

Table of Contents

EXECUTIVE SUMMARY xxix

The West Valley Demonstration Project was established to show that technologies could be developed to safely clean up and solidify radioactive wastes.

INTRODUCTION xxxvii

An environmental surveillance and monitoring program was instituted to ensure that operations at the Project would not affect the public's health and safety or the environment.

ENVIRONMENTAL COMPLIANCE SUMMARY: CALENDAR YEAR 1992 xlv

Project activities are governed by federal and state regulations, Department of Energy Orders, and regulatory compliance agreements.

ENVIRONMENTAL COMPLIANCE SUMMARY: FIRST QUARTER 1993 liii

All federal and state regulations and standards are integrated into the Project's compliance program.

CHAPTER 1. ENVIRONMENTAL MONITORING PROGRAM INFORMATION

The radionuclides monitored at the Project are those that might produce relatively higher doses or that are most abundant in air and water effluents discharged from the site.

Introduction	1-1
High-Level Waste Treatment	1-1
Radiation and Radioactivity	1-2
Measurement of Radioactivity	1-3
Measurement of Dose	1-3
Environmental Monitoring Program Overview	1-5
1992 Activities at the West Valley Demonstration Project	1-6
1992 National Environmental Policy Act (NEPA) Activities	1-7
1992 Changes in the Environmental Monitoring Program	1-8

Table of Contents

Resource Conservation and Recovery Act (RCRA) Reports	1-8
Toxic Chemical Inventory	1-9
On-Site Environmental Training	1-9
Self-Assessment	1-10

CHAPTER 2. ENVIRONMENTAL MONITORING

The West Valley Demonstration Project's environmental monitoring program includes monitoring and sampling of liquids and air effluents both on- and off-site. Deer, fish, milk, hay, and various fruits and vegetables are also sampled.

Pathway Monitoring	2-1
Sampling Codes	2-1
Air Sampler Location and Operation	2-2
Water Sampler Location and Operation	2-2
Radiological Monitoring	2-2
Air Monitoring	2-2
Surface Water and Sediment Monitoring	2-11
Radioactivity in the Food Chain	2-16
Direct Environmental Radiation Monitoring	2-18
Meteorological Monitoring	2-23
Special Monitoring	2-24
Nonradiological Monitoring	2-26
Air Monitoring	2-26
Surface Water Monitoring	2-26

Table of Contents

CHAPTER 3. GROUNDWATER MONITORING

Groundwater is routinely sampled for radiological and chemical parameters both inside the WVDP site security fence and around the site to determine and document any effect of site activities on groundwater quality.

Geology of the West Valley Site	3-1
Surface Water Hydrology	3-2
Hydrogeology of the West Valley Site	3-2
Groundwater Monitoring Program Overview	3-5
Groundwater Sampling Parameters	3-11
Sampling Methodology	3-11
Groundwater Monitoring Results	3-14
Results of Contamination Indicator Monitoring of the Sand and Gravel Unit	3-17
Results of Contamination Indicator Monitoring of the Till-Sand Unit	3-20
Results of Contamination Indicator Monitoring of the Unweathered Lavery Till Unit	3-21
Results of Contamination Indicator Monitoring of the Lacustrine Unit	3-22
Results of Contamination Indicator Monitoring of the Weathered Lavery Till Unit	3-24
Results of Monitoring of Site Groundwater for Volatile Organic Compounds	3-25
Long-term Trends of Gross Beta and Tritium at Selected Groundwater Monitoring Locations	3-27
Groundwater Quality Parameters	3-28
Sampling Site Groundwater for EPA Interim Drinking Water Quality Parameters	3-28
Discussion of Site Groundwater Monitoring	3-29
Off-Site Groundwater Monitoring Program	3-29

Table of Contents

CHAPTER 4. RADIOLOGICAL DOSE ASSESSMENT

Because of the difficulty of measuring the small amounts of radionuclides emitted from the site, computer models are used to calculate dose estimates. Estimates are based on concentrations of radionuclides measured in air and water collected from on-site effluent points.

Introduction	4-1
Radioactivity	4-1
Radiation Dose	4-2
Units of Measurement	4-2
Sources of Radiation	4-2
Health Effects of Low-Level Radiation	4-3
Exposure Pathways	4-3
Dose Assessment Methodology	4-4
Airborne Releases	4-6
Waterborne Releases	4-6
Biological Compartment Concentrations	4-7
Predicted Dose from Airborne Emissions	4-8
Predicted Dose from Waterborne Releases	4-9
Predicted Dose from all Pathways	4-9
Risk Assessment	4-10
Summary	4-12

Table of Contents

CHAPTER 5. QUALITY ASSURANCE

The West Valley Demonstration Project's quality assurance program certifies that sample collection and analyses are consistent, precise, and accurate.

Organizational Responsibilities	5-1
Program Design	5-1
Procedures	5-2
Quality Control in the Field	5-2
Quality Control in the Laboratory	5-3
Personnel Training	5-5
Record Keeping	5-5
Chain-of-Custody Procedures	5-5
Audits	5-6
Performance Reporting	5-6
Independent Data Verification	5-6
Analytical Methods Evaluation	5-6
Self-Assessments	5-7

Table of Contents

APPENDIX A

1992 Environmental Monitoring Program

APPENDIX B

Regulations and Standards

APPENDIX C-1

Summary of Water and Sediment Monitoring Data

APPENDIX C-2

Summary of Air Monitoring Data

APPENDIX C-3

Summary of Biological Data

APPENDIX C-4

Summary of Direct Radiation Monitoring Data

APPENDIX C-5

Summary of Nonradiological Monitoring Data

APPENDIX C-6

Summary of Meteorological Data

APPENDIX D

Summary of Quality Assurance Crosscheck Analyses

APPENDIX E

Summary of Groundwater Monitoring Data

REFERENCES

GLOSSARY

ACRONYMS

UNITS OF MEASURE

DISTRIBUTION

ACKNOWLEDGMENTS

Table of Contents

List of Figures

INTRODUCTION

1-1. Location of the Western New York Nuclear Service Center	xxxviii
--	---------

CHAPTER 2. ENVIRONMENTAL MONITORING

2-1. Location of On-Site Air Effluent Points	2-3
2-2. Location of Perimeter Air Samplers	2-4
2-3. Sampling Locations for On-Site Surface Water	2-5
2-4. Location of Off-Site Surface Water Samplers	2-6
2-5. Five-Year Trends of Gross Alpha and Gross Beta at the Main Stack Sampling Location (ANSTACK)	2-7
2-6. Five-Year Trends of Gross Alpha and Gross Beta at the Rock Springs Road Sampling Location (AFRSPRD)	2-9
2-7. Five-Year Trends of Gross Alpha, Gross Beta, and Tritium at Sampling Location WNSP006	2-14
2-8. Five-Year Trends of Gross Alpha, Gross Beta, and Tritium at Sampling Location WFFELBR	2-15
2-9. Annual Averages of Cesium-137 in Stream Sediment for Two Locations Upstream and Three Locations Downstream of the WVDP	2-15
2-10. Comparison of Cesium-137 with Naturally Occurring Potassium-40 Concentrations at Downstream Sampling Location SFTCSED	2-16
2-11. Near-Site Biological Sampling Points	2-19
2-12. Location of Off-Site Thermoluminescent Dosimetry (TLD)	2-21
2-13. Location of On-Site Thermoluminescent Dosimetry (TLD)	2-22

Table of Contents

List of Figures

2-14. Trend of Environmental Radiation Levels	2-23
2-15. SPDES Monitoring Points	2-27
CHAPTER 3. GROUNDWATER MONITORING	
3-1. Geologic Cross Section through the North Plateau	3-2
3-2. Geologic Cross Section through the South Plateau	3-3
3-3. Location of On-Site Groundwater Monitoring Network Wells	3-6
3-4. Off-Site Groundwater Monitoring Points	3-15
3-5. Sample Box-and-Whisker Plot	3-17
3-6. Sample Pie Chart	3-17
Groundwater Samples from the Sand and Gravel Unit	
3-7. <i>pH</i>	3-30
3-8. <i>Conductivity</i>	3-30
3-9. <i>Total Organic Carbon</i>	3-31
3-10. <i>Total Organic Halogens</i>	3-31
3-11. <i>Gross Alpha</i>	3-32
3-12. <i>Gross Beta</i>	3-32
3-12a. <i>Gross Beta (expanded scale)</i>	3-33
3-12b. <i>Gross Beta (expanded scale of Fig.3-12a)</i>	3-33
3-13. <i>Tritium Activity</i>	3-34
3-13a. <i>Tritium Activity (expanded scale)</i>	3-34

Table of Contents

List of Figures

Groundwater Samples from the Till-Sand Unit

<i>3-14. pH</i>	3-35
<i>3-15. Conductivity</i>	3-35
<i>3-16. Total Organic Carbon</i>	3-35
<i>3-17. Total Organic Halogens</i>	3-35
<i>3-18. Gross Alpha</i>	3-36
<i>3-19. Gross Beta</i>	3-36
<i>3-20. Tritium Activity</i>	3-36

Groundwater Samples from the Unweathered Lavery Till Unit

<i>3-21. pH</i>	3-37
<i>3-22. Conductivity</i>	3-37
<i>3-23. Total Organic Carbon</i>	3-37
<i>3-24. Total Organic Halogens</i>	3-37
<i>3-25. Gross Alpha</i>	3-38
<i>3-26. Gross Beta</i>	3-38
<i>3-27. Tritium Activity</i>	3-38

Groundwater Samples from the Lacustrine Unit

<i>3-28. pH</i>	3-39
<i>3-29. Conductivity</i>	3-39
<i>3-30. Total Organic Carbon</i>	3-39
<i>3-31. Total Organic Halogens</i>	3-39
<i>3-32. Gross Alpha</i>	3-40

Table of Contents

List of Figures

3-33. <i>Gross Beta</i>	3-40
3-34. <i>Tritium Activity</i>	3-40
Groundwater Samples from the Weathered Lavery Till Unit	
3-35. <i>pH</i>	3-41
3-36. <i>Conductivity</i>	3-41
3-37. <i>Total Organic Carbon</i>	3-41
3-38. <i>Total Organic Halogens</i>	3-41
3-39. <i>Gross Alpha</i>	3-42
3-40. <i>Gross Beta</i>	3-42
3-41. <i>Tritium Activity</i>	3-42
3-41a. <i>Tritium Activity (expanded scale)</i>	3-42
3-42. Three-Year Trends of 1,1-DCA and 1,1,1-TCA at Selected Groundwater Locations	3-43
3-42a. Two-Year Trends of Dichlorodifluoromethane (DCDFMeth) at Selected Groundwater Locations	3-43
3-43. Seven-Year Trends of Averaged Gross Beta Activity at Selected Locations in the Sand and Gravel Unit	3-44
3-43a. Two-Year Trends of Gross Beta Activity for Selected New Wells	3-44
3-44. Seven-Year Trends of Averaged Tritium Activity at Selected Locations in the Sand and Gravel Unit	3-45
3-44a. Two-Year Trends of Tritium Activity for Selected New Wells	3-45

Table of Contents

List of Figures

CHAPTER 4. RADIOLOGICAL DOSE ASSESSMENT

4-1. Comparison of Annual Background Radiation Dose to the Dose from 1992 WVDP Effluents	4-3
4-2. Effective Dose Equivalent from Liquid and Airborne Effluents to a Maximally Exposed Individual Residing near the WVDP	4-10
4-3. Collective Effective Dose Equivalent from Liquid and Airborne Effluents to the Population Residing within 80 Kilometers of the WVDP	4-12

APPENDIX A. 1992 ENVIRONMENTAL MONITORING PROGRAM

A-1. Location of On-Site Air Effluent Points	A-54
A-2. Sampling Locations for On-Site Surface Water and Soil	A-55
A-3. Location of On-Site Groundwater Monitoring Network Wells	A-56
A-4. Location of Off-Site Surface Water Samplers and Sediment Collection	A-57
A-5. Near-Site Drinking Water and Biological Sample Points	A-58
A-6. Location of Perimeter Air Samplers	A-59
A-7. Location of Off-Site Thermoluminescent Dosimetry (TLD)	A-60
A-8. Location of On-Site Thermoluminescent Dosimetry (TLD)	A-61
A-9. Environmental Sample Points more than 5 Kilometers from the WVDP Site	A-62

Table of Contents

List of Figures

APPENDIX C-4. SUMMARY OF DIRECT RADIATION MONITORING DATA

C-4.1. 1992 Average Quarterly Gamma Exposure Rates around the West Valley Demonstration Project Site	C4-4
--	------

C-4.2. 1992 Average Quarterly Gamma Exposure Rates on the West Valley Demonstration Project Site	C4-4
--	------

APPENDIX C - 5. SUMMARY OF NONRADIOLOGICAL MONITORING DATA

C-5.1. SPDES Monitoring Points	C5-5
--	------

Parameters Measured at SPDES Outfalls – 1992

<i>C-5.2. Biochemical Oxygen Demand-5: Outfall 001</i>	<i>C5-6</i>
--	-------------

<i>C-5.3. Biochemical Oxygen Demand-5: Outfalls 007 and 008</i>	<i>C5-6</i>
---	-------------

<i>C-5.4. Suspended Solids: Outfall 001</i>	<i>C5-6</i>
---	-------------

<i>C-5.5. Suspended Solids: Outfall 007</i>	<i>C5-7</i>
---	-------------

<i>C-5.6. Settleable Solids: Outfall 001</i>	<i>C5-7</i>
--	-------------

<i>C-5.7. Settleable Solids: Outfall 007</i>	<i>C5-7</i>
--	-------------

<i>C-5.8. Ammonia: Outfall 001</i>	<i>C5-8</i>
--	-------------

<i>C-5.9. Ammonia: Outfall 007</i>	<i>C5-8</i>
--	-------------

<i>C-5.10. Metals (Aluminum): Outfall 001</i>	<i>C5-8</i>
---	-------------

<i>C-5.11. Metals (Zinc): Outfall 001</i>	<i>C5-9</i>
---	-------------

<i>C-5.12. Metals (Arsenic): Outfall 001</i>	<i>C5-9</i>
--	-------------

<i>C-5.13. Cyanide: Outfall 001</i>	<i>C5-9</i>
---	-------------

<i>C-5.14. Metals (Iron): Outfall 001</i>	<i>C5-10</i>
---	--------------

<i>C-5.15. Metals (Iron): Outfalls 007 and 008</i>	<i>C5-10</i>
--	--------------

Table of Contents

List of Figures

<i>C-5.16. Metals (Copper): Outfall 001</i>	<i>C5-10</i>
<i>C-5.17. Metals (Cadmium): Outfall 001</i>	<i>C5-11</i>
<i>C-5.18. Metals (Chromium, VI): Outfall 001</i>	<i>C5-11</i>
<i>C-5.19. Metals (Lead): Outfall 001</i>	<i>C5-11</i>
<i>C-5.20. Nitrate (NO₃-N): Outfall 001</i>	<i>C5-12</i>
<i>C-5.21. Nitrite (NO₂-N): Outfall 001</i>	<i>C5-12</i>
<i>C-5.22. Sulfate-S: Outfall 001</i>	<i>C5-12</i>
<i>C-5.23. Oil and Grease: Outfall 001</i>	<i>C5-13</i>
<i>C-5.24. pH: Outfall 001</i>	<i>C5-13</i>
<i>C-5.25. pH: Outfalls 007 and 008</i>	<i>C5-13</i>
<i>C-5.26. Discharge Rate: Outfall 001</i>	<i>C5-14</i>
<i>C-5.27. Discharge Rate: Outfall 007</i>	<i>C5-14</i>
<i>C-5.28. Discharge Rate: Outfall 008</i>	<i>C5-14</i>
<i>C-5.29. Flow-weighted Averages: Ammonia</i>	<i>C5-15</i>
<i>C-5.30. Flow-weighted Averages: Biochemical Oxygen Demand-5</i>	<i>C5-15</i>
<i>C-5.31. Flow-weighted Averages: Iron</i>	<i>C5-15</i>
<i>C-5.32. Nickel: Outfall 001</i>	<i>C5-16</i>
<i>C-5.33. Trichlorofluoromethane: Outfall 001</i>	<i>C5-16</i>
<i>C-5.34. 3,3-Dichlorobenzidine: Outfall 001</i>	<i>C5-16</i>
<i>C-5.35. Tributyl Phosphate: Outfall 001</i>	<i>C5-17</i>
<i>C-5.36. Vanadium: Outfall 001</i>	<i>C5-17</i>
<i>C-5.37. Dichlorodifluoromethane: Outfall 001</i>	<i>C5-17</i>

Table of Contents

List of Figures

APPENDIX C-6. SUMMARY OF METEOROLOGICAL DATA

C-6.1. Wind Frequency Rose: 10-meter	C6-3
C-6.2. Wind Frequency Rose: 60-meter	C6-4
C-6.3. 1992 Weekly Rainfall	C6-5
C-6.4. 1992 Cumulative Rainfall	C6-5

APPENDIX E. SUMMARY OF GROUNDWATER MONITORING DATA

E-1. 1992 Groundwater Quality Plots for the Sand and Gravel Unit Wells	E-82
E-2. 1992 Groundwater Quality Plots for the Till-Sand Unit Wells	E-90
E-3. 1992 Groundwater Quality Plots for the Unweathered Lavery Till Unit Wells	E-92
E-4. 1992 Groundwater Quality Plots for the Lacustrine Unit Wells	E-96
E-5. 1992 Groundwater Quality Plots for the Weathered Lavery Till Unit Wells	E-98

Table of Contents

List of Tables

CHAPTER 2. ENVIRONMENTAL MONITORING

2-1. 1992 Gross Alpha Activity at Off-Site and Perimeter Ambient Air Sampling Locations	2-10
2-2. 1992 Gross Beta Activity at Off-Site and Perimeter Ambient Air Sampling Locations	2-10
2-3. 1992 Gross Alpha Activity at Off-Site Surface Water Sampling Locations	2-13
2-4. 1992 Gross Beta Activity at Off-Site Surface Water Sampling Locations	2-13

CHAPTER 3. GROUNDWATER MONITORING

3-1. Groundwater Monitoring Network: Super Solid Waste Management Units	3-7
3-2. 1992 Schedule for Expanded Groundwater Monitoring Network	3-12
3-3. Schedule of Groundwater Sampling and Analysis	3-13

CHAPTER 4. RADIOLOGICAL DOSE ASSESSMENT

4-1. Potential Exposure Pathways under Existing WVDP Conditions	4-5
4-2. Summary of Annual Effective Dose Equivalents to an Individual and Population from WVDP Effluents	4-11

Table of Contents

List of Tables

APPENDIX B. REGULATIONS AND STANDARDS

B-1. Department of Energy Radiation Protection Standards and Concentration Guides . . .	B-3
B-2. Environmental Standards and Regulations	B-4
B-3. West Valley Demonstration Project Environmental Permits: Calendar Year 1992 . . .	B-5

APPENDIX C-1. SUMMARY OF WATER AND SEDIMENT MONITORING DATA

C-1.1. Total Radioactivity of Liquid Effluents Released from Lagoon 3 in 1992	C1-3
C-1.2. Comparison of 1992 Lagoon 3 Liquid Effluent Radioactivity Concentrations with Department of Energy Guidelines	C1-4
1992 Radioactivity Concentrations in Surface Water:	
<i>C-1.3. Upstream of the WVDP at Fox Valley</i>	<i>C1-5</i>
<i>C-1.4. Downstream of the WVDP at Thomas Corners</i>	<i>C1-5</i>
<i>C-1.5. Monthly Concentrations Downstream of the WVDP at Frank's Creek</i>	<i>C1-6</i>
<i>C-1.6. Quarterly Concentrations Downstream of the WVDP at Frank's Creek</i>	<i>C1-6</i>
<i>C-1.7. Monthly Concentrations Downstream of Buttermilk Creek at Felton Bridge</i>	<i>C1-7</i>
C-1.8. 1992 Results of Sampling of Potable Well Water around the WVDP	C1-7
C-1.9. 1992 Radioactivity Concentrations in Stream Sediments around the WVDP	C1-8
C-1.10. 1992 Radioactivity Concentrations in Surface Soil Collected at Air Sampling Stations around the WVDP	C1-8
C-1.11. 1992 Water Quality Concentrations in Surface Water at Locations WFBCBKG and WNSP006	C1-9

Table of Contents

List of Tables

APPENDIX C-2. SUMMARY OF AIR MONITORING DATA

1992 Airborne Radioactive Effluent:

<i>C-2.1. Monthly Totals from the Main Ventilation Stack</i>	<i>C2-3</i>
<i>C-2.2. Quarterly Totals from the Main Ventilation Stack</i>	<i>C2-3</i>
<i>C-2.3. Comparison of 1992 Main Stack Exhaust Radioactivity Concentrations with Department of Energy Guidelines</i>	<i>C2-4</i>

1992 Airborne Radioactive Effluent:

<i>C-2.4. Monthly Totals from the Cement Solidification System Ventilation Stack</i>	<i>C2-5</i>
<i>C-2.5. Quarterly Totals from the Cement Solidification System Ventilation Stack</i>	<i>C2-5</i>
<i>C-2.6. Monthly Totals from the Contact Size-Reduction Facility Ventilation Stack</i>	<i>C2-6</i>
<i>C-2.7. Quarterly Totals from the Contact Size-Reduction Facility Ventilation Stack</i>	<i>C2-6</i>
<i>C-2.8. Monthly Totals from the Supernatant Treatment System Ventilation Stack</i>	<i>C2-7</i>
<i>C-2.9. Quarterly Totals from the Supernatant Treatment System Ventilation Stack</i>	<i>C2-7</i>
<i>C-2.10. Monthly Totals from the Supercompactor Ventilation Stack</i>	<i>C2-8</i>
<i>C-2.11. Quarterly Totals from the Supercompactor Ventilation Stack</i>	<i>C2-8</i>

1992 Radioactivity Concentrations in Airborne Particulates at the:

<i>C-2.12 Fox Valley Air Sampler</i>	<i>C2-9</i>
<i>C-2.13 Rock Springs Road Air Sampler</i>	<i>C2-9</i>
<i>C-2.14. Route 240 Air Sampler</i>	<i>C2-10</i>
<i>C-2.15. Springville Air Sampler</i>	<i>C2-10</i>

Table of Contents

List of Tables

<i>C-2.16. Thomas Corners Road Air Sampler</i>	<i>C2-11</i>
<i>C-2.17. West Valley Air Sampler</i>	<i>C2-11</i>
<i>C-2.18. Great Valley Air Sampler</i>	<i>C2-12</i>
<i>C-2.19. Dunkirk Air Sampler</i>	<i>C2-12</i>
<i>C-2.20. Dutch Hill Air Sampler</i>	<i>C2-13</i>
<i>C-2.21. Radioactivity in Fallout in 1992</i>	<i>C2-14</i>
<i>C-2.22. pH of Precipitation Collected in Fallout Pots in 1992</i>	<i>C2-15</i>

APPENDIX C-3. SUMMARY OF BIOLOGICAL DATA

C-3.1. 1992 Radioactivity Concentrations in Milk	C3-3
C-3.2. 1992 Radioactivity Concentrations in Meat	C3-4
C-3.3. 1992 Radioactivity Concentrations in Food Crops	C3-5
C-3.4. 1992 Radioactivity Concentrations in Fish Flesh from Cattaraugus Creek	C3-6

APPENDIX C-4. SUMMARY OF DIRECT RADIATION MONITORING DATA

C-4.1. Summary of 1992 Quarterly Averages of TLD Measurements	C4-3
---	------

APPENDIX C-5. SUMMARY OF NONRADIOLOGICAL MONITORING DATA

C-5.1. West Valley Demonstration Project State Pollutant Discharge Elimination System (SPDES) Sampling Program	C5-3
C-5.2. West Valley Demonstration Project 1992 SPDES Noncompliance Episodes	C5-4

Table of Contents

List of Tables

APPENDIX C-6. SUMMARY OF METEOROLOGICAL DATA

C-6.1. 1992 Site Rainfall Collection Data	C6-6
---	------

APPENDIX D. SUMMARY OF QUALITY ASSURANCE CROSSCHECK ANALYSES

Comparison of Radiological Concentrations in Crosscheck Samples between the West Valley Demonstration Project and the:

<i>D-1. Environmental Measurements Laboratory Quality Assessment Program 36</i>	<i>D-3</i>
<i>D-2. Environmental Measurements Laboratory Quality Assessment Program 37</i>	<i>D-4</i>
<i>D-3. U.S. EPA's Environmental Monitoring Systems Laboratory</i>	<i>D-5</i>

Comparison of Water Quality Parameters in Crosscheck Samples between the West Valley Demonstration Project and the:

<i>D-4. U.S. EPA 1992 Discharge Monitoring Report Quality Assurance Program #11 for the NPDES</i>	<i>D-7</i>
<i>D-5. New York State Department of Health in 1992</i>	<i>D-8</i>
D-6. Comparison of the West Valley Demonstration Project's Thermoluminescent Dosimeters to the Co-located Nuclear Regulatory Commission TLDs in 1992	D-9

APPENDIX E. SUMMARY OF GROUNDWATER MONITORING DATA

E-1. Contamination Indicator Parameters for the Sand and Gravel Unit	E-3
E-2. Contamination Indicator Parameters for the Till-Sand Unit	E-12
E-3. Contamination Indicator Parameters for the Unweathered Lavery Till Unit	E-14
E-4. Contamination Indicator Parameters for the Lacustrine Unit	E-19

Table of Contents

List of Tables

E-5. Contamination Indicator Parameters for the Weathered Lavery Till Unit	E-22
E-6. Groundwater Quality Parameters for the Sand and Gravel Unit	E-26
E-7. Groundwater Quality Parameters for the Till-Sand Unit	E-32
E-8. Groundwater Quality Parameters for the Unweathered Lavery Till Unit	E-34
E-9. Groundwater Quality Parameters for the Lacustrine Unit	E-38
E-10. Groundwater Quality Parameters for the Weathered Lavery Till Unit	E-40
E-11. Typical Practical Quantitation Limits for Appendix IX Volatile Organic Compounds	E-44
E-12. 1,1,1-Trichloroethane, 1,1-Dichloroethane, and Dichlorodifluoromethane for Selected Groundwater Monitoring Locations	E-45
E-13. Drinking Water Quality Parameters for the Sand and Gravel Unit	E-46
E-14. Drinking Water Quality Parameters for the Till-Sand Unit	E-60
E-15. Drinking Water Quality Parameters for the Unweathered Lavery Till Unit	E-64
E-16. Drinking Water Quality Parameters for the Lacustrine Unit	E-72
E-17. Drinking Water Quality Parameters for the Weathered Lavery Till Unit	E-76