.75E+02	1.85E+02	2.00E+02
Beryllium	3 : 3	100	5.60E-01	7.37E-01	8.60E-01
Cadmium	3 : 3	100	1.70E+00	2.50E+00	3.20E+00
Calcium	3 : 3	100	6.60E+03	8.23E+03	1.10E+04
Chromium	3 : 3	100	1.30E+01	1.77E+01	2.00E+01
Cobalt	3 : 3	100	6.50E+00	8.43E+00	1.00E+01
Copper	3 : 3	100	5.40E+01	6.57E+01	7.90E+01

Table 3-81
DAS Transect 4 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Iron	3 : 3	100	1.45E+04	1.88E+04	2.10E+04
Lead	3 : 3	100	5.00E+01	7.37E+01	9.60E+01
Magnesium	3 : 3	100	3.70E+03	3.97E+03	4.20E+03
Manganese	3 : 3	100	3.95E+02	5.05E+02	6.10E+02
Mercury	3 : 3	100	6.00E-02	8.10E-02	1.10E-01
Molybdenum	3 : 3	100	5.80E-01	8.10E-01	1.00E+00
Nickel	3 : 3	100	1.85E+01	2.18E+01	2.40E+01
Potassium	3 : 3	100	2.00E+03	2.23E+03	2.60E+03
Selenium	1 : 3	33	8.80E-01	8.80E-01	8.80E-01
Silver	2 : 3	67	2.90E-01	2.90E-01	2.90E-01
Thallium	3 : 3	100	8.60E-01	1.02E+00	1.10E+00
Vanadium	3 : 3	100	2.10E+01	3.00E+01	3.50E+01
Zinc	3 : 3	100	1.80E+02	2.42E+02	3.10E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-82
DAS Transect 4 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Acetone	2 : 3	67	2.50E-02	1.23E-01	2.20E-01
Toluene	1 : 3	33	4.80E-03	4.80E-03	4.80E-03
SVOCs					
Benzo(g,h,i)perylene	1 : 3	33	6.25E-02	6.25E-02	6.25E-02
bis(2-Ethylhexyl)phthalate	1 : 3	33	7.00E-02	7.00E-02	7.00E-02
Pesticides					
delta-BHC	2 : 3	67	1.20E-04	1.75E-04	2.30E-04
Endosulfan sulfate	1 : 3	33	1.00E-03	1.00E-03	1.00E-03
Endrin ketone	1 : 3	33	2.90E-04	2.90E-04	2.90E-04
Herbicides					
Pentachlorophenol	1 : 3	33	1.70E-03	1.70E-03	1.70E-03
PCBs					
Total PCBs	1 : 3	33	1.00E-02	1.00E-02	1.00E-02
Metals					
Aluminum	3 : 3	100	4.10E+03	5.38E+03	6.55E+03
Arsenic	3 : 3	100	4.40E+00	4.88E+00	5.75E+00
Barium	3 : 3	100	1.30E+02	1.53E+02	1.90E+02
Beryllium	3 : 3	100	2.90E-01	3.68E-01	4.55E-01
Cadmium	3 : 3	100	1.80E-01	2.17E-01	2.70E-01
Calcium	3 : 3	100	6.80E+03	1.09E+04	1.50E+04
Chromium	3 : 3	100	8.10E+00	9.70E+00	1.10E+01
Cobalt	3 : 3	100	4.70E+00	5.30E+00	6.10E+00
Copper	3 : 3	100	6.20E+00	9.13E+00	1.25E+01
Iron	3 : 3	100	9.90E+03	1.13E+04	1.30E+04
Lead	3 : 3	100	6.40E+00	7.95E+00	9.75E+00
Magnesium	3 : 3	100	4.70E+03	5.53E+03	6.80E+03
Manganese	3 : 3	100	1.90E+02	2.75E+02	3.55E+02
Mercury	1 : 3	33	1.90E-02	1.90E-02	1.90E-02
Molybdenum	3 : 3	100	3.90E-01	4.22E-01	4.60E-01
Nickel	3 : 3	100	1.20E+01	1.40E+01	1.60E+01
Potassium	3 : 3	100	8.80E+02	1.09E+03	1.30E+03
Sodium	3 : 3	100	9.90E+01	1.13E+02	1.40E+02
Vanadium	3 : 3	100	1.50E+01	1.73E+01	2.00E+01
Zinc	3 : 3	100	3.00E+01	3.72E+01	4.55E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-82
DAS Transect 4 Floodplain Subsurface Soil Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-83
DAS Transect 5 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
2-Butanone (MEK)	1 : 3	33	2.00E-02	2.00E-02	2.00E-02
Acetone	1 : 3	33	1.60E-01	1.60E-01	1.60E-01
Benzene	1 : 3	33	1.80E-03	1.80E-03	1.80E-03
Toluene	1 : 3	33	2.80E-03	2.80E-03	2.80E-03
SVOCs					
Acenaphthylene	1 : 3	33	3.40E-02	3.40E-02	3.40E-02
Anthracene	1 : 3	33	8.90E-02	8.90E-02	8.90E-02
Benzo(a)anthracene	3 : 3	100	4.60E-02	2.00E-01	4.60E-01
Benzo(a)pyrene	3 : 3	100	5.80E-02	2.99E-01	6.00E-01
Benzo(b)fluoranthene	3 : 3	100	7.00E-02	3.43E-01	7.80E-01
Benzo(g,h,i)perylene	3 : 3	100	4.40E-02	2.81E-01	4.30E-01
Benzo(k)fluoranthene	3 : 3	100	5.80E-02	2.83E-01	6.00E-01
bis(2-Ethylhexyl)phthalate	3 : 3	100	9.40E-02	1.45E-01	1.80E-01
Butylbenzylphthalate	1 : 3	33	3.40E-01	3.40E-01	3.40E-01
Carbazole	1 : 3	33	7.10E-02	7.10E-02	7.10E-02
Chrysene	3 : 3	100	6.90E-02	3.06E-01	7.10E-01
Dibenzo(a,h)anthracene	2 : 3	67	1.10E-01	2.15E-01	3.20E-01
Di-n-butylphthalate	1 : 3	33	3.50E-02	3.50E-02	3.50E-02
Fluoranthene	3 : 3	100	1.00E-01	4.57E-01	1.10E+00
Indeno(1,2,3-cd)pyrene	2 : 3	67	3.50E-01	4.00E-01	4.50E-01
Phenanthrene	3 : 3	100	2.20E-02	1.47E-01	3.60E-01
Pyrene	3 : 3	100	7.70E-02	3.56E-01	8.10E-01
Pesticides					
4,4'-DDD	1 : 3	33	3.60E-02	3.60E-02	3.60E-02
4,4'-DDE	2 : 3	67	4.20E-03	6.25E-03	8.30E-03
4,4'-DDT	2 : 3	67	2.40E-02	6.70E-02	1.10E-01
Aldrin	1 : 3	33	2.30E-02	2.30E-02	2.30E-02
Alpha Chlordane	2 : 3	67	9.20E-03	3.16E-02	5.40E-02
Dieldrin	2 : 3	67	1.40E-03	6.07E-02	1.20E-01
Endrin	1 : 3	33	6.10E-03	6.10E-03	6.10E-03
Gamma Chlordane	2 : 3	67	7.10E-02	7.45E-02	7.80E-02
Heptachlor	1 : 3	33	9.10E-02	9.10E-02	9.10E-02
Heptachlor epoxide	1 : 3	33	3.00E-02	3.00E-02	3.00E-02
Methoxychlor	1 : 3	33	3.80E-02	3.80E-02	3.80E-02
Herbicides					
2,4-DB	2 : 3	67	1.80E-02	2.05E-02	2.30E-02
Dicamba	1 : 3	33	1.30E-03	1.30E-03	1.30E-03
Pentachlorophenol	1 : 3	33	4.30E-03	4.30E-03	4.30E-03
PCBs					
Total PCBs	1 : 3	33	3.50E-02	3.50E-02	3.50E-02
Dioxin					
Dioxin TEQ-HH	3 : 3	100	3.85E-06	1.07E-05	2.43E-05
Metals					
Aluminum	3 : 3	100	5.30E+03	5.87E+03	6.20E+03
Arsenic	3 : 3	100	5.40E+00	5.53E+00	5.70E+00
Barium	3 : 3	100	1.50E+02	1.63E+02	1.70E+02

Table 3-83
DAS Transect 5 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Beryllium	3 : 3	100	4.00E-01	4.37E-01	4.60E-01
Cadmium	3 : 3	100	1.40E+00	3.40E+00	5.70E+00
Calcium	3 : 3	100	1.10E+04	1.40E+04	1.80E+04
Chromium	3 : 3	100	1.10E+01	1.20E+01	1.30E+01
Cobalt	3 : 3	100	5.20E+00	5.77E+00	6.10E+00
Copper	3 : 3	100	4.00E+01	6.17E+01	7.50E+01
Iron	3 : 3	100	1.20E+04	1.27E+04	1.30E+04
Lead	3 : 3	100	3.50E+01	9.83E+01	1.30E+02
Magnesium	3 : 3	100	4.50E+03	4.63E+03	4.80E+03
Manganese	3 : 3	100	2.80E+02	3.47E+02	4.00E+02
Mercury	3 : 3	100	4.40E-02	7.67E-02	9.70E-02
Molybdenum	3 : 3	100	4.00E-01	5.87E-01	7.80E-01
Nickel	3 : 3	100	1.40E+01	1.63E+01	1.90E+01
Potassium	3 : 3	100	1.50E+03	1.57E+03	1.60E+03
Silver	2 : 3	67	2.10E-01	4.05E-01	6.00E-01
Vanadium	3 : 3	100	1.70E+01	1.83E+01	1.90E+01
Zinc	3 : 3	100	1.40E+02	4.07E+02	7.50E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-84
DAS Transect 5 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
SVOCs					
Benzo(g,h,i)perylene	1 : 3	33	3.00E-02	3.00E-02	3.00E-02
bis(2-Ethylhexyl)phthalate	2 : 3	67	6.50E-02	8.05E-02	9.60E-02
Herbicides					
2,4-DB	1 : 3	33	7.70E-03	7.70E-03	7.70E-03
Dioxin					
Dioxin TEQ-HH	1 : 1	100	3.00E-08	3.00E-08	3.00E-08
Metals					
Aluminum	3 : 3	100	3.60E+03	4.30E+03	5.30E+03
Arsenic	3 : 3	100	4.30E+00	4.73E+00	5.40E+00
Barium	3 : 3	100	1.60E+02	1.80E+02	2.00E+02
Beryllium	3 : 3	100	2.80E-01	3.23E-01	4.00E-01
Cadmium	3 : 3	100	1.90E-01	2.87E-01	3.40E-01
Calcium	3 : 3	100	1.30E+04	1.57E+04	1.90E+04
Chromium	3 : 3	100	7.30E+00	8.23E+00	9.70E+00
Cobalt	3 : 3	100	4.60E+00	5.00E+00	5.80E+00
Copper	3 : 3	100	6.30E+00	8.83E+00	1.20E+01
Iron	3 : 3	100	9.20E+03	1.03E+04	1.20E+04
Lead	3 : 3	100	6.70E+00	8.20E+00	9.00E+00
Magnesium	3 : 3	100	4.90E+03	5.67E+03	6.40E+03
Manganese	3 : 3	100	2.00E+02	2.40E+02	2.90E+02
Mercury	3 : 3	100	1.10E-02	1.50E-02	2.00E-02
Molybdenum	3 : 3	100	3.50E-01	3.83E-01	4.50E-01
Nickel	3 : 3	100	1.20E+01	1.30E+01	1.50E+01
Potassium	3 : 3	100	9.30E+02	1.04E+03	1.10E+03
Sodium	3 : 3	100	1.10E+02	1.30E+02	1.60E+02
Vanadium	3 : 3	100	1.30E+01	1.47E+01	1.70E+01
Zinc	3 : 3	100	3.10E+01	3.73E+01	4.10E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.
Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-85
DAS Transect 6 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Acetone	3 : 3	100	4.80E-02	2.29E-01	4.20E-01
Toluene	1 : 3	33	2.20E-03	2.20E-03	2.20E-03
SVOCs					
Acenaphthene	1 : 3	33	4.20E-01	4.20E-01	4.20E-01
Anthracene	1 : 3	33	1.40E+00	1.40E+00	1.40E+00
Benzo(a)anthracene	2 : 3	67	7.00E-02	2.14E+00	4.20E+00
Benzo(a)pyrene	2 : 3	67	7.80E-02	1.84E+00	3.60E+00
Benzo(b)fluoranthene	2 : 3	67	7.20E-02	2.24E+00	4.40E+00
Benzo(g,h,i)perylene	1 : 3	33	1.30E+00	1.30E+00	1.30E+00
Benzo(k)fluoranthene	2 : 3	67	5.30E-02	1.73E+00	3.40E+00
bis(2-Ethylhexyl)phthalate	1 : 3	33	3.60E-01	3.60E-01	3.60E-01
Butylbenzylphthalate	1 : 3	33	5.70E-02	5.70E-02	5.70E-02
Carbazole	1 : 3	33	8.60E-01	8.60E-01	8.60E-01
Chrysene	2 : 3	67	1.00E-01	2.50E+00	4.90E+00
Dibenzo(a,h)anthracene	1 : 3	33	6.00E-01	6.00E-01	6.00E-01
Dibenzofuran	1 : 3	33	2.30E-01	2.30E-01	2.30E-01
Fluoranthene	2 : 3	67	1.10E-01	4.96E+00	9.80E+00
Fluorene	1 : 3	33	5.80E-01	5.80E-01	5.80E-01
Indeno(1,2,3-cd)pyrene	1 : 3	33	1.10E+00	1.10E+00	1.10E+00
Phenanthrene	2 : 3	67	2.80E-02	3.56E+00	7.10E+00
Pyrene	2 : 3	67	1.10E-01	3.91E+00	7.70E+00
Pesticides					
4,4'-DDD	1 : 3	33	1.80E-03	1.80E-03	1.80E-03
4,4'-DDE	3 : 3	100	6.60E-04	1.15E-03	2.00E-03
Alpha Chlordane	1 : 3	33	1.70E-02	1.70E-02	1.70E-02
alpha-BHC	1 : 3	33	2.20E-04	2.20E-04	2.20E-04
beta-BHC	1 : 3	33	3.80E-03	3.80E-03	3.80E-03
delta-BHC	1 : 3	33	1.20E-04	1.20E-04	1.20E-04
Endosulfan sulfate	3 : 3	100	5.70E-04	1.14E-03	1.90E-03
Endrin	1 : 3	33	2.20E-03	2.20E-03	2.20E-03
Endrin aldehyde	1 : 3	33	7.50E-04	7.50E-04	7.50E-04
Endrin ketone	2 : 3	67	2.30E-04	4.50E-04	6.70E-04
Gamma Chlordane	1 : 3	33	1.80E-02	1.80E-02	1.80E-02
gamma-BHC (Lindane)	1 : 3	33	1.30E-04	1.30E-04	1.30E-04
Heptachlor	1 : 3	33	4.10E-03	4.10E-03	4.10E-03
Heptachlor epoxide	1 : 3	33	1.80E-04	1.80E-04	1.80E-04
Methoxychlor	3 : 3	100	1.50E-03	3.60E-03	5.50E-03
Herbicides					
Dicamba	2 : 3	67	1.70E-03	2.35E-03	3.00E-03
Pentachlorophenol	2 : 3	67	1.60E-03	1.80E-03	2.00E-03
PCBs					
Total PCBs	2 : 3	67	3.00E-02	1.05E-01	1.79E-01
Dioxin					
Dioxin TEQ-HH	3 : 3	100	2.34E-06	5.03E-06	7.32E-06
Metals					
Aluminum	3 : 3	100	5.20E+03	6.60E+03	7.50E+03

Table 3-85
DAS Transect 6 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Antimony	1 : 3	33	5.90E-01	5.90E-01	5.90E-01
Arsenic	3 : 3	100	4.30E+00	6.03E+00	8.00E+00
Barium	3 : 3	100	1.10E+02	1.57E+02	2.00E+02
Beryllium	3 : 3	100	3.20E-01	4.53E-01	5.50E-01
Cadmium	3 : 3	100	1.10E+00	2.30E+00	4.00E+00
Calcium	3 : 3	100	9.50E+03	5.64E+04	1.50E+05
Chromium	3 : 3	100	1.30E+01	1.33E+01	1.40E+01
Cobalt	3 : 3	100	3.90E+00	5.50E+00	6.50E+00
Copper	3 : 3	100	2.40E+01	3.87E+01	5.60E+01
Iron	3 : 3	100	9.00E+03	1.27E+04	1.50E+04
Lead	3 : 3	100	2.90E+01	7.53E+01	1.10E+02
Magnesium	3 : 3	100	4.90E+03	7.27E+03	1.10E+04
Manganese	3 : 3	100	2.80E+02	3.23E+02	3.50E+02
Mercury	3 : 3	100	4.90E-02	5.63E-02	7.10E-02
Molybdenum	3 : 3	100	3.70E-01	5.97E-01	8.30E-01
Nickel	3 : 3	100	1.50E+01	1.73E+01	2.00E+01
Potassium	3 : 3	100	1.60E+03	1.73E+03	1.90E+03
Silver	1 : 3	33	2.90E-01	2.90E-01	2.90E-01
Thallium	2 : 3	67	7.30E-01	8.50E-01	9.70E-01
Vanadium	3 : 3	100	1.70E+01	2.03E+01	2.20E+01
Zinc	3 : 3	100	1.10E+02	2.33E+02	3.50E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-86
DAS Transect 6 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Acetone	1 : 3	33	4.00E-02	4.00E-02	4.00E-02
Benzene	1 : 3	33	3.00E-03	3.00E-03	3.00E-03
Toluene	1 : 3	33	6.60E-03	6.60E-03	6.60E-03
Xylenes, Total	1 : 3	33	4.30E-03	4.30E-03	4.30E-03
Pesticides					
delta-BHC	1 : 3	33	1.40E-04	1.40E-04	1.40E-04
Endosulfan sulfate	2 : 3	67	4.20E-04	5.00E-04	5.80E-04
Herbicides					
MCPA	1 : 3	33	1.40E+00	1.40E+00	1.40E+00
Dioxin					
Dioxin TEQ-HH	1 : 1	100	5.70E-08	5.70E-08	5.70E-08
Metals					
Aluminum	3 : 3	100	5.50E+03	5.93E+03	6.70E+03
Arsenic	3 : 3	100	5.70E+00	5.93E+00	6.10E+00
Barium	3 : 3	100	1.90E+02	1.97E+02	2.00E+02
Beryllium	3 : 3	100	3.80E-01	4.03E-01	4.50E-01
Cadmium	3 : 3	100	2.90E-01	4.00E-01	5.90E-01
Calcium	3 : 3	100	1.40E+04	1.63E+04	1.80E+04
Chromium	3 : 3	100	9.80E+00	1.03E+01	1.10E+01
Cobalt	3 : 3	100	5.30E+00	5.50E+00	5.80E+00
Copper	3 : 3	100	9.40E+00	1.11E+01	1.20E+01
Iron	3 : 3	100	1.20E+04	1.23E+04	1.30E+04
Lead	3 : 3	100	8.00E+00	1.09E+01	1.60E+01
Magnesium	3 : 3	100	6.40E+03	6.60E+03	6.80E+03
Manganese	3 : 3	100	2.40E+02	2.67E+02	2.90E+02
Mercury	1 : 3	33	7.80E-02	7.80E-02	7.80E-02
Molybdenum	3 : 3	100	3.90E-01	4.23E-01	4.60E-01
Nickel	3 : 3	100	1.40E+01	1.50E+01	1.60E+01
Potassium	3 : 3	100	1.20E+03	1.30E+03	1.50E+03
Sodium	3 : 3	100	1.20E+02	1.30E+02	1.40E+02
Vanadium	3 : 3	100	1.80E+01	1.87E+01	2.00E+01
Zinc	3 : 3	100	3.70E+01	4.63E+01	6.00E+01

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-86
DAS Transect 6 Floodplain Subsurface Soil Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-87
DAS Transect 7 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Acetone	2 : 2	100	3.40E-01	4.10E-01	4.80E-01
Benzene	1 : 2	50	4.80E-03	4.80E-03	4.80E-03
Carbon disulfide	1 : 2	50	4.30E-03	4.30E-03	4.30E-03
Ethylbenzene	1 : 2	50	3.00E-03	3.00E-03	3.00E-03
Toluene	2 : 2	100	2.20E-03	5.50E-03	8.80E-03
Xylenes, Total	1 : 2	50	4.20E-03	4.20E-03	4.20E-03
SVOCs					
Acenaphthene	2 : 2	100	5.90E-02	1.10E-01	1.60E-01
Anthracene	2 : 2	100	1.00E-01	2.30E-01	3.60E-01
Benzo(a)anthracene	2 : 2	100	5.00E-01	1.20E+00	1.90E+00
Benzo(a)pyrene	2 : 2	100	5.20E-01	1.31E+00	2.10E+00
Benzo(b)fluoranthene	2 : 2	100	5.80E-01	1.39E+00	2.20E+00
Benzo(g,h,i)perylene	2 : 2	100	3.10E-01	7.05E-01	1.10E+00
Benzo(k)fluoranthene	2 : 2	100	4.70E-01	1.29E+00	2.10E+00
bis(2-Ethylhexyl)phthalate	1 : 2	50	9.10E-02	9.10E-02	9.10E-02
Carbazole	2 : 2	100	1.10E-01	2.10E-01	3.10E-01
Chrysene	2 : 2	100	7.70E-01	1.69E+00	2.60E+00
Dibenzo(a,h)anthracene	2 : 2	100	1.20E-01	2.65E-01	4.10E-01
Dibenzofuran	1 : 2	50	5.20E-02	5.20E-02	5.20E-02
Fluoranthene	2 : 2	100	1.40E+00	3.50E+00	5.60E+00
Fluorene	2 : 2	100	5.60E-02	9.80E-02	1.40E-01
Indeno(1,2,3-cd)pyrene	2 : 2	100	2.80E-01	6.90E-01	1.10E+00
Phenanthrene	2 : 2	100	9.70E-01	1.94E+00	2.90E+00
Pyrene	2 : 2	100	1.00E+00	2.45E+00	3.90E+00
Pesticides					
4,4'-DDD	1 : 2	50	1.30E-03	1.30E-03	1.30E-03
4,4'-DDE	1 : 2	50	1.60E-03	1.60E-03	1.60E-03
4,4'-DDT	1 : 2	50	1.50E-02	1.50E-02	1.50E-02
Alpha Chlordane	2 : 2	100	3.00E-04	5.65E-03	1.10E-02
delta-BHC	1 : 2	50	1.80E-04	1.80E-04	1.80E-04
Endrin	2 : 2	100	1.00E-04	2.50E-04	4.00E-04
Gamma Chlordane	1 : 2	50	1.00E-02	1.00E-02	1.00E-02
gamma-BHC (Lindane)	1 : 2	50	8.70E-05	8.70E-05	8.70E-05
Heptachlor epoxide	1 : 2	50	6.20E-04	6.20E-04	6.20E-04
Methoxychlor	1 : 2	50	1.00E-02	1.00E-02	1.00E-02
Herbicides					
Pentachlorophenol	1 : 2	50	2.50E-03	2.50E-03	2.50E-03
PCBs					
Total PCBs	1 : 2	50	1.00E-02	1.00E-02	1.00E-02
Dioxin					
Dioxin TEQ-HH	2 : 2	100	1.16E-06	3.72E-06	6.28E-06
Metals					
Aluminum	2 : 2	100	7.20E+03	8.10E+03	9.00E+03
Arsenic	2 : 2	100	6.80E+00	7.20E+00	7.60E+00
Barium	2 : 2	100	1.60E+02	1.70E+02	1.80E+02
Beryllium	2 : 2	100	4.70E-01	5.30E-01	5.90E-01

Table 3-87
DAS Transect 7 Floodplain Surface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
Metals (cont.)					
Cadmium	2 : 2	100	2.20E+00	2.90E+00	3.60E+00
Calcium	2 : 2	100	8.10E+03	2.31E+04	3.80E+04
Chromium	2 : 2	100	1.60E+01	1.80E+01	2.00E+01
Cobalt	2 : 2	100	6.10E+00	6.80E+00	7.50E+00
Copper	2 : 2	100	2.90E+01	3.10E+01	3.30E+01
Iron	2 : 2	100	1.40E+04	1.45E+04	1.50E+04
Lead	2 : 2	100	3.90E+01	5.30E+01	6.70E+01
Magnesium	2 : 2	100	5.20E+03	6.55E+03	7.90E+03
Manganese	2 : 2	100	3.80E+02	3.85E+02	3.90E+02
Mercury	2 : 2	100	6.60E-02	7.75E-02	8.90E-02
Molybdenum	2 : 2	100	5.10E-01	6.00E-01	6.90E-01
Nickel	2 : 2	100	1.80E+01	1.95E+01	2.10E+01
Potassium	2 : 2	100	1.50E+03	1.75E+03	2.00E+03
Thallium	1 : 2	50	8.50E-01	8.50E-01	8.50E-01
Vanadium	2 : 2	100	2.20E+01	2.35E+01	2.50E+01
Zinc	2 : 2	100	2.60E+02	5.65E+02	8.70E+02

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-88
DAS Transect 7 Floodplain Subsurface Soil Data Summary

Constituent	FOD (a)	%FOD (b)	Minimum (c) (mg/kg)	Mean (c) (mg/kg)	Maximum (c) (mg/kg)
VOCs					
Acetone	2 : 2	100	1.40E-01	2.25E-01	3.10E-01
Benzene	2 : 2	100	2.50E-03	2.85E-03	3.20E-03
Carbon disulfide	2 : 2	100	4.90E-03	6.35E-03	7.80E-03
Chlorobenzene	1 : 2	50	1.00E-02	1.00E-02	1.00E-02
Toluene	1 : 2	50	5.40E-03	5.40E-03	5.40E-03
SVOCs					
bis(2-Ethylhexyl)phthalate	1 : 2	50	1.40E-01	1.40E-01	1.40E-01
Pesticides					
Endosulfan sulfate	2 : 2	100	3.20E-04	4.45E-04	5.70E-04
Herbicides					
Pentachlorophenol	1 : 2	50	2.60E-03	2.60E-03	2.60E-03
Metals					
Aluminum	2 : 2	100	7.90E+03	8.80E+03	9.70E+03
Antimony	1 : 2	50	6.00E-01	6.00E-01	6.00E-01
Arsenic	2 : 2	100	5.50E+00	6.05E+00	6.60E+00
Barium	2 : 2	100	2.20E+02	2.50E+02	2.80E+02
Beryllium	2 : 2	100	4.90E-01	4.95E-01	5.00E-01
Cadmium	2 : 2	100	3.70E-01	4.13E+00	7.90E+00
Calcium	2 : 2	100	4.70E+03	1.09E+04	1.70E+04
Chromium	2 : 2	100	1.30E+01	7.15E+01	1.30E+02
Cobalt	2 : 2	100	5.70E+00	6.25E+00	6.80E+00
Copper	2 : 2	100	1.40E+01	3.80E+01	6.20E+01
Iron	2 : 2	100	1.10E+04	1.30E+04	1.50E+04
Lead	2 : 2	100	1.00E+01	4.35E+01	7.70E+01
Magnesium	2 : 2	100	3.20E+03	5.10E+03	7.00E+03
Manganese	2 : 2	100	1.50E+02	2.75E+02	4.00E+02
Mercury	1 : 2	50	1.20E-01	1.20E-01	1.20E-01
Molybdenum	2 : 2	100	3.30E-01	4.25E-01	5.20E-01
Nickel	2 : 2	100	1.70E+01	1.80E+01	1.90E+01
Potassium	2 : 2	100	1.70E+03	1.90E+03	2.10E+03
Sodium	2 : 2	100	1.60E+02	2.10E+02	2.60E+02
Thallium	1 : 2	50	7.20E-01	7.20E-01	7.20E-01
Vanadium	2 : 2	100	2.30E+01	2.30E+01	2.30E+01
Zinc	2 : 2	100	7.40E+01	6.37E+02	1.20E+03

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration
Calculated using TEFs from Van den Berg, et al., 2006.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile organic compound.
TEF - Toxicity Equivalency Factor.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Percent detected

Table 3-88
DAS Transect 7 Floodplain Subsurface Soil Data Summary

(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. Only detected results are included in the mean calculation. Where both of the sample and duplicate results were reported as detected or where both were reported as not detected, the average of the values is used. Where one of the sample and duplicate results was reported as not detected and the other detected, the detected result is used.

Table 3-89
Groundwater Screening Levels For All Constituents Detected in Groundwater

Constituent	CAS No.	Screening Criteria (a) (ug/L)		
VOCs				
1,1,2,2-Tetrachloroethane	79-34-5	6.70E-02	RSL	
1,1-Dichloroethane	75-34-3	2.40E+00	RSL	
1,1-Dichloroethene	75-35-4	7.00E+00	MCL	
4-Methyl-2-pentanone (MIBK)	108-10-1	2.00E+03	RSL	
Acetone	67-64-1	2.20E+04	RSL	
Benzene	71-43-2	5.00E+00	MCL	
Carbon disulfide	75-15-0	1.00E+03	RSL	
Chlorobenzene	108-90-7	1.00E+02	MCL	
Chloroform	67-66-3	8.00E+01	MCL	
Cis/Trans-1,2-Dichloroethene	540-59-0	3.30E+02	RSL	
Ethylbenzene	100-41-4	7.00E+02	MCL	
Tetrachloroethene	127-18-4	5.00E+00	MCL	
Toluene	108-88-3	1.00E+03	MCL	
Trichloroethene	79-01-6	5.00E+00	MCL	
Vinyl chloride	75-01-4	2.00E+00	MCL	
Xylenes, Total	1330-20-7	1.00E+04	MCL	
SVOCs				
2,4,5-Trichlorophenol	95-95-4	3.70E+03	RSL	
2,4,6-Trichlorophenol	88-06-2	6.10E+00	RSL	
1,2,4-Trichlorobenzene	120-82-1	7.00E+01	MCL	
1,2-Dichlorobenzene	95-50-1	6.00E+02	MCL	
1,3-Dichlorobenzene	541-73-1	7.50E+01	MCL	(b)
1,4-Dichlorobenzene	106-46-7	7.50E+01	MCL	
2,4-Dichlorophenol	120-83-2	1.10E+02	RSL	
2-Chloronaphthalene	91-58-7	2.90E+03	RSL	
2-Chlorophenol	95-57-8	1.80E+02	RSL	
2-Methylnaphthalene	91-57-6	1.50E+02	RSL	
2-Methylphenol (o-cresol)	95-48-7	1.80E+03	RSL	
2-Nitroaniline	88-74-4	1.10E+02	RSL	
3-Methylphenol/4-Methylphenol	106-44-5	1.80E+02	RSL	
4,6-Dinitro-2-methylphenol	534-52-1	3.70E+00	RSL	
4-Chloro-3-methylphenol	59-50-7	NA	NA	
4-Chloroaniline	106-47-8	3.40E-01	RSL	
4-Nitroaniline	100-01-6	3.40E+00	RSL	
Acenaphthene	83-32-9	2.20E+03	RSL	
Acenaphthylene	208-96-8	2.20E+03	RSL	(c)
Anthracene	120-12-7	1.10E+04	RSL	
Benzo(a)anthracene	56-55-3	2.90E-02	RSL	
Benzo(a)pyrene	50-32-8	2.00E-01	MCL	
Benzo(b)fluoranthene	205-99-2	2.90E-02	RSL	
Benzo(g,h,i)perylene	191-24-2	1.10E+03	RSL	(d)
Benzo(k)fluoranthene	207-08-9	2.90E-01	RSL	
bis(2-Chloroethyl)ether	111-44-4	1.20E-02	RSL	
bis(2-Ethylhexyl)phthalate	117-81-7	6.00E+00	MCL	
Butylbenzylphthalate	85-68-7	3.50E+01	RSL	
Carbazole	86-74-8	NA	NA	
Chrysene	218-01-9	2.90E+00	RSL	
Dibenzo(a,h)anthracene	53-70-3	2.90E-03	RSL	

Table 3-89
Groundwater Screening Levels For All Constituents Detected in Groundwater

Constituent	CAS No.	Screening Criteria (a) (ug/L)		
SVOCs (cont.)				
Dibenzofuran	132-64-9	NA	NA	
Diethylphthalate	84-66-2	2.90E+04	RSL	
Dimethylphthalate	131-11-3	2.90E+04	RSL	(e)
Di-n-butylphthalate	84-74-2	3.70E+03	RSL	
Di-n-octylphthalate	117-84-0	NA	NA	
Fluoranthene	206-44-0	1.50E+03	RSL	
Fluorene	86-73-7	1.50E+03	RSL	
Hexachlorobenzene	118-74-1	1.00E+00	MCL	
Indeno(1,2,3-cd)pyrene	193-39-5	2.90E-02	RSL	
Isophorone	78-59-1	7.10E+01	RSL	
Naphthalene	91-20-3	1.40E-01	RSL	
Nitrobenzene	98-95-3	1.20E-01	RSL	
N-Nitrosodiphenylamine	122-39-4	9.10E+02	RSL	
Pentachlorophenol	87-86-5	1.00E+00	MCL	
Pentachlorophenol (8270)	87-86-5svoc	1.00E+00	MCL	
Phenanthrene	85-01-8	1.10E+04	RSL	(f)
Phenol	108-95-2	1.10E+04	RSL	
Pyrene	129-00-0	1.10E+03	RSL	
Pesticides				
4,4'-DDD	72-54-8	2.80E-01	RSL	
4,4'-DDE	72-55-9	2.00E-01	RSL	
4,4'-DDT	50-29-3	2.00E-01	RSL	
Aldrin	309-00-2	4.00E-03	RSL	
Alpha Chlordane	5103-71-9	2.00E+00	MCL	(g)
alpha-BHC	319-84-6	1.10E-02	RSL	
beta-BHC	319-85-7	3.70E-02	RSL	
delta-BHC	319-86-8	1.10E-02	RSL	(h)
Dieldrin	60-57-1	4.20E-03	RSL	
Endosulfan I	959-98-8	2.20E+02	RSL	(i)
Endosulfan II	33213-65-9	2.20E+02	RSL	(i)
Endosulfan sulfate	1031-07-8	2.20E+02	RSL	(i)
Endrin	72-20-8	2.00E+00	MCL	
Endrin aldehyde	7421-93-4	2.00E+00	MCL	(j)
Endrin ketone	53494-70-5	2.00E+00	MCL	(j)
Gamma Chlordane	5103-74-2	2.00E+00	MCL	(g)
gamma-BHC (Lindane)	58-89-9	2.00E-01	MCL	
Heptachlor	76-44-8	4.00E-01	MCL	
Heptachlor epoxide	1024-57-3	2.00E-01	MCL	
Methoxychlor	72-43-5	4.00E+01	MCL	
Herbicides				
2,4,5-T	93-76-5	3.70E+02	RSL	
2,4,5-TP (Silvex)	93-72-1	5.00E+01	MCL	
2,4-D	94-75-7	7.00E+01	MCL	
2,4-DB	94-82-6	2.90E+02	RSL	
Dicamba	1918-00-9	1.10E+03	RSL	
Dichloroprop	120-36-5	NA	NA	
Dinoseb	88-85-7	7.00E+00	MCL	
MCPA	94-74-6	1.80E+01	RSL	
MCPP	7085-19-0	NA	NA	
PCBs				
Total PCBs	1366-36-3	5.00E-01	MCL	
Dioxin				
Dioxin TEQ-HH	1746-01-6	3.00E-05	MCL	

Table 3-89
Groundwater Screening Levels For All Constituents Detected in Groundwater

Constituent	CAS No.	Screening Criteria (a) (ug/L)		
Metals				
Aluminum	7429-90-5	2.00E+02	MCL	(k)
Antimony	7440-36-0	6.00E+00	MCL	
Arsenic	7440-38-2	1.00E+01	MCL	
Barium	7440-39-3	2.00E+03	MCL	
Beryllium	7440-41-7	4.00E+00	MCL	
Cadmium	7440-43-9	5.00E+00	MCL	
Calcium	7440-70-2	NA	NA	(l)
Chromium	7440-47-3	1.00E+02	MCL	
Cobalt	7440-48-4	1.10E+01	RSL	
Copper	7440-50-8	1.30E+03	MCL	
Cyanide, Total	57-12-5	2.00E+02	MCL	
Iron	7439-89-6	3.00E+02	MCL	(k)
Lead	7439-92-1	1.50E+01	MCL	
Magnesium	7439-95-4	NA	NA	(l)
Manganese	7439-96-5	5.00E+01	MCL	(k)
Mercury	7439-97-6	2.00E+00	MCL	
Molybdenum	7439-98-7	1.80E+02	RSL	
Nickel	7440-02-0	7.30E+02	RSL	
Potassium	7440-09-7	NA	NA	(l)
Selenium	7782-49-2	5.00E+01	MCL	
Silver	7440-22-4	1.00E+02	MCL	(k)
Sodium	7440-23-5	NA	NA	(l)
Thallium	7440-28-0	2.00E+00	MCL	
Vanadium	7440-62-2	2.60E+02	RSL	
Zinc	7440-66-6	5.00E+03	MCL	(k)

Notes:
2,4-D - 2,4-Dichlorophenoxy acetic acid.
2,4-DB - 4-(2,4-Dichlorophenoxy) butyric acid.
2,4,5-T - 2,4,5-Trichlorophenoxy acetic acid.
BHC - Hexachlorocyclohexane.
CAS - Chemical Abstract Service.
Dicamba - 2-Methoxy-3,6-dichlorobenzoic acid.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration.
Calculated using TEFs from Van den Berg et al., 2006.
MCL - USEPA Maximum Contaminant Levels, 2006.
MCPA - 4(Chloro-2-methoxyphenoxy)acetic acid.
MCPP - 2-(2-Methyl-4-chlorophenoxy)propionic acid.
NA - Not Available.
RSL - USEPA Regional Screening Levels for Tap Water (April 2009).
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TEF - Toxicity Equivalency Factor.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.

(a) Equals the USEPA MCL (2006) or the USEPA RSL (April 2009) if an MCL is not available.
(b) Due to structural similarities, the value for 1,4-dichlorobenzene is used.
(c) Due to structural similarities, the value for acenaphthene is used.
(d) Due to structural similarities, the value for pyrene is used.
(e) Due to structural similarities, the value for diethylphthalate is used.
(f) Due to structural similarities, the value for anthracene is used.
(g) Due to structural similarities, the value for chlordane is used.
(h) Due to structural similarities, the value for alpha-BHC is used.
(i) Due to structural similarities, the value for endosulfan is used.
(j) Due to structural similarities, the value for endrin is used.
(k) Secondary Drinking Water Regulation.
(l) Essential nutrient.

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
Upgradient									
UGGW-EE-04	10/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EE-04	10/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EE-04	10/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-04	10/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EE-04	10/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
UGGW-EE-04	10/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EE-04	10/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-04	10/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-04	10/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-04	10/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-04	10/13/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
UGGW-EE-04	10/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EE-04	10/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-04	10/13/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-04	10/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EE-04	10/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EE-04	10/13/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-04	10/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EE-04	10/13/1999	Metals	7440-47-3	Chromium	mg/l	0.14		0.1	MCL
UGGW-EE-04	10/13/1999	Metals	7439-89-6	Iron	mg/l	1	N	0.3	MCL
UGGW-EE-04	10/13/1999	Metals	7439-96-5	Manganese	mg/l	1.2	N	0.05	MCL
UGGW-EE-04	10/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
UGGW-EE-04FD	10/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EE-04FD	10/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EE-04FD	10/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-04FD	10/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EE-04FD	10/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EE-04FD	10/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EE-04FD	10/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-04FD	10/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-04FD	10/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-04FD	10/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-04FD	10/13/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
UGGW-EE-04FD	10/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EE-04FD	10/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-04FD	10/13/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-04FD	10/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EE-04FD	10/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EE-04FD	10/13/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-04FD	10/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EE-04FD	10/13/1999	Metals	7440-47-3	Chromium	mg/l	0.11		0.1	MCL
UGGW-EE-04FD	10/13/1999	Metals	7439-89-6	Iron	mg/l	0.8	N	0.3	MCL
UGGW-EE-04FD	10/13/1999	Metals	7439-96-5	Manganese	mg/l	1.2	N	0.05	MCL
UGGW-EE-04FD	10/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
UGGW-EE-20	10/18/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EE-20	10/18/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EE-20	10/18/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-20	10/18/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EE-20	10/18/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
UGGW-EE-20	10/18/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EE-20	10/18/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-20	10/18/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EE-20	10/18/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-20	10/18/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-20	10/18/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-20	10/18/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
UGGW-EE-20	10/18/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EE-20	10/18/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-20	10/18/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-20	10/18/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EE-20	10/18/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EE-20	10/18/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-20	10/18/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EE-20	10/18/1999	Metals	7439-96-5	Manganese	mg/l	0.074		0.05	MCL
UGGW-EE-20	10/18/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
UGGW-EEG-108	10/11/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EEG-108	10/11/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EEG-108	10/11/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EEG-108	10/11/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EEG-108	10/11/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
UGGW-EEG-108	10/11/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EEG-108	10/11/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EEG-108	10/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EEG-108	10/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EEG-108	10/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EEG-108	10/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EEG-108	10/11/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
UGGW-EEG-108	10/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EEG-108	10/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EEG-108	10/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EEG-108	10/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EEG-108	10/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EEG-108	10/11/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EEG-108	10/11/1999	Metals	7439-89-6	Iron	mg/l	32	N	0.3	MCL
UGGW-EEG-108	10/11/1999	Metals	7439-96-5	Manganese	mg/l	1.3	N	0.05	MCL
UGGW-EEG-108	10/11/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Site G Source Area									
EE-05	10/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
EE-05	10/13/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
EE-05	10/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	50	U	2.4	Tapwater RSL
EE-05	10/13/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	50	U	7	MCL
EE-05	10/13/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
EE-05	10/13/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
EE-05	10/13/1999	VOCs	71-43-2	Benzene	ug/l	110		5	MCL
EE-05	10/13/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
EE-05	10/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
EE-05	10/13/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
EE-05	10/13/1999	VOCs	108-90-7	Chlorobenzene	ug/l	620		100	MCL
EE-05	10/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
EE-05	10/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
EE-05	10/13/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
EE-05	10/13/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	50	U	5	MCL
EE-05	10/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
EE-05	10/13/1999	VOCs	79-01-6	Trichloroethene	ug/l	18	J	5	MCL
EE-05	10/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	100	U	2	MCL
EE-05	10/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-05	10/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-05	10/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-05	10/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-05	10/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-05	10/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1600	D	0.34	Tapwater RSL
EE-05	10/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	8.4	J	3.4	Tapwater RSL
EE-05	10/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-05	10/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-05	10/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-05	10/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-05	10/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-05	10/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-05	10/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-05	10/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-05	10/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-05	10/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-05	10/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	390	E	0.14	Tapwater RSL
EE-05	10/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-05	10/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-05	10/13/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
EE-05	10/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EE-05	10/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.024	J	0.011	Tapwater RSL
EE-05	10/13/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.36	P	0.011	Tapwater RSL
EE-05	10/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.02	J	0.0042	Tapwater RSL
EE-05	10/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EE-05	10/13/1999	Herbicides	93-72-1	2,4,5-TP (Silvex)	ug/l	390		50	MCL
EE-05	10/13/1999	Herbicides	75-99-0	Dalapon	ug/l	12000	U	200	MCL
EE-05	10/13/1999	Herbicides	88-85-7	Dinoseb	ug/l	600	U	7	MCL
EE-05	10/13/1999	Herbicides	94-74-6	MCPA	ug/l	12000	U	18	Tapwater RSL
EE-05	10/13/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	100	U	1	MCL
EE-05	10/13/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	2.21E-04		0.00003	MCL
EE-05	10/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-05	10/13/1999	Metals	7440-38-2	Arsenic	mg/l	0.045		0.01	MCL
EE-05	10/13/1999	Metals	7439-89-6	Iron	mg/l	46	N	0.3	MCL
EE-05	10/13/1999	Metals	7439-96-5	Manganese	mg/l	1.1	N	0.05	MCL
EE-05	10/13/1999	Metals	7439-98-7	Molybdenum	mg/l	0.45		0.18	Tapwater RSL
EE-05	10/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EEG-107	10/7/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	25	U	0.067	Tapwater RSL
EEG-107	10/7/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	25	U	5	MCL
EEG-107	10/7/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	25	U	2.4	Tapwater RSL
EEG-107	10/7/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	25	U	7	MCL
EEG-107	10/7/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	25	U	5	MCL
EEG-107	10/7/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	25	U	5	MCL
EEG-107	10/7/1999	VOCs	71-43-2	Benzene	ug/l	3700	D	5	MCL
EEG-107	10/7/1999	VOCs	75-25-2	Bromoform	ug/l	25	U	8.5	Tapwater RSL
EEG-107	10/7/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	49	U	8.7	Tapwater RSL
EEG-107	10/7/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	25	U	5	MCL
EEG-107	10/7/1999	VOCs	108-90-7	Chlorobenzene	ug/l	4300	D	100	MCL
EEG-107	10/7/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EEG-107	10/7/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	25	U	0.15	Tapwater RSL
EEG-107	10/7/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	24	U	5	MCL
EEG-107	10/7/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	170		5	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EEG-107	10/7/1999	VOCs	108-88-3	Toluene	ug/l	8500	D	1000	MCL
EEG-107	10/7/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
EEG-107	10/7/1999	VOCs	79-01-6	Trichloroethene	ug/l	200		5	MCL
EEG-107	10/7/1999	VOCs	75-01-4	Vinyl chloride	ug/l	41	J	2	MCL
EEG-107	10/7/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	180	J	70	MCL
EEG-107	10/7/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	400	U	75	MCL
EEG-107	10/7/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	850		75	MCL
EEG-107	10/7/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	400	U	0.32	Tapwater RSL
EEG-107	10/7/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	84	U	6.1	Tapwater RSL
EEG-107	10/7/1999	SVOCs	120-83-2	2,4-Dichlorophenol	ug/l	3600		110	Tapwater RSL
EEG-107	10/7/1999	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	560	U	73	Tapwater RSL
EEG-107	10/7/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	400	U	0.22	Tapwater RSL
EEG-107	10/7/1999	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	400	U	37	Tapwater RSL
EEG-107	10/7/1999	SVOCs	95-57-8	2-Chlorophenol	ug/l	630		180	Tapwater RSL
EEG-107	10/7/1999	SVOCs	91-57-6	2-Methylnaphthalene	ug/l	400	U	150	Tapwater RSL
EEG-107	10/7/1999	SVOCs	88-74-4	2-Nitroaniline	ug/l	2000	U	110	Tapwater RSL
EEG-107	10/7/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	800	U	0.15	Tapwater RSL
EEG-107	10/7/1999	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	2400		180	Tapwater RSL
EEG-107	10/7/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	2000	U	3.4	Tapwater RSL
EEG-107	10/7/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	520	U	3.7	Tapwater RSL
EEG-107	10/7/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	23000	D	0.34	Tapwater RSL
EEG-107	10/7/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	2000	U	3.4	Tapwater RSL
EEG-107	10/7/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	400	U	0.029	Tapwater RSL
EEG-107	10/7/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	400	U	0.2	MCL
EEG-107	10/7/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	400	U	0.029	Tapwater RSL
EEG-107	10/7/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	400	U	0.29	Tapwater RSL
EEG-107	10/7/1999	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	400	U	110	Tapwater RSL
EEG-107	10/7/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	400	U	0.012	Tapwater RSL
EEG-107	10/7/1999	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	72	U	6	MCL
EEG-107	10/7/1999	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	400	U	35	Tapwater RSL
EEG-107	10/7/1999	SVOCs	218-01-9	Chrysene	ug/l	400	U	2.9	Tapwater RSL
EEG-107	10/7/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	400	U	0.0029	Tapwater RSL
EEG-107	10/7/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	400	U	1	MCL
EEG-107	10/7/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	400	U	0.86	Tapwater RSL
EEG-107	10/7/1999	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	400	U	50	MCL
EEG-107	10/7/1999	SVOCs	67-72-1	Hexachloroethane	ug/l	76	U	4.8	Tapwater RSL
EEG-107	10/7/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	400	U	0.029	Tapwater RSL
EEG-107	10/7/1999	SVOCs	78-59-1	Isophorone	ug/l	400	U	71	Tapwater RSL
EEG-107	10/7/1999	SVOCs	91-20-3	Naphthalene	ug/l	2100		0.14	Tapwater RSL
EEG-107	10/7/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	140	U	0.12	Tapwater RSL
EEG-107	10/7/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	400	U	0.0096	Tapwater RSL
EEG-107	10/7/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	2000		1	MCL
EEG-107	10/7/1999	SVOCs	108-95-2	Phenol	ug/l	14000	D	11000	Tapwater RSL
EEG-107	10/7/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	5	U	0.28	Tapwater RSL
EEG-107	10/7/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	5	U	0.2	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EEG-107	10/7/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	5	U	0.2	Tapwater RSL
EEG-107	10/7/1999	Pesticides	309-00-2	Aldrin	ug/l	2.5	U	0.004	Tapwater RSL
EEG-107	10/7/1999	Pesticides	5103-71-9	Alpha Chlordane	ug/l	2.5	U	2	MCL
EEG-107	10/7/1999	Pesticides	319-84-6	alpha-BHC	ug/l	6	P	0.011	Tapwater RSL
EEG-107	10/7/1999	Pesticides	319-85-7	beta-BHC	ug/l	0.7	U	0.037	Tapwater RSL
EEG-107	10/7/1999	Pesticides	319-86-8	delta-BHC	ug/l	17		0.011	Tapwater RSL
EEG-107	10/7/1999	Pesticides	60-57-1	Dieldrin	ug/l	5	U	0.0042	Tapwater RSL
EEG-107	10/7/1999	Pesticides	72-20-8	Endrin	ug/l	5	U	2	MCL
EEG-107	10/7/1999	Pesticides	7421-93-4	Endrin aldehyde	ug/l	5	U	2	MCL
EEG-107	10/7/1999	Pesticides	53494-70-5	Endrin ketone	ug/l	5	U	2	MCL
EEG-107	10/7/1999	Pesticides	5103-74-2	Gamma Chlordane	ug/l	2.5	U	2	MCL
EEG-107	10/7/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	2.5	U	0.2	MCL
EEG-107	10/7/1999	Pesticides	76-44-8	Heptachlor	ug/l	2.5	U	0.4	MCL
EEG-107	10/7/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	2.5	U	0.2	MCL
EEG-107	10/7/1999	Pesticides	8001-35-2	Toxaphene	ug/l	250	U	3	MCL
EEG-107	10/7/1999	Herbicides	94-75-7	2,4-D	ug/l	120		70	MCL
EEG-107	10/7/1999	Herbicides	75-99-0	Dalapon	ug/l	6000	U	200	MCL
EEG-107	10/7/1999	Herbicides	88-85-7	Dinoseb	ug/l	300	U	7	MCL
EEG-107	10/7/1999	Herbicides	94-74-6	MCPA	ug/l	6000	U	18	Tapwater RSL
EEG-107	10/7/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	19	J	1	MCL
EEG-107	10/7/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	3.57E-03		0.00003	MCL
EEG-107	10/7/1999	Metals	7429-90-5	Aluminum	mg/l	0.61		0.2	MCL
EEG-107	10/7/1999	Metals	7440-36-0	Antimony	mg/l	0.0086	B	0.006	MCL
EEG-107	10/7/1999	Metals	7440-38-2	Arsenic	mg/l	0.014		0.01	MCL
EEG-107	10/7/1999	Metals	7440-48-4	Cobalt	mg/l	0.14		0.011	Tapwater RSL
EEG-107	10/7/1999	Metals	7439-89-6	Iron	mg/l	270		0.3	MCL
EEG-107	10/7/1999	Metals	7439-92-1	Lead	mg/l	0.024		0.015	MCL
EEG-107	10/7/1999	Metals	7439-96-5	Manganese	mg/l	6.1	N	0.05	MCL
EEG-107	10/7/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EEG-107	10/7/1999	Metals	7440-62-2	Vanadium	mg/l	0.33		0.26	Tapwater RSL
Site H Source Area									
EE-01	10/12/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	12	J	0.067	Tapwater RSL
EE-01	10/12/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	100	U	5	MCL
EE-01	10/12/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	100	U	2.4	Tapwater RSL
EE-01	10/12/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	100	U	7	MCL
EE-01	10/12/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	100	U	5	MCL
EE-01	10/12/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	100	U	5	MCL
EE-01	10/12/1999	VOCs	71-43-2	Benzene	ug/l	1500		5	MCL
EE-01	10/12/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	100	U	80	MCL
EE-01	10/12/1999	VOCs	75-25-2	Bromoform	ug/l	100	U	8.5	Tapwater RSL
EE-01	10/12/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	200	U	8.7	Tapwater RSL
EE-01	10/12/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	100	U	5	MCL
EE-01	10/12/1999	VOCs	108-90-7	Chlorobenzene	ug/l	1200		100	MCL
EE-01	10/12/1999	VOCs	67-66-3	Chloroform	ug/l	100	U	80	MCL
EE-01	10/12/1999	VOCs	74-87-3	Chloromethane	ug/l	200	U	190	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-01	10/12/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	20	U	0.43	Tapwater RSL
EE-01	10/12/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	100	U	0.15	Tapwater RSL
EE-01	10/12/1999	VOCs	100-41-4	Ethylbenzene	ug/l	1800		700	MCL
EE-01	10/12/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	94	U	5	MCL
EE-01	10/12/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	100	U	5	MCL
EE-01	10/12/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
EE-01	10/12/1999	VOCs	79-01-6	Trichloroethene	ug/l	54	U	5	MCL
EE-01	10/12/1999	VOCs	75-01-4	Vinyl chloride	ug/l	200	U	2	MCL
EE-01	10/12/1999	SVOCs	95-50-1	1,2-Dichlorobenzene	ug/l	720	D	600	MCL
EE-01	10/12/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	2200	D	75	MCL
EE-01	10/12/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-01	10/12/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	270		6.1	Tapwater RSL
EE-01	10/12/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-01	10/12/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-01	10/12/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-01	10/12/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-01	10/12/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1800	D	0.34	Tapwater RSL
EE-01	10/12/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-01	10/12/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-01	10/12/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-01	10/12/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-01	10/12/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-01	10/12/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-01	10/12/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-01	10/12/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-01	10/12/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-01	10/12/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-01	10/12/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-01	10/12/1999	SVOCs	91-20-3	Naphthalene	ug/l	2300	D	0.14	Tapwater RSL
EE-01	10/12/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-01	10/12/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-01	10/12/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	4300	D	1	MCL
EE-01	10/12/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	10	U	0.28	Tapwater RSL
EE-01	10/12/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	10	U	0.2	Tapwater RSL
EE-01	10/12/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	10	U	0.2	Tapwater RSL
EE-01	10/12/1999	Pesticides	309-00-2	Aldrin	ug/l	5	U	0.004	Tapwater RSL
EE-01	10/12/1999	Pesticides	5103-71-9	Alpha Chlordane	ug/l	5	U	2	MCL
EE-01	10/12/1999	Pesticides	319-84-6	alpha-BHC	ug/l	3.9	U	0.011	Tapwater RSL
EE-01	10/12/1999	Pesticides	319-85-7	beta-BHC	ug/l	1.4	U	0.037	Tapwater RSL
EE-01	10/12/1999	Pesticides	319-86-8	delta-BHC	ug/l	1.2	U	0.011	Tapwater RSL
EE-01	10/12/1999	Pesticides	60-57-1	Dieldrin	ug/l	10	U	0.0042	Tapwater RSL
EE-01	10/12/1999	Pesticides	72-20-8	Endrin	ug/l	10	U	2	MCL
EE-01	10/12/1999	Pesticides	7421-93-4	Endrin aldehyde	ug/l	10	U	2	MCL
EE-01	10/12/1999	Pesticides	53494-70-5	Endrin ketone	ug/l	10	U	2	MCL
EE-01	10/12/1999	Pesticides	5103-74-2	Gamma Chlordane	ug/l	5	U	2	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-01	10/12/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	1.9	U	0.2	MCL
EE-01	10/12/1999	Pesticides	76-44-8	Heptachlor	ug/l	5	U	0.4	MCL
EE-01	10/12/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	5	U	0.2	MCL
EE-01	10/12/1999	Pesticides	72-43-5	Methoxychlor	ug/l	50	U	40	MCL
EE-01	10/12/1999	Pesticides	8001-35-2	Toxaphene	ug/l	500	U	3	MCL
EE-01	10/12/1999	Herbicides	93-72-1	2,4,5-TP (Silvex)	ug/l	250	U	50	MCL
EE-01	10/12/1999	Herbicides	94-75-7	2,4-D	ug/l	250	U	70	MCL
EE-01	10/12/1999	Herbicides	75-99-0	Dalapon	ug/l	60000	U	200	MCL
EE-01	10/12/1999	Herbicides	88-85-7	Dinoseb	ug/l	3000	U	7	MCL
EE-01	10/12/1999	Herbicides	94-74-6	MCPA	ug/l	60000	U	18	Tapwater RSL
EE-01	10/12/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	2400		1	MCL
EE-01	10/12/1999	PCBs	Total PCBs	Total PCBs	ug/l	40		0.5	MCL
EE-01	10/12/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	5.96E-05		0.00003	MCL
EE-01	10/12/1999	Metals	7429-90-5	Aluminum	mg/l	0.3		0.2	MCL
EE-01	10/12/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-01	10/12/1999	Metals	7440-38-2	Arsenic	mg/l	0.037		0.01	MCL
EE-01	10/12/1999	Metals	7440-48-4	Cobalt	mg/l	0.13		0.011	Tapwater RSL
EE-01	10/12/1999	Metals	7439-89-6	Iron	mg/l	77	N	0.3	MCL
EE-01	10/12/1999	Metals	7439-96-5	Manganese	mg/l	1.6	N	0.05	MCL
EE-01	10/12/1999	Metals	7440-28-0	Thallium	mg/l	0.006	B	0.002	MCL
EE-02-GP	11/4/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	250	U	200	MCL
EE-02-GP	11/4/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	250	U	0.067	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	250	U	5	MCL
EE-02-GP	11/4/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	250	U	2.4	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	250	U	7	MCL
EE-02-GP	11/4/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	250	U	5	MCL
EE-02-GP	11/4/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	250	U	5	MCL
EE-02-GP	11/4/1999	VOCs	71-43-2	Benzene	ug/l	2200		5	MCL
EE-02-GP	11/4/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	250	U	80	MCL
EE-02-GP	11/4/1999	VOCs	75-25-2	Bromoform	ug/l	250	U	8.5	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	490	U	8.7	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	250	U	5	MCL
EE-02-GP	11/4/1999	VOCs	108-90-7	Chlorobenzene	ug/l	4100		100	MCL
EE-02-GP	11/4/1999	VOCs	67-66-3	Chloroform	ug/l	410		80	MCL
EE-02-GP	11/4/1999	VOCs	74-87-3	Chloromethane	ug/l	500	U	190	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	250	U	0.15	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	240	U	5	MCL
EE-02-GP	11/4/1999	VOCs	100-42-5	Styrene	ug/l	250	U	100	MCL
EE-02-GP	11/4/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	250	U	5	MCL
EE-02-GP	11/4/1999	VOCs	108-88-3	Toluene	ug/l	1500		1000	MCL
EE-02-GP	11/4/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	250	U	0.43	Tapwater RSL
EE-02-GP	11/4/1999	VOCs	79-01-6	Trichloroethene	ug/l	40	J	5	MCL
EE-02-GP	11/4/1999	VOCs	75-01-4	Vinyl chloride	ug/l	500	U	2	MCL
EE-02-GP	11/4/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	290		70	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-02-GP	11/4/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	550	D	75	MCL
EE-02-GP	11/4/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	420	D	6.1	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	120-83-2	2,4-Dichlorophenol	ug/l	310		110	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	200		180	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	690	D	0.34	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-02-GP	11/4/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-02-GP	11/4/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	91-20-3	Naphthalene	ug/l	190		0.14	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	52		0.12	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-02-GP	11/4/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	580	D	1	MCL
EE-02-GP	11/4/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	5	U	0.28	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	5	U	0.2	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	5	U	0.2	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	309-00-2	Aldrin	ug/l	2.5	U	0.004	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.54	J	0.011	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	319-85-7	beta-BHC	ug/l	3.5	U	0.037	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	319-86-8	delta-BHC	ug/l	3	U	0.011	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	60-57-1	Dieldrin	ug/l	5	U	0.0042	Tapwater RSL
EE-02-GP	11/4/1999	Pesticides	7421-93-4	Endrin aldehyde	ug/l	5	U	2	MCL
EE-02-GP	11/4/1999	Pesticides	53494-70-5	Endrin ketone	ug/l	5	U	2	MCL
EE-02-GP	11/4/1999	Pesticides	5103-74-2	Gamma Chlordane	ug/l	2.5	U	2	MCL
EE-02-GP	11/4/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	4.8	U	0.2	MCL
EE-02-GP	11/4/1999	Pesticides	76-44-8	Heptachlor	ug/l	12	U	0.4	MCL
EE-02-GP	11/4/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	4.2	P	0.2	MCL
EE-02-GP	11/4/1999	Pesticides	8001-35-2	Toxaphene	ug/l	250	U	3	MCL
EE-02-GP	11/4/1999	Herbicides	93-72-1	2,4,5-TP (Silvex)	ug/l	120	U	50	MCL
EE-02-GP	11/4/1999	Herbicides	94-75-7	2,4-D	ug/l	190		70	MCL
EE-02-GP	11/4/1999	Herbicides	75-99-0	Dalapon	ug/l	30000	U	200	MCL
EE-02-GP	11/4/1999	Herbicides	88-85-7	Dinoseb	ug/l	1500	U	7	MCL
EE-02-GP	11/4/1999	Herbicides	94-74-6	MCPA	ug/l	30000	U	18	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-02-GP	11/4/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	500		1	MCL
EE-02-GP	11/4/1999	PCBs	Total PCBs	Total PCBs	ug/l	20		0.5	MCL
EE-02-GP	11/4/1999	Metals	7440-36-0	Antimony	mg/l	0.11		0.006	MCL
EE-02-GP	11/4/1999	Metals	7440-38-2	Arsenic	mg/l	1.2		0.01	MCL
EE-02-GP	11/4/1999	Metals	7440-48-4	Cobalt	mg/l	0.037		0.011	Tapwater RSL
EE-02-GP	11/4/1999	Metals	7439-89-6	Iron	mg/l	23	*	0.3	MCL
EE-02-GP	11/4/1999	Metals	7439-96-5	Manganese	mg/l	8.7	N	0.05	MCL
EE-02-GP	11/4/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EE-02-GPFD	11/4/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	500	U	200	MCL
EE-02-GPFD	11/4/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	500	U	0.067	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	500	U	5	MCL
EE-02-GPFD	11/4/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	500	U	2.4	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	500	U	7	MCL
EE-02-GPFD	11/4/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	500	U	5	MCL
EE-02-GPFD	11/4/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	500	U	5	MCL
EE-02-GPFD	11/4/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	2500	U	2000	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	71-43-2	Benzene	ug/l	2300		5	MCL
EE-02-GPFD	11/4/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	500	U	80	MCL
EE-02-GPFD	11/4/1999	VOCs	75-25-2	Bromoform	ug/l	500	U	8.5	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	980	U	8.7	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	500	U	5	MCL
EE-02-GPFD	11/4/1999	VOCs	108-90-7	Chlorobenzene	ug/l	4600		100	MCL
EE-02-GPFD	11/4/1999	VOCs	67-66-3	Chloroform	ug/l	440	J	80	MCL
EE-02-GPFD	11/4/1999	VOCs	74-87-3	Chloromethane	ug/l	1000	U	190	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	500	U	330	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	500	U	0.15	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	470	U	5	MCL
EE-02-GPFD	11/4/1999	VOCs	100-42-5	Styrene	ug/l	500	U	100	MCL
EE-02-GPFD	11/4/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	500	U	5	MCL
EE-02-GPFD	11/4/1999	VOCs	108-88-3	Toluene	ug/l	1600		1000	MCL
EE-02-GPFD	11/4/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	500	U	0.43	Tapwater RSL
EE-02-GPFD	11/4/1999	VOCs	79-01-6	Trichloroethene	ug/l	59	J	5	MCL
EE-02-GPFD	11/4/1999	VOCs	75-01-4	Vinyl chloride	ug/l	1000	U	2	MCL
EE-02-GPFD	11/4/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	340		70	MCL
EE-02-GPFD	11/4/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	720	D	75	MCL
EE-02-GPFD	11/4/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	510	D	6.1	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	120-83-2	2,4-Dichlorophenol	ug/l	430	D	110	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	230		180	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	860	D	0.34	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-02-GPFD	11/4/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-02-GPFD	11/4/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-02-GPFD	11/4/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	91-20-3	Naphthalene	ug/l	200		0.14	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	61		0.12	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-02-GPFD	11/4/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	760	D	1	MCL
EE-02-GPFD	11/4/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	5	U	0.28	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	5	U	0.2	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	5	U	0.2	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	309-00-2	Aldrin	ug/l	2.5	U	0.004	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	5103-71-9	Alpha Chlordane	ug/l	3.2	P	2	MCL
EE-02-GPFD	11/4/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.45	J	0.011	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	319-85-7	beta-BHC	ug/l	3.5	U	0.037	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	319-86-8	delta-BHC	ug/l	3	U	0.011	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	60-57-1	Dieldrin	ug/l	5	U	0.0042	Tapwater RSL
EE-02-GPFD	11/4/1999	Pesticides	7421-93-4	Endrin aldehyde	ug/l	5	U	2	MCL
EE-02-GPFD	11/4/1999	Pesticides	53494-70-5	Endrin ketone	ug/l	5	U	2	MCL
EE-02-GPFD	11/4/1999	Pesticides	5103-74-2	Gamma Chlordane	ug/l	2.5	U	2	MCL
EE-02-GPFD	11/4/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	4.8	U	0.2	MCL
EE-02-GPFD	11/4/1999	Pesticides	76-44-8	Heptachlor	ug/l	12	U	0.4	MCL
EE-02-GPFD	11/4/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	4.6	P	0.2	MCL
EE-02-GPFD	11/4/1999	Pesticides	8001-35-2	Toxaphene	ug/l	250	U	3	MCL
EE-02-GPFD	11/4/1999	Herbicides	93-72-1	2,4,5-TP (Silvex)	ug/l	120	U	50	MCL
EE-02-GPFD	11/4/1999	Herbicides	94-75-7	2,4-D	ug/l	170		70	MCL
EE-02-GPFD	11/4/1999	Herbicides	75-99-0	Dalapon	ug/l	30000	U	200	MCL
EE-02-GPFD	11/4/1999	Herbicides	88-85-7	Dinoseb	ug/l	1500	U	7	MCL
EE-02-GPFD	11/4/1999	Herbicides	94-74-6	MCPA	ug/l	30000	U	18	Tapwater RSL
EE-02-GPFD	11/4/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	450		1	MCL
EE-02-GPFD	11/4/1999	Metals	7440-36-0	Antimony	mg/l	0.1		0.006	MCL
EE-02-GPFD	11/4/1999	Metals	7440-38-2	Arsenic	mg/l	1.3		0.01	MCL
EE-02-GPFD	11/4/1999	Metals	7440-48-4	Cobalt	mg/l	0.042		0.011	Tapwater RSL
EE-02-GPFD	11/4/1999	Metals	7439-89-6	Iron	mg/l	25	*	0.3	MCL
EE-02-GPFD	11/4/1999	Metals	7439-96-5	Manganese	mg/l	8.9	N	0.05	MCL
EE-02-GPFD	11/4/1999	Metals	7440-28-0	Thallium	mg/l	0.0051	B	0.002	MCL
EE-03	10/12/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
EE-03	10/12/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-03	10/12/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
EE-03	10/12/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
EE-03	10/12/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
EE-03	10/12/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EE-03	10/12/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
EE-03	10/12/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-03	10/12/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-03	10/12/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-03	10/12/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-03	10/12/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-03	10/12/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
EE-03	10/12/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-03	10/12/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-03	10/12/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-03	10/12/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-03	10/12/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-03	10/12/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-03	10/12/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-03	10/12/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-03	10/12/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-03	10/12/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-03	10/12/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-03	10/12/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EE-03	10/12/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-03	10/12/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-03	10/12/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	3	J	1	MCL
EE-03	10/12/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EE-03	10/12/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
EE-03	10/12/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
EE-03	10/12/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
EE-03	10/12/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EE-03	10/12/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EE-03	10/12/1999	PCBs	Total PCBs	Total PCBs	ug/l	2		0.5	MCL
EE-03	10/12/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-03	10/12/1999	Metals	7440-38-2	Arsenic	mg/l	0.028		0.01	MCL
EE-03	10/12/1999	Metals	7439-89-6	Iron	mg/l	36	N	0.3	MCL
EE-03	10/12/1999	Metals	7439-96-5	Manganese	mg/l	1.4	N	0.05	MCL
EE-03	10/12/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Site I Source Area									
EE-12-GP	11/5/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	25	U	0.067	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	25	U	5	MCL
EE-12-GP	11/5/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	25	U	2.4	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	25	U	7	MCL
EE-12-GP	11/5/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	25	U	5	MCL
EE-12-GP	11/5/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	25	U	5	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-12-GP	11/5/1999	VOCs	71-43-2	Benzene	ug/l	680		5	MCL
EE-12-GP	11/5/1999	VOCs	75-25-2	Bromoform	ug/l	25	U	8.5	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	49	U	8.7	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	25	U	5	MCL
EE-12-GP	11/5/1999	VOCs	108-90-7	Chlorobenzene	ug/l	1400	D	100	MCL
EE-12-GP	11/5/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	25	U	0.15	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	24	U	5	MCL
EE-12-GP	11/5/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	25	U	5	MCL
EE-12-GP	11/5/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
EE-12-GP	11/5/1999	VOCs	79-01-6	Trichloroethene	ug/l	14	U	5	MCL
EE-12-GP	11/5/1999	VOCs	75-01-4	Vinyl chloride	ug/l	50	U	2	MCL
EE-12-GP	11/5/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	96		75	MCL
EE-12-GP	11/5/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1400	D	0.34	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-12-GP	11/5/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-12-GP	11/5/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	91-20-3	Naphthalene	ug/l	6.5	J	0.14	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-12-GP	11/5/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
EE-12-GP	11/5/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	2	U	0.28	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	2.2		0.2	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	2	U	0.2	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	309-00-2	Aldrin	ug/l	1	U	0.004	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	319-84-6	alpha-BHC	ug/l	2.4		0.011	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	319-85-7	beta-BHC	ug/l	0.28	U	0.037	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.24	U	0.011	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	60-57-1	Dieldrin	ug/l	2	U	0.0042	Tapwater RSL
EE-12-GP	11/5/1999	Pesticides	5103-74-2	Gamma Chlordane	ug/l	3.5		2	MCL
EE-12-GP	11/5/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	0.38	U	0.2	MCL
EE-12-GP	11/5/1999	Pesticides	76-44-8	Heptachlor	ug/l	2.5	P	0.4	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-12-GP	11/5/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	5.6	P	0.2	MCL
EE-12-GP	11/5/1999	Pesticides	8001-35-2	Toxaphene	ug/l	100	U	3	MCL
EE-12-GP	11/5/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EE-12-GP	11/5/1999	PCBs	Total PCBs	Total PCBs	ug/l	5		0.5	MCL
EE-12-GP	11/5/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	3.18E-03		0.00003	MCL
EE-12-GP	11/5/1999	Metals	7429-90-5	Aluminum	mg/l	4.9	*	0.2	MCL
EE-12-GP	11/5/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-12-GP	11/5/1999	Metals	7439-89-6	Iron	mg/l	62	*	0.3	MCL
EE-12-GP	11/5/1999	Metals	7439-96-5	Manganese	mg/l	6.8	N	0.05	MCL
EE-12-GP	11/5/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EE-13-GP	11/4/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
EE-13-GP	11/4/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
EE-13-GP	11/4/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
EE-13-GP	11/4/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
EE-13-GP	11/4/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
EE-13-GP	11/4/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EE-13-GP	11/4/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
EE-13-GP	11/4/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-13-GP	11/4/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-13-GP	11/4/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-13-GP	11/4/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
EE-13-GP	11/4/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EE-13-GP	11/4/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
EE-13-GP	11/4/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.021		0.011	Tapwater RSL
EE-13-GP	11/4/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
EE-13-GP	11/4/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EE-13-GP	11/4/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EE-13-GP	11/4/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	5.77E-05		0.00003	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-13-GP	11/4/1999	Metals	7429-90-5	Aluminum	mg/l	1.5	*	0.2	MCL
EE-13-GP	11/4/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-13-GP	11/4/1999	Metals	7439-89-6	Iron	mg/l	2.1	*	0.3	MCL
EE-13-GP	11/4/1999	Metals	7439-96-5	Manganese	mg/l	0.32	N	0.05	MCL
EE-13-GP	11/4/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EE-14-GP	11/5/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	120	U	0.067	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	120	U	5	MCL
EE-14-GP	11/5/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	120	U	2.4	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	120	U	7	MCL
EE-14-GP	11/5/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	120	U	5	MCL
EE-14-GP	11/5/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	120	U	5	MCL
EE-14-GP	11/5/1999	VOCs	71-43-2	Benzene	ug/l	750		5	MCL
EE-14-GP	11/5/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	120	U	80	MCL
EE-14-GP	11/5/1999	VOCs	75-25-2	Bromoform	ug/l	120	U	8.5	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	240	U	8.7	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	120	U	5	MCL
EE-14-GP	11/5/1999	VOCs	108-90-7	Chlorobenzene	ug/l	3800		100	MCL
EE-14-GP	11/5/1999	VOCs	67-66-3	Chloroform	ug/l	120	U	80	MCL
EE-14-GP	11/5/1999	VOCs	74-87-3	Chloromethane	ug/l	250	U	190	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	120	U	0.15	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	120	U	5	MCL
EE-14-GP	11/5/1999	VOCs	100-42-5	Styrene	ug/l	120	U	100	MCL
EE-14-GP	11/5/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	120	U	5	MCL
EE-14-GP	11/5/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	120	U	0.43	Tapwater RSL
EE-14-GP	11/5/1999	VOCs	79-01-6	Trichloroethene	ug/l	68	U	5	MCL
EE-14-GP	11/5/1999	VOCs	75-01-4	Vinyl chloride	ug/l	250	U	2	MCL
EE-14-GP	11/5/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	510	D	70	MCL
EE-14-GP	11/5/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	14000	D	75	MCL
EE-14-GP	11/5/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	15		6.1	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1800	D	0.34	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-14-GP	11/5/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-14-GP	11/5/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	91-20-3	Naphthalene	ug/l	36		0.14	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-14-GP	11/5/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	500	D	1	MCL
EE-14-GP	11/5/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	1	U	0.28	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	1	U	0.2	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	309-00-2	Aldrin	ug/l	0.5	U	0.004	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	319-84-6	alpha-BHC	ug/l	1.1		0.011	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	319-85-7	beta-BHC	ug/l	1	P	0.037	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.12	U	0.011	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	60-57-1	Dieldrin	ug/l	1	U	0.0042	Tapwater RSL
EE-14-GP	11/5/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	0.4		0.2	MCL
EE-14-GP	11/5/1999	Pesticides	76-44-8	Heptachlor	ug/l	0.5	U	0.4	MCL
EE-14-GP	11/5/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	0.68	P	0.2	MCL
EE-14-GP	11/5/1999	Pesticides	8001-35-2	Toxaphene	ug/l	50	U	3	MCL
EE-14-GP	11/5/1999	Herbicides	75-99-0	Dalapon	ug/l	6000	U	200	MCL
EE-14-GP	11/5/1999	Herbicides	88-85-7	Dinoseb	ug/l	300	U	7	MCL
EE-14-GP	11/5/1999	Herbicides	94-74-6	MCPA	ug/l	6000	U	18	Tapwater RSL
EE-14-GP	11/5/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	160		1	MCL
EE-14-GP	11/5/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.88		0.5	MCL
EE-14-GP	11/5/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	8.59E-04		0.00003	MCL
EE-14-GP	11/5/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-14-GP	11/5/1999	Metals	7440-38-2	Arsenic	mg/l	0.016		0.01	MCL
EE-14-GP	11/5/1999	Metals	7439-89-6	Iron	mg/l	64	*	0.3	MCL
EE-14-GP	11/5/1999	Metals	7439-92-1	Lead	mg/l	0.022		0.015	MCL
EE-14-GP	11/5/1999	Metals	7439-96-5	Manganese	mg/l	1.2	N	0.05	MCL
EE-14-GP	11/5/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Site I Downgradient									
AA-I-S1-17-21FT	12/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	960		2.4	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	32	J	7	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	71-43-2	Benzene	ug/l	620		5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	108-90-7	Chlorobenzene	ug/l	1600		100	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	1200		330	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	100-41-4	Ethylbenzene	ug/l	870		700	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-17-21FT	12/14/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	50	U	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	J	5	MCL
AA-I-S1-17-21FT	12/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	970		2	MCL
AA-I-S1-17-21FT	12/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	4100	D	0.34	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-17-21FT	12/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	1.1	J	0.012	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S1-17-21FT	12/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S1-17-21FT	12/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.0055	J	0.004	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.012	J	0.011	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	Pesticides	319-85-7	beta-BHC	ug/l	0.091	P	0.037	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.036		0.011	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-17-21FT	12/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-17-21FT	12/14/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S1-17-21FT	12/14/1999	Metals	7429-90-5	Aluminum	mg/l	1.4		0.2	MCL
AA-I-S1-17-21FT	12/14/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-17-21FT	12/14/1999	Metals	7440-38-2	Arsenic	mg/l	0.14		0.01	MCL
AA-I-S1-17-21FT	12/14/1999	Metals	7439-89-6	Iron	mg/l	33		0.3	MCL
AA-I-S1-17-21FT	12/14/1999	Metals	7439-96-5	Manganese	mg/l	3.7		0.05	MCL
AA-I-S1-17-21FT	12/14/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	500	U	200	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	500	U	0.067	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	500	U	5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	500	U	2.4	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	500	U	7	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	500	U	5	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-27-31FT	12/15/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	500	U	5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	2500	U	2000	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	71-43-2	Benzene	ug/l	290		5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	500	U	80	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	75-25-2	Bromoform	ug/l	500	U	8.5	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	980	U	8.7	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	500	U	5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	108-90-7	Chlorobenzene	ug/l	8700		100	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	67-66-3	Chloroform	ug/l	500	U	80	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	74-87-3	Chloromethane	ug/l	1000	U	190	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	500	U	330	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	500	U	0.15	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	470	U	5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	100-42-5	Styrene	ug/l	500	U	100	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	500	U	5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	500	U	0.43	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	VOCs	79-01-6	Trichloroethene	ug/l	270	U	5	MCL
AA-I-S1-27-31FT	12/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	1000	U	2	MCL
AA-I-S1-27-31FT	12/15/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	110		75	MCL
AA-I-S1-27-31FT	12/15/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	4400	D	75	MCL
AA-I-S1-27-31FT	12/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	2400		0.34	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-27-31FT	12/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S1-27-31FT	12/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	4.2	J	0.14	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S1-27-31FT	12/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.054	P	0.011	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.1		0.011	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-27-31FT	12/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-27-31FT	12/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-27-31FT	12/15/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-27-31FT	12/15/1999	Metals	7440-38-2	Arsenic	mg/l	0.068		0.01	MCL
AA-I-S1-27-31FT	12/15/1999	Metals	7439-89-6	Iron	mg/l	65		0.3	MCL
AA-I-S1-27-31FT	12/15/1999	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
AA-I-S1-27-31FT	12/15/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	25	U	0.067	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	25	U	5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	180		2.4	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	31		7	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	25	U	5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	25	U	5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	75-25-2	Bromoform	ug/l	25	U	8.5	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	49	U	8.7	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	25	U	5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	108-90-7	Chlorobenzene	ug/l	120		100	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	510		330	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	25	U	0.15	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	24	U	5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	7.4	J	5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	VOCs	79-01-6	Trichloroethene	ug/l	180		5	MCL
AA-I-S2-16-20FT	12/3/1999	VOCs	75-01-4	Vinyl chloride	ug/l	160		2	MCL
AA-I-S2-16-20FT	12/3/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	92		75	MCL
AA-I-S2-16-20FT	12/3/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	21		0.34	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	0.59	J	0.029	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.98	J	0.2	MCL
AA-I-S2-16-20FT	12/3/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	1.2	J	0.29	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	1.1	J	0.0029	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-16-20FT	12/3/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	B	0.029	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-16-20FT	12/3/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S2-16-20FT	12/3/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S2-16-20FT	12/3/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7429-90-5	Aluminum	mg/l	0.36		0.2	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7440-36-0	Antimony	mg/l	0.2	U	0.006	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7440-43-9	Cadmium	mg/l	0.07		0.005	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7440-48-4	Cobalt	mg/l	0.047		0.011	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	Metals	7439-89-6	Iron	mg/l	0.89		0.3	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7439-96-5	Manganese	mg/l	7.4		0.05	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7440-02-0	Nickel	mg/l	7.8		0.73	Tapwater RSL
AA-I-S2-16-20FT	12/3/1999	Metals	7782-49-2	Selenium	mg/l	0.1	U	0.05	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-16-20FT	12/3/1999	Metals	7440-66-6	Zinc	mg/l	33		5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	100	U	0.067	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	100	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	160		2.4	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	100	B	7	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	100	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	100	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	71-43-2	Benzene	ug/l	120		5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	100	U	80	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	75-25-2	Bromoform	ug/l	100	U	8.5	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	200	U	8.7	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	100	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	108-90-7	Chlorobenzene	ug/l	3200	B	100	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	67-66-3	Chloroform	ug/l	100	U	80	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	74-87-3	Chloromethane	ug/l	200	U	190	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	20	U	0.43	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	100	U	0.15	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	94	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	100	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	VOCs	79-01-6	Trichloroethene	ug/l	54	U	5	MCL
AA-I-S2-26-30FT	12/6/1999	VOCs	75-01-4	Vinyl chloride	ug/l	240		2	MCL
AA-I-S2-26-30FT	12/6/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	120		75	MCL
AA-I-S2-26-30FT	12/6/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	4200	D	75	MCL
AA-I-S2-26-30FT	12/6/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-26-30FT	12/6/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	680	D	0.34	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-26-30FT	12/6/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	0.85	J	0.0029	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-26-30FT	12/6/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	B	0.029	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S2-26-30FT	12/6/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.042		0.011	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S2-26-30FT	12/6/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S2-26-30FT	12/6/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S2-26-30FT	12/6/1999	Metals	7440-38-2	Arsenic	mg/l	0.041		0.01	MCL
AA-I-S2-26-30FT	12/6/1999	Metals	7440-48-4	Cobalt	mg/l	0.04		0.011	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-I-S2-26-30FT	12/6/1999	Metals	7439-96-5	Manganese	mg/l	2.3		0.05	MCL
AA-I-S2-26-30FT	12/6/1999	Metals	7440-02-0	Nickel	mg/l	1		0.73	Tapwater RSL
AA-I-S2-26-30FT	12/6/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-24-28FT	12/3/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S3-24-28FT	12/3/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-24-28FT	12/3/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.45	J	0.2	MCL
AA-I-S3-24-28FT	12/3/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	0.3	J	0.029	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-24-28FT	12/3/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	B	0.029	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S3-24-28FT	12/3/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-24-28FT	12/3/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-24-28FT	12/3/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-24-28FT	12/3/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-24-28FT	12/3/1999	Metals	7439-89-6	Iron	mg/l	0.33		0.3	MCL
AA-I-S3-24-28FT	12/3/1999	Metals	7439-96-5	Manganese	mg/l	0.43		0.05	MCL
AA-I-S3-24-28FT	12/3/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EE-15-GP	11/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	10	U	0.067	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	10	U	5	MCL
EE-15-GP	11/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	11		2.4	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	10	U	7	MCL
EE-15-GP	11/8/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	10	U	5	MCL
EE-15-GP	11/8/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	10	U	5	MCL
EE-15-GP	11/8/1999	VOCs	75-25-2	Bromoform	ug/l	10	U	8.5	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	20	U	8.7	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	10	U	5	MCL
EE-15-GP	11/8/1999	VOCs	108-90-7	Chlorobenzene	ug/l	200		100	MCL
EE-15-GP	11/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	2	U	0.43	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	10	U	0.15	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	9.4	U	5	MCL
EE-15-GP	11/8/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	10	U	5	MCL
EE-15-GP	11/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
EE-15-GP	11/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	20	U	2	MCL
EE-15-GP	11/8/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	440	D	75	MCL
EE-15-GP	11/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-15-GP	11/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	6.9	J	0.34	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-15-GP	11/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-15-GP	11/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-15-GP	11/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
EE-15-GP	11/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EE-15-GP	11/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
EE-15-GP	11/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
EE-15-GP	11/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
EE-15-GP	11/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EE-15-GP	11/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EE-15-GP	11/8/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
EE-15-GP	11/8/1999	Metals	7429-90-5	Aluminum	mg/l	7.1	*	0.2	MCL
EE-15-GP	11/8/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-15-GP	11/8/1999	Metals	7440-38-2	Arsenic	mg/l	0.026		0.01	MCL
EE-15-GP	11/8/1999	Metals	7439-89-6	Iron	mg/l	42	*	0.3	MCL
EE-15-GP	11/8/1999	Metals	7439-96-5	Manganese	mg/l	1.2	N	0.05	MCL
EE-15-GP	11/8/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EE-15-GPFD	11/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	10	U	0.067	Tapwater RSL
EE-15-GPFD	11/8/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	10	U	5	MCL
EE-15-GPFD	11/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	11		2.4	Tapwater RSL
EE-15-GPFD	11/8/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	10	U	7	MCL
EE-15-GPFD	11/8/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	10	U	5	MCL
EE-15-GPFD	11/8/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	10	U	5	MCL
EE-15-GPFD	11/8/1999	VOCs	75-25-2	Bromoform	ug/l	10	U	8.5	Tapwater RSL
EE-15-GPFD	11/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	20	U	8.7	Tapwater RSL
EE-15-GPFD	11/8/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	10	U	5	MCL
EE-15-GPFD	11/8/1999	VOCs	108-90-7	Chlorobenzene	ug/l	190		100	MCL
EE-15-GPFD	11/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	2	U	0.43	Tapwater RSL
EE-15-GPFD	11/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	10	U	0.15	Tapwater RSL
EE-15-GPFD	11/8/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	9.4	U	5	MCL
EE-15-GPFD	11/8/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	10	U	5	MCL
EE-15-GPFD	11/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EE-15-GPFD	11/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	20	U	2	MCL
EE-15-GPFD	11/8/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	420	D	75	MCL
EE-15-GPFD	11/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	7.6	J	0.34	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EE-15-GPFD	11/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EE-15-GPFD	11/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EE-15-GPFD	11/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
EE-15-GPFD	11/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EE-15-GPFD	11/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
EE-15-GPFD	11/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
EE-15-GPFD	11/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
EE-15-GPFD	11/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EE-15-GPFD	11/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EE-15-GPFD	11/8/1999	Metals	7429-90-5	Aluminum	mg/l	1.4	*	0.2	MCL
EE-15-GPFD	11/8/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EE-15-GPFD	11/8/1999	Metals	7440-38-2	Arsenic	mg/l	0.016		0.01	MCL
EE-15-GPFD	11/8/1999	Metals	7439-89-6	Iron	mg/l	28	*	0.3	MCL
EE-15-GPFD	11/8/1999	Metals	7439-96-5	Manganese	mg/l	1.1	N	0.05	MCL
EE-15-GPFD	11/8/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Sites G, H, and L Downgradient									
AA-GHL-S1-12-16FT	11/16/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	13		5	MCL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S1-12-16FT	11/16/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S1-12-16FT	11/16/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-12-16FT	11/16/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-12-16FT	11/16/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S1-12-16FT	11/16/1999	Metals	7439-89-6	Iron	mg/l	0.77	N	0.3	MCL
AA-GHL-S1-12-16FT	11/16/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	7.1		5	MCL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S1-22-26FT	11/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.034	P	0.011	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S1-22-26FT	11/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-22-26FT	11/17/1999	Metals	7429-90-5	Aluminum	mg/l	0.33		0.2	MCL
AA-GHL-S1-22-26FT	11/17/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S1-22-26FT	11/17/1999	Metals	7439-89-6	Iron	mg/l	1.1	N	0.3	MCL
AA-GHL-S1-22-26FT	11/17/1999	Metals	7439-96-5	Manganese	mg/l	0.75		0.05	MCL
AA-GHL-S1-22-26FT	11/17/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	7.8		5	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.030	P	0.011	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-22-26FTFD	11/17/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	Metals	7439-89-6	Iron	mg/l	0.40	N	0.3	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	Metals	7439-96-5	Manganese	mg/l	0.71		0.05	MCL
AA-GHL-S1-22-26FTFD	11/17/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S2-12-16FT	11/18/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S2-12-16FT	11/18/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-12-16FT	11/18/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S2-12-16FT	11/18/1999	Metals	7429-90-5	Aluminum	mg/l	1.6		0.2	MCL
AA-GHL-S2-12-16FT	11/18/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S2-12-16FT	11/18/1999	Metals	7439-89-6	Iron	mg/l	2.7	N	0.3	MCL
AA-GHL-S2-12-16FT	11/18/1999	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
AA-GHL-S2-12-16FT	11/18/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S2-22-26FT	11/18/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-22-26FT	11/18/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S2-22-26FT	11/18/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-22-26FT	11/18/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S2-22-26FT	11/18/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S2-22-26FT	11/18/1999	Metals	7439-96-5	Manganese	mg/l	0.22		0.05	MCL
AA-GHL-S2-22-26FT	11/18/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-20-24FT	12/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-20-24FT	12/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-20-24FT	12/14/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.58		0.5	MCL
AA-GHL-S3-20-24FT	12/14/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-20-24FT	12/14/1999	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
AA-GHL-S3-20-24FT	12/14/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
Creek Segment B Downgradient									
AA-SW-S1-14-16FT	11/1/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-14-16FT	11/1/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-14-16FT	11/1/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-14-16FT	11/1/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-14-16FT	11/1/1999	Metals	7429-90-5	Aluminum	mg/l	0.21		0.2	MCL
AA-SW-S1-14-16FT	11/1/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-14-16FT	11/1/1999	Metals	7439-89-6	Iron	mg/l	0.71		0.3	MCL
AA-SW-S1-14-16FT	11/1/1999	Metals	7439-96-5	Manganese	mg/l	0.78		0.05	MCL
AA-SW-S1-14-16FT	11/1/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-24-26FT	11/2/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-24-26FT	11/2/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-24-26FT	11/2/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-24-26FT	11/2/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-24-26FT	11/2/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-24-26FT	11/2/1999	Metals	7429-90-5	Aluminum	mg/l	4.8		0.2	MCL
AA-SW-S1-24-26FT	11/2/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-24-26FT	11/2/1999	Metals	7439-89-6	Iron	mg/l	9.1		0.3	MCL
AA-SW-S1-24-26FT	11/2/1999	Metals	7439-96-5	Manganese	mg/l	0.62		0.05	MCL
AA-SW-S1-24-26FT	11/2/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S2-14-16FT	11/9/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-14-16FT	11/9/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-14-16FT	11/9/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-14-16FT	11/9/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-14-16FT	11/9/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.78		0.5	MCL
AA-SW-S2-14-16FT	11/9/1999	Metals	7429-90-5	Aluminum	mg/l	0.27	N	0.2	MCL
AA-SW-S2-14-16FT	11/9/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-14-16FT	11/9/1999	Metals	7439-89-6	Iron	mg/l	0.96		0.3	MCL
AA-SW-S2-14-16FT	11/9/1999	Metals	7439-96-5	Manganese	mg/l	0.13		0.05	MCL
AA-SW-S2-14-16FT	11/9/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-22-26FT	11/9/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-22-26FT	11/9/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-22-26FT	11/9/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-22-26FT	11/9/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-22-26FT	11/9/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.75		0.5	MCL
AA-SW-S2-22-26FT	11/9/1999	Metals	7429-90-5	Aluminum	mg/l	2.6	N	0.2	MCL
AA-SW-S2-22-26FT	11/9/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-22-26FT	11/9/1999	Metals	7439-89-6	Iron	mg/l	6.7		0.3	MCL
AA-SW-S2-22-26FT	11/9/1999	Metals	7439-96-5	Manganese	mg/l	1.3		0.05	MCL
AA-SW-S2-22-26FT	11/9/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-14-16FT	11/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-14-16FT	11/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-14-16FT	11/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-14-16FT	11/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-14-16FT	11/10/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.68		0.5	MCL
AA-SW-S3-14-16FT	11/10/1999	Metals	7429-90-5	Aluminum	mg/l	4.4	N	0.2	MCL
AA-SW-S3-14-16FT	11/10/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-14-16FT	11/10/1999	Metals	7439-89-6	Iron	mg/l	8.7		0.3	MCL
AA-SW-S3-14-16FT	11/10/1999	Metals	7439-96-5	Manganese	mg/l	0.36		0.05	MCL
AA-SW-S3-14-16FT	11/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-22-26FT	11/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-22-26FT	11/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-22-26FT	11/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-22-26FT	11/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-22-26FT	11/10/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.76		0.5	MCL
AA-SW-S3-22-26FT	11/10/1999	Metals	7429-90-5	Aluminum	mg/l	0.70	N	0.2	MCL
AA-SW-S3-22-26FT	11/10/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-22-26FT	11/10/1999	Metals	7439-89-6	Iron	mg/l	2.0		0.3	MCL
AA-SW-S3-22-26FT	11/10/1999	Metals	7439-96-5	Manganese	mg/l	2.0		0.05	MCL
AA-SW-S3-22-26FT	11/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
EEG-103-GP	11/3/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
EEG-103-GP	11/3/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
EEG-103-GP	11/3/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
EEG-103-GP	11/3/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
EEG-103-GP	11/3/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
EEG-103-GP	11/3/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EEG-103-GP	11/3/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
EEG-103-GP	11/3/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EEG-103-GP	11/3/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EEG-103-GP	11/3/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EEG-103-GP	11/3/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
EEG-103-GP	11/3/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EEG-103-GP	11/3/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
EEG-103-GP	11/3/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
EEG-103-GP	11/3/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
EEG-103-GP	11/3/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EEG-103-GP	11/3/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EEG-103-GP	11/3/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
EEG-103-GP	11/3/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EEG-103-GP	11/3/1999	Metals	7440-38-2	Arsenic	mg/l	0.014		0.01	MCL
EEG-103-GP	11/3/1999	Metals	7439-89-6	Iron	mg/l	1.4		0.3	MCL
EEG-103-GP	11/3/1999	Metals	7439-96-5	Manganese	mg/l	0.27		0.05	MCL
EEG-103-GP	11/3/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EEG-104	10/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
EEG-104	10/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
EEG-104	10/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
EEG-104	10/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
EEG-104	10/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
EEG-104	10/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EEG-104	10/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
EEG-104	10/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EEG-104	10/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EEG-104	10/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EEG-104	10/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EEG-104	10/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EEG-104	10/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
EEG-104	10/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EEG-104	10/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EEG-104	10/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EEG-104	10/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EEG-104	10/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EEG-104	10/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EEG-104	10/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EEG-104	10/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EEG-104	10/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EEG-104	10/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EEG-104	10/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EEG-104	10/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EEG-104	10/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EEG-104	10/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EEG-104	10/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
EEG-104	10/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EEG-104	10/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
EEG-104	10/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EEG-104	10/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EEG-104	10/8/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
EEG-104	10/8/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
EEG-104	10/8/1999	Metals	7439-96-5	Manganese	mg/l	0.72	N	0.05	MCL
EEG-104	10/8/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
EEG-105-GP	11/2/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
EEG-105-GP	11/2/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
EEG-105-GP	11/2/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
EEG-105-GP	11/2/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
EEG-105-GP	11/2/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
EEG-105-GP	11/2/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
EEG-105-GP	11/2/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
EEG-105-GP	11/2/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
EEG-105-GP	11/2/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
EEG-105-GP	11/2/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
EEG-105-GP	11/2/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
EEG-105-GP	11/2/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
EEG-105-GP	11/2/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	P	0.011	Tapwater RSL
EEG-105-GP	11/2/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
EEG-105-GP	11/2/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
EEG-105-GP	11/2/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
EEG-105-GP	11/2/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
EEG-105-GP	11/2/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
EEG-105-GP	11/2/1999	Metals	7439-96-5	Manganese	mg/l	0.45		0.05	MCL
EEG-105-GP	11/2/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL

Table 5-1
Groundwater Exceedances (a)
Shallow Hydrogeologic Unit (SHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference

Notes:
CAS - Chemical Abstracts Service.
MCL - Maximum Contaminant Level. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. USEPA Office of Water. August, 2006.
RSL - Regional Screening Level. USEPA. April 2009.
USEPA - United States Environmental Protection Agency.
(a) This table presents groundwater results that exceed the associated screening level (equal to the MCL or the RSL for constituents with no available MCL).

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
Upgradient									
UGGW-EE-04-60FT	10/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-04-60FT	10/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-04-60FT	10/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-04-60FT	10/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
UGGW-EE-04-60FT	10/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EE-04-60FT	10/13/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	Metals	7429-90-5	Aluminum	mg/l	24		0.2	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7440-38-2	Arsenic	mg/l	0.014		0.01	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7440-47-3	Chromium	mg/l	0.18		0.1	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7440-48-4	Cobalt	mg/l	0.018		0.011	Tapwater RSL
UGGW-EE-04-60FT	10/13/1999	Metals	7439-89-6	Iron	mg/l	57	N	0.3	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7439-92-1	Lead	mg/l	0.021		0.015	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7439-96-5	Manganese	mg/l	1.2	N	0.05	MCL
UGGW-EE-04-60FT	10/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
UGGW-EE-20-60FT	1/24/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EE-20-60FT	1/24/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-20-60FT	1/24/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	0.97	J	0.029	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-20-60FT	1/24/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-20-60FT	1/24/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
UGGW-EE-20-60FT	1/24/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
UGGW-EE-20-60FT	1/24/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-20-60FT	1/24/2000	Metals	7429-90-5	Aluminum	mg/l	0.46	N	0.2	MCL
UGGW-EE-20-60FT	1/24/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
UGGW-EE-20-60FT	1/24/2000	Metals	7439-89-6	Iron	mg/l	12		0.3	MCL
UGGW-EE-20-60FT	1/24/2000	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
UGGW-EE-20-60FT	1/24/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
Site H Source Area									
AA-H-S1-53-57FT	3/10/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-53-57FT	3/10/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	2500	D	70	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-53-57FT	3/10/2000	SVOCs	95-50-1	1,2-Dichlorobenzene	ug/l	680	D	600	MCL
AA-H-S1-53-57FT	3/10/2000	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	94		75	MCL
AA-H-S1-53-57FT	3/10/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	2600	D	75	MCL
AA-H-S1-53-57FT	3/10/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	12	J	0.34	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-H-S1-53-57FT	3/10/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	21		1	MCL
AA-H-S1-53-57FT	3/10/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	91-20-3	Naphthalene	ug/l	3.2	J	0.14	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-H-S1-53-57FT	3/10/2000	Pesticides	72-54-8	4,4'-DDD	ug/l	0.90	D	0.28	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	Pesticides	50-29-3	4,4'-DDT	ug/l	4.4	D	0.2	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	Pesticides	309-00-2	Aldrin	ug/l	0.066	J	0.004	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.15	P	0.011	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-53-57FT	3/10/2000	Herbicides	75-99-0	Dalapon	ug/l	600	U	200	MCL
AA-H-S1-53-57FT	3/10/2000	Herbicides	88-85-7	Dinoseb	ug/l	30	U	7	MCL
AA-H-S1-53-57FT	3/10/2000	Herbicides	94-74-6	MCPA	ug/l	600	U	18	Tapwater RSL
AA-H-S1-53-57FT	3/10/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	4.2	J	1	MCL
AA-H-S1-53-57FT	3/10/2000	PCBs	Total PCBs	Total PCBs	ug/l	10.32		0.5	MCL
AA-H-S1-53-57FT	3/10/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	4.72E-03		0.00003	MCL
AA-H-S1-53-57FT	3/10/2000	Metals	7429-90-5	Aluminum	mg/l	2.1	N	0.2	MCL
AA-H-S1-53-57FT	3/10/2000	Metals	7440-36-0	Antimony	mg/l	0.0062	B	0.006	MCL
AA-H-S1-53-57FT	3/10/2000	Metals	7440-38-2	Arsenic	mg/l	0.33		0.01	MCL
AA-H-S1-53-57FT	3/10/2000	Metals	7439-89-6	Iron	mg/l	18		0.3	MCL
AA-H-S1-53-57FT	3/10/2000	Metals	7439-96-5	Manganese	mg/l	0.72		0.05	MCL
AA-H-S1-53-57FT	3/10/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-H-S1-63-67FT	3/10/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-63-67FT	3/10/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	510		70	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	140	J	75	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	14000		75	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	500	U	0.32	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	100	U	6.1	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	700	U	73	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	500	U	0.22	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	500	U	37	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	95-57-8	2-Chlorophenol	ug/l	500	U	180	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	91-57-6	2-Methylnaphthalene	ug/l	500	U	150	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	88-74-4	2-Nitroaniline	ug/l	2500	U	110	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	1000	U	0.15	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	500	U	180	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	2500	U	3.4	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	650	U	3.7	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	1000	U	0.34	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	2500	U	3.4	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	500	U	0.029	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	500	U	0.2	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	500	U	0.029	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	500	U	0.29	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	500	U	110	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	500	U	0.012	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	90	U	6	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	500	U	35	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	218-01-9	Chrysene	ug/l	500	U	2.9	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	500	U	0.0029	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	500	U	1	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	500	U	0.86	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	500	U	50	MCL
AA-H-S1-63-67FT	3/10/2000	SVOCs	67-72-1	Hexachloroethane	ug/l	95	U	4.8	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	500	U	0.029	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	78-59-1	Isophorone	ug/l	500	U	71	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	91-20-3	Naphthalene	ug/l	500	U	0.14	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	180	U	0.12	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	500	U	0.0096	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	250	U	1	MCL
AA-H-S1-63-67FT	3/10/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.021	J	0.011	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.077	P	0.011	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.0050	J	0.0042	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-63-67FT	3/10/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-63-67FT	3/10/2000	Herbicides	75-99-0	Dalapon	ug/l	240	U	200	MCL
AA-H-S1-63-67FT	3/10/2000	Herbicides	88-85-7	Dinoseb	ug/l	12	U	7	MCL
AA-H-S1-63-67FT	3/10/2000	Herbicides	94-74-6	MCPA	ug/l	240	U	18	Tapwater RSL
AA-H-S1-63-67FT	3/10/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	1.2	J	1	MCL
AA-H-S1-63-67FT	3/10/2000	PCBs	Total PCBs	Total PCBs	ug/l	2.93		0.5	MCL
AA-H-S1-63-67FT	3/10/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	8.09E-05		0.00003	MCL
AA-H-S1-63-67FT	3/10/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-H-S1-63-67FT	3/10/2000	Metals	7440-38-2	Arsenic	mg/l	0.39		0.01	MCL
AA-H-S1-63-67FT	3/10/2000	Metals	7439-89-6	Iron	mg/l	9.8		0.3	MCL
AA-H-S1-63-67FT	3/10/2000	Metals	7439-96-5	Manganese	mg/l	0.44		0.05	MCL
AA-H-S1-63-67FT	3/10/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
Site I Source Area									
AA-I-S4-56-60FT	3/7/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S4-56-60FT	3/7/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	290		75	MCL
AA-I-S4-56-60FT	3/7/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S4-56-60FT	3/7/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S4-56-60FT	3/7/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S4-56-60FT	3/7/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S4-56-60FT	3/7/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S4-56-60FT	3/7/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S4-56-60FT	3/7/2000	Metals	7429-90-5	Aluminum	mg/l	3.5		0.2	MCL
AA-I-S4-56-60FT	3/7/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S4-56-60FT	3/7/2000	Metals	7439-89-6	Iron	mg/l	28		0.3	MCL
AA-I-S4-56-60FT	3/7/2000	Metals	7439-96-5	Manganese	mg/l	1.1		0.05	MCL
AA-I-S4-56-60FT	3/7/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	250		75	MCL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	2.3	J	0.029	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	3.4	J	0.2	MCL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	3.8	J	0.029	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	4.0	J	0.29	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	218-01-9	Chrysene	ug/l	3.1	J	2.9	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	3.0	J	0.0029	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	0.92	J	0.029	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S4-56-60FTFD	3/7/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S4-56-60FTFD	3/7/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S4-56-60FTFD	3/7/2000	Metals	7429-90-5	Aluminum	mg/l	5.1		0.2	MCL
AA-I-S4-56-60FTFD	3/7/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S4-56-60FTFD	3/7/2000	Metals	7439-89-6	Iron	mg/l	32		0.3	MCL
AA-I-S4-56-60FTFD	3/7/2000	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
AA-I-S4-56-60FTFD	3/7/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S4-66-70FT	3/7/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S4-66-70FT	3/7/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S4-66-70FT	3/7/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S4-66-70FT	3/7/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S4-66-70FT	3/7/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S4-66-70FT	3/7/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S4-66-70FT	3/7/2000	Metals	7429-90-5	Aluminum	mg/l	1.8		0.2	MCL
AA-I-S4-66-70FT	3/7/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S4-66-70FT	3/7/2000	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-I-S4-66-70FT	3/7/2000	Metals	7439-96-5	Manganese	mg/l	0.84		0.05	MCL
AA-I-S4-66-70FT	3/7/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
Site I Downgradient									
AA-I-S1-37-41FT	12/15/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	500	U	200	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	500	U	0.067	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-37-41FT	12/15/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	500	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	500	U	2.4	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	500	U	7	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	500	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	500	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	2500	U	2000	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	71-43-2	Benzene	ug/l	120	J	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	500	U	80	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	75-25-2	Bromoform	ug/l	500	U	8.5	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	980	U	8.7	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	500	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	108-90-7	Chlorobenzene	ug/l	9800		100	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	67-66-3	Chloroform	ug/l	500	U	80	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	74-87-3	Chloromethane	ug/l	1000	U	190	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	500	U	330	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	500	U	0.15	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	470	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	100-42-5	Styrene	ug/l	500	U	100	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	500	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	500	U	0.43	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	VOCs	79-01-6	Trichloroethene	ug/l	270	U	5	MCL
AA-I-S1-37-41FT	12/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	1000	U	2	MCL
AA-I-S1-37-41FT	12/15/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	280		75	MCL
AA-I-S1-37-41FT	12/15/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	10000	D	75	MCL
AA-I-S1-37-41FT	12/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1400	J	0.34	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-37-41FT	12/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S1-37-41FT	12/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	15		0.14	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-37-41FT	12/15/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S1-37-41FT	12/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.066		0.011	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.079	P	0.011	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.0077	J	0.0042	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-37-41FT	12/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-37-41FT	12/15/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.77		0.5	MCL
AA-I-S1-37-41FT	12/15/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-37-41FT	12/15/1999	Metals	7439-89-6	Iron	mg/l	59		0.3	MCL
AA-I-S1-37-41FT	12/15/1999	Metals	7439-96-5	Manganese	mg/l	2.1		0.05	MCL
AA-I-S1-37-41FT	12/15/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	50	U	2.4	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	50	U	7	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	71-43-2	Benzene	ug/l	190		5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	108-90-7	Chlorobenzene	ug/l	9400		100	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	50	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	U	5	MCL
AA-I-S1-47-51FT	12/16/1999	VOCs	75-01-4	Vinyl chloride	ug/l	320		2	MCL
AA-I-S1-47-51FT	12/16/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	290	J	75	MCL
AA-I-S1-47-51FT	12/16/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	6700	D	75	MCL
AA-I-S1-47-51FT	12/16/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1700	D	0.34	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-47-51FT	12/16/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-47-51FT	12/16/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S1-47-51FT	12/16/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	91-20-3	Naphthalene	ug/l	24		0.14	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S1-47-51FT	12/16/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	Pesticides	319-85-7	beta-BHC	ug/l	46	P	0.037	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-47-51FT	12/16/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-47-51FT	12/16/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S1-47-51FT	12/16/1999	Metals	7429-90-5	Aluminum	mg/l	0.58	N	0.2	MCL
AA-I-S1-47-51FT	12/16/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-47-51FT	12/16/1999	Metals	7439-89-6	Iron	mg/l	34		0.3	MCL
AA-I-S1-47-51FT	12/16/1999	Metals	7439-96-5	Manganese	mg/l	3.4		0.05	MCL
AA-I-S1-47-51FT	12/16/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	500	U	200	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	500	U	0.067	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	500	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	500	U	2.4	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	500	U	7	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	500	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	500	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	2500	U	2000	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	71-43-2	Benzene	ug/l	120	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	500	U	80	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	75-25-2	Bromoform	ug/l	500	U	8.5	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	980	U	8.7	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	500	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	108-90-7	Chlorobenzene	ug/l	20000		100	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	67-66-3	Chloroform	ug/l	500	U	80	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	74-87-3	Chloromethane	ug/l	1000	U	190	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	500	U	330	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	500	U	0.15	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	470	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	100-42-5	Styrene	ug/l	500	U	100	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	500	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	500	U	0.43	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	VOCs	79-01-6	Trichloroethene	ug/l	270	U	5	MCL
AA-I-S1-57-61FT	12/16/1999	VOCs	75-01-4	Vinyl chloride	ug/l	1000	U	2	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-57-61FT	12/16/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	500	U	70	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	200	J	75	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	8100		75	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	500	U	0.32	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	100	U	6.1	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	120-83-2	2,4-Dichlorophenol	ug/l	500	U	110	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	700	U	73	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	500	U	0.22	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	500	U	37	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	95-57-8	2-Chlorophenol	ug/l	500	U	180	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	91-57-6	2-Methylnaphthalene	ug/l	500	U	150	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	88-74-4	2-Nitroaniline	ug/l	2500	U	110	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	1000	U	0.15	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	500	U	180	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	2500	U	3.4	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	650	U	3.7	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	520	J	0.34	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	2500	U	3.4	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	500	U	0.029	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	500	U	0.2	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	500	U	0.029	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	500	U	0.29	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	500	U	110	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	500	U	0.012	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	90	U	6	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	500	U	35	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	218-01-9	Chrysene	ug/l	500	U	2.9	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	500	U	0.0029	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	500	U	1	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	500	U	0.86	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	500	U	50	MCL
AA-I-S1-57-61FT	12/16/1999	SVOCs	67-72-1	Hexachloroethane	ug/l	95	U	4.8	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	500	U	0.029	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	78-59-1	Isophorone	ug/l	500	U	71	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	91-20-3	Naphthalene	ug/l	500	U	0.14	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	180	U	0.12	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	500	U	0.0096	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	250	U	1	MCL
AA-I-S1-57-61FT	12/16/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-57-61FT	12/16/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-57-61FT	12/16/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-57-61FT	12/16/1999	Metals	7429-90-5	Aluminum	mg/l	3	N	0.2	MCL
AA-I-S1-57-61FT	12/16/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-57-61FT	12/16/1999	Metals	7439-89-6	Iron	mg/l	30		0.3	MCL
AA-I-S1-57-61FT	12/16/1999	Metals	7439-96-5	Manganese	mg/l	3		0.05	MCL
AA-I-S1-57-61FT	12/16/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	25	U	0.067	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	25	U	5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	25	U	2.4	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	25	U	7	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	25	U	5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	25	U	5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	71-43-2	Benzene	ug/l	12		5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	75-25-2	Bromoform	ug/l	25	U	8.5	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	49	U	8.7	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	25	U	5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	108-90-7	Chlorobenzene	ug/l	9900		100	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	25	U	0.15	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	24		5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	25	U	5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	VOCs	79-01-6	Trichloroethene	ug/l	14	U	5	MCL
AA-I-S1-67-71FT	12/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	50	U	2	MCL
AA-I-S1-67-71FT	12/17/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	210		75	MCL
AA-I-S1-67-71FT	12/17/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	6100	D	75	MCL
AA-I-S1-67-71FT	12/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	180		0.34	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-67-71FT	12/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S1-67-71FT	12/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	1.9	J	0.14	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-67-71FT	12/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S1-67-71FT	12/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-67-71FT	12/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-67-71FT	12/17/1999	Metals	7429-90-5	Aluminum	mg/l	0.61	N	0.2	MCL
AA-I-S1-67-71FT	12/17/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-67-71FT	12/17/1999	Metals	7439-89-6	Iron	mg/l	26		0.3	MCL
AA-I-S1-67-71FT	12/17/1999	Metals	7439-96-5	Manganese	mg/l	2.5		0.05	MCL
AA-I-S1-67-71FT	12/17/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	500	U	200	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	500	U	0.067	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	500	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	500	U	2.4	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	500	U	7	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	500	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	500	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	2500	U	2000	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	71-43-2	Benzene	ug/l	250		5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	500	U	80	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	75-25-2	Bromoform	ug/l	500	U	8.5	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	980	U	8.7	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	500	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	108-90-7	Chlorobenzene	ug/l	12000		100	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	67-66-3	Chloroform	ug/l	500	U	80	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	74-87-3	Chloromethane	ug/l	1000	U	190	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	500	U	0.15	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	470	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	100-42-5	Styrene	ug/l	500	U	100	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	500	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	500	U	0.43	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	VOCs	79-01-6	Trichloroethene	ug/l	270	U	5	MCL
AA-I-S2-36-40FT	12/7/1999	VOCs	75-01-4	Vinyl chloride	ug/l	1000	U	2	MCL
AA-I-S2-36-40FT	12/7/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	150		75	MCL
AA-I-S2-36-40FT	12/7/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	4900	D	75	MCL
AA-I-S2-36-40FT	12/7/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	340		0.34	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-36-40FT	12/7/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-36-40FT	12/7/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-36-40FT	12/7/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	91-20-3	Naphthalene	ug/l	1.3	J	0.14	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S2-36-40FT	12/7/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.012	J	0.011	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	Pesticides	319-85-7	beta-BHC	ug/l	0.049	P	0.037	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.038		0.011	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S2-36-40FT	12/7/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-36-40FT	12/7/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-I-S2-36-40FT	12/7/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S2-36-40FT	12/7/1999	Metals	7440-38-2	Arsenic	mg/l	0.029		0.01	MCL
AA-I-S2-36-40FT	12/7/1999	Metals	7439-89-6	Iron	mg/l	20		0.3	MCL
AA-I-S2-36-40FT	12/7/1999	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
AA-I-S2-36-40FT	12/7/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	500	U	200	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	500	U	0.067	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	500	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	500	U	2.4	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	500	U	7	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	500	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	500	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	2500	U	2000	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	71-43-2	Benzene	ug/l	300		5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	500	U	80	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	75-25-2	Bromoform	ug/l	500	U	8.5	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	980	U	8.7	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	500	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	108-90-7	Chlorobenzene	ug/l	19000		100	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	67-66-3	Chloroform	ug/l	500	U	80	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	74-87-3	Chloromethane	ug/l	1000	U	190	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	500	U	330	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	500	U	0.15	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-46-50FT	12/7/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	470	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	100-42-5	Styrene	ug/l	500	U	100	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	500	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	500	U	0.43	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	VOCs	79-01-6	Trichloroethene	ug/l	270	U	5	MCL
AA-I-S2-46-50FT	12/7/1999	VOCs	75-01-4	Vinyl chloride	ug/l	1000	U	2	MCL
AA-I-S2-46-50FT	12/7/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	150		75	MCL
AA-I-S2-46-50FT	12/7/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	2900	D	75	MCL
AA-I-S2-46-50FT	12/7/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	130		0.34	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-46-50FT	12/7/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-46-50FT	12/7/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	91-20-3	Naphthalene	ug/l	38		0.14	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S2-46-50FT	12/7/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.041		0.011	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	Pesticides	319-85-7	beta-BHC	ug/l	0.071	P	0.037	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.026	P	0.011	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S2-46-50FT	12/7/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-46-50FT	12/7/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S2-46-50FT	12/7/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S2-46-50FT	12/7/1999	Metals	7439-89-6	Iron	mg/l	29		0.3	MCL
AA-I-S2-46-50FT	12/7/1999	Metals	7439-96-5	Manganese	mg/l	1.7		0.05	MCL
AA-I-S2-46-50FT	12/7/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	100	U	0.067	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	100	U	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	100	U	2.4	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	100	U	7	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-56-60FT	12/8/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	100	U	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	100	U	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	71-43-2	Benzene	ug/l	200		5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	100	U	80	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	75-25-2	Bromoform	ug/l	100	U	8.5	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	200	U	8.7	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	100	U	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	108-90-7	Chlorobenzene	ug/l	13000	D	100	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	67-66-3	Chloroform	ug/l	100	U	80	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	74-87-3	Chloromethane	ug/l	200	U	190	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	20	U	0.43	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	100	U	0.15	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	94	U	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	81	J	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	VOCs	79-01-6	Trichloroethene	ug/l	54	U	5	MCL
AA-I-S2-56-60FT	12/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	200	U	2	MCL
AA-I-S2-56-60FT	12/8/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	130		75	MCL
AA-I-S2-56-60FT	12/8/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	3700	D	75	MCL
AA-I-S2-56-60FT	12/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	280		0.34	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-56-60FT	12/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-56-60FT	12/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	7.6	J	0.14	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S2-56-60FT	12/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.028	J	0.011	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.0077	J	0.0042	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-56-60FT	12/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-56-60FT	12/8/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.67		0.5	MCL
AA-I-S2-56-60FT	12/8/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S2-56-60FT	12/8/1999	Metals	7439-89-6	Iron	mg/l	30		0.3	MCL
AA-I-S2-56-60FT	12/8/1999	Metals	7439-96-5	Manganese	mg/l	1.9		0.05	MCL
AA-I-S2-56-60FT	12/8/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	100	U	0.067	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	100	U	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	27	J	2.4	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	100	J	7	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	100	U	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	100	U	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	71-43-2	Benzene	ug/l	270		5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	100	U	80	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	75-25-2	Bromoform	ug/l	100	U	8.5	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	200	U	8.7	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	100	U	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	108-90-7	Chlorobenzene	ug/l	12000	D	100	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	67-66-3	Chloroform	ug/l	100	U	80	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	74-87-3	Chloromethane	ug/l	200	U	190	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	20	U	0.43	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	100	U	0.15	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	94	U	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	83	J	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	VOCs	79-01-6	Trichloroethene	ug/l	26	J	5	MCL
AA-I-S2-66-70FT	12/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	17	J	2	MCL
AA-I-S2-66-70FT	12/8/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	160		75	MCL
AA-I-S2-66-70FT	12/8/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	4500	D	75	MCL
AA-I-S2-66-70FT	12/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	320		0.34	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-66-70FT	12/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-66-70FT	12/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-66-70FT	12/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	8.7	J	0.14	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S2-66-70FT	12/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.030	J	0.011	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S2-66-70FT	12/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-66-70FT	12/8/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S2-66-70FT	12/8/1999	Metals	7429-90-5	Aluminum	mg/l	2.7	E	0.2	MCL
AA-I-S2-66-70FT	12/8/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S2-66-70FT	12/8/1999	Metals	7439-89-6	Iron	mg/l	34		0.3	MCL
AA-I-S2-66-70FT	12/8/1999	Metals	7439-92-1	Lead	mg/l	0.019		0.015	MCL
AA-I-S2-66-70FT	12/8/1999	Metals	7439-96-5	Manganese	mg/l	2.5		0.05	MCL
AA-I-S2-66-70FT	12/8/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S3-34-38FT	12/6/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	3.2	J	2.4	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S3-34-38FT	12/6/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	1.3	J	0.029	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	2	J	0.2	MCL
AA-I-S3-34-38FT	12/6/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	1.7	J	0.029	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	2.2	J	0.29	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	1.6	J	0.0029	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-34-38FT	12/6/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	B	0.029	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-34-38FT	12/6/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-34-38FT	12/6/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-34-38FT	12/6/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-34-38FT	12/6/1999	Metals	7429-90-5	Aluminum	mg/l	7.5		0.2	MCL
AA-I-S3-34-38FT	12/6/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-34-38FT	12/6/1999	Metals	7440-38-2	Arsenic	mg/l	0.011		0.01	MCL
AA-I-S3-34-38FT	12/6/1999	Metals	7439-89-6	Iron	mg/l	22		0.3	MCL
AA-I-S3-34-38FT	12/6/1999	Metals	7439-96-5	Manganese	mg/l	0.46		0.05	MCL
AA-I-S3-34-38FT	12/6/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	10	U	0.067	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	10	U	5	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	26		2.4	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	46		7	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	10	U	5	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	10	U	5	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	75-25-2	Bromoform	ug/l	10	U	8.5	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	20	U	8.7	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	10	U	5	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	2	U	0.43	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	10	U	0.15	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	9.4	U	5	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	10	U	5	MCL
AA-I-S3-44-48FT	12/6/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	VOCs	75-01-4	Vinyl chloride	ug/l	5	J	2	MCL
AA-I-S3-44-48FT	12/6/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	3	J	0.34	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-44-48FT	12/6/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-44-48FT	12/6/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-44-48FT	12/6/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S3-44-48FT	12/6/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-44-48FT	12/6/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-44-48FT	12/6/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-44-48FT	12/6/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-44-48FT	12/6/1999	Metals	7440-38-2	Arsenic	mg/l	0.011		0.01	MCL
AA-I-S3-44-48FT	12/6/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-I-S3-44-48FT	12/6/1999	Metals	7439-96-5	Manganese	mg/l	0.6		0.05	MCL
AA-I-S3-44-48FT	12/6/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	150		2.4	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	330		7	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	71-43-2	Benzene	ug/l	45		5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	108-90-7	Chlorobenzene	ug/l	350		100	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	1400		330	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	50	J	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	U	5	MCL
AA-I-S3-54-58FT	12/7/1999	VOCs	75-01-4	Vinyl chloride	ug/l	39	J	2	MCL
AA-I-S3-54-58FT	12/7/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	36		0.34	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-54-58FT	12/7/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-54-58FT	12/7/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-54-58FT	12/7/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	91-20-3	Naphthalene	ug/l	1.5	J	0.14	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S3-54-58FT	12/7/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-54-58FT	12/7/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-54-58FT	12/7/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-54-58FT	12/7/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-54-58FT	12/7/1999	Metals	7439-89-6	Iron	mg/l	22		0.3	MCL
AA-I-S3-54-58FT	12/7/1999	Metals	7439-96-5	Manganese	mg/l	0.9		0.05	MCL
AA-I-S3-54-58FT	12/7/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	78		2.4	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	9.8	J	7	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	71-43-2	Benzene	ug/l	74		5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	108-90-7	Chlorobenzene	ug/l	1800		100	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	50	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	U	5	MCL
AA-I-S3-64-68FT	12/7/1999	VOCs	75-01-4	Vinyl chloride	ug/l	190		2	MCL
AA-I-S3-64-68FT	12/7/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1500	D	75	MCL
AA-I-S3-64-68FT	12/7/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-64-68FT	12/7/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	170		0.34	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	0.36	J	0.029	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.98	J	0.2	MCL
AA-I-S3-64-68FT	12/7/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	0.74	J	0.29	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	B	0.0029	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-64-68FT	12/7/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	0.86	J	0.029	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	91-20-3	Naphthalene	ug/l	6.8	J	0.14	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S3-64-68FT	12/7/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.015	P	0.011	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-64-68FT	12/7/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-64-68FT	12/7/1999	Metals	7429-90-5	Aluminum	mg/l	0.42		0.2	MCL
AA-I-S3-64-68FT	12/7/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-64-68FT	12/7/1999	Metals	7439-89-6	Iron	mg/l	34		0.3	MCL
AA-I-S3-64-68FT	12/7/1999	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
AA-I-S3-64-68FT	12/7/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Sites G, H, and L Downgradient									
AA-GHL-S1-32-36FT	11/18/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S1-32-36FT	11/18/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S1-32-36FT	11/18/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-32-36FT	11/18/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-32-36FT	11/18/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S1-32-36FT	11/18/1999	Metals	7439-89-6	Iron	mg/l	3.6	N	0.3	MCL
AA-GHL-S1-32-36FT	11/18/1999	Metals	7439-96-5	Manganese	mg/l	1.7		0.05	MCL
AA-GHL-S1-32-36FT	11/18/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S1-42-46FT	11/18/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S1-42-46FT	11/18/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-42-46FT	11/18/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-42-46FT	11/18/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S1-42-46FT	11/18/1999	Metals	7439-89-6	Iron	mg/l	11	N	0.3	MCL
AA-GHL-S1-42-46FT	11/18/1999	Metals	7439-96-5	Manganese	mg/l	2.0		0.05	MCL
AA-GHL-S1-42-46FT	11/18/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S1-52-56FT	11/19/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.019	P	0.011	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-52-56FT	11/19/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S1-52-56FT	11/19/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-52-56FT	11/19/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-52-56FT	11/19/1999	Metals	7429-90-5	Aluminum	mg/l	0.28		0.2	MCL
AA-GHL-S1-52-56FT	11/19/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S1-52-56FT	11/19/1999	Metals	7439-89-6	Iron	mg/l	27		0.3	MCL
AA-GHL-S1-52-56FT	11/19/1999	Metals	7439-96-5	Manganese	mg/l	1.9		0.05	MCL
AA-GHL-S1-52-56FT	11/19/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	108-90-7	Chlorobenzene	ug/l	270	D	100	MCL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-62-66FT	11/29/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.015		0.011	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-62-66FT	11/29/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-62-66FT	11/29/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-62-66FT	11/29/1999	Metals	7429-90-5	Aluminum	mg/l	0.43		0.2	MCL
AA-GHL-S1-62-66FT	11/29/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S1-62-66FT	11/29/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-GHL-S1-62-66FT	11/29/1999	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
AA-GHL-S1-62-66FT	11/29/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S2-32-36FT	11/19/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S2-32-36FT	11/19/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-32-36FT	11/19/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S2-32-36FT	11/19/1999	Metals	7439-89-6	Iron	mg/l	1.4		0.3	MCL
AA-GHL-S2-32-36FT	11/19/1999	Metals	7439-96-5	Manganese	mg/l	1.9		0.05	MCL
AA-GHL-S2-32-36FT	11/19/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S2-42-46FT	11/19/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-42-46FT	11/19/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-GHL-S2-42-46FT	11/19/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-GHL-S2-42-46FT	11/19/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-42-46FT	11/19/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S2-42-46FT	11/19/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-GHL-S2-42-46FT	11/19/1999	Metals	7439-89-6	Iron	mg/l	11		0.3	MCL
AA-GHL-S2-42-46FT	11/19/1999	Metals	7439-96-5	Manganese	mg/l	1.6		0.05	MCL
AA-GHL-S2-42-46FT	11/19/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	8.9		5	MCL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S2-52-56FT	11/29/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S2-52-56FT	11/29/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-52-56FT	11/29/1999	Metals	7429-90-5	Aluminum	mg/l	0.26		0.2	MCL
AA-GHL-S2-52-56FT	11/29/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S2-52-56FT	11/29/1999	Metals	7439-89-6	Iron	mg/l	21		0.3	MCL
AA-GHL-S2-52-56FT	11/29/1999	Metals	7439-96-5	Manganese	mg/l	2.2		0.05	MCL
AA-GHL-S2-52-56FT	11/29/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	VOCs	75-01-4	Vinyl chloride	ug/l	7.5	J	2	MCL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	14	J	0.34	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S2-62-66FT	11/30/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.014	P	0.011	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.011	J	0.0042	Tapwater RSL
AA-GHL-S2-62-66FT	11/30/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S2-62-66FT	11/30/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-62-66FT	12/2/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S2-62-66FT	11/30/1999	Metals	7429-90-5	Aluminum	mg/l	0.24		0.2	MCL
AA-GHL-S2-62-66FT	11/30/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S2-62-66FT	11/30/1999	Metals	7439-89-6	Iron	mg/l	32		0.3	MCL
AA-GHL-S2-62-66FT	11/30/1999	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
AA-GHL-S2-62-66FT	11/30/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	VOCs	75-01-4	Vinyl chloride	ug/l	7.1	J	2	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	14	J	0.34	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.018	P	0.011	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.012	J	0.0042	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-62-66FTFD	11/30/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	Metals	7439-89-6	Iron	mg/l	31		0.3	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
AA-GHL-S2-62-66FTFD	11/30/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S3-30-34FT	12/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-30-34FT	12/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-30-34FT	12/15/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-30-34FT	12/15/1999	Metals	7439-89-6	Iron	mg/l	1.8		0.3	MCL
AA-GHL-S3-30-34FT	12/15/1999	Metals	7439-96-5	Manganese	mg/l	0.7		0.05	MCL
AA-GHL-S3-30-34FT	12/15/1999	Metals	7440-28-0	Thallium	mg/l	0.0054	B	0.002	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-30-34FTFD	12/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-30-34FTFD	12/15/1999	Metals	7429-90-5	Aluminum	mg/l	0.22		0.2	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	Metals	7439-89-6	Iron	mg/l	1.6		0.3	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	Metals	7439-96-5	Manganese	mg/l	0.7		0.05	MCL
AA-GHL-S3-30-34FTFD	12/15/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S3-40-44FT	12/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-40-44FT	12/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-40-44FT	12/15/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-40-44FT	12/15/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-40-44FT	12/15/1999	Metals	7439-89-6	Iron	mg/l	1.2		0.3	MCL
AA-GHL-S3-40-44FT	12/15/1999	Metals	7439-96-5	Manganese	mg/l	1.9		0.05	MCL
AA-GHL-S3-40-44FT	12/15/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-50-54FT	12/16/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-50-54FT	12/16/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-50-54FT	12/16/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-50-54FT	12/16/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-50-54FT	12/16/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-50-54FT	12/16/1999	Metals	7439-89-6	Iron	mg/l	5.2		0.3	MCL
AA-GHL-S3-50-54FT	12/16/1999	Metals	7439-96-5	Manganese	mg/l	1.8		0.05	MCL
AA-GHL-S3-50-54FT	12/16/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-60-64FT	12/16/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-60-64FT	12/16/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-60-64FT	12/16/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-60-64FT	12/16/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-60-64FT	12/16/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-60-64FT	12/16/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-60-64FT	12/16/1999	Metals	7439-89-6	Iron	mg/l	26		0.3	MCL
AA-GHL-S3-60-64FT	12/16/1999	Metals	7439-96-5	Manganese	mg/l	1.9		0.05	MCL
AA-GHL-S3-60-64FT	12/16/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Creek Segment B Downgradient									
AA-SW-S1-34-36FT	11/2/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-34-36FT	11/2/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-34-36FT	11/2/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-34-36FT	11/2/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-34-36FT	11/2/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-34-36FT	11/2/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-34-36FT	11/2/1999	Metals	7439-89-6	Iron	mg/l	11		0.3	MCL
AA-SW-S1-34-36FT	11/2/1999	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
AA-SW-S1-34-36FT	11/2/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-42-46FT	11/3/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-42-46FT	11/3/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-42-46FT	11/3/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-42-46FT	11/3/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-42-46FT	11/3/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-42-46FT	11/3/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-42-46FT	11/3/1999	Metals	7439-89-6	Iron	mg/l	25		0.3	MCL
AA-SW-S1-42-46FT	11/3/1999	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
AA-SW-S1-42-46FT	11/3/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-52-56FT	11/3/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-52-56FT	11/3/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-52-56FT	11/3/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-52-56FT	11/3/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-52-56FT	11/3/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-52-56FT	11/3/1999	Metals	7429-90-5	Aluminum	mg/l	0.83		0.2	MCL
AA-SW-S1-52-56FT	11/3/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-52-56FT	11/3/1999	Metals	7439-89-6	Iron	mg/l	20		0.3	MCL
AA-SW-S1-52-56FT	11/3/1999	Metals	7439-96-5	Manganese	mg/l	1.1		0.05	MCL
AA-SW-S1-52-56FT	11/3/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-62-66FT	11/4/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-62-66FT	11/4/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-62-66FT	11/4/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-62-66FT	11/4/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-62-66FT	11/4/1999	Metals	7429-90-5	Aluminum	mg/l	0.34	*	0.2	MCL
AA-SW-S1-62-66FT	11/4/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-62-66FT	11/4/1999	Metals	7439-89-6	Iron	mg/l	20	*	0.3	MCL
AA-SW-S1-62-66FT	11/4/1999	Metals	7439-96-5	Manganese	mg/l	1.1	N	0.05	MCL
AA-SW-S1-62-66FT	11/4/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S2-32-36FT	11/9/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5.0	U	1	MCL
AA-SW-S2-32-36FT	11/9/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-32-36FT	11/9/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-32-36FT	11/9/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S2-32-36FT	11/9/1999	Metals	7429-90-5	Aluminum	mg/l	1.1	N	0.2	MCL
AA-SW-S2-32-36FT	11/9/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-32-36FT	11/9/1999	Metals	7440-38-2	Arsenic	mg/l	0.033		0.01	MCL
AA-SW-S2-32-36FT	11/9/1999	Metals	7439-89-6	Iron	mg/l	9.3		0.3	MCL
AA-SW-S2-32-36FT	11/9/1999	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
AA-SW-S2-32-36FT	11/9/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-42-46FT	11/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/L	1.0	U	0.43	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/L	10	U	0.22	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-42-46FT	11/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-42-46FT	11/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-42-46FT	11/10/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S2-42-46FT	11/10/1999	Metals	7429-90-5	Aluminum	mg/l	0.42	N	0.2	MCL
AA-SW-S2-42-46FT	11/10/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-42-46FT	11/10/1999	Metals	7439-89-6	Iron	mg/l	24		0.3	MCL
AA-SW-S2-42-46FT	11/10/1999	Metals	7439-96-5	Manganese	mg/l	0.97		0.05	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-42-46FT	11/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-52-56FT	11/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-52-56FT	11/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-52-56FT	11/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-52-56FT	11/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-52-56FT	11/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-52-56FT	11/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-52-56FT	11/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-52-56FT	11/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-52-56FT	11/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-52-56FT	11/11/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S2-52-56FT	11/11/1999	Metals	7429-90-5	Aluminum	mg/l	1.4	N	0.2	MCL
AA-SW-S2-52-56FT	11/11/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-52-56FT	11/11/1999	Metals	7439-89-6	Iron	mg/l	31		0.3	MCL
AA-SW-S2-52-56FT	11/11/1999	Metals	7439-96-5	Manganese	mg/l	1.0		0.05	MCL
AA-SW-S2-52-56FT	11/11/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-62-66FT	11/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-62-66FT	11/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-62-66FT	11/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-62-66FT	11/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-62-66FT	11/10/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S2-62-66FT	11/10/1999	Metals	7429-90-5	Aluminum	mg/l	4.2	N	0.2	MCL
AA-SW-S2-62-66FT	11/10/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-62-66FT	11/10/1999	Metals	7439-89-6	Iron	mg/l	28		0.3	MCL
AA-SW-S2-62-66FT	11/10/1999	Metals	7439-96-5	Manganese	mg/l	0.80		0.05	MCL
AA-SW-S2-62-66FT	11/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-62-66FTFD	11/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-62-66FTFD	11/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-62-66FTFD	11/10/1999	Metals	7429-90-5	Aluminum	mg/l	3.3	N	0.2	MCL
AA-SW-S2-62-66FTFD	11/10/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-62-66FTFD	11/10/1999	Metals	7439-89-6	Iron	mg/l	26		0.3	MCL
AA-SW-S2-62-66FTFD	11/10/1999	Metals	7439-96-5	Manganese	mg/l	0.77		0.05	MCL
AA-SW-S2-62-66FTFD	11/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-32-36FT	11/11/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-32-36FT	11/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-32-36FT	11/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-32-36FT	11/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-32-36FT	11/11/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S3-32-36FT	11/11/1999	Metals	7429-90-5	Aluminum	mg/l	3.7	N	0.2	MCL
AA-SW-S3-32-36FT	11/11/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-32-36FT	11/11/1999	Metals	7440-38-2	Arsenic	mg/l	0.023		0.01	MCL
AA-SW-S3-32-36FT	11/11/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-SW-S3-32-36FT	11/11/1999	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
AA-SW-S3-32-36FT	11/11/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-42-46FT	11/11/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	5.3	J	0.34	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-42-46FT	11/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-42-46FT	11/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-42-46FT	11/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-42-46FT	11/11/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S3-42-46FT	11/11/1999	Metals	7429-90-5	Aluminum	mg/l	0.51	N	0.2	MCL
AA-SW-S3-42-46FT	11/11/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-42-46FT	11/11/1999	Metals	7439-89-6	Iron	mg/l	13		0.3	MCL
AA-SW-S3-42-46FT	11/11/1999	Metals	7439-96-5	Manganese	mg/l	0.64		0.05	MCL
AA-SW-S3-42-46FT	11/11/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-52-56FT	11/12/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1.2	J	0.34	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-52-56FT	11/12/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-52-56FT	11/12/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-52-56FT	11/12/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S3-52-56FT	11/12/1999	Metals	7429-90-5	Aluminum	mg/l	0.87	N	0.2	MCL
AA-SW-S3-52-56FT	11/12/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-52-56FT	11/12/1999	Metals	7439-89-6	Iron	mg/l	20		0.3	MCL
AA-SW-S3-52-56FT	11/12/1999	Metals	7439-96-5	Manganese	mg/l	0.59		0.05	MCL
AA-SW-S3-52-56FT	11/12/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-62-66FT	11/12/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-62-66FT	11/12/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-62-66FT	11/12/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-62-66FT	11/12/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL

Table 5-2
Groundwater Exceedances (a)
Middle Hydrogeologic Unit (MHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-62-66FT	11/12/1999	Metals	7429-90-5	Aluminum	mg/l	2.5	N	0.2	MCL
AA-SW-S3-62-66FT	11/12/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-62-66FT	11/12/1999	Metals	7439-89-6	Iron	mg/l	21		0.3	MCL
AA-SW-S3-62-66FT	11/12/1999	Metals	7439-96-5	Manganese	mg/l	0.49		0.05	MCL
AA-SW-S3-62-66FT	11/12/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL

Notes:
CAS - Chemical Abstracts Service.
MCL - Maximum Contaminant Level. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. USEPA Office of Water. August, 2006.
RSL - Regional Screening Level. USEPA. April 2009.
USEPA - United States Environmental Protection Agency.
(a) This table presents groundwater results that exceed the associated screening level (equal to the MCL or the RSL for constituents with no available MCL).

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
Upgradient									
UGGW-EE-04-100FT	1/27/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	VOCs	71-43-2	Benzene	ug/l	6.4		5	MCL
UGGW-EE-04-100FT	1/27/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-04-100FT	1/27/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-04-100FT	1/27/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-04-100FT	1/27/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	91-20-3	Naphthalene	ug/l	100		0.14	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
UGGW-EE-04-100FT	1/27/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
UGGW-EE-04-100FT	1/27/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-04-100FT	1/27/2000	Metals	7429-90-5	Aluminum	mg/l	0.38	N	0.2	MCL
UGGW-EE-04-100FT	1/27/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
UGGW-EE-04-100FT	1/27/2000	Metals	7439-89-6	Iron	mg/l	8.4		0.3	MCL
UGGW-EE-04-100FT	1/27/2000	Metals	7439-96-5	Manganese	mg/l	0.32		0.05	MCL
UGGW-EE-04-100FT	1/27/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	71-43-2	Benzene	ug/l	6.7		5	MCL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EE-04-100FTFD	1/27/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	91-20-3	Naphthalene	ug/l	98		0.14	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
UGGW-EE-04-100FTFD	1/27/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
UGGW-EE-04-100FTFD	1/27/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-04-100FTFD	1/27/2000	Metals	7429-90-5	Aluminum	mg/l	0.84	N	0.2	MCL
UGGW-EE-04-100FTFD	1/27/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
UGGW-EE-04-100FTFD	1/27/2000	Metals	7439-89-6	Iron	mg/l	9.9		0.3	MCL
UGGW-EE-04-100FTFD	1/27/2000	Metals	7439-96-5	Manganese	mg/l	0.35		0.05	MCL
UGGW-EE-04-100FTFD	1/27/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
UGGW-EE-20-100FT	1/25/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EE-20-100FT	1/25/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EE-20-100FT	1/25/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EE-20-100FT	1/25/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EE-20-100FT	1/25/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
UGGW-EE-20-100FT	1/25/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
UGGW-EE-20-100FT	1/25/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	Metals	7429-90-5	Aluminum	mg/l	17	N	0.2	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7440-38-2	Arsenic	mg/l	0.016		0.01	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7440-47-3	Chromium	mg/l	0.17		0.1	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7440-48-4	Cobalt	mg/l	0.015		0.011	Tapwater RSL
UGGW-EE-20-100FT	1/25/2000	Metals	7439-89-6	Iron	mg/l	80		0.3	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7439-92-1	Lead	mg/l	0.022		0.015	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7439-96-5	Manganese	mg/l	1.6		0.05	MCL
UGGW-EE-20-100FT	1/25/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
UGGW-EEG-108-100FT	1/31/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EEG-108-100FT	1/31/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
UGGW-EEG-108-100FT	1/31/2000	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EEG-108-100FT	1/31/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EEG-108-100FT	1/31/2000	Metals	7429-90-5	Aluminum	mg/l	5.4	N	0.2	MCL
UGGW-EEG-108-100FT	1/31/2000	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EEG-108-100FT	1/31/2000	Metals	7439-89-6	Iron	mg/l	20	N	0.3	MCL
UGGW-EEG-108-100FT	1/31/2000	Metals	7439-96-5	Manganese	mg/l	0.58		0.05	MCL
UGGW-EEG-108-100FT	1/31/2000	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
UGGW-EEG-108-60FT	1/28/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EEG-108-60FT	1/28/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
UGGW-EEG-108-60FT	1/28/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
UGGW-EEG-108-60FT	1/28/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EEG-108-60FT	1/28/2000	Metals	7429-90-5	Aluminum	mg/l	2.4	N	0.2	MCL
UGGW-EEG-108-60FT	1/28/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
UGGW-EEG-108-60FT	1/28/2000	Metals	7439-89-6	Iron	mg/l	20		0.3	MCL
UGGW-EEG-108-60FT	1/28/2000	Metals	7439-96-5	Manganese	mg/l	0.62		0.05	MCL
UGGW-EEG-108-60FT	1/28/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
UGGW-EEG-108FD	10/11/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
UGGW-EEG-108FD	10/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
UGGW-EEG-108FD	10/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
UGGW-EEG-108FD	10/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
UGGW-EEG-108FD	10/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
UGGW-EEG-108FD	10/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
UGGW-EEG-108FD	10/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
UGGW-EEG-108FD	10/11/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
UGGW-EEG-108FD	10/11/1999	Metals	7439-89-6	Iron	mg/l	32	N	0.3	MCL
UGGW-EEG-108FD	10/11/1999	Metals	7439-96-5	Manganese	mg/l	1.4	N	0.05	MCL
UGGW-EEG-108FD	10/11/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Site H Source Area									
AA-H-S1-101-105FT	3/16/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-101-105FT	3/16/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-H-S1-101-105FT	3/16/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	6.0	J	1	MCL
AA-H-S1-101-105FT	3/16/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-H-S1-101-105FT	3/16/2000	Pesticides	72-54-8	4,4'-DDD	ug/l	0.44		0.28	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	Pesticides	50-29-3	4,4'-DDT	ug/l	1.2	D	0.2	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-101-105FT	3/16/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-101-105FT	3/16/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-H-S1-101-105FT	3/16/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	1.4		1	MCL
AA-H-S1-101-105FT	3/17/2000	PCBs	Total PCBs	Total PCBs	ug/l	12.16		0.5	MCL
AA-H-S1-101-105FT	3/17/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	1.72E-03		0.00003	MCL
AA-H-S1-101-105FT	3/16/2000	Metals	7429-90-5	Aluminum	mg/l	1.1	N	0.2	MCL
AA-H-S1-101-105FT	3/16/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-H-S1-101-105FT	3/16/2000	Metals	7440-38-2	Arsenic	mg/l	0.59		0.01	MCL
AA-H-S1-101-105FT	3/16/2000	Metals	7439-89-6	Iron	mg/l	6.4		0.3	MCL
AA-H-S1-101-105FT	3/16/2000	Metals	7439-96-5	Manganese	mg/l	0.45		0.05	MCL
AA-H-S1-101-105FT	3/16/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-H-S1-73-77FT	3/13/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	VOCs	71-43-2	Benzene	ug/l	7.5		5	MCL
AA-H-S1-73-77FT	3/13/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-73-77FT	3/13/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	1200	D	70	MCL
AA-H-S1-73-77FT	3/13/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1300	D	75	MCL
AA-H-S1-73-77FT	3/13/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	2.4	J	0.34	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-H-S1-73-77FT	3/13/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	25		1	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-73-77FT	3/13/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	Pesticides	319-85-7	beta-BHC	ug/l	0.14	U	0.037	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.019	P	0.011	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-73-77FT	3/13/2000	Herbicides	75-99-0	Dalapon	ug/l	600	U	200	MCL
AA-H-S1-73-77FT	3/13/2000	Herbicides	88-85-7	Dinoseb	ug/l	30	U	7	MCL
AA-H-S1-73-77FT	3/13/2000	Herbicides	94-74-6	MCPA	ug/l	600	U	18	Tapwater RSL
AA-H-S1-73-77FT	3/13/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	23		1	MCL
AA-H-S1-73-77FT	3/13/2000	PCBs	Total PCBs	Total PCBs	ug/l	2.36		0.5	MCL
AA-H-S1-73-77FT	3/13/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	3.47E-05		0.00003	MCL
AA-H-S1-73-77FT	3/13/2000	Metals	7440-36-0	Antimony	mg/l	0.15		0.006	MCL
AA-H-S1-73-77FT	3/13/2000	Metals	7440-38-2	Arsenic	mg/l	0.095		0.01	MCL
AA-H-S1-73-77FT	3/13/2000	Metals	7439-89-6	Iron	mg/l	19		0.3	MCL
AA-H-S1-73-77FT	3/13/2000	Metals	7439-96-5	Manganese	mg/l	0.47		0.05	MCL
AA-H-S1-73-77FT	3/13/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	71-43-2	Benzene	ug/l	11		5	MCL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	1000	D	70	MCL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1000	D	75	MCL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	50		1	MCL
AA-H-S1-73-77FTFD	3/13/2000	Pesticides	309-00-2	Aldrin	ug/l	0.026	J	0.004	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.044	P	0.011	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	Pesticides	319-85-7	beta-BHC	ug/l	0.14	U	0.037	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.27	P	0.011	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-73-77FTFD	3/13/2000	Herbicides	75-99-0	Dalapon	ug/l	600	U	200	MCL
AA-H-S1-73-77FTFD	3/13/2000	Herbicides	88-85-7	Dinoseb	ug/l	30	U	7	MCL
AA-H-S1-73-77FTFD	3/13/2000	Herbicides	94-74-6	MCPA	ug/l	600	U	18	Tapwater RSL
AA-H-S1-73-77FTFD	3/13/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	28		1	MCL
AA-H-S1-73-77FTFD	3/13/2000	Metals	7440-36-0	Antimony	mg/l	0.15		0.006	MCL
AA-H-S1-73-77FTFD	3/13/2000	Metals	7440-38-2	Arsenic	mg/l	0.097		0.01	MCL
AA-H-S1-73-77FTFD	3/13/2000	Metals	7439-89-6	Iron	mg/l	19		0.3	MCL
AA-H-S1-73-77FTFD	3/13/2000	Metals	7439-96-5	Manganese	mg/l	0.46		0.05	MCL
AA-H-S1-73-77FTFD	3/13/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-H-S1-83-87FT	3/13/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	VOCs	71-43-2	Benzene	ug/l	18		5	MCL
AA-H-S1-83-87FT	3/13/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	VOCs	108-90-7	Chlorobenzene	ug/l	230	D	100	MCL
AA-H-S1-83-87FT	3/13/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-83-87FT	3/13/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	150		70	MCL
AA-H-S1-83-87FT	3/13/2000	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	120		75	MCL
AA-H-S1-83-87FT	3/13/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	2400	D	75	MCL
AA-H-S1-83-87FT	3/13/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	7.3		6.1	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20		0.34	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-H-S1-83-87FT	3/13/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-83-87FT	3/13/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	95		1	MCL
AA-H-S1-83-87FT	3/13/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	Pesticides	319-85-7	beta-BHC	ug/l	0.70	U	0.037	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.062	P	0.011	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	0.95	U	0.2	MCL
AA-H-S1-83-87FT	3/13/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-83-87FT	3/13/2000	Herbicides	75-99-0	Dalapon	ug/l	6000	U	200	MCL
AA-H-S1-83-87FT	3/13/2000	Herbicides	88-85-7	Dinoseb	ug/l	300	U	7	MCL
AA-H-S1-83-87FT	3/13/2000	Herbicides	94-74-6	MCPA	ug/l	6000	U	18	Tapwater RSL
AA-H-S1-83-87FT	3/13/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	89		1	MCL
AA-H-S1-83-87FT	3/13/2000	PCBs	Total PCBs	Total PCBs	ug/l	1.9		0.5	MCL
AA-H-S1-83-87FT	3/13/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	1.26E-04		0.00003	MCL
AA-H-S1-83-87FT	3/13/2000	Metals	7440-38-2	Arsenic	mg/l	0.31		0.01	MCL
AA-H-S1-83-87FT	3/13/2000	Metals	7439-89-6	Iron	mg/l	22		0.3	MCL
AA-H-S1-83-87FT	3/13/2000	Metals	7439-96-5	Manganese	mg/l	0.50		0.05	MCL
AA-H-S1-83-87FT	3/13/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-H-S1-93-97FT	3/15/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	VOCs	71-43-2	Benzene	ug/l	140		5	MCL
AA-H-S1-93-97FT	3/15/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	VOCs	108-90-7	Chlorobenzene	ug/l	600	D	100	MCL
AA-H-S1-93-97FT	3/15/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-H-S1-93-97FT	3/15/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	160		70	MCL
AA-H-S1-93-97FT	3/15/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	810	D	75	MCL
AA-H-S1-93-97FT	3/15/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	52		6.1	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	14		3.7	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	80		0.34	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-H-S1-93-97FT	3/15/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-H-S1-93-97FT	3/15/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	32	B	6	MCL
AA-H-S1-93-97FT	3/15/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-H-S1-93-97FT	3/15/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	91-20-3	Naphthalene	ug/l	24		0.14	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	710	D	1	MCL
AA-H-S1-93-97FT	3/15/2000	Pesticides	309-00-2	Aldrin	ug/l	0.053	P	0.004	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	Pesticides	319-85-7	beta-BHC	ug/l	2.8	U	0.037	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	3.8	U	0.2	MCL
AA-H-S1-93-97FT	3/15/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-H-S1-93-97FT	3/15/2000	Herbicides	75-99-0	Dalapon	ug/l	600	U	200	MCL
AA-H-S1-93-97FT	3/15/2000	Herbicides	88-85-7	Dinoseb	ug/l	30	U	7	MCL
AA-H-S1-93-97FT	3/15/2000	Herbicides	94-74-6	MCPA	ug/l	600	U	18	Tapwater RSL
AA-H-S1-93-97FT	3/15/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	320	D	1	MCL
AA-H-S1-93-97FT	3/16/2000	PCBs	Total PCBs	Total PCBs	ug/l	1.99		0.5	MCL
AA-H-S1-93-97FT	3/16/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	2.54E-04		0.00003	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7429-90-5	Aluminum	mg/l	1.0	N	0.2	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7440-36-0	Antimony	mg/l	0.0094	B	0.006	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7440-38-2	Arsenic	mg/l	0.084		0.01	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7440-47-3	Chromium	mg/l	0.11		0.1	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7439-89-6	Iron	mg/l	89		0.3	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7439-96-5	Manganese	mg/l	1.8		0.05	MCL
AA-H-S1-93-97FT	3/15/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
Site I Source Area									
AA-I-S4-76-80FT	3/8/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S4-76-80FT	3/8/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S4-76-80FT	3/8/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S4-76-80FT	3/8/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S4-76-80FT	3/8/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	91-20-3	Naphthalene	ug/l	1.9	J	0.14	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S4-76-80FT	3/8/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S4-76-80FT	3/8/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S4-76-80FT	3/8/2000	Metals	7429-90-5	Aluminum	mg/l	0.46		0.2	MCL
AA-I-S4-76-80FT	3/8/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S4-76-80FT	3/8/2000	Metals	7439-89-6	Iron	mg/l	19		0.3	MCL
AA-I-S4-76-80FT	3/8/2000	Metals	7439-96-5	Manganese	mg/l	0.51		0.05	MCL
AA-I-S4-76-80FT	3/8/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S4-86-90FT	3/8/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	VOCs	71-43-2	Benzene	ug/l	32		5	MCL
AA-I-S4-86-90FT	3/8/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S4-86-90FT	3/8/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.58	J	0.2	MCL
AA-I-S4-86-90FT	3/8/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	0.42	J	0.029	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S4-86-90FT	3/8/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S4-86-90FT	3/8/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S4-86-90FT	3/8/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S4-86-90FT	3/8/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S4-86-90FT	3/8/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S4-86-90FT	3/8/2000	Metals	7439-89-6	Iron	mg/l	20		0.3	MCL
AA-I-S4-86-90FT	3/8/2000	Metals	7439-96-5	Manganese	mg/l	0.49		0.05	MCL
AA-I-S4-86-90FT	3/8/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S4-96-100FT	3/9/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	VOCs	71-43-2	Benzene	ug/l	97		5	MCL
AA-I-S4-96-100FT	3/9/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S4-96-100FT	3/9/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S4-96-100FT	3/9/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S4-96-100FT	3/9/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S4-96-100FT	3/9/2000	SVOCs	91-20-3	Naphthalene	ug/l	1400	D	0.14	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S4-96-100FT	3/9/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S4-96-100FT	3/9/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S4-96-100FT	3/9/2000	Metals	7439-89-6	Iron	mg/l	14		0.3	MCL
AA-I-S4-96-100FT	3/9/2000	Metals	7439-96-5	Manganese	mg/l	0.34		0.05	MCL
AA-I-S4-96-100FT	3/9/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
Site I Downgradient									
AA-I-S1-77-81FT	12/20/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	1000	U	200	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	1000	U	0.067	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	1000	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	1000	U	2.4	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	1000	U	7	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	1000	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	1000	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	108-10-1	4-Methyl-2-pentanone (MIBK)	ug/l	5000	U	2000	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	71-43-2	Benzene	ug/l	140	J	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	1000	U	80	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	75-25-2	Bromoform	ug/l	1000	U	8.5	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	2000	U	8.7	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	1000	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	108-90-7	Chlorobenzene	ug/l	34000		100	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	67-66-3	Chloroform	ug/l	1000	U	80	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	74-87-3	Chloromethane	ug/l	2000	U	190	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	540-59-0	Cis/Trans-1,2-Dichloroethene	ug/l	1000	U	330	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	200	U	0.43	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	1000	U	0.15	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	100-41-4	Ethylbenzene	ug/l	1000	U	700	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	940	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	100-42-5	Styrene	ug/l	1000	U	100	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	1000	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	1000	U	0.43	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	VOCs	79-01-6	Trichloroethene	ug/l	540	U	5	MCL
AA-I-S1-77-81FT	12/20/1999	VOCs	75-01-4	Vinyl chloride	ug/l	2000	U	2	MCL
AA-I-S1-77-81FT	12/20/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	130		75	MCL
AA-I-S1-77-81FT	12/20/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	3100	E	75	MCL
AA-I-S1-77-81FT	12/20/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-77-81FT	12/20/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	18	J	0.34	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-77-81FT	12/20/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S1-77-81FT	12/20/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	91-20-3	Naphthalene	ug/l	0.57	J	0.14	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S1-77-81FT	12/20/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.03		0.011	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S1-77-81FT	12/20/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7429-90-5	Aluminum	mg/l	10	N	0.2	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7440-38-2	Arsenic	mg/l	0.013		0.01	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7440-47-3	Chromium	mg/l	0.16		0.1	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7440-48-4	Cobalt	mg/l	0.027		0.011	Tapwater RSL
AA-I-S1-77-81FT	12/20/1999	Metals	7439-89-6	Iron	mg/l	190		0.3	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7439-92-1	Lead	mg/l	0.019		0.015	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7439-96-5	Manganese	mg/l	7.7		0.05	MCL
AA-I-S1-77-81FT	12/20/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-87-91FT	12/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	VOCs	71-43-2	Benzene	ug/l	74		5	MCL
AA-I-S1-87-91FT	12/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	VOCs	108-90-7	Chlorobenzene	ug/l	280		100	MCL
AA-I-S1-87-91FT	12/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	2700		70	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	80	J	75	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	6900		75	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-87-91FT	12/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	400	U	0.32	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	84	U	6.1	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	120-83-2	2,4-Dichlorophenol	ug/l	400	U	110	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	560	U	73	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	400	U	0.22	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	400	U	37	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	95-57-8	2-Chlorophenol	ug/l	400	U	180	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	91-57-6	2-Methylnaphthalene	ug/l	400	U	150	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	88-74-4	2-Nitroaniline	ug/l	2000	U	110	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	800	U	0.15	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	400	U	180	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	2000	U	3.4	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	520	U	3.7	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	800	U	0.34	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	2000	U	3.4	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	400	U	0.029	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	400	U	0.2	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	400	U	0.029	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	400	U	0.29	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	400	U	110	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	400	U	0.012	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	72	U	6	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	400	U	35	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	218-01-9	Chrysene	ug/l	400	U	2.9	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	400	U	0.0029	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	400	U	1	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	400	U	0.86	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	400	U	50	MCL
AA-I-S1-87-91FT	12/21/1999	SVOCs	67-72-1	Hexachloroethane	ug/l	76	U	4.8	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	400	U	0.029	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	78-59-1	Isophorone	ug/l	400	U	71	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	400	U	0.14	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	140	U	0.12	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	400	U	0.0096	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	200	U	1	MCL
AA-I-S1-87-91FT	12/21/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	1	U	0.28	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	1	U	0.2	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	1	U	0.2	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.5	U	0.004	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	65	D	0.011	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	319-85-7	beta-BHC	ug/l	13	D	0.037	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.99	P	0.011	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	1	U	0.0042	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	Pesticides	76-44-8	Heptachlor	ug/l	0.5	U	0.4	MCL
AA-I-S1-87-91FT	12/21/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	0.5	U	0.2	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-87-91FT	12/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	50	U	3	MCL
AA-I-S1-87-91FT	12/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-87-91FT	12/21/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.56		0.5	MCL
AA-I-S1-87-91FT	12/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-87-91FT	12/21/1999	Metals	7439-89-6	Iron	mg/l	18		0.3	MCL
AA-I-S1-87-91FT	12/21/1999	Metals	7439-96-5	Manganese	mg/l	0.4		0.05	MCL
AA-I-S1-87-91FT	12/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	71-43-2	Benzene	ug/l	77		5	MCL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	108-90-7	Chlorobenzene	ug/l	280		100	MCL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	2300	D	70	MCL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	5800	D	75	MCL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	66		0.14	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	1	U	0.28	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	1	U	0.2	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	1	U	0.2	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.5	U	0.004	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	70	D	0.011	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	319-85-7	beta-BHC	ug/l	14	D	0.037	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	319-86-8	delta-BHC	ug/l	2		0.011	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	1	U	0.0042	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	0.31	P	0.2	MCL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	76-44-8	Heptachlor	ug/l	0.5	U	0.4	MCL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	0.5	U	0.2	MCL
AA-I-S1-87-91FTFD	12/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	50	U	3	MCL
AA-I-S1-87-91FTFD	12/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-87-91FTFD	12/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-87-91FTFD	12/21/1999	Metals	7439-89-6	Iron	mg/l	18		0.3	MCL
AA-I-S1-87-91FTFD	12/21/1999	Metals	7439-96-5	Manganese	mg/l	0.4		0.05	MCL
AA-I-S1-87-91FTFD	12/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S1-97-101FT	12/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	VOCs	71-43-2	Benzene	ug/l	50		5	MCL
AA-I-S1-97-101FT	12/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	VOCs	108-90-7	Chlorobenzene	ug/l	340		100	MCL
AA-I-S1-97-101FT	12/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	980		70	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	150	J	75	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	9700	D	75	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	400	U	0.32	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	84	U	6.1	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	560	U	73	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	400	U	0.22	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	400	U	37	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	95-57-8	2-Chlorophenol	ug/l	400	U	180	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	91-57-6	2-Methylnaphthalene	ug/l	400	U	150	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	88-74-4	2-Nitroaniline	ug/l	2000	U	110	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	800	U	0.15	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	400	U	180	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	2000	U	3.4	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	520	U	3.7	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	800	U	0.34	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	2000	U	3.4	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	400	U	0.029	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	400	U	0.2	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	400	U	0.029	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	400	U	0.29	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	400	U	110	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	400	U	0.012	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	72	U	6	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	400	U	35	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	218-01-9	Chrysene	ug/l	400	U	2.9	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	400	U	0.0029	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S1-97-101FT	12/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	400	U	1	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	400	U	0.86	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	400	U	50	MCL
AA-I-S1-97-101FT	12/21/1999	SVOCs	67-72-1	Hexachloroethane	ug/l	76	U	4.8	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	400	U	0.029	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	78-59-1	Isophorone	ug/l	400	U	71	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	400	U	0.14	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	140	U	0.12	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	400	U	0.0096	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	200	U	1	MCL
AA-I-S1-97-101FT	12/21/1999	Pesticides	72-54-8	4,4'-DDD	ug/l	1	U	0.28	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	72-55-9	4,4'-DDE	ug/l	1	U	0.2	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	50-29-3	4,4'-DDT	ug/l	1	U	0.2	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.5	U	0.004	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	72	D	0.011	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	319-85-7	beta-BHC	ug/l	4.4	D	0.037	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	319-86-8	delta-BHC	ug/l	3.8		0.011	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	1	U	0.0042	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	Pesticides	76-44-8	Heptachlor	ug/l	0.5	U	0.4	MCL
AA-I-S1-97-101FT	12/21/1999	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	0.5	U	0.2	MCL
AA-I-S1-97-101FT	12/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	50	U	3	MCL
AA-I-S1-97-101FT	12/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S1-97-101FT	12/21/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S1-97-101FT	12/21/1999	Metals	7429-90-5	Aluminum	mg/l	4.8	N	0.2	MCL
AA-I-S1-97-101FT	12/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S1-97-101FT	12/21/1999	Metals	7439-89-6	Iron	mg/l	47		0.3	MCL
AA-I-S1-97-101FT	12/21/1999	Metals	7439-96-5	Manganese	mg/l	0.98		0.05	MCL
AA-I-S1-97-101FT	12/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	100	U	0.067	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	100	U	5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	100	U	2.4	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	100	U	7	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	100	U	5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	100	U	5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	71-43-2	Benzene	ug/l	120		5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	100	U	80	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	75-25-2	Bromoform	ug/l	100	U	8.5	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	200	U	8.7	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	100	U	5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	108-90-7	Chlorobenzene	ug/l	11000	D	100	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	67-66-3	Chloroform	ug/l	100	U	80	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	74-87-3	Chloromethane	ug/l	200	U	190	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	20	U	0.43	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	100	U	0.15	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	94	U	5	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-76-80FT	12/10/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	100	U	5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	VOCs	79-01-6	Trichloroethene	ug/l	54	U	5	MCL
AA-I-S2-76-80FT	12/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	200	U	2	MCL
AA-I-S2-76-80FT	12/10/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	510	D	75	MCL
AA-I-S2-76-80FT	12/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	26		0.34	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-76-80FT	12/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-76-80FT	12/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	5.9	J	0.14	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S2-76-80FT	12/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S2-76-80FT	12/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7429-90-5	Aluminum	mg/l	7.4	E	0.2	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-36-0	Antimony	mg/l	0.056		0.006	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-38-2	Arsenic	mg/l	0.023		0.01	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-43-9	Cadmium	mg/l	0.010		0.005	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-48-4	Cobalt	mg/l	0.020		0.011	Tapwater RSL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-50-8	Copper	mg/l	3.0		1.3	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7439-89-6	Iron	mg/l	47		0.3	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7439-92-1	Lead	mg/l	3.6		0.015	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7439-96-5	Manganese	mg/l	0.87		0.05	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S2-76-80FT	12/10/1999	Metals	7440-66-6	Zinc	mg/l	5.7		5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	100	U	0.067	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	100	U	5	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-76-80FTFD	12/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	100	U	2.4	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	100	U	7	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	100	U	5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	100	U	5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	71-43-2	Benzene	ug/l	120		5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	100	U	80	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	75-25-2	Bromoform	ug/l	100	U	8.5	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	200	U	8.7	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	100	U	5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	108-90-7	Chlorobenzene	ug/l	9200	D	100	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	67-66-3	Chloroform	ug/l	100	U	80	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	74-87-3	Chloromethane	ug/l	200	U	190	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	20	U	0.43	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	100	U	0.15	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	94	U	5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	66	J	5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	100	U	0.43	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	79-01-6	Trichloroethene	ug/l	54	U	5	MCL
AA-I-S2-76-80FTFD	12/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	200	U	2	MCL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	560	D	75	MCL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	36		0.34	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	J	0.012	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	0.66	J	0.029	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	9.1	J	0.14	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S2-76-80FTFD	12/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-76-80FTFD	12/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S2-76-80FTFD	12/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7429-90-5	Aluminum	mg/l	8.2	E	0.2	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-36-0	Antimony	mg/l	0.058		0.006	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-38-2	Arsenic	mg/l	0.024		0.01	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-43-9	Cadmium	mg/l	0.012		0.005	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-48-4	Cobalt	mg/l	0.022		0.011	Tapwater RSL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-50-8	Copper	mg/l	3.5		1.3	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7439-89-6	Iron	mg/l	50		0.3	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7439-92-1	Lead	mg/l	4.1		0.015	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7439-96-5	Manganese	mg/l	0.91		0.05	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S2-76-80FTFD	12/10/1999	Metals	7440-66-6	Zinc	mg/l	6.3		5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	120	U	0.067	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	120	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	120	U	2.4	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	120	U	7	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	120	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	120	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	71-43-2	Benzene	ug/l	60		5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	120	U	80	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	75-25-2	Bromoform	ug/l	120	U	8.5	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	240	U	8.7	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	120	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	108-90-7	Chlorobenzene	ug/l	7300		100	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	67-66-3	Chloroform	ug/l	120	U	80	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	74-87-3	Chloromethane	ug/l	250	U	190	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	120	U	0.15	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	120	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	100-42-5	Styrene	ug/l	120	U	100	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	120	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	120	U	0.43	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	VOCs	79-01-6	Trichloroethene	ug/l	68	U	5	MCL
AA-I-S2-86-90FT	12/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	250	U	2	MCL
AA-I-S2-86-90FT	12/13/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	610	D	75	MCL
AA-I-S2-86-90FT	12/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	15	J	0.34	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-86-90FT	12/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	J	0.0029	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-86-90FT	12/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	J	0.029	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	20		0.14	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S2-86-90FT	12/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.034		0.011	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S2-86-90FT	12/13/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-86-90FT	12/13/1999	Metals	7429-90-5	Aluminum	mg/l	5.6		0.2	MCL
AA-I-S2-86-90FT	12/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S2-86-90FT	12/13/1999	Metals	7440-38-2	Arsenic	mg/l	0.015		0.01	MCL
AA-I-S2-86-90FT	12/13/1999	Metals	7439-89-6	Iron	mg/l	33		0.3	MCL
AA-I-S2-86-90FT	12/13/1999	Metals	7439-92-1	Lead	mg/l	0.073		0.015	MCL
AA-I-S2-86-90FT	12/13/1999	Metals	7439-96-5	Manganese	mg/l	1.1		0.05	MCL
AA-I-S2-86-90FT	12/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	120	U	0.067	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	120	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	120	U	2.4	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	120	U	7	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	120	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	120	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	71-43-2	Benzene	ug/l	50		5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	120	U	80	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	75-25-2	Bromoform	ug/l	120	U	8.5	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	240	U	8.7	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	120	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	108-90-7	Chlorobenzene	ug/l	3300		100	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	67-66-3	Chloroform	ug/l	120	U	80	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	74-87-3	Chloromethane	ug/l	250	U	190	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	120	U	0.15	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	120	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	100-42-5	Styrene	ug/l	120	U	100	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	120	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	120	U	0.43	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S2-96-100FT	12/13/1999	VOCs	79-01-6	Trichloroethene	ug/l	68	U	5	MCL
AA-I-S2-96-100FT	12/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	250	U	2	MCL
AA-I-S2-96-100FT	12/13/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	81		75	MCL
AA-I-S2-96-100FT	12/13/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	5300	D	75	MCL
AA-I-S2-96-100FT	12/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	58		0.34	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.63	J	0.2	MCL
AA-I-S2-96-100FT	12/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	J	0.0029	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S2-96-100FT	12/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	J	0.029	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	11		0.14	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S2-96-100FT	12/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.038	J	0.011	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.032	P	0.011	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S2-96-100FT	12/13/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.76		0.5	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7429-90-5	Aluminum	mg/l	4.3		0.2	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7440-38-2	Arsenic	mg/l	0.028		0.01	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7439-89-6	Iron	mg/l	22		0.3	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7439-92-1	Lead	mg/l	0.06		0.015	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7439-96-5	Manganese	mg/l	0.89		0.05	MCL
AA-I-S2-96-100FT	12/13/1999	Metals	7440-02-0	Nickel	mg/l	2		0.73	Tapwater RSL
AA-I-S2-96-100FT	12/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	120	U	0.067	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	120	U	5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	120	U	2.4	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	120	U	7	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	120	U	5	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-104-108FT	12/13/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	120	U	5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	71-43-2	Benzene	ug/l	52		5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	120	U	80	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	75-25-2	Bromoform	ug/l	120	U	8.5	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	240	U	8.7	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	120	U	5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	108-90-7	Chlorobenzene	ug/l	4900	D	100	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	67-66-3	Chloroform	ug/l	120	U	80	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	74-87-3	Chloromethane	ug/l	250	U	190	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	120	U	0.15	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	120	U	5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	100-42-5	Styrene	ug/l	120	U	100	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	120	U	5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	120	U	0.43	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	VOCs	79-01-6	Trichloroethene	ug/l	91		5	MCL
AA-I-S3-104-108FT	12/13/1999	VOCs	75-01-4	Vinyl chloride	ug/l	250	U	2	MCL
AA-I-S3-104-108FT	12/13/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1300	D	75	MCL
AA-I-S3-104-108FT	12/13/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	21		0.34	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-104-108FT	12/13/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-104-108FT	12/13/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	J	0.029	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	91-20-3	Naphthalene	ug/l	16		0.14	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-I-S3-104-108FT	12/13/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-104-108FT	12/13/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-104-108FT	12/13/1999	Metals	7429-90-5	Aluminum	mg/l	13		0.2	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-104-108FT	12/13/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-104-108FT	12/13/1999	Metals	7440-38-2	Arsenic	mg/l	0.03		0.01	MCL
AA-I-S3-104-108FT	12/13/1999	Metals	7440-47-3	Chromium	mg/l	0.2		0.1	MCL
AA-I-S3-104-108FT	12/13/1999	Metals	7439-89-6	Iron	mg/l	53		0.3	MCL
AA-I-S3-104-108FT	12/13/1999	Metals	7439-92-1	Lead	mg/l	0.024		0.015	MCL
AA-I-S3-104-108FT	12/13/1999	Metals	7439-96-5	Manganese	mg/l	0.97		0.05	MCL
AA-I-S3-104-108FT	12/13/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	25	U	0.067	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	25	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	25	U	2.4	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	25	U	7	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	25	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	25	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	71-43-2	Benzene	ug/l	23		5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	75-25-2	Bromoform	ug/l	25	U	8.5	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	49	U	8.7	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	25	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	108-90-7	Chlorobenzene	ug/l	700		100	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	25	U	0.15	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	24	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	25	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	VOCs	79-01-6	Trichloroethene	ug/l	14	U	5	MCL
AA-I-S3-110-114FT	12/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	50	U	2	MCL
AA-I-S3-110-114FT	12/14/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1000	D	75	MCL
AA-I-S3-110-114FT	12/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	75		0.34	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-110-114FT	12/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-110-114FT	12/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	2.5	J	0.14	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-110-114FT	12/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-I-S3-110-114FT	12/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-I-S3-110-114FT	12/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Metals	7429-90-5	Aluminum	mg/l	3.6		0.2	MCL
AA-I-S3-110-114FT	12/14/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-I-S3-110-114FT	12/14/1999	Metals	7440-47-3	Chromium	mg/l	0.16		0.1	MCL
AA-I-S3-110-114FT	12/14/1999	Metals	7440-48-4	Cobalt	mg/l	0.024		0.011	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Metals	7439-89-6	Iron	mg/l	140		0.3	MCL
AA-I-S3-110-114FT	12/14/1999	Metals	7439-92-1	Lead	mg/l	0.024	B	0.015	MCL
AA-I-S3-110-114FT	12/14/1999	Metals	7439-96-5	Manganese	mg/l	2.3		0.05	MCL
AA-I-S3-110-114FT	12/14/1999	Metals	7440-02-0	Nickel	mg/l	27		0.73	Tapwater RSL
AA-I-S3-110-114FT	12/14/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	64		2.4	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	50	U	7	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	71-43-2	Benzene	ug/l	72		5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	108-90-7	Chlorobenzene	ug/l	3300	D	100	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	24	J	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	U	5	MCL
AA-I-S3-74-78FT	12/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	130		2	MCL
AA-I-S3-74-78FT	12/8/1999	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	79		75	MCL
AA-I-S3-74-78FT	12/8/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	3200	D	75	MCL
AA-I-S3-74-78FT	12/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	100		0.34	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-74-78FT	12/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-74-78FT	12/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-74-78FT	12/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	13		0.14	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S3-74-78FT	12/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S3-74-78FT	12/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-74-78FT	12/8/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-74-78FT	12/8/1999	Metals	7429-90-5	Aluminum	mg/l	0.63	E	0.2	MCL
AA-I-S3-74-78FT	12/8/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S3-74-78FT	12/8/1999	Metals	7439-89-6	Iron	mg/l	39		0.3	MCL
AA-I-S3-74-78FT	12/8/1999	Metals	7439-96-5	Manganese	mg/l	2.6		0.05	MCL
AA-I-S3-74-78FT	12/8/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	34	J	2.4	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	50	U	7	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	71-43-2	Benzene	ug/l	68		5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	108-90-7	Chlorobenzene	ug/l	5500	D	100	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	32	J	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	U	5	MCL
AA-I-S3-84-88FT	12/9/1999	VOCs	75-01-4	Vinyl chloride	ug/l	43	J	2	MCL
AA-I-S3-84-88FT	12/9/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1200		75	MCL
AA-I-S3-84-88FT	12/9/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-84-88FT	12/9/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	22		0.34	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-84-88FT	12/9/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	1.6	J	0.0029	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-84-88FT	12/9/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	91-20-3	Naphthalene	ug/l	13		0.14	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S3-84-88FT	12/9/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S3-84-88FT	12/9/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-84-88FT	12/9/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-84-88FT	12/9/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S3-84-88FT	12/9/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-I-S3-84-88FT	12/9/1999	Metals	7439-96-5	Manganese	mg/l	0.86		0.05	MCL
AA-I-S3-84-88FT	12/9/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	50	U	0.067	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	50	U	5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	32	J	2.4	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	50	U	7	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	50	U	5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	50	U	5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	71-43-2	Benzene	ug/l	69		5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	75-25-2	Bromoform	ug/l	50	U	8.5	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	98	U	8.7	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	50	U	5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	108-90-7	Chlorobenzene	ug/l	5600	D	100	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	10	U	0.43	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	50	U	0.15	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	47	U	5	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-84-88FTFD	12/9/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	50	U	5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	79-01-6	Trichloroethene	ug/l	27	U	5	MCL
AA-I-S3-84-88FTFD	12/9/1999	VOCs	75-01-4	Vinyl chloride	ug/l	42	J	2	MCL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	1500		75	MCL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	22		0.34	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	9.7	J	0.012	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	91-20-3	Naphthalene	ug/l	23		0.14	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S3-84-88FTFD	12/9/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S3-84-88FTFD	12/9/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-84-88FTFD	12/9/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-I-S3-84-88FTFD	12/9/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-I-S3-84-88FTFD	12/9/1999	Metals	7439-96-5	Manganese	mg/l	0.87		0.05	MCL
AA-I-S3-84-88FTFD	12/9/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	71-55-6	1,1,1-Trichloroethane	ug/l	250	U	200	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	250	U	0.067	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	250	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	250	U	2.4	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	75-35-4	1,1-Dichloroethene	ug/l	250	U	7	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	107-06-2	1,2-Dichloroethane	ug/l	250	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	78-87-5	1,2-Dichloropropane	ug/l	250	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	71-43-2	Benzene	ug/l	53	J	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	75-27-4	Bromodichloromethane	ug/l	250	U	80	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-94-98FT	12/10/1999	VOCs	75-25-2	Bromoform	ug/l	250	U	8.5	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	490	U	8.7	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	56-23-5	Carbon tetrachloride	ug/l	250	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	108-90-7	Chlorobenzene	ug/l	5100		100	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	67-66-3	Chloroform	ug/l	250	U	80	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	74-87-3	Chloromethane	ug/l	500	U	190	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	50	U	0.43	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	250	U	0.15	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	75-09-2	Methylene chloride (Dichloromethane)	ug/l	240	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	100-42-5	Styrene	ug/l	250	U	100	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	127-18-4	Tetrachloroethene	ug/l	250	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	250	U	0.43	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	VOCs	79-01-6	Trichloroethene	ug/l	140	U	5	MCL
AA-I-S3-94-98FT	12/10/1999	VOCs	75-01-4	Vinyl chloride	ug/l	500	U	2	MCL
AA-I-S3-94-98FT	12/10/1999	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	790	D	75	MCL
AA-I-S3-94-98FT	12/10/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	12	J	0.34	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-I-S3-94-98FT	12/10/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	1.7	J	0.0029	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-I-S3-94-98FT	12/10/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	91-20-3	Naphthalene	ug/l	18		0.14	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-I-S3-94-98FT	12/10/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-I-S3-94-98FT	12/10/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-I-S3-94-98FT	12/10/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.8		0.5	MCL
AA-I-S3-94-98FT	12/10/1999	Metals	7429-90-5	Aluminum	mg/l	1.6	E	0.2	MCL
AA-I-S3-94-98FT	12/10/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-I-S3-94-98FT	12/10/1999	Metals	7439-89-6	Iron	mg/l	19		0.3	MCL
AA-I-S3-94-98FT	12/10/1999	Metals	7439-96-5	Manganese	mg/l	0.75		0.05	MCL
AA-I-S3-94-98FT	12/10/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
Sites G, H, and L Downgradient									
AA-GHL-S1-102-106FT	12/1/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-102-106FT	12/1/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-102-106FT	12/1/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7429-90-5	Aluminum	mg/l	11		0.2	MCL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7440-47-3	Chromium	mg/l	0.11		0.1	MCL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7440-48-4	Cobalt	mg/l	0.014		0.011	Tapwater RSL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7439-89-6	Iron	mg/l	54		0.3	MCL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7439-92-1	Lead	mg/l	0.017		0.015	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-102-106FT	12/1/1999	Metals	7439-96-5	Manganese	mg/l	2.9		0.05	MCL
AA-GHL-S1-102-106FT	12/1/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	1.9	J	0.029	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	5.7	J	0.2	MCL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	3.7	J	0.029	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	5.9	J	0.29	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	4.8	J	0.0029	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	5.6	J	0.029	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-107-111FT	12/2/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-107-111FT	12/2/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-107-111FT	12/2/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-107-111FT	12/2/1999	Metals	7429-90-5	Aluminum	mg/l	8.1		0.2	MCL
AA-GHL-S1-107-111FT	12/2/1999	Metals	7440-36-0	Antimony	mg/l	0.0079	B	0.006	MCL
AA-GHL-S1-107-111FT	12/2/1999	Metals	7439-89-6	Iron	mg/l	45		0.3	MCL
AA-GHL-S1-107-111FT	12/2/1999	Metals	7439-96-5	Manganese	mg/l	1.9		0.05	MCL
AA-GHL-S1-107-111FT	12/2/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S1-72-76FT	11/30/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-72-76FT	11/30/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-72-76FT	11/30/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-72-76FT	11/30/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-72-76FT	11/30/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-72-76FT	11/30/1999	Metals	7439-89-6	Iron	mg/l	14		0.3	MCL
AA-GHL-S1-72-76FT	11/30/1999	Metals	7439-96-5	Manganese	mg/l	0.76		0.05	MCL
AA-GHL-S1-72-76FT	11/30/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-82-86FT	11/30/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-82-86FT	11/30/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7429-90-5	Aluminum	mg/l	15		0.2	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7440-47-3	Chromium	mg/l	0.16		0.1	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7440-48-4	Cobalt	mg/l	0.018		0.011	Tapwater RSL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7439-89-6	Iron	mg/l	67		0.3	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7439-92-1	Lead	mg/l	0.022		0.015	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7439-96-5	Manganese	mg/l	2.2		0.05	MCL
AA-GHL-S1-82-86FT	11/30/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-92-96FT	12/1/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-92-96FT	12/1/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-92-96FT	12/1/1999	Metals	7429-90-5	Aluminum	mg/l	2.2		0.2	MCL
AA-GHL-S1-92-96FT	12/1/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S1-92-96FT	12/1/1999	Metals	7439-89-6	Iron	mg/l	21		0.3	MCL
AA-GHL-S1-92-96FT	12/1/1999	Metals	7439-96-5	Manganese	mg/l	0.68		0.05	MCL
AA-GHL-S1-92-96FT	12/1/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S1-92-96FTFD	12/1/1999	Metals	7429-90-5	Aluminum	mg/l	1.7		0.2	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	Metals	7439-89-6	Iron	mg/l	19		0.3	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	Metals	7439-96-5	Manganese	mg/l	0.6		0.05	MCL
AA-GHL-S1-92-96FTFD	12/1/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	1	J	0.34	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S2-72-76FT	11/30/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012		0.011	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S2-72-76FT	11/30/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7429-90-5	Aluminum	mg/l	8.7		0.2	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7440-47-3	Chromium	mg/l	0.11		0.1	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7440-48-4	Cobalt	mg/l	0.014		0.011	Tapwater RSL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7439-89-6	Iron	mg/l	54		0.3	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7439-92-1	Lead	mg/l	0.019		0.015	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7439-96-5	Manganese	mg/l	1.6		0.05	MCL
AA-GHL-S2-72-76FT	11/30/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-82-86FT	12/1/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S2-82-86FT	12/1/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-82-86FT	12/1/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S2-82-86FT	12/1/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S2-82-86FT	12/1/1999	Metals	7439-89-6	Iron	mg/l	16		0.3	MCL
AA-GHL-S2-82-86FT	12/1/1999	Metals	7439-96-5	Manganese	mg/l	0.53		0.05	MCL
AA-GHL-S2-82-86FT	12/1/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-GHL-S2-99-103FT	12/2/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S2-99-103FT	12/2/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S2-99-103FT	12/2/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S2-99-103FT	12/2/1999	Metals	7429-90-5	Aluminum	mg/l	4.2		0.2	MCL
AA-GHL-S2-99-103FT	12/2/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S2-99-103FT	12/2/1999	Metals	7439-89-6	Iron	mg/l	24		0.3	MCL
AA-GHL-S2-99-103FT	12/2/1999	Metals	7439-96-5	Manganese	mg/l	0.5		0.05	MCL
AA-GHL-S2-99-103FT	12/2/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-100-104FT	12/20/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-100-104FT	12/20/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-100-104FT	12/20/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7429-90-5	Aluminum	mg/l	23	N	0.2	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7440-38-2	Arsenic	mg/l	0.02		0.01	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7440-47-3	Chromium	mg/l	0.28		0.1	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7440-48-4	Cobalt	mg/l	0.018		0.011	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-100-104FT	12/20/1999	Metals	7439-89-6	Iron	mg/l	69		0.3	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7439-92-1	Lead	mg/l	0.026		0.015	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7439-96-5	Manganese	mg/l	1.1		0.05	MCL
AA-GHL-S3-100-104FT	12/20/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.5	J	0.2	MCL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	0.52	J	0.029	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-110-114FT	12/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-110-114FT	12/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-110-114FT	12/21/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-110-114FT	12/21/1999	Metals	7429-90-5	Aluminum	mg/l	0.9	N	0.2	MCL
AA-GHL-S3-110-114FT	12/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-110-114FT	12/21/1999	Metals	7439-89-6	Iron	mg/l	14		0.3	MCL
AA-GHL-S3-110-114FT	12/21/1999	Metals	7439-96-5	Manganese	mg/l	0.34		0.05	MCL
AA-GHL-S3-110-114FT	12/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-70-74FT	12/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-70-74FT	12/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-70-74FT	12/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-70-74FT	12/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-70-74FT	12/17/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-70-74FT	12/17/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-70-74FT	12/17/1999	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
AA-GHL-S3-70-74FT	12/17/1999	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
AA-GHL-S3-70-74FT	12/17/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	1.8	J	0.029	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-80-84FT	12/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-80-84FT	12/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-80-84FT	12/17/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-80-84FT	12/17/1999	Metals	7429-90-5	Aluminum	mg/l	1.4	N	0.2	MCL
AA-GHL-S3-80-84FT	12/17/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-80-84FT	12/17/1999	Metals	7439-89-6	Iron	mg/l	28		0.3	MCL
AA-GHL-S3-80-84FT	12/17/1999	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
AA-GHL-S3-80-84FT	12/17/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-GHL-S3-90-94FT	12/20/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-GHL-S3-90-94FT	12/20/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.7		0.5	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7429-90-5	Aluminum	mg/l	33	N	0.2	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7440-38-2	Arsenic	mg/l	0.034		0.01	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7440-47-3	Chromium	mg/l	0.57		0.1	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7440-48-4	Cobalt	mg/l	0.034		0.011	Tapwater RSL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7439-89-6	Iron	mg/l	110		0.3	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7439-92-1	Lead	mg/l	0.045		0.015	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7439-96-5	Manganese	mg/l	2		0.05	MCL
AA-GHL-S3-90-94FT	12/20/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
Creek Segment B Downgradient									
AA-SW-S1-101-104FT	11/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-101-104FT	11/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-101-104FT	11/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-101-104FT	11/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-101-104FT	11/8/1999	Metals	7429-90-5	Aluminum	mg/l	9.8	*	0.2	MCL
AA-SW-S1-101-104FT	11/8/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-101-104FT	11/8/1999	Metals	7440-47-3	Chromium	mg/l	0.18	N	0.1	MCL
AA-SW-S1-101-104FT	11/8/1999	Metals	7440-48-4	Cobalt	mg/l	0.012		0.011	Tapwater RSL
AA-SW-S1-101-104FT	11/8/1999	Metals	7439-89-6	Iron	mg/l	47	*	0.3	MCL
AA-SW-S1-101-104FT	11/8/1999	Metals	7439-96-5	Manganese	mg/l	1	N	0.05	MCL
AA-SW-S1-101-104FT	11/8/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-101-104FTFD	11/8/1999	Metals	7429-90-5	Aluminum	mg/l	10	*	0.2	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Metals	7440-47-3	Chromium	mg/l	0.17	N	0.1	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Metals	7439-89-6	Iron	mg/l	45	*	0.3	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Metals	7439-96-5	Manganese	mg/l	0.96	N	0.05	MCL
AA-SW-S1-101-104FTFD	11/8/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-72-76FT	11/4/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-72-76FT	11/4/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-SW-S1-72-76FT	11/4/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-72-76FT	11/4/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-72-76FT	11/4/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-72-76FT	11/4/1999	Metals	7429-90-5	Aluminum	mg/l	0.53	*	0.2	MCL
AA-SW-S1-72-76FT	11/4/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-72-76FT	11/4/1999	Metals	7439-89-6	Iron	mg/l	17	*	0.3	MCL
AA-SW-S1-72-76FT	11/4/1999	Metals	7439-96-5	Manganese	mg/l	0.74	N	0.05	MCL
AA-SW-S1-72-76FT	11/4/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-82-86FT	11/5/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-82-86FT	11/5/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
AA-SW-S1-82-86FT	11/5/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-82-86FT	11/5/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7429-90-5	Aluminum	mg/l	29	*	0.2	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7440-38-2	Arsenic	mg/l	0.021		0.01	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7440-47-3	Chromium	mg/l	0.3	N	0.1	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7440-48-4	Cobalt	mg/l	0.032		0.011	Tapwater RSL
AA-SW-S1-82-86FT	11/5/1999	Metals	7439-89-6	Iron	mg/l	87	*	0.3	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7439-92-1	Lead	mg/l	0.035		0.015	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7439-96-5	Manganese	mg/l	1.9	N	0.05	MCL
AA-SW-S1-82-86FT	11/5/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S1-91-95FT	11/5/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	SVOCs	87-86-5svoc	Pentachlorophenol (8270)	ug/l	5	U	1	MCL
AA-SW-S1-91-95FT	11/5/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S1-91-95FT	11/5/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
AA-SW-S1-91-95FT	11/5/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S1-91-95FT	11/5/1999	Herbicides	87-86-5	Pentachlorophenol	ug/l	1.4		1	MCL
AA-SW-S1-91-95FT	11/5/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S1-91-95FT	11/5/1999	Metals	7429-90-5	Aluminum	mg/l	8.2	*	0.2	MCL
AA-SW-S1-91-95FT	11/5/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
AA-SW-S1-91-95FT	11/5/1999	Metals	7439-89-6	Iron	mg/l	39	*	0.3	MCL
AA-SW-S1-91-95FT	11/5/1999	Metals	7439-96-5	Manganese	mg/l	1	N	0.05	MCL
AA-SW-S1-91-95FT	11/5/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
AA-SW-S2-102-106FT	11/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-102-106FT	11/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-102-106FT	11/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-102-106FT	11/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-102-106FT	11/15/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S2-102-106FT	11/15/1999	Metals	7429-90-5	Aluminum	mg/l	9.0		0.2	MCL
AA-SW-S2-102-106FT	11/15/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-102-106FT	11/15/1999	Metals	7439-89-6	Iron	mg/l	30	N	0.3	MCL
AA-SW-S2-102-106FT	11/15/1999	Metals	7439-96-5	Manganese	mg/l	0.76		0.05	MCL
AA-SW-S2-102-106FT	11/15/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-72-76FT	11/11/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-72-76FT	11/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-72-76FT	11/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.74		0.5	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7429-90-5	Aluminum	mg/l	22	N	0.2	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7440-38-2	Arsenic	mg/l	0.020		0.01	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7440-47-3	Chromium	mg/l	0.25		0.1	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-72-76FT	11/11/1999	Metals	7440-48-4	Cobalt	mg/l	0.026		0.011	Tapwater RSL
AA-SW-S2-72-76FT	11/11/1999	Metals	7439-89-6	Iron	mg/l	73		0.3	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7439-92-1	Lead	mg/l	0.029		0.015	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7439-96-5	Manganese	mg/l	2.4		0.05	MCL
AA-SW-S2-72-76FT	11/11/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-82-86FT	11/11/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-82-86FT	11/11/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-82-86FT	11/11/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-82-86FT	11/11/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7429-90-5	Aluminum	mg/l	32	N	0.2	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7440-38-2	Arsenic	mg/l	0.025		0.01	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7440-47-3	Chromium	mg/l	0.41		0.1	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7440-48-4	Cobalt	mg/l	0.041		0.011	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-82-86FT	11/11/1999	Metals	7439-89-6	Iron	mg/l	110		0.3	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7439-92-1	Lead	mg/l	0.042		0.015	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7439-96-5	Manganese	mg/l	3.7		0.05	MCL
AA-SW-S2-82-86FT	11/11/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S2-92-96FT	11/12/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S2-92-96FT	11/12/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S2-92-96FT	11/12/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.71		0.5	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7429-90-5	Aluminum	mg/l	23	N	0.2	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7440-38-2	Arsenic	mg/l	0.020		0.01	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7440-47-3	Chromium	mg/l	0.27		0.1	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7440-48-4	Cobalt	mg/l	0.029		0.011	Tapwater RSL
AA-SW-S2-92-96FT	11/12/1999	Metals	7439-89-6	Iron	mg/l	82		0.3	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7439-92-1	Lead	mg/l	0.024		0.015	MCL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S2-92-96FT	11/12/1999	Metals	7439-96-5	Manganese	mg/l	2.8		0.05	MCL
AA-SW-S2-92-96FT	11/12/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-72-76FT	11/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-72-76FT	11/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-72-76FT	11/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7429-90-5	Aluminum	mg/l	11		0.2	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7440-38-2	Arsenic	mg/l	0.016		0.01	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7440-48-4	Cobalt	mg/l	0.014		0.011	Tapwater RSL
AA-SW-S3-72-76FT	11/15/1999	Metals	7439-89-6	Iron	mg/l	52	N	0.3	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7439-92-1	Lead	mg/l	0.020		0.015	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7439-96-5	Manganese	mg/l	2.1		0.05	MCL
AA-SW-S3-72-76FT	11/15/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-82-86FT	11/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-82-86FT	11/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-82-86FT	11/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-82-86FT	11/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7429-90-5	Aluminum	mg/l	11		0.2	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7440-38-2	Arsenic	mg/l	0.012		0.01	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7440-48-4	Cobalt	mg/l	0.013		0.011	Tapwater RSL
AA-SW-S3-82-86FT	11/15/1999	Metals	7439-89-6	Iron	mg/l	45	N	0.3	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7439-92-1	Lead	mg/l	0.019		0.015	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7439-96-5	Manganese	mg/l	1.3		0.05	MCL
AA-SW-S3-82-86FT	11/15/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-92-96FT	11/16/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-92-96FT	11/16/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-92-96FT	11/16/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-92-96FT	11/16/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	PCBs	Total PCBs	Total PCBs	ug/l	1		0.5	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7429-90-5	Aluminum	mg/l	13		0.2	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7440-38-2	Arsenic	mg/l	0.011		0.01	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7440-47-3	Chromium	mg/l	0.14		0.1	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7440-48-4	Cobalt	mg/l	0.012		0.011	Tapwater RSL
AA-SW-S3-92-96FT	11/16/1999	Metals	7439-89-6	Iron	mg/l	50	N	0.3	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7439-96-5	Manganese	mg/l	0.95		0.05	MCL
AA-SW-S3-92-96FT	11/16/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-96-99FT	11/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-96-99FT	11/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-96-99FT	11/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-96-99FT	11/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-96-99FT	11/17/1999	PCBs	Total PCBs	Total PCBs	ug/l	0.76		0.5	MCL
AA-SW-S3-96-99FT	11/17/1999	Metals	7429-90-5	Aluminum	mg/l	0.43		0.2	MCL
AA-SW-S3-96-99FT	11/17/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-96-99FT	11/17/1999	Metals	7439-89-6	Iron	mg/l	12	N	0.3	MCL
AA-SW-S3-96-99FT	11/17/1999	Metals	7439-96-5	Manganese	mg/l	0.24		0.05	MCL
AA-SW-S3-96-99FT	11/17/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-3
Groundwater Exceedances (a)
Deep Hydrogeologic Unit (DHU)

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
AA-SW-S3-96-99FTFD	11/17/1999	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
AA-SW-S3-96-99FTFD	11/17/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
AA-SW-S3-96-99FTFD	11/17/1999	Metals	7429-90-5	Aluminum	mg/l	2.5		0.2	MCL
AA-SW-S3-96-99FTFD	11/17/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
AA-SW-S3-96-99FTFD	11/17/1999	Metals	7439-89-6	Iron	mg/l	22	N	0.3	MCL
AA-SW-S3-96-99FTFD	11/17/1999	Metals	7439-96-5	Manganese	mg/l	0.38		0.05	MCL
AA-SW-S3-96-99FTFD	11/17/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL

Notes:
CAS - Chemical Abstracts Service.
MCL - Maximum Contaminant Level. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. USEPA Office of Water. August, 2006.
RSL - Regional Screening Level. USEPA. April 2009.
USEPA - United States Environmental Protection Agency.
(a) This table presents groundwater results that exceed the associated screening level (equal to the MCL or the RSL for constituents with no available MCL).

Table 5-4
Groundwater Exceedances (a)
Bedrock Wells

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
BR-G	5/1/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
BR-G	5/1/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
BR-G	5/1/2000	VOCs	71-43-2	Benzene	ug/l	55		5	MCL
BR-G	5/1/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
BR-G	5/1/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
BR-G	5/1/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
BR-G	5/1/2000	VOCs	127-18-4	Tetrachloroethene	ug/l	5.4		5	MCL
BR-G	5/1/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
BR-G	5/1/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
BR-G	5/1/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	9400	D	70	MCL
BR-G	5/1/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	210		75	MCL
BR-G	5/1/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
BR-G	5/1/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
BR-G	5/1/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
BR-G	5/1/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
BR-G	5/1/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
BR-G	5/1/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
BR-G	5/1/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
BR-G	5/1/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	J	0.029	Tapwater RSL
BR-G	5/1/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	J	0.2	MCL
BR-G	5/1/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	J	0.029	Tapwater RSL
BR-G	5/1/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	2.8	J	0.29	Tapwater RSL
BR-G	5/1/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
BR-G	5/1/2000	SVOCs	218-01-9	Chrysene	ug/l	5.4	J	2.9	Tapwater RSL
BR-G	5/1/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	3.0	J	0.0029	Tapwater RSL
BR-G	5/1/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	520	D	1	MCL
BR-G	5/1/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
BR-G	5/1/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	J	0.029	Tapwater RSL
BR-G	5/1/2000	SVOCs	91-20-3	Naphthalene	ug/l	38		0.14	Tapwater RSL
BR-G	5/1/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
BR-G	5/1/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
BR-G	5/1/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
BR-G	5/1/2000	Pesticides	72-54-8	4,4'-DDD	ug/l	20	U	0.28	Tapwater RSL
BR-G	5/1/2000	Pesticides	72-55-9	4,4'-DDE	ug/l	20	U	0.2	Tapwater RSL
BR-G	5/1/2000	Pesticides	50-29-3	4,4'-DDT	ug/l	18	J	0.2	Tapwater RSL
BR-G	5/1/2000	Pesticides	309-00-2	Aldrin	ug/l	10	U	0.004	Tapwater RSL
BR-G	5/1/2000	Pesticides	5103-71-9	Alpha Chlordane	ug/l	10	U	2	MCL
BR-G	5/1/2000	Pesticides	319-84-6	alpha-BHC	ug/l	390	D	0.011	Tapwater RSL
BR-G	5/1/2000	Pesticides	319-85-7	beta-BHC	ug/l	2.8	U	0.037	Tapwater RSL
BR-G	5/1/2000	Pesticides	319-86-8	delta-BHC	ug/l	2.4	U	0.011	Tapwater RSL
BR-G	5/1/2000	Pesticides	60-57-1	Dieldrin	ug/l	20	U	0.0042	Tapwater RSL
BR-G	5/1/2000	Pesticides	72-20-8	Endrin	ug/l	20	U	2	MCL
BR-G	5/1/2000	Pesticides	7421-93-4	Endrin aldehyde	ug/l	20	U	2	MCL
BR-G	5/1/2000	Pesticides	53494-70-5	Endrin ketone	ug/l	20	U	2	MCL
BR-G	5/1/2000	Pesticides	5103-74-2	Gamma Chlordane	ug/l	10	U	2	MCL

Table 5-4
Groundwater Exceedances (a)
Bedrock Wells

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
BR-G	5/1/2000	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	3.8	U	0.2	MCL
BR-G	5/1/2000	Pesticides	76-44-8	Heptachlor	ug/l	10	U	0.4	MCL
BR-G	5/1/2000	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	10	U	0.2	MCL
BR-G	5/1/2000	Pesticides	72-43-5	Methoxychlor	ug/l	100	U	40	MCL
BR-G	5/1/2000	Pesticides	8001-35-2	Toxaphene	ug/l	1000	U	3	MCL
BR-G	5/1/2000	Herbicides	94-75-7	2,4-D	ug/l	440	D	70	MCL
BR-G	5/1/2000	Herbicides	75-99-0	Dalapon	ug/l	1200	U	200	MCL
BR-G	5/1/2000	Herbicides	88-85-7	Dinoseb	ug/l	60	U	7	MCL
BR-G	5/1/2000	Herbicides	94-74-6	MCPA	ug/l	1200	U	18	Tapwater RSL
BR-G	5/1/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	6.6	J	1	MCL
BR-G	5/1/2000	PCBs	Total PCBs	Total PCBs	ug/l	54.5		0.5	MCL
BR-G	5/1/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	9.61E-04		0.00003	MCL
BR-G	5/1/2000	Metals	7429-90-5	Aluminum	mg/l	8.2		0.2	MCL
BR-G	5/1/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
BR-G	5/1/2000	Metals	7440-47-3	Chromium	mg/l	0.41		0.1	MCL
BR-G	5/1/2000	Metals	7439-89-6	Iron	mg/l	14		0.3	MCL
BR-G	5/1/2000	Metals	7439-96-5	Manganese	mg/l	0.091		0.05	MCL
BR-G	5/1/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
BR-GFD	5/1/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
BR-GFD	5/1/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
BR-GFD	5/1/2000	VOCs	71-43-2	Benzene	ug/l	53		5	MCL
BR-GFD	5/1/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
BR-GFD	5/1/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
BR-GFD	5/1/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
BR-GFD	5/1/2000	VOCs	127-18-4	Tetrachloroethene	ug/l	5.7		5	MCL
BR-GFD	5/1/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
BR-GFD	5/1/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
BR-GFD	5/1/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	87000	D	70	MCL
BR-GFD	5/1/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	960		75	MCL
BR-GFD	5/1/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	200	U	0.32	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	42	U	6.1	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	280	U	73	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	200	U	0.22	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	200	U	37	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	88-74-4	2-Nitroaniline	ug/l	1000	U	110	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	400	U	0.15	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	200	U	180	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	1000	U	3.4	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	260	U	3.7	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	400	U	0.34	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	1000	U	3.4	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	200	J	0.029	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	200	J	0.2	MCL
BR-GFD	5/1/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	200	J	0.029	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	200	U	0.29	Tapwater RSL

Table 5-4
Groundwater Exceedances (a)
Bedrock Wells

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
BR-GFD	5/1/2000	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	200	U	110	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	200	U	0.012	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	36	U	6	MCL
BR-GFD	5/1/2000	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	200	U	35	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	218-01-9	Chrysene	ug/l	120	J	2.9	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	200	U	0.0029	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	8400	D	1	MCL
BR-GFD	5/1/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	200	U	0.86	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	200	U	50	MCL
BR-GFD	5/1/2000	SVOCs	67-72-1	Hexachloroethane	ug/l	38	U	4.8	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	200	J	0.029	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	78-59-1	Isophorone	ug/l	200	U	71	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	91-20-3	Naphthalene	ug/l	69	J	0.14	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	70	U	0.12	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	200	U	0.0096	Tapwater RSL
BR-GFD	5/1/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	100	U	1	MCL
BR-GFD	5/1/2000	Pesticides	72-54-8	4,4'-DDD	ug/l	20	U	0.28	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	72-55-9	4,4'-DDE	ug/l	20	U	0.2	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	50-29-3	4,4'-DDT	ug/l	20	U	0.2	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	309-00-2	Aldrin	ug/l	10	U	0.004	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	5103-71-9	Alpha Chlordane	ug/l	10	U	2	MCL
BR-GFD	5/1/2000	Pesticides	319-84-6	alpha-BHC	ug/l	2200	D	0.011	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	319-85-7	beta-BHC	ug/l	170	D	0.037	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	319-86-8	delta-BHC	ug/l	2.4	U	0.011	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	60-57-1	Dieldrin	ug/l	6.0	J	0.0042	Tapwater RSL
BR-GFD	5/1/2000	Pesticides	72-20-8	Endrin	ug/l	20	U	2	MCL
BR-GFD	5/1/2000	Pesticides	7421-93-4	Endrin aldehyde	ug/l	20	U	2	MCL
BR-GFD	5/1/2000	Pesticides	53494-70-5	Endrin ketone	ug/l	20	U	2	MCL
BR-GFD	5/1/2000	Pesticides	5103-74-2	Gamma Chlordane	ug/l	10	U	2	MCL
BR-GFD	5/1/2000	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	3.8	U	0.2	MCL
BR-GFD	5/1/2000	Pesticides	76-44-8	Heptachlor	ug/l	10	U	0.4	MCL
BR-GFD	5/1/2000	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	10	U	0.2	MCL
BR-GFD	5/1/2000	Pesticides	72-43-5	Methoxychlor	ug/l	100	U	40	MCL
BR-GFD	5/1/2000	Pesticides	8001-35-2	Toxaphene	ug/l	1000	U	3	MCL
BR-GFD	5/1/2000	Herbicides	94-75-7	2,4-D	ug/l	320	D	70	MCL
BR-GFD	5/1/2000	Herbicides	75-99-0	Dalapon	ug/l	1200	U	200	MCL
BR-GFD	5/1/2000	Herbicides	88-85-7	Dinoseb	ug/l	60	U	7	MCL
BR-GFD	5/1/2000	Herbicides	94-74-6	MCPA	ug/l	840	J	18	Tapwater RSL
BR-GFD	5/1/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	7.6	J	1	MCL
BR-GFD	5/1/2000	Metals	7429-90-5	Aluminum	mg/l	3.7		0.2	MCL
BR-GFD	5/1/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
BR-GFD	5/1/2000	Metals	7439-89-6	Iron	mg/l	5.7		0.3	MCL
BR-GFD	5/1/2000	Metals	7440-28-0	Thallium	mg/l	0.0053	B	0.002	MCL
BR-H	5/1/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
BR-H	5/1/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL

Table 5-4
Groundwater Exceedances (a)
Bedrock Wells

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
BR-H	5/1/2000	VOCs	71-43-2	Benzene	ug/l	9.4		5	MCL
BR-H	5/1/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
BR-H	5/1/2000	VOCs	108-90-7	Chlorobenzene	ug/l	110		100	MCL
BR-H	5/1/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
BR-H	5/1/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
BR-H	5/1/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
BR-H	5/1/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
BR-H	5/1/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	600	D	70	MCL
BR-H	5/1/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
BR-H	5/1/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
BR-H	5/1/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
BR-H	5/1/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
BR-H	5/1/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
BR-H	5/1/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	14	J	0.34	Tapwater RSL
BR-H	5/1/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
BR-H	5/1/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	J	0.029	Tapwater RSL
BR-H	5/1/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	J	0.2	MCL
BR-H	5/1/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	J	0.029	Tapwater RSL
BR-H	5/1/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
BR-H	5/1/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
BR-H	5/1/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
BR-H	5/1/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
BR-H	5/1/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
BR-H	5/1/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
BR-H	5/1/2000	SVOCs	91-20-3	Naphthalene	ug/l	7.4	J	0.14	Tapwater RSL
BR-H	5/1/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
BR-H	5/1/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
BR-H	5/1/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
BR-H	5/1/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
BR-H	5/1/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
BR-H	5/1/2000	Pesticides	319-85-7	beta-BHC	ug/l	0.14	P	0.037	Tapwater RSL
BR-H	5/1/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
BR-H	5/1/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
BR-H	5/1/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
BR-H	5/1/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
BR-H	5/1/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
BR-H	5/1/2000	Metals	7439-89-6	Iron	mg/l	23		0.3	MCL
BR-H	5/1/2000	Metals	7439-96-5	Manganese	mg/l	2.9		0.05	MCL
BR-H	5/1/2000	Metals	7440-02-0	Nickel	mg/l	9.6		0.73	Tapwater RSL
BR-H	5/1/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
BR-I	4/25/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	25	U	0.067	Tapwater RSL
BR-I	4/25/2000	VOCs	79-00-5	1,1,2-Trichloroethane	ug/l	25	U	5	MCL
BR-I	4/25/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	25	U	2.4	Tapwater RSL
BR-I	4/25/2000	VOCs	75-35-4	1,1-Dichloroethene	ug/l	25	U	7	MCL
BR-I	4/25/2000	VOCs	107-06-2	1,2-Dichloroethane	ug/l	25	U	5	MCL

Table 5-4
Groundwater Exceedances (a)
Bedrock Wells

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
BR-I	4/25/2000	VOCs	78-87-5	1,2-Dichloropropane	ug/l	25	U	5	MCL
BR-I	4/25/2000	VOCs	71-43-2	Benzene	ug/l	63		5	MCL
BR-I	4/25/2000	VOCs	75-25-2	Bromoform	ug/l	25	U	8.5	Tapwater RSL
BR-I	4/25/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	49	U	8.7	Tapwater RSL
BR-I	4/25/2000	VOCs	56-23-5	Carbon tetrachloride	ug/l	25	U	5	MCL
BR-I	4/25/2000	VOCs	108-90-7	Chlorobenzene	ug/l	240		100	MCL
BR-I	4/25/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
BR-I	4/25/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	25	U	0.15	Tapwater RSL
BR-I	4/25/2000	VOCs	127-18-4	Tetrachloroethene	ug/l	20	J	5	MCL
BR-I	4/25/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	25	U	0.43	Tapwater RSL
BR-I	4/25/2000	VOCs	75-01-4	Vinyl chloride	ug/l	50	U	2	MCL
BR-I	4/25/2000	SVOCs	120-82-1	1,2,4-Trichlorobenzene	ug/l	1100000	D	70	MCL
BR-I	4/25/2000	SVOCs	95-50-1	1,2-Dichlorobenzene	ug/l	12000		600	MCL
BR-I	4/25/2000	SVOCs	541-73-1	1,3-Dichlorobenzene	ug/l	1100		75	MCL
BR-I	4/25/2000	SVOCs	106-46-7	1,4-Dichlorobenzene	ug/l	51000	D	75	MCL
BR-I	4/25/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	1000	U	0.32	Tapwater RSL
BR-I	4/25/2000	SVOCs	88-06-2	2,4,6-Trichlorophenol	ug/l	1700		6.1	Tapwater RSL
BR-I	4/25/2000	SVOCs	120-83-2	2,4-Dichlorophenol	ug/l	2400		110	Tapwater RSL
BR-I	4/25/2000	SVOCs	51-28-5	2,4-Dinitrophenol	ug/l	1400	U	73	Tapwater RSL
BR-I	4/25/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	1000	U	0.22	Tapwater RSL
BR-I	4/25/2000	SVOCs	606-20-2	2,6-Dinitrotoluene	ug/l	1000	U	37	Tapwater RSL
BR-I	4/25/2000	SVOCs	95-57-8	2-Chlorophenol	ug/l	1000	U	180	Tapwater RSL
BR-I	4/25/2000	SVOCs	91-57-6	2-Methylnaphthalene	ug/l	670	J	150	Tapwater RSL
BR-I	4/25/2000	SVOCs	88-74-4	2-Nitroaniline	ug/l	5000	U	110	Tapwater RSL
BR-I	4/25/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	2000	U	0.15	Tapwater RSL
BR-I	4/25/2000	SVOCs	106-44-5	3-Methylphenol/4-Methylphenol	ug/l	1000	U	180	Tapwater RSL
BR-I	4/25/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	5000	U	3.4	Tapwater RSL
BR-I	4/25/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	5000	U	3.7	Tapwater RSL
BR-I	4/25/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	2000	U	0.34	Tapwater RSL
BR-I	4/25/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	5000	U	3.4	Tapwater RSL
BR-I	4/25/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	400	J	0.029	Tapwater RSL
BR-I	4/25/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	380	J	0.2	MCL
BR-I	4/25/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	290	J	0.029	Tapwater RSL
BR-I	4/25/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	220	J	0.29	Tapwater RSL
BR-I	4/25/2000	SVOCs	111-91-1	bis(2-Chloroethoxy)methane	ug/l	1000	U	110	Tapwater RSL
BR-I	4/25/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	1000	U	0.012	Tapwater RSL
BR-I	4/25/2000	SVOCs	117-81-7	bis(2-Ethylhexyl)phthalate	ug/l	420		6	MCL
BR-I	4/25/2000	SVOCs	85-68-7	Butylbenzylphthalate	ug/l	160	J	35	Tapwater RSL
BR-I	4/25/2000	SVOCs	218-01-9	Chrysene	ug/l	740	J	2.9	Tapwater RSL
BR-I	4/25/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	210	J	0.0029	Tapwater RSL
BR-I	4/25/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	90000	D	1	MCL
BR-I	4/25/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	1000	U	0.86	Tapwater RSL
BR-I	4/25/2000	SVOCs	77-47-4	Hexachlorocyclopentadiene	ug/l	1000	U	50	MCL
BR-I	4/25/2000	SVOCs	67-72-1	Hexachloroethane	ug/l	190	U	4.8	Tapwater RSL
BR-I	4/25/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	240	J	0.029	Tapwater RSL

Table 5-4
Groundwater Exceedances (a)
Bedrock Wells

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
BR-I	4/25/2000	SVOCs	78-59-1	Isophorone	ug/l	1000	U	71	Tapwater RSL
BR-I	4/25/2000	SVOCs	91-20-3	Naphthalene	ug/l	5800		0.14	Tapwater RSL
BR-I	4/25/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	140	J	0.12	Tapwater RSL
BR-I	4/25/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	1000	U	0.0096	Tapwater RSL
BR-I	4/25/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	500	U	1	MCL
BR-I	4/25/2000	Pesticides	72-54-8	4,4'-DDD	ug/l	180		0.28	Tapwater RSL
BR-I	4/25/2000	Pesticides	72-55-9	4,4'-DDE	ug/l	50	U	0.2	Tapwater RSL
BR-I	4/25/2000	Pesticides	50-29-3	4,4'-DDT	ug/l	50	U	0.2	Tapwater RSL
BR-I	4/25/2000	Pesticides	309-00-2	Aldrin	ug/l	25	U	0.004	Tapwater RSL
BR-I	4/25/2000	Pesticides	5103-71-9	Alpha Chlordane	ug/l	25	U	2	MCL
BR-I	4/25/2000	Pesticides	319-84-6	alpha-BHC	ug/l	3300	D	0.011	Tapwater RSL
BR-I	4/25/2000	Pesticides	319-85-7	beta-BHC	ug/l	7.0	U	0.037	Tapwater RSL
BR-I	4/25/2000	Pesticides	319-86-8	delta-BHC	ug/l	41		0.011	Tapwater RSL
BR-I	4/25/2000	Pesticides	60-57-1	Dieldrin	ug/l	50	U	0.0042	Tapwater RSL
BR-I	4/25/2000	Pesticides	72-20-8	Endrin	ug/l	50	U	2	MCL
BR-I	4/25/2000	Pesticides	7421-93-4	Endrin aldehyde	ug/l	50	U	2	MCL
BR-I	4/25/2000	Pesticides	53494-70-5	Endrin ketone	ug/l	50	U	2	MCL
BR-I	4/25/2000	Pesticides	5103-74-2	Gamma Chlordane	ug/l	25	U	2	MCL
BR-I	4/25/2000	Pesticides	58-89-9	gamma-BHC (Lindane)	ug/l	9.5	U	0.2	MCL
BR-I	4/25/2000	Pesticides	76-44-8	Heptachlor	ug/l	25	U	0.4	MCL
BR-I	4/25/2000	Pesticides	1024-57-3	Heptachlor epoxide	ug/l	25	U	0.2	MCL
BR-I	4/25/2000	Pesticides	72-43-5	Methoxychlor	ug/l	250	U	40	MCL
BR-I	4/25/2000	Pesticides	8001-35-2	Toxaphene	ug/l	2500	U	3	MCL
BR-I	4/25/2000	Herbicides	75-99-0	Dalapon	ug/l	600	U	200	MCL
BR-I	4/25/2000	Herbicides	88-85-7	Dinoseb	ug/l	30	U	7	MCL
BR-I	4/25/2000	Herbicides	94-74-6	MCPA	ug/l	600	U	18	Tapwater RSL
BR-I	4/25/2000	Herbicides	87-86-5	Pentachlorophenol	ug/l	900	D	1	MCL
BR-I	4/25/2000	PCBs	Total PCBs	Total PCBs	ug/l	15750		0.5	MCL
BR-I	4/25/2000	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	4.89E-03		0.00003	MCL
BR-I	4/25/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
BR-I	4/25/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL

Notes:
CAS - Chemical Abstracts Service.
MCL - Maximum Contaminant Level. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. USEPA Office of Water. August, 2006.
RSL - Regional Screening Level. USEPA. April 2009.
USEPA - United States Environmental Protection Agency.
(a) This table presents groundwater results that exceed the associated screening level (equal to the MCL or the RSL for constituents with no available MCL).

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
DW-MCDO-1	10/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
DW-MCDO-1	10/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
DW-MCDO-1	10/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
DW-MCDO-1	10/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
DW-MCDO-1	10/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
DW-MCDO-1	10/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
DW-MCDO-1	10/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
DW-MCDO-1	10/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
DW-MCDO-1	10/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
DW-MCDO-1	10/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
DW-MCDO-1	10/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
DW-MCDO-1	10/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
DW-MCDO-1	10/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
DW-MCDO-1	10/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
DW-MCDO-1	10/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
DW-MCDO-1	10/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
DW-MCDO-1	10/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
DW-MCDO-1	10/21/1999	Metals	7440-38-2	Arsenic	mg/l	0.027		0.01	MCL
DW-MCDO-1	10/21/1999	Metals	7439-89-6	Iron	mg/l	9.2		0.3	MCL
DW-MCDO-1	10/21/1999	Metals	7439-92-1	Lead	mg/l	0.077		0.015	MCL
DW-MCDO-1	10/21/1999	Metals	7439-96-5	Manganese	mg/l	0.57		0.05	MCL
DW-MCDO-1	10/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
DW-MCDO-1FD	10/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
DW-MCDO-1FD	10/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
DW-MCDO-1FD	10/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
DW-MCDO-1FD	10/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
DW-MCDO-1FD	10/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
DW-MCDO-1FD	10/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
DW-MCDO-1FD	10/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
DW-MCDO-1FD	10/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
DW-MCDO-1FD	10/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
DW-MCDO-1FD	10/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
DW-MCDO-1FD	10/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
DW-MCDO-1FD	10/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
DW-MCDO-1FD	10/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
DW-MCDO-1FD	10/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
DW-MCDO-1FD	10/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
DW-MCDO-1FD	10/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
DW-MCDO-1FD	10/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
DW-MCDO-1FD	10/21/1999	Metals	7440-38-2	Arsenic	mg/l	0.031		0.01	MCL
DW-MCDO-1FD	10/21/1999	Metals	7439-89-6	Iron	mg/l	11		0.3	MCL
DW-MCDO-1FD	10/21/1999	Metals	7439-92-1	Lead	mg/l	0.18		0.015	MCL
DW-MCDO-1FD	10/21/1999	Metals	7439-96-5	Manganese	mg/l	0.58		0.05	MCL
DW-MCDO-1FD	10/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
DW-MCDO-1FD	10/21/1999	Metals	7440-66-6	Zinc	mg/l	5.8		5	MCL
DW-SCHM-1	10/22/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
DW-SCHM-1	10/22/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
DW-SCHM-1	10/22/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
DW-SCHM-1	10/22/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
DW-SCHM-1	10/22/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
DW-SCHM-1	10/22/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
DW-SCHM-1	10/22/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
DW-SCHM-1	10/22/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
DW-SCHM-1	10/22/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
DW-SCHM-1	10/22/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
DW-SCHM-1	10/22/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
DW-SCHM-1	10/22/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
DW-SCHM-1	10/22/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
DW-SCHM-1	10/22/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
DW-SCHM-1	10/22/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
DW-SCHM-1	10/22/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
DW-SCHM-1	10/22/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
DW-SCHM-1	10/22/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
DW-SCHM-1	10/22/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
DW-SCHM-1	10/22/1999	Metals	7439-89-6	Iron	mg/l	17		0.3	MCL
DW-SCHM-1	10/22/1999	Metals	7439-96-5	Manganese	mg/l	1.2		0.05	MCL
DW-SCHM-1	10/22/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
DW-SETT-1	10/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
DW-SETT-1	10/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
DW-SETT-1	10/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
DW-SETT-1	10/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
DW-SETT-1	10/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
DW-SETT-1	10/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
DW-SETT-1	10/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
DW-SETT-1	10/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
DW-SETT-1	10/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
DW-SETT-1	10/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
DW-SETT-1	10/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
DW-SETT-1	10/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
DW-SETT-1	10/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
DW-SETT-1	10/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
DW-SETT-1	10/21/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
DW-SETT-1	10/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
DW-SETT-1	10/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
DW-SETT-1	10/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
DW-SETT-1	10/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
DW-SETT-1	10/21/1999	Metals	7439-89-6	Iron	mg/l	2.4		0.3	MCL
DW-SETT-1	10/21/1999	Metals	7439-96-5	Manganese	mg/l	0.86		0.05	MCL
DW-SETT-1	10/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
DW-WRIG-1	10/21/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5	U	0.067	Tapwater RSL
DW-WRIG-1	10/21/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5	U	2.4	Tapwater RSL
DW-WRIG-1	10/21/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
DW-WRIG-1	10/21/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1	U	0.43	Tapwater RSL
DW-WRIG-1	10/21/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5	U	0.15	Tapwater RSL
DW-WRIG-1	10/21/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5	U	0.43	Tapwater RSL
DW-WRIG-1	10/21/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
DW-WRIG-1	10/21/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
DW-WRIG-1	10/21/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
DW-WRIG-1	10/21/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
DW-WRIG-1	10/21/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
DW-WRIG-1	10/21/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5	U	1	MCL
DW-WRIG-1	10/21/1999	Pesticides	309-00-2	Aldrin	ug/l	0.05	U	0.004	Tapwater RSL
DW-WRIG-1	10/21/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
DW-WRIG-1	10/21/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.1	U	0.0042	Tapwater RSL
DW-WRIG-1	10/21/1999	Pesticides	8001-35-2	Toxaphene	ug/l	5	U	3	MCL
DW-WRIG-1	10/21/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
DW-WRIG-1	10/21/1999	Metals	7440-36-0	Antimony	mg/l	0.02	U	0.006	MCL
DW-WRIG-1	10/21/1999	Metals	7439-89-6	Iron	mg/l	1.9		0.3	MCL
DW-WRIG-1	10/21/1999	Metals	7439-96-5	Manganese	mg/l	1.1		0.05	MCL
DW-WRIG-1	10/21/1999	Metals	7440-28-0	Thallium	mg/l	0.01	U	0.002	MCL
SGW-S1-15FT	10/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S1-15FT	10/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
SGW-S1-15FT	10/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S1-15FT	10/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S1-15FT	10/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S1-15FT	10/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S1-15FT	10/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
SGW-S1-15FT	10/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S1-15FT	10/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S1-15FT	10/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S1-15FT	10/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
SGW-S1-15FT	10/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S1-15FT	10/14/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
SGW-S1-15FT	10/14/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
SGW-S1-15FT	10/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S1-15FT	10/14/1999	Metals	7429-90-5	Aluminum	mg/l	4.0	N	0.2	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
SGW-S1-15FT	10/14/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S1-15FT	10/14/1999	Metals	7440-38-2	Arsenic	mg/l	0.013		0.01	MCL
SGW-S1-15FT	10/14/1999	Metals	7440-48-4	Cobalt	mg/l	0.012		0.011	Tapwater RSL
SGW-S1-15FT	10/14/1999	Metals	7439-89-6	Iron	mg/l	12	*	0.3	MCL
SGW-S1-15FT	10/14/1999	Metals	7439-96-5	Manganese	mg/l	1.7	N	0.05	MCL
SGW-S1-15FT	10/14/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
SGW-S1-20FT	10/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S1-20FT	10/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
SGW-S1-20FT	10/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S1-20FT	10/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S1-20FT	10/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S1-20FT	10/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S1-20FT	10/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
SGW-S1-20FT	10/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S1-20FT	10/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S1-20FT	10/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S1-20FT	10/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
SGW-S1-20FT	10/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S1-20FT	10/14/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	J	0.011	Tapwater RSL
SGW-S1-20FT	10/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S1-20FT	10/14/1999	Metals	7429-90-5	Aluminum	mg/l	0.70	N	0.2	MCL
SGW-S1-20FT	10/14/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S1-20FT	10/14/1999	Metals	7440-38-2	Arsenic	mg/l	0.044		0.01	MCL
SGW-S1-20FT	10/14/1999	Metals	7439-89-6	Iron	mg/l	7.6	*	0.3	MCL
SGW-S1-20FT	10/14/1999	Metals	7439-96-5	Manganese	mg/l	0.85	N	0.05	MCL
SGW-S1-20FT	10/14/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
SGW-S1-40FT	10/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S1-40FT	10/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
SGW-S1-40FT	10/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S1-40FT	10/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S1-40FT	10/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S1-40FT	10/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S1-40FT	10/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
SGW-S1-40FT	10/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S1-40FT	10/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S1-40FT	10/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S1-40FT	10/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
SGW-S1-40FT	10/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S1-40FT	10/14/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
SGW-S1-40FT	10/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S1-40FT	10/14/1999	Dioxins	Dioxin TEQ-H	Dioxin TEQ-HH	ug/l	7.72E-05		0.00003	MCL
SGW-S1-40FT	10/14/1999	Metals	7429-90-5	Aluminum	mg/l	17	N	0.2	MCL
SGW-S1-40FT	10/14/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S1-40FT	10/14/1999	Metals	7440-38-2	Arsenic	mg/l	0.023		0.01	MCL
SGW-S1-40FT	10/14/1999	Metals	7440-48-4	Cobalt	mg/l	0.020		0.011	Tapwater RSL
SGW-S1-40FT	10/14/1999	Metals	7439-89-6	Iron	mg/l	42	*	0.3	MCL
SGW-S1-40FT	10/14/1999	Metals	7439-92-1	Lead	mg/l	0.036		0.015	MCL
SGW-S1-40FT	10/14/1999	Metals	7439-96-5	Manganese	mg/l	1.4	N	0.05	MCL
SGW-S1-40FT	10/14/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
SGW-S1-40FTFD	10/14/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
SGW-S1-40FTFD	10/14/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S1-40FTFD	10/14/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S1-40FTFD	10/14/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
SGW-S1-40FTFD	10/14/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	J	0.011	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S1-40FTFD	10/14/1999	Metals	7429-90-5	Aluminum	mg/l	7.3	N	0.2	MCL
SGW-S1-40FTFD	10/14/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S1-40FTFD	10/14/1999	Metals	7440-38-2	Arsenic	mg/l	0.012		0.01	MCL
SGW-S1-40FTFD	10/14/1999	Metals	7439-89-6	Iron	mg/l	18	*	0.3	MCL
SGW-S1-40FTFD	10/14/1999	Metals	7439-96-5	Manganese	mg/l	1.0	N	0.05	MCL
SGW-S1-40FTFD	10/14/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
SGW-S2-15FT	10/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S2-15FT	10/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
SGW-S2-15FT	10/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S2-15FT	10/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S2-15FT	10/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S2-15FT	10/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S2-15FT	10/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
SGW-S2-15FT	10/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
SGW-S2-15FT	10/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S2-15FT	10/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S2-15FT	10/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S2-15FT	10/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
SGW-S2-15FT	10/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S2-15FT	10/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
SGW-S2-15FT	10/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	J	0.011	Tapwater RSL
SGW-S2-15FT	10/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
SGW-S2-15FT	10/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S2-15FT	10/15/1999	Metals	7429-90-5	Aluminum	mg/l	3.2	N	0.2	MCL
SGW-S2-15FT	10/15/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S2-15FT	10/15/1999	Metals	7439-89-6	Iron	mg/l	6.7	*	0.3	MCL
SGW-S2-15FT	10/15/1999	Metals	7439-96-5	Manganese	mg/l	0.35	N	0.05	MCL
SGW-S2-15FT	10/15/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
SGW-S2-20FT	10/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S2-20FT	10/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
SGW-S2-20FT	10/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S2-20FT	10/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S2-20FT	10/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S2-20FT	10/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S2-20FT	10/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
SGW-S2-20FT	10/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S2-20FT	10/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
SGW-S2-20FT	10/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S2-20FT	10/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S2-20FT	10/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
SGW-S2-20FT	10/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S2-20FT	10/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
SGW-S2-20FT	10/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
SGW-S2-20FT	10/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
SGW-S2-20FT	10/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S2-20FT	10/15/1999	Metals	7429-90-5	Aluminum	mg/l	4.6	N	0.2	MCL
SGW-S2-20FT	10/15/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S2-20FT	10/15/1999	Metals	7439-89-6	Iron	mg/l	8.4	*	0.3	MCL
SGW-S2-20FT	10/15/1999	Metals	7439-96-5	Manganese	mg/l	1.2	N	0.05	MCL
SGW-S2-20FT	10/15/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
SGW-S2-40FT	10/15/1999	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
SGW-S2-40FT	10/15/1999	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
SGW-S2-40FT	10/15/1999	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
SGW-S2-40FT	10/15/1999	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
SGW-S2-40FT	10/15/1999	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
SGW-S2-40FT	10/15/1999	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
SGW-S2-40FT	10/15/1999	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
SGW-S2-40FT	10/15/1999	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
SGW-S2-40FT	10/15/1999	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
SGW-S2-40FT	10/15/1999	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
SGW-S2-40FT	10/15/1999	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
SGW-S2-40FT	10/15/1999	Pesticides	309-00-2	Aldrin	ug/l	0.50	U	0.004	Tapwater RSL
SGW-S2-40FT	10/15/1999	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
SGW-S2-40FT	10/15/1999	Pesticides	319-86-8	delta-BHC	ug/l	0.012	J	0.011	Tapwater RSL
SGW-S2-40FT	10/15/1999	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
SGW-S2-40FT	10/15/1999	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
SGW-S2-40FT	10/15/1999	Metals	7429-90-5	Aluminum	mg/l	2.0	N	0.2	MCL
SGW-S2-40FT	10/15/1999	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
SGW-S2-40FT	10/15/1999	Metals	7439-89-6	Iron	mg/l	5.2	*	0.3	MCL
SGW-S2-40FT	10/15/1999	Metals	7439-96-5	Manganese	mg/l	1.6	N	0.05	MCL
SGW-S2-40FT	10/15/1999	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
TS-S1-0HR	3/29/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S1-0HR	3/29/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S1-0HR	3/29/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S1-0HR	3/29/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S1-0HR	3/29/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S1-0HR	3/29/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S1-0HR	3/29/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
TS-S1-0HR	3/29/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
TS-S1-0HR	3/29/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S1-0HR	3/29/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S1-0HR	3/29/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
TS-S1-0HR	3/29/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S1-0HR	3/29/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S1-0HR	3/29/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S1-0HR	3/29/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S1-0HR	3/29/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S1-0HR	3/29/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S1-0HR	3/29/2000	Metals	7429-90-5	Aluminum	mg/l	4.3		0.2	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
TS-S1-0HR	3/29/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S1-0HR	3/29/2000	Metals	7440-38-2	Arsenic	mg/l	0.011		0.01	MCL
TS-S1-0HR	3/29/2000	Metals	7440-48-4	Cobalt	mg/l	0.014		0.011	Tapwater RSL
TS-S1-0HR	3/29/2000	Metals	7439-89-6	Iron	mg/l	14		0.3	MCL
TS-S1-0HR	3/29/2000	Metals	7439-96-5	Manganese	mg/l	1.7		0.05	MCL
TS-S1-0HR	3/29/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
TS-S1-12HR	3/29/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S1-12HR	3/29/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S1-12HR	3/29/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S1-12HR	3/29/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S1-12HR	3/29/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S1-12HR	3/29/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S1-12HR	3/29/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
TS-S1-12HR	3/29/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
TS-S1-12HR	3/29/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S1-12HR	3/29/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S1-12HR	3/29/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
TS-S1-12HR	3/29/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S1-12HR	3/29/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S1-12HR	3/29/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S1-12HR	3/29/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S1-12HR	3/29/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S1-12HR	3/29/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S1-12HR	3/29/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S1-12HR	3/29/2000	Metals	7440-38-2	Arsenic	mg/l	0.012		0.01	MCL
TS-S1-12HR	3/29/2000	Metals	7439-89-6	Iron	mg/l	5.6		0.3	MCL
TS-S1-12HR	3/29/2000	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
TS-S1-12HR	3/29/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
TS-S1-12HRFD	3/29/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S1-12HRFD	3/29/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S1-12HRFD	3/29/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S1-12HRFD	3/29/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S1-12HRFD	3/29/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S1-12HRFD	3/29/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S1-12HRFD	3/29/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
TS-S1-12HRFD	3/29/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
TS-S1-12HRFD	3/29/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S1-12HRFD	3/29/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S1-12HRFD	3/29/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
TS-S1-12HRFD	3/29/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S1-12HRFD	3/29/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S1-12HRFD	3/29/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S1-12HRFD	3/29/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S1-12HRFD	3/29/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S1-12HRFD	3/29/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S1-12HRFD	3/29/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S1-12HRFD	3/29/2000	Metals	7439-89-6	Iron	mg/l	5.5		0.3	MCL
TS-S1-12HRFD	3/29/2000	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
TS-S1-12HRFD	3/29/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
TS-S1-24HR	3/30/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S1-24HR	3/30/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S1-24HR	3/30/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S1-24HR	3/30/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S1-24HR	3/30/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S1-24HR	3/30/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S1-24HR	3/30/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
TS-S1-24HR	3/30/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	0.52	J	0.029	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	0.49	J	0.2	MCL
TS-S1-24HR	3/30/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	0.44	J	0.029	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S1-24HR	3/30/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	0.66	J	0.029	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S1-24HR	3/30/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
TS-S1-24HR	3/30/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S1-24HR	3/30/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S1-24HR	3/30/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S1-24HR	3/30/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S1-24HR	3/30/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S1-24HR	3/30/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S1-24HR	3/30/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S1-24HR	3/30/2000	Metals	7440-38-2	Arsenic	mg/l	0.013		0.01	MCL
TS-S1-24HR	3/30/2000	Metals	7439-89-6	Iron	mg/l	5.4		0.3	MCL
TS-S1-24HR	3/30/2000	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
TS-S1-24HR	3/30/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
TS-S2-0HR	3/29/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S2-0HR	3/29/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S2-0HR	3/29/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S2-0HR	3/29/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S2-0HR	3/29/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S2-0HR	3/29/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S2-0HR	3/29/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
TS-S2-0HR	3/29/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
TS-S2-0HR	3/29/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
TS-S2-0HR	3/29/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S2-0HR	3/29/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S2-0HR	3/29/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
TS-S2-0HR	3/29/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S2-0HR	3/29/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S2-0HR	3/29/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S2-0HR	3/29/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S2-0HR	3/29/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S2-0HR	3/29/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S2-0HR	3/29/2000	Metals	7429-90-5	Aluminum	mg/l	1.5		0.2	MCL
TS-S2-0HR	3/29/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S2-0HR	3/29/2000	Metals	7439-89-6	Iron	mg/l	8.7		0.3	MCL
TS-S2-0HR	3/29/2000	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
TS-S2-0HR	3/29/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
TS-S2-12HR	3/29/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S2-12HR	3/29/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S2-12HR	3/29/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S2-12HR	3/29/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S2-12HR	3/29/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S2-12HR	3/29/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S2-12HR	3/29/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
TS-S2-12HR	3/29/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
TS-S2-12HR	3/29/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	218-01-9	Chrysene	ug/l	10	U	2.9	Tapwater RSL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
TS-S2-12HR	3/29/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S2-12HR	3/29/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S2-12HR	3/29/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL
TS-S2-12HR	3/29/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S2-12HR	3/29/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S2-12HR	3/29/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S2-12HR	3/29/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S2-12HR	3/29/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S2-12HR	3/29/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S2-12HR	3/29/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S2-12HR	3/29/2000	Metals	7439-89-6	Iron	mg/l	6.9		0.3	MCL
TS-S2-12HR	3/29/2000	Metals	7439-96-5	Manganese	mg/l	1.5		0.05	MCL
TS-S2-12HR	3/29/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL
TS-S2-24HR	3/30/2000	VOCs	79-34-5	1,1,2,2-Tetrachloroethane	ug/l	5.0	U	0.067	Tapwater RSL
TS-S2-24HR	3/30/2000	VOCs	75-34-3	1,1-Dichloroethane	ug/l	5.0	U	2.4	Tapwater RSL
TS-S2-24HR	3/30/2000	VOCs	74-83-9	Bromomethane (Methyl bromide)	ug/l	9.8	U	8.7	Tapwater RSL
TS-S2-24HR	3/30/2000	VOCs	10061-01-5	cis-1,3-Dichloropropene	ug/l	1.0	U	0.43	Tapwater RSL
TS-S2-24HR	3/30/2000	VOCs	124-48-1	Dibromochloromethane	ug/l	5.0	U	0.15	Tapwater RSL
TS-S2-24HR	3/30/2000	VOCs	10061-02-6	trans-1,3-Dichloropropene	ug/l	5.0	U	0.43	Tapwater RSL
TS-S2-24HR	3/30/2000	VOCs	75-01-4	Vinyl chloride	ug/l	10	U	2	MCL
TS-S2-24HR	3/30/2000	SVOCs	108-60-1	2,2'-Oxybis(1-Chloropropane)	ug/l	10	U	0.32	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	121-14-2	2,4-Dinitrotoluene	ug/l	10	U	0.22	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	91-94-1	3,3'-Dichlorobenzidine	ug/l	20	U	0.15	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	99-09-2	3-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	534-52-1	4,6-Dinitro-2-methylphenol	ug/l	13	U	3.7	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	106-47-8	4-Chloroaniline	ug/l	20	U	0.34	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	100-01-6	4-Nitroaniline	ug/l	50	U	3.4	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	56-55-3	Benzo(a)anthracene	ug/l	0.37	J	0.029	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	50-32-8	Benzo(a)pyrene	ug/l	10	U	0.2	MCL
TS-S2-24HR	3/30/2000	SVOCs	205-99-2	Benzo(b)fluoranthene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	207-08-9	Benzo(k)fluoranthene	ug/l	10	U	0.29	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	111-44-4	bis(2-Chloroethyl)ether	ug/l	10	U	0.012	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	53-70-3	Dibenzo(a,h)anthracene	ug/l	10	U	0.0029	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	118-74-1	Hexachlorobenzene	ug/l	10	U	1	MCL
TS-S2-24HR	3/30/2000	SVOCs	87-68-3	Hexachlorobutadiene	ug/l	10	U	0.86	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	193-39-5	Indeno(1,2,3-cd)pyrene	ug/l	10	U	0.029	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	91-20-3	Naphthalene	ug/l	10	U	0.14	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	98-95-3	Nitrobenzene	ug/l	3.5	U	0.12	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	621-64-7	N-Nitroso-di-n-propylamine	ug/l	10	U	0.0096	Tapwater RSL
TS-S2-24HR	3/30/2000	SVOCs	87-86-5	Pentachlorophenol	ug/l	5.0	U	1	MCL

Table 5-5
Groundwater Exceedances (a)
Groundwater in Residential Areas

Sample ID	Sample Date	Analyte Type	CAS	Constituent	Units	Result	Qualifier	Screening Level	Screening Level Reference
TS-S2-24HR	3/30/2000	Pesticides	309-00-2	Aldrin	ug/l	0.050	U	0.004	Tapwater RSL
TS-S2-24HR	3/30/2000	Pesticides	319-84-6	alpha-BHC	ug/l	0.039	U	0.011	Tapwater RSL
TS-S2-24HR	3/30/2000	Pesticides	319-86-8	delta-BHC	ug/l	0.012	U	0.011	Tapwater RSL
TS-S2-24HR	3/30/2000	Pesticides	60-57-1	Dieldrin	ug/l	0.10	U	0.0042	Tapwater RSL
TS-S2-24HR	3/30/2000	Pesticides	8001-35-2	Toxaphene	ug/l	5.0	U	3	MCL
TS-S2-24HR	3/30/2000	Herbicides	94-74-6	MCPA	ug/l	120	U	18	Tapwater RSL
TS-S2-24HR	3/30/2000	Metals	7440-36-0	Antimony	mg/l	0.020	U	0.006	MCL
TS-S2-24HR	3/30/2000	Metals	7439-89-6	Iron	mg/l	6.8		0.3	MCL
TS-S2-24HR	3/30/2000	Metals	7439-96-5	Manganese	mg/l	1.4		0.05	MCL
TS-S2-24HR	3/30/2000	Metals	7440-28-0	Thallium	mg/l	0.010	U	0.002	MCL

Notes:
CAS - Chemical Abstracts Service.
MCL - Maximum Contaminant Level. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013. USEPA Office of Water. August, 2006.
RSL - Regional Screening Level. USEPA. April 2009.
USEPA - United States Environmental Protection Agency.
(a) This table presents groundwater results that exceed the associated screening level (equal to the MCL or the RSL for constituents with no available MCL).

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	Surface Soil	Surface Soil	Site G	Outdoor Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site G	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site G	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Surface Soil	Site G	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Surface Soil	Excavation Air	Site G	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Subsurface Soil	Subsurface Soil	Site G	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Excavation Air	Site G	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Site G	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Excavation Air	Site G	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Leachate	Site G	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Excavation Air	Site G	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Site G	Trespasser	7-18 yrs	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site G	Trespasser	7-18 yrs	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site G	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Soil Gas	Indoor Air	Adjacent to Site G: Wiese Building	Indoor Worker	Adult	Inhalation	Quant	Pathway potentially complete.	AECOM. 2009a
Current/Future	Surface Soil	Surface Soil	Site H	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site H	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site H	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Surface Soil	Site H	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Excavation Air	Site H	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Subsurface Soil	Site H	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Excavation Air	Site H	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Site H	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Excavation Air	Site H	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Leachate	Site H	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Excavation Air	Site H	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Site H	Trespasser	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site H	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site H	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Soil/Waste	Soil/Waste	Existing Utility Lines Adjacent to Site H	Utility Worker	Adult	Ing/Derm	Quant	Potentially complete pathway	ENSR. 2008
Future	Soil/Waste	Outdoor Air	Existing Utility Lines Adjacent to Site H	Utility Worker	Adult	Inhalation	Quant	Potentially complete pathway	ENSR. 2008
Future	Groundwater	Groundwater	Existing Utility Lines Adjacent to Site H	Utility Worker	Adult	Ing/Derm	None	Pathway incomplete; depth to groundwater is greater than utility depth.	ENSR. 2008
Future	Groundwater	Excavation Air	Existing Utility Lines Adjacent to Site H	Utility Worker	Adult	Inhalation	None	Pathway incomplete; depth to groundwater is greater than utility depth.	ENSR. 2008

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	Surface Soil	Surface Soil	Site I	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site I	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site I	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Surface Soil	Site I	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Excavation Air	Site I	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Subsurface Soil	Site I	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Excavation Air	Site I	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Site I	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Excavation Air	Site I	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Leachate	Site I	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Excavation Air	Site I	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Site I	Trespasser	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site I	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site I	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Soil/Waste	Soil/Waste	Existing Utility Lines Adjacent to Site I	Utility Worker	Adult	Ing/Derm	Quant	Potentially complete pathway	ENSR. 2008
Future	Soil/Waste	Outdoor Air	Existing Utility Lines Adjacent to Site I	Utility Worker	Adult	Inhalation	Quant	Potentially complete pathway	ENSR. 2008
Future	Groundwater	Groundwater	Existing Utility Lines Adjacent to Site I	Utility Worker	Adult	Ing/Derm	None	Pathway incomplete; depth to groundwater is greater than utility depth.	ENSR. 2008
Future	Groundwater	Excavation Air	Existing Utility Lines Adjacent to Site I	Utility Worker	Adult	Inhalation	None	Pathway incomplete; depth to groundwater is greater than utility depth.	ENSR. 2008
Current/Future	Soil Gas	Indoor Air	Site I: Cerro Guard House	Indoor Worker	Adult	Inhalation	Quant	Pathway potentially complete.	AECOM. 2009a
Current/Future	Soil Gas	Indoor Air	Adjacent to Site I: Sauget Village Hall	Indoor Worker	Adult	Inhalation	Quant	Pathway potentially complete.	AECOM. 2009a
Current/Future	Soil Gas	Indoor Air	Adjacent to Site I: Cerro Control Center	Indoor Worker	Adult	Inhalation	Quant	Pathway potentially complete.	AECOM. 2009a
Current/Future	Surface Soil	Surface Soil	Site L	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site L	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site L	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Surface Soil	Site L	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Surface Soil	Excavation Air	Site L	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Subsurface Soil	Site L	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Subsurface Soil	Excavation Air	Site L	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Site L	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Excavation Air	Site L	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Leachate	Site L	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Leachate	Excavation Air	Site L	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Site L	Trespasser	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site L	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site L	Trespasser	7-18 yrs	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	CBS	CBS	Site M	Recreational Child	0-6 yrs	Ing/Derm	None	Pathway incomplete. Area is fenced and it is assumed a child cannot access.	ENSR. 2006
Current/Future	CBS	CBS	Site M	Recreational Teen	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	Site M	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	Surface Soil	Surface Soil	Site N	Outdoor Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site N	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site N	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Surface Soil	Surface Soil	Site N	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Surface Soil	Excavation Air	Site N	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Subsurface Soil	Subsurface Soil	Site N	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Subsurface Soil	Excavation Air	Site N	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Groundwater	Site N	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Site N	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Leachate	Leachate	Site N	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Leachate	Excavation Air	Site N	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Site N	Trespasser	7-18 yrs	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site N	Trespasser	7-18 yrs	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site N	Trespasser	7-18 yrs	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Site N	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Produce	Site N	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Site N	Resident	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Site N	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Site N	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Site N	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 1	Outdoor Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 1	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 1	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 1	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 1	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 1	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 1	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete for lead.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 1	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 1	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 1	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 1	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 1	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 1	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 1	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete for lead.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 1	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	Surface Soil	Surface Soil	Transect 2	Outdoor Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 2	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 2	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 2	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 2	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 2	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 2	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 2	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 2	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 2	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 2	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 2	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 2	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 2	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 2	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 3	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 3	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 3	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 3	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 3	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 3	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 3	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 3	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 3	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 3	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 3	Resident	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 3	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 3	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 3	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 3	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	Surface Soil	Surface Soil	Transect 4	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 4	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 4	Outdoor Worker	Adult	Inh	None	Pathway incomplete. Volatile COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 4	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 4	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 4	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 4	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 4	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 4	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 4	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 4	Resident	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 4	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 4	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 4	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 4	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 5	Outdoor Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 5	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 5	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 5	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 5	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 5	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 5	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 5	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 5	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 5	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 5	Resident	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 5	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 5	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 5	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 5	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	Surface Soil	Surface Soil	Transect 6	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 6	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 6	Outdoor Worker	Adult	Inh	None	Pathway incomplete. Volatile COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 6	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 6	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 6	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 6	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 6	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 6	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 6	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs with plant uptake potential were not identified.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 6	Resident	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 6	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 6	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 6	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 6	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 7	Outdoor Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 7	Outdoor Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 7	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 7	Outdoor Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Soil (b)	Soil (b)	Transect 7	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Future	Soil (b)	Excavation Air	Transect 7	Construction Worker	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Future	Groundwater	Groundwater	Transect 7	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Future	Groundwater	Excavation Air	Transect 7	Construction Worker	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Surface Soil	Surface Soil	Transect 7	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Produce	Transect 7	Resident	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Soil	Outdoor Air	Transect 7	Resident	Adult	Inh	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Subsurface Soil	Outdoor Air	Transect 7	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Drinking water	Transect 7	Resident	Adult	Ing/Derm	None	Pathway incomplete. GW not used for drinking.	ENSR. 2001
Current/Future	Groundwater	Non-potable use	Transect 7	Resident	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Groundwater	Outdoor Air	Transect 7	Resident	Adult	Inh	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	CBS	CBS	CS- B	Recreational Child	0-6 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- B	Recreational Teen	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- B	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- C	Recreational Child	0-6 yrs	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2006
Current/Future	CBS	CBS	CS- C	Recreational Teen	7-18 yrs	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2006
Current/Future	CBS	CBS	CS- C	Construction Worker	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2006
Current/Future	CBS	CBS	CS- D	Recreational Child	0-6 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- D	Recreational Teen	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- D	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006

TABLE 8-1
SELECTION OF EXPOSURE PATHWAYS
SAUGET AREA 1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Document
Current/Future	CBS	CBS	CS- E	Recreational Child	0-6 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- E	Recreational Teen	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- E	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- F (a)	Recreational Child	0-6 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- F (a)	Recreational Teen	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	CBS	CBS	CS- F (a)	Construction Worker	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2006
Current/Future	Fish	Fish	BPL/CS- F (a)	Recreational Fisher	Adult	Ing	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Sediment	Sediment	BPL/CS- F (a)	Recreational Fisher	Adult	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Water	Surface Water	BPL/CS- F (a)	Recreational Fisher	Adult	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001
Current/Future	Sediment	Sediment	BPL/CS- F (a)	Recreational Teen	7-18 yrs	Ing/Derm	Quant	Pathway potentially complete.	ENSR. 2001
Current/Future	Surface Water	Surface Water	BPL/CS- F (a)	Recreational Teen	7-18 yrs	Ing/Derm	None	Pathway incomplete. COPCs were not identified.	ENSR. 2001

Notes:

BPL - Borrow Pit Lake.

AECOM. 2009a. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Tier 2 Evaluation. September 2009. USEPA Approved (September 30, 2009).

ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).

ENSR. 2006 Sauget Area 1 Dead Creek Final Remedy. Creek Bottom Soil Engineering Evaluation/Cost Analysis. Human Health Risk Assessment. April 2006

ENSR. 2008. Sauget Area 1 Utility Corridor Evaluation Human Health Risk Assessment. August 2008. USEPA Approved (September 10, 2008).

Ing/Derm - Incidental Ingestion and Dermal Contact.

Inh - Inhalation.

Quant - Quantitative.

(a) - Areas of Creek Segment F not subject to the sediment removal action were included in ENSR, 2001, and areas subject to the removal action were included in ENSR, 2006

(b) - Constituents of potential concern were identified in subsurface soil only in Transects 4 and 6; for these transects, the higher of the surface soil and the subsurface soil exposure point concentration was used to evaluate potential construction worker exposure. For the remaining transects, the surface soil exposure point concentration was used.

TABLE 8-2
SUMMARY OF POTENTIAL RISKS FOR ALL RECEPTORS - SITES
SAUGET AREA 1

Medium (Pathways)	Sites										Document
	G		H		I		L		N		
	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE	
Indoor Industrial Worker											
Soil Gas to Indoor Air (inh) (a)	4.60E-05	Wiese Blg	NA	NA	1.30E-07	Cerro Guard House	NA	NA	NA	NA	AECOM. 2009a
					6.41E-08	Cerro Control Center					
					1.12E-08	Sauget Village Hall					
Outdoor Industrial Worker											
Surface Soil (ing/derm)	--	--	1.89E-05	1.35E-06	1.65E-04	8.15E-06	5.02E-06	5.07E-07	--	--	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	4.99E-08	3.19E-09	1.15E-07	5.57E-09	1.67E-08	2.56E-09	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	5.32E-08	1.05E-09	8.50E-08	2.13E-09	1.25E-06	6.93E-09	2.79E-09	1.50E-10	--	--	ENSR. 2001
Total Potential Risk:	**5.32E-08**	**1.05E-09**	**1.90E-05**	**1.35E-06**	**1.66E-04**	**8.16E-06**	**5.04E-06**	**5.10E-07**	**--**	**--**	ENSR. 2001
Construction Worker											
Surface Soil (ing/derm)	--	--	4.30E-07	6.57E-08	3.89E-06	4.14E-07	9.97E-08	1.90E-08	--	--	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	3.11E-08	3.41E-09	5.50E-08	4.55E-09	1.56E-08	4.10E-09	--	--	ENSR. 2001
Subsurface Soil (ing/derm)	2.30E-05	1.77E-06	9.15E-05	5.40E-06	7.98E-06	1.11E-06	2.62E-06	4.78E-07	--	--	ENSR. 2001
Subsurface Soil to Outdoor Air (inh)	2.40E-07	1.51E-08	1.06E-06	5.94E-08	4.40E-07	1.15E-07	9.63E-08	1.07E-08	--	--	ENSR. 2001
Groundwater (ing/derm)	9.90E-06	4.71E-06	2.71E-06	1.12E-06	4.84E-06	2.39E-06	2.00E-07	1.00E-07	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	2.19E-07	6.57E-08	3.35E-07	1.00E-07	1.32E-07	3.16E-08	5.36E-08	1.61E-08	--	--	ENSR. 2001
Leachate (ing/derm)	1.18E-05	5.89E-06	8.83E-07	2.03E-07	1.50E-05	7.47E-06	2.84E-07	1.07E-07	--	--	ENSR. 2001
Leachate to Outdoor Air (inh)	2.41E-07	7.20E-08	2.34E-07	1.48E-08	3.26E-06	4.88E-07	1.55E-09	2.25E-10	--	--	ENSR. 2001
Total Potential Risk:	**4.54E-05**	**1.25E-05**	**9.72E-05**	**6.97E-06**	**3.56E-05**	**1.20E-05**	**3.37E-06**	**7.34E-07**	**--**	**--**	ENSR. 2001
Trespassing Teenager											
Surface Soil (ing/derm)	--	--	3.24E-06	3.41E-07	2.81E-05	2.05E-06	8.81E-07	1.33E-07	--	--	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	8.38E-10	1.28E-10	1.94E-09	2.23E-10	2.82E-10	1.02E-10	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	8.94E-10	4.20E-11	1.43E-09	8.51E-11	2.10E-08	2.78E-10	4.69E-11	5.99E-12	--	--	ENSR. 2001
Total Potential Risk:	**8.94E-10**	**4.20E-11**	**3.24E-06**	**3.42E-07**	**2.81E-05**	**2.05E-06**	**8.81E-07**	**1.33E-07**	**--**	**--**	ENSR. 2001
Resident											
Surface Soil (ing/derm)	NA	NA	NA	NA	NA	NA	NA	NA	1.30E-06	9.27E-08	ENSR. 2001
Surface Soil to Outdoor Air (inh)	NA	NA	NA	NA	NA	NA	NA	NA	7.15E-11	2.60E-12	ENSR. 2001
Produce (ing)	NA	NA	NA	NA	NA	NA	NA	NA	--	--	ENSR. 2001
Total Potential Risk:	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**1.30E-06**	**9.27E-08**	ENSR. 2001
Utility Worker											ENSR. 2008
Soil/Waste (ing/derm)	NA	NA	1.57E-02	4.56E-04	1.56E-05	4.52E-07	NA	NA	NA	NA	ENSR. 2008
Soil/Waste to Outdoor Air (inh)	NA	NA	5.83E-05	4.90E-06	5.45E-08	4.58E-09	NA	NA	NA	NA	ENSR. 2008
Total Potential Risk:	**NA**	**NA**	**1.58E-02**	**4.61E-04**	**1.57E-05**	**4.56E-07**	**NA**	**NA**	**NA**	**NA**	ENSR. 2008

See notes on following page.

TABLE 8-2
SUMMARY OF POTENTIAL RISKS FOR ALL RECEPTORS - SITES
SAUGET AREA 1

Notes:
Potential risks for Site M are presented on Table 8-6 along with Borrow Pit Lake and Dead Creek.
-- No constituents of potential concern were identified for this pathway.
derm - dermal contact.
AECOM. 2009a. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Tier 2 Evaluation. September 2009. USEPA Approved (September 30, 2009).
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ENSR. 2008. Sauget Area 1 Utility Corridor Evaluation Human Health Risk Assessment. August 2008. USEPA Approved (September 10, 2008).
ing - ingestion.
inh - inhalation.
MLE - Most Likely Exposure.
NA - Not Applicable. Pathway not identified as a pathway of potential concern.
RME - Reasonable Maximum Exposure.
Highlighted results exceed the target risk range of 1E-6 to 1E-4.
(a) - MLE scenario was not evaluated in ENSR, 2008a.

TABLE 8-3
SUMMARY OF POTENTIAL HAZARD INDICES FOR ALL RECEPTORS
SAUGET AREA 1

Medium (Pathways)	Sites										Document
	G		H		I		L		N		
	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE	
Indoor Industrial Worker											
Soil Gas to Indoor Air (inh) (a)	1.13E+00 (a)	Wiese Blg	NA	NA	3.69E-03 5.93E-04 4.79E-04	Cerro Guard House Cerro Control Center Sauget Village Hall	NA	NA	NA	NA	ENSR. 2008a
Outdoor Industrial Worker											
Surface Soil (ing/derm)	--	--	4.89E-02	1.19E-02	2.12E+00	3.61E-01	3.14E-02	1.25E-02	--	--	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	NC	NC	NC	NC	NC	NC	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	1.06E-02	5.99E-04	3.97E-02	3.10E-03	2.79E-02	7.26E-04	1.61E-03	3.08E-04	--	--	ENSR. 2001
Total Potential Hazard Index:	**1.06E-02**	**5.99E-04**	**8.85E-02**	**1.50E-02**	**2.15E+00**	**3.62E-01**	**3.30E-02**	**1.28E-02**	**--**	**--**	ENSR. 2001
Construction Worker											
Surface Soil (ing/derm)	--	--	2.31E-02	3.21E-03	1.08E+00	1.05E-01	1.50E-02	3.23E-03	--	--	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	NC	NC	NC	NC	NC	NC	--	--	ENSR. 2001
Subsurface Soil (ing/derm)	4.48E+01	4.16E+00	1.54E+02	8.46E+00	6.29E+00	9.71E-01	4.27E+00	7.96E-01			ENSR. 2001
Subsurface Soil to Outdoor Air (inh)	5.50E-01	1.98E-02	4.87E+00	1.70E-01	5.03E-01	1.51E-01	4.57E-04	4.57E-05			ENSR. 2001
Groundwater (ing/derm)	9.06E-02	4.06E-02	9.37E-02	4.23E-02	8.60E-02	3.92E-02	9.94E-02	4.97E-02	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	2.40E+00	7.19E-01	4.43E+00	1.33E+00	8.66E-01	1.99E-01	7.80E-01	2.34E-01	--	--	ENSR. 2001
Leachate (ing/derm)	6.13E-01	2.79E-01	2.47E+00	2.59E-01	6.51E+00	3.21E+00	4.38E-02	1.24E-02	--	--	ENSR. 2001
Leachate to Outdoor Air (inh)	1.75E+00	5.25E-01	1.62E+00	1.13E-01	3.28E+01	3.08E+00	4.77E-04	6.91E-05	--	--	ENSR. 2001
Total Potential Hazard Index:	**5.02E+01**	**5.74E+00**	**1.67E+02**	**1.04E+01**	**4.81E+01**	**7.76E+00**	**5.21E+00**	**1.10E+00 (b)**	**--**	**--**	ENSR. 2001
Trespassing Teenager											
Surface Soil (ing/derm)	--	--	1.96E-02	1.98E-03	8.43E-01	5.95E-02	1.26E-02	2.09E-03	--	--	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	NC	NC	NC	NC	NC	NC	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	4.05E-04	1.53E-05	1.52E-03	7.90E-05	1.07E-03	1.85E-05	6.14E-05	7.85E-06	--	--	ENSR. 2001
Total Potential Hazard Index:	**4.05E-04**	**1.53E-05**	**2.11E-02**	**2.06E-03**	**8.44E-01**	**5.96E-02**	**1.27E-02**	**2.10E-03**	**--**	**--**	ENSR. 2001
Resident											
Surface Soil (ing/derm)	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	ENSR. 2001
Surface Soil to Outdoor Air (inh)	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	ENSR. 2001
Produce (ing)	NA	NA	NA	NA	NA	NA	NA	NA	--	--	ENSR. 2001
Total Potential Hazard Index:	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NC**	**NC**	ENSR. 2001
Utility Worker											ENSR. 2008
Soil/Waste (ing/derm)	NA	NA	6.25E+02	6.53E+01	6.23E-01	6.51E-02	NA	NA	NA	NA	ENSR. 2008
Soil/Waste to Outdoor Air (inh)	NA	NA	3.10E+00	9.31E-01	2.63E-06	7.89E-07	NA	NA	NA	NA	ENSR. 2008
Total Potential Hazard Index:	**NA**	**NA**	**6.28E+02**	**6.63E+01**	**6.23E-01**	**6.51E-02**	**NA**	**NA**	**NA**	**NA**	ENSR. 2008

See notes on following page.

TABLE 8-3
SUMMARY OF POTENTIAL HAZARD INDICES FOR ALL RECEPTORS
SAUGET AREA 1

Notes:

Potential hazard indices for Site M are presented on Table 8-7 along with Borrow Pit Lake and Dead Creek.
-- No constituents of potential concern were identified for this pathway.
derm - dermal contact.
ing - ingestion.
inh - inhalation.
AECOM. 2009a. Sauget Area 1 EE/CA and RI/FS Addendum – Vapor Intrusion Human Health Risk Assessment Technical Memorandum – Tier 2 Evaluation. September 2009. USEPA Approved (September 30, 2009).
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ENSR. 2008. Sauget Area 1 Utility Corridor Evaluation Human Health Risk Assessment. August 2008. USEPA Approved (September 10, 2008).
MLE - Most Likely Exposure.
NA - Not Applicable. Pathway not identified as a pathway of potential concern.
NC - Not Calculated. No appropriate dose-response values for constituents for this pathway.
RME - Reasonable Maximum Exposure.
Highlighted results exceed the target hazard index of one on a target endpoint basis.
(a) - MLE scenario was not evaluated in ENSR, 2008.
(b) - No HI exceedence based on a toxic endpoint analysis.

TABLE 8-4
SUMMARY OF POTENTIAL RISKS FOR ALL RECEPTORS - TRANSECTS
SAUGET AREA 1

			Residential Transects										
	1		3		4		5		6		7		
Medium (Pathways)	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**Document**
Outdoor Industrial Worker													
Surface Soil (ing/derm)	--	--	7.98E-08	7.46E-09	1.15E-06	3.92E-08	--	--	1.11E-06	2.75E-08	1.54E-06	1.21E-07	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	2.32E-11	2.13E-12	3.32E-10	1.12E-11	--	--	3.21E-10	7.85E-12	6.64E-09	7.59E-10	ENSR. 2001
Groundwater to Outdoor Air (inh)	--	--	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Total Potential Risk:	**--**	**--**	**7.98E-08**	**7.47E-09**	**1.15E-06**	**3.92E-08**	**--**	**--**	**1.11E-06**	**2.75E-08**	**1.55E-06**	**1.22E-07**	ENSR. 2001
Construction Worker													
Soil (ing/derm) (a)	--	--	1.77E-09	3.49E-10	3.36E-08	2.76E-09	--	--	2.45E-08	1.29E-09	2.97E-08	4.28E-09	ENSR. 2001
Soil to Outdoor Air (inh) (a)	--	--	2.16E-11	3.42E-12	4.11E-10	2.70E-11	--	--	3.00E-10	1.26E-11	6.21E-09	1.22E-09	ENSR. 2001
Groundwater (ing/derm)	(b)	(b)	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	--	--	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Total Potential Risk:	**--**	**--**	**1.79E-09**	**3.53E-10**	**3.40E-08**	**2.79E-09**	**--**	**--**	**2.48E-08**	**1.30E-09**	**3.59E-08**	**5.49E-09**	ENSR. 2001
Resident													
Surface Soil (ing/derm)	--	--	1.18E-06	7.96E-08	1.34E-05	3.16E-07	3.52E-06	1.18E-07	1.43E-05	2.74E-07	1.63E-05	7.89E-07	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	4.34E-11	1.49E-12	4.92E-10	5.93E-12	1.14E-10	2.13E-12	5.26E-10	5.14E-12	8.16E-09	3.27E-10	ENSR. 2001
Produce (ing)	--	--	--	--	--	--	--	--	--	--	5.33E-05	2.87E-06	ENSR. 2001
Groundwater (ing/derm, non-potable)	(b)	(b)	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Total Potential Risk:			**1.18E-06**	**7.96E-08**	**1.34E-05**	**3.16E-07**	**3.52E-06**	**1.18E-07**	**1.43E-05**	**2.74E-07**	**6.96E-05**	**3.65E-06**	ENSR. 2001

Notes:
-- No constituents of potential concern were identified for this pathway.
derm - dermal contact.
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ing - ingestion.
inh - inhalation.
MLE - Most Likely Exposure.
NA - Not Applicable. Pathway not identified as a pathway of potential concern.
RME - Reasonable Maximum Exposure.
(a) - Constituents of potential concern were identified in subsurface soil only in Transects 4 and 6; for these transects, the higher of the surface soil and the subsurface soil exposure point concentration was used to evaluate potential construction worker exposure. For the remaining transects, the surface soil exposure point concentration was used.
(b) - Lead was the only constituent of potential concern identified for groundwater in Transect 1. As indicated in Appendix Q of ENSR, 2001, no adverse health effects are expected.

TABLE 8-5
SUMMARY OF POTENTIAL HAZARD INDICES FOR ALL RECEPTORS - TRANSECTS
SAUGET AREA 1

			Residential Transects										
	1		3		4		5		6		7		
Medium (Pathways)	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**RME**	**MLE**	**Document**
Outdoor Industrial Worker													
Surface Soil (ing/derm)	--	--	NC	NC	NC	NC	--	--	NC	NC	5.59E-03	2.25E-03	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	NC	NC	NC	NC	--	--	NC	NC	NC	NC	ENSR. 2001
Groundwater to Outdoor Air (inh)	--	--	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Total Potential Hazard Index:	**--**	**--**	**NC**	**NC**	**NC**	**NC**	**--**	**--**	**NC**	**NC**	**5.59E-03**	**2.25E-03**	ENSR. 2001
Construction Worker													
Soil (ing/derm) (a)	--	--	NC	NC	NC	NC	--	--	NC	NC	2.39E-03	5.17E-04	ENSR. 2001
Soil to Outdoor Air (inh) (a)	--	--	NC	NC	NC	NC	--	--	NC	NC	NC	NC	ENSR. 2001
Groundwater (ing/derm)	(b)	(b)	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Groundwater to Outdoor Air (inh)	--	--	--	--	--	--	--	--	--	--	--	--	ENSR. 2001
Total Potential Hazard Index:	**--**	**--**	**NC**	**NC**	**NC**	**NC**	**--**	**--**	**NC**	**NC**	**2.39E-03**	**5.17E-04**	ENSR. 2001
Resident													
Surface Soil (ing/derm)	--	--	NC	NC	NC	NC	1.96E-02	1.04E-03	NC	NC	1.46E-01	3.26E-02	ENSR. 2001
Surface Soil to Outdoor Air (inh)	--	--	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	ENSR. 2001
Produce (ing)	--	--	--	--	--	--	--	--	--	--	5.13E-02	9.12E-03	ENSR. 2001
Groundwater (ing/derm, non-potable)	(b)	(b)											
Total Potential Hazard Index:			**NC**	**NC**	**NC**	**NC**	**1.96E-02**	**1.04E-03**	**NC**	**NC**	**1.97E-01**	**4.17E-02**	ENSR. 2001

Notes:
-- No constituents of potential concern were identified for this pathway.
derm - dermal contact.
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ing - ingestion.
inh - inhalation.
MLE - Most Likely Exposure.
NA - Not Applicable. Pathway not identified as a pathway of potential concern.
NC - Not Calculated. No appropriate dose-response values for constituents for this pathway.
RME - Reasonable Maximum Exposure.
(a) - Constituents of potential concern were identified in subsurface soil only in Transects 4 and 6; for these transects, the higher of the surface soil and the subsurface soil exposure point concentration was used to evaluate potential construction worker exposure. For the remaining transects, the surface soil exposure point concentration was used.
(b) - Lead was the only constituent of potential concern identified for groundwater in Transect 1. As indicated in Appendix Q of ENSR, 2001, no adverse health effects are expected.

TABLE 8-6
SUMMARY OF POTENTIAL RISKS FOR ALL RECEPTORS - DEAD CREEK, BORROW PIT LAKE, AND SITE M
SAUGET AREA 1

Medium (Pathways)	Dead Creek Segment F (a) and Borrow Pit Lake		Dead Creek Segment B		Dead Creek Segment C		Dead Creek Segment D		Dead Creek Segment E		Dead Creek Segment F (a)		Site M	
	ENSR. 2001		ENSR. 2006		ENSR. 2006		ENSR. 2006		ENSR. 2006		ENSR. 2006		ENSR. 2006	
	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE
Recreational Child														
Creek Bottom Soils	(b)	(b)	1.77E-05	7.22E-07	--	--	2.34E-06	1.88E-07	6.70E-07	1.00E-07	5.69E-07	1.03E-07	NA	NA
Recreational Teen														
Sediment/Creek Bottom Soils	4.53E-07	8.51E-08	7.70E-06	2.36E-07	--	--	1.10E-06	6.33E-08	3.31E-07	3.44E-08	2.66E-07	3.47E-08	7.77E-06	6.14E-07
Recreational Fisher														
Sediment (ing/derm)	5.83E-07	9.22E-09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fish Tissue (ing)	3.31E-05	1.24E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Potential Risk:	**3.36E-05**	**1.25E-06**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Construction Worker														
Creek Bottom Soils	(b)	(b)	1.55E-06	3.10E-08	--	--	2.02E-07	8.45E-09	5.74E-08	4.65E-09	4.91E-08	4.63E-09	1.61E-06	7.97E-08

Notes:
-- No constituents of potential concern were identified for this pathway.
derm - dermal contact.
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ENSR. 2006. Sauget Area 1 Dead Creek Final Remedy. Creek Bottom Soil Engineering Evaluation/Cost Analysis. Human Health Risk Assessment. April 2006.
ing - ingestion.
inh - inhalation.
MLE - Most Likely Exposure.
NA - Not Applicable. Pathway not identified as a pathway of potential concern.
RME - Reasonable Maximum Exposure.
(a) - Areas of Creek Segment F not subject to the sediment removal action were included in ENSR, 2001, and areas subject to the removal action were included in ENSR, 2006.
(b) - Creek bottom soils scenarios were evaluated in ENSR, 2006 and do not apply to the portion of Creek Segment F and Borrow Pit Lake evalauted in ENSR, 2001.

TABLE 8-7
SUMMARY OF POTENTIAL HAZARD INDICES FOR ALL RECEPTORS - DEAD CREEK, BORROW PIT LAKE, AND SITE M
SAUGET AREA 1

Medium (Pathways)	Dead Creek Segment F (a) and Borrow Pit Lake		Dead Creek Segment B		Dead Creek Segment C		Dead Creek Segment D		Dead Creek Segment E		Dead Creek Segment F (a)		Site M	
	ENSR. 2001		ENSR. 2006		ENSR. 2006		ENSR. 2006		ENSR. 2006		ENSR. 2006		ENSR. 2006	
	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE	RME	MLE
Recreational Child														
Creek Bottom Soils	(b)	(b)	2.32E+00 (c)	8.01E-02	--	--	1.63E-01	9.44E-03	1.29E-01	1.01E-02	1.38E-02	2.56E-03	NA	NA
Recreational Teen														
Sediment/Creek Bottom Soils	2.75E-02	3.76E-03	6.13E-01	1.52E-02	--	--	4.53E-02	1.78E-03	5.04E-02	2.39E-03	3.41E-03	4.64E-04	6.21E-01	3.93E-02
Recreational Fisher														
Sediment (ing/derm)	1.58E-02	6.36E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fish Tissue (ing)	1.71E-01	2.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Potential Hazard Index	**1.87E-01**	**2.21E-02**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Construction Worker														
Creek Bottom Soils	(b)	(b)	1.20E+00 (d)	2.28E-02	--	--	8.34E-02	2.66E-03	6.20E-02	4.02E-03	7.20E-03	6.75E-04	1.16E+01 (d)	5.88E-02

Notes:
-- No constituents of potential concern were identified for this pathway.
derm - dermal contact.
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ENSR. 2006. Sauget Area 1 Dead Creek Final Remedy. Creek Bottom Soil Engineering Evaluation/Cost Analysis. Human Health Risk Assessment. April 2006.
ing - ingestion.
inh - inhalation.
MLE - Most Likely Exposure.
NA - Not Applicable. Pathway not identified as a pathway of potential concern.
RME - Reasonable Maximum Exposure.
(a) - Areas of Creek Segment F not subject to the sediment removal action were included in ENSR, 2001, and areas subject to the removal action were included in ENSR, 2006.
(b) - Creek bottom soils scenarios were evaluated in ENSR, 2006 and do not apply to the portion of Creek Segment F and Borrow Pit Lake evalauted in ENSR, 2001.
(c) - Based on target endpoint analysis and evaluation of HI using post-excavation data, hazard index is below one. See text for additional details.
(d) - Based on target endpoint analysis, hazard index is below one.

TABLE 8-8
SUMMARY OF CONSTITUENTS OF CONCERN
SAUGET AREA 1

Area	Receptor	Medium	Pathway	COC	Cancer Potential Risk		Non-Cancer Hazard		Remedial	Units	Document
					RME	MLE	RME HQ	MLE HQ	Goal Options		
Site G	Construction worker	Groundwater	inhalation	Benzene	1.78E-07	5.33E-08	9.50E-01	2.85E-01	(a)	--	ENSR. 2001
Site G	Construction worker	Leachate	inhalation	Benzene	8.21E-08	2.46E-08	4.39E-01	1.32E-01	(a)	--	ENSR. 2001
Site G	Construction worker	Leachate	inhalation	Chlorobenzene	NC	NC	3.83E-01	1.15E-01	(a)	--	ENSR. 2001
Site G	Construction worker	Groundwater	inhalation	Naphthalene	NC	NC	9.93E-01	2.98E-01	(a)	--	ENSR. 2001
Site G	Construction worker	Leachate	inhalation	Naphthalene	NC	NC	7.98E-01	2.39E-01	(a)	--	ENSR. 2001
Site G	Construction worker	Subsurface Soil	ing/derm	Phosphorus	NC	NC	7.07E+00	1.36E+00	(a)	--	ENSR. 2001
Site G	Construction worker	Subsurface Soil	ing/derm	Total PCBs	2.15E-05	1.59E-06	3.76E+01	2.79E+00	(a)	--	ENSR. 2001
Site H	Utility Worker	Soil/Waste	ing/derm/inh	2,3,7,8-TCDD TEQ	8.55E-03	2.46E-04	1.59E+02	1.62E+01	6.38E-04	mg/kg	ENSR. 2008
Site H	Utility Worker	Soil/Waste	ing/derm	4,4-DDD	5.28E-05	5.28E-05	1.23E+00	1.23E-01	1.80E+02	mg/kg	ENSR. 2008
Site H	Utility Worker	Soil/Waste	ing/derm/inh	4,4-DDT	6.07E-05	1.71E-06	9.96E-01	9.96E-02	1.71E+02	mg/kg	ENSR. 2008
Site H	Utility Worker	Soil/Waste	inhalation	Barium	NC	NC	1.08E+00	3.24E-01	7.60E+04	mg/kg	ENSR. 2008
Site H	Utility Worker	Soil/Waste	inhalation	Chlorobenzene	NC	NC	1.77E+00	5.31E-01	8.25E+02	mg/kg	ENSR. 2008
Site H	Utility Worker	Soil/Waste	ing/derm/inh	Dieldrin	4.99E-04	1.45E-05	1.74E+00	1.81E-01	2.43E+00	mg/kg	ENSR. 2008
Site H	Utility Worker	Soil/Waste	ing/derm/inh	Total PCBs	6.61E-03	1.96E-04	4.62E+02	4.87E+01	1.34E+01	mg/kg	ENSR. 2008
Site H	Construction worker	Groundwater	inhalation	Benzene	1.75E-07	5.25E-08	9.35E-01	2.81E-01	(a)	--	ENSR. 2001
Site H	Construction worker	Leachate	inhalation	Benzene	2.33E-07	1.46E-08	1.25E+00	7.83E-02	(a)	--	ENSR. 2001
Site H	Construction worker	Leachate	ing/derm	Cadmium	NC	NC	2.39E+00	2.45E-01	(a)	--	ENSR. 2001
Site H	Construction worker	Groundwater	inhalation	Chloroform	1.38E-07	4.15E-08	2.12E+00	6.36E-01	(a)	--	ENSR. 2001
Site H	Construction worker	Subsurface Soil	inhalation	Manganese	NC	NC	4.81E+00	1.52E-01	(a)	--	ENSR. 2001
Site H	Construction worker	Subsurface Soil	ing/derm	Total PCBs	8.73E-05	4.80E-06	1.53E+02	8.40E+00	(a)	--	ENSR. 2001
Site I	Outdoor Worker	Surface Soil	ing/derm	2,3,7,8-TCDD TEQ	1.35E-04	6.83E-06	NC	NC	6.20E-03	mg/kg	ENSR. 2001
Site I	Outdoor Worker	Surface Soil	ing/derm	Total PCBs	2.85E-05	1.28E-06	1.99E+00	3.21E-01	6.10E+01	mg/kg	ENSR. 2001
Site I	Construction Worker	Subsurface Soil	ing/derm	Antimony	NC	NC	2.72E+00	2.99E-01	(a)	--	ENSR. 2001
Site I	Construction Worker	Leachate	inhalation	Chlorobenzene	NC	NC	1.22E+00	1.07E-01	(a)	--	ENSR. 2001
Site I	Construction Worker	Leachate	inhalation	Chloroform	1.89E-06	1.43E-07	2.89E+01	2.19E+00	(a)	--	ENSR. 2001
Site I	Construction Worker	Leachate	ing/derm	MCPP	NC	NC	5.74E-01	2.87E-01	(a)	--	ENSR. 2001
Site I	Construction Worker	Leachate	inhalation	Naphthalene	NC	NC	1.99E+00	5.98E-01	(a)	--	ENSR. 2001
Site I	Construction Worker	Leachate	ing/derm	Total PCBs	3.14E-06	1.57E-06	5.50E+00	2.75E+00	(a)	--	ENSR. 2001
Site I	Construction Worker	Subsurface Soil	ing/derm	Total PCBs	1.66E-06	3.17E-07	2.91E+00	5.55E-01	(a)	--	ENSR. 2001
Site I	Construction Worker	Surface Soil	ing/derm	Total PCBs	5.88E-07	5.49E-08	1.03E+00	9.62E-02	(a)	--	ENSR. 2001
Site L	Construction worker	Subsurface Soil	ing/derm	Total PCBs	2.42E-06	4.53E-07	4.24E+00	7.93E-01	(a)	--	ENSR. 2001

Notes:
2,3,7,8-TCDD TEQ - 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalent concentration
ENSR. 2001. Sauget Area 1 Human Health Risk Assessment. Sauget and Cahokia, Illinois. June 1, 2001 Revision 1 and August 31, 2001 Revision 2. USEPA Approved (November 13, 2001).
ENSR. 2008. Sauget Area 1 Utility Corridor Evaluation Human Health Risk Assessment. August 2008. USEPA Approved (September 10, 2008).
ing/derm - incidental ingestion and dermal contact.
inh - inhalation
MCPP - 2-(2-Methyl-4-chlorophenoxy) propionic acid.
NC - Not Calculated. No dose-response value.
PCB - Polychlorinated Biphenyl.
Highlighting indicates that the potential risk or hazard is greater than the target risk level of 1E-4 or a hazard index of one on a target organ basis, or that the potential risk or hazard drives the total above the targets.
(a) A range of remedial goal options are available, including institutional controls. Therefore, numeric remedial goal options were not derived. These COCs should be considered when making remedial decisions.

TABLE 10-1
FEASIBILITY STUDY SITE SCREENING
Sauget Area 1, Sauget and Cahokia, Illinois

Study Area	Included in FS	Receptors	COC	Pathway
Site G	Yes	Construction Worker	Benzene	Inhalation / groundwater and leachate
			Chlorobenzene	Inhalation / leachate
			Naphthalene	Inhalation / groundwater and leachate
			Phosphorus	Ingestion/dermal contact /subsurface soil
			PCBs	Ingestion/dermal contact/ subsurface soil
Site H	Yes	Utility Worker	2,3,7,8-TCDD-TEC	Inhalation/Ingestion/dermal contact / soil and waste
			4,4-DDD	Ingestion/dermal contact / soil and waste
			4,4-DDT	Inhalation/Ingestion/dermal contact / soil and waste
			Barium	Inhalation / soil and waste
			Chlorobenzene	Inhalation / soil and waste
			Dieldrin	Inhalation/Ingestion/dermal contact / soil and waste
			PCB's	Inhalation/Ingestion/dermal contact / soil and waste
		Construction Worker	Benzene	Inhalation/ groundwater and leachate
			Cadmium	Ingestion/dermal contact / leachate
			Chloroform	Inhalation/ groundwater
			Manganese	Inhalation/ subsurface soil
			PCBs	Ingestion/dermal contact / subsurface soil
Site L	Yes	Construction Worker	PCBs	Ingestion/dermal contact/ subsurface soil
Site I South	Yes	Outdoor Industrial Worker	2,3,7,8-TCDD-TEC	Ingestion/dermal contact / surface soil
			PCBs	Ingestion/dermal contact / surface soil
		Construction Worker	Antimony	Ingestion/dermal contact / subsurface soil
			Chlorobenzene	Inhalation / leachate
			Chloroform	Inhalation / leachate
			MCPP	Ingestion/dermal contact / leachate
			Naphthalene	inhalation / leachate
			PCBs	Ingestion/dermal contact / surface soil, subsurface soil, and leachate

TABLE 10-1
FEASIBILITY STUDY SITE SCREENING
Sauget Area 1, Sauget and Cahokia, Illinois

Study Area	Included in FS	Receptors / COCs / Pathways
Site I North	No	None
Site M	No	None. Previous remediation of Dead Creek Segment B addressed all COCs and pathways.
Site N	No	None
Transects	No	None
Creek Segment A	Yes	None. Previous remediation addressed all COCs and pathways. (See Note 3)
Creek Segment B	Yes	None. Previous remediation addressed all COCs and pathways. (See Note 4)
Creek Segment C	No	None. Previous remediation addressed all COCs and pathways.
Creek Segment D	No	None. Previous remediation addressed all COCs and pathways.
Creek Segment E	No	None. Previous remediation addressed all COCs and pathways.
Creek Segment F	No	None. Previous remediation addressed all COCs and pathways.
Borrow Pit Lake	No	None. Previous remediation addressed all COCs and pathways.

Notes:
1. Site screening data summarized from Section 8.0 Summary of Human Health Risk Assessment.
2. FS = Feasibility Study
3. The remedial action at Creek Segment A was completed in 1991. The FS includes institutional controls.
4. The remedial action at Creek Segment B was completed in 2008 when the armored liner was installed. The FS includes institutional controls and maintenance of existing fencing.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
1	35 IAC 620.405 (Illinois Groundwater Quality Standards)	Prohibits any person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedence of groundwater quality standards.
2	35 IAC 620.410 (Illinois Groundwater Quality Standards)	Class 1 groundwater standards (in general equivalent to a drinking water standard or the MCL).
3	35 IAC 620.250 (Illinois Groundwater Quality Standards)	A groundwater management zone (GMZ) may be established for a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site: (1) That is subject to a corrective action process approved by the Agency; or (2) For which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner. The GMZ suspends the groundwater quality standards during the period of remediation until the groundwater quality standards have been attained.
4	35 IAC 620.260 (Illinois Groundwater Quality Standards)	Any person may petition the Illinois Pollution Control Board to reclassify a groundwater in accordance with the procedures for adjusted standards specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106, Subpart G. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to the requirements of 35 Ill. Adm. Code 106, Subpart G, and Section 28.1(c) of the Act, the petition shall, at a minimum, contain information specified in this section.
5	35 IAC 302.208 (Illinois Surface Water Quality Standards)	Numeric Surface Water Quality Standards are established for the protection of human health and aquatic life. The Mississippi River is not provided any specific surface water designation; therefore, the general use water quality standards would be applied. The general use water quality standards provide criteria for the protection of aquatic life (acute and chronic) and human health.
6	35 IAC 302.210 (Illinois Surface Water Quality Standards)	Waters of the State shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. This regulation includes those constituents without a promulgated standard in 35 IAC 302.208. These derived water quality criteria may be found on IEPA's web site (http://www.epa.state.il.us/water /water-quality-standards/water-quality-criteria.html) and will include any additional criteria that IEPA develops to address specific chemicals associated with the Sauget Area 1 Sites for which derived criteria have not been calculated already.
7	35 IAC 301.108 (Illinois Water Quality and Pollution Control regulations general provisions)	The Illinois Pollution Control Board may grant an adjusted standard to an applicable regulatory standard for persons who can justify such an adjustment consistent with subsection (a) of section 27 of the Illinois Environmental Protection Act.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
8	35 IAC 724.191 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.91)	Required Programs: Owners and operators subject to Subpart F must conduct a monitoring and response program as follows: 1) Whenever hazardous constituents pursuant to Section 724.193 from a regulated unit are detected at a compliance point pursuant to Section 724.195, the owner or operator must institute a compliance monitoring program pursuant to Section 724.199. 2) Whenever the groundwater protection standard pursuant to Section 724.192 is exceeded, the owner or operator must institute a corrective action program pursuant to Section 724.200. 3) Whenever hazardous constituents pursuant to Section 724.193 from a regulated unit exceed concentration limits pursuant to Section 724.194 in groundwater between the compliance point pursuant to Section 724.195 and the downgradient facility property boundary, the owner or operator must institute a corrective action program pursuant to Section 724.200
9	35 IAC 724.192 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.92)	Groundwater Protection Standard: The owner or operator must ensure that hazardous constituents under Section 724.193 detected in the groundwater from a regulated unit do not exceed the concentration limits under Section 724.194 in the uppermost aquifer underlying the waste management area beyond the point of compliance under Section 724.195 during the compliance period under Section 724.196.
10	35 IAC 724.193 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.93)	Hazardous Constituents: The Agency must specify in the facility permit the hazardous constituents to which the groundwater protection standard of Section 724.192 applies. Hazardous constituents are constituents identified in Appendix H of 35 Ill. Adm. Code 721 that have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the Agency has excluded them under subsection (b) of this Section.
11	35 IAC 724.194 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.94)	Concentration Limits: The Agency must specify in the facility permit concentration limits in the groundwater for hazardous constituents established under Section 724.193. The following must be true of the concentration of a hazardous constituent: 1) It must not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or, 2) For any of the constituents listed in Table 1, it must not exceed the respective value given in that Table if the background level of the constituent is below the value given in Table 1; or, 3) It must not exceed an alternative limit established by the Agency under subsection (b) of this Section.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
12	35 IAC 724.195 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.95)	Point of Compliance: The Agency must specify in the facility permit the point of compliance at which the groundwater protection standard of Section 724.192 applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units.
13	35 IAC 724.196 a) (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.96 (a))	Compliance Period: The Agency must specify in the facility permit the compliance period during which the groundwater protection standard of Section 724.192 applies. The compliance period is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting, and the closure period.)
14	35 IAC 724.197 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.97)	724.197(a) - The groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that fulfill the following requirements: 1) They represent the quality of background water, 2) They represent the quality of groundwater passing the point of compliance; and, 3) They allow for the detection of hazardous waste or hazardous constituents that have migrated to the uppermost aquifer. 724.197(c) - All monitoring wells must be cased in accordance with this section. 724.197(d) - The groundwater monitoring program must include consistent sampling and analysis to ensure a reliable indication of groundwater quality below the waste management area. The program must include procedures and techniques for the following: 1) Sample collection; 2) Sample preservation and shipment; 3) Analytical procedures; and 4) Chain of custody control. 724.197(e) - The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples. 724.197(f) - The groundwater monitoring program must include a determination of the groundwater surface elevation each time groundwater is sampled. 724.197 (h) and (i) - Specifies the statistical methods that may be used in evaluating groundwater monitoring data and performance standards for each statistical method
15	35 IAC 724.199 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.99)	Compliance Monitoring Program: An owner or operator is required to establish a compliance monitoring program to meet the requirements of this section.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
16	35 IAC 724.200 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.100)	Corrective Action: An owner or operator is required to establish a corrective action program in accordance with this section.
17	35 IAC 212, Subpart K (Illinois Air Pollution regulations)	Measures need to be implemented to control fugitive dust emissions so that there will be no visible emissions at the property line and fugitive dust emissions do not exceed 20% opacity. Control measures typically include the application of water or other dust suppressants during clearing, grubbing, and grading.
18	35 IAC 309.102 (Illinois NPDES Storm Water regulations Analogous to 40 CFR 122.26)	Storm water discharge requirements are applicable to activities at the Sauget Area 1 Sites involving disturbance of cover in an area of 1 acre or more total. The types of controls typical to SWPPP include, but are not limited to: storm water run-off conveyances, diversion dikes, sediment fences, sediment traps, limitations on the size of disturbed areas, and sequencing of construction to minimize and control disturbances.
19	35 IAC 309.202 (Illinois Construction Permits)	Required State construction permit for any new water treatment works, sewer or wastewater sources or any modification to existing treatment works, sewer or wastewater sources.
20	10 CFR 230.10(a), (b), (c) and (d) 40 CFR 230 Subpart H (USEPA Clean Water Act regulations)	The discharge of dredged or fill material into Waters of the United States, including jurisdictional (adjacent) wetlands, is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of state water quality standards, violates any toxic effluent standard, and/or jeopardizes an endangered species or its critical habitat. No discharge will be permitted that will cause significant degradation of Waters of the United States. No discharge is permitted unless mitigation measures have been taken in accordance with 40 CFR 230, Subpart H. Compensatory mitigation for loss of wetlands shall be provided for wetlands > 0.25 acre. Compensatory mitigation shall be at a ratio of 2:1 for restoration, 4:1 for creation and enhancement, and 10:1 for preservation.
21	40 CFR 230.10 (a)-(d) 40 CFR 230 33 CFR 320 (USEPA Clean Water Act regulations)	The discharge of dredged or fill material into Waters of the United States is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of state water quality standards, violates any toxic effluent standard, or jeopardizes an endangered species. No discharge is permitted that will cause significant degradation of Waters of the United States. Mitigative measures must be implemented in accordance with 40 CFR 230, Subpart H.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
22	16.U.S.C. 661 et seq., (Sections 661-663 and 668) (U.S. Fish and Wildlife Coordination Act)	Activities that modify water bodies must consult and coordinate with the U.S. Department of the Interior to ensure that the activity conserves wildlife resources and prevents the loss and damage to such resources.
23	16 U.S.C. 1531 et seq., Sect. 7(a)(2) (U.S. Threatened and Endangered Species Act)	Actions that jeopardize the existence of a listed species, or result in the destruction or adverse modification of critical habitat, must be avoided or reasonable and prudent mitigation measures taken. The lead agency must determine whether threatened and endangered species or their critical habitat are present and conduct informal consultation with the U. S. Fish and Wildlife Service. Determination that threatened and endangered species or their critical habitat may be impacted by the proposed action requires preparation of a biological assessment to determine the extent of any possible impacts.
24	520 ILCS 10/3 (Illinois Endangered Species Protection Act)	Prohibits actions that result in takings of state-listed species, such as actions that jeopardize the continued existence of a listed species or result in destruction or adverse modification of its critical habitat.
25	40 CFR 6.Appendix A Executive Order 11988 (USEPA NEPA regulations; Federal Agencies Executive Order on Floodplains)	Activities that are taken within a floodplain shall avoid, to the extent possible, the long- and short-term adverse effects associated with occupancy and modification of floodplains. Measures shall be taken to mitigate adverse effects of actions in a floodplain, including measures to reduce the risk of flood loss, minimize the impact of floods on human safety and health, and restore/preserve the beneficial values of the floodplain. Structures constructed in a floodplain shall meet the standards and criteria set forth in the regulations promulgated by the Federal Insurance Administration pursuant to the National Flood Insurance Act of 1968.
26	35 IAC 724.118 b) (Illinois RCRA Hazardous Waste Permit Program regulations similar to 40 CFR 270.14(b)(11)(iv))	Any RCRA Subtitle C TSDF located within a 100-year floodplain must be designed, constructed, and maintained to prevent washout.
27	35 IAC 703.184 d) (Illinois RCRA Hazardous Waste regulations (Subpart B General Facility Standards – Location Standards similar to 40 CFR 264.18(b))	Engineering analysis required to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100-year flood; Structural or other engineering studies showing the design of operational units and flood protection devices (e.g., floodwalls, dikes) at the facility and how these will prevent washout.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
28	17 IAC Part 3700 (Illinois Department of Natural Resources (IDNR)-Construction in Floodways of Rivers, Lakes and Streams)	Applies to all rivers, lakes and streams under the department's jurisdiction. Construction in the floodway of any stream serving a tributary area of 6,400 acres or more is subject to this part. Construction activities in the floodway must be permitted (3700.40). However for construction other than levees, the worst-case analysis does not involve flood events in excess of the 100-year frequency flood. Floodplain construction that occurred before July 1, 1985 is considered grandfathered in. Many activities permitted under this part require review by the U.S. Army Corps of Engineers and the IEPA.
29	17 IAC 3704 Regulation of Public Water (IDNR regulations for construction in rivers)	Applies to construction activities to be undertaken within the river below normal water stage elevation.
30	35 IAC 724.211 a) and b) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.111)	Closure Performance Standard: The owner or operator must close the facility in a manner that does the following: a) The closure minimizes the need for further maintenance; b) The closure controls, minimizes, or eliminates, to the extent necessary to adequately protect to human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous decomposition products to the ground or surface waters or to the atmosphere
31	35 IAC 724.212 a) and b) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.112)	Closure Plan: Requires owners of hazardous waste facilities to submit a written closure plan (the approved plan becomes a condition to any RCRA permit). The closure plan describes the steps necessary for final closure. 724.212(a) (2), 724.212(b) (2) and 724.212(b) (4) are substantive requirements.
32	35 IAC 724.214 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.114)	Disposal or Decontamination of Equipment, Structures, and Soil: All contaminated equipment, structures, and soils must be properly disposed of or decontaminated.
33	35 IAC 724.215 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.115)	Certification of Closure: Within 60 days after completion of closure, the owner or operator must submit to the Agency, by registered mail, a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by an independent registered professional engineer.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
34	35 IAC 724.216 35 IAC 724.409 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care and Subpart N Landfills Surveying and Recordkeeping) similar to 40 CFR 264.116; 40 CFR 264.309)	Survey Plat: No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to any local zoning authority or authority with jurisdiction over local land use and to the Agency and record with land titles, a survey plat indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local zoning authority or the authority with jurisdiction over local land use must contain a note, prominently displayed, that states the owner's and operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with Subpart G of this Part.
35	35 IAC 724.217 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.117)	Postclosure Care and Use of Property a) Requires a Postclosure Care Period of at least 30 years after completion of closure for the unit b) must require continuation at partial or final closure of any of the security requirements of Section 724.114 during part or all of the post-closure period when either of the following is true: - hazardous wastes may remain exposed after completion of partial or final closure; or - access by the public or domestic livestock may pose a hazard to human health. d) All the post-closure care activities must be in accordance with the provisions of the approved post-closure plan as specified in Section 724.218.
36	35 IAC 724.217 c) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.117)	Postclosure Care and Use of Property c) Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover unless the Agency determines it is necessary for reasons listed in the regulations
37	35 IAC 724.218 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.118)	Post-Closure Plan The owner must have a written postclosure plan which must identify the activities that will be carried on after closure and the frequency of these activities (including planned monitoring activities and frequencies, planned maintenance activities, and name, address, and phone number of the person or office to contact). The relevant and appropriate requirements in 724.218 are: 724.218(b)(1) and (b)(2) – the post-closure plans must incorporate monitoring and maintenance activities that comply with the substantive requirements of 724 Subparts F and N.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
38	35 IAC 724.219 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.119)	Post-Closure Notices: Requires within 60 days after certification of closure the owner or operator of a disposal facility to submit to the Agency, to the County Recorder and to any local zoning authority or authority, a record of the type, location, and quantity of hazardous wastes disposed (for hazardous wastes disposed of before January 12, 1981, the owner or operator must identify these items to the best of the owner or operator's knowledge and in accordance with any records). In addition, the owner or operator is required to record a notation on the deed to the facility property (or on some other instrument that is normally examined during title search) that will in perpetuity notify any potential purchaser of the property that the land has been used to manage hazardous wastes; its use is restricted; and the survey plat and record of the type, location, and quantity of hazardous wastes disposed been filed with the Agency, the County Recorder and any local zoning authority or authority with jurisdiction over local land use.
39	35 IAC 724.220 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.120)	Certification of Completion of Post-Closure Care: Within 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner or operator must submit to the Agency, by registered mail, a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan.
40	35 IAC 724.242 – 724.251 (Illinois Hazardous Waste Regulations (Subpart H - Financial Requirements for Closure and Post-Closure Care))	These sections require an owner/operator of a regulated unit to provide cost estimates and financial assurance for both closure and post-closure care.
41	35 IAC 724.410 a)1 – 4 (Illinois RCRA Hazardous Waste regulations (Subpart N Landfills Closure and Postclosure Care) similar to 40 CFR 264.310(a))	At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to do the following: 1) Provide long-term minimization of migration of liquids through the closed landfill; 2) Function with minimum maintenance; 3) Promote drainage and minimize erosion or abrasion of the cover; 4) Accommodate settling and subsidence so that the cover's integrity is maintained

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
42	35 IAC 724.410 b) 1,4,5,and 6 (Illinois RCRA Hazardous Waste regulations (Subpart N Landfills Closure and Postclosure Care) similar to 40 CFR 264.310(b))	After final closure, the owner or operator must comply with all post-closure requirements contained in Sections 724.217 through 724.220, including maintenance and monitoring throughout the post-closure care period (specified in the permit under Section 724.217). After final closure the owner or operator must do the following: 1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events; 4) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of Subpart F of this Part; 5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and 6) Protect and maintain surveyed benchmarks
43	35 IAC 722.111 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262.11)	Characterization of generated waste to determine if it is a hazardous waste. Any person who generates a solid waste must determine if that waste is hazardous by evaluation of whether the waste is excluded from hazardous waste regulation; listed under 35 IAC 721, Subpart D; or exhibits one of the hazardous waste characteristics under 35 IAC 721, Subpart C.
44	40 CFR 761.61 (USEPA TSCA regulations)	Characterization of soils, liquids and decontamination fluids to determine whether they are PCB-remediation waste (as found concentrations of PCBs are 50 ppm or greater).
45	35 IAC 728.109 a) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 268.7)	Requires a generator to determine whether generated hazardous waste is prohibited from land disposal, including waste codes, treatment standards and underlying hazardous constituents.
46	35 IAC 722.134 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262.34)	Allows for storage of hazardous waste in containers for 90 days or less while alleviating the need to meet all the requirements for a container storage area.
47	35 IAC 724.275 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.175)	Design standards for hazardous waste container storage area.
48	35 IAC 724.271 – 279 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.171 – 179)	Requirements for condition, handling, containment, compatibility, and marking containers used to store or treat hazardous waste or environmental media containing a hazardous waste.
49	35 IAC 724.297 (Illinois Hazardous Waste regulations for tank systems)	Requirements for closure and post-closure care of a tank system. Applies to owners and operators of facilities that use tank systems for storing or treating hazardous waste.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
50	35 IAC 724.328 (Illinois Hazardous Waste regulations for surface impoundments)	Applies to owners and operators that use surface impoundments to treat, store, or dispose of hazardous waste.
51	35 IAC 724.653 a) b) d) and e) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.553)	Requirements associated with establishing temporary storage of hazardous waste (hazardous soils, water, and decontamination fluids) in tanks or containers during remediation.
52	35 IAC 724.101 g) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.1(g))	Exemption from RCRA tank standards for tanks that are part of a wastewater treatment unit (tanks used to temporarily store hazardous wastewaters sent to a wastewater treatment facility for treatment on- or off-site).
53	40 CFR 761.65 (USEPA TSCA regulations)	Storage area design and operation requirements for storage of TSCA-regulated PCB-containing wastes for disposal in containers.
54	35 IAC 728.140 a) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 268.40(a))	Disposal requirement that all hazardous waste or hazardous waste containing media must meet applicable LDR treatment standards prior to disposal.
55	35 IAC 722.130 – 134 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262)	Pre-transport requirements requires the generator to package the waste, label each package, mark each package, and placard or offer the initial transporter the appropriate placards in accordance with the U. S. Department of Transportation regulations prior to transporting hazardous waste or offering hazardous waste for transportation off-site.
56	35 IAC 722 and 723 92 IAC 171-178 (Illinois RCRA Hazardous Waste regulations and the Illinois Department of Transportation hazardous material regulations)	For any hazardous waste, all RCRA hazardous waste generator and transporter requirements including administrative requirements (manifests, EPA ID number, etc.) as well as the Illinois Department of Transportation requirement for hazardous materials (which incorporate the US Department of Transportation hazardous material regulations) would apply.
57	35 IAC 742 (Illinois Tiered Approach to Corrective Action Objectives)	Sets forth procedures for evaluating the risk to human health posed by environmental conditions and developing remediation objectives that achieve acceptable risk levels based upon site-specific conditions.
58	35 IAC 101-104 (Illinois Construction and Demolition Landfill Citing Restrictions)	Requirements for landfilling construction and demolition debris.
59	35 IAC 1100 (Illinois Clean Construction or Demolition Debris Fill Operations)	Applies to all clean construction or demolition debris (CCDD) fill operations that are required to be permitted in a current or former quarry, mine or other excavation.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
60	35 IAC 306.302 (Illinois Performance Criteria – Expansion of Combined Sewer Service)	The expansion of existing or establishment of new combined sewer service areas is prohibited, except when approved by Agency in accordance with the provisions in this section.
61	35 IAC 307.1101 (Illinois sewer discharge criteria)	Prohibition against discharge of certain types of pollutants into a Publicly Owned Treatment Works.
62	35 IAC 807 Subpart C (Illinois Sanitary Landfills)	Final cover (807.305(a)); Prohibitions against open burning (807.311), air pollution (807.312), water pollution (807.313) and waters of the state (807.315); and, requirements for implementation of closure requirements (807.318).
63	35 IAC 807 Subpart E (Illinois Closure and Post-Closure Care)	All sections
64	35 IAC 807 Subpart F (Financial Assurance for Closure and Post-closure care)	All sections
65	35 IAC 809 (Illinois Special Waste Hauling regulations)	For wastes that meet the definition of a Special Waste (35 IAC 808) in Illinois, the special waste regulations, including administrative requirements, relating to manifesting and transport would apply.
66	35 IAC 811.107 (New Solid Waste Landfills - Operating Standards)	New landfills must not accept solid waste from vehicles that do not utilize devices such as cover or tarpaulins to control litter. Trucks exiting or entering the site(s) with solid waste must be tarped.
67	35 IAC 811.111 (New Solid Waste Landfills Post-closure Maintenance)	This section describes post-closure maintenance activities including the specification of inspection frequencies; filling of rills, gullies or crevices; repair of eroded and scoured drainage channels; filling of holes and depressions; revegetation of reworked surfaces or eroded vegetation of 100 sq ft; and, identification of planned uses of the property.
68	35 IAC 811.314 (New Solid Waste Landfill - Final Cover System)	This section provides standards for low permeability and final protective layers of a new solid waste landfill.
69	35 IAC 811.319 (New Solid Waste Landfill - Groundwater Monitoring Program)	Requires groundwater monitoring to continue for 15 years after closure, or in the case of MSWLF units, a minimum of 30 years after closure. Quarterly monitoring is required for 5 years and semi-annual after that.

Table 10-2
Potential ARARs

Item No.	Potential ARAR	Description of Requirements
70	765 ILCS 122/1 et seq. Illinois' Uniform Environmental Covenants Act.	An owner or owners of real property may voluntarily enter into an environmental covenant, as a grantor of an interest in the real property, with an agency and, if appropriate, one or more holders. No owner, agency, or other person shall be required to enter into an environmental covenant as part of an environmental response project; provided, however, that (i) failure to enter into an environmental covenant may result in disapproval of the environmental response project; and (ii) once the owner, agency, or other person assumes obligations in an environmental covenant they must comply with those obligations of the environmental covenant in accordance with this Act.

Table 11-1
Screening of Technologies for Unsaturated Waste and Soil

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
In Situ Biological Treatment						
Bioventing	Oxygen is delivered to contaminated unsaturated soils by forced air movement (either extraction or injection of air) to increase oxygen concentrations and stimulate biodegradation.	○	●	●	Yes	Potentially effective for treatment of the unsaturated waste and soils to reduce concentrations of the principal COCs that are found in groundwater at Sauget Area 1 (i.e., benzene, chlorobenzene, and 1,4-dichlorobenzene). Not effective for chlorinated ethenes, which require anaerobic conditions for most effective biodegradation. Not effective for SVOCs. (Note: Implementation of air sparging with SVE or biosparging of the saturated zone would result in some movement of air through the unsaturated zone soils and waste.)
Enhanced Bioremediation	The activity of naturally occurring microbes is stimulated by circulating water-based solutions through contaminated soils to enhance in situ biological degradation of organic contaminants or immobilization of inorganic contaminants. Nutrients, oxygen, or other amendments may be used to enhance bioremediation and contaminant desorption from subsurface materials.	○	●	◉	—	Not effective where soil and waste contain NAPL.
Phytoremediation	Phytoremediation is a process that uses plants to remove, transfer, stabilize, and destroy contaminants in soil and sediment. Contaminants may be either organic or inorganic.	○	○	●	—	Not effective where soil and waste contain NAPL. Not effective for deep soils. Not all site COCs can be degraded by plants.
In Situ Physical/Chemical Treatment						
Chemical Oxidation	Oxidation chemically converts hazardous contaminants to non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. The oxidizing agents most commonly used are ozone, hydrogen peroxide, hypochlorites, chlorine, and chlorine dioxide.	◉	●	○	—	Expensive relative to other technologies at the scale required at Sauget Area 1.
Electrokinetic Separation	The Electrokinetic Remediation (ER) process removes metals and organic contaminants from low permeability soil, mud, sludge, and marine dredging. ER uses electrochemical and electrokinetic processes to desorb, and then remove, metals and polar organics. This in situ soil processing technology is primarily a separation and removal technique for extracting contaminants from soils.	○	○	○	—	Not applicable to site conditions at Sauget Area 1.
Fracturing	Cracks are developed by fracturing beneath the surface in low permeability and over-consolidated sediments to open new passageways that increase the effectiveness of many in situ processes and enhance extraction efficiencies.	○	○	○	—	Not applicable to site conditions at Sauget Area 1.
Soil Flushing	Water, or water containing an additive to enhance contaminant solubility, is applied to the soil or injected into the ground water to raise the water table into the contaminated soil zone. Contaminants are leached into the ground water, which is then extracted and treated.	◉	●	○	—	Not effective for SVOCs. Expensive relative to other technologies at the scale required.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

Table 11-1
Screening of Technologies for Unsaturated Waste and Soil

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
Soil Vapor Extraction	Vacuum is applied through extraction wells to create a pressure/concentration gradient that induces gas-phase volatiles to be removed from soil through extraction wells. This technology also is known as in situ soil venting, in situ volatilization, enhanced volatilization, or soil vacuum extraction.	◉	●	●	Yes	Not effective for SVOCs and not effective for fill and waste materials below the water table. Can be used to capture vapors generated during air sparging or biosparging.
Solidification/Stabilization	Contaminants are physically bound or enclosed within a stabilized mass (solidification), or chemical reactions are induced between the stabilizing agent and contaminants to reduce their mobility (stabilization).	◉	●	◉	—	Not effective for VOCs.
In Situ Thermal Treatment						
Thermal Treatment	Steam/hot air injection or electrical resistance/electromagnetic/fiber optic/radio frequency heating is used to increase the volatilization rate of semi-volatiles and facilitate extraction.	●	●	○	—	Expensive relative to other technologies at the scale required.
Ex Situ Biological Treatment (assuming excavation)						
Biopiles	Excavated soils are mixed with soil amendments and placed in aboveground enclosures. It is an aerated static pile composting process in which compost is formed into piles and aerated with blowers or vacuum pumps.	○	○	●	—	Not effective for chlorinated SVOCs. Requires excavation, which is very expensive due to the large volumes of fill and waste.
Composting	Contaminated soil is excavated and mixed with bulking agents and organic amendments such as wood chips, hay, manure, and vegetative (e.g., potato) wastes. Proper amendment selection ensure adequate porosity and provides a balance of carbon and nitrogen to promote thermophilic, microbial activity.	○	○	●	—	Not effective for chlorinated SVOCs. Requires excavation, which is very expensive due to the large volumes of fill and waste.
Landfarming	Contaminated soil, sediment, or sludge is excavated, applied into lined beds, and periodically turned over or tilled to aerate the waste.	◉	○	●	—	Requires excavation, which is very expensive due to the large volumes of fill and waste.
Slurry Phase Biological Treatment	An aqueous slurry is created by combining soil, sediment, or sludge with water and other additives. The slurry is mixed to keep solids suspended and microorganisms in contact with the soil contaminants. Upon completion of the process, the slurry is dewatered and the treated soil is disposed of.	○	○	○	—	Not effective for chlorinated SVOCs. Requires excavation and extensive processing and separation, which are very expensive due to the large volumes of fill and waste.
Ex Situ Physical/Chemical Treatment (assuming excavation)						
Chemical Extraction	Waste contaminated soil and extractant are mixed in an extractor, thereby dissolving the contaminants. The extracted solution is then placed in a separator, where the contaminants and extractant are separated for treatment and further use.	◉	○	○	—	Requires excavation, extensive processing / separation, and purchase of extractant, all of which are very expensive due to the large volumes of fill and waste.
Chemical Reduction /Oxidation	Reduction/oxidation chemically converts hazardous contaminants to non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. The oxidizing agents most commonly used are ozone, hydrogen peroxide, hypochlorites, chlorine, and chlorine dioxide.	◉	○	○	—	Requires excavation, extensive processing / separation, and purchase of oxidant, all of which are very expensive due to the large volumes of fill and waste.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

Table 11-1
Screening of Technologies for Unsaturated Waste and Soil

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
Dehalogenation	Reagents are added to soils contaminated with halogenated organics. The dehalogenation process is achieved by either the replacement of the halogen molecules or the decomposition and partial volatilization of the contaminants.	○	○	○	_	Requires excavation, extensive processing / separation, and purchase of reagents, all of which are very expensive due to the large volumes of fill and waste.
Separation	Separation techniques concentrate contaminated solids through physical and chemical means. These processes seek to detach contaminants from their medium (i.e., the soil, sand, and/or binding material that contains them).	○	○	○	_	Not effective for NAPL and some COCs. Requires excavation and extensive processing / separation, which are very expensive due to the large volumes of fill and waste.
Soil Washing	Contaminants sorbed onto fine soil particles are separated from bulk soil in an aqueous-based system on the basis of particle size. The wash water may be augmented with a basic leaching agent, surfactant, pH adjustment, or chelating agent to help remove organics and heavy metals.	◉	○	○	_	Requires excavation, extensive processing / separation, and purchase of leaching agents or surfactants, all of which are very expensive due to the large volumes of fill and waste.
Solidification/Stabilization	Contaminants are physically bound or enclosed within a stabilized mass (solidification), or chemical reactions are induced between the stabilizing agent and contaminants to reduce their mobility (stabilization).	◉	○	○	_	Requires excavation, extensive processing / separation, and purchase of stabilizing agent, all of which are very expensive due to the large volumes of fill and waste.
Ex Situ Thermal Treatment (assuming excavation)						
Hot Gas Decontamination	The process involves raising the temperature of the contaminated equipment or material for a specified period of time. The gas effluent from the material is treated in an afterburner system to destroy all volatilized contaminants.	○	○	○	_	Requires excavation, extensive processing / separation, and thermal treatment, all of which are very expensive due to the large volumes of fill and waste.
Incineration	High temperatures, 870-1,200 °C (1,600- 2,200 °F), are used to combust (in the presence of oxygen) organic constituents in hazardous wastes.	●	○	○	_	Requires excavation, extensive processing / separation, and thermal treatment, all of which are very expensive due to the large volumes of fill and waste.
Open Burn/Open Detonation	In OB operations, explosives or munitions are destroyed by self-sustained combustion, which is ignited by an external source, such as flame, heat, or a detonatable wave. In OD operations, detonatable explosives and munitions are destroyed by a detonation, which is generally initiated by the detonation of an energetic charge.	○	○	○	_	Not applicable to site conditions.
Pyrolysis	Chemical decomposition is induced in organic materials by heat in the absence of oxygen. Organic materials are transformed into gaseous components and a solid residue (coke) containing fixed carbon and ash.	◉	○	○	_	Requires excavation, extensive processing / separation, and thermal treatment, all of which are very expensive due to the large volumes of fill and waste.
Thermal Desorption	Wastes are heated to volatilize water and organic contaminants. A carrier gas or vacuum system transports volatilized water and organics to the gas treatment system.	●	○	○	_	Requires excavation, extensive processing / separation, and thermal treatment, all of which are very expensive due to the large volumes of fill and waste.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

Table 11-1
Screening of Technologies for Unsaturated Waste and Soil

Containment						
Landfill Cap	Landfill caps are used for contaminant source control.	●	●	◉	Yes	Effective for all COCs. Relatively moderate cost. Readily implemented.
Landfill Cap Enhancements/Alternatives	The purpose of landfill cover enhancement is to reduce or eliminate contaminant migration (e.g. percolation). Water harvesting and vegetative cover are two ways for landfill cover enhancements. Water harvesting uses runoff enhancement to manage landfill site water balance. Vegetative cover reduces soil moisture via plant uptake and evapotranspiration.	●	●	◉	Yes	Effective for all COCs. Relatively moderate cost. Readily implemented.
Other Treatment						
Excavation, Retrieval, Off-Site Disposal	Contaminated material is removed and transported to permitted off-site treatment and disposal facilities. Pretreatment may be required.	●	◉	○	—	Requires excavation, extensive processing / separation, transportation, and off-site disposal, all of which are very expensive due to the large volumes of fill and waste.

Symbol key:

● = Higher than average effectiveness and implementability, lower than average cost.

◉ = Average effectiveness and implementability, average cost.

○ = Lower than average effectiveness and implementability, higher than average cost.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

TABLE 11-2
Screening of Technologies for Groundwater and Leachate

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
In Situ Biological Treatment						
Injection of Oxygen-Releasing Compound	A solution containing an oxygen-releasing compound is injected into saturated matrices to increase oxygen content and promote aerobic biodegradation.	◉	◉	◉	—	Effective to some extent for benzene, chlorobenzene, and 1,4-dichlorobenzene but not for PCE, TCE, or cis-1,2-DCE. Expensive relative to biosparging.
Biosparging	Air in injected into saturated matrices to increase oxygen content and promote aerobic biodegradation. Some contaminants also removed through volatilization. (Biosparging is a particular mode of air sparging that emphasizes aerobic biodegradation over volatilization.)	◉	●	●	Yes	Effective to some extent for benzene, chlorobenzene, and 1,4-dichlorobenzene but not for PCE, TCE, or cis-1,2-DCE. Requires management and/or treatment of vapors generated during sparging.
Enhanced Anaerobic Bioremediation	The rate of anaerobic bioremediation of organic contaminants by microbes is enhanced by adding a degradable substrate that releases hydrogen, which is used in reductive dechlorination of contaminants.	◉	◉	◉	—	Effective to some extent for all site COCs in groundwater. Potentially difficult to get good distribution of the degradable substrate in the aquifer and often results in increased concentrations of iron and manganese in the groundwater.
Monitored Natural Attenuation	Natural subsurface processes—such as dilution, volatilization, biodegradation, adsorption, and chemical reactions with subsurface materials—are allowed to reduce contaminant concentrations to acceptable levels.	◉	●	●	Yes	Inexpensive relative to other technologies. Effective to some extent on all site COCs in groundwater. Easily implemented.
Phytoremediation	Phytoremediation is a set of processes that uses plants to remove, transfer, stabilize and destroy organic/inorganic contamination in ground water, surface water, and leachate.	○	○	◉	—	Not effective for deep groundwater.
In Situ Physical/Chemical Treatment						
Air Sparging	Air is injected into saturated matrices to remove contaminants primarily through volatilization.	◉	●	◉	Yes	Effective to some extent for all site COCs in groundwater. Requires treatment of vapors generated during sparging.
Bioslurping	Bioslurping combines the two remedial approaches of bioventing and vacuum-enhanced free-product recovery. Bioventing stimulates the aerobic bioremediation of hydrocarbon-contaminated soils. Vacuum-enhanced free-product recovery extracts LNAPLs from the capillary fringe and the water table.	○	○	◉	—	Not applicable to site conditions.
Chemical Oxidation	Oxidation chemically converts hazardous contaminants to non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. The oxidizing agents most commonly used are ozone, hydrogen peroxide, hypochlorites, chlorine, and chlorine dioxide.	◉	◉	○	—	Expensive relative to other technologies at the scale required.
Directional Wells (enhancement)	Drilling techniques are used to position wells horizontally, or at an angle, to reach contaminants not accessible by direct vertical drilling.	●	●	◉	—	Sites at Sauget Area 1 are open and suitable for direct vertical drilling.
Dual Phase Extraction	A high vacuum system is applied to simultaneously remove various combinations of contaminated ground water, separate-phase petroleum product, and hydrocarbon vapor from the subsurface.	◉	◉	○	—	Expensive relative to other effective technologies.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

TABLE 11-2
Screening of Technologies for Groundwater and Leachate

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
Thermal Treatment	Steam is forced into an aquifer through injection wells to vaporize volatile and semivolatile contaminants. Vaporized components rise to the unsaturated zone where they are removed by vacuum extraction and then treated.	●	●	○	—	Expensive relative to other effective technologies.
Hydrofracturing Enhancements	Injection of pressurized water through wells cracks low permeability and over-consolidated sediments. Cracks are filled with porous media that serve as substrates for bioremediation or to improve pumping efficiency.	○	○	○	—	Not applicable to site conditions.
In-Well Air Stripping	Air is injected into a double screened well, lifting the water in the well and forcing it out the upper screen. Simultaneously, additional water is drawn in the lower screen. Once in the well, some of the VOCs in the contaminated ground water are transferred from the dissolved phase to the vapor phase by air bubbles. The contaminated air rises in the well to the water surface where vapors are drawn off and treated by a soil vapor extraction system.	○	●	○	—	Not effective for SVOCs. Requires treatment of vapors.
Passive/Reactive Treatment Walls	These barriers allow the passage of water while causing the degradation or removal of contaminants.	◉	○	○	—	Potentially effective for all site COCs in groundwater but difficult to install and expensive due to depth and thickness of saturated zone.
Ex Situ Biological Treatment						
Bioreactors	Contaminants in extracted ground water are put into contact with microorganisms in attached or suspended growth biological reactors. In suspended systems, such as activated sludge, contaminated ground water is circulated in an aeration basin. In attached systems, such as rotating biological contractors and trickling filters, microorganisms are established on an inert support matrix.	○	●	○	—	Not effective for some SVOCs. Not effective when NAPL is present. Requires groundwater extraction.
Constructed Wetlands	The constructed wetlands-based treatment technology uses natural geochemical and biological processes inherent in an artificial wetland ecosystem to accumulate and remove metals, explosives, and other contaminants from influent waters. The process can use a filtration or degradation process.	○	○	○	—	Not applicable to site conditions.
Ex Situ Physical/Chemical Treatment						
Adsorption/ Absorption	In liquid adsorption, solutes concentrate at the surface of a sorbent, thereby reducing their concentration in the bulk liquid phase.	○	●	○	—	Not effective when NAPL is present. Requires groundwater extraction.
Advanced Oxidation Processes	Advanced Oxidation Processes including ultraviolet (UV) radiation, ozone, and/or hydrogen peroxide are used to destroy organic contaminants as water flows into a treatment tank. If ozone is used as the oxidizer, an ozone destruction unit is used to treat collected off gases from the treatment tank and downstream units where ozone gas may collect, or escape.	○	●	○	—	Not effective when NAPL is present. Requires groundwater extraction.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

TABLE 11-2
Screening of Technologies for Groundwater and Leachate

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
Air Stripping	Volatile organics are partitioned from extracted ground water by increasing the surface area of the contaminated water exposed to air. Aeration methods include packed towers, diffused aeration, tray aeration, and spray aeration.	◉	●	◉	Yes	Potentially useful technology for treatment of leachate and/or groundwater at Sauget Area 1.
Granulated Activated Carbon/Liquid Phase Carbon Adsorption	Ground water is pumped through a series of canisters or columns containing activated carbon to which dissolved organic contaminants adsorb. Periodic replacement or regeneration of saturated carbon is required.	◉	●	◉	Yes	Potentially useful technology for treatment of leachate and/or groundwater at Sauget Area 1.
Groundwater Pumping/Pump & Treat	Ground water pumping is a component of many pump-and-treat processes, which are some of the most commonly used ground water remediation technologies at contaminated sites.	●	●	○	Yes	Commonly used for plume containment and source mass reduction.
Ion Exchange	Ion exchange removes ions from the aqueous phase by exchange with counter ions on the exchange medium.	○	●	○	—	Not applicable to site conditions.
Precipitation/Coagulation/ Flocculation	This process transforms dissolved contaminants into an insoluble solid, facilitating the contaminant's subsequent removal from the liquid phase by sedimentation or filtration. The process usually uses pH adjustment, addition of a chemical precipitant, and flocculation.	◉	●	○	Yes	Potentially useful technology for removal of metals from recovered leachate.
Separation	Separation techniques concentrate contaminated waste water through physical and chemical means.	◉	●	●	Yes	DNAPL and water separation would be applicable to total fluids pumped from well BR-I at Site I.
Sprinkler Irrigation	The process involves the pressurized distribution of VOC-laden water through a standard sprinkler irrigation system.	○	○	●	—	Not applicable to site conditions.
Containment						
Physical Barriers	These subsurface barriers consist of vertically excavated trenches filled with slurry. The slurry, usually a mixture of bentonite and water, hydraulically shores the trench to prevent collapse and retards ground water flow.	●	○	○	—	Effective for all COCs but difficult to install and expensive due to depth and thickness of saturated zone.
Deep Well Injection	Deep well injection is a liquid waste disposal technology. This alternative uses injection wells to place treated or untreated liquid waste into geologic formations that have no potential to allow migration of contaminants into potential potable water aquifers.	○	◉	◉	—	Not applicable to site conditions.
Groundwater Capture						
Interceptor trench	An interceptor trench consists of a perforated pipe laid in a trench and covered with a high permeability material, typically gravel. The trench intercepts groundwater flow and channels the captured groundwater to sumps, where it is pumped to the surface.	○	○	○	—	Not applicable to site conditions.
Conventional extraction wells	Traditional extraction wells are vertically-drilled wells that pump groundwater from a screened interval.	●	●	◉	Yes	Possible component of any alternative that requires groundwater extraction.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

TABLE 11-2
Screening of Technologies for Groundwater and Leachate

Technology	Description	Effectiveness	Implementability	Relative Cost	Retained?	Comments
Conventional injection wells	Traditional extraction wells are vertically-drilled wells that inject water into a screened interval. Used to channel groundwater into desired flow paths, and as a method of disposal of treated groundwater.	●	●	◉	—	Not applicable to site conditions.
Wellpoint system	System of many vertical wells discharging to a common header at the surface. Useful for low permeability soils where many closely-spaced wells are required.	●	●	◉	—	Not applicable to site conditions.
Air Emissions/Gas Treatment						
Biofiltration	Vapor-phase organic contaminants are pumped through a soil bed and sorb to the soil surface where they are degraded by microorganisms in the soil.	○	●	◉	—	Not effective for all site COCs.
High Energy Destruction	The high energy destruction process uses high-voltage electricity to destroy VOCs at room temperature.	●	●	○	—	Expensive relative to other effective technologies.
Membrane Separation	This organic vapor/air separation technology involves the preferential transport of organic vapors through a nonporous gas separation membrane (a diffusion process analogous to putting hot oil on a piece of waxed paper).	◉	●	○	—	Expensive relative to other effective technologies.
Oxidation	Organic contaminants are destroyed in a high temperature 1,000°C (1,832 °F) combustor. Trace organics in contaminated air streams are destroyed at lower temperatures, 450 °C (842 °F), than conventional combustion by passing the mixture through a catalyst.	●	●	○	Yes	Possible component of a vapor treatment system for air sparging or biosparging.
Scrubbers	Scrubbers remove air pollutants by inertial or diffusional impaction, reaction with a sorbent or reagent slurry, or absorption into a liquid. Scrubbers are used to remove water-soluble acid, base, and organic contaminants and to control particulate matter.	◉	◉	○	—	Expensive relative to other effective technologies.
Vapor Phase Carbon Adsorption	Off-gases are pumped through a series of canisters or vessels containing activated carbon to which organic contaminants adsorb. Periodic replacement or regeneration of saturated carbon is required.	●	●	◉	Yes	Possible component of a vapor treatment system for air sparging or biosparging.

Symbol key:

● = Higher than average effectiveness and implementability, lower than average cost.

◉ = Average effectiveness and implementability, average cost.

○ = Lower than average effectiveness and implementability, higher than average cost.

Notes:
COC = Chemical of concern. DNAPL = Dense non-aqueous phase liquid. GW = Groundwater. LNAPL = Light non-aqueous phase liquid. VOC = Volatile organic compound.

TABLE 12-1
Screening of Preliminary Remedial Alternatives

Alternative Array	Components	Effectiveness	Implementability	Relative Cost	Retained or Screened Out?
Alternative 1	No action	This alternative would not be effective at meeting RAOs.	Implementable.	Capital: None O&M: None	Retained to provide a baseline for detailed evaluation of the other remedial alternatives.
Alternative 2	Institutional Controls Containment Cell O&M Monitored Natural Attenuation (MNA)	This alternative cannot be effective at meeting RAOs for soil, waste, and leachate because it does not include engineered covers. However, it can meet RAOs for soil vapor and groundwater.	Implementable.	Capital: Low O&M: Low	Retained for detailed evaluation.
Alternative 3	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Capping Sites G, H, I South, and L	This alternative can be effective at meeting the RAOs for soil, waste, and leachate, although using soil or crushed rock covers would be equally effective and less expensive. This alternative meets the soil vapor and groundwater RAOs. The RCRA Subtitle C caps would not significantly reduce the time to clean for groundwater.	RCRA Subtitle C caps are implementable at Sites G and H but difficult to implement at Site I South (see Note 1). This alternative would require large amounts of fill materials and would change the site grades significantly.	Capital: High O&M: Moderate Capital costs for RCRA Subtitle C caps are typically at least $200K per acre and can be significantly higher.	Retained for detailed evaluation.
Alternative 4	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Capping Sites G, H, I South, and L Leachate Control at Sites G, H, and I South	This alternative can be effective at meeting the RAOs for soil, waste, and leachate, although using soil or crushed rock covers would be equally effective and less expensive. This alternative meets the soil vapor and groundwater RAOs. The RCRA Subtitle C caps with leachate control would not significantly reduce the time to clean for groundwater.	RCRA Subtitle C caps and leachate recovery systems (including wells and piping) are implementable at Sites G and H but difficult to implement at Site I South and disruptive to current operations (see Note 1). This alternative would require large amounts of fill materials and would change the site grades significantly.	Capital: High O&M: High Capital costs are higher compared to Alternative 3 due to installation of leachate extraction wells and leahcate pre-treatment systems. Disposal of recovered leachate at the ABRTF costs approximately $8.50 per 1000 gallons, which results in high O&M costs.	Retained for detailed evaluation.
Alternative 5	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Soil or Crushed Rock Covers at Sites G, H, I South and L Pulsed Air Biosparging (PABS) at Residual DNAPL Areas at Sites G, H, and I South	This alternative can be effective at meeting the RAOs for soil, waste, and leachate and meets the groundwater RAOs. The PABS systems would require relatively expensive O&M and would not achieve a 30-year time to clean for groundwater. This alternative can achieve the soil vapor RAO provided that soil vapors generated during operation of the PABS systems are carefully monitored and managed to prevent potential unacceptable risks to indoor workers in nearby buildings.	Soil or crushed rock covers and biosparging systems (including wells and piping) are implementable at Sites G and H but difficult to implement and disruptive to current operations at Site I South (see Note 1).	Capital: High O&M: High Soil or crushed rock covers are much less expensive than RCRA Subtitle C caps. However, this alternative includes significant capital costs for numerous closely spaced sparge well pairs in MHU and DHU, air compressors and extensive underground piping.	Retained for detailed evaluation.

TABLE 12-1
Screening of Preliminary Remedial Alternatives

Alternative Array	Components	Effectiveness	Implementability	Relative Cost	Retained or Screened Out?
Alternative 6	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Soil or Crushed Rock Covers at Sites G, H, I South and L Air Sparging with SVE at DNAPL Areas at Sites G, H, and I South	This alternative can be effective at meeting the RAOs for soil, waste, and leachate and meets the groundwater RAOs. The air sparging and SVE systems would require relatively expensive O&M and would not achieve a 30-year time to clean for groundwater. This alternative can achieve the soil vapor RAO provided that soil vapors generated during operation of the air sparging systems are carefully monitored and managed to prevent potential unacceptable risks to indoor workers in nearby buildings.	Soil covers and air sparging / SVE systems (including wells and piping) are implementable at Sites G and H but difficult to implement and disruptive to current operations at Site I South (see Note 1).	Capital: Very High O&M: Very High Capital and O&M costs for air sparging with SVE are significantly higher compared to Alternative 5. See discussion in Appendix C.	Screened out from further consideration. This alternative is significantly more expensive than Alternative 5 and has little or no added benefit in improving time to clean for downgradient groundwater.
Alternative 7	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Capping Sites G, H, I South, and L Hydraulic Containment at Downgradient Boundary of Sauget Area 1 Study Area	This alternative can be effective at meeting the RAOs for soil, waste, and leachate, although using soil or crushed rock covers would be equally effective and less expensive. This alternative meets the soil vapor and groundwater RAOs. Hydraulic containment would require very expensive long term O&M and would not achieve a 30-year time to clean for groundwater.	RCRA Subtitle C caps are implementable at Sites G and H but difficult to implement at Site I South and disruptive to current operations (see Note 1). Hydraulic containment is implementable but is very expensive to operate.	Capital: Very High O&M: Very High **Alternative 7** (RCRA caps and hydraulic containment) includes 5 high-capacity extraction wells with a total flowrate of 1850 gpm. The estimated O&M cost for Alternative 7 is $5.6 million per year, and the estimated present value cost for Alternative 7, including capital costs and 30 years of operation, is $78.9 million.	Screened out from further consideration. Alternative 5 achieves much greater source mass reduction at far less cost and does not require consumption of large quantities of electrical power and other resources to pump and treat groundwater for hundreds of years.
Alternative 8	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Capping Sites G, H, I South, and L Groundwater Removal at Sites G, H, and I South Hydraulic Containment at Downgradient Boundary of Sauget Area 1 Study Area	This alternative can be effective at meeting the RAOs for soil, waste, and leachate, although using soil or crushed rock covers would be equally effective and less expensive. This alternative meets the soil vapor and groundwater RAOs. Plume removal would require very expensive O&M and would not achieve a 30-year time to clean for groundwater.	RCRA Subtitle C caps are implementable at Sites G and H but difficult to implement at Site I South and disruptive to current operations (see Note 1). Plume removal is implementable but is very expensive to operate.	Capital: Very High O&M: Very High **Alternative 8** (RCRA caps, groundwater extraction in source areas, and hydraulic containment) includes 8 high-capacity extraction wells with a total flowrate of 2800 gpm. The estimated O&M cost for Alternative 8 is $8.2 million per year, and the estimated present value cost for Alternative 8, including capital costs and 30 years of operation, is $113 million.	Screened out from further consideration. Alternative 5 achieves much greater source mass reduction at far less cost and does not require consumption of large quantities of electrical power and other resources to pump and treat groundwater for hundreds of years.

TABLE 12-1
Screening of Preliminary Remedial Alternatives

Alternative Array	Components	Effectiveness	Implementability	Relative Cost	Retained or Screened Out?
Alternative 9	Institutional Controls, Containment Cell O&M, MNA Utility Relocation, Pooled DNAPL Recovery at BR-I Excavation and Off-Site Disposal of Wastes at Sites G, H, I South, and L	This alternative can be effective at meeting the RAOs. However, this alternative would pose significant short-term risks to site workers and the community. Site workers would have to excavate, segregate, and load large volumes of hazardous wastes. Short-term risks to the community include heavy truck traffic for a long period of time and potential for dust and COC emissions.	Very difficult to implement. This alternative would involve excavation and off-site disposal of approximately 827,000 loose cubic yards of waste / fill and backfilling a similar volume of clean imported fill. At some locations the waste extends to depths of > 30 ft below grade.	Capital: Extremely High O&M: Low Much of the waste / fill is hazardous waste and/or contains PCB and would be very expensive to dispose. Costs for excavation, transportation, and disposal could easily exceed $1000 per ton.	Screened out from further consideration. This alternative is very expensive and very difficult to implement, and would involve significant short-term risks to workers and the community.

Notes:
1) Cerro uses Site I South and Site I North as a trailer parking and staging area. The truck traffic at this trailer parking area includes trailers of raw material entering the facility, trailers of product leaving the facility, and moves of the trailers between the trailer parking area and the main operating areas. The amount of traffic in the facility varies during the year, but the traffic levels for February 2012 are typical. During February 2012 a total of 155 raw material trailers and 227 product trailers were managed by the facility. As part of standard operations, each trailer is moved into or out of the trailer parking area a total of 4 times. Therefore, during February 2012 there were a total of 1528 moves. In February there were 22 operating days (i.e., Monday through Friday), so there were an average of 69 moves per operating day during the month. This traffic would need to be managed during construction of a RCRA Subtitle C cover at Site I South.

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
1	35 IAC 620.405 (Illinois Groundwater Quality Standards)	Prohibits any person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedence of groundwater quality standards.	Applicable		No on-going releases of COCs from surface sources such as tanks or chemical storage areas are present at any of the Sauget Area 1 Sites. Under current conditions, there are impacts to groundwater at Sites G, H, and I South with COCs above the IEPA Class I Groundwater Remediation Objectives (GROs). See footnote below for a bullet-point description of the remedial alternatives. The alternatives include a RCRA Subtitle C cap or a soil or crushed rock cover at Sites G, H, and I South. The covers will reduce infiltration from direct precipitation and run-on with the RCRA cap having a greater reduction in infiltration. At the end of the remedial action there will not be releases of contaminants to groundwater that would result in exceedances of groundwater quality standards through implementation of one of the remedial alternatives (i.e., Alternatives 2 through 5) due to Monitored Natural Attenuation (MNA) or MNA and Pulsed Air Biosparging.
2	35 IAC 620.410 (Illinois Groundwater Quality Standards)	Class 1 groundwater standards (in general equivalent to a drinking water standard or the MCL).	Applicable		At the end of the remedial action, the Illinois Groundwater Quality Standards presented in 35 IAC 620.410 will be met at Sites G, H, and I South by the implementation of Alternative 2, 3, 4, or 5 due to MNA or MNA enhanced with Pulsed Air Biosparging. The selected alternative will be evaluated using long-term groundwater monitoring and the Five Year Review process.
3	35 IAC 620.250 (Illinois Groundwater Quality Standards)	A groundwater management zone (GMZ) may be established for a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site: (1) That is subject to a corrective action process approved by the Agency; or (2) For which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner. The GMZ suspends the groundwater quality standards during the period of remediation until the groundwater quality standards have been attained.	Applicable		Alternatives 2, 3, 4, and 5 address the area of exceedance in groundwater at Sites G, H, and I South. It is anticipated that a Groundwater Management Zone may be considered as part of the area-wide final ROD. Separate Groundwater Management Zones for the Sauget Area 1 Sites are not recommended.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
4	35 IAC 620.260 (Illinois Groundwater Quality Standards)	Any person may petition the Illinois Pollution Control Board to reclassify a groundwater in accordance with the procedures for adjusted standards specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106, Subpart G. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to the requirements of 35 Ill. Adm. Code 106, Subpart G, and Section 28.1(c) of the Act, the petition shall, at a minimum, contain information specified in this section.	Applicable		The Sauget Area 1 Group has no plans to file a petition with the Illinois Pollution Control Board to reclassify groundwater in this area during implementation of any of the alternatives as they relate to Sites G, H, I South and L. However, a petition for reclassification may be established regionally as part of the area-wide final ROD.
5	35 IAC 302.208 (Illinois Surface Water Quality Standards)	Numeric Surface Water Quality Standards are established for the protection of human health and aquatic life. The Mississippi River is not provided any specific surface water designation; therefore, the general use water quality standards would be applied. The general use water quality standards provide criteria for the protection of aquatic life (acute and chronic) and human health.	Applicable		Illinois surface water quality standards apply to the Mississippi River. Any impacted groundwater from the Sauget Area 1 Sites will be addressed by Alternatives 2, 3, 4 and 5 prior to discharge to the river. Alternatives 2, 3, 4, and 5 would result in compliance with this ARAR by reducing concentrations of COCs in groundwater to concentrations that will result in compliance with the applicable surface water standards in the river at the end of the remedial action. The selected alternative will be evaluated using long-term groundwater monitoring and the Five Year Review process.
6	35 IAC 302.210 (Illinois Surface Water Quality Standards)	Waters of the State shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. This regulation includes those constituents without a promulgated standard in 35 IAC 302.208. These derived water quality criteria may be found on IEPA's web site (http://www.epa.state.il.us/water /water-quality-standards/water-quality-criteria.html) and will include any additional criteria that IEPA develops to address specific chemicals associated with the Sauget Area 1 Sites for which derived criteria have not been calculated already.	Applicable		Illinois Surface Water Quality Standards apply to the Mississippi River. The use of Alternatives 2, 3, 4, and 5 address impacted groundwater from the Sauget Area 1 Sites that may potentially discharge to the river. Alternatives 2, 3, 4, and 5 would result in compliance with this ARAR by reducing concentrations of COCs in groundwater to concentrations that will result in compliance with the applicable surface water standards in the river at the end of the remedial action. The selected alternative will be evaluated using long-term groundwater monitoring and the Five Year Review process.
7	35 IAC 301.108 (Illinois Water Quality and Pollution Control regulations general provisions)	The Illinois Pollution Control Board may grant an adjusted standard to an applicable regulatory standard for persons who can justify such an adjustment consistent with subsection (a) of section 27 of the Illinois Environmental Protection Act.	Applicable		It is not currently anticipated that the Sauget Area 1 Group will request any adjusted standards for surface water or groundwater at Sites G, H, I South, and L. However, if the need for an adjusted standard develops, a written justification will be developed and submitted to the Board for consideration.

Alternatives
Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
8	35 IAC 724.191 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.91)	Required Programs: Owners and operators subject to Subpart F must conduct a monitoring and response program as follows: 1) Whenever hazardous constituents pursuant to Section 724.193 from a regulated unit are detected at a compliance point pursuant to Section 724.195, the owner or operator must institute a compliance monitoring program pursuant to Section 724.199. 2) Whenever the groundwater protection standard pursuant to Section 724.192 is exceeded, the owner or operator must institute a corrective action program pursuant to Section 724.200. 3) Whenever hazardous constituents pursuant to Section 724.193 from a regulated unit exceed concentration limits pursuant to Section 724.194 in groundwater between the compliance point pursuant to Section 724.195 and the downgradient facility property boundary, the owner or operator must institute a corrective action program pursuant to Section 724.200	Relevant and Appropriate		The substantive requirements will be addressed by the implementation of Alternatives 2, 3, 4, or 5, which include long-term groundwater monitoring. The effectiveness of the selected alternative will also be evaluated using the Five Year Review process at which time compliance with the ARAR and the need for additional corrective action(s) will be evaluated.
9	35 IAC 724.192 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.92)	Groundwater Protection Standard: The owner or operator must ensure that hazardous constituents under Section 724.193 detected in the groundwater from a regulated unit do not exceed the concentration limits under Section 724.194 in the uppermost aquifer underlying the waste management area beyond the point of compliance under Section 724.195 during the compliance period under Section 724.196.	Relevant and Appropriate		The substantive requirements of this standard are addressed by Alternatives 2, 3, 4, or 5. Each of these alternatives will include a long-term groundwater monitoring program and the effectiveness of the remedy will be evaluated using the Five Year Review process.
10	35 IAC 724.193 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.93)	Hazardous Constituents: The Agency must specify in the facility permit the hazardous constituents to which the groundwater protection standard of Section 724.192 applies. Hazardous constituents are constituents identified in Appendix H of 35 Ill. Adm. Code 721 that have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the Agency has excluded them under subsection (b) of this Section.	Relevant and Appropriate		A permit is not required; however, the Agency can identify, as part of the CERCLA process, the hazardous constituents for which a groundwater protection standard applies. These identified constituents would then become a part of the long-term groundwater monitoring program. As a result, implementation of the evaluated alternatives would result in meeting the substantive requirements of 35 IAC 724.193.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
11	35 IAC 724.194 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.94)	Concentration Limits: The Agency must specify in the facility permit concentration limits in the groundwater for hazardous constituents established under Section 724.193. The following must be true of the concentration of a hazardous constituent: 1) It must not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or, 2) For any of the constituents listed in Table 1, it must not exceed the respective value given in that Table if the background level of the constituent is below the value given in Table 1; or, 3) It must not exceed an alternative limit established by the Agency under subsection (b) of this Section.	Relevant and Appropriate		A permit is not required; however, the Agency can identify, as part of the CERCLA process, the appropriate requirements of 35 IAC 724.194. As a result, implementation of the selected alternative would result in meeting the substantive requirements of 35 IAC 724.194.
12	35 IAC 724.195 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.95)	Point of Compliance: The Agency must specify in the facility permit the point of compliance at which the groundwater protection standard of Section 724.192 applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units.	Relevant and Appropriate		A permit is not required; however, the Agency can identify, as part of the CERCLA process, the appropriate requirements of 35 IAC 724.195. The substantive requirements of 35 IAC 724.195 will be met by the groundwater monitoring requirements specified in Alternatives 2, 3, 4, or 5.
13	35 IAC 724.196 a) (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.96 (a))	Compliance Period: The Agency must specify in the facility permit the compliance period during which the groundwater protection standard of Section 724.192 applies. The compliance period is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting, and the closure period.)	Relevant and Appropriate		A permit is not required; however the Agency can identify, as part of the CERCLA process, the appropriate requirements of 35 IAC 724.196. As a result, the substantive requirements of 35 IAC 724.196 will be met by Alternatives 2, 3, 4, or 5 which will include a long-term groundwater monitoring program developed through the CERCLA process.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
14	35 IAC 724.197 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.97)	724.197(a) - The groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that fulfill the following requirements: 1) They represent the quality of background water, 2) They represent the quality of groundwater passing the point of compliance; and, 3) They allow for the detection of hazardous waste or hazardous constituents that have migrated to the uppermost aquifer. 724.197(c) - All monitoring wells must be cased in accordance with this section. 724.197(d) - The groundwater monitoring program must include consistent sampling and analysis to ensure a reliable indication of groundwater quality below the waste management area. The program must include procedures and techniques for the following: 1) Sample collection; 2) Sample preservation and shipment; 3) Analytical procedures; and 4) Chain of custody control. 724.197(e) - The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples. 724.197(f) - The groundwater monitoring program must include a determination of the groundwater surface elevation each time groundwater is sampled. 724.197 (h) and (i) - Specifies the statistical methods that may be used in evaluating groundwater monitoring data and performance standards for each statistical method	Relevant and Appropriate		A permit is not required; however the Agency can identify, as part of the CERCLA process, the appropriate requirements of 35 IAC 724.197. As a result, the substantive requirements of 35 IAC 724.197(a)-(i) will be met by the long-term groundwater monitoring program developed through the CERCLA process for Alternatives 2, 3, 4, or 5.
15	35 IAC 724.199 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.99)	Compliance Monitoring Program: An owner or operator is required to establish a compliance monitoring program to meet the requirements of this section.	Relevant and Appropriate		Alternatives 2, 3, 4, and 5 include groundwater monitoring. The substantive requirements of 35 IAC 724.199 will be met by implementation of Alternatives 2, 3, 4, or 5. A compliance monitoring program will be implemented as part of the CERCLA process and the remedy will be subject to the Five Year Review process.
16	35 IAC 724.200 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.100)	Corrective Action: An owner or operator is required to establish a corrective action program in accordance with this section.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.200 will be met by Alternatives 2, 3, 4, or 5 through the CERCLA process. The need for revision to the program and/or additional corrective action will be evaluated with the long-term monitoring program and the Five Year Review process.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
17	35 IAC 212, Subpart K (Illinois Air Pollution regulations)	Measures need to be implemented to control fugitive dust emissions so that there will be no visible emissions at the property line and fugitive dust emissions do not exceed 20% opacity. Control measures typically include the application of water or other dust suppressants during clearing, grubbing, and grading.	Applicable		During construction of the remedy proposed under Alternatives 3, 4, and 5, the applicable requirements of 35 IAC 212 will be met. The specific procedures for controlling fugitive dust emissions will be presented in the remedial design for the selected alternative.
18	35 IAC 309.102 (Illinois NPDES Storm Water regulations Analogous to 40 CFR 122.26)	Storm water discharge requirements are applicable to activities at the Sauget Area 1 Sites involving disturbance of cover in an area of 1 acre or more total. The types of controls typical to SWPPP include, but are not limited to: storm water run-off conveyances, diversion dikes, sediment fences, sediment traps, limitations on the size of disturbed areas, and sequencing of construction to minimize and control disturbances.	Applicable		The applicable requirements of 35 IAC 309.102 will be met during construction of the remedy proposed under Alternatives 3, 4, and 5. A SWPPP will be developed for the selected alternative as part of the remedial design. The SWPPP will describe the procedures and Best Management Practices that would be implemented during construction to meet these requirements.
19	35 IAC 309.202 (Illinois Construction Permits)	Required State construction permit for any new water treatment works, sewer or wastewater sources or any modification to existing treatment works, sewer or wastewater sources.	Relevant and Appropriate		Alternative 4 includes a network of leachate collection wells and a pre-treatment system for the recovered leachate. The substantive requirements of 35 IAC 309.202 will be met during construction if the leachate pre-treatment system is built.
20	10 CFR 230.10(a), (b), (c) and (d) 40 CFR 230 Subpart H (USEPA Clean Water Act regulations)	The discharge of dredged or fill material into Waters of the United States, including jurisdictional (adjacent) wetlands, is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of state water quality standards, violates any toxic effluent standard, and/or jeopardizes an endangered species or its critical habitat. No discharge will be permitted that will cause significant degradation of Waters of the United States. No discharge is permitted unless mitigation measures have been taken in accordance with 40 CFR 230, Subpart H. Compensatory mitigation for loss of wetlands shall be provided for wetlands > 0.25 acre. Compensatory mitigation shall be at a ratio of 2:1 for restoration, 4:1 for creation and enhancement, and 10:1 for preservation.	Not Applicable or Relevant to Site Conditions	No alternatives developed for Sauget Area 1 involve the discharge of dredged or fill materials into the waters of the United States.	
21	40 CFR 230.10 (a)-(d) 40 CFR 230 33 CFR 320 (USEPA Clean Water Act regulations)	The discharge of dredged or fill material into Waters of the United States is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of state water quality standards, violates any toxic effluent standard, or jeopardizes an endangered species. No discharge is permitted that will cause significant degradation of Waters of the United States. Mitigative measures must be implemented in accordance with 40 CFR 230, Subpart H.	Not Applicable or Relevant to Site Conditions	No alternatives developed for Sauget Area 1 involve the discharge of dredged or fill materials into the waters of the United States.	

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
22	16.U.S.C. 661 et seq., (Sections 661-663 and 668) (U.S. Fish and Wildlife Coordination Act)	Activities that modify water bodies must consult and coordinate with the U.S. Department of the Interior to ensure that the activity conserves wildlife resources and prevents the loss and damage to such resources.	Not Applicable or Relevant to Site Conditions	The alternatives developed for Sauget Area 1 do not include activities that would modify any water bodies.	
23	16 U.S.C. 1531 et seq., Sect. 7(a)(2) (U.S. Threatened and Endangered Species Act)	Actions that jeopardize the existence of a listed species, or result in the destruction or adverse modification of critical habitat, must be avoided or reasonable and prudent mitigation measures taken. The lead agency must determine whether threatened and endangered species or their critical habitat are present and conduct informal consultation with the U. S. Fish and Wildlife Service. Determination that threatened and endangered species or their critical habitat may be impacted by the proposed action requires preparation of a biological assessment to determine the extent of any possible impacts.	Applicable		The actions involved in Alternatives 2 through 5 would not jeopardize the existence of any state-listed species, or result in the destruction or adverse modification of critical habitat for any such species, because habitat to support threatened and/or endangered species does not exist at the fill areas, (i.e., Sauget Area 1 Sites G, H, I, and L). In addition, the actions involved in Alternatives 2 through 5 would not affect Dead Creek or the Borrow Pit Lake.
24	520 ILCS 10/3 (Illinois Endangered Species Protection Act)	Prohibits actions that result in takings of state-listed species, such as actions that jeopardize the continued existence of a listed species or result in destruction or adverse modification of its critical habitat.	Applicable		The actions involved in Alternatives 2 through 5 will not result in takings of state-listed species, jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of critical habitat for any such species, because habitat to support threatened and/or endangered species does not exist at the fill areas, (i.e., Sauget Area 1 Sites G, H, I, and L). In addition, the actions involved in Alternatives 2 through 5 would not affect Dead Creek or the Borrow Pit Lake.
25	40 CFR 6.Appendix A Executive Order 11988 (USEPA NEPA regulations; Federal Agencies Executive Order on Floodplains)	Activities that are taken within a floodplain shall avoid, to the extent possible, the long- and short-term adverse effects associated with occupancy and modification of floodplains. Measures shall be taken to mitigate adverse effects of actions in a floodplain, including measures to reduce the risk of flood loss, minimize the impact of floods on human safety and health, and restore/preserve the beneficial values of the floodplain. Structures constructed in a floodplain shall meet the standards and criteria set forth in the regulations promulgated by the Federal Insurance Administration pursuant to the National Flood Insurance Act of 1968.	Not Applicable or Relevant to Site Conditions	All of the Sauget Area 1 sites are located on the dry side of the levee and any activity at Sauget Area 1 is not expected to impact the floodplain side of the levee.	
26	35 IAC 724.118 b) (Illinois RCRA Hazardous Waste Permit Program regulations similar to 40 CFR 270.14(b)(11)(iv))	Any RCRA Subtitle C TSDF located within a 100-year floodplain must be designed, constructed, and maintained to prevent washout.	Not Applicable or Relevant to Site Conditions	All of the Sauget Area 1 sites are located on the dry side of the levee and any activity at Sauget Area 1 is not expected to impact the floodplain side of the levee.	

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
27	35 IAC 703.184 d) (Illinois RCRA Hazardous Waste regulations (Subpart B General Facility Standards – Location Standards similar to 40 CFR 264.18(b))	Engineering analysis required to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100-year flood; Structural or other engineering studies showing the design of operational units and flood protection devices (e.g., floodwalls, dikes) at the facility and how these will prevent washout.	Not Applicable or Relevant to Site Conditions	All of the Sauget Area 1 sites are located on the dry side of the levee and any activity at Sauget Area 1 is not expected to impact the floodplain side of the levee.	
28	17 IAC Part 3700 (Illinois Department of Natural Resources (IDNR)-Construction in Floodways of Rivers, Lakes and Streams)	Applies to all rivers, lakes and streams under the department's jurisdiction. Construction in the floodway of any stream serving a tributary area of 6,400 acres or more is subject to this part. Construction activities in the floodway must be permitted (3700.40). However for construction other than levees, the worst-case analysis does not involve flood events in excess of the 100-year frequency flood. Floodplain construction that occurred before July 1, 1985 is considered grandfathered in. Many activities permitted under this part require review by the U.S. Army Corps of Engineers and the IEPA.	Not Applicable or Relevant to Site Conditions	All of the Sauget Area 1 sites are located on the dry side of the levee and any activity at Sauget Area 1 is not expected to impact the floodplain side of the levee.	
29	17 IAC 3704 Regulation of Public Water (IDNR regulations for construction in rivers)	Applies to construction activities to be undertaken within the river below normal water stage elevation.	Not Applicable or Relevant to Site Conditions	No construction activities will occur related to Sauget Area 1 within the river below normal water stage elevation.	
30	35 IAC 724.211 a) and b) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.111)	Closure Performance Standard: The owner or operator must close the facility in a manner that does the following: a) The closure minimizes the need for further maintenance; b) The closure controls, minimizes, or eliminates, to the extent necessary to adequately protect to human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous decomposition products to the ground or surface waters or to the atmosphere	Relevant and Appropriate		The substantive requirements of 35 IAC 724.211 a) and b) will be met to protect human health and the environment. The cover designs in Alternatives 3, 4, and 5 would control, minimize, or eliminate, to the extent necessary to adequately protect to human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous decomposition products to the groundwater, surface water, or atmosphere. Each cover described in Alternatives 3, 4, and 5 would require long-term maintenance to insure integrity of the cover; however, the design and construction of each cover would be completed so as to minimize this maintenance.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
31	35 IAC 724.212 a) and b) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.112)	Closure Plan: Requires owners of hazardous waste facilities to submit a written closure plan (the approved plan becomes a condition to any RCRA permit). The closure plan describes the steps necessary for final closure. 724.212(a) (2), 724.212(b) (2) and 724.212(b) (4) are substantive requirements.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.212 a) and b) are relevant and appropriate to the conditions at Sauget Area 1, but a formal Closure Plan required for owners of hazardous waste management facilities is not applicable to former landfill sites being addressed through the CERCLA process. The substantive requirements of 35 IAC 724.212 a) and b) will be met by the Remedial Action Completion Report completed through the CERCLA process.
32	35 IAC 724.214 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.114)	Disposal or Decontamination of Equipment, Structures, and Soil: All contaminated equipment, structures, and soils must be properly disposed of or decontaminated.	Relevant and Appropriate		None of the Remedial Action alternatives for the Sauget Area 1 sites would likely involve off-site disposal and/or decontamination of equipment and structures or off-site disposal of soil. If any solid wastes require decontamination or off-site disposal per 35 IAC 724.214 this would be completed in compliance with hazardous waste regulations including, but not limited to, waste determinations, proper storage, transportation, and disposal in appropriately permitted off-site facilities.
33	35 IAC 724.215 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.115)	Certification of Closure: Within 60 days after completion of closure, the owner or operator must submit to the Agency, by registered mail, a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by an independent registered professional engineer.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.215 will be met by the Remedial Action Completion Report completed through the CERCLA process.
34	35 IAC 724.216 35 IAC 724.409 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care and Subpart N Landfills Surveying and Recordkeeping) similar to 40 CFR 264.116; 40 CFR 264.309)	Survey Plat: No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to any local zoning authority or authority with jurisdiction over local land use and to the Agency and record with land titles, a survey plat indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local zoning authority or the authority with jurisdiction over local land use must contain a note, prominently displayed, that states the owner's and operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with Subpart G of this Part.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.216 and 35 IAC 724.409 will be met by the Remedial Action Completion Report completed through the CERCLA process. As part of the implementation of any of these alternatives, a survey plat indicating the location and dimensions of the waste area and cover limits will be submitted to the appropriate local authority with jurisdiction over local land use and to Illinois EPA. The plat will be prepared and certified by a professional land surveyor. Along with the survey plat, institutional controls will be established to prohibit disturbance of the cover and to control the land use in the survey area.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
35	35 IAC 724.217 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.117)	Postclosure Care and Use of Property a) Requires a Postclosure Care Period of at least 30 years after completion of closure for the unit b) must require continuation at partial or final closure of any of the security requirements of Section 724.114 during part or all of the post-closure period when either of the following is true: - hazardous wastes may remain exposed after completion of partial or final closure; or - access by the public or domestic livestock may pose a hazard to human health. d) All the post-closure care activities must be in accordance with the provisions of the approved post-closure plan as specified in Section 724.218.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.217 for Post-Closure Care and Use of Property will be addressed in the Operations & Maintenance (O&M) Plan developed through the CERCLA process. The O&M Plan will include descriptions of the long-term O&M, post-closure care, property use restrictions, and institutional controls. The remedy would also be subjected to the Five Year Review process under CERCLA. An assessment of the on-going post closure/O&M activities would be completed at that time.
36	35 IAC 724.217 c) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.117)	Postclosure Care and Use of Property c) Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover unless the Agency determines it is necessary for reasons listed in the regulations	Relevant and Appropriate		The substantive requirements of 35 IAC 724.217 for post-closure care and use of the remediated portions of Sauget Area 1 will be addressed in the O&M Plan. The selected remedy will also be subjected to the Five Year Review process under CERCLA. An assessment of the on-going post closure/O&M activities would be completed at that time.
37	35 IAC 724.218 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.118)	Post-Closure Plan The owner must have a written postclosure plan which must identify the activities that will be carried on after closure and the frequency of these activities (including planned monitoring activities and frequencies, planned maintenance activities, and name, address, and phone number of the person or office to contact). The relevant and appropriate requirements in 724.218 are: 724.218(b)(1) and (b)(2) – the post-closure plans must incorporate monitoring and maintenance activities that comply with the substantive requirements of 724 Subparts F and N.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.218 for post-closure care and use of the remediated portions of Sauget Area 1 will be addressed in the O&M Plan. The selected remedy will also be subjected to the Five Year Review process under CERCLA. An assessment of the on-going post closure/O&M activities would be completed at that time.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
38	35 IAC 724.219 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.119)	Post-Closure Notices: Requires within 60 days after certification of closure the owner or operator of a disposal facility to submit to the Agency, to the County Recorder and to any local zoning authority or authority, a record of the type, location, and quantity of hazardous wastes disposed (for hazardous wastes disposed of before January 12, 1981, the owner or operator must identify these items to the best of the owner or operator's knowledge and in accordance with any records). In addition, the owner or operator is required to record a notation on the deed to the facility property (or on some other instrument that is normally examined during title search) that will in perpetuity notify any potential purchaser of the property that the land has been used to manage hazardous wastes; its use is restricted; and the survey plat and record of the type, location, and quantity of hazardous wastes disposed been filed with the Agency, the County Recorder and any local zoning authority or authority with jurisdiction over local land use.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.219 for post-closure notices will be met by preparing a Remedial Action Completion Report completed through the CERCLA process. The report will contain information documenting the activities completed and approved deviations/changes implemented. This report will provide surveyed locations of the cover construction, surveyed locations of monitoring wells, and document any waste generated and disposed off-site, as well as all other pertinent remedy related documentation. A description of the institutional controls applied will also be included within the report. A summary of compliance with the substantive requirements of 35 IAC 724.219 from the RACR will be summarized in a deed notation that travels in perpetuity with the land. The deed notation will be recorded with the appropriate authority and the Agency.
39	35 IAC 724.220 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.120)	Certification of Completion of Post-Closure Care: Within 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner or operator must submit to the Agency, by registered mail, a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan.	Relevant and Appropriate		The substantive requirements of 35 IAC 724.220 will be met through the submission of routine O&M reports, as well as Five Year Remedy Reviews which will evaluate and document the effectiveness of the remedy and post-closure care.
40	35 IAC 724.242 – 724.251 (Illinois Hazardous Waste Regulations (Subpart H - Financial Requirements for Closure and Post-Closure Care))	These sections require an owner/operator of a regulated unit to provide cost estimates and financial assurance for both closure and post-closure care.	Not Applicable	35 IAC 724.242 – 724.251 are not applicable because the requirements are considered to be administrative requirements, not substantive environmental requirements. RCRA financial responsibility requirements support implementation of RCRA technical standards by ensuring that RCRA facility owners or operators have the financial resources available to address releases and comply with closure and post-closure requirements. CERCLA agreements with PRPs and, ultimately, the Fund itself, achieve essentially the same purpose. (See EPA Publication 9234.2-01/FS-A, July 1991)	

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
41	35 IAC 724.410 a)1 – 4 (Illinois RCRA Hazardous Waste regulations (Subpart N Landfills Closure and Postclosure Care) similar to 40 CFR 264.310(a))	At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to do the following: 1) Provide long-term minimization of migration of liquids through the closed landfill; 2) Function with minimum maintenance; 3) Promote drainage and minimize erosion or abrasion of the cover; 4) Accommodate settling and subsidence so that the cover's integrity is maintained	Item 1 Relevant But Not Appropriate to Site Conditions Items 2-4 Relevant and Appropriate	For Item 1 Engineered covers that provide for long-term minimization of migration of liquids are not appropriate because: • Estimated mass flux of chlorobenzene, 1,4-DCB, and benzene from leaching of unsaturated Site I source materials is small compared to estimated mass flux of these COCs by lateral groundwater flow in the alluvial aquifer underlying Site I (see Figs 6-46 and 6-47 of RI/FS). These results indicate that leachate recovery would only remove a relatively small mass of these COCs at Site I and would therefore not significantly reduce the time to meet remedial goals. • Average estimated waste thicknesses for Sites G, H, and I South are 20 ft, 20 ft, and 25 ft, respectively. Under typical conditions the lower portion of the waste at these sites is below the water table. • From 2008 to the present depth to groundwater at A1-19 (screened in the DHU at Site I) ranged from 4.5 ft bgs in Jun-2011 to 13.3 ft bgs in Feb-2012 and averaged approx. 9.4 ft bgs. This suggests that the depth to the water table at Sites G, H, I South, and L can fluctuate by several feet over time. • Fluctuation of the water table in the SHU is observed in monitoring wells located at and near the Judith Lane Containment Cell. Based on a review of quarterly water level measurements from Mar-2005 to Jun-2010, the average static water level elevation ranged from 391.4 ft MSL in Dec-2006 to 404.3 ft MSL in Jun-2010. • Site I South is located on an active industrial property. The on-going operations at Site I South would make it difficult to install and operate a leachate collection system. • Impacted groundwater at Sauget Area 1 is addressed by MNA and the barrier wall prior to discharge to the Mississippi River. • The areas of potential human health and ecological risk identified at Sites G, H, I South, and L would be addressed by engineered covers included in Alternatives 3, 4, and 5. • No Principal Threat liquids or mobile source materials were identified in the wastes above the water table at the Sauget Area 1 sites.	For Item 2, 3 and 4 The engineered covers in Alternatives 3, 4, and 5, either comply with or are substantially equivalent to 35 IAC 724.410(a). The above referenced Alternatives can be constructed to require minimal maintenance. Periodic maintenance as described in the O&M Plan would be implemented to correct any settling or subsidence occurrences and to facilitate any needed repairs to the cover. Formal Institutional Controls and cover repair and maintenance, as needed, can be easily implemented and enforced.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
42	35 IAC 724.410 b) 1,4,5,and 6 (Illinois RCRA Hazardous Waste regulations (Subpart N Landfills Closure and Postclosure Care) similar to 40 CFR 264.310(b))	After final closure, the owner or operator must comply with all post-closure requirements contained in Sections 724.217 through 724.220, including maintenance and monitoring throughout the post-closure care period (specified in the permit under Section 724.217). After final closure the owner or operator must do the following: 1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events; 4) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of Subpart F of this Part; 5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and 6) Protect and maintain surveyed benchmarks	Relevant and Appropriate		The substantive requirements of 35 IAC 724.410 for post-closure care and use would be addressed in the O&M Plan as part of the CERCLA process. The O&M Plan will provide detail on inspection and maintenance of the final cover, groundwater monitoring and run-on/run-off controls to prevent erosion or damage. The remedy will also be subjected to the Five Year Review process under CERCLA. An assessment of the on-going post closure/O&M activities would be completed at that time and revisions implemented as necessary.
43	35 IAC 722.111 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262.11)	Characterization of generated waste to determine if it is a hazardous waste. Any person who generates a solid waste must determine if that waste is hazardous by evaluation of whether the waste is excluded from hazardous waste regulation; listed under 35 IAC 721, Subpart D; or exhibits one of the hazardous waste characteristics under 35 IAC 721, Subpart C.	Applicable		For any solid waste generated and removed from the Site during remedial action implementation, a hazardous waste determination will be completed and documented. Appropriate measures will be taken for any hazardous waste generated at the Site.
44	40 CFR 761.61 (USEPA TSCA regulations)	Characterization of soils, liquids and decontamination fluids to determine whether they are PCB-remediation waste (as found concentrations of PCBs are 50 ppm or greater).	Applicable		The applicable requirements of this regulation will be addressed by completing and documenting a PCB waste determination pursuant to regulatory requirements for any soils, liquids, and decontamination fluids generated and removed from the Site.
45	35 IAC 728.109 a) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 268.7)	Requires a generator to determine whether generated hazardous waste is prohibited from land disposal, including waste codes, treatment standards and underlying hazardous constituents.	Applicable		The applicable requirements of this regulation will be met. Pooled DNAPL recovery at well BR-I, which is included in Alternatives 3, 4, and 5, is the only remedy component that would involve the removal of any significant quantities of potentially hazardous waste from Sauget Area 1. For any waste streams requiring off-site disposal, a proper waste determination will be completed and documented. This waste determination would include proper waste coding, identifying underlying hazardous constituents (if present) and identify the applicable land ban treatment standards for each waste stream.
46	35 IAC 722.134 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262.34)	Allows for storage of hazardous waste in containers for 90 days or less while alleviating the need to meet all the requirements for a container storage area.	Applicable		The applicable requirements of 35 IAC 722.134 for on-site storage of hazardous wastes will be met during implementation of remedial actions at Sauget Area 1.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
47	35 IAC 724.275 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.175)	Design standards for hazardous waste container storage area.	Relevant and Appropriate		Alternatives 3, 4, and 5 include pooled DNAPL recovery at well BR-I, which involves use of a 500-gallon dual-wall poly tank for storing recovered DNAPL and water. The 500-gallon tank meets and will continue to meet the substantive requirements of 35 IAC 724.275 (e.g., inclusion of secondary containment). Alternative 4 includes a network of leachate collection wells and a pre-treatment system for the recovered leachate. If a hazardous waste container storage area is required during implementation of Alternative 4, the container storage area will be designed to meet the substantive requirements of 35 IAC 724.275.
48	35 IAC 724.271 – 279 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.171 – 179)	Requirements for condition, handling, containment, compatibility, and marking containers used to store or treat hazardous waste or environmental media containing a hazardous waste.	Relevant and Appropriate		Onsite storage of containers of hazardous waste, including the 500-gallon dual-wall poly tank for storage of recovered DNAPL and water at BR-I, will meet the substantive requirements of 35 IAC 724.271-279 (e.g., inclusion of secondary containment). The substantive requirements for condition, handling, containment, compatibility, and marking containers used to store or treat hazardous waste or environmental media containing a hazardous waste will be met.
49	35 IAC 724.297 (Illinois Hazardous Waste regulations for tank systems)	Requirements for closure and post-closure care of a tank system. Applies to owners and operators of facilities that use tank systems for storing or treating hazardous waste.	Applicable		Alternatives 3, 4, and 5 include pooled DNAPL recovery at well BR-I, which involves use of a 500-gallon dual-wall poly tank for storing recovered DNAPL and water. The substantive requirements of 35 IAC 724.297 a) will be met during closure of the 500-gallon tank after completion of DNAPL recovery activities at BR-I.
50	35 IAC 724.328 (Illinois Hazardous Waste regulations for surface impoundments)	Applies to owners and operators that use surface impoundments to treat, store, or dispose of hazardous waste.	Not Applicable or Relevant to Site Conditions	None of the Sauget Area 1 remedies propose the use of surface impoundments to treat, store, or dispose of hazardous waste.	
51	35 IAC 724.653 a) b) d) and e) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.553)	Requirements associated with establishing temporary storage of hazardous waste (hazardous soils, water, and decontamination fluids) in tanks or containers during remediation.	Relevant and Appropriate		If temporary storage of hazardous waste in tanks or containers is required during remediation, it will meet the substantive requirements of 35 IAC 724.653 a) b) d) and e).
52	35 IAC 724.101 g) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.1(g))	Exemption from RCRA tank standards for tanks that are part of a wastewater treatment unit (tanks used to temporarily store hazardous wastewaters sent to a wastewater treatment facility for treatment on- or off-site).	Applicable		The applicable requirements of 35 IAC 724.101 will be met. Any on-site wastewater storage tanks would be exempt from the RCRA tank standards. However, the design and operation of such tanks, if any, would be approved by U.S. EPA under the CERCLA process.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
53	40 CFR 761.65 (USEPA TSCA regulations)	Storage area design and operation requirements for storage of TSCA-regulated PCB-containing wastes for disposal in containers.	Relevant and Appropriate		If storage of TSCA-regulated PCB- containing waste is required, the substantive requirements of 761.65 will be met. The design and operation of such storage units would be reviewed and approved by the U.S. EPA under the CERCLA process.
54	35 IAC 728.140 a) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 268.40(a))	Disposal requirement that all hazardous waste or hazardous waste containing media must meet applicable LDR treatment standards prior to disposal.	Applicable		Any hazardous waste generated and shipped off-site will be handled in accordance with applicable hazardous waste regulations. A hazardous waste determination will be made on any waste material generated to determine its proper classification and whether the material meets LDRs or requires treatment prior to land disposal.
55	35 IAC 722.130 – 134 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262)	Pre-transport requirements requires the generator to package the waste, label each package, mark each package, and placard or offer the initial transporter the appropriate placards in accordance with the U. S. Department of Transportation regulations prior to transporting hazardous waste or offering hazardous waste for transportation off-site.	Applicable		Any hazardous waste generated requiring off-site treatment and/or disposal will be handled in accordance with applicable hazardous waste regulations including packaging and placarding. A hazardous waste determination will be made on any waste material generated to determine its proper classification and the appropriate packaging and placarding requirements.
56	35 IAC 722 and 723 92 IAC 171-178 (Illinois RCRA Hazardous Waste regulations and the Illinois Department of Transportation hazardous material regulations)	For any hazardous waste, all RCRA hazardous waste generator and transporter requirements including administrative requirements (manifests, EPA ID number, etc.) as well as the Illinois Department of Transportation requirement for hazardous materials (which incorporate the US Department of Transportation hazardous material regulations) would apply.	Applicable		Any hazardous waste generated and shipped off-site during implementation of the remedy will be handled in accordance with applicable hazardous waste regulations. A hazardous waste determination will be made on any waste material generated to determine its proper classification, manifesting and DOT shipping requirements that would apply.
57	35 IAC 742 (Illinois Tiered Approach to Corrective Action Objectives)	Sets forth procedures for evaluating the risk to human health posed by environmental conditions and developing remediation objectives that achieve acceptable risk levels based upon site-specific conditions.	To Be Considered		Potential risks to human health posed by site-specific environmental conditions were evaluated and documented in the Human Health Risk Assessment (HHRA) completed during the RI. The identified risks were considered and accounted for during development of the remedial action objectives presented in the FS.
58	35 IAC 101-104 (Illinois Construction and Demolition Landfill Citing Restrictions)	Requirements for landfilling construction and demolition debris.	Not Applicable or Relevant to Site Conditions	None of the potential Alternatives for Sauget Area 1 propose the landfilling of construction or demolition debris.	
59	35 IAC 1100 (Illinois Clean Construction or Demolition Debris Fill Operations)	Applies to all clean construction or demolition debris (CCDD) fill operations that are required to be permitted in a current or former quarry, mine or other excavation.	Not Applicable or Relevant to Site Conditions	Construction or demolition debris will not be used for fill or cover materials at Sauget Area 1.	

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
60	35 IAC 306.302 (Illinois Performance Criteria – Expansion of Combined Sewer Service)	The expansion of existing or establishment of new combined sewer service areas is prohibited, except when approved by Agency in accordance with the provisions in this section.	Not Applicable or Relevant to Site Conditions	Sauget Area 1 remedial actions would not involve expansion of existing or establishment of new combined sewer service areas.	
61	35 IAC 307.1101 (Illinois sewer discharge criteria)	Prohibition against discharge of certain types of pollutants into a Publicly Owned Treatment Works.	Relevant and Appropriate		Any water discharged to the local POTW (the American Bottoms Regional Wastewater Treatment Facility) would require approval from the POTW. Such discharge approval would have limitations in place to meet 307.1101.
62	35 IAC 807 Subpart C (Illinois Sanitary Landfills)	Final cover (807.305(a)); Prohibitions against open burning (807.311), air pollution (807.312), water pollution (807.313) and waters of the state (807.315); and, requirements for implementation of closure requirements (807.318).	Not Applicable. Relevant but Not Appropriate to Site Conditions	The Sauget Area 1 sites were not operated as a permitted municipal solid waste landfill (MSWLF). While sanitary landfill requirements are relevant Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	
63	35 IAC 807 Subpart E (Illinois Closure and Post-Closure Care)	All sections	Not Applicable. Relevant but Not Appropriate to Site Conditions	The Sauget Area 1 sites were not operated as a permitted municipal solid waste landfill (MSWLF). While sanitary landfill requirements are relevant Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	
64	35 IAC 807 Subpart F (Financial Assurance for Closure and Post-closure care)	All sections	Not Applicable. Relevant but Not Appropriate to Site Conditions	The Sauget Area 1 sites were not operated as a permitted municipal solid waste landfill (MSWLF). While sanitary landfill requirements are relevant Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	
65	35 IAC 809 (Illinois Special Waste Hauling regulations)	For wastes that meet the definition of a Special Waste (35 IAC 808) in Illinois, the special waste regulations, including administrative requirements, relating to manifesting and transport would apply.	Applicable		The applicable requirements of this regulation will be met. Any special waste generated and transported off-site will be handled in accordance with special waste handling regulations, including the administrative requirements related to manifesting and transportation.
66	35 IAC 811.107 (New Solid Waste Landfills - Operating Standards)	New landfills must not accept solid waste from vehicles that do not utilize devices such as cover or tarpaulins to control litter. Trucks exiting or entering the site(s) with solid waste must be tarped.	Not Applicable. Relevant but Not Appropriate to Site Conditions	While sanitary landfill requirements are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-1
ARAR Classification and Demonstration of Compliance

Item No.	Potential ARAR	Description of Requirements	Classification	Rationale for Classification	Demonstration of Compliance
67	35 IAC 811.111 (New Solid Waste Landfills Post-closure Maintenance)	This section describes post-closure maintenance activities including the specification of inspection frequencies; filling of rills, gullies or crevices; repair of eroded and scoured drainage channels; filling of holes and depressions; revegetation of reworked surfaces or eroded vegetation of 100 sq ft; and, identification of planned uses of the property.	Not Applicable. Relevant but Not Appropriate to Site Conditions	While sanitary landfill requirements are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	
68	35 IAC 811.314 (New Solid Waste Landfill - Final Cover System)	This section provides standards for low permeability and final protective layers of a new solid waste landfill.	Not Applicable. Relevant but Not Appropriate to Site Conditions	While sanitary landfill requirements are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	
69	35 IAC 811.319 (New Solid Waste Landfill - Groundwater Monitoring Program)	Requires groundwater monitoring to continue for 15 years after closure, or in the case of MSWLF units, a minimum of 30 years after closure. Quarterly monitoring is required for 5 years and semi-annual after that.	Not Applicable. Relevant but Not Appropriate to Site Conditions	While sanitary landfill requirements are relevant to Sauget Area 1, they are not appropriate because the hazardous waste landfill requirements of 35 IAC 724 are better suited to site conditions.	
70	765 ILCS 122/1 et seq. Illinois' Uniform Environmental Covenants Act.	An owner or owners of real property may voluntarily enter into an environmental covenant, as a grantor of an interest in the real property, with an agency and, if appropriate, one or more holders. No owner, agency, or other person shall be required to enter into an environmental covenant as part of an environmental response project; provided, however, that (i) failure to enter into an environmental covenant may result in disapproval of the environmental response project; and (ii) once the owner, agency, or other person assumes obligations in an environmental covenant they must comply with those obligations of the environmental covenant in accordance with this Act.	To Be Considered		The requirements of 765 ILCS 122/1 will be met through the development of institutional controls.

Note: ARAR Classifications include Applicable, Not Applicable, Relevant and Appropriate, Relevant But Not Appropriate, To Be Considered, and Waived.

Alternatives

Alternative 1: No Action
Alternative 2: Containment Cell O&M; MNA; and Institutional Controls
Alternative 3: Capping Sites G, H, and I South; Soil Cover at Site L; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 4: Capping Sites G, H, and I South; Soil Cover at Site L; Leachate Control at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls
Alternative 5: Soil or Crushed Rock Covers at Sites G, H, I South and L; Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South; Utility Relocation; Pooled DNAPL Recovery at BR-I; Containment Cell O&M; MNA; and Institutional Controls

Table 13-2
Carbon Footprint Analysis for Import of Fill Material for Alternatives 3, 4, and 5

Alternative	Site	Abbreviated Description	Estimated Volume of Imported Cover Mat'ls (CY)	Estimated Number of Truck Loads (20 CY each)	Estimated Truck Miles (12 mile avg cycle)	Estimated Fuel Consumption (gallons)	Estimated CO_2 Emissions (lbs)
3 and 4	G	RCRA Subtitle C Cover	19,000				
	G West	Asphalt Cover	800				
	H	RCRA Subtitle C Cover	40,500				
	I South	RCRA Subtitle C Cover	73,100				
	L	RCRA Subtitle C Cover	7,200				
		Totals for Alternatives 3 and 4:	140,600	7,030	84,360	10,545	**234,099**
5	G	35 IAC 807 Cover (soil)	17,200				
	G West	Asphalt Cover	800				
	H	35 IAC 807 Cover (soil)	32,800				
	I South	35 IAC 807 Cover (crushed stone)	35,100				
	L	35 IAC 807 Cover (soil)	7,200				
		Totals for Alternative 5:	93,100	4,655	55,860	6,983	**155,012**

Notes:
1) Imported materials for certain alternatives include various geosynthetics and other construction materials which have not been considered in this analysis.
2) Carbon emissions associated with on-site equipment (placement, spreading, compaction) have not been considered.
3) Fuel consumption based on estimated 8 miles per gallon.
4) Carbon dioxide emissions based on 22.2 pounds per gallon of diesel.