Niagara Falls Storage Site (NFSS)
Remedial Investigation Report (RIR) Addendum
Appendices (Part A)

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RIR Addendum Photograph Log

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Photograph 2. Advancing augers at TWP925 (EU 1).

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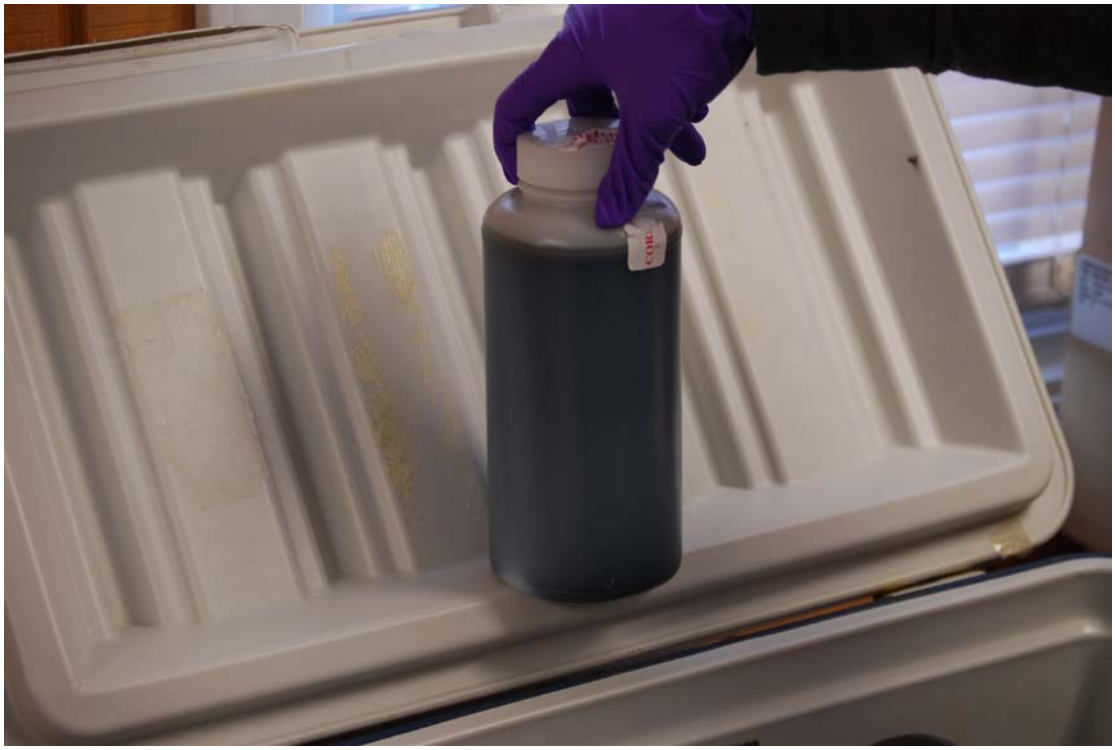


Photograph 34. TWP933 Screening Groundwater Sample (EU 4).

APPENDIX 3-B

RIR Addendum Boring and Well Logs

US Army Corps of Engineers

SAIC From Science to Solutions

TWP 921

(Page 1 of 1)

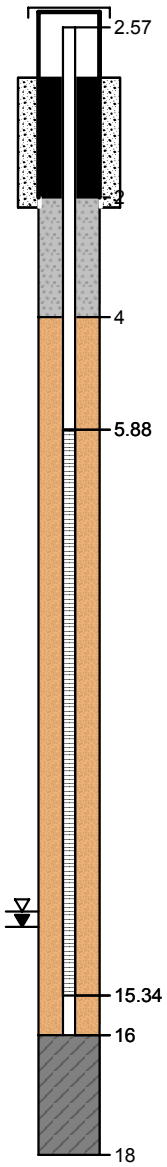
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/23/09
End Date	: 12/22/09
Northing Coord.	: 1173286.2
Easting Coord.	: 1040038.0
Ground Surface Elev.	: 317.31
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.6') CLAY (CL); trace medium Sand; trace Gravel to 30mm, subrounded; dry; medium plastic; roots to 0.6' bgs; 10YR4/3 brown to 10YR3/3 dark brown.	317
1			316
2		(0.6' - 2.3') coarse grained subrounded SAND (SP); some Gravel 12mm to 70mm, subrounded, limestone; trace Clay; trace fine to medium Sand; damp, very moist at 2.0-2.3 interval; medium dense; 10YR3/4 dark yellowish brown.	315
3			314
4			313
5		(2.3' - 6.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 20mm, subrounded; dry; stiff; medium plastic; 10YR4/4 dark yellowish brown. 4'-6' interval vertical fractures backfilled with 10YR5/1 gray SILT.	312
6			311
7			310
8		(6.0' - 16.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 20mm, subrounded; damp to dry; medium stiff to stiff; medium plastic to plastic; 10YR4/3 brown. Softer with depth Trace Gravel to 50mm, subrounded (10' - 12') Plastic to v. plastic (12' - 14') v. soft, v. plastic, damp to moist	309
9			308
10			307
11			306
12			305
13			304
14			303
15			302
16		(16.0' - 17.0') CLAY (CL); trace medium Sand; trace Gravel to 20mm, subrounded; moist; 10YR5/1 gray.	301
17		(17.0' - 18.0') No Recovery	300
18		Bottom of Boring 18.0' bgs	299
19			298
20			

Well: MW 921
TOC Elev.: 319.88



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	921SS0.0-0.5-0001 921SS0.0-0.5-9002 11/23/09 1225 PID 0 Headspace 0 ppm alpha 0 beta 290 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	16/19/15	1.5/1.5		PID 0 Headspace 0.2 ppm alpha 1 beta 225 cpm
Concrete 0.0 - 2.0 ft bgs	9/11/16/25	1.5/2.0		PID 0 Headspace 0 ppm alpha 2 beta 276 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 2.0 - 4.0 ft bgs	5/14/18/24	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 261 cpm
Riser 2" ID PVC Sch 40 2.57 ft ags - 5.88 ft bgs	35/33/40/38	2.0/2.0		PID 0 Headspace 0.2 ppm alpha 2 beta 282 cpm
Sand Pack 4.0 ft - 16.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 6.5 - 50lb bags	4/10/14/19	1.8/2.0		PID 0 Headspace 0 ppm alpha 2 beta 251 cpm
Screen 2" ID PVC Sch 40 5.88 - 15.34 ft bgs 0.010 slot	2/8/10/12	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 269 cpm
Borehole Dia 8"	17/16/14/16	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 238 cpm First Encountered Water 14.0' bgs Static Water Level 16.76' TOC
16.0 ft - 18.0 ft natural materials	2/3/6/9	2.0/2.0	■	921SB14.0-16.0-0002 11/23/09 1316 PID 0 Headspace 0 ppm alpha 3 beta 269 cpm
	4/5/6/5	1.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 240 cpm
				Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/23/09 and was converted to a permanent well when the protective casing was installed on 12/22/09.

TWP 921

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US Army Corps of Engineers

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TWP 922

(Page 1 of 1)

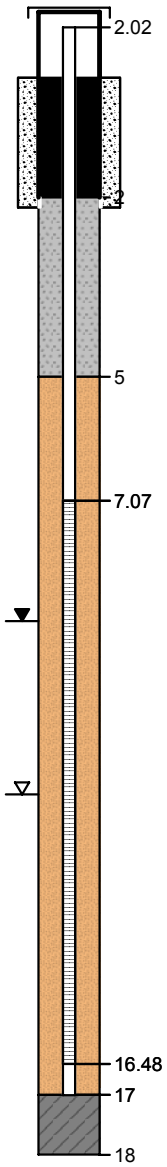
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/18/09
End Date	: 12/22/09
Northing Coord.	: 1173236.9
Easting Coord.	: 1040207.7
Ground Surface Elev.	: 316.54
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 1.5') CLAY (CL); trace medium to coarse Sand; trace Gravel to 20mm, subrounded; damp; dense; plastic; roots to 0.3' bgs; 10YR4/2 dark grayish brown.	316
1			315
2		(1.5' - 1.75') GRAVEL (GP), subangular to 35mm; some medium to very coarse Gravel; very moist; loose; non-plastic; 10YR4/4 dark yellowish brown.	314
3			313
4		(1.75' - 12.0') CLAY (CL); trace fine Sand; trace Gravel to 40mm, subrounded; rootlets; dry to damp; very stiff; slightly plastic; 10YR4/4 dark yellowish brown with 10YR5/2 grayish brown and 2.5YR3/6 dark red mottling; vertical fractures filled with fine sand.	312
5			311
6		Gravel to 60mm, Limestone at 6.0' bgs	310
7			309
8			308
9			307
10			306
11		(12.0' - 12.2') Coarse SAND (SP); some Clay; trace fine to medium Sand; moist; medium dense; non-plastic; 10YR4/4 dark yellowish brown.	305
12		(12.2' - 13.6') CLAY (CL); trace medium Sand; dry to damp; stiff; slightly plastic; 10YR4/4 dark yellowish brown.	304
13			303
14		(13.6' - 13.8') Sandy SILT (ML); very moist; loose; non-plastic; 10YR4/4 dark yellowish brown.	302
15		(13.8' - 15.8') CLAY (CL); trace Gravel, subrounded to 50mm, limestone; trace Silt; trace fine Sand; damp; stiff; plastic; 10YR4/3 brown.	301
16			300
17		(15.8' - 18.0') CLAY (CL); moist; very soft; very plastic; 10YR5/1 gray	299
18		Bottom of Boring 18.0' bgs	298
19			297
20			

Well: MW 922
TOC Elev.: 318.56



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	922SS0.0-0.5-0005 11/18/09 1623 PID 0 Headspace 0 ppm alpha 1 beta 175 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	5/6/10	1.5/1.5		PID 0 Headspace 0 ppm alpha 3 beta 238 cpm
	4/8/13/23	1.3/2.0		PID 0 Headspace 0 ppm alpha 5 beta 236 cpm
Concrete 0.0 - 2.0 ft bgs				
Holeplug 3/8 Coarse Grade Bentonite Chips 2.0 - 5.0 ft bgs	8/13/20/26	2.0/2.0		PID 0 Headspace 0 ppm alpha 3 beta 270 cpm
	28/33/33/28	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 258 cpm
Riser 2" ID PVC Sch 40 2.02 ft ags - 7.07 ft bgs	5/12/16/20	2.0/2.0		Static Water Level 9.11' bgs PID 0 Headspace 0 ppm alpha 1 beta 259 cpm
Sand Pack 5.0 ft - 17.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	5/11/15/20	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 237 cpm
Screen 2" ID PVC Sch 40 7.07 - 16.48 ft bgs 0.010 slot	17/20/26/20	2.0/2.0	■	First Encountered Water 12.0' bgs 922SB12.0-14.0-0006 11/19/09 0923 PID 0 Headspace 1.5 ppm alpha 2 beta 258 cpm
Borehole Dia 8"				
17.0 ft - 18.0 ft Natural Materials	4/6/8/6	2.0/2.0		PID 0 Headspace 0.7 ppm alpha 2 beta 213 cpm
	6/5/5/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 256 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/18/09 and 11/19/09 and was converted to a permanent well when the protective casing was installed on 12/22/09.

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US Army Corps of Engineers

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TWP 923

(Page 1 of 1)

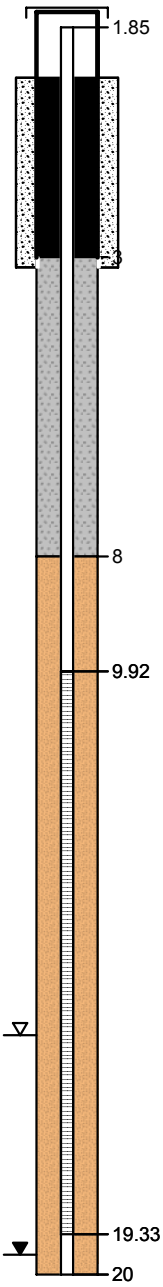
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/17/09
End Date	: 12/21/09
Northing Coord.	: 1173235.5
Easting Coord.	: 1040354.9
Ground Surface Elev.	: 317.68
Total Depth of Boring	: 20 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 2" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.6') Silty SAND (SM), very fine to coarse; some Gravel to 50mm, subrounded; dry; loose; non-plastic; roots to 0.4' bgs; 10YR3/4 dark yellowish brown.	317
1			316
2		(0.6' - 1.3') SILT (ML) with Sand; trace GRAVEL, subrounded to 15mm; dry; medium dense; non-plastic; 10YR4/3 brown with 10YR5/1 gray.	315
3			314
4		(1.3' - 5.3') CLAY (CL); trace fine Sand; trace Silt; dry; dense; non-plastic; crumbly; 10YR4/3 brown, 10YR5/1 gray and 10YR5/2 grayish brown.	313
5			312
6		(5.3' - 6.0') No Recovery	311
7		(6.0' - 10.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 10mm, subrounded; dry; very dense; slightly plastic; 10YR4/3 brown.	310
8		-softer with depth and more plastic	309
9			308
10		(10.0' - 16.0') CLAY (CL); some Silt; some v. fine Sand; trace Gravel to 12mm, subrounded, limestone; dry to slightly damp; soft; slightly plastic; 10YR4/3 brown and 5YR4/4 yellowish red.	307
11			306
12			305
13			304
14		Softer with depth, less Silt; slightly damp; plastic; 5YR5/3 reddish brown.	303
15			302
16		(16.0' - 18.0') CLAY (CL); trace fine Sand; moist to very moist; soft; very plastic; 10YR4/2 dark grayish brown.	301
17			300
18		(18.0' - 20.0') CLAY (CL); very moist to moist; very soft; plastic to very plastic; 10YR5/1 gray	299
19			
20		Bottom of Boring 20.0' bgs	298

Well: MW 923
TOC Elev.: 319.53



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	923SS0.0-0.5-0009 11/17/09 1306 PID 0 Headspace 0 ppm alpha 2 beta 200 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 3 ft bgs Set In Concrete	2/4/6	0.9/1.5		
	6/9/10/15	1.8/2.0		PID 0 Headspace 0 ppm alpha 1 beta 155 cpm PID 0 Headspace 0 ppm alpha 1 beta 165 cpm
Concrete 0.0 - 3.0 ft bgs				
Holeplug 3/8 Coarse Grade Bentonite Chips 3.0 - 8.0 ft bgs	9/9/14/14	1.3/2.0		PID 0 Headspace 0 ppm alpha 1 beta 145 cpm
	16/19/19/18	1.4/2.0		PID 0 Headspace 0 ppm alpha 2 beta 140 cpm
Riser 2" ID PVC Sch 40 1.85 ft ags - 9.92 ft bgs				
	7/5/7/13	1.6/2.0		PID 0 Headspace 0 ppm alpha 4 beta 160 cpm
Sand Pack 8.0 ft - 20.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6.5 - 50lb bags	9/11/14/18	1.7/2.0		PID 0 Headspace 0 ppm alpha 1 beta 155 cpm
Screen 2" ID PVC Sch 40 9.92 - 19.37 ft bgs 0.010 slot	15/12/16/12	1.2/2.0		PID 0 Headspace 0 ppm alpha 1 beta 175 cpm
Borehole Dia 8"				PID 0 Headspace 0 ppm alpha 3 beta 165 cpm First Encountered Water 16.0' bgs
	3/3/6/5	1.6/2.0		
			■	923SB16.0-18.0-0010 11/17/09 1427
	6/6/5/5	1.7/2.0		PID 0 Headspace 0 ppm alpha 1 beta 150 cpm
				PID 0 Headspace 0 ppm alpha NR beta NR cpm Static Water Level 19.67' bgs
	woh/woh	2.0/2.0		
	woh/2			Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/17/09 and was converted to a permanent well when the protective casing was installed on 12/21/09.

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TWP 924

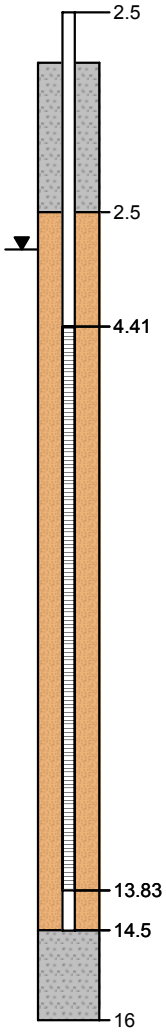
(Page 1 of 1)

Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/19/09
End Date	: 12/18/09
Northing Coord.	: 1173162.9
Easting Coord.	: 1039990.5
Ground Surface Elev.	: 316.61
Total Depth of Boring	: 16 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Well: TWP 924
TOC Elev.: NA



Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') SILT (ML); trace fine to medium Sand; trace Clay; roots; damp to dry; loose; slightly plastic; 10YR3/3 dark brown.	316
1		(0.5' - 4.3') CLAY (CL); trace medium Sand; trace Gravel to 30mm, subrounded; dry; very stiff; 10YR4/4 dark yellowish brown with 10YR5/2 grayish brown mottling. trace 5YR4/6 yellowish red mottling	315
2			314
3			313
4		(4.3' - 4.7') CLAY (CL); very soft; 10YR3/2 very dark grayish brown.	312
5		(4.7' - 5.3') Same as 0.5' - 4.3' interval.	311
6		(5.3' - 5.5') SILT (ML); dry; 10YR6/1 gray.	310
7		(5.5' - 6.2') CLAY (CL) as 0.5' - 4.3' interval. Larger percentage of yellowish red mottling; trace Gravel to 60mm, subrounded, limestone; plastic to medium plastic.	309
8			308
9		(6.2' - 7.5') SILT (ML); 10YR4/4 dark yellowish brown with 5YR4/6 yellowish red mottling.	307
10		(7.5' - 14.5') CLAY (CL); trace fine to coarse Sand; trace Silt; trace Gravel to 40mm, subrounded, limestone; damp; medium stiff to soft; slightly plastic; 10YR4/4 dark yellowsh brown with 5YR4/6 yellowish red mottling	306
11			305
12			304
13			303
14			302
15		(14.5' - 15.5') CLAY (CL); damp; very soft; very plastic; 10YR5/1 gray.	301
16		(15.5' - 16.0') No Recovery.	
		Bottom of Boring at 16.0' bgs	300
17			299
18			298
19			297
20			

Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	924SS0.0-0.5-0013 924SS0.0-0.5-9001 11/19/09 0820 PID 0 Headspace 0 ppm alpha 1 beta 250 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 2.5 ft bgs	5/7/7	1.5/1.5		PID 0 Headspace 0 ppm alpha 1 beta 244 cpm
	5/12/17/16	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 245 cpm Static Water Level 5.62' TOC
Riser 2" ID PVC Sch 40 2.5 ft ags - 4.41 ft bgs	5/9/15/15	1.9/2.0		PID 0 Headspace 0 ppm alpha 1 beta 238 cpm
Sand Pack 2.5 ft - 14.5 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	13/40/37/32	1.7/2.0		PID 0 Headspace 0 ppm alpha 1 beta 215 cpm
Screen 2" ID PVC Sch 40 4.41 - 13.83 ft bgs 0.010 slot	13/20/20/22	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 185 cpm
Borehole Dia 8" 14.5 ft - 16.0 ft Bentonite chips	9/9/11/12	1.7/2.0		PID 0 Headspace 0 ppm alpha 0 beta 209 cpm
	7/9/9/8	1.8/2.0	■	PID 0 Headspace 0 ppm alpha 1 beta 171 cpm 924SB12.0-14.0-0014 11/19/09 0927
	1/2/2/2	1.5/2.0		PID 0 Headspace NR ppm alpha 1 beta 213 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/19/09 and was abandoned on 12/18/09.

02-19-2010 C:\Documents and Settings\parrishp\Desktop\NFSS\NFSS Boring Logs\TWP-924.bor

US Army Corps of Engineers

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TWP 925

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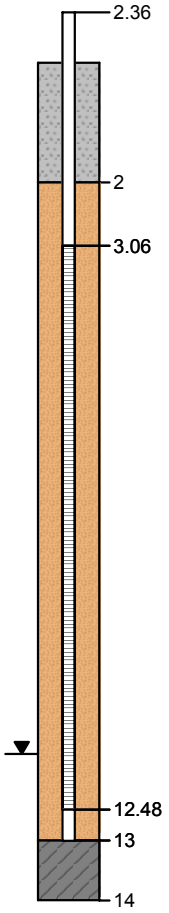
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/18/09
End Date	: 12/17/09
Northing Coord.	: 1173124.8
Easting Coord.	: 1040151.0
Ground Surface Elev.	: 315.59
Total Depth of Boring	: 14 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Well: TWP 925
TOC Elev.: NA



Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 13.0') CLAY (CL); trace fine Sand; trace Gravel to 60mm, subrounded, limestone; dry; medium stiff; plastics; roots to 0.3' bgs; 10YR4/4 dark yellowish brown with 10YR5/1 gray and 2.5YR4/6 red mottling.	315
1			314
2			313
3			312
4			311
5			310
6			309
7			308
8		very stiff; slightly plastic	307
9			306
10		very stiff, medium plastic	305
11			304
12			303
13		(13.0' - 14.0') CLAY (CL); trace fine Sand; damp; very soft to soft; very plastic; 10YR5/1 gray.	302
14		Bottom of Boring at 14.0' bgs	301
15			300
16			299
17			298
18			297
19			296
20			

Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	925SS0.0-0.5-0017 11/18/09 1335 PID 0 Headspace 0 ppm alpha 4 beta 263 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 2.0 ft bgs	4/5/5	1.5/1.5		PID 0 Headspace 0 ppm alpha 3 beta 222 cpm
	6/9/19/19	1.6/2.0		PID 0 Headspace 0 ppm alpha 4 beta 265 cpm
Riser 2" ID PVC Sch 40 2.36 ft ags - 3.06 ft bgs	8/16/19/20	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 228 cpm
Sand Pack 2.0 ft - 13.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	35/32/38/32	1.8/2.0		PID 0 Headspace 0 ppm alpha 1 beta 269 cpm
Screen 2" ID PVC Sch 40 3.06 - 12.48 ft bgs 0.010 slot	8/15/15/23	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 223 cpm
			■	PID 0 Headspace 0 ppm alpha 3 beta 249 cpm
Borehole Dia 8"	6/11/9/9	2.0/2.0	■	925SB10.0-12.0-0018 11/18/09 1415 Static Water Level 13.91' TOC
13.0 ft - 14.0 ft natural materials	11/8/8/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 264 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/18/09 and it was abandoned on 12/17/09.

TWP 925

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TWP 926

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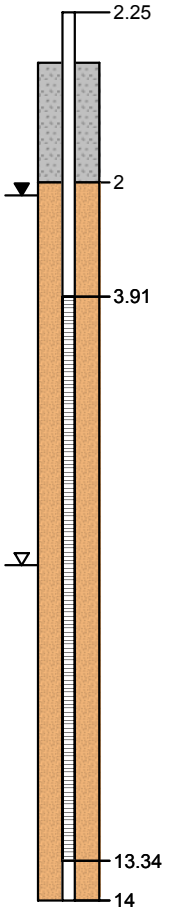
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/19/09
End Date	: 12/17/09
Northing Coord.	: 1173123.4
Easting Coord.	: 1040532.5
Ground Surface Elev.	: 316.91
Total Depth of Boring	: 14 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 8.4') CLAY (CL); trace fine to coarse Sand; trace Gravel to 30mm, subrounded, limestone, shale; damp; medium stiff; plastic; rootlets to 4.0' bgs; 10YR4/4 dark yellowish brown.	316
1			315
2			314
3		trace 5YR4/6 yellowish red mottling, stiffer with depth, less plasticity.	313
4			312
5		trace 10YR5/1 gray mottling, no yellowish red mottling.	311
6			310
7			309
8		(8.4' - 9.6') Fine SAND (SM); trace Silt; moist; loose; non-plastic; 10YR4/4 dark yellowsh brown.	308
9		(9.6' - 10.0') No Recovery	307
10		(10.0' - 13.5') CLAY (CL); trace medium Sand; trace Gravel to 15mm; moist; very soft; very plastic; 10YR5/4 yellowish brown.	306
11			305
12			304
13		(13.5' - 14.0') CLAY (CL); trace fine Sand; moist; very soft; very plastic; 10YR5/1 gray.	303
14		Bottom of Boring at 14.0' bgs	302
15			301
16			300
17			299
18			298
19			297
20			

Well: TWP 926
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	926SS0.0-0.5-0021 11/19/09 1200
	4/8/13	1.5/1.5		PID 0 Headspace 0 ppm alpha 1 beta 239 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 2.0 ft bgs				PID 0 Headspace 0 ppm alpha 1 beta 215 cpm Static Water Level 4.47' TOC
	7/14/20/25	1.3/2.0		
Riser 2" ID PVC Sch 40 2.25 ft ags - 3.9 ft bgs				PID 0 Headspace 0 ppm alpha 1 beta 219 cpm
	6/13/17/20	1.8/2.0		PID 0 Headspace 0 ppm alpha 0 beta 214 cpm
Sand Pack 2.0 ft - 14.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	28/36/25/32	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 245 cpm
Screen 2" ID PVC Sch 40 3.9 - 13.33 ft bgs 0.010 slot	6/14/13/13	1.6/2.0	■	First Water Encountered 8.4' bgs PID 0 Headspace 0 ppm alpha 0 beta 204 cpm 926SB8.0-10.0-0022 11/19/09 1230
Borehole Dia 8"	5/5/5/4	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 209 cpm
	4/5/5/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 220 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/19/09 and was abandoned on 12/17/09.

TWP 926

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TWP 927

(Page 1 of 1)

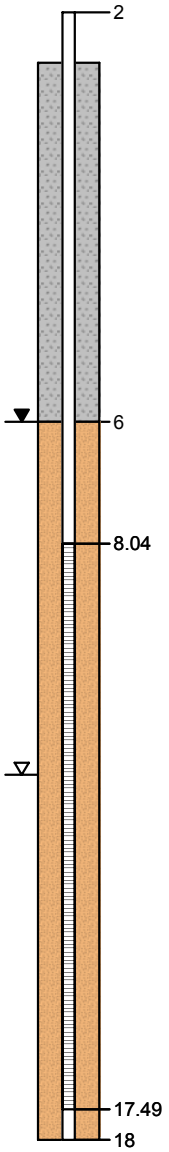
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/20/09
End Date	: 12/16/09
Northing Coord.	: 1173124.5
Easting Coord.	: 1042486.8
Ground Surface Elev.	: 319.94
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 1.0') CLAY (CL); trace medium to very coarse Sand; trace Gravel to 35mm, subrounded; damp; medium stiff; slightly plastic; 10YR4/3 brown.	319
1		(1.0' - 11.9') CLAY (CL); trace Silt; trace medium Sand; trace Gravel to 25mm, subrounded; dry; stiff; medium plasticity; 10YR4/6 dark yellowish brown.	318
2		trace 10YR5/1 gray mottling	317
3			316
4			315
5		very stiff; trace 5YR6/6 yellowish red mottling	314
6			313
7		no yellowish mottling; medium stiff to stiff; vertical fractures backfilled with 10YR5/1 gray Silt.	312
8			311
9		(11.9' - 12.9') fine SAND (SW); trace Clay at 12.6' - 12.9'; trace Gravel to 35mm, subangular; saturated; loose; 10YR4/4 dark yellowish brown.	310
10		(12.9' - 14.5') CLAY (CL); trace Gravel to 35mm, subrounded; moist; medium stiff to soft; plastic; 10YR4/4 dark yellowish brown.	309
11		(14.5' - 15.5') CLAY (CL); trace fine to medium Sand; moist; very soft; very plastic; 10YR4/3 brown.	308
12		(15.5' - 17.3') CLAY (CL); some Silt; trace fine to medium Sand; trace Gravel to 25mm, subrounded; cobble, limestone, subrounded; 10YR4/4 dark yellowish brown	307
13		(17.3' - 17.5') CLAY (CL); v. soft; v. plastic; 10YR4/1 dark gray.	306
14		(17.5' - 18.0') No Recovery.	305
15		Bottom of Boring at 18.0' bgs	304
16			303
17			302
18			301
19			300
20			

Well: TWP 927
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	927SS0.0-0.5-0025 11/20/09 0754
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 2.0 ft bgs	15/8/13	1.5/1.5		PID 0 Headspace 0 ppm alpha 1 beta 239 cpm
	9/15/20/20	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 247 cpm
Riser 2" ID PVC Sch 40 2.0 ft ags - 8.04 ft bgs	8/11/16/21	1.9/2.0		PID 0 Headspace 0 ppm alpha 0 beta 229 cpm PID 0 Headspace 0 ppm alpha 1 beta 274 cpm
Sand Pack 6.0 ft - 18.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	19/20/22/20	2.0/2.0		Static Water Level 8.0' TOC PID 0 Headspace 0 ppm alpha 0 beta 230 cpm
Screen 2" ID PVC Sch 40 8.04 - 17.49 ft bgs 0.010 slot	3/9/10/12	1.9/2.0		PID 0 Headspace 0 ppm alpha 0 beta 221 cpm
Borehole Dia 8"	7/4/4/9	2.0/2.0	■	PID 0 Headspace 0 ppm alpha 1 beta 219 cpm 927SB10.0-12.0-0026 11/20/09 0834 First Water Encountered 12.0' bgs
	12/13/9/8	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 211 cpm
	2/3/12/16	1.8/2.0		PID 0 Headspace 0 ppm alpha 1 beta 226 cpm
	20/8/7/15	1.5/2.0		PID 0 Headspace 0 ppm alpha 0 beta 217 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/20/09 and was abandoned on 12/16/09.

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TWP 928

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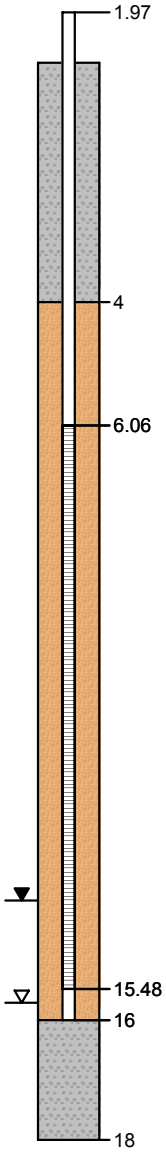
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/20/09
End Date	: 12/16/09
Northing Coord.	: 1173118.6
Easting Coord.	: 1042321.1
Ground Surface Elev.	: 319.66
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.2') CLAY (CL); trace Silt; trace fine Sand; damp; soft; medium plastic; roots to 0.2' bgs; 10YR3/3 dark brown.	319
1		(0.2' - 6.5') CLAY (CL); trace Silt; trace fine to coarse Sand; trace Gravel to 20mm, subrounded; dry; stiff; slightly plastic; crumbly; 10YR4/4 dark yellowish brown with 10YR5/1 gray and 10YR5/2 grayish brown mottling.	318
2			317
3			316
4			315
5			314
6			313
7		(6.5' - 6.9') SILT (ML); trace fine Sand; dry; loose; non-plastic; 10YR5/4 yellowish brown.	312
8		(6.9' - 10.0') CLAY (CL); trace medium Sand; trace Gravel to 20mm, subrounded, limestone; dry to damp; medium stiff to stiff; medium plastic to plastic; 10YR4/3 brown with 10YR5/1 gray mottling.	311
9			310
10		(10.0' - 14.0') CLAY (CL); trace medium Sand; trace Gravel to 25mm, subrounded; damp; soft; very plastic; 10YR4/4 dark yellowish brown. 10YR5/2 grayish brown.	309
11			308
12			307
13			306
14		(14.0' - 17.9') CLAY (CL); trace medium to coarse Sand; trace Gravel to 25mm, subrounded; damp to moist; very soft; very plastic; 10YR5/2 grayish brown, grading into 10YR5/1 gray.	305
15			304
16			303
17		(17.9' - 18.0') very coarse SAND (SP); trace fine to medium Sand; trace Gravel to 12mm, subangular; wet; loose; non-plastic; 10YR4/6 dark yellowish brown.	302
18			301
19		Bottom of Boring at 18.0' bgs	300
20			

Well: TWP 928
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	928SS0.0-0.5-0029 11/20/09 1404
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 4.0 ft bgs	7/11/12	1.5/1.5		PID 0 Headspace 0 ppm alpha 1 beta 230 cpm
				PID 0 Headspace 1.5 ppm alpha 3 beta 197 cpm
	16/16/22/22	1.5/2.0		PID 0 Headspace 0.5 ppm alpha 3 beta 227 cpm
Riser 2" ID PVC Sch 40 1.97 ft ags - 6.06 ft bgs	9/17/22/30	2.0/2.0		PID 0 Headspace 0.3 ppm alpha 2 beta 233 cpm
Sand Pack 4.0 ft - 16.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	28/25/30/24	2.0/2.0		PID 8.4 ppm Headspace 1.4 ppm alpha 0 beta 213 cpm
Screen 2" ID PVC Sch 40 6.06 - 15.48 ft bgs 0.010 slot	4/7/8/9	2.0/2.0		PID 13.4 ppm Headspace 7.0 ppm alpha 0 beta 234 cpm
Borehole Dia 8"	2/3/5/4	2.0/2.0		PID 9.5 ppm Headspace 11.1 ppm alpha 2 beta 199 cpm
			■	PID 4.9 ppm Headspace 16.5 ppm alpha 2 beta 201 cpm
	5/5/5/4	2.0/2.0	■	928SB12.0-14.0-0030 11/20/09 1447
			■	First Water Encountered 14.0' bgs
	1/2/2/3	2.0/2.0		PID 0 Headspace 3.7 ppm alpha 2 beta 213 cpm
				Static Water Level 17.68' TOC
	woh/2/3/4	2.0/2.0		PID 0 Headspace NR ppm alpha 2 beta 213 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/20/09 and was abandoned on 12/16/09.

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 929

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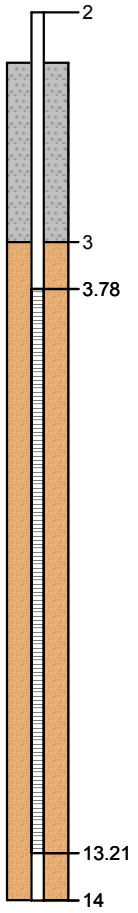
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/21/09
End Date	: 12/16/09
Northing Coord.	: 1173038.3
Easting Coord.	: 1042282.6
Ground Surface Elev.	: 320.92
Total Depth of Boring	: 14 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Well: TWP 929
TOC Elev.: NA



Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.3') CLAY (CL); trace fine to medium Sand; roots; trace Gravel to 15mm, subrounded; damp; soft to medium stiff; medium plasticity; 10YR4/3 brown.	319
1			
2		(0.3' - 0.7') GRAVEL (GP) to 20mm, subrounded to rounded; trace fine to very coarse Sand; trace Clay; dry; loose to medium dense; non-plastic; 10YR4/3 brown.	318
3			317
4		(0.7' - 8.0') CLAY (CL); some Silt; trace medium sand; stiff to very stiff; 10YR4/4 dark yellowish brown trace 10YR5/1 gray and 5YR6/4 yellowish red mottling.	316
5			315
6			314
7			313
8		(8.0' -9.0') Coarse SAND (SP), rounded to subrounded; trace Gravel to 20mm, subrounded; dry; loose; non-plastic; 10YR4/6 dark yellowish brown.	312
9			311
10		(9.0' - 11.0') CLAY (CL); trace medium Sand; trace Gravel to 15mm; damp; medium stiff to soft; medium plasticity; 10YR4/4 dark yellowish brown to 10YR4/3 brown.	310
11			309
12		(11.0' - 14.0') CLAY (CL); trace fine to medium Sand; trace Gravel; damp; very soft; plastic; 10YR5/1 gray.	308
13			307
14		Bottom of Boring at 14.0' bgs	306
15			305
16			304
17			303
18			302
19			301
20			300

Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	929SS0.0-0.5-0033 11/21/09 1515
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 3.0 ft bgs	8/10/14	1.5/1.5		PID 0 Headspace 0.4 ppm alpha 0 beta 294 cpm
				PID 0 Headspace 0.3 ppm alpha 0 beta 280 cpm
	15/22/22/28	2.0/2.0		PID 0 Headspace 0.6 ppm alpha 3 beta 274 cpm
Riser 2" ID PVC Sch 40 2.0 ft ags - 3.78 ft bgs	8/20/26/28	2.0/2.0		PID 0 Headspace 0.3 ppm alpha 2 beta 310 cpm
Sand Pack 3.0 ft - 14.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	25/32/30/39	1.2/2.0		PID 0 Headspace 0.1 ppm alpha 2 beta 297 cpm
			■	PID 0 Headspace 0.8 ppm alpha 0 beta 236 cpm
Screen 2" ID PVC Sch 40 3.78 - 13.21 ft bgs 0.010 slot	8/8/7/7	2.0/2.0	■	929SB8.0-10.0-0034 11/21/09 1544
Borehole Dia 8"	2/3/5/5	2.0/2.0		PID 0 Headspace 0.3 ppm alpha 1 beta 302 cpm
				No split spoon collected, drilled out interval to set 10' screen. Description from cuttings.
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/21/09 and was abandoned on 12/16/09.

TWP 929

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TWP 930

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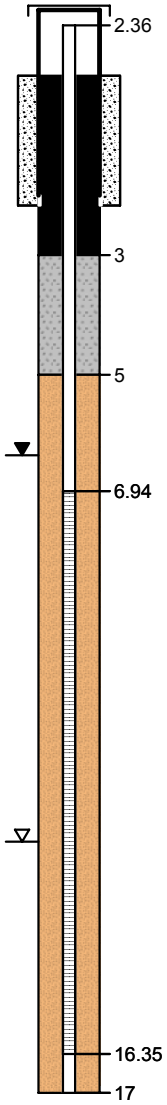
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/21/09
End Date	: 12/21/09
Northing Coord.	: 1173005.1
Easting Coord.	: 1042469.0
Ground Surface Elev.	: 320.80
Total Depth of Boring	: 17 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 3.0') FILL (FL); Cobbles 70mm, subangular; trace Silt; trace Gravel to 50mm, subrounded; trace medium to coarse Sand; loose; non-plastic; roots to 0.5' bgs; 10YR3/2 very dark grayish brown.	320
1			319
2			318
3		(3.0' - 12.8') CLAY (CL); trace fine to medium Sand, 60mm Cobble, subrounded, limestone in end of shoe; damp to dry; very stiff; slightly plastic; 10YR4/4 dark yellowish brown, trace 10YR5/1 gray mottling.	317
4			316
5			315
6			314
7		trace 5YR6/6 yellowish red mottling	313
8			312
9		no yellowish red mottling	311
10		(12.8' - 14.6') Medium SAND (SW); trace Silt; trace fine Sand; trace Gravel to 12mm, subrounded to subangular; wet; loose; non-plastic; 10YR4/4 dark yellowish brown.	310
11			309
12			308
13		(14.6' - 14.8') Coarse SAND (SW); trace medium Sand; trace Gravel to 15mm, wet; 10YR4/4 dark yellowish brown.	307
14		(14.8' - 15.0') CLAY (CL); trace fine Sand; trace Gravel to 12mm; moist; very soft; plastic; 10YR4/3 brown.	306
15		(15.0' - 15.5') SAND as 14.6' - 14.8' interval.	305
16		(15.5' - 16.8') CLAY; trace fine to medium Sand; trace Gravel to 15mm, subrounded; moist; very soft; plastic; 10YR5/1 gray.	304
17		(16.8' - 17.0') No Recovery	303
18		Bottom of Boring 17.0' bgs	302
19			301
20			

Well: MW 930
TOC Elev.: 323.16



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
Above Grade Completion 6" Protective Casing 3 ft ags - 3 ft bgs Set In Concrete		3.0/3.0	■	930SS0.0-0.5-0037 11/21/09 0828 1.5 PID 0 Headspace 0.8 ppm alpha 0 beta 232 cpm
Concrete 0.0 - 3.0 ft bgs	5/7/15/15	1.5/2.0		PID 0 Headspace 1.1 ppm alpha 5 beta 263 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 3.0 - 5.0 ft bgs	8/15/23/28	1.7/2.0		PID 0 Headspace 1.0 ppm alpha 2 beta 235 cpm Static Water Level 8.70' TOC
Riser 2" ID PVC Sch 40 2.36 ft ags - 6.94 ft bgs	5/12/16/23	1.8/2.0		PID 0 Headspace 1.1 ppm alpha 3 beta 256 cpm
Sand Pack 5.0 ft - 17.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 6 - 50lb bags	4/9/11/12	1.5/2.0		PID 0 Headspace 1.9 ppm alpha 3 beta 267 cpm
Screen 2" ID PVC Sch 40 6.94 - 16.35 ft bgs 0.010 slot	7/12/14/16	2.0/2.0		PID 0 Headspace 11.3 ppm alpha 0 beta 228 cpm First Encountered Water 12.8' bgs
Borehole Dia 8"	6/8/7/4	2.0/2.0		PID 39.8 ppm Headspace 18.4 ppm alpha 0 beta 163 cpm
	2/2/3/5	1.8/2.0	■	930SB15.0-17.0-0038 11/21/09 0918 PID 168 ppm Headspace 334 ppm alpha 0 beta 220 cpm 215 ppm at top of augers sheen on center plug when pulled out of the augers Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/21/09 and was converted to a permanent well when the protective casing was installed on 12/21/09.

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 931

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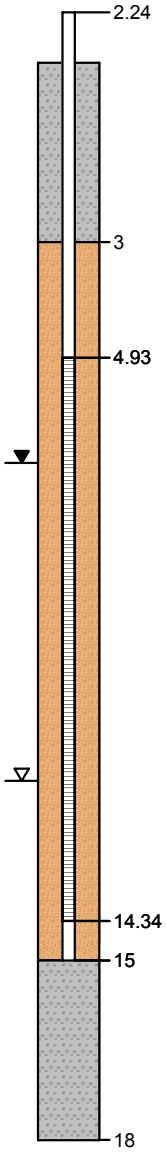
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/21/09
End Date	: 12/16/09
Northing Coord.	: 1172976.7
Easting Coord.	: 1042374.4
Ground Surface Elev.	: 320.33
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.4') CLAY (CL); trace Silt; trace fine to medum Sand; roots; damp; loose; slightly plastic; 10YR4/3 brown.	320
1		(0.4' - 5.4') CLAY (CL); trace fine to medium Sand; trace Gravel to 50mm, subrounded; dry; medium stiff; slightly plastic; 10YR4/4 dark yellowish brown	319
2		trace 5YR6/6 yellowish red mottling; trace Silt.	318
3			317
4			316
5		(5.4' - 6.3') Sandy CLAY (CL); Sand is medium to coarse; trace Gravel to 15mm, subrounded; slightly moist; medium stiff; slightly plastic; 10YR4/4 dark yellowish brown.	315
6		(6.3' - 13.7') CLAY (CL); trace fine Sand; trace Gravel to 15mm, subrounded; 10YR4/4 dark yellowish brown	314
7		10YR5/1 gray mottling and Cobble 70mm, subrounded, limestone.	313
8		Silt content increases with depth	312
9		moist 12.0' - 12.3' bgs	311
10		(13.7' - 14.0') Silty fine SAND (SM); dry; medium dense; non-plastic; 10YR4/4 dark yellowish brown.	310
11		(14.0' - 15.0') Silty CLAY (CL); trace fine Sand; damp; medium stiff; slightly plastic; 10YR4/4 dark yellowish brown.	309
12		(15.0' - 18.0') CLAY (CL); trace medium to coarse Sand; trace Gravel to 12mm, subrounded; 10YR5/1 gray	308
13			307
14			306
15			305
16			304
17			303
18		Bottom of Boring at 18.0' bgs	302
19			301
20			

Well: TWP 931
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	931SS0.0-0.5-0041 11/21/09 1134
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 3.0 ft bgs	5/5/6	1.2/1.5		PID 0 Headspace 0.4 ppm alpha 2 beta 260 cpm
				PID 0 Headspace 0.5 ppm alpha 0 beta 217 cpm
	6/6/10/11	2.0/2.0		PID 0 Headspace 0.4 ppm alpha 0 beta 224 cpm
Riser 2" ID PVC Sch 40 2.24 ft ags - 4.93 ft bgs	3/5/6/8	1.8/2.0		PID 0 Headspace 0.3 ppm alpha 3 beta 216 cpm
Sand Pack 3.0 ft - 15.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	6/7/11/11	2.0/2.0		Static Water Level 8.93' TOC PID 0 Headspace 0.6 ppm alpha 3 beta 216 cpm
Screen 2" ID PVC Sch 40 4.93 - 14.34 ft bgs 0.010 slot	3/6/7/9	2.0/2.0		PID 0 Headspace 0.9 ppm alpha 2 beta 238 cpm
Borehole Dia 8"	4/8/10/16	2.0/2.0		PID 0 Headspace 1.0 ppm alpha 1 beta 256 cpm
			■	First Water Encountered 12.0' bgs
	15/13/22/26	2.0/2.0	■	PID 0 Headspace 1.1 ppm alpha 1 beta 205 cpm
			■	931SB12.0-14.0-0042 11/21/09 1210
	5/7/5/5	2.0/2.0		PID 0 Headspace 0.7 ppm alpha 3 beta 231 cpm
	4/5/6/6	2.0/2.0		PID 0 Headspace 0.7 ppm alpha 1 beta 198cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/20/09 and was abandoned on 12/16/09.

TWP 931

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 932

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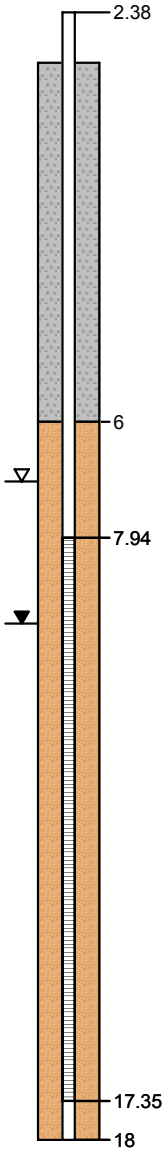
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/2/09
End Date	: 12/17/09
Northing Coord.	: 1173018.6
Easting Coord.	: 1042534.1
Ground Surface Elev.	: 321.03
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') CLAY (CL) and SILT; some fine to coarse Sand; trace Gravel to 50mm, subangular; dry; loose; non-plastic; 10YR4/2 dark grayish brown.	321
1			320
2		(0.5' - 3.5') Poor Recovery; Cobbles and Road Bed Material, angular to 80mm, limestone.	319
3			318
4		(3.5' - 7.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 25mm, subrounded; trace Silt; 10YR4/4 dark yellowish brown with 10YR5/1 gray mottling.	317
5			316
6			315
7		(7.0' - 7.1') Medium SAND (SW), well sort; very moist; loose; non-plastic; 10YR4/1 dark gray.	314
8		(7.1' - 9.8') Same as 3.5' - 7.0' interval	313
9			312
10		(9.8' - 10.2') SILT (ML); trace fine Sand; moist; medium dense; non-plastic; 10YR4/3 brown.	311
11		(10.2' - 11.75') Inside Shelby Tube	310
12		(11.75' - 15.0') CLAY (CL); dry; soft to medium stiff; plastic; 10YR4/4 dark yellowish brown.	309
13			308
14		(15.0' - 15.2') Medium SAND (SW), well sorted; damp; loose; non-plastic; 10YR5/1 gray.	307
15		(15.2' - 15.7') CLAY (CL); damp; soft to very soft; very plastic; 10YR5/1 gray.	306
16		(15.7' - 16.0') SILT (ML); damp to dry; loose to medium dense; non-plastic; 10YR4/4 dark yellowish brown.	305
17			304
18		(16.0' - 18.0') CLAY (CL); trace medium Sand; damp to moist; very soft to soft; very plastic; 10YR5/1 gray.	303
19			302
20		Bottom of Boring at 18.0' bgs	

Well: TWP 932
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	932SS0.0-0.5-0045 932SS0.0-0.5-9006 12/2/09 1420 PID 0 Headspace 0 ppm alpha 3 beta 254 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 6.0 ft bgs	13/13/16	0.2/1.5		PID 0 Headspace 0 ppm alpha 3 beta 248 cpm
	14/15/13/12	0.9/2.0		PID 0 Headspace 0 ppm alpha 1 beta 258 cpm
Riser 2" ID PVC Sch 40 2.38 ft ags - 7.94 ft bgs		1.4/2.0	■	932SB4.0-6.0-0100 12/2/09 1446 Geotech PID NR Headspace 0 ppm alpha 3 beta 221 cpm
Sand Pack 6.0 ft - 18.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	11/15/18/23	2.0/2.0		First Water Encountered 7.0' bgs PID 0 Headspace 0 ppm alpha 0 beta 239 cpm
Screen 2" ID PVC Sch 40 7.94 - 17.35 ft bgs 0.010 slot	6/11/14/21	2.0/2.0		PID 0 Headspace 0 ppm alpha 3 beta 252 cpm
Borehole Dia 8"		1.75/2.0	■	932SB10.0-12.0-0101 12/2/09 1515 Geotech PID 0 Headspace 0 ppm alpha 1 beta 240 cpm Static Water Level 11.75' TOC
	7/7/8/6	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 287 cpm
	2/3/4/7	2.0/2.0	■	932SB14.0-16.0-0046 12/2/09 1536 PID 0 Headspace 0 ppm alpha 3 beta 285 cpm
	4/3/4/4	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 238 cpm

Soil Color Chart
Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/2/09 and it was abandoned on 12/17/09.

TWP 932

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 933

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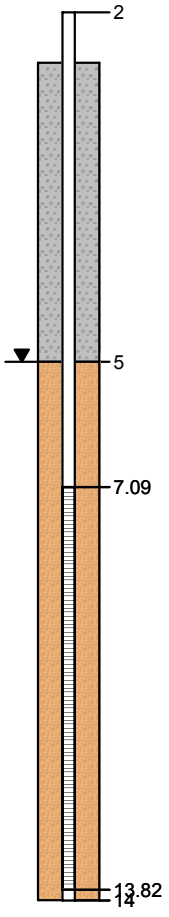
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/3/09
End Date	: 12/17/09
Northing Coord.	: 1172959.2
Easting Coord.	: 1042495.7
Ground Surface Elev.	: 319.64
Total Depth of Boring	: 14 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') CLAY (CL); trace Gravel to 30mm, subangular; trace fine to coarse Sand; roots; damp; soft to medium stiff; medium plastic; 10YR3/2 very dark grayish brown.	319
1			318
2		(0.5' - 3.0') CLAY and limestone Road Bed Material (CL/FL), subangular to 70mm; glass; slight odor; loose; 10YR4/2 dark grayish brown and 10YR3/1 very dark gray.	317
3			316
4		(3.0' - 4.0') Same as Above except more Clay.	315
5		(4.0' - 10.0') CLAY (CL); trace Gravel to 20mm, subrounded; trace medium Sand; dry; medium stiff; medium plastic; 10YR4/4 dark yellowish brown.	314
6			313
7		Stiffer with depth	312
8			311
9		Vertical fractures backfilled with 10YR5/1 gray Silt	310
10		(10.0' - 12.0') CLAY (CL); trace Gravel to 70mm, subangular; trace fine to coarse Sand; soft; plastic; 10YR4/3 brown. Pushed rock low recovery.	309
11			308
12		(12.0' - 14.0') CLAY (CL); slightly moist; very soft; very plastic; 10YR5/1 gray. Sheen at the bottom on the soil in the shelby tube.	307
13			306
14		Bottom of Boring at 14.0' bgs	305
15			304
16			303
17			302
18			301
19			300
20			

Well: TWP 933
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	933SS0.0-0.5-0053 12/3/09 1522 PID 0.1 Headspace 0.2 ppm alpha 1 beta 313 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 5.0 ft bgs	6/5/3	1.1/1.5		PID 0.6 Headspace 0.9 ppm alpha 2 beta 277 cpm
	6/8/7/8	1.9/2.0		PID 1.4 Headspace 0.7 ppm alpha 0 beta 275 cpm
Riser 2" ID PVC Sch 40 2.0 ft ags - 7.09 ft bgs		1.5/2.0	■	933SB4.0-6.0-0104 12/3/09 1550 Geotech PID 0 Headspace 189 ppm alpha 1 beta 299 cpm Static Water Level 7.00' TOC
Sand Pack 5.0 ft - 14.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	9/13/16/20	2.0/2.0		PID 0 Headspace 3.5 ppm alpha 0 beta 274 cpm
Screen 2" ID PVC Sch 40 7.09 - 13.82 ft bgs 0.010 slot	4/9/15/15	1.8/2.0		PID 0 Headspace 5.9 ppm alpha 2 beta 295 cpm
Borehole Dia 8"	5/7/6/6	1.5/2.0	■	933SB10.0-12.0-0054 12/3/09 1601 PID 0 Headspace 35.2 ppm alpha 1 beta 261 cpm
		2.0/2.0	■	933SB12.0-14.0-0105 12/3/09 1605 Geotech PID NR Headspace 2103 ppm alpha 7 beta 317 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/3/09 and it was abandoned on 12/17/09.

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US Army Corps of Engineers | SAIC From Science to Solutions

TWP 934

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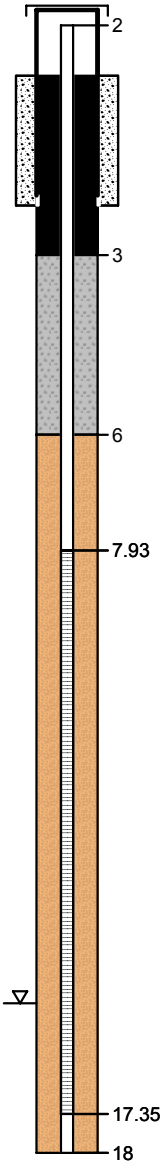
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/3/09
End Date	: 12/19/09
Northing Coord.	: 1173157.9
Easting Coord.	: 1042286.5
Ground Surface Elev.	: 320.33
Total Depth of Boring	: 18 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') CLAY (CL); trace fine to medium Sand; trace Silt; damp; soft; slightly plastic; roots; 10YR3/2 very dark grayish brown.	320
1		(0.5' - 1.5') GRAVEL (GW), to 20mm, angular, road base; wet; loose; well sorted.	319
2		(1.5' - 10.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 20mm, subrounded; trace Silt backfilling fractures; dry; stiff to medium stiff; slightly plastic; 10YR4/4 dark yellowish brown with 10YR5/1 gray mottling.	318
3			317
4			316
5			315
6			314
7			313
8			312
9			311
10		(10.0' - 12.0') No Recovery.	310
11			309
12		(12.0' - 14.0') CLAY (CL); trace medium Sand; trace Gravel to 15mm, subrounded; damp; soft; very plastic; 10YR4/3 brown.	308
13			307
14		(14.0' - 15.5') Inside Shelby Tube	306
15			305
16		(15.5' - 16.5') Medium SAND (SW); wet; loose; non-plastic; 10YR4/4 dark yellowish brown.	304
17		(16.5' - 18.0') CLAY (CL); trace Gravel to 15mm, subrounded; damp; very soft; very plastic; 10YR5/1 gray.	303
18		Bottom of Boring 18.0' bgs	302
19			301
20			

Well: MW 934
TOC Elev.: 322.20



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	934SS0.0-0.5-0049 12/3/09 1222 PID 0 Headspace 0.3 ppm alpha 1 beta 244 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 3 ft bgs Set In Concrete	6/6/4	1.5/1.5		
				PID 0 Headspace 0.2 ppm alpha 1 beta 206 cpm
	8/11/19/21	1.5/2.0		PID 0 Headspace 0.3 ppm alpha 1 beta 209 cpm
Concrete 0.0 - 3.0 ft bgs			■	934SB4.0-6.0-0102 12/3/09 1240 Geotech PID NR Headspace 0.2 ppm alpha 0 beta 255 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 3.0 - 6.0 ft bgs		1.3/2.0		
	14/19/22/24	2.0/2.0		PID 0 Headspace 0.3 ppm alpha 1 beta 241 cpm
Riser 2" ID PVC Sch 40 2.0 ft ags - 7.93 ft bgs				
	10/31/15/16	1.2/2.0		PID 0 Headspace 1.3 ppm alpha 0 beta 233 cpm
Sand Pack 6.0 ft - 18.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 6 - 50lb bags	10/15/16/17	0.2/2.0		PID 0 Headspace 1.5 ppm alpha 1 beta 207 cpm
Screen 2" ID PVC Sch 40 7.93 - 17.35 ft bgs 0.010 slot	14/11/9/7	2.0/2.0		PID 0 Headspace 3.8 ppm alpha 2 beta 221 cpm
Borehole Dia 8"				
		1.4/2.0	■	934SB14.0-16.0-0103 12/3/09 1320 Geotech PID 0 Headspace NR ppm alpha 1 beta 203 cpm First Encountered Water 15.5' bgs
	7/6/6/7	2.0/2.0	■	934SB16.0-18.0-0050 12/3/09 1326 PID 0 Headspace 4.6 ppm alpha 0 beta 255 cpm
				Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/3/09 and was converted to a permanent well when the protective casing was installed on 12/19/09.

TWP 934

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SAIC From Science to Solutions

TWP 935

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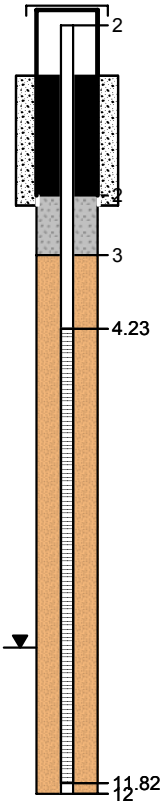
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/24/09
End Date	: 12/22/09
Northing Coord.	: 1172206.8
Easting Coord.	: 1040450.6
Ground Surface Elev.	: 317.43
Total Depth of Boring	: 12 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.3') CLAY (CL); trace fine to medium Sand; damp; soft; plastic; roots to 0.2' bgs; 10YR4/3 brown.	317
1		(0.3' - 11.8') CLAY (CL); trace fine to medium Sand; trace Gravel to 25mm, subrounded; trace Silt; 10YR4/4 dark yellowish brown with 10YR5/1 gray and 5YR6/6 yellowish red mottling.	316
2			315
3			314
4			313
5			312
6			311
7			310
8		Gravel to 50mm, softer with depth	309
9			308
10			307
11			306
12		(11.8' - 12.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 20mm, subrounded; damp; medium stiff; plastic; 10YR5/1 gray.	305
13			304
14		Bottom of Boring 12.0' bgs	303
15			302
16			301
17			300
18			299
19			298
20			

Well: MW 935
TOC Elev.: 319.33



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	935SS0.0-0.5-0057 11/24/09 0823 PID 0 Headspace 0 ppm alpha 3 beta 270 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	5/8/12	1.5/1.5		PID 0 Headspace 1.3 ppm alpha 1 beta 271 cpm
	8/12/19/19	1.9/2.0		PID 0 Headspace 0.3 ppm alpha 0 beta 264 cpm
Concrete 0.0 - 2.0 ft bgs				
Holeplug 3/8 Coarse Grade Bentonite Chips 2.0 - 3.0 ft bgs	5/12/15/17	1.5/2.0		PID 0 Headspace 0 ppm alpha 0 beta 241 cpm
	21/17/18/15	1,8/2.0		PID 0 Headspace 0 ppm alpha 2 beta 195 cpm
Riser 2" ID PVC Sch 40 2.0 ft ags - 4.23 ft bgs				
	4/8/10/10	1.7/2.0		PID 0 Headspace 0.4 ppm alpha 5 beta 274 cpm Static Water Level 11.56' TOC
Sand Pack 3.0 ft - 12.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 6 - 50lb bags	3/5/8/6	2.0/2.0	■	935SB10.0-12.0-0058 11/24/09 0857 PID 0.4 Headspace 0.6 ppm alpha 5 beta 261 cpm
Screen 2" ID PVC Sch 40 4.23 - 11.82 ft bgs 0.010 slot				
Borehole Dia 8"				Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/24/09 and was converted to a permanent well when the protective casing was installed on 12/22/09.

TWP 935

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US Army Corps of Engineers | SAIC From Science to Solutions

TWP 936

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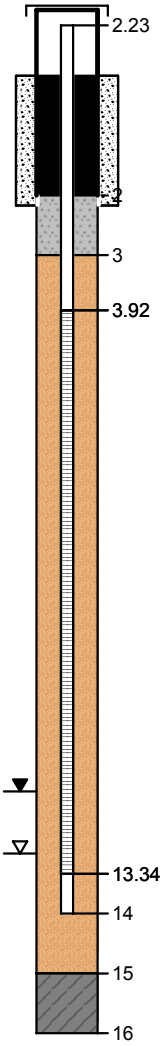
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/22/09
End Date	: 12/22/09
Northing Coord.	: 1172102.4
Easting Coord.	: 1040562.8
Ground Surface Elev.	: 318.66
Total Depth of Boring	: 16 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0–1		(0.0' - 1.0') CLAY (CL); trace fine to medium Sand; damp; soft; plastic; roots to 0.3' bgs; 10YR3/2 dark grayish brown.	318
1–4		(1.0' - 4.2') CLAY (CL); trace Cobble to 70mm, subangular; trace fine to coarse Sand; trace fine Gravel, subrounded; damp to dry; stiff to very stiff; plastic; 10YR4/4 and 4/6 dark yellowish brown.	317, 316, 315
4–5		(4.2' - 4.6') CLAY (CL); wet; very soft; non-plastic; 10YR4/3 brown.	314
5–10		(4.6' - 10.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 15mm, subrounded; medium stiff; medium plastic; 10YR4/4 dark yellowish brown with trace 10YR5/1 gray and 5YR6/6 yellowish red mottling.	313, 312, 311, 310, 309
10–13		(10.0' - 13.0') CLAY; trace medium Sand; trace Gravel to 20mm; dry; medium stiff; plastic; Getting softer with depth	308, 307, 306
13–14		(13.0' - 14.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 10mm, subrounded; moist; soft; plastic; 10YR4/3 brown.	305
14–16		(14.0' - 16.0') CLAY (CL) trace fine to coarse Sand; damp; very soft; very plastic; 10YR5/1 gray.	304, 303
16		Bottom of Boring 16.0' bgs	302, 301, 300, 299

Well: MW 936
TOC Elev.: 320.64



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	936SS0.0-0.5-0061 11/22/09 1034 PID 0 Headspace 5.8 ppm alpha 3 beta 233 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	2/7/8	1.5/1.5		
	2/7/14/21	1.5/2.0		PID 0 Headspace 2.6 ppm alpha 1 beta 225 cpm; PID 0 Headspace 6.4 ppm alpha 2 beta 242 cpm
Concrete 0.0 - 2.0 ft bgs; Holeplug 3/8 Coarse Grade Bentonite Chips 2.0 - 3.0 ft bgs	4/5/10/14	2.0/2.0		PID 0 Headspace 5.1 ppm alpha 0 beta 227 cpm
Riser 2" ID PVC Sch 40 2.23 ft ags - 3.92 ft bgs	14/17/19/19	1.9/2.0		PID 0 Headspace 4.7 ppm alpha 2 beta 233 cpm
Sand Pack 3.0 ft - 15.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 6 - 50lb bags	2/7/8/10	1.9/2.0		PID 0 Headspace 2.4 ppm alpha 2 beta 237 cpm
	3/6/8/8	1.5/2.0		PID 0 Headspace 7.8 ppm alpha 0 beta 195 cpm
Screen 2" ID PVC Sch 40 3.92 - 13.34 ft bgs 0.010 slot	11/9/11/11	1.5/2.0	■	936SB12.0-14.0-0062 11/22/09 1121 PID 0 Headspace 5.3 ppm alpha 1 beta 216 cpm Static Water Level 14.19' TOC First Water Encountered 13.0' bgs
Borehole Dia 8"	2/3/3/3	2.0/2.0		PID 0 Headspace 4.5 ppm alpha 1 beta 222 cpm

Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/22/09 and was converted to a permanent well when the protective casing was installed on 12/22/09.

TWP 936

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US Army Corps of Engineers | SAIC From Science to Solutions

TWP 937

(Page 1 of 1)

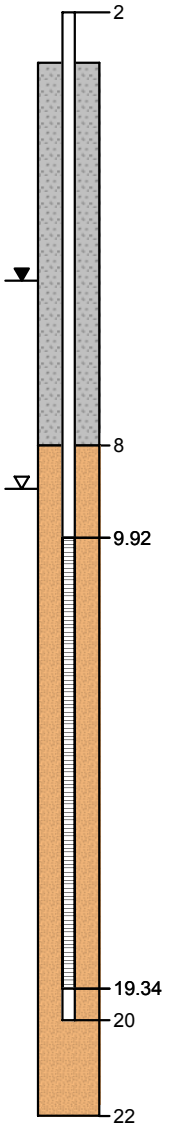
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/1/09
End Date	: 12/18/09
Northing Coord.	: 1172057.9
Easting Coord.	: 1040745.0
Ground Surface Elev.	: 316.99
Total Depth of Boring	: 22 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0–3		(0.0' - 2.5') CLAY (CL); trace medium to coarse Sand; trace Gravel to 25mm, subrounded; trace Silt; roots to 0.3' bgs; dry; medium stiff; non-plastic; 10YR4/4 dark yellowish brown with trace 10YR5/1 gray mottling and very little 2.5YR4/8 red mottling.	316–314
3–7		(2.5' - 7.0') CLAY (CL); trace medium Sand; dry; stiff; medium plastic; 10YR4/4 dark yellowish brown.	314–310
7–8		(7.0' - 7.2') SILT (ML); dry; loose; non-plastic; 10YR4/4 dark yellowish brown.	310–309
8–10		(7.2' - 8.9') CLAY (CL); trace Gravel to 20mm, subrounded; trace medium to coarse Sand; trace Silt; dry; stiff to very stiff; medium plastic; 10YR4/4 dark yellowish brown.	309–307
10–13		(8.9' - 12.0') Silty SAND (SM); trace Gravel to 80mm, subrounded, limestone; moist to very moist; medium dense to loose; non-plastic; 10YR4/4 dark yellowish brown.	307–304
13–16		(12.0' - 14.0') SAND and GRAVEL (SP) gravel to 40mm, subrounded to subangular, gneiss; sand is fine to coarse; trace Clay; wet; medium dense; non-plastic.	304–301
16–18		(14.0' - 17.6') SILT (ML); trace fine to coarse Sand; trace Gravel to 30mm, subrounded; very moist; loose; non-plastic; 10YR4/4 dark yellowish brown.	301–299
18–21		(17.6' - 20.0') SILT (ML); trace medium Sand; trace Gravel to 20mm, subrounded; trace Clay; moist; loose; non-plastic; 5YR4/4 reddish brown to 2.5YR4/6 red.	299–296
21–22		(20.0' - 22.0') CLAY (CL); trace medium Sand; trace Gravel to 15mm, subrounded; moist; very soft; plastic; 10YR5/1 gray.	296–295
22–25		Bottom of Boring at 22.0' bgs	295–292

Well: TWP 937
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	937SS0.0-0.5-0073 12/1/09 1124
	5/9/15	1.5/1.5		PID 0 Headspace 2.5 ppm alpha 2 beta 342 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 8.0 ft bgs	10/14/18/18	1.7/2.0		PID 0 Headspace 2.0 ppm alpha 6 beta 328 cpm PID 0 Headspace 2.2 ppm alpha 0 beta 336 cpm Static Water Level 6.55' TOC
Riser 2" ID PVC Sch 40 2.0 ft ags - 9.92 ft bgs	3/7/10/11	1.7/2.0		PID 0 Headspace 2.6 ppm alpha 0 beta 337 cpm
Sand Pack 8.0 ft - 22.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	14/21/19/16	2.0/2.0		PID 0 Headspace 2.9 ppm alpha 0 beta 299 cpm
	4/7/15/18	2.0/2.0		PID 0 Headspace 2.6 ppm alpha 3 beta 248 cpm First Water Encountered 8.9' bgs
Screen 2" ID PVC Sch 40 9.92 - 19.34 ft bgs 0.010 slot	4/8/11/11	1.6/2.0		PID 0 Headspace 3.0 ppm alpha 1 beta 230 cpm
Borehole Dia 8"	16/13/11/12	2.0/2.0	■	PID 1.1 Headspace 3.3 ppm alpha 1 beta 206 cpm 937SB12.0-14.0-0074 12/1/09 1208
	3/4/6/7	1.0/2.0		PID 0 Headspace 2.4 ppm alpha 0 beta 246 cpm
	3/5/8/8	2.0/2.0		PID 0 Headspace 2.0 ppm alpha 1 beta 263 cpm
	3/4/5/7	1.9/2.0		PID 0 Headspace 1.8 ppm alpha 1 beta 227 cpm
	2/3/2/3	2.0/2.0		PID 0 Headspace 1.9 ppm alpha 0 beta 250 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/1/09 and it was abandoned on 12/18/09.

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 938

(Page 1 of 1)

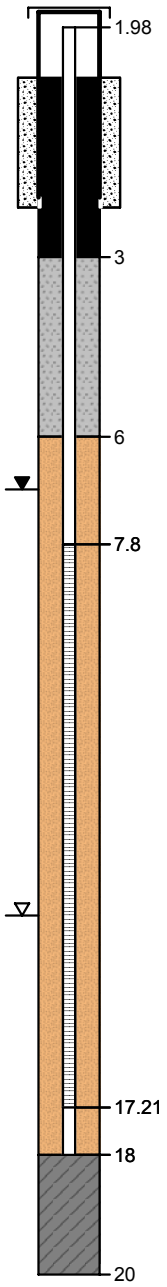
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/24/09
End Date	: 12/22/09
Northing Coord.	: 1171715.3
Easting Coord.	: 1040443.9
Ground Surface Elev.	: 317.38
Total Depth of Boring	: 20 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.2') CLAY (CL); trace medium to coarse Sand; damp; soft; medium plastic; 10YR3/3 dark brown.	317
1		(0.2' - 4.0') CLAY (CL); trace fine to coarse Sand; trace Gravel to 40mm, subrounded; trace Silt; dry; stiff; slightly plastic; 10YR4/6 to 10YR4/4 dark yellowish brown with 5YR6/6 yellowish red and 10YR5/1 gray mottling.	316
2			315
3			314
4		(4.0' - 10.0') CLAY (CL); trace fine to medium Sand; trace Silt; dry; soft to medium stiff; medium plastic; 10YR4/3 brown.	313
5			312
6		plastic to very plastic; dry; medium stiff; trace fine Sand at 9.0' bgs	311
7			310
8		(10.0' - 10.2') SILT (ML); trace fine to coarse Sand; wet; loose; non-plastic; 5YR4/4 reddish brown.	309
9		(10.2' - 14.0') Silty CLAY; trace fine to coarse Sand; trace Gravel to 15mm, subrounded; dry; medium stiff; slightly plastic to medium plastic; 5YR4/4 reddish brown	308
10			307
11			306
12		Gravel to 30mm, subrounded	305
13		(14.0' - 18.0') Sandy SILT (ML); trace Gravel to 40mm, subangular to subrounded; sand fine to coarse; moist; loose to medium dense; non-plastic; 5YR4/4 reddish brown.	304
14			303
15		5YR3/4 dark reddish brown.	302
16		(18.0' - 18.5') CLAY (CL) trace medium to coarse Sand; trace Gravel to 20mm, subrounded; damp; soft; plastic; 10YR4/3 brown.	301
17			300
18		(18.5' - 20.0') CLAY (CL); trace medium to coarse Sand; trace Gravel to 15mm, subrounded; moist; very soft; very plastic; 10YR5/1 gray.	299
19			298
20		Bottom of Boring 20.0' bgs	

Well: MW 938
TOC Elev.: 319.54



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	938SS0.0-0.5-0069 11/24/09 1042 PID 0 Headspace 0.5 ppm alpha 2 beta 277 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	5/7/12	1.5/1.5		
	10/12/20/18	2.0/2.0		PID 0 Headspace 1.3 ppm alpha 3 beta 284 cpm PID 0 Headspace 2.1 ppm alpha 1 beta 278 cpm
Concrete 0.0 - 2.0 ft bgs				
Holeplug 3/8 Coarse Grade Bentonite Chips 3.0 - 6.0 ft bgs	2/4/6/9	1.5/2.0		PID 0 Headspace 1.8 ppm alpha 2 beta 280 cpm
	10/14/15/14	2.0/2.0		PID 0 Headspace 1.9 ppm alpha 1 beta 267 cpm Static Water Level 8.86' TOC
Riser 2" ID PVC Sch 40 1.98 ft ags - 7.8 ft bgs				
Sand Pack 6.0 ft - 18.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 6 - 50lb bags	3/1/4/6	2.0/2.0		PID 0 Headspace 2.3 ppm alpha 3 beta 256 cpm
	3/8/9/10	1.5/2.0		PID 0 Headspace 1.5 ppm alpha 3 beta 209 cpm
Screen 2" ID PVC Sch 40 7.8 - 17.21 ft bgs 0.010 slot	12/10/13/11	1.8/2.0		PID 0.7 Headspace 2.4 ppm alpha 3 beta 227
Borehole Dia 8"				First Water Encountered 14.0' bgs
	3/6/6/9	1.5/2.0	■	938SB14.0-16.0-0070 11/24/09 1126 PID 0 Headspace 3.3 ppm alpha 2 beta 227 cpm
	8/22/16/16	1.0/2.0		PID 0 Headspace 0.6 ppm alpha 0 beta 230 cpm
	2/3/2/3	2.0/2.0		PID 0 Headspace 0.3 ppm alpha 2 beta 241 cpm Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/24/09 and was converted to a permanent well when the protective casing was installed on 12/22/09.

TWP 938

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 939

(Page 1 of 1)

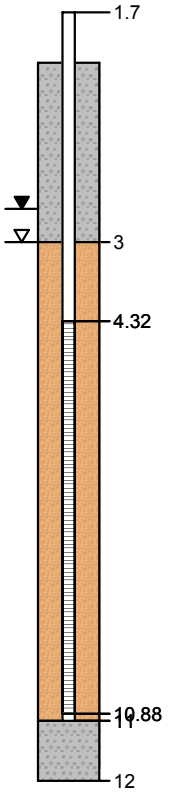
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/22/09
End Date	: 12/18/09
Northing Coord.	: 1171648.6
Easting Coord.	: 1040549.2
Ground Surface Elev.	: 318.89
Total Depth of Boring	: 12 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Jackie Getson
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') CLAY (CL); trace Silt; trace fine to medum Sand; fine roots; damp; soft; plastic; 10YR3/2 very dark grayish brown.	318
1		(0.5' - 2.6') CLAY (CL); some SILT; damp; stiff; 10YR4/3 brown and 10YR3/2 very dark grayish brown.	317
2		(2.6' - 4.0') CLAY (CL); coarse Sand top 0.4'; trace Gravel, subrounded, large to 0.1'; moist; stiff to very stiff; 10YR4/4 dark yellowish brown.	316
3		(4.0' - 6.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 50mm, subangular; moist to wet; 10YR3/4 dark yellowish brown	315
4		(6.0' - 9.5') CLAY (CL); trace Silt; trace sand; trace Gravel to 30mm; moist; very stiff; 10YR4/3 brown with 10YR5/1 gray Silt throughout.	314
5			313
6			312
7			311
8			310
9		(9.5' - 10.0') Silty SAND (SM); trace Gravel; wet; 10YR5/1 gray.	309
10		(10.0' - 12.0') CLAY (CL); fine to coarse Sand; moist; very plastic; 10YR5/1 gray	308
11		Bottom of Boring at 12.0' bgs	307
12			306
13			305
14			304
15			303
16			302
17			301
18			300
19			299
20			

Well: TWP 939
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	939SS0.0-0.5-0065 11/22/09 1410 PID 0 Headspace 0 ppm alpha 2 beta 242 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 3.0 ft bgs	3/6/8	1.5/1.5		PID 0 Headspace 0 ppm alpha 3 beta 215 cpm
Riser 2" ID PVC Sch 40 1.7 ft ags - 4.32 ft bgs	7/9/8/9	1.7/2.0	■	939SB2.0-4.0-0066 11/22/09 1421 PID 0 Headspace 0.4 ppm alpha 2 beta 227 cpm First Encountered Water 3.0' bgs
Sand Pack 3.0 ft - 11.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 6 - 50lb bags	4/9/15/10	2.0/2.0		PID 0 Headspace 0.3 ppm alpha 1 beta 240 cpm Static Water Level 4.14' TOC
Screen 2" ID PVC Sch 40 4.32 - 10.88 ft bgs 0.010 slot	23/28/28/22	1.6/2.0		PID 0 Headspace 0 ppm alpha 0 beta 213 cpm
Borehole Dia 8"	3/3/5/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 215 cpm
	3/3/4/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 234 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/22/09 and was abandoned on 12/18/09.

TWP 939

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 940

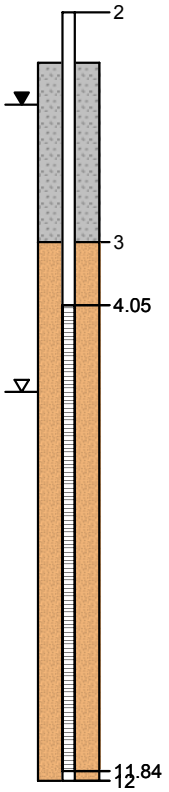
(Page 1 of 1)

Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/1/09
End Date	: 12/19/09
Northing Coord.	: 1171367.4
Easting Coord.	: 1040439.7
Ground Surface Elev.	: 317.02
Total Depth of Boring	: 12 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Well: TWP 940
TOC Elev.: NA



Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') CLAY (CL); trace medium Sand; trace Gravel to 15mm, subrounded; dry; stiff; medium plastic; 10YR4/3 brown.	317
1			316
2		(0.5' - 5.5') CLAY (CL); trace medium to coarse Sand; trace Gravel to 25mm, subangular to subrounded; trace Silt; dry; stiff; slightly plastic; 10YR4/4 dark yellowish brown.	315
3			314
4			313
5			312
6		(5.5' - 8.5') Fine SAND; trace Silt; moist; loose; non-plastic; 10YR4/6 dark yellowish brown. Description from cuttings.	311
7			310
8			309
9		(8.5' - 11.5') CLAY (CL); trace medium Sand; trace Silt; damp; soft; plastic; 10YR4/3 brown.	308
10			307
11			306
12		(11.5' - 12.0') CLAY (CL); trace Silt; trace fine to medium Sand; trace Gravel to 15mm, subrounded; damp; very soft; very plastic; 10YR5/1 gray.	305
13		Bottom of Boring at 12.0' bgs	304
14			303
15			302
16			301
17			300
18			299
19			298
20			

Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	940SS0.0-0.5-0077 12/1/09 0827 PID 0 Headspace 0 ppm alpha 4 beta 318 cpm
	6/9/13	1.5/1.5		
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 3.0 ft bgs				PID 0 Headspace 0 ppm alpha 1 beta 288 cpm Static Water Level 2.7' TOC
	10/16/17/25	1.8/2.0		PID 0 Headspace 0 ppm alpha 1 beta 320 cpm
Riser 2" ID PVC Sch 40 2.0 ft ags - 4.05 ft bgs				
	2/9/15/17	0.5/2.0		First Encountered Water 5.5' bgs PID 0 Headspace 0 ppm alpha 0 beta 240 cpm
Sand Pack 3.0 ft - 12.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co 5 - 50lb bags	37/40/37/37	0.5/2.0		PID 0 Headspace 0 ppm alpha 1 beta 168 cpm
Screen 2" ID PVC Sch 40 4.05 - 11.84 ft bgs 0.010 slot	6/4/4/4	2.0/2.0	■	940SB8.0-10.0-0078 12/1/09 0855 PID 0 Headspace 0 ppm alpha 0 beta 279 cpm
Borehole Dia 8"	4/6/4/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 266 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/1/09 and was abandoned on 12/19/09.

TWP 940

(Page 1 of 1)

US Army Corps of Engineers

SAIC From Science to Solutions

TWP 941

(Page 1 of 1)

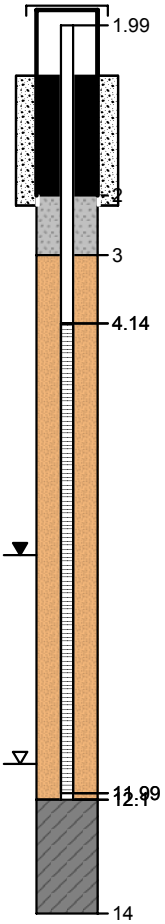
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 11/30/09
End Date	: 12/22/09
Northing Coord.	: 1171058.8
Easting Coord.	: 1040432.9
Ground Surface Elev.	: 317.06
Total Depth of Boring	: 14 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 7.5') CLAY (CL); trace fine to medium Sand; trace Gravel to 20mm, subrounded; dry; stiff to very stiff; medium plastic to slightly plastic; roots to 0.2' bgs; 10YR4/6 dark yellowish brown with trace 10YR5/1 gray mottling.	317
1			316
2			315
3		trace Gravel to 50mm, subrounded	314
4			313
5		trace 5YR6/6 yellowish red mottling	312
6		no yellowish red mottling	311
7			310
8		(7.5' - 11.5') CLAY (CL); trace fine to medium Sand; trace Gravel to 15mm, subrounded; dry; very stiff; plastic; 10YR4/4 dark yellowish brown.	309
9			308
10			307
11			306
12		(11.5' - 14.0') CLAY; trace medium Sand; moist; soft; plastic to very plastic; 10YR5/1 gray. Silt layer at brown Clay/gray Clay interface (0.05')	305
13			304
14		Bottom of Boring 14.0' bgs	303
15			302
16			301
17			300
18			299
19			298
20			

Well: MW 941
TOC Elev.: 318.98



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	941SS0.0-0.5-0081 11/30/09 1400 PID 0 Headspace 0 ppm alpha 0 beta 244 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	5/10/15	1.5/1.5		
	13/19/22/22	1.8/2.0		PID 0 Headspace 0.0 ppm alpha 1 beta 282 cpm PID 0 Headspace 0 ppm alpha 1 beta 246 cpm
Concrete 0.0 - 2.0 ft bgs				
Holeplug 3/8 Coarse Grade Bentonite Chips 2.0 - 3.0 ft bgs	6/10/14/16	1.8/2.0		PID 0 Headspace 0 ppm alpha 0 beta 279 cpm
Riser 2" ID PVC Sch 40 1.99 ft ags - 4.14 ft bgs	20/20/20/18	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 275 cpm Static Water Level 10.0' TOC
Sand Pack 3.0 ft - 12.1 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 4.5 - 50lb bags	3/4/8/8	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 254 cpm
	2/3/4/5	2.0/2.0	■	941SB10.0-12.0-0082 11/30/09 1440 PID 0 Headspace 0 ppm alpha 0 beta 273 cpm First Water Encountered 11.5' bgs
Screen 2" ID PVC Sch 40 4.14 - 11.99 ft bgs 0.010 slot	4/3/2/2	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 216 cpm
Borehole Dia 8" 12.1 ft - 14.0 ft Natural Materials				Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 11/30/09 and was converted to a permanent well when the protective casing was installed on 12/22/09.

TWP 941

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 942

(Page 1 of 1)

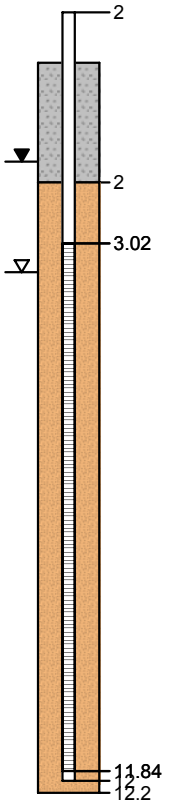
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/2/09
End Date	: 12/18/09
Northing Coord.	: 1170926.6
Easting Coord.	: 1040546.9
Ground Surface Elev.	: 319.71
Total Depth of Boring	: 12.2 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.3') CLAY (CL); trace medum to coarse Sand; trace Silt; roots; slightly moist; medium stiff; medium plastic; 10YR3/2 very dark grayish brown.	319
1			318
2		(0.3' - 3.5') CLAY (CL); trace medium to coarse Sand; trace Gravel to 40mm, subrounded; trace Silt; damp; medium plastic; 10YR4/6 dark yellowish brown grading into 10YR4/4 dark yellowish brown.	317
3			316
4			315
5		(3.5' - 5.3') Medium SAND (SC); trace Clay; moist; loose; non-plastic; 10YR4/4 dark yellowish brown.	314
6		(5.3' - 8.0') CLAY (CL) as above in 0.3-3.5 interval.	313
7			312
8		(8.0' - 11.0') CLAY (CL); trace Silt; trace fine to medium Sand; trace Gravel to 20mm, subrounded; damp; medium stiff; plastic; 10YR4/4 dark yellowish brown.	311
9			310
10			309
11		(11.0' - 11.3') SILT (ML); trace Clay; dry; medium dense to loose; non-plastic 10YR4/4 dark yellowish brown.	308
12		(11.3' - 12.2') CLAY (CL); moist; soft; very plastic; 10YR5/1 gray	307
13		Bottom of Boring at 12.2' bgs	306
14			305
15			304
16			303
17			302
18			301
19			300
20			

Well: TWP 942
TOC Elev.: NA



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	942SS0.0-0.5-0085 12/2/09 0819 PID 0 Headspace 0 ppm alpha 1 beta 226 cpm
Holeplug 3/8 Coarse Grade Bentonite Chips 0.0 - 2.0 ft bgs	5/9/9	1.2/1.5		PID 0 Headspace 0 ppm alpha 0 beta 187 cpm Static Water Level 3.65' TOC
Riser 2" ID PVC Sch 40 2.0 ft ags - 3.02 ft bgs	9/19/24/23	1.6/2.0		PID 0 Headspace 0 ppm alpha 0 beta 166 cpm First Encountered Water 3.5' bgs
Sand Pack 2.0 ft - 12.2 ft Silica Quartz 0.4mm Ricci Bros Sand Co 5 - 50lb bags	2/4/6/10	1.6/2.0	■	942SB4.0-6.0-0086 12/2/09 0841 PID 0 Headspace 0 ppm alpha 1 beta 176 cpm
Screen 2" ID PVC Sch 40 3.02 - 11.84 ft bgs 0.010 slot	10/13/16/24	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 188 cpm
Borehole Dia 8"	5/10/10/10	2.0/2.0		PID 0 Headspace 0 ppm alpha 0 beta 176 cpm
	3/4/7/5	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 223 cpm
				Soil Color Chart Munsell 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/2/09 and was abandoned on 12/18/09.

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US Army Corps of Engineers

SAIC From Science to Solutions

TWP 943

(Page 1 of 1)

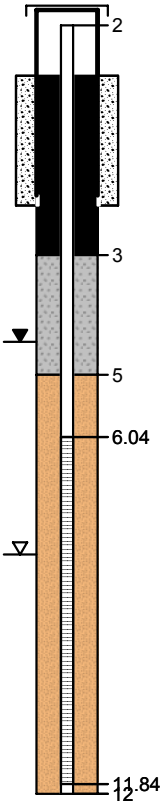
Niagara Falls Storage Site
1397 Pletcher Road
Youngstown, New York 14174
Niagara County

Start Date	: 12/2/09
End Date	: 12/22/09
Northing Coord.	: 1170909.9
Easting Coord.	: 1040773.7
Ground Surface Elev.	: 319.48
Total Depth of Boring	: 12 ft

Drilling Company	: Frontz Drilling
Driller	: Jim Bucksar
Designation of Drill	: CME 55 LC
Type of Drill Rig	: Hollow Stem Auger
Geologist	: Paul Parrish
Oversight Company	: SAIC
Borehole Diameter	: 8 inches
Sampling Equipment	: 4.25" Hollow Stem Augers
	: 3" 2' Long Split Spoons

Depth in feet (bgs)	USCS Symbol	DESCRIPTION	Elevation (amsl)
0		(0.0' - 0.5') CLAY (CL); trace fine to medium Sand; roots; damp; medium stiff; medium plastic; 10YR3/2 very dark grayish brown.	319
1			318
2		(0.5' - 8.0') CLAY (CL); trace fine to medium Sand; trace Gravel to 15mm, subrounded; trace Silt; dry; medium stiff; slightly plastic; 10YR4/4 dark yellowish brown. Vertical fractures backfilled with 10YR5/1 gray Silt.	317
3			316
4			315
5		Gravel to 25mm, subrounded	314
6		stiff to very stiff	313
7			312
8		(8.0' - 8.5') Fine SAND, well sorted; trace Silt; wet; loose; non-plastic; 10YR4/4 dark yellowish brown.	311
9		(8.5' - 10.0') CLAY (CL); trace medium Sand; medium stiff; plastic; 10YR4/3 brown.	310
10			309
11		(10.0' - 12.0') CLAY; trace fine Sand; trace Silt; dry; soft; very plastic; 10YR5/1 gray.	308
12		Bottom of Boring 12.0' bgs	307
13			306
14			305
15			304
16			303
17			302
18			301
19			300
20			

Well: MW 943
TOC Elev.: 321.60



Well Constr. Information	Blow Count	Recovery	Sample Interval	Comments
		0.5/0.5	■	943SS0.0-0.5-0089 12/2/09 1040 PID 0 Headspace 0 ppm alpha 1 beta 194 cpm
Above Grade Completion 6" Protective Casing 3 ft ags - 2 ft bgs Set In Concrete	5/6/11	1.5/1.5		
	9/16/17/19	1.9/2.0		PID 0 Headspace 0 ppm alpha 3 beta 204 cpm PID 0 Headspace 0 ppm alpha 0 beta 182 cpm
Concrete 0.0 - 3.0 ft bgs				Static Water Level 6.45' TOC
Holeplug 3/8 Coarse Grade Bentonite Chips 3.0 - 5.0 ft bgs	6/11/15/16	2.0/2.0		PID 0 Headspace 0 ppm alpha 1 beta 199 cpm
	21/27/28/28	1.9/2.0		PID 0 Headspace 0 ppm alpha 0 beta 216 cpm First Water Encountered 8.0' bgs
Riser 2" ID PVC Sch 40 2.0 ft ags - 6.04 ft bgs			■	943SB8.0-10.0-0090 12/2/09 1110 PID 0 Headspace 0 ppm alpha 1 beta 165 cpm
	8/10/12/14	1.7/2.0	■	
Sand Pack 5.0 ft - 12.0 ft Silica Quartz 0.4mm Ricci Bros Sand Co. 5 - 50lb bags	3/6/7/8	2.0/2.0		PID 0 Headspace 0 ppm alpha 2 beta 221 cpm
Screen 2" ID PVC Sch 40 6.04 - 11.84 ft bgs 0.010 slot				
Borehole Dia 8"				Munsell Soil Color Chart 1994 Rev. Ed.

Elevation - NGVD 1929
Coordinates - New York State Plane Coordinate System NAD 1983, West Zone 3103
Well was drilled as a temporary well point on 12/2/09 and it was converted to a permanent well when the protective casing was installed on 12/22/09.

TWP 943

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APPENDIX 4-A

Environmental Surveillance Program and Supplemental Sampling Event Data Summary

The Niagara Fall Storage Site (NFSS) Interim Waste Containment Structure (IWCS) encapsulates radioactive residues and wastes brought to the site by the Manhattan Engineering District and the Atomic Energy Commission during the 1940's and 1950's. These residues and wastes were consolidated into the IWCS in the 1980's. The IWCS was constructed with a compacted clay cap and cut-off walls keyed into low-permeability gray clay to minimize the likelihood of contaminant movement within the structure. The clay cap was designed, and is maintained, to minimize rainwater infiltration and minimize the potential for release of radon. The Environmental Surveillance Program (ESP) was initially developed in 1981 by the Department of Energy (DOE) to demonstrate that the residues and wastes within the IWCS are contained and to ensure the onsite contamination does not pose a threat to human health and the environment. In 1997, the responsibility of the Formerly Utilized Sites Remedial Action Program was transferred from DOE to the United States Army Corps of Engineers (henceforth referred to as the Corps). This transfer of responsibility tasked the Corps with the investigation, remediation, maintenance, and environmental surveillance at the NFSS.

This appendix summarizes the ESP data from the date of the transfer (1997) to the most recent sampling at the NFSS (2010). In this thirteen year period, the ESP has been enhanced and modified to collect a comprehensive data set to monitor the sites. Additional sampling locations and analytical parameters have been added, as needed, to adequately monitor the site. The media sampled in the ESP consists of groundwater, surface water, sediment, and air for potential radon releases. The Corps presents this data by posting it to the Corps website quarterly and annually publishes a Technical Memorandum. The ESP Technical Memoranda compile and analyze the quarterly data and assesses the long-term data trends and variances. These Technical Memoranda are generally published in the September-December timeframe the year after the data was collected. The Technical Memoranda for the 2006-2009 ESP data are available online at http://www.lrb.usace.army.mil/fusrap/nfss/#EnvSurv.

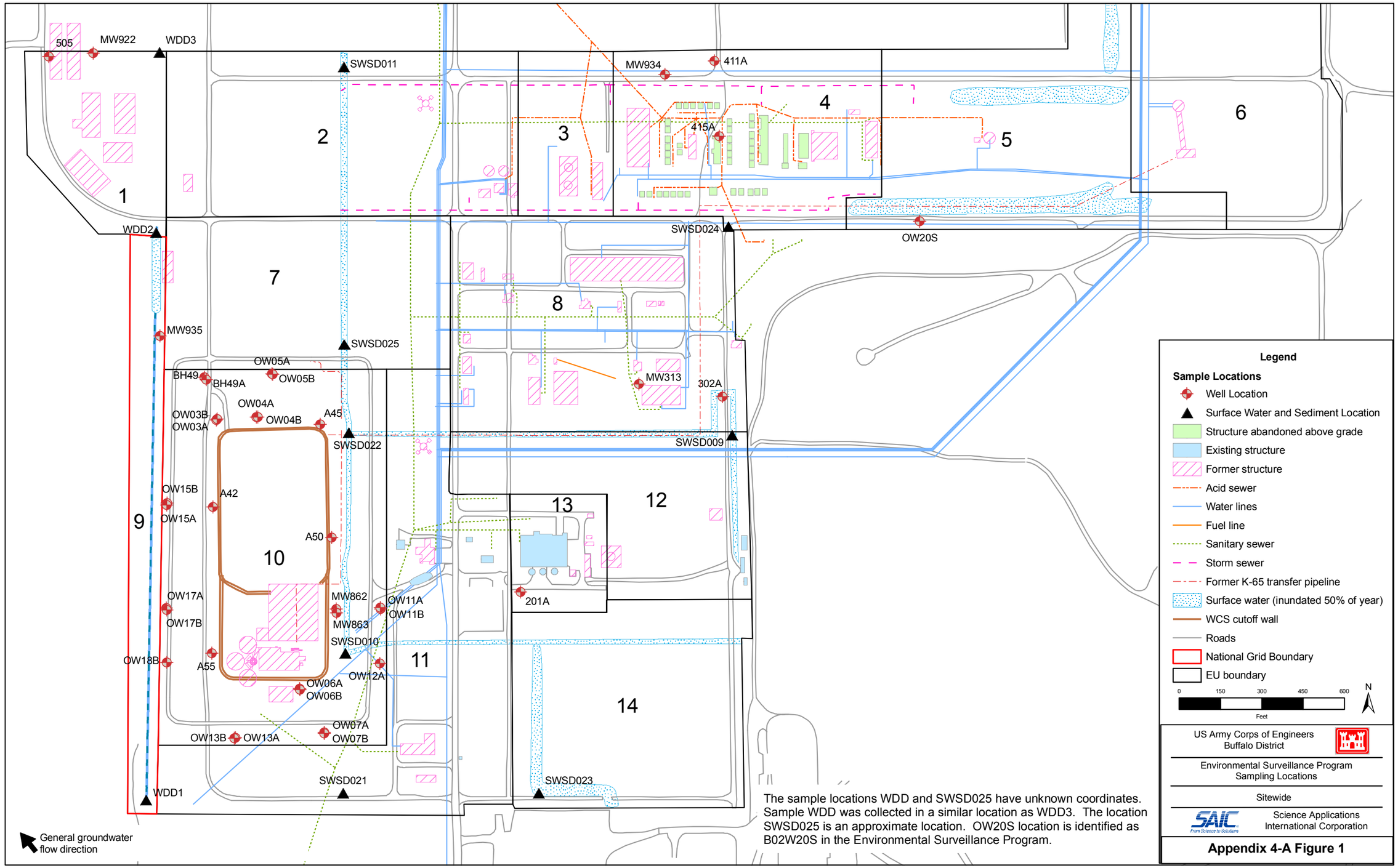
The Technical Memoranda primarily use DOE and United States Environmental Protection Agency (USEPA) guidelines to aid in the evaluation of the environmental data. The ESP data are compared to the DOE guidelines to facilitate historical comparison between reports and DOE still has "property accountability". Over the 25 years of environmental monitoring data, no measured parameter from the NFSS surveillance program exceeded the DOE guidelines and no dose calculation for potentially exposed members of the general public exceeded DOE and USEPA limits (USACE 2009 and USACE 2010).

This ESP data will be used in conjunction with the RI and RIR Addendum data to assess and confirm the nature and extent of on-site contaminants discussed in Section 4. The following tables present the ESP data from 1997 to the available validated 2010 data. The RI and RIR Addendum data for the locations included in the ESP are included in the following tables. In addition, supplemental sampling events that were not part of the ESP or RI are presented in the following data tables. The tables present the parameters, results, and qualifiers by date for each sampling location. The well results are presented in Tables 1-38 and surface water and sediment samples are presented in Tables 39-60. The ESP locations presented in the following tables are presented in Appendix 4-A Figure 1. Section 5.4 presents a trending analysis of select wells surrounding the IWCS. The trending analysis includes RI and ESP data for two analytes, total uranium and radium-226.

References:

USACE 2009. *Niagara Falls Storage Site Environmental Surveillance Program Enhancements Fact Sheet*. (December).

USACE 2010. *2009 (December 17, 2008 to December 17, 2009) Environmental Surveillance Technical Memorandum*. (November).



Appendix 4-A Figure 1

Table 1. Results for Location 201A

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/28/2009	5/18/2010	11/1/2010
Volatile Organic Compounds										
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)	5(U)	5(U)	5(U)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)	5(U)	5(U)	5(U)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)	5(U)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)	2.8(J)	4.12(J)	5(U)	5(U)	5(U)	0.44(U)		0.44(U)		
Benzene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.2(U)		0.18(U)		
Bromoform (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)	5(U)	5(U)	5(U)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.17(U)		1.6		
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.17(U)		0.17(U)		
Dibromochloromethane (µg/L)	1(U)	1(U)								
Ethylbenzene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)	5(U)	5(U)	5(U)	10(U)	10(U)	0.2(U)		0.2(U)		
Styrene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)	1(U)	1(U)	1(U)	2(U)	2(U)	20		38		
Toluene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	1.6		3.9		
Vinyl chloride (µg/L)	1(U)	1(U)	1(U)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)	3(U)	1(U)	1(U)	1(U)	1(U)	0.66(U)		0.66(U)		
Semi-Volatile Organic Compounds										
1,2,4-Trichlorobenzene (µg/L)		9.9(U)								
1,2-Dichlorobenzene (µg/L)		9.9(U)								
1,3-Dichlorobenzene (µg/L)		9.9(U)								
1,4-Dichlorobenzene (µg/L)		9.9(U)								
2,4,5-Trichlorophenol (µg/L)		9.9(U)								
2,4,6-Trichlorophenol (µg/L)		9.9(U)								
2,4-Dichlorophenol (µg/L)		9.9(U)								
2,4-Dimethylphenol (µg/L)		9.9(U)								
2,4-Dinitrophenol (µg/L)		19.8(U)								
2-Chloronaphthalene (µg/L)		0.99(U)								
2-Chlorophenol (µg/L)		9.9(U)								
2-Methyl-4,6-dinitrophenol (µg/L)		9.9(U)								
2-Methylnaphthalene (µg/L)		0.99(U)								
2-Nitroaniline (µg/L)		9.9(U)								
2-Nitrophenol (µg/L)		9.9(U)								
3,3'-Dichlorobenzidine (µg/L)		9.9(U)								
3-Nitroaniline (µg/L)		9.9(U)								
4-Bromophenylphenylether (µg/L)		9.9(U)								
4-Chloro-3-methylphenol (µg/L)		9.9(U)								

Table 1. Results for Location 201A

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/28/2009	5/18/2010	11/1/2010
4-Chloroaniline (µg/L)		9.9(U)								
4-Chlorophenylphenylether (µg/L)		9.9(U)								
4-Nitroaniline (µg/L)		9.9(U)								
4-Nitrophenol (µg/L)		9.9(U)								
bis(2-Chloroethoxy)methane (µg/L)		9.9(U)								
bis(2-Chloroethyl) ether (µg/L)		9.9(U)								
bis(2-Chloroisopropyl)ether (µg/L)		9.9(U)								
bis(2-Ethylhexyl)phthalate (µg/L)		9.9(U)								
Butylbenzylphthalate (µg/L)		9.9(U)								
Carbazole (µg/L)		9.9(U)								
Dibenzofuran (µg/L)		9.9(U)								
Diethylphthalate (µg/L)		9.9(U)								
Dimethylphthalate (µg/L)		9.9(U)								
Di-n-butylphthalate (µg/L)		9.9(U)								
Di-n-octylphthalate (µg/L)		9.9(U)								
Hexachlorobenzene (µg/L)		9.9(U)								
Hexachlorobutadiene (µg/L)		9.9(U)								
Hexachlorocyclopentadiene (µg/L)		9.9(U)								
Hexachloroethane (µg/L)		9.9(U)								
Isophorone (µg/L)		9.9(U)								
m,p-Cresols (µg/L)		9.9(U)								
N-Nitroso-di-n-propylamine (µg/L)		9.9(U)								
N-Nitrosodiphenylamine (µg/L)		9.9(U)								
o-Cresol (µg/L)		9.9(U)								
Pentachlorophenol (µg/L)		9.9(U)								
Phenol (µg/L)		9.9(U)								
General Chemistry										
Alkalinity (µg/L)				467000	467000	490000		480000		
Chloride (µg/L)				6920	6920	6200		140000		
Fluoride (µg/L)				236	236	30(U)		3200		
Nitrate (µg/L)				33(U)	33(U)	24(U)		78(U)		
Nitrite (µg/L)				35.7(J)	35.7(J)	24(U)		72(U)		
Phosphate as P, Ortho (µg/L)					66(U)	60(U)		130(U)		
Solids, Total Dissolved (µg/L)				1290000	1290000	1300000		1300000		
Sulfate (µg/L)				574000	574000	600000		620000		
Explosives										
1,3,5-Trinitrobenzene (µg/L)		0.1(U)								
2,4,6-Trinitrotoluene (µg/L)		0.1(U)								
2,4-Dinitrotoluene (µg/L)		0.1(U)								
2,6-Dinitrotoluene (µg/L)		0.1(U)								
2-Amino-4,6-dinitrotoluene (µg/L)		0.1(U)								
2-Nitrotoluene (µg/L)		0.1(U)								
3-Dinitrobenzene (µg/L)		0.1(U)								
3-Nitrotoluene (µg/L)		0.1(U)								
4-Amino-2,6-dinitrotoluene (µg/L)		0.1(U)								
4-Nitrotoluene (µg/L)		0.1(U)								
HMX (µg/L)		0.1(U)								
Nitrobenzene (µg/L)		0.1(U)								
RDX (µg/L)		0.1(U)								
Tetryl (µg/L)		0.1(U)								
Metals										
Aluminum (µg/L)		97.1(B)								
Aluminum, Dissolved (µg/L)		67.1(BN^{+})								
Antimony (µg/L)		0.28(U)								
Antimony, Dissolved (µg/L)		0.28(U)								

Table 1. Results for Location 201A

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/28/2009	5/18/2010	11/1/2010
Arsenic (µg/L)		9.15(B)								
Arsenic, Dissolved (µg/L)		8.34(B)								
Barium (µg/L)		23.7								
Barium, Dissolved (µg/L)		20.7								
Beryllium (µg/L)		0.21(U)								
Beryllium, Dissolved (µg/L)		0.21(U)								
Boron (µg/L)		276								
Boron, Dissolved (µg/L)		263								
Cadmium (µg/L)		0.66(U)								
Cadmium, Dissolved (µg/L)		0.66(U)								
Calcium (µg/L)		160000								
Calcium, Dissolved (µg/L)		156000								
Chromium (µg/L)		1.7(U)								
Chromium, Dissolved (µg/L)		1.7(U)								
Cobalt (µg/L)		1.4(B)								
Cobalt, Dissolved (µg/L)		1(U)								
Copper (µg/L)		3.36(B)								
Copper, Dissolved (µg/L)		1.6(U)								
Iron (µg/L)		56(B)								
Iron, Dissolved (µg/L)		359								
Lead (µg/L)		0.36(B)								
Lead, Dissolved (µg/L)		0.02(B)								
Lithium (µg/L)		35.9(B)								
Lithium, Dissolved (µg/L)		43.3(B)								
Magnesium (µg/L)		133000								
Magnesium, Dissolved (µg/L)		152000								
Manganese (µg/L)		352								
Manganese, Dissolved (µg/L)		269								
Mercury (µg/L)		0.1(U)								
Mercury, Dissolved (µg/L)		0.1(U)								
Nickel (µg/L)		1.6(U)								
Nickel, Dissolved (µg/L)		1.6(U)								
Potassium (µg/L)		3020								
Potassium, Dissolved (µg/L)		3790								
Selenium (µg/L)		1.8(U)								
Selenium, Dissolved (µg/L)		1.8(U)								
Silver (µg/L)		0.03(U)								
Silver, Dissolved (µg/L)		0.03(U)								
Sodium (µg/L)		65100								
Sodium, Dissolved (µg/L)		63800								
Thallium (µg/L)		0.02(U)								
Thallium, Dissolved (µg/L)		0.02(U)								
Vanadium (µg/L)		2.5(U)								
Vanadium, Dissolved (µg/L)		2.5(U)								
Zinc (µg/L)		149								
Zinc, Dissolved (µg/L)		35.3								
Polycyclic Aromatic Hydrocarbons										
Acenaphthene (µg/L)		0.49(U)								
Acenaphthylene (µg/L)		0.49(U)								
Anthracene (µg/L)		0.49(U)								
Benzo(a)anthracene (µg/L)		0.05(U)								
Benzo(a)pyrene (µg/L)		0.05(U)								
Benzo(b)fluoranthene (µg/L)		0.05(U)								
Benzo(ghi)perylene (µg/L)		0.05(U)								
Benzo(k)fluoranthene (µg/L)		0.02(U)								
Chrysene (µg/L)		0.05(U)								

Table 1. Results for Location 201A

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/28/2009	5/18/2010	11/1/2010
Dibenzo(a,h)anthracene (µg/L)		0.05(U)								
Fluoranthene (µg/L)		0.05(U)								
Fluorene (µg/L)		0.49(U)								
Indeno(1,2,3-cd)pyrene (µg/L)		0.05(U)								
Naphthalene (µg/L)		0.49(U)								
Phenanthrene (µg/L)		0.49(U)								
Pyrene (µg/L)		0.05(U)								
Aroclor-1016 (µg/L)		0.1(U)								
Aroclor-1221 (µg/L)		0.1(U)								
Aroclor-1232 (µg/L)		0.1(U)								
Aroclor-1242 (µg/L)		0.1(U)								
Aroclor-1248 (µg/L)		0.1(U)								
Aroclor-1254 (µg/L)		0.1(U)								
Aroclor-1260 (µg/L)		0.1(U)								
Pesticides										
4,4'-DDD (µg/L)		0.03(J)								
4,4'-DDE (µg/L)		0.02(J)								
4,4'-DDT (µg/L)		0.03(J)								
Aldrin (µg/L)		0.02(U)								
alpha-BHC (µg/L)		0.02(U)								
alpha-Chlordane (µg/L)		0.02(U)								
beta-BHC (µg/L)		0.02(U)								
delta-BHC (µg/L)		0.02(U)								
Dieldrin (µg/L)		0.01(J)								
Endosulfan I (µg/L)		0.02(U)								
Endosulfan II (µg/L)		0.02(J)								
Endosulfan sulfate (µg/L)		0.04(U)								
Endrin (µg/L)		0.01(J)								
Endrin aldehyde (µg/L)		0.04(U)								
Endrin ketone (µg/L)		0.04(U)								
gamma-BHC (Lindane) (µg/L)		0.02(U)								
gamma-Chlordane (µg/L)		0.02(U)								
Heptachlor (µg/L)		0.02(U)								
Heptachlor epoxide (µg/L)		0.02(U)								
Methoxychlor (µg/L)		0.2(U)								
Toxaphene (µg/L)		0.99(U)								
Radiological Compounds										
Actinium-227 (pCi/L)	-7.06(U)									
Actinium-227, Dissolved (pCi/L)		-11.4(U)								
Actinium-227, Gamma (pCi/L)		-4.58(U)								
Alpha (pCi/L)	15.4	14.7								
Alpha, Dissolved (pCi/L)		10.3								
Americium-241 (pCi/L)	3.71(U)									
Americium-241, Dissolved (pCi/L)		0.81(U)								
Americium-241, Gamma (pCi/L)		8.71(U)								
Beta (pCi/L)	11.6	8.87								
Beta, Dissolved (pCi/L)		11.6								
Cesium-137 (pCi/L)	27.4			0.11(U)		1.41(U)	-0.7(U)		-1.87(U)	
Cesium-137, Dissolved (pCi/L)		-0.62(U)								
Cesium-137, Gamma (pCi/L)		0.92(U)								
Cobalt-60 (pCi/L)	1.53(U)									
Cobalt-60, Dissolved (pCi/L)		-0.92(U)								
Cobalt-60, Gamma (pCi/L)		0.36(U)								
Plutonium-238 (pCi/L)				-0.01(U)		0.02(U)	-0.06(U)		0(U)	
Plutonium-239 (pCi/L)						0.03(U)	0.03(U)		0(U)	
Plutonium-239/240 (pCi/L)				-0.01(U)						

Table 1. Results for Location 201A

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/28/2009	5/18/2010	11/1/2010
Protactinium-231 (pCi/L)	41.8(U)									
Protactinium-231, Dissolved (pCi/L)		-26.7(U)								
Protactinium-231, Gamma (pCi/L)		-113(U)								
Radium-226 (pCi/L)	0.49(U)	0.63								0.02(U)
Radium-226, Dissolved (pCi/L)		0.42(U)								
Radium-228 (pCi/L)	4.13(U)	-0.18(U)								0.2(U)
Radium-228, Dissolved (pCi/L)		0.78(UUI)								
Radium-228, Gamma (pCi/L)		5.23(U)								
Strontium-89 (pCi/L)						-0.88(U)	-0.61(U)		1.16(U)	
Strontium-90 (pCi/L)				0.05(U)		1.84(U)	1.11(U)		0.6(U)	
Technetium-99 (pCi/L)				8.57(U)						
Thorium-228 (pCi/L)	0.45									-0.01(U)
Thorium-228, Alpha (pCi/L)		0.13(UJ)								
Thorium-228, Dissolved (pCi/L)	0.43(U)	-0.03(UJ)								
Thorium-228, Dissolved Gamma (pCi/L)	3.23(U)	2.87(U)								
Thorium-228, Gamma (pCi/L)		0(UUI)								
Thorium-230 (pCi/L)	0(U)									-0.11(U)
Thorium-230, Alpha (pCi/L)		0.41(J)								
Thorium-230, Dissolved (pCi/L)		0.44(UJ)								
Thorium-232 (pCi/L)	0.03(U)									0.08
Thorium-232, Alpha (pCi/L)		0(UJ)								
Thorium-232, Dissolved (pCi/L)		-0.06(UJ)								
Total Strontium (pCi/L)						1.24(U)	0.68(U)		1.46(U)	
Total Uranium (µg/L)	25.9	17.3								20.27*
Total Uranium, Dissolved (µg/L)		18.3								
Tritium (pCi/L)				-43.9(U)						
Uranium-233/234 (pCi/L)	10.4									
Uranium-233/234, Alpha (pCi/L)		9.31								
Uranium-233/234, Dissolved (pCi/L)	11.1	9.31								
Uranium-234 (pCi/L)										6.99
Uranium-235 (pCi/L)	4.06(U)									0.46
Uranium-235, Dissolved (pCi/L)	3.22(U)	5.96(U)								
Uranium-235, Gamma (pCi/L)		10.6(U)								
Uranium-235/236 (pCi/L)	0.27									
Uranium-235/236, Alpha (pCi/L)		0.56								
Uranium-235/236, Dissolved (pCi/L)	0.48	0.34								
Uranium-238 (pCi/L)	33.5									6.62
Uranium-238, Alpha (pCi/L)		6.48								
Uranium-238, Dissolved (pCi/L)	8.64	6.78								
Uranium-238, Dissolved Gamma (pCi/L)	98.6(U)	95.2								
Uranium-238, Gamma (pCi/L)		51.3(U)								

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 2. Results for Location 302A

Parameter (unit)	9/27/2000	8/27/2002	5/18/2003	11/3/2004	5/24/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Volatile Organic Compounds																
1,1,1-Trichloroethane (µg/L)			1(U)													
1,1,2,2-Tetrachloroethane (µg/L)			1(U)													
1,1,2-Trichloroethane (µg/L)			1(U)													
1,1-Dichloroethane (µg/L)			1(U)													
1,1-Dichloroethene (µg/L)			1(U)													
1,2-Dichloroethane (µg/L)			1(U)													
1,2-Dichloropropane (µg/L)			1(U)													
2-Butanone (µg/L)			5(U)													
2-Hexanone (µg/L)			5(U)													
4-Methyl-2-pentanone (µg/L)			5(U)													
Acetone (µg/L)			5(U)													
Benzene (µg/L)			1(U)													
Bromodichloromethane (µg/L)			1(U)													
Bromoform (µg/L)			1(U)													
Bromomethane (µg/L)			1(U)													
Carbon disulfide (µg/L)			5(U)													
Carbon tetrachloride (µg/L)			1(U)													
Chlorobenzene (µg/L)			1(U)													
Chloroethane (µg/L)			1(U)													
Chloroform (µg/L)			1(U)													
Chloromethane (µg/L)			1(U)													
cis-1,2-Dichloroethylene (µg/L)			1(U)													
cis-1,3-Dichloropropylene (µg/L)			1(U)													
Dibromochloromethane (µg/L)			1(U)													
Ethylbenzene (µg/L)			1(U)													
Methylene chloride (µg/L)			5(U)													
Styrene (µg/L)			1(U)													
Tetrachloroethylene (µg/L)			1(U)													
Toluene (µg/L)			1(U)													
trans-1,2-Dichloroethylene (µg/L)			1(U)													
trans-1,3-Dichloropropylene (µg/L)			1(U)													
Trichloroethylene (µg/L)			1(U)													
Vinyl chloride (µg/L)			1(U)													
Xylenes (total) (µg/L)			1(U)													
Semi-Volatile Organic Compounds																
1,2,4-Trichlorobenzene (µg/L)			9.8(U)													
1,2-Dichlorobenzene (µg/L)			9.8(U)													
1,3-Dichlorobenzene (µg/L)			9.8(U)													
1,4-Dichlorobenzene (µg/L)			9.8(U)													
2,4,5-Trichlorophenol (µg/L)			9.8(U)													
2,4,6-Trichlorophenol (µg/L)			9.8(U)													
2,4-Dichlorophenol (µg/L)			9.8(U)													
2,4-Dimethylphenol (µg/L)			9.8(U)													
2,4-Dinitrophenol (µg/L)			19.6(U)													
2-Chloronaphthalene (µg/L)			0.98(U)													
2-Chlorophenol (µg/L)			9.8(U)													
2-Methyl-4,6-dinitrophenol (µg/L)			9.8(U)													
2-Methylnaphthalene (µg/L)			0.98(U)													
2-Nitroaniline (µg/L)			9.8(U)													

Table 2. Results for Location 302A

Parameter (unit)	9/27/2000	8/27/2002	5/18/2003	11/3/2004	5/24/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
2-Nitrophenol (µg/L)			9.8(U)													
3,3'-Dichlorobenzidine (µg/L)			9.8(U)													
3-Nitroaniline (µg/L)			9.8(U)													
4-Bromophenylphenylether (µg/L)			9.8(U)													
4-Chloro-3-methylphenol (µg/L)			9.8(U)													
4-Chloroaniline (µg/L)			9.8(U)													
4-Chlorophenylphenylether (µg/L)			9.8(U)													
4-Nitroaniline (µg/L)			9.8(U)													
4-Nitrophenol (µg/L)			9.8(U)													
bis(2-Chloroethoxy)methane (µg/L)			9.8(U)													
bis(2-Chloroethyl) ether (µg/L)			9.8(U)													
bis(2-Chloroisopropyl)ether (µg/L)			9.8(U)													
bis(2-Ethylhexyl)phthalate (µg/L)			2.24(U)													
Butylbenzylphthalate (µg/L)			9.8(U)													
Carbazole (µg/L)			9.8(U)													
Dibenzofuran (µg/L)			9.8(U)													
Diethylphthalate (µg/L)			9.8(U)													
Dimethylphthalate (µg/L)			9.8(U)													
Di-n-butylphthalate (µg/L)			9.8(U)													
Di-n-octylphthalate (µg/L)			9.8(U)													
Hexachlorobenzene (µg/L)			9.8(U)													
Hexachlorobutadiene (µg/L)			9.8(U)													
Hexachlorocyclopentadiene (µg/L)			9.8(U)													
Hexachloroethane (µg/L)			9.8(U)													
Isophorone (µg/L)			9.8(U)													
m,p-Cresols (µg/L)			9.8(U)													
N-Nitroso-di-n-propylamine (µg/L)			9.8(U)													
N-Nitrosodiphenylamine (µg/L)			9.8(U)													
o-Cresol (µg/L)			9.8(U)													
Pentachlorophenol (µg/L)			9.8(U)													
Phenol (µg/L)			11.3													
General Chemistry																
Alkalinity (µg/L)										542000	526000	550000		540000		
Chloride (µg/L)										457000	473000	49000		38000		
Fluoride (µg/L)										490(J)	1280	30(U)		170(U)		
Nitrate (µg/L)										165(U)	33(U)	24(U)		78(U)		
Nitrite (µg/L)										33(U)	33(U)	24(U)		510(J)		
Phosphate as P, Ortho (µg/L)										66(U)	66(U)	60(U)		130(U)		
Solids, Total Dissolved (µg/L)										8890000	8880000	9100000		9100000		
Sulfate (µg/L)										4900000	5430000	530000		5500000		
Explosives																
1,3,5-Trinitrobenzene (µg/L)			0.1(U)													
2,4,6-Trinitrotoluene (µg/L)			0.1(U)													
2,4-Dinitrotoluene (µg/L)			0.1(U)													
2,6-Dinitrotoluene (µg/L)			0.1(U)													
2-Amino-4,6-dinitrotoluene (µg/L)			0.1(U)													
2-Nitrotoluene (µg/L)			0.1(U)													
3-Dinitrobenzene (µg/L)			0.1(U)													
3-Nitrotoluene (µg/L)			0.1(U)													
4-Amino-2,6-dinitrotoluene (µg/L)			0.1(U)													

Table 2. Results for Location 302A

Parameter (unit)	9/27/2000	8/27/2002	5/18/2003	11/3/2004	5/24/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
4-Nitrotoluene (µg/L)			0.1(U)													
HMX (µg/L)			0.1(U)													
Nitrobenzene (µg/L)			0.1(U)													
RDX (µg/L)			0.15													
Tetryl (µg/L)			0.1(U)													
Metals																
Aluminum (µg/L)			199													
Aluminum, Dissolved (µg/L)			799													
Antimony (µg/L)			0.16(B)													
Antimony, Dissolved (µg/L)			0.15(B)													
Arsenic (µg/L)			0.81(U)													
Arsenic, Dissolved (µg/L)			2.08(B)													
Barium (µg/L)			11.4													
Barium, Dissolved (µg/L)			10.2													
Beryllium (µg/L)			0.18(U)													
Beryllium, Dissolved (µg/L)			0.21(U)													
Boron (µg/L)			186													
Boron, Dissolved (µg/L)			180													
Cadmium (µg/L)			0.33(U)													
Cadmium, Dissolved (µg/L)			0.66(U)													
Calcium (µg/L)			456000													
Calcium, Dissolved (µg/L)			475000													
Chromium (µg/L)			15.4													
Chromium, Dissolved (µg/L)			1.7(U)													
Cobalt (µg/L)			1.76(B)													
Cobalt, Dissolved (µg/L)			2.51(B)													
Copper (µg/L)			31.3													
Copper, Dissolved (µg/L)			33.7													
Iron (µg/L)			272													
Iron, Dissolved (µg/L)			28(U)													
Lead (µg/L)			0.48(B)													
Lead, Dissolved (µg/L)			0.32(B)													
Lithium (µg/L)			220(E)													
Lithium, Dissolved (µg/L)			236													
Magnesium (µg/L)			1130000													
Magnesium, Dissolved (µg/L)			1180000													
Manganese (µg/L)			770													
Manganese, Dissolved (µg/L)			905													
Mercury (µg/L)			0.1(U)													
Mercury, Dissolved (µg/L)			0.1(U)													
Nickel (µg/L)			7.49													
Nickel, Dissolved (µg/L)			7.65													
Potassium (µg/L)			8960													
Potassium, Dissolved (µg/L)			8210													
Selenium (µg/L)			2.18(B)													
Selenium, Dissolved (µg/L)			2.08(B)													
Silver (µg/L)			0.02(B)													
Silver, Dissolved (µg/L)			0(U)													
Sodium (µg/L)			419000													
Sodium, Dissolved (µg/L)			392000													

Table 2. Results for Location 302A

Parameter (unit)	9/27/2000	8/27/2002	5/18/2003	11/3/2004	5/24/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Thallium (µg/L)			0.4(B)													
Thallium, Dissolved (µg/L)			0.06(B)													
Vanadium (µg/L)			0.23(U)													
Vanadium, Dissolved (µg/L)			2.5(U)													
Zinc (µg/L)			40													
Zinc, Dissolved (µg/L)			4.4(U)													
Polycyclic Aromatic Hydrocarbons																
Acenaphthene (µg/L)			0.48(U)													
Acenaphthylene (µg/L)			0.48(U)													
Anthracene (µg/L)			0.48(U)													
Benzo(a)anthracene (µg/L)			0.05(U)													
Benzo(a)pyrene (µg/L)			0.05(U)													
Benzo(b)fluoranthene (µg/L)			0.05(U)													
Benzo(ghi)perylene (µg/L)			0.05(U)													
Benzo(k)fluoranthene (µg/L)			0.02(U)													
Chrysene (µg/L)			0.05(U)													
Dibenzo(a,h)anthracene (µg/L)			0.05(U)													
Fluoranthene (µg/L)			0.05(U)													
Fluorene (µg/L)			0.48(U)													
Indeno(1,2,3-cd)pyrene (µg/L)			0.05(U)													
Naphthalene (µg/L)			0.48(U)													
Phenanthrene (µg/L)			0.48(U)													
Pyrene (µg/L)			0.05(U)													
PCBs																
Aroclor-1016 (µg/L)			0.1(U)													
Aroclor-1221 (µg/L)			0.1(U)													
Aroclor-1232 (µg/L)			0.1(U)													
Aroclor-1242 (µg/L)			0.1(U)													
Aroclor-1248 (µg/L)			0.1(U)													
Aroclor-1254 (µg/L)			0.1(U)													
Aroclor-1260 (µg/L)			0.1(U)													
Pesticides																
4,4'-DDD (µg/L)			0.04(U)													
4,4'-DDE (µg/L)			0.04(U)													
4,4'-DDT (µg/L)			0.04(U)													
Aldrin (µg/L)			0.02(U)													
alpha-BHC (µg/L)			0.02(U)													
alpha-Chlordane (µg/L)			0.02(U)													
beta-BHC (µg/L)			0.02(U)													
delta-BHC (µg/L)			0.02(U)													
Dieldrin (µg/L)			0.04(U)													
Endosulfan I (µg/L)			0.02(U)													
Endosulfan II (µg/L)			0.04(U)													
Endosulfan sulfate (µg/L)			0.04(U)													
Endrin (µg/L)			0.04(U)													
Endrin aldehyde (µg/L)			0.04(U)													
Endrin ketone (µg/L)			0.04(U)													
gamma-BHC (Lindane) (µg/L)			0.02(U)													
gamma-Chlordane (µg/L)			0.02(U)													
Heptachlor (µg/L)			0.02(U)													

Table 2. Results for Location 302A

Parameter (unit)	9/27/2000	8/27/2002	5/18/2003	11/3/2004	5/24/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Heptachlor epoxide (µg/L)			0.02(U)													
Methoxychlor (µg/L)			0.2(U)													
Toxaphene (µg/L)			1(U)													
Radiological Compounds																
Actinium-227 (pCi/L)	6.15(U)															
Actinium-227, Dissolved (pCi/L)			-9.47(U)													
Actinium-227, Gamma (pCi/L)			1.91(U)													
Alpha (pCi/L)	59.7		53.9													
Alpha, Dissolved (pCi/L)			70.2													
Americium-241 (pCi/L)	2.18(U)															
Americium-241, Dissolved (pCi/L)			1.97(U)													
Americium-241, Gamma (pCi/L)			2.03(U)													
Beta (pCi/L)	44.9		38.9													
Beta, Dissolved (pCi/L)			44.4													
Cesium-137 (pCi/L)	0.09(U)															
Cesium-137, Dissolved (pCi/L)			0.01(U)													
Cesium-137, Gamma (pCi/L)			0.31(U)													
Cobalt-60 (pCi/L)	1.69(U)															
Cobalt-60, Dissolved (pCi/L)			0.7(U)													
Cobalt-60, Gamma (pCi/L)			0.74(U)													
Protactinium-231 (pCi/L)	-155(U)															
Protactinium-231, Dissolved (pCi/L)			-1.75(U)													
Protactinium-231, Gamma (pCi/L)			-23.8(U)													
Radium-226 (pCi/L)	0.45(U)		0.48	0.68	0.16(U)		0.35(J)	0.15(U)								0.55
Radium-226, Dissolved (pCi/L)			0.18(U)	0.81			0.48(J)									
Radium-228 (pCi/L)	4.83(U)		0.43(U)	0.6(U)	0.51(U)		0.24(U)	-1.03(U)								0.18(U)
Radium-228, Dissolved (pCi/L)			0.3(U)	0.72			0.33(U)									
Radium-228, Gamma (pCi/L)			2.43(U)													
Thorium-228 (pCi/L)	1.25(U)			-0.05(U)	0.02(U)		0.06(U)	0.02(U)								0(U)
Thorium-228, Alpha (pCi/L)			0.05(U)													
Thorium-228, Dissolved (pCi/L)	0.1(U)		0.33	0.18(U)			0.02(U)									
Thorium-228, Dissolved Gamma (pCi/L)	3.68(U)		0(UUI)													
Thorium-228, Gamma (pCi/L)			0.46(U)													
Thorium-230 (pCi/L)	0.14			0.39(U)	0.09(J)		0.18(J)	0.13(U)								0.18(U)
Thorium-230, Alpha (pCi/L)			0.06(U)													
Thorium-230, Dissolved (pCi/L)			0.28	0.15(U)			0.15(J)									
Thorium-232 (pCi/L)	0.02(U)			-0.03(U)	0(U)		0.04(U)	0.05(U)								0.11
Thorium-232, Alpha (pCi/L)			-0.01(U)													
Thorium-232, Dissolved (pCi/L)			0.02(U)	-0.1(U)			0.02(U)									
Total Uranium (µg/L)	125		125	115						125.82*	128.79*	150.47*		126.09*	135.23*	131.3*
Total Uranium (pCi/L)					100.96*	98.1*				99.68*	101.38*	122.42*		102.5*		
Total Uranium, Dissolved (µg/L)		118	126	110												
Total Uranium, Dissolved (pCi/L)		106.29*														
Uranium-233/234 (pCi/L)	61			53.9				48			55.3			57.74		
Uranium-233/234, Alpha (pCi/L)			52.6													
Uranium-233/234, Dissolved (pCi/L)	57.4		57.5	54												
Uranium-234 (pCi/L)					55	53	54.9		52	55.8		69.69	57.74		55.71	58.1
Uranium-234, Dissolved (pCi/L)		59					50.6									
Uranium-235 (pCi/L)	4.57(U)				2.16	4.2	1.59			2.78		3.62	3.14		1.89	3.51
Uranium-235, Dissolved (pCi/L)	3.49(U)	2.29	9.86(U)				2.05									

Table 2. Results for Location 302A

Parameter (unit)	9/27/2000	8/27/2002	5/18/2003	11/3/2004	5/24/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Uranium-235, Gamma (pCi/L)			2.46(U)													
Uranium-235/236 (pCi/L)	1.89			3.11				1.37	2.16		3.58			3.14		
Uranium-235/236, Alpha (pCi/L)			2.24													
Uranium-235/236, Dissolved (pCi/L)	1.87		3.46	3.91												
Uranium-238 (pCi/L)	81			40.9	43.8	40.9	43.2	37.8	39.8	41.1	42.5	49.11	41.61	41.61	44.34	42.8
Uranium-238, Alpha (pCi/L)			41.1													
Uranium-238, Dissolved (pCi/L)	42.7	45	44.4	44.9			39.8									
Uranium-238, Dissolved Gamma (pCi/L)	39.3(U)		17.5(U)													
Uranium-238, Gamma (pCi/L)			120													

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 3. Results for Location 411A

Parameter (unit)	9/29/2000	5/19/2003	10/28/2010
Volatile Organic Compounds			
1,1,1-Trichloroethane (µg/L)		1(U)	
1,1,2,2-Tetrachloroethane (µg/L)		1(U)	
1,1,2-Trichloroethane (µg/L)		1(U)	
1,1-Dichloroethane (µg/L)		1(U)	
1,1-Dichloroethene (µg/L)		1(U)	
1,2-Dichloroethane (µg/L)		1(U)	
1,2-Dichloropropane (µg/L)		1(U)	
2-Butanone (µg/L)		5(U)	
2-Hexanone (µg/L)		5(U)	
4-Methyl-2-pentanone (µg/L)		5(U)	
Acetone (µg/L)		5(U)	
Benzene (µg/L)		1(U)	
Bromodichloromethane (µg/L)		1(U)	
Bromoform (µg/L)		1(U)	
Bromomethane (µg/L)		1(U)	
Carbon disulfide (µg/L)		5(U)	
Carbon tetrachloride (µg/L)		1(U)	
Chlorobenzene (µg/L)		1(U)	
Chloroethane (µg/L)		1(U)	
Chloroform (µg/L)		1(U)	
Chloromethane (µg/L)		1(U)	
cis-1,2-Dichloroethylene (µg/L)		1.47	
cis-1,3-Dichloropropylene (µg/L)		1(U)	
Dibromochloromethane (µg/L)		1(U)	
Ethylbenzene (µg/L)		1(U)	
Methylene chloride (µg/L)		5(U)	
Styrene (µg/L)		1(U)	
Tetrachloroethylene (µg/L)		1(U)	
Toluene (µg/L)		1(U)	
trans-1,2-Dichloroethylene (µg/L)		1(U)	
trans-1,3-Dichloropropylene (µg/L)		1(U)	
Trichloroethylene (µg/L)		1(U)	
Vinyl chloride (µg/L)		1(U)	
Xylenes (total) (µg/L)		1(U)	
Semi-Volatile Organic Compounds			
1,2,4-Trichlorobenzene (µg/L)		9.8(U)	
1,2-Dichlorobenzene (µg/L)		9.8(U)	
1,3-Dichlorobenzene (µg/L)		9.8(U)	
1,4-Dichlorobenzene (µg/L)		9.8(U)	
2,4,5-Trichlorophenol (µg/L)		9.8(U)	
2,4,6-Trichlorophenol (µg/L)		9.8(U)	
2,4-Dichlorophenol (µg/L)		9.8(U)	
2,4-Dimethylphenol (µg/L)		9.8(U)	
2,4-Dinitrophenol (µg/L)		19.6(U)	
2-Chloronaphthalene (µg/L)		0.98(U)	
2-Chlorophenol (µg/L)		9.8(U)	
2-Methyl-4,6-dinitrophenol (µg/L)		9.8(U)	
2-Methylnaphthalene (µg/L)		0.98(U)	
2-Nitroaniline (µg/L)		9.8(U)	
2-Nitrophenol (µg/L)		9.8(U)	
3,3'-Dichlorobenzidine (µg/L)		9.8(U)	
3-Nitroaniline (µg/L)		9.8(U)	
4-Bromophenylphenylether (µg/L)		9.8(U)	
4-Chloro-3-methylphenol (µg/L)		9.8(U)	
4-Chloroaniline (µg/L)		9.8(U)	
4-Chlorophenylphenylether (µg/L)		9.8(U)	

Table 3. Results for Location 411A

Parameter (unit)	9/29/2000	5/19/2003	10/28/2010
4-Nitroaniline (µg/L)		9.8(U)	
4-Nitrophenol (µg/L)		9.8(U)	
bis(2-Chloroethoxy)methane (µg/L)		9.8(U)	
bis(2-Chloroethyl) ether (µg/L)		9.8(U)	
bis(2-Chloroisopropyl)ether (µg/L)		9.8(U)	
bis(2-Ethylhexyl)phthalate (µg/L)		24	
Butylbenzylphthalate (µg/L)		9.8(U)	
Carbazole (µg/L)		9.8(U)	
Dibenzofuran (µg/L)		9.8(U)	
Diethylphthalate (µg/L)		9.8(U)	
Dimethylphthalate (µg/L)		9.8(U)	
Di-n-butylphthalate (µg/L)		9.8(U)	
Di-n-octylphthalate (µg/L)		9.8(U)	
Hexachlorobenzene (µg/L)		9.8(U)	
Hexachlorobutadiene (µg/L)		9.8(U)	
Hexachlorocyclopentadiene (µg/L)		9.8(U)	
Hexachloroethane (µg/L)		9.8(U)	
Isophorone (µg/L)		9.8(U)	
m,p-Cresols (µg/L)		9.8(U)	
N-Nitroso-di-n-propylamine (µg/L)		9.8(U)	
N-Nitrosodiphenylamine (µg/L)		9.8(U)	
o-Cresol (µg/L)		9.8(U)	
Pentachlorophenol (µg/L)		9.8(U)	
Phenol (µg/L)		9.8(U)	
Explosives			
1,3,5-Trinitrobenzene (µg/L)		0.1(U)	
2,4,6-Trinitrotoluene (µg/L)		0.1(U)	
2,4-Dinitrotoluene (µg/L)		0.1(U)	
2,6-Dinitrotoluene (µg/L)		0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)		0.1(U)	
2-Nitrotoluene (µg/L)		0.1(U)	
3-Dinitrobenzene (µg/L)		0.1(U)	
3-Nitrotoluene (µg/L)		0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)		0.1(U)	
4-Nitrotoluene (µg/L)		0.1(U)	
HMX (µg/L)		0.1(U)	
Nitrobenzene (µg/L)		0.1(U)	
RDX (µg/L)		0.1(U)	
Tetryl (µg/L)		0.1(U)	
Metals			
Aluminum (µg/L)		71.1(B)	
Aluminum, Dissolved (µg/L)		82.9(B)	
Antimony (µg/L)		0.11(B)	
Antimony, Dissolved (µg/L)		0.16(B)	
Arsenic (µg/L)		7.24	
Arsenic, Dissolved (µg/L)		4.56	
Barium (µg/L)		21.8	
Barium, Dissolved (µg/L)		21.7	
Beryllium (µg/L)		0.18(U)	
Beryllium, Dissolved (µg/L)		0.21(U)	
Boron (µg/L)		1420	
Boron, Dissolved (µg/L)		1350	
Cadmium (µg/L)		0.33(U)	
Cadmium, Dissolved (µg/L)		0.66(U)	
Calcium (µg/L)		118000	
Calcium, Dissolved (µg/L)		115000	
Chromium (µg/L)		1.53(B)	

Table 3. Results for Location 411A

Parameter (unit)	9/29/2000	5/19/2003	10/28/2010
Chromium, Dissolved (µg/L)		1.7(U)	
Cobalt (µg/L)		0.29(U)	
Cobalt, Dissolved (µg/L)		1(U)	
Copper (µg/L)		19.9	
Copper, Dissolved (µg/L)		8.05	
Iron (µg/L)		340	
Iron, Dissolved (µg/L)		148	
Lead (µg/L)		0.55(B)	
Lead, Dissolved (µg/L)		0.3(B)	
Lithium (µg/L)		55.1(E)	
Lithium, Dissolved (µg/L)		62.7	
Magnesium (µg/L)		214000	
Magnesium, Dissolved (µg/L)		218000	
Manganese (µg/L)		41.8	
Manganese, Dissolved (µg/L)		35.6	
Mercury (µg/L)		0.1(U)	
Mercury, Dissolved (µg/L)		0.1(U)	
Nickel (µg/L)		1.51(B)	
Nickel, Dissolved (µg/L)		2.38(B)	
Potassium (µg/L)		2080(E)	
Potassium, Dissolved (µg/L)		1900	
Selenium (µg/L)		1.72(B)	
Selenium, Dissolved (µg/L)		1.62(B)	
Silver (µg/L)		0.01(B)	
Silver, Dissolved (µg/L)		0.01(U)	
Sodium (µg/L)		76300	
Sodium, Dissolved (µg/L)		73000	
Thallium (µg/L)		0.02(B)	
Thallium, Dissolved (µg/L)		0.02(U)	
Vanadium (µg/L)		0.23(U)	
Vanadium, Dissolved (µg/L)		2.5(U)	
Zinc (µg/L)		10.4	
Zinc, Dissolved (µg/L)		1.44(B)	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene (µg/L)		0.5(U)	
Acenaphthylene (µg/L)		0.5(U)	
Anthracene (µg/L)		0.5(U)	
Benzo(a)anthracene (µg/L)		0.05(U)	
Benzo(a)pyrene (µg/L)		0.05(U)	
Benzo(b)fluoranthene (µg/L)		0.05(U)	
Benzo(ghi)perylene (µg/L)		0.05(U)	
Benzo(k)fluoranthene (µg/L)		0.02(U)	
Chrysene (µg/L)		0.05(U)	
Dibenzo(a,h)anthracene (µg/L)		0.05(U)	
Fluoranthene (µg/L)		0.05(U)	
Fluorene (µg/L)		0.5(U)	
Indeno(1,2,3-cd)pyrene (µg/L)		0.05(U)	
Naphthalene (µg/L)		0.5(U)	
Phenanthrene (µg/L)		0.5(U)	
Pyrene (µg/L)		0.05(U)	
PCBs			
Aroclor-1016 (µg/L)		0.1(U)	
Aroclor-1221 (µg/L)		0.1(U)	
Aroclor-1232 (µg/L)		0.1(U)	
Aroclor-1242 (µg/L)		0.1(U)	
Aroclor-1248 (µg/L)		0.1(U)	
Aroclor-1254 (µg/L)		0.1(U)	

Table 3. Results for Location 411A

Parameter (unit)	9/29/2000	5/19/2003	10/28/2010
Aroclor-1260 (µg/L)		0.1(U)	
Pesticides			
4,4'-DDD (µg/L)		0.04(U)	
4,4'-DDE (µg/L)		0.04(U)	
4,4'-DDT (µg/L)		0.04(U)	
Aldrin (µg/L)		0.02(U)	
alpha-BHC (µg/L)		0.02(U)	
alpha-Chlordane (µg/L)		0.02(U)	
beta-BHC (µg/L)		0.02(U)	
delta-BHC (µg/L)		0.02(U)	
Dieldrin (µg/L)		0.04(U)	
Endosulfan I (µg/L)		0.02(U)	
Endosulfan II (µg/L)		0.04(U)	
Endosulfan sulfate (µg/L)		0.04(U)	
Endrin (µg/L)		0.04(U)	
Endrin aldehyde (µg/L)		0.04(U)	
Endrin ketone (µg/L)		0.04(U)	
gamma-BHC (Lindane) (µg/L)		0.02(U)	
gamma-Chlordane (µg/L)		0.02(U)	
Heptachlor (µg/L)		0.02(U)	
Heptachlor epoxide (µg/L)		0.02(U)	
Methoxychlor (µg/L)		0.19(U)	
Toxaphene (µg/L)		0.97(U)	
Radiological Compounds			
Actinium-227 (pCi/L)	11.1(U)		
Actinium-227, Dissolved (pCi/L)		25.2(U)	
Actinium-227, Gamma (pCi/L)		-14.5(U)	
Alpha (pCi/L)	7.54	14.5	
Alpha, Dissolved (pCi/L)		12.8	
Americium-241 (pCi/L)	-6.63(U)		
Americium-241, Dissolved (pCi/L)		0.01(U)	
Americium-241, Gamma (pCi/L)		0.02(U)	
Beta (pCi/L)	6.15	8.39	
Beta, Dissolved (pCi/L)		7.51	
Cesium-137 (pCi/L)	-0.65(U)		
Cesium-137, Dissolved (pCi/L)		-0.28(U)	
Cesium-137, Gamma (pCi/L)		0.23(U)	
Cobalt-60 (pCi/L)	1.16(U)		
Cobalt-60, Dissolved (pCi/L)		0.36(U)	
Cobalt-60, Gamma (pCi/L)		-0.83(U)	
Protactinium-231 (pCi/L)	-51.6(U)		
Protactinium-231, Dissolved (pCi/L)		23.9(U)	
Protactinium-231, Gamma (pCi/L)		-3.7(U)	
Radium-226 (pCi/L)	0.34(U)	0.21(U)	0.32(U)
Radium-226, Dissolved (pCi/L)		0.69	
Radium-228 (pCi/L)	2.14(U)	0.36(U)	0.06(U)
Radium-228, Dissolved (pCi/L)		0.4(U)	
Radium-228, Gamma (pCi/L)		4.29(U)	
Thorium-228 (pCi/L)	4.4(U)		0.07(U)
Thorium-228, Alpha (pCi/L)		-0.02(U)	
Thorium-228, Dissolved (pCi/L)	0.23	0.04(U)	
Thorium-228, Dissolved Gamma (pCi/L)	0.34(U)	0(UUI)	
Thorium-228, Gamma (pCi/L)		2.69(U)	
Thorium-230 (pCi/L)	0.02(U)		0.06(U)
Thorium-230, Alpha (pCi/L)		0.03(U)	
Thorium-230, Dissolved (pCi/L)		0.64	
Thorium-232 (pCi/L)	0.01(U)		0.08(U)

Table 3. Results for Location 411A

Parameter (unit)	9/29/2000	5/19/2003	10/28/2010
Thorium-232, Alpha (pCi/L)		-0.03(U)	
Thorium-232, Dissolved (pCi/L)		0.01(U)	
Total Uranium (µg/L)	13.6	13	19.46*
Total Uranium, Dissolved (µg/L)		14.8	
Uranium-233/234 (pCi/L)	5.05		
Uranium-233/234, Alpha (pCi/L)		6.87	
Uranium-233/234, Dissolved (pCi/L)	6.92	7.57	
Uranium-234 (pCi/L)			6.88
Uranium-235 (pCi/L)	18.1(U)		0.48
Uranium-235, Dissolved (pCi/L)	2.64(U)	4.21(U)	
Uranium-235, Gamma (pCi/L)		2.05(U)	
Uranium-235/236 (pCi/L)	0.42		
Uranium-235/236, Alpha (pCi/L)		0.38	
Uranium-235/236, Dissolved (pCi/L)	0.09(U)	0.83	
Uranium-238 (pCi/L)	147(U)		6.35
Uranium-238, Alpha (pCi/L)		5.25	
Uranium-238, Dissolved (pCi/L)	5.27	5.17	
Uranium-238, Dissolved Gamma (pCi/L)	67.4(U)	131(U)	
Uranium-238, Gamma (pCi/L)		20.8(U)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 4. Results for Location 415A

Parameter (unit)	9/29/2000	10/2/2000	5/19/2003	6/17/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Volatile Organic Compounds											
1,1,1-Trichloroethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.16(U)		160(U)		
1,1,2,2-Tetrachloroethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.16(U)		290(U)		
1,1,2-Trichloroethane (µg/L)	500(U)		4.29	100(U)		200(U)	0.29(U)		270(U)		
1,1-Dichloroethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.26(U)		250(U)		
1,1-Dichloroethylene (µg/L)	500(U)		38.9	100(U)		200(U)	0.27(U)		190(U)		
1,2-Dichloroethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.19(U)		190(U)		
1,2-Dichloropropane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.35(U)		350(U)		
2-Butanone (µg/L)	2500(U)		19.5	500(U)		1000(U)	0.28(U)		280(U)		
2-Hexanone (µg/L)	2500(U)		5(U)	500(U)		1000(U)	0.21(U)		210(U)		
4-Methyl-2-pentanone (µg/L)	2500(U)		8.56	500(U)		1000(U)	3.1(J)		400(U)		
Acetone (µg/L)	2500(U)		157	201(J)		1000(U)	64(J)		440(U)		
Benzene (µg/L)	500(U)		2.28	100(U)		200(U)	2		200(U)		
Bromodichloromethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.18(U)		180(U)		
Bromoform (µg/L)	500(U)		1(U)	100(U)		200(U)	0.33(U)		330(U)		
Bromomethane (µg/L)	500(U)		1(U)	100(U)		200(U)	1.2(U)		1200(U)		
Carbon disulfide (µg/L)	2500(U)		5(U)	500(U)		1000(U)	0.15(U)		150(U)		
Carbon tetrachloride (µg/L)	500(U)		1(U)	100(U)		200(U)	0.36(U)		360(U)		
Chlorobenzene (µg/L)	500(U)		1(U)	100(U)		200(U)	0.22(U)		220(U)		
Chloroethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.42(U)		420(U)		
Chloroform (µg/L)	500(U)		1.37	100(U)		200(U)	1		190(U)		
Chloromethane (µg/L)	500(U)		1(U)	100(U)		200(U)	0.22(U)		220(U)		
cis-1,2-Dichloroethylene (µg/L)	12300(D)		13900	9650		11200	7000		7700		
cis-1,3-Dichloropropylene (µg/L)	500(U)		1(U)	100(U)		200(U)	0.17(U)		170(U)		
Dibromochloromethane (µg/L)	500(U)		1(U)								
Ethylbenzene (µg/L)	500(U)		0.36(J)	100(U)		200(U)	0.62(J)		200(U)		
Methylene chloride (µg/L)	2500(U)		2.59(J)	500(U)		2000(U)	U		670(J)		
Styrene (µg/L)	500(U)		0.4(J)	100(U)		200(U)	0.2(U)		200(U)		
Tetrachloroethylene (µg/L)	103000		92000	29800		22800(J)	120000(J)		79000		
Toluene (µg/L)	500(U)		1.37	100(U)		200(U)	1.3		200(U)		
trans-1,2-Dichloroethylene (µg/L)	500(U)		115	104		139(J)	110		180(U)		
trans-1,3-Dichloropropylene (µg/L)	500(U)		1(U)	100(U)		200(U)	0.2(U)		200(U)		
Trichloroethylene (µg/L)	21200(D)		20400	11500		10200	18000		11000		
Vinyl chloride (µg/L)	1760(JD)		1630	513		763	280		460(J)		
Xylenes (total) (µg/L)	1500(U)		2.04	100(U)		200(U)	3.8		660(U)		
Semi-Volatile Organic Compounds											
1,2,4-Trichlorobenzene (µg/L)	10.3(U)		10(U)								
1,2-Dichlorobenzene (µg/L)	10.3(U)		10(U)								
1,3-Dichlorobenzene (µg/L)	10.3(U)		10(U)								
1,4-Dichlorobenzene (µg/L)	10.3(U)		10(U)								
2,4,5-Trichlorophenol (µg/L)	10.3(U)		10(U)								
2,4,6-Trichlorophenol (µg/L)	10.3(U)		10(U)								
2,4-Dichlorophenol (µg/L)	10.3(U)		10(U)								
2,4-Dimethylphenol (µg/L)	10.3(U)		10(U)								
2,4-Dinitrophenol (µg/L)	20.6(U)		20(U)								
2-Chloronaphthalene (µg/L)	10.3(U)		1(U)								
2-Chlorophenol (µg/L)	10.3(U)		10(U)								
2-Methyl-4,6-dinitrophenol (µg/L)	10.3(U)		10(U)								
2-Methylnaphthalene (µg/L)	10.3(U)		1(U)								
2-Nitroaniline (µg/L)	10.3(U)		10(U)								

Table 4. Results for Location 415A

Parameter (unit)	9/29/2000	10/2/2000	5/19/2003	6/17/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
2-Nitrophenol (µg/L)	10.3(U)		10(U)								
3,3'-Dichlorobenzidine (µg/L)	10.3(U)		10(U)								
3-Nitroaniline (µg/L)	10.3(U)		10(U)								
4-Bromophenylphenylether (µg/L)	10.3(U)		10(U)								
4-Chloro-3-methylphenol (µg/L)	10.3(U)		10(U)								
4-Chloroaniline (µg/L)	10.3(U)		10(U)								
4-Chlorophenylphenylether (µg/L)	10.3(U)		10(U)								
4-Nitroaniline (µg/L)	10.3(U)		10(U)								
4-Nitrophenol (µg/L)	10.3(U)		10(U)								
Benzoic Acid (µg/L)	20.6(U)										
bis(2-Chloroethoxy)methane (µg/L)	10.3(U)		10(U)								
bis(2-Chloroethyl) ether (µg/L)	10.3(U)		10(U)								
bis(2-Chloroisopropyl)ether (µg/L)	10.3(U)		10(U)								
bis(2-Ethylhexyl)phthalate (µg/L)	10.3(U)		16.7								
Butylbenzylphthalate (µg/L)	10.3(U)		10(U)								
Carbazole (µg/L)	10.3(U)		10(U)								
Dibenzofuran (µg/L)	10.3(U)		10(U)								
Diethylphthalate (µg/L)	10.3(U)		10(U)								
Dimethylphthalate (µg/L)	10.3(U)		10(U)								
Di-n-butylphthalate (µg/L)	10.3(U)		10(U)								
Di-n-octylphthalate (µg/L)	10.3(U)		10(U)								
Diphenylamine (µg/L)	10.3(U)										
Hexachlorobenzene (µg/L)	10.3(U)		10(U)								
Hexachlorobutadiene (µg/L)	10.3(U)		10(U)								
Hexachlorocyclopentadiene (µg/L)	10.3(U)		10(U)								
Hexachloroethane (µg/L)	10.3(U)		10(U)								
Isophorone (µg/L)	28.7		10(U)								
m,p-Cresols (µg/L)	10.3(U)		10(U)								
N-Nitroso-di-n-propylamine (µg/L)	10.3(U)		10(U)								
N-Nitrosodiphenylamine (µg/L)			10(U)								
o-Cresol (µg/L)	10.3(U)		10(U)								
Pentachlorophenol (µg/L)	10.3(U)		10(U)								
Phenol (µg/L)	10.3(U)		10(U)								
General Chemistry											
Alkalinity (µg/L)				542000	543000	543000	570000		42000000		
Chloride (µg/L)			139000	141000	134000	134000			190000		
Fluoride (µg/L)			1130	2980	3490	3490	1600		170(U)		
Methane (µg/L)			39.7								
Nitrate (µg/L)			34.1(U)	33(U)	33(U)	33(U)			78(U)		
Nitrite (µg/L)			54.2(U)	33(U)	33(U)	33(U)			72(U)		
Phosphate as P, Ortho (µg/L)			151	66(U)	66(U)	66(U)			130(U)		
Solids, Total Dissolved (µg/L)				2310000	2120000	2120000	2400000		580000		
Sulfate (µg/L)			985000	926000	890000	890000			880000		
Total Organic Carbon Average (µg/L)			34900								
Explosives											
1,3,5-Trinitrobenzene (µg/L)	1(U)		0.1(U)								
2,4,6-Trinitrotoluene (µg/L)	1(U)		0.1(U)								

Table 4. Results for Location 415A

Parameter (unit)	9/29/2000	10/2/2000	5/19/2003	6/17/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
2,4-Dinitrotoluene (µg/L)	1(U)		0.1(U)								
2,6-Dinitrotoluene (µg/L)	1(U)		0.1(U)								
2-Amino-4,6-dinitrotoluene (µg/L)	1(U)		0.1(U)								
2-Nitrotoluene (µg/L)	1(U)		0.1(U)								
3-Dinitrobenzene (µg/L)	1(U)		0.1(U)								
3-Nitrotoluene (µg/L)	1(U)		0.1(U)								
4-Amino-2,6-dinitrotoluene (µg/L)	1(U)		0.1(U)								
4-Nitrotoluene (µg/L)	1(U)		0.1(U)								
HMX (µg/L)	1(U)		0.1(U)								
Nitrobenzene (µg/L)	1(U)		0.1(U)								
RDX (µg/L)	1(U)		0.1(U)								
Tetryl (µg/L)	1(U)		0.1(U)								
Metals											
Aluminum (µg/L)	51.7		135								
Aluminum, Dissolved (µg/L)		634	109								
Antimony (µg/L)	4.1(U)		0.15(B)								
Antimony, Dissolved (µg/L)		4.1(U)	0.68(B)								
Arsenic (µg/L)	0.07(U)		6.78								
Arsenic, Dissolved (µg/L)		0.59(B)	4.84								
Barium (µg/L)	22.6		14.4								
Barium, Dissolved (µg/L)		38.7	13.4								
Beryllium (µg/L)	0.46(U)		0.18(U)								
Beryllium, Dissolved (µg/L)		0.46(U)	0.21(U)								
Boron (µg/L)	21100		28700								
Boron, Dissolved (µg/L)		26600	15100								
Cadmium (µg/L)	0.69(U)		0.33(U)								
Cadmium, Dissolved (µg/L)		0.69(U)	0.66(U)								
Calcium (µg/L)	270000		235000								
Calcium, Dissolved (µg/L)		247000	266000								
Chromium (µg/L)	0.87(U)		3.18(B)								
Chromium, Dissolved (µg/L)		1.47(B)	1.7(U)								
Cobalt (µg/L)	5.86		1.77(B)								
Cobalt, Dissolved (µg/L)		6.12	1.48(B)								
Copper (µg/L)	6.8		10.2								
Copper, Dissolved (µg/L)		12.2	1.6(U)								
Iron (µg/L)	88.2		685								
Iron, Dissolved (µg/L)		586	21.1(B)								
Lead (µg/L)	0.14(U)		0.62(B)								
Lead, Dissolved (µg/L)		0.14(U)	0.07(B)								
Lithium (µg/L)	22.4		20.9(E)								
Lithium, Dissolved (µg/L)		5.93(B)	35								
Magnesium (µg/L)	258000		276000								
Magnesium, Dissolved (µg/L)		282000	191000								
Manganese (µg/L)	3060		1600								
Manganese, Dissolved (µg/L)		2110	3350								
Mercury (µg/L)	0.04(UN)		0.1(U)								
Mercury, Dissolved (µg/L)		0.04(U)	0.1(U)								
Nickel (µg/L)	21.1		1.74(B)								
Nickel, Dissolved (µg/L)		25.6	1.6(U)								
Potassium (µg/L)	7450		4160(E)								

Table 4. Results for Location 415A

Parameter (unit)	9/29/2000	10/2/2000	5/19/2003	6/17/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Potassium, Dissolved (µg/L)		8120	5840								
Selenium (µg/L)	4.57(B)		1.3(B)								
Selenium, Dissolved (µg/L)		5.82	1.13(B)								
Silver (µg/L)	0.18(B)		0.04(B)								
Silver, Dissolved (µg/L)		0.05(B)	0.01(B)								
Sodium (µg/L)	108000		131000								
Sodium, Dissolved (µg/L)		168000	83800								
Thallium (µg/L)	0.19(UN)		0.02(B)								
Thallium, Dissolved (µg/L)		0.19(U)	0.04(B)								
Vanadium (µg/L)	2.27(B)		2.68(B)								
Vanadium, Dissolved (µg/L)		5.19	19.2								
Zinc (µg/L)	3.16(B)		9.53								
Zinc, Dissolved (µg/L)		2.2(U)	0.87(U)								
Polycyclic Aromatic Hydrocarbons											
Acenaphthene (µg/L)	10.3(U)		0.49(U)								
Acenaphthylene (µg/L)	10.3(U)		0.49(U)								
Anthracene (µg/L)	10.3(U)		0.49(U)								
Benzo(a)anthracene (µg/L)	10.3(U)		0.05(U)								
Benzo(a)pyrene (µg/L)	10.3(U)		0.05(U)								
Benzo(b)fluoranthene (µg/L)	10.3(U)		0.05(U)								
Benzo(ghi)perylene (µg/L)	10.3(U)		0.05(U)								
Benzo(k)fluoranthene (µg/L)	10.3(U)		0.02(U)								
Chrysene (µg/L)	10.3(U)		0.05(U)								
Dibenzo(a,h)anthracene (µg/L)	10.3(U)		0.05(U)								
Fluoranthene (µg/L)	10.3(U)		0.05(U)								
Fluorene (µg/L)	10.3(U)		0.49(U)								
Indeno(1,2,3-cd)pyrene (µg/L)	10.3(U)		0.05(U)								
Naphthalene (µg/L)	10.3(U)		0.42(U)								
Phenanthrene (µg/L)	10.3(U)		0.49(U)								
Pyrene (µg/L)	10.3(U)		0.05(U)								
Aroclor-1016 (µg/L)	0.1(U)		0.1(U)								
PCBs											
Aroclor-1221 (µg/L)	0.1(U)		0.1(U)								
Aroclor-1232 (µg/L)	0.1(U)		0.1(U)								
Aroclor-1242 (µg/L)	0.1(U)		0.1(U)								
Aroclor-1248 (µg/L)	0.1(U)		0.1(U)								
Aroclor-1254 (µg/L)	0.1(U)		0.1(U)								
Aroclor-1260 (µg/L)	0.1(U)		0.1(U)								
Pesticides											
4,4'-DDD (µg/L)	0.04(U)		0.04(U)								
4,4'-DDE (µg/L)	0.04(U)		0.04(U)								
4,4'-DDT (µg/L)	0.04(U)		0.04(U)								
Aldrin (µg/L)	0.02(U)		0.02(U)								
alpha-BHC (µg/L)	0.02(U)		0.02(U)								
alpha-Chlordane (µg/L)	0.02(U)		0.02(U)								
beta-BHC (µg/L)	0.02(U)		0.02(U)								
delta-BHC (µg/L)	0.02(U)		0.02(U)								
Dieldrin (µg/L)	0.04(U)		0.04(U)								
Endosulfan I (µg/L)	0.02(U)		0.02(U)								
Endosulfan II (µg/L)	0.04(U)		0.04(U)								

Table 4. Results for Location 415A

Parameter (unit)	9/29/2000	10/2/2000	5/19/2003	6/17/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Endosulfan sulfate (µg/L)	0.04(U)		0.04(U)								
Endrin (µg/L)	0.04(U)		0.04(U)								
Endrin aldehyde (µg/L)	0.04(U)		0.04(U)								
Endrin ketone (µg/L)	0.04(U)		0.04(U)								
gamma-BHC (Lindane) (µg/L)	0.02(U)		0.02(U)								
gamma-Chlordane (µg/L)	0.02(U)		0.02(U)								
Heptachlor (µg/L)	0.02(U)		0.02(U)								
Heptachlor epoxide (µg/L)	0.02(U)		0.02(U)								
Methoxychlor (µg/L)	0.21(U)		0.2(U)								
Toxaphene (µg/L)	1(U)		1(U)								
Radiological Compounds											
Actinium-227 (pCi/L)	-7.29(U)										
Actinium-227, Dissolved (pCi/L)	3.73(U)		-6.31(U)								
Actinium-227, Gamma (pCi/L)			0.94(U)								
Alpha (pCi/L)	39.9		21.8								
Alpha, Dissolved (pCi/L)			9.68								
Americium-241 (pCi/L)	0.94(U)										
Americium-241, Dissolved (pCi/L)	-11.8(U)		-2.67(U)								
Americium-241, Gamma (pCi/L)			-2.42(U)								
Beta (pCi/L)	26.9		14.5								
Beta, Dissolved (pCi/L)			12.4								
Cesium-137 (pCi/L)	2.08(U)										
Cesium-137, Dissolved (pCi/L)	1.29(U)		0.65(U)								
Cesium-137, Gamma (pCi/L)			-0.87(U)								
Cobalt-60 (pCi/L)	-0.12(U)										
Cobalt-60, Dissolved (pCi/L)	1.77(U)		0.33(U)								
Cobalt-60, Gamma (pCi/L)			0.17(U)								
Protactinium-231 (pCi/L)	56.2(U)										
Protactinium-231, Dissolved (pCi/L)	-30.7(U)		53.5(U)								
Protactinium-231, Gamma (pCi/L)			11(U)								
Radium-226 (pCi/L)	0.19(U)		0.29(U)								0.28
Radium-226, Dissolved (pCi/L)	-0.03(U)		0.21(U)								
Radium-228 (pCi/L)	2.33(U)		4.07								0.14(U)
Radium-228, Dissolved (pCi/L)	3.35(U)		0.56(U)								
Radium-228, Gamma (pCi/L)			5.7(U)								
Thorium-228 (pCi/L)	5.32(U)										0.09
Thorium-228, Alpha (pCi/L)			0.05(U)								
Thorium-228, Dissolved (pCi/L)	1.52		-0.03(U)								
Thorium-228, Dissolved Gamma (pCi/L)			4.38								
Thorium-228, Gamma (pCi/L)			0(UUI)								
Thorium-230 (pCi/L)	0.07(U)										-0.19(U)
Thorium-230, Alpha (pCi/L)			0.08(U)								
Thorium-230, Dissolved (pCi/L)	0.13		0.19								
Thorium-232 (pCi/L)	0.06										0.07(U)
Thorium-232, Alpha (pCi/L)			-0.01(U)								
Thorium-232, Dissolved (pCi/L)	0(U)		0.03(U)								
Total Uranium (µg/L)	29.8		16.7	21.48*		16.97*	22.58*		19.63*	21.47*	23.44*
Total Uranium (pCi/L)				16.9*		12.71*	15.85*		14.78*		
Total Uranium, Dissolved (µg/L)	30.1		16.5								
Uranium-233/234 (pCi/L)	11.6				6.81	6.81			8.04		

Table 4. Results for Location 415A

Parameter (unit)	9/29/2000	10/2/2000	5/19/2003	6/17/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/28/2009	5/19/2010	10/28/2010
Uranium-233/234, Alpha (pCi/L)			10.8								
Uranium-233/234, Dissolved (pCi/L)	12.2		6.78								
Uranium-234 (pCi/L)				9.85			7.96	8.04		8.87	9.65
Uranium-235 (pCi/L)	5.22(U)			0.25(U)			0.51	0.27		0.62	0.5
Uranium-235, Dissolved (pCi/L)	-5.37(U)		2.11(U)								
Uranium-235, Gamma (pCi/L)			1.77(U)								
Uranium-235/236 (pCi/L)	0.47				0.3	0.3			0.27		
Uranium-235/236, Alpha (pCi/L)			0.99								
Uranium-235/236, Dissolved (pCi/L)	0.59		0.82								
Uranium-238 (pCi/L)	24.5(U)			7.05	5.6	5.6	7.38	6.48	6.48	6.99	7.66
Uranium-238, Alpha (pCi/L)			9.16								
Uranium-238, Dissolved (pCi/L)	27.9(U)		4.63								
Uranium-238, Dissolved Gamma (pCi/L)			52.9(U)								
Uranium-238, Gamma (pCi/L)			17.3(U)								

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 5. Results for Location 505

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/17/2010	10/26/2010
Volatile Organic Compounds									
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)							
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)							
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)							
1,1-Dichloroethane (µg/L)	1(U)	1(U)							
1,1-Dichloroethene (µg/L)	1(U)	1(U)							
1,2-Dichloroethane (µg/L)	1(U)	1(U)							
1,2-Dichloropropane (µg/L)	1(U)	1(U)							
2-Butanone (µg/L)	8.4	5(U)							
2-Hexanone (µg/L)	5(U)	5(U)							
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)							
Acetone (µg/L)	3.5(J)	4.84(J)							
Benzene (µg/L)	1(U)	1(U)							
Bromodichloromethane (µg/L)	1(U)	1(U)							
Bromoform (µg/L)	1(U)	1(U)							
Bromomethane (µg/L)	1(U)	1(U)							
Carbon disulfide (µg/L)	5(U)	5(U)							
Carbon tetrachloride (µg/L)	1(U)	1(U)							
Chlorobenzene (µg/L)	1(U)	1(U)							
Chloroethane (µg/L)	1(U)	1(U)							
Chloroform (µg/L)	0.41(J)	1(U)							
Chloromethane (µg/L)	1(U)	1(U)							
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)							
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)							
Dibromochloromethane (µg/L)	1(U)	1(U)							
Ethylbenzene (µg/L)	1(U)	1(U)							
Methylene chloride (µg/L)	5(U)	5(U)							
Styrene (µg/L)	1(U)	1(U)							
Tetrachloroethylene (µg/L)	1(U)	1(U)							
Toluene (µg/L)	1(U)	1(U)							
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)							
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)							
Trichloroethylene (µg/L)	1(U)	1(U)							
Vinyl chloride (µg/L)	1(U)	1(U)							
Xylenes (total) (µg/L)	3(U)	1(U)							
Semi-Volatile Organic Compounds									
1,2,4-Trichlorobenzene (µg/L)	10(U)	10.2(U)							
1,2-Dichlorobenzene (µg/L)	10(U)	10.2(U)							
1,3-Dichlorobenzene (µg/L)	10(U)	10.2(U)							
1,4-Dichlorobenzene (µg/L)	10(U)	10.2(U)							
2,4,5-Trichlorophenol (µg/L)	10(U)	10.2(U)							
2,4,6-Trichlorophenol (µg/L)	10(U)	10.2(U)							
2,4-Dichlorophenol (µg/L)	10(U)	10.2(U)							
2,4-Dimethylphenol (µg/L)	10(U)	10.2(U)							
2,4-Dinitrophenol (µg/L)	20(U)	20.4(U)							
2-Chloronaphthalene (µg/L)	10(U)	1.02(U)							
2-Chlorophenol (µg/L)	10(U)	10.2(U)							
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)	10.2(U)							
2-Methylnaphthalene (µg/L)	10(U)	1.02(U)							
2-Nitroaniline (µg/L)	10(U)	10.2(U)							
2-Nitrophenol (µg/L)	10(U)	10.2(U)							
3,3'-Dichlorobenzidine (µg/L)	10(U)	10.2(U)							
3-Nitroaniline (µg/L)	10(U)	10.2(U)							
4-Bromophenylphenylether (µg/L)	10(U)	10.2(U)							
4-Chloro-3-methylphenol (µg/L)	10(U)	10.2(U)							
4-Chloroaniline (µg/L)	10(U)	10.2(U)							
4-Chlorophenylphenylether (µg/L)	10(U)	10.2(U)							

Table 5. Results for Location 505

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/17/2010	10/26/2010
4-Nitroaniline (µg/L)	10(U)	10.2(U)							
4-Nitrophenol (µg/L)	10(U)	10.2(U)							
Benzoic Acid (µg/L)	20(U)								
bis(2-Chloroethoxy)methane (µg/L)	10(U)	10.2(U)							
bis(2-Chloroethyl) ether (µg/L)	10(U)	10.2(U)							
bis(2-Chloroisopropyl)ether (µg/L)	10(U)	10.2(U)							
bis(2-Ethylhexyl)phthalate (µg/L)	6.4(J)	10.2(U)							
Butylbenzylphthalate (µg/L)	10(U)	10.2(U)							
Carbazole (µg/L)	10(U)	10.2(U)							
Dibenzofuran (µg/L)	10(U)	10.2(U)							
Diethylphthalate (µg/L)	10(U)	10.2(U)							
Dimethylphthalate (µg/L)	10(U)	10.2(U)							
Di-n-butylphthalate (µg/L)	10(U)	10.2(U)							
Di-n-octylphthalate (µg/L)	10(U)	10.2(U)							
Diphenylamine (µg/L)	10(U)								
Hexachlorobenzene (µg/L)	10(U)	10.2(U)							
Hexachlorobutadiene (µg/L)	10(U)	10.2(U)							
Hexachlorocyclopentadiene (µg/L)	10(U)	10.2(U)							
Hexachloroethane (µg/L)	10(U)	10.2(U)							
Isophorone (µg/L)	10(U)	10.2(U)							
m,p-Cresols (µg/L)	10(U)	10.2(U)							
N-Nitroso-di-n-propylamine (µg/L)	10(U)	10.2(U)							
N-Nitrosodiphenylamine (µg/L)		10.2(U)							
o-Cresol (µg/L)	10(U)	10.2(U)							
Pentachlorophenol (µg/L)	10(U)	10.2(U)							
Phenol (µg/L)	10(U)	0.31(J)							
General Chemistry									
Alkalinity (µg/L)			841000	715000	780000		740000		
Chloride (µg/L)		138000	170000	211000	160000		6200		
Fluoride (µg/L)		280	311	65.5(J)	30(U)		170(U)		
Methane (µg/L)		14(U)							
Nitrate (µg/L)		114	94(J)	33(U)	24(U)		78(U)		
Nitrite (µg/L)		54.2(U)	100(U)	33(U)	810		320(J)		
Phosphate as P, Ortho (µg/L)		151(U)	200(U)	66(U)	60(U)		130(U)		
Solids, Total Dissolved (µg/L)			4160000		4300000		4300000		
Sulfate (µg/L)		1570000	2160000	2760000	2200000		2100000		
Total Organic Carbon Average (µg/L)		6110							
Explosives									
1,3,5-Trinitrobenzene (µg/L)	1(U)	0.1(U)							
2,4,6-Trinitrotoluene (µg/L)	1(U)	0.1(U)							
2,4-Dinitrotoluene (µg/L)	1(U)	0.1(U)							
2,6-Dinitrotoluene (µg/L)	1(U)	0.1(U)							
2-Amino-4,6-dinitrotoluene (µg/L)	1(U)	0.1(U)							
2-Nitrotoluene (µg/L)	1(U)	0.1(U)							
3-Dinitrobenzene (µg/L)	1(U)	0.1(U)							
3-Nitrotoluene (µg/L)	1(U)	0.1(U)							
4-Amino-2,6-dinitrotoluene (µg/L)	1(U)	0.1(U)							
4-Nitrotoluene (µg/L)	1(U)	0.1(U)							
HMX (µg/L)	1(U)	0.1(U)							
Nitrobenzene (µg/L)	1(U)	0.1(U)							
RDX (µg/L)	1(U)	0.1(U)							
Tetryl (µg/L)	1(U)	0.1(U)							
Metals									
Aluminum (µg/L)	39.2(B)	485							

Table 5. Results for Location 505

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/17/2010	10/26/2010
Aluminum, Dissolved (µg/L)	411	160(UN+)							
Antimony (µg/L)	2.2(U)	0.28(U)							
Antimony, Dissolved (µg/L)	2.2(U)	0.28(U)							
Arsenic (µg/L)	5.19	7.44(B)							
Arsenic, Dissolved (µg/L)	4.31	6.04(B)							
Barium (µg/L)	17.5	15.9							
Barium, Dissolved (µg/L)	11.1	11							
Beryllium (µg/L)	0.21(U)	0.21(U)							
Beryllium, Dissolved (µg/L)	0.21(U)	0.21(U)							
Boron (µg/L)	296	597							
Boron, Dissolved (µg/L)	277	370							
Cadmium (µg/L)	0.36(U)	0.66(U)							
Cadmium, Dissolved (µg/L)	0.36(U)	0.66(U)							
Calcium (µg/L)	215000	174000							
Calcium, Dissolved (µg/L)	219000	217000							
Chromium (µg/L)	3.17(B)	1.7(U)							
Chromium, Dissolved (µg/L)	1.4(B)	1.7(U)							
Cobalt (µg/L)	0.67(U)	1(U)							
Cobalt, Dissolved (µg/L)	4.29(B)	1.07(B)							
Copper (µg/L)	2.03(B)	32.1							
Copper, Dissolved (µg/L)	1.86(B)	2.51(B)							
Iron (µg/L)	619	119							
Iron, Dissolved (µg/L)	5200	28(U)							
Lead (µg/L)	0.01(U)	0.56(B)							
Lead, Dissolved (µg/L)	0.55(B)	0.08(B)							
Lithium (µg/L)	39.1	68.8							
Lithium, Dissolved (µg/L)	58.9	109							
Magnesium (µg/L)	456000	416000							
Magnesium, Dissolved (µg/L)	471000	462000							
Manganese (µg/L)	515	45.3							
Manganese, Dissolved (µg/L)	684	237							
Mercury (µg/L)	0.07(BN)	0.1(U)							
Mercury, Dissolved (µg/L)	0.05(U)	0.1(U)							
Nickel (µg/L)	4.73(B)	1.6(U)							
Nickel, Dissolved (µg/L)	9.89	3.51(B)							
Potassium (µg/L)	9530	3800							
Potassium, Dissolved (µg/L)	10000	6940							
Selenium (µg/L)	4.11(B)	1.8(U)							
Selenium, Dissolved (µg/L)	3.23(B)	1.8(U)							
Silver (µg/L)	0.16(B)	0.03(U)							
Silver, Dissolved (µg/L)	0.17(B)	0.03(U)							
Sodium (µg/L)	304000	270000							
Sodium, Dissolved (µg/L)	281000	295000							
Thallium (µg/L)	0.11(BN)	0.02(U)							
Thallium, Dissolved (µg/L)	0.03(U)	0.02(U)							
Vanadium (µg/L)	5.93	2.5(U)							
Vanadium, Dissolved (µg/L)	2.12(B)	2.5(U)							
Zinc (µg/L)	2.5(U)	460							
Zinc, Dissolved (µg/L)	2.5(U)	4.4(U)							
Polycyclic Aromatic Hydrocarbons									
Acenaphthene (µg/L)	10(U)	0.5(U)							
Acenaphthylene (µg/L)	10(U)	0.5(U)							
Anthracene (µg/L)	10(U)	0.5(U)							
Benzo(a)anthracene (µg/L)	10(U)	0.05(U)							
Benzo(a)pyrene (µg/L)	10(U)	0.05(U)							
Benzo(b)fluoranthene (µg/L)	10(U)	0.05(U)							
Benzo(ghi)perylene (µg/L)	10(U)	0.05(U)							

Table 5. Results for Location 505

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/17/2010	10/26/2010
Benzo(k)fluoranthene (µg/L)	10(U)	0.02(U)							
Chrysene (µg/L)	10(U)	0.05(U)							
Dibenzo(a,h)anthracene (µg/L)	10(U)	0.05(U)							
Fluoranthene (µg/L)	10(U)	0.05(U)							
Fluorene (µg/L)	10(U)	0.5(U)							
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)	0.05(U)							
Naphthalene (µg/L)	10(U)	0.5(U)							
Phenanthrene (µg/L)	10(U)	0.5(U)							
Pyrene (µg/L)	10(U)	0.05(U)							
PCBs									
Aroclor-1016 (µg/L)	0.1(U)	0.1(U)							
Aroclor-1221 (µg/L)	0.1(U)	0.1(U)							
Aroclor-1232 (µg/L)	0.1(U)	0.1(U)							
Aroclor-1242 (µg/L)	0.1(U)	0.1(U)							
Aroclor-1248 (µg/L)	0.1(U)	0.1(U)							
Aroclor-1254 (µg/L)	0.1(U)	0.1(U)							
Aroclor-1260 (µg/L)	0.1(U)	0.1(U)							
Pesticides									
4,4'-DDD (µg/L)	0.04(U)	0.03(J)							
4,4'-DDE (µg/L)	0.04(U)	0.04(U)							
4,4'-DDT (µg/L)	0.04(U)	0.03(J)							
Aldrin (µg/L)	0.02(U)	0.02(U)							
alpha-BHC (µg/L)	0.02(U)	0.02(U)							
alpha-Chlordane (µg/L)	0.02(U)	0.02(U)							
beta-BHC (µg/L)	0.02(U)	0.02(U)							
delta-BHC (µg/L)	0.02(U)	0.02(U)							
Dieldrin (µg/L)	0.04(U)	0.04(U)							
Endosulfan I (µg/L)	0.02(U)	0.02(U)							
Endosulfan II (µg/L)	0.04(U)	0.02(J)							
Endosulfan sulfate (µg/L)	0.04(U)	0.02(J)							
Endrin (µg/L)	0.04(U)	0.04(U)							
Endrin aldehyde (µg/L)	0.04(U)	0.04(U)							
Endrin ketone (µg/L)	0.04(U)	0.04(U)							
gamma-BHC (Lindane) (µg/L)	0.02(U)	0.02(U)							
gamma-Chlordane (µg/L)	0.02(U)	0.02(U)							
Heptachlor (µg/L)	0.02(U)	0.02(U)							
Heptachlor epoxide (µg/L)	0.02(U)	0.02(U)							
Methoxychlor (µg/L)	0.19(U)	0.2(U)							
Toxaphene (µg/L)	0.97(U)	0.98(U)							
Radiological Compounds									
Actinium-227 (pCi/L)	-21.1(U)								
Actinium-227, Dissolved (pCi/L)		-5.12(U)							
Actinium-227, Gamma (pCi/L)		-2.07(U)							
Alpha (pCi/L)	20.8	9.93							
Alpha, Dissolved (pCi/L)		20.5							
Americium-241 (pCi/L)	-25.2(U)								
Americium-241, Dissolved (pCi/L)		5.44(U)							
Americium-241, Gamma (pCi/L)		4.42(U)							
Beta (pCi/L)	15	11.2							
Beta, Dissolved (pCi/L)		23.6							
Cesium-137 (pCi/L)	-0.44(U)								
Cesium-137, Dissolved (pCi/L)		-0.23(U)							
Cesium-137, Gamma (pCi/L)		-0.57(U)							
Cobalt-60 (pCi/L)	0.4(U)								
Cobalt-60, Dissolved (pCi/L)		-0.2(U)							
Cobalt-60, Gamma (pCi/L)		1.28(U)							
Protactinium-231 (pCi/L)	-57(U)								

Table 5. Results for Location 505

Parameter (unit)	9/28/2000	5/29/2003	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/17/2010	10/26/2010
Protactinium-231, Dissolved (pCi/L)		-24.4(U)							
Protactinium-231, Gamma (pCi/L)		28.3(U)							
Radium-226 (pCi/L)	1.94	0.1(U)							0.23(U)
Radium-226, Dissolved (pCi/L)		0.24(U)							
Radium-228 (pCi/L)	12.1(U)	0.2(U)							0.45
Radium-228, Dissolved (pCi/L)		1.03							
Radium-228, Gamma (pCi/L)		4.99(U)							
Thorium-228 (pCi/L)	0.288								0.22
Thorium-228, Alpha (pCi/L)		0.1(U)							
Thorium-228, Dissolved (pCi/L)		0.03(U)							
Thorium-228, Dissolved Gamma (pCi/L)		0(UUI)							
Thorium-228, Gamma (pCi/L)		3.88(U)							
Thorium-230 (pCi/L)	0.23								-0.01(U)
Thorium-230, Alpha (pCi/L)		0.1(U)							
Thorium-230, Dissolved (pCi/L)		0.26(U)							
Thorium-232 (pCi/L)	0.08								0.26
Thorium-232, Alpha (pCi/L)		-0.03(U)							
Thorium-232, Dissolved (pCi/L)		0.05(U)							
Total Uranium (µg/L)	24.4	25.8	34.6*	29.39*	33.59*		39.97*	33.82*	28.82*
Total Uranium (pCi/L)			27.1*	25.3*	26.67*		31.92*		
Total Uranium, Dissolved (µg/L)		30.2							
Uranium-233/234 (pCi/L)	11.3			15.3			17.95		
Uranium-233/234, Alpha (pCi/L)		11.8							
Uranium-233/234, Dissolved (pCi/L)		14.2							
Uranium-234 (pCi/L)			15.7		14.83	17.95		12.45	13
Uranium-235 (pCi/L)	15.2(U)		0.11(U)		0.89	0.78		0.73	0.54
Uranium-235, Dissolved (pCi/L)		0.49(U)							
Uranium-235, Gamma (pCi/L)		7.96(U)							
Uranium-235/236 (pCi/L)	0.7			0.3			0.78		
Uranium-235/236, Alpha (pCi/L)		0.86							
Uranium-235/236, Dissolved (pCi/L)		0.68							
Uranium-238 (pCi/L)	8.71		11.4	9.7	10.95	13.19	13.19	11.05	9.43
Uranium-238, Alpha (pCi/L)		9.12							
Uranium-238, Dissolved (pCi/L)		11.9							
Uranium-238, Dissolved Gamma (pCi/L)		0(UUI)							
Uranium-238, Gamma (pCi/L)		68(U)							

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 6. Results for Location A42

Parameter (unit)	1/6/2000	1/8/2000	5/14/2002	8/26/2002	5/29/2003	11/3/2004	5/25/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/18/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/18/2010	6/24/2010	10/26/2010
Volatile Organic Compounds																			
1,1,1-Trichloroethane (µg/L)	1(U)				1(U)														
1,1,2,2-Tetrachloroethane (µg/L)	1(U)				1(U)														
1,1,2-Trichloroethane (µg/L)	1(U)				1(U)														
1,1-Dichloroethane (µg/L)	1(U)				1(U)														
1,1-Dichloroethene (µg/L)	1(U)				1(U)														
1,2-Dichloroethane (µg/L)	1(U)				1(U)														
1,2-Dichloropropane (µg/L)	1(U)				1(U)														
2-Butanone (µg/L)	5(U)				5(U)														
2-Hexanone (µg/L)	5(U)				5(U)														
4-Methyl-2-pentanone (µg/L)	5(U)				5(U)														
Acetone (µg/L)	1.2(J)				5(U)														
Benzene (µg/L)	1(U)				1(U)														
Bromodichloromethane (µg/L)	1(U)				1(U)														
Bromoform (µg/L)	1(U)				1(U)														
Bromomethane (µg/L)	1(U)				1(U)														
Carbon disulfide (µg/L)	5(U)				5(U)														
Carbon tetrachloride (µg/L)	1(U)				1(U)														
Chlorobenzene (µg/L)	1(U)				1(U)														
Chloroethane (µg/L)	1(U)				1(U)														
Chloroform (µg/L)	1(U)				1(U)														
Chloromethane (µg/L)	1(U)				1(U)														
cis-1,2-Dichloroethylene (µg/L)	1(U)				1(U)														
cis-1,3-Dichloropropylene (µg/L)	1(U)				1(U)														
Dibromochloromethane (µg/L)	1(U)				1(U)														
Ethylbenzene (µg/L)	1(U)				1(U)														
Methylene chloride (µg/L)	5(U)				5(U)														
Styrene (µg/L)	1(U)				1(U)														
Tetrachloroethylene (µg/L)	1(U)				1(U)														
Toluene (µg/L)	1(U)				1(U)														
trans-1,2-Dichloroethylene (µg/L)	1(U)				1(U)														
trans-1,3-Dichloropropylene (µg/L)	1(U)				1(U)														
Trichloroethylene (µg/L)	1(U)				1(U)														
Vinyl chloride (µg/L)	1(U)				1(U)														
Xylenes (total) (µg/L)	3(U)				1(U)														
Semi-Volatile Organic Compounds																			
1,2,4-Trichlorobenzene (µg/L)	9.8(U)				9.71(U)														
1,2-Dichlorobenzene (µg/L)	9.8(U)				9.71(U)														
1,3-Dichlorobenzene (µg/L)	9.8(U)				9.71(U)														
1,4-Dichlorobenzene (µg/L)	9.8(U)				9.71(U)														
2,4,5-Trichlorophenol (µg/L)	9.8(U)				9.71(U)														
2,4,6-Trichlorophenol (µg/L)	9.8(U)				9.71(U)														
2,4-Dichlorophenol (µg/L)	9.8(U)				9.71(U)														
2,4-Dimethylphenol (µg/L)	9.8(U)				9.71(U)														
2,4-Dinitrophenol (µg/L)	19.6(U)				19.4(U)														
2-Chloronaphthalene (µg/L)	9.8(U)				0.97(U)														
2-Chlorophenol (µg/L)	9.8(U)				9.71(U)														
2-Methyl-4,6-dinitrophenol (µg/L)	9.8(U)				9.71(U)														
2-Methylnaphthalene (µg/L)	9.8(U)				0.97(U)														
2-Nitroaniline (µg/L)	9.8(U)				9.71(U)														
2-Nitrophenol (µg/L)	9.8(U)				9.71(U)														
3,3'-Dichlorobenzidine (µg/L)	9.8(U)				9.71(U)														
3-Nitroaniline (µg/L)	9.8(U)				9.71(U)														
4-Bromophenylphenylether (µg/L)	9.8(U)				9.71(U)														
4-Chloro-3-methylphenol (µg/L)	9.8(U)				9.71(U)														
4-Chloroaniline (µg/L)	9.8(U)				9.71(U)														
4-Chlorophenylphenylether (µg/L)	9.8(U)				9.71(U)														

Table 6. Results for Location A42

Parameter (unit)	1/6/2000	1/8/2000	5/14/2002	8/26/2002	5/29/2003	11/3/2004	5/25/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/18/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/18/2010	6/24/2010	10/26/2010
4-Nitroaniline (µg/L)	9.8(U)				9.71(U)														
4-Nitrophenol (µg/L)	9.8(U)				9.71(U)														
Benzoic Acid (µg/L)	19.6(U)																		
bis(2-Chloroethoxy)methane (µg/L)	9.8(U)				9.71(U)														
bis(2-Chloroethyl) ether (µg/L)	9.8(U)				9.71(U)														
bis(2-Chloroisopropyl)ether (µg/L)	9.8(U)				9.71(U)														
bis(2-Ethylhexyl)phthalate (µg/L)	9.8(U)				9.71(U)														
Butylbenzylphthalate (µg/L)	9.8(U)				9.71(U)														
Carbazole (µg/L)	9.8(U)				9.71(U)														
Dibenzofuran (µg/L)	9.8(U)				9.71(U)														
Diethylphthalate (µg/L)	9.8(U)				9.71(U)														
Dimethylphthalate (µg/L)	9.8(U)				9.71(U)														
Di-n-butylphthalate (µg/L)	9.8(U)				9.71(U)														
Di-n-octylphthalate (µg/L)	19.6				9.71(U)														
Diphenylamine (µg/L)	9.8(U)																		
Hexachlorobenzene (µg/L)	9.8(U)				9.71(U)														
Hexachlorobutadiene (µg/L)	9.8(U)				9.71(U)														
Hexachlorocyclopentadiene (µg/L)	9.8(U)				9.71(U)														
Hexachloroethane (µg/L)	9.8(U)				9.71(U)														
Isophorone (µg/L)	9.8(U)				9.71(U)														
m,p-Cresols (µg/L)	9.8(U)				9.71(U)														
N-Nitroso-di-n-propylamine (µg/L)	9.8(U)				9.71(U)														
N-Nitrosodiphenylamine (µg/L)					9.71(U)														
o-Cresol (µg/L)	9.8(U)				9.71(U)														
Pentachlorophenol (µg/L)	9.8(U)				9.71(U)														
Phenol (µg/L)	9.8(U)				8.34(J)														
General Chemistry																			
Alkalinity (µg/L)												457000	482000	460000		470000			
Chloride (µg/L)					11600							13000	13300	14000		14000			
Fluoride (µg/L)					122							125	132	30(U)		170(U)			
Methane (µg/L)					14(U)														
Nitrate (µg/L)					34.1(U)							88(J)	33(U)	24(U)		78(U)			
Nitrite (µg/L)					54.2(U)							100(U)	33(U)	24(U)		72(U)			
Phosphate as P, Ortho (µg/L)					151(U)							200(U)	66(U)	60(U)		130(U)			
Solids, Total Dissolved (µg/L)												897000	910000	880000		910000			
Sulfate (µg/L)					279000							286000	304000	300000		310000			
Total Organic Carbon Average (µg/L)					2490														
Explosives																			
1,3,5-Trinitrobenzene (µg/L)	0.1(U)				0.1(U)														
2,4,6-Trinitrotoluene (µg/L)	0.1(U)				0.1(U)														
2,4-Dinitrotoluene (µg/L)	0.1(U)				0.1(U)														
2,6-Dinitrotoluene (µg/L)	0.1(U)				0.1(U)														
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)				0.1(U)														
2-Nitrotoluene (µg/L)	0.1(U)				0.1(U)														
3-Dinitrobenzene (µg/L)	0.1(U)				0.1(U)														
3-Nitrotoluene (µg/L)	0.1(U)				0.1(U)														
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)				0.1(U)														
4-Nitrotoluene (µg/L)	0.1(U)				0.1(U)														
HMX (µg/L)	0.1(U)				0.1(U)														
Nitrobenzene (µg/L)	0.1(U)				0.1(U)														
RDX (µg/L)	0.1(U)				0.1(U)														
Tetryl (µg/L)	0.1(U)				0.1(U)														
Metals																			
Aluminum (µg/L)	23.5(B)				46.7(B)														

Table 6. Results for Location A42

Parameter (unit)	1/6/2000	1/8/2000	5/14/2002	8/26/2002	5/29/2003	11/3/2004	5/25/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/18/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/18/2010	6/24/2010	10/26/2010
Aluminum, Dissolved (µg/L)		9.3(B)			35.6(B)														
Antimony (µg/L)	3.8(B)				0.08(B)														
Antimony, Dissolved (µg/L)		2(U)			0.07(B)														
Arsenic (µg/L)	0.59(U)				1.04(B)														
Arsenic, Dissolved (µg/L)		2.4(B)			2.79(B)														
Barium (µg/L)	40.4				32.2														
Barium, Dissolved (µg/L)		34.9			32.3														
Beryllium (µg/L)	0.17(U)				0.18(U)														
Beryllium, Dissolved (µg/L)		0.17(U)			0.18(U)														
Boron (µg/L)	130(E)				116														
Boron, Dissolved (µg/L)		127			130														
Cadmium (µg/L)	0.23(U)				0.33(U)														
Cadmium, Dissolved (µg/L)		0.23(U)			0.33(U)														
Calcium (µg/L)	170000				151000														
Calcium, Dissolved (µg/L)		154000			162000(E)														
Chromium (µg/L)	1.2(B)				1.1(U)														
Chromium, Dissolved (µg/L)		1.1(B)			1.1(U)														
Cobalt (µg/L)	2(B)				0.29(U)														
Cobalt, Dissolved (µg/L)		0.67(U)			0.29(U)														
Copper (µg/L)	1(U)				26.9														
Copper, Dissolved (µg/L)		1(U)			16.1														
Iron (µg/L)	64.3				62.5(B)														
Iron, Dissolved (µg/L)		22.1(B)			30.6(B)														
Lead (µg/L)	0.05(U)				0(U)														
Lead, Dissolved (µg/L)		0.05(U)			0(U)														
Lithium (µg/L)	29.5(E)				27.9														
Lithium, Dissolved (µg/L)		32.7(NE)			36.8(N)														
Magnesium (µg/L)	77600				72000(E)														
Magnesium, Dissolved (µg/L)		68200			73700(E)														
Manganese (µg/L)	927				279														
Manganese, Dissolved (µg/L)		342			269														
Mercury (µg/L)	0.04(U)				0.1(UN)														
Mercury, Dissolved (µg/L)		0.04(U)			0.1(UN)														
Nickel (µg/L)	2.5(B)				0.97(U)														
Nickel, Dissolved (µg/L)		1.3(B)			0.97(U)														
Potassium (µg/L)	3650				3600(E)														
Potassium, Dissolved (µg/L)		3670			3810(E)														
Selenium (µg/L)	1.5(U)				0.5(B)														
Selenium, Dissolved (µg/L)		1.5(U)			0.46(B)														
Silver (µg/L)	0.35(B)				0.01(B)														
Silver, Dissolved (µg/L)		0.3(B)			0.01(B)														
Sodium (µg/L)	42100(E)				41000														
Sodium, Dissolved (µg/L)		41900(E)			41600														
Thallium (µg/L)	1.3(B)				0.24(B)														
Thallium, Dissolved (µg/L)		0.13(U)			0(U)														
Vanadium (µg/L)	0.63(U)				0.23(U)														
Vanadium, Dissolved (µg/L)		0.63(U)			0.23(U^{+})														
Zinc (µg/L)	5.3				18.7														
Zinc, Dissolved (µg/L)		1.6(B)			17.7														
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene (µg/L)	9.8(U)				0.48(U)														
Acenaphthylene (µg/L)	9.8(U)				0.48(U)														
Anthracene (µg/L)	9.8(U)				0.48(U)														
Benzo(a)anthracene (µg/L)	9.8(U)				0.05(U)														
Benzo(a)pyrene (µg/L)	9.8(U)				0.05(U)														
Benzo(b)fluoranthene (µg/L)	9.8(U)				0.05(U)														
Benzo(ghi)perylene (µg/L)	9.8(U)				0.05(U)														

Table 6. Results for Location A42

Parameter (unit)	1/6/2000	1/8/2000	5/14/2002	8/26/2002	5/29/2003	11/3/2004	5/25/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/18/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/18/2010	6/24/2010	10/26/2010
Benzo(k)fluoranthene (µg/L)	9.8(U)				0.02(U)														
Chrysene (µg/L)	9.8(U)				0.05(U)														
Dibenzo(a,h)anthracene (µg/L)	9.8(U)				0.05(U)														
Fluoranthene (µg/L)	9.8(U)				0.05(U)														
Fluorene (µg/L)	9.8(U)				0.48(U)														
Indeno(1,2,3-cd)pyrene (µg/L)	9.8(U)				0.05(U)														
Naphthalene (µg/L)	9.8(U)				0.48(U)														
Phenanthrene (µg/L)	9.8(U)				0.48(U)														
Pyrene (µg/L)	9.8(U)				0.05(U)														
PCBs																			
Aroclor-1016 (µg/L)	0.1(U)				0.1(U)														
Aroclor-1221 (µg/L)	0.1(U)				0.1(U)														
Aroclor-1232 (µg/L)	0.1(U)				0.1(U)														
Aroclor-1242 (µg/L)	0.1(U)				0.1(U)														
Aroclor-1248 (µg/L)	0.1(U)				0.1(U)														
Aroclor-1254 (µg/L)	0.1(U)				0.1(U)														
Aroclor-1260 (µg/L)	0.1(U)				0.1(U)														
Pesticides																			
4,4'-DDD (µg/L)	0.04(U)				0.04(U)														
4,4'-DDE (µg/L)	0.04(U)				0.04(U)														
4,4'-DDT (µg/L)	0.04(U)				0.04(U)														
Aldrin (µg/L)	0.02(U)				0.02(U)														
alpha-BHC (µg/L)	0.02(U)				0.02(U)														
alpha-Chlordane (µg/L)	0.02(U)				0.02(U)														
beta-BHC (µg/L)	0.02(U)				0.02(U)														
delta-BHC (µg/L)	0.02(U)				0.02(U)														
Dieldrin (µg/L)	0.04(U)				0.04(U)														
Endosulfan I (µg/L)	0.02(U)				0.02(U)														
Endosulfan II (µg/L)	0.04(U)				0.04(U)														
Endosulfan sulfate (µg/L)	0.04(U)				0.04(U)														
Endrin (µg/L)	0.04(U)				0.04(U)														
Endrin aldehyde (µg/L)	0.04(U)				0.04(U)														
Endrin ketone (µg/L)	0.04(U)				0.04(U)														
gamma-BHC (Lindane) (µg/L)	0.02(U)				0.02(U)														
gamma-Chlordane (µg/L)	0.02(U)				0.02(U)														
Heptachlor (µg/L)	0.02(U)				0.02(U)														
Heptachlor epoxide (µg/L)	0.02(U)				0.02(U)														
Methoxychlor (µg/L)	0.2(U)				0.19(U)														
Toxaphene (µg/L)	0.99(U)				0.96(U)														
Radiological Compounds																			
Actinium-227, Dissolved (pCi/L)					-7.26(U)														
Actinium-227, Gamma (pCi/L)					-4.88(U)														
Alpha (pCi/L)	72				38.6														
Alpha, Dissolved (pCi/L)					40.7														
Americium-241, Dissolved (pCi/L)					-2.57(U)														
Americium-241, Gamma (pCi/L)					-8.15(U)														
Beta (pCi/L)	36.6				28.6														
Beta, Dissolved (pCi/L)					26														
Cesium-137 (pCi/L)			4																
Cesium-137, Dissolved (pCi/L)			1.1		0.15(U)														
Cesium-137, Gamma (pCi/L)					0(UUI)														
Cobalt-60, Dissolved (pCi/L)					-0.82(U)														
Cobalt-60, Gamma (pCi/L)					1.71(U)														
Protactinium-231, Dissolved (pCi/L)					-30.7(U)														
Protactinium-231, Gamma (pCi/L)					6.62(U)														
Radium-226 (pCi/L)	0.67(U)		0.72		0.33(U)	1.61	0.08(U)		0.26(J)	0.83								0.34	-0.87(U)
Radium-226, Dissolved (pCi/L)			0.12		0.21(U)	1.77			0.08(U)									0(U)	

Table 6. Results for Location A42

Parameter (unit)	1/6/2000	1/8/2000	5/14/2002	8/26/2002	5/29/2003	11/3/2004	5/25/2005	11/8/2005	5/22/2006	6/12/2007	11/27/2007	6/18/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/18/2010	6/24/2010	10/26/2010
Radium-228 (pCi/L)			0.44		0.93(U)	0.57(U)	0.23(U)		0.22(U)	0.46(U)								0(U)	0.26(U)
Radium-228, Dissolved (pCi/L)			0.49		0.25(U)	-0.03(U)			0.2(U)									0(U)	
Radium-228, Gamma (pCi/L)					0(UUI)														
Thorium-228 (pCi/L)	0.56		0.25			0.09(U)	0.06(U)		0.01(U)	0.03(U)								0.18	0.01(U)
Thorium-228, Alpha (pCi/L)					0.13(U)														
Thorium-228, Dissolved (pCi/L)			0.14		0.17(U)	0.09(U)			0.08(U)									0.06(U)	
Thorium-228, Dissolved Gamma (pCi/L)					0.57(U)														
Thorium-228, Gamma (pCi/L)					0(UUI)														
Thorium-230 (pCi/L)	0.06(U)		0.91			0.85	0.14		0.23(J)	0.18(U)								0.06(U)	0.51
Thorium-230, Alpha (pCi/L)					0.02(U)														
Thorium-230, Dissolved (pCi/L)			1.25		0.12(U)	0.36			0.11(U)									0.05(U)	
Thorium-232 (pCi/L)	0(U)		0.03			-0.04(U)	0.01(U)		0(U)	-0.04(U)								0.07(U)	0.4
Thorium-232, Alpha (pCi/L)					0(U)														
Thorium-232, Dissolved (pCi/L)			0.12		0.02(U)	0.05(U)			0.02(U)									0.13	
Total Radium (pCi/L)																		0.34*	
Total Thorium (pCi/L)																		0.18*	
Total Thorium, Dissolved (pCi/L)																		0.13*	
Total Uranium (µg/L)	80.3				56	99.7						89.95*	110.61*	106.88*		119.18*	71.91*		81.07*
Total Uranium (pCi/L)			58.04*				55.46*	85.6*				61.88*	78.82*	74.62*		84.46*		37.5*	
Total Uranium, Dissolved (µg/L)				81.1	63.7	99.8													
Total Uranium, Dissolved (pCi/L)			63.73*															33.34*	
Uranium-233/234 (pCi/L)	30.5					35.8				29.6			38.7			42.87			
Uranium-233/234, Alpha (pCi/L)					25.7														
Uranium-233/234, Dissolved (pCi/L)					28.2	31.2													
Uranium-234 (pCi/L)			29.8				29.1	42.2	36.1		34.9	30.6		36.81	42.87		27.74	18.6	34.1
Uranium-234, Dissolved (pCi/L)			32.4	28.1					36.8									17.2	
Uranium-235 (pCi/L)			1.44				1.16	4	1.33			1.88		2.99	2.26		1.86	0.24(U)	2.34
Uranium-235, Dissolved (pCi/L)			1.63	1.11	5.74(U)				1.28									0.44	
Uranium-235, Gamma (pCi/L)					12.6(U)														
Uranium-235/236 (pCi/L)	1.23					1.54				2.27	1.88		3.62			2.26			
Uranium-235/236, Alpha (pCi/L)					2.1														
Uranium-235/236, Dissolved (pCi/L)					1.94	1.42													
Uranium-238 (pCi/L)	25.7		26.8			32	25.2	39.4	33.8	27.6	29.4	29.4	36.5	34.82	39.33	39.33	23.45	18.9	26.4
Uranium-238, Alpha (pCi/L)					23.8														
Uranium-238, Dissolved (pCi/L)			29.7	25.4	25.7	28.2			34.1									15.7	
Uranium-238, Dissolved Gamma (pCi/L)					0(UUI)														
Uranium-238, Gamma (pCi/L)					0(UUI)														

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; + = Duplicate sample analysis for an analyte is out of control.

Table 7. Results for Location A45

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	1/5/2000	7/19/2000	5/7/2001	5/13/2002	5/15/2002	5/20/2002	5/16/2003	4/29/2004	5/25/2005	5/18/2006	5/22/2006	6/12/2007	6/12/2008	10/27/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	10/25/2010
Volatile Organic Compounds																						
1,1,1-Trichloroethane (µg/L)				1(U)						1(U)												
1,1,2,2-Tetrachloroethane (µg/L)				1(U)						1(U)												
1,1,2-Trichloroethane (µg/L)				1(U)						1(U)												
1,1-Dichloroethane (µg/L)				1(U)						1(U)												
1,1-Dichloroethene (µg/L)				1(U)						1(U)												
1,2-Dichloroethane (µg/L)				1(U)						1(U)												
1,2-Dichloropropane (µg/L)				1(U)						1(U)												
2-Butanone (µg/L)				5(U)						5(U)												
2-Hexanone (µg/L)				5(U)						5(U)												
4-Methyl-2-pentanone (µg/L)				5(U)						5(U)												
Acetone (µg/L)				18						5(U)												
Benzene (µg/L)				1(U)						1(U)												
Bromodichloromethane (µg/L)				1(U)						1(U)												
Bromoform (µg/L)				1(U)						1(U)												
Bromomethane (µg/L)				1(U)						1(U)												
Carbon disulfide (µg/L)				0.84(J)						5(U)												
Carbon tetrachloride (µg/L)				1(U)						1(U)												
Chlorobenzene (µg/L)				1(U)						1(U)												
Chloroethane (µg/L)				1(U)						1(U)												
Chloroform (µg/L)				1(U)						1(U)												
Chloromethane (µg/L)				1(U)						1(U)												
cis-1,2-Dichloroethylene (µg/L)				1(U)						1(U)												
cis-1,3-Dichloropropylene (µg/L)				1(U)						1(U)												
Dibromochloromethane (µg/L)				1(U)						1(U)												
Ethylbenzene (µg/L)				0.1(J)						1(U)												
Methylene chloride (µg/L)				5(U)						5(U)												
Styrene (µg/L)				0.15(J)						1(U)												
Tetrachloroethylene (µg/L)				1(U)						1(U)												
Toluene (µg/L)				1(U)						1(U)												
trans-1,2-Dichloroethylene (µg/L)				1(U)						1(U)												
trans-1,3-Dichloropropylene (µg/L)				1(U)						1(U)												
Trichloroethylene (µg/L)				1(U)						1(U)												
Vinyl chloride (µg/L)				1(U)						1(U)												
Xylenes (total) (µg/L)				2.5(J)						1(U)												
Semi-Volatile Organic Compounds																						
1,2,4-Trichlorobenzene (µg/L)				9.8(U)						9.9(U)												
1,2-Dichlorobenzene (µg/L)				9.8(U)						9.9(U)												
1,3-Dichlorobenzene (µg/L)				9.8(U)						9.9(U)												
1,4-Dichlorobenzene (µg/L)				9.8(U)						9.9(U)												
2,4,5-Trichlorophenol (µg/L)				9.8(U)						9.9(U)												
2,4,6-Trichlorophenol (µg/L)				9.8(U)						9.9(U)												
2,4-Dichlorophenol (µg/L)				9.8(U)						9.9(U)												
2,4-Dimethylphenol (µg/L)				9.8(U)						9.9(U)												
2,4-Dinitrophenol (µg/L)				19.6(U)						19.8(U)												
2-Chloronaphthalene (µg/L)				9.8(U)						0.99(U)												
2-Chlorophenol (µg/L)				9.8(U)						9.9(U)												
2-Methyl-4,6-dinitrophenol (µg/L)				9.8(U)						9.9(U)												
2-Methylnaphthalene (µg/L)				9.8(U)						0.99(U)												
2-Nitroaniline (µg/L)				9.8(U)						9.9(U)												
2-Nitrophenol (µg/L)				9.8(U)						9.9(U)												
3,3'-Dichlorobenzidine (µg/L)				9.8(U)						9.9(U)												
3-Nitroaniline (µg/L)				9.8(U)						9.9(U)												
4-Bromophenylphenylether (µg/L)				9.8(U)						9.9(U)												
4-Chloro-3-methylphenol (µg/L)				9.8(U)						9.9(U)												
4-Chloroaniline (µg/L)				9.8(U)						9.9(U)												
4-Chlorophenylphenylether (µg/L)				9.8(U)						9.9(U)												

Table 7. Results for Location A45

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	1/5/2000	7/19/2000	5/7/2001	5/13/2002	5/15/2002	5/20/2002	5/16/2003	4/29/2004	5/25/2005	5/18/2006	5/22/2006	6/12/2007	6/12/2008	10/27/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	10/25/2010
4-Nitroaniline (µg/L)				9.8(U)						9.9(U)												
4-Nitrophenol (µg/L)				9.8(U)						9.9(U)												
Benzoic Acid (µg/L)				19.6(U)																		
bis(2-Chloroethoxy)methane (µg/L)				9.8(U)						9.9(U)												
bis(2-Chloroethyl) ether (µg/L)				9.8(U)						9.9(U)												
bis(2-Chloroisopropyl)ether (µg/L)				9.8(U)						9.9(U)												
bis(2-Ethylhexyl)phthalate (µg/L)				9.8(U)						9.65(J)												
Butylbenzylphthalate (µg/L)				9.8(U)						9.9(U)												
Carbazole (µg/L)				9.8(U)						9.9(U)												
Dibenzofuran (µg/L)				9.8(U)						9.9(U)												
Diethylphthalate (µg/L)				9.8(U)						9.9(U)												
Dimethylphthalate (µg/L)				9.8(U)						9.9(U)												
Di-n-butylphthalate (µg/L)				9.8(U)						9.9(U)												
Di-n-octylphthalate (µg/L)				9.8(U)						9.9(U)												
Diphenylamine (µg/L)				9.8(U)																		
Hexachlorobenzene (µg/L)				9.8(U)						9.9(U)												
Hexachlorobutadiene (µg/L)				9.8(U)						9.9(U)												
Hexachlorocyclopentadiene (µg/L)				9.8(U)						9.9(U)												
Hexachloroethane (µg/L)				9.8(U)						9.9(U)												
Isophorone (µg/L)				9.8(U)						9.9(U)												
m,p-Cresols (µg/L)				9.8(U)						9.9(U)												
N-Nitroso-di-n-propylamine (µg/L)				9.8(U)						9.9(U)												
N-Nitrosodiphenylamine (µg/L)										9.9(U)												
o-Cresol (µg/L)				9.8(U)						9.9(U)												
Pentachlorophenol (µg/L)				9.8(U)						9.9(U)												
Phenol (µg/L)				9.8(U)						4.08(J)												
General Chemistry																						
Alkalinity (µg/L)	439000	455000	480000		500000	436000		470000		465000	453000	533000		5000(U)		481000	478000	490000		490000		
Alkalinity, Dissolved (µg/L)								468000														
Bicarbonate Alkalinity (µg/L)	439000	455000	586000		500000	436000		470000		464000	452000	533000		782000								
Bicarbonate Alkalinity, Dissolved (µg/L)								468000														
Carbonate (µg/L)	4000(U)	4000(U)	1000(U)		1000(U)	1000(U)		<5000														
Carbonate Alkalinity (µg/L)										1450(U)	586(U)	0(U)		460000								
Carbonate, Dissolved (µg/L)								<5000														
Chloride (µg/L)	69600	48700	53000		53000	52600		50200		48700	56100	53700		250(J)	58200	55300	55100	59000		64000		
Chloride, Dissolved (µg/L)								49100														
Fluoride (µg/L)		250(U)								190				230	120	177	117	30(U)		170(U)		
Methane (µg/L)										14(U)												
Nitrate (µg/L)	60	260	100(U)		100(U)	50(U)		<20		34.1(U)	0(U)	390		230	290(J)	194(J)	91.2(J)	24(U)		78(J)		
Nitrate, Dissolved (µg/L)								<20														
Nitrite (µg/L)	20(U)	250(U)			50(U)	20(U)		<20		54.2(U)	0(U)	0(U)		640	20(U)	100(U)	33(U)	350		610(J)		
Nitrite, Dissolved (µg/L)								<20														
Phosphate (µg/L)	50(U)	50(U)																				
Phosphate as P, Ortho (µg/L)										151(U)	0(U)	140(J)		20(U)		200(U)	66(U)	60(U)		130(J)		
Phosphorous, Total (µg/L)			10(U)		30(U)	193		500														
Phosphorous, Total, Dissolved (µg/L)								500														
Solids, Total Dissolved (µg/L)	1700000	1900000	1800000		1800000	1700000		1750000		1800000	1790000	1750000		1810000		1770000	1760000	1800000		1800000		
Sulfate (µg/L)	817000	859000	800000		600000	811000		994000		777000	775000	774000		360(J)	792000	759000	802000	810000		850000		
Sulfate, Dissolved (µg/L)								979000														
Total Alkalinity (µg/L)														460000								
Total Organic Carbon Average (µg/L)										0.0029												
Explosives																						
1,3,5-Trinitrobenzene (µg/L)				0.1(U)						0.1(U)												
2,4,6-Trinitrotoluene (µg/L)				0.1(U)						0.1(U)												

Table 7. Results for Location A45

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	1/5/2000	7/19/2000	5/7/2001	5/13/2002	5/15/2002	5/20/2002	5/16/2003	4/29/2004	5/25/2005	5/18/2006	5/22/2006	6/12/2007	6/12/2008	10/27/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	10/25/2010
2,4-Dinitrotoluene (µg/L)				0.1(U)						0.1(U)												
2,6-Dinitrotoluene (µg/L)				0.1(U)						0.1(U)												
2-Amino-4,6-dinitrotoluene (µg/L)				0.1(U)						0.1(U)												
2-Nitrotoluene (µg/L)				0.1(U)						0.1(U)												
3-Dinitrobenzene (µg/L)				0.1(U)						0.1(U)												
3-Nitrotoluene (µg/L)				0.1(U)						0.1(U)												
4-Amino-2,6-dinitrotoluene (µg/L)				0.1(U)						0.1(U)												
4-Nitrotoluene (µg/L)				0.1(U)						0.1(U)												
HMX (µg/L)				0.1(U)						0.1(U)												
Nitrobenzene (µg/L)				0.1(U)						0.1(U)												
RDX (µg/L)				0.1(U)						0.1(U)												
Tetryl (µg/L)				0.1(U)						0.1(U)												
Metals																						
Aluminum (µg/L)				6.5(U)						33(U)						5(U)	5(U)	0.21(U)		2.4(J)		
Aluminum, Dissolved (µg/L)				6.5(U)						54.1(B)												
Antimony (µg/L)				4.7(B)						0.06(U)						0.5(U)	0.86(U)	1.5(J)		1.7		
Antimony, Dissolved (µg/L)				2.4(B)						0.06(U)												
Arsenic (µg/L)				2.8(B)						3.67						1.5(U)	1.5(U)	0.78		1.3		
Arsenic, Dissolved (µg/L)				0.25(B)						2.43(B)												
Barium (µg/L)				10						9.14						8.7	10.1	8.6		9.5		
Barium, Dissolved (µg/L)				11.8						9.57												
Beryllium (µg/L)				0.17(U)						0.21(U)						0.1(U)	0.1(U)	0.3(U)		0.12(U)		
Beryllium, Dissolved (µg/L)				0.17(U)						0.21(U)												
Boron (µg/L)				67.5(E)						50.9						73.9	69.2	500		75(J)		
Boron, Dissolved (µg/L)				111						50.2												
Cadmium (µg/L)				0.23(U)						0.66(U)						0.11(U)	0.11(U)	0.12(U)		0.13(J)		
Cadmium, Dissolved (µg/L)				1.4(B)						0.66(U)												
Calcium (µg/L)	269000	266000	270000	282000	280000	273000		275000		293000	292000	270000	27300(J)		288000	257000	247000	240000		240000		
Calcium, Dissolved (µg/L)				156000				296000		298000			289000(J)									
Chromium (µg/L)				1.5(B)						1.7(U)						3.2	1.5(U)	0.13(U)		0.6(J)		
Chromium, Dissolved (µg/L)				2.6(B)						1.7(U)												
Cobalt (µg/L)				2.8(B)						1(U)						1.9	1.5	0.12(U)		0.91(J)		
Cobalt, Dissolved (µg/L)				1.9(B)						1(U)												
Copper (µg/L)	1.8	2.3(U)	<5	1(U)	0.05(U)	10(U)		33.2		10.8	1.39(U)	2.4(J)	4.6(J)		9	11.4	4.9	9.7		0.47		
Copper, Dissolved (µg/L)				2(B)				<2.3		1.64(U)	1.68(J)		3.9(J)									
Iron (µg/L)				671						1260						2200	2450	960		1300		
Iron, Dissolved (µg/L)				37.1(B)						1150												
Lead (µg/L)	0.9(U)	1.6	4	0.05(U)	0.01(U)	5.01		<3		0.23(B)	1.72(U)	0.57(U)	0.49(U)		0.91	0.5(U)	0.5(U)	0.13(U)		0.13(U)		
Lead, Dissolved (µg/L)				0.48(B)				<3		0(U)	1.72(U)		0.49(U)									
Lithium (µg/L)				61.3(E)						68.8						66.8	69.2	65		100(U)		
Lithium, Dissolved (µg/L)				47.6(NE)						64.4												
Magnesium (µg/L)	149000	145000	146000	154000	150000	140000		147000		145000	151000	131000	146000		139000(J)	140000	135000	140000		130000		
Magnesium, Dissolved (µg/L)				83200				151000		154000			156000									
Manganese (µg/L)				559						462						323	419	250		390		
Manganese, Dissolved (µg/L)				158						431												
Mercury (µg/L)				0.04(U)						0.1(U)						0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Mercury, Dissolved (µg/L)				0.04(U)						0.1(U)												
Nickel (µg/L)				3.2(B)						1.6(U)						20.1	6.3	17		8.3		
Nickel, Dissolved (µg/L)				74						1.6(U)												
Potassium (µg/L)	5690	5970	5600	3780	4600	10900		6310		4810	6700	4380	4230		4190(J)	4090	3940	4600		3100		
Potassium, Dissolved (µg/L)				84300				4400		4750			4300									
Selenium (µg/L)				1.5(U)						0.87(B)						1(U)	1(U)	0.45(U)		2.2		
Selenium, Dissolved (µg/L)				0.62(B)						0.28(U)												
Silver (µg/L)				0.3(B)						0.01(B)						0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Silver, Dissolved (µg/L)				0.11(B)						0.01(B)												
Sodium (µg/L)	48800	47900	49400	42000(E)	49000	51700		48200		51500	53100	43600	45500		44400(J)	49200	49300	55000		47000		
Sodium, Dissolved (µg/L)				85200(E)				46900		51100			48400									

Table 7. Results for Location A45

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	1/5/2000	7/19/2000	5/7/2001	5/13/2002	5/15/2002	5/20/2002	5/16/2003	4/29/2004	5/25/2005	5/18/2006	5/22/2006	6/12/2007	6/12/2008	10/27/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	10/25/2010
Thallium (µg/L)				0.35(B)						0.01(B)						0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Thallium, Dissolved (µg/L)				0.33(B)						0.01(B)												
Vanadium (µg/L)	21.2	2.9(U)	<5	0.63(U)	0.01(U)	10(U)		<10		2.48(U)	0.61(U)	1.6(U)	1.6(U)		16(U)	3(U)	3(U)	0.14(U)		0.54		
Vanadium, Dissolved (µg/L)				0.63(U)				<10		2.48(U)	0.61(U)		1.6(U)									
Zinc (µg/L)				0.74(B)						6.85						367(J)	8.6(J)	130		13		
Zinc, Dissolved (µg/L)				18						29.1												
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene (µg/L)				9.8(U)						0.49(U)												
Acenaphthylene (µg/L)				9.8(U)						0.49(U)												
Anthracene (µg/L)				9.8(U)						0.49(U)												
Benzo(a)anthracene (µg/L)				9.8(U)						0.05(U)												
Benzo(a)pyrene (µg/L)				9.8(U)						0.05(U)												
Benzo(b)fluoranthene (µg/L)				9.8(U)						0.05(U)												
Benzo(ghi)perylene (µg/L)				9.8(U)						0.05(U)												
Benzo(k)fluoranthene (µg/L)				9.8(U)						0.02(U)												
Chrysene (µg/L)				9.8(U)						0.05(U)												
Dibenzo(a,h)anthracene (µg/L)				9.8(U)						0.05(U)												
Fluoranthene (µg/L)				9.8(U)						0.05(U)												
Fluorene (µg/L)				9.8(U)						0.49(U)												
Indeno(1,2,3-cd)pyrene (µg/L)				9.8(U)						0.05(U)												
Naphthalene (µg/L)				9.8(U)						0.49(U)												
Phenanthrene (µg/L)				9.8(U)						0.49(U)												
Pyrene (µg/L)				9.8(U)						0.05(U)												
Aroclor-1016 (µg/L)				0.1(U)						0.1(U)												
Aroclor-1221 (µg/L)				0.1(U)						0.1(U)												
Aroclor-1232 (µg/L)				0.1(U)						0.1(U)												
Aroclor-1242 (µg/L)				0.1(U)						0.1(U)												
Aroclor-1248 (µg/L)				0.1(U)						0.1(U)												
Aroclor-1254 (µg/L)				0.1(U)						0.1(U)												
Aroclor-1260 (µg/L)				0.1(U)						0.1(U)												
Pesticides																						
4,4'-DDD (µg/L)				0.04(U)						0.04(U)												
4,4'-DDE (µg/L)				0.04(U)						0.04(U)												
4,4'-DDT (µg/L)				0.04(U)						0.04(U)												
Aldrin (µg/L)				0.02(U)						0.02(U)												
alpha-BHC (µg/L)				0.02(U)						0.02(U)												
alpha-Chlordane (µg/L)				0.02(U)						0.02(U)												
beta-BHC (µg/L)				0.02(U)						0.02(U)												
delta-BHC (µg/L)				0.02(U)						0.02(U)												
Dieldrin (µg/L)				0.04(U)						0.04(U)												
Endosulfan I (µg/L)				0.02(U)						0.02(U)												
Endosulfan II (µg/L)				0.04(U)						0.04(U)												
Endosulfan sulfate (µg/L)				0.04(U)						0.04(U)												
Endrin (µg/L)				0.04(U)						0.04(U)												
Endrin aldehyde (µg/L)				0.04(U)						0.04(U)												
Endrin ketone (µg/L)				0.04(U)						0.04(U)												
gamma-BHC (Lindane) (µg/L)				0.02(U)						0.02(U)												
gamma-Chlordane (µg/L)				0.02(U)						0.02(U)												
Heptachlor (µg/L)				0.02(U)						0.02(U)												
Heptachlor epoxide (µg/L)				0.02(U)						0.02(U)												
Methoxychlor (µg/L)				0.19(U)						0.19(U)												
Toxaphene (µg/L)				0.96(U)						0.97(U)												
Radiological Compounds																						
Actinium-227, Dissolved (pCi/L)										-8.26(U)												
Actinium-227, Gamma (pCi/L)										-2.76(U)												
Alpha (pCi/L)				40.1						42.9												
Alpha, Dissolved (pCi/L)										22.3												

Table 7. Results for Location A45

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	1/5/2000	7/19/2000	5/7/2001	5/13/2002	5/15/2002	5/20/2002	5/16/2003	4/29/2004	5/25/2005	5/18/2006	5/22/2006	6/12/2007	6/12/2008	10/27/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	10/25/2010
Americium-241, Dissolved (pCi/L)										-7.23(U)												
Americium-241, Gamma (pCi/L)										1.54(U)												
Beta (pCi/L)				24.3						90												
Beta, Dissolved (pCi/L)										10.6												
Cesium-137, Dissolved (pCi/L)										1.78(U)												
Cesium-137, Gamma (pCi/L)										-0.21(U)												
Cobalt-60, Dissolved (pCi/L)										-0.52(U)												
Cobalt-60, Gamma (pCi/L)										0.03(U)												
Protactinium-231, Dissolved (pCi/L)										-17.7(U)												
Protactinium-231, Gamma (pCi/L)										21.7(U)												
Radium-226 (pCi/L)	0.08	0.94(J)	0.1	0.67(J)	0.4	0.52	0.07(U)			0.32(U)	1.12	0.16(J)	0.25(J)		0.64	0.25	0.45	0.66(J)	0.97	0.97	0.07(U)	-0.07(U)
Radium-226, Dissolved (pCi/L)									0.21	0.34(U)	0.88		0.18(J)									
Radium-228 (pCi/L)	0.06	0.09(UJ)	0.8		0.34	-0.47(U)	0.57(U)			-0.02(U)	1.02(U)	0.5(U)	0.65		0.7(U)	0.22(U)	0.72	0.41(U)	1.07	1.07	0.73(U)	0.26(U)
Radium-228, Dissolved (pCi/L)									0.78	0.49(U)	2.94		0.41(U)									
Radium-228, Gamma (pCi/L)										3.32(U)												
Thorium-228 (pCi/L)				0.25(U)											0.36(U)	0.09(U)	0.13(U)	-0.07(U)	0.03(U)	0.03(U)	0.08(U)	0.1
Thorium-228, Alpha (pCi/L)										0.08(U)												
Thorium-228, Dissolved (pCi/L)										0.02(U)												
Thorium-228, Dissolved Gamma (pCi/L)										0.46(U)												
Thorium-228, Gamma (pCi/L)										1.93(U)												
Thorium-230 (pCi/L)	0.28	0.35	0.3	0(U)	0.1	0.43	1.02			0.02(U)	0.43(U)	0.02(U)	0.05(U)		0.25(U)	0.04(U)	0(U)	0.32	0.09(U)	0.09(U)	0.01(U)	-0.16(U)
Thorium-230, Alpha (pCi/L)										0.02(U)												
Thorium-230, Dissolved (pCi/L)									1.14	0.2	0.78		0.02(U)									
Thorium-232 (pCi/L)	0.3	0.17(UJ)	U	-0.01(U)	0.14	0.07(U)	0.02(U)			-0.01(U)	0.02(U)	0(U)	0(U)		0.06(U)	-0.02(U)	0(U)	0.05(U)	0(U)	0(U)	0.04(U)	0.07
Thorium-232, Alpha (pCi/L)										-0.01(U)												
Thorium-232, Dissolved (pCi/L)									0.08	0.02(U)	-0.02(U)		0(U)									
Total Radium (pCi/L)			0.9*		0.74*	0.52*	U *			U *	1.12*	0.16*	0.9*		0.64*	U *	1.17*	0.66*		2.04*		
Total Radium, Dissolved (pCi/L)									0.99*	U *	3.82*		0.59*									
Total Thorium (pCi/L)																U *	U *	0.32*		U *		
Total Uranium (µg/L)		46.16*	30.53*	44.1	62.46*	40.23*	41.63*			36.17	33.42*	33.02*	43.66*		39.62*	39.27*	40.3*	36.73*		27.75*	40.14*	31.2*
Total Uranium (pCi/L)	32.67	36.32*	30.5*		47.41*	30.59*	32.51*			29.1	26.51*	25.43*	34.42*		30.46*	28.7*	33.74*	30.96*		21.54*		
Total Uranium, Dissolved (µg/L)									42.18*	42.26	34.86*		44.62*									
Total Uranium, Dissolved (pCi/L)									32.48*	33.86	26.3*		35.43*									
Uranium-233/234 (pCi/L)				19.9											16.4		19.4			11.86		
Uranium-233/234, Alpha (pCi/L)										16.4												
Uranium-233/234, Dissolved (pCi/L)										19.1												
Uranium-234 (pCi/L)		20.73	20		26.09	17.36	18			16.4	14.2	14	19.4		16.4	15.4		17.82	11.86		16.18	13.3
Uranium-234, Dissolved (pCi/L)									17.9	19.1	14.2		20									
Uranium-235 (pCi/L)		0.42	0.5		0.84	0.29(U)	0.91			0.9	1.51	0.63	0.72		1.16	0.4		1.2	0.53		1.18	0.64
Uranium-235, Dissolved (pCi/L)									0.78	0.96(U)	0.7		0.83									
Uranium-235, Gamma (pCi/L)										10.1(U)												
Uranium-235/236 (pCi/L)				0.83											1.16		1.04			0.53		
Uranium-235/236, Alpha (pCi/L)										0.9												
Uranium-235/236, Dissolved (pCi/L)										0.96												
Uranium-238 (pCi/L)		15.17	10	14.8	20.48	13.23	13.6			11.8	10.8	10.8	14.3		12.9	12.9	13.3	11.94	9.16	9.16	13.07	10.2
Uranium-238, Alpha (pCi/L)										11.8												
Uranium-238, Dissolved (pCi/L)									13.8	13.8	11.4		14.6									
Uranium-238, Dissolved Gamma (pCi/L)										82.6(U)												
Uranium-238, Gamma (pCi/L)										6.02(U)												

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 8. Results for Location A50

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/9/2000	7/21/2000	5/10/2001	5/15/2002	5/15/2003	4/29/2004	5/26/2005	5/18/2006	6/12/2007	6/12/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Volatile Organic Compounds																			
1,1,1-Trichloroethane (µg/L)				1(U)				1(U)											
1,1,2,2-Tetrachloroethane (µg/L)				1(U)				1(U)											
1,1,2-Trichloroethane (µg/L)				1(U)				1(U)											
1,1-Dichloroethane (µg/L)				1(U)				1(U)											
1,1-Dichloroethene (µg/L)				1(U)				1(U)											
1,2-Dichloroethane (µg/L)				1(U)				1(U)											
1,2-Dichloropropane (µg/L)				1(U)				1(U)											
2-Butanone (µg/L)				2.6(J)				3.52(J)											
2-Hexanone (µg/L)				5(U)				5(U)											
4-Methyl-2-pentanone (µg/L)				5(U)				5(U)											
Acetone (µg/L)				0.31(U)				5(U)											
Benzene (µg/L)				1(U)				1(U)											
Bromodichloromethane (µg/L)				1(U)				1(U)											
Bromoform (µg/L)				1(U)				1(U)											
Bromomethane (µg/L)				1(U)				1(U)											
Carbon disulfide (µg/L)				5(U)				5(U)											
Carbon tetrachloride (µg/L)				1(U)				1(U)											
Chlorobenzene (µg/L)				1(U)				1(U)											
Chloroethane (µg/L)				1(U)				1(U)											
Chloroform (µg/L)				1(U)				1(U)											
Chloromethane (µg/L)				1(U)				1(U)											
cis-1,2-Dichloroethylene (µg/L)				1(U)				1(U)											
cis-1,3-Dichloropropylene (µg/L)				1(U)				1(U)											
Dibromochloromethane (µg/L)								1(U)											
Ethylbenzene (µg/L)				1(U)				1(U)											
Methylene chloride (µg/L)				5(U)				5(U)											
Styrene (µg/L)				1(U)				1(U)											
Tetrachloroethylene (µg/L)				1(U)				1(U)											
Toluene (µg/L)				1(U)				1(U)											
trans-1,2-Dichloroethylene (µg/L)				1(U)				1(U)											
trans-1,3-Dichloropropylene (µg/L)				1(U)				1(U)											
Trichloroethylene (µg/L)				1(U)				1(U)											
Vinyl chloride (µg/L)				1(U)				1(U)											
Xylenes (total) (µg/L)				3(U)				1(U)											
Semi-Volatile Organic Compounds																			
1,2,4-Trichlorobenzene (µg/L)				10(U)				9.9(U)											
1,2-Dichlorobenzene (µg/L)				10(U)				9.9(U)											
1,3-Dichlorobenzene (µg/L)				10(U)				9.9(U)											
1,4-Dichlorobenzene (µg/L)				10(U)				9.9(U)											
2,4,5-Trichlorophenol (µg/L)				10(U)				9.9(U)											
2,4,6-Trichlorophenol (µg/L)				10(U)				9.9(U)											
2,4-Dichlorophenol (µg/L)				10(U)				9.9(U)											
2,4-Dimethylphenol (µg/L)				10(U)				9.9(U)											
2,4-Dinitrophenol (µg/L)				20(U)				19.8(U)											
2-Chloronaphthalene (µg/L)				10(U)				0.99(U)											
2-Chlorophenol (µg/L)				10(U)				9.9(U)											
2-Methyl-4,6-dinitrophenol (µg/L)				10(U)				9.9(U)											
2-Methylnaphthalene (µg/L)				10(U)				0.99(U)											
2-Nitroaniline (µg/L)				10(U)				9.9(U)											
2-Nitrophenol (µg/L)				10(U)				9.9(U)											
3,3'-Dichlorobenzidine (µg/L)				10(U)				9.9(U)											
3-Nitroaniline (µg/L)				10(U)				9.9(U)											
4-Bromophenylphenylether (µg/L)				10(U)				9.9(U)											
4-Chloro-3-methylphenol (µg/L)				10(U)				9.9(U)											
4-Chloroaniline (µg/L)				10(U)				9.9(U)											
4-Chlorophenylphenylether (µg/L)				10(U)				9.9(U)											

Table 8. Results for Location A50

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/9/2000	7/21/2000	5/10/2001	5/15/2002	5/15/2003	4/29/2004	5/26/2005	5/18/2006	6/12/2007	6/12/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
4-Nitroaniline (µg/L)				10(U)				9.9(U)											
4-Nitrophenol (µg/L)				10(U)				9.9(U)											
Benzoic Acid (µg/L)				20(U)															
bis(2-Chloroethoxy)methane (µg/L)				10(U)				9.9(U)											
bis(2-Chloroethyl) ether (µg/L)				10(U)				9.9(U)											
bis(2-Chloroisopropyl)ether (µg/L)				10(U)				9.9(U)											
bis(2-Ethylhexyl)phthalate (µg/L)				10(U)				2.87(J)											
Butylbenzylphthalate (µg/L)				10(U)				9.9(U)											
Carbazole (µg/L)				10(U)				9.9(U)											
Dibenzofuran (µg/L)				10(U)				9.9(U)											
Diethylphthalate (µg/L)				10(U)				9.9(U)											
Dimethylphthalate (µg/L)				10(U)				9.9(U)											
Di-n-butylphthalate (µg/L)				10(U)				9.9(U)											
Di-n-octylphthalate (µg/L)				10(U)				9.9(U)											
Diphenylamine (µg/L)				10(U)															
Hexachlorobenzene (µg/L)				10(U)				9.9(U)											
Hexachlorobutadiene (µg/L)				10(U)				9.9(U)											
Hexachlorocyclopentadiene (µg/L)				10(U)				9.9(U)											
Hexachloroethane (µg/L)				10(U)				9.9(U)											
Isophorone (µg/L)				10(U)				9.9(U)											
m,p-Cresols (µg/L)				10(U)				9.9(U)											
N-Nitroso-di-n-propylamine (µg/L)				10(U)				9.9(U)											
N-Nitrosodiphenylamine (µg/L)								9.9(U)											
o-Cresol (µg/L)				10(U)				9.9(U)											
Pentachlorophenol (µg/L)				10(U)				9.9(U)											
Phenol (µg/L)				10(U)				9.9(U)											
General Chemistry																			
Alkalinity (µg/L)		403000	440000		440000	381000	418000	440000	416000	414000	420000		441000	427000	430000		420000		
Bicarbonate Alkalinity (µg/L)		403000	537000		440000	381000	418000	438000	415000	414000	420000								
Carbonate (µg/L)		4000(U)	1000(U)		1000(U)	1000(U)	<5000												
Carbonate Alkalinity (µg/L)								1460(U)	1120(U)	0(U)	5000(U)								
Chloride (µg/L)		19800	21100		22000	22300	20300	19600	23100	26300	19600(J)	23100	19600	21200	20000		22000		
Fluoride (µg/L)		1000(U)						316				410	328	297	30(U)		630		
Methane (µg/L)								14(U)											
Nitrate (µg/L)		250(U)	100(U)		100(U)	85	42	34.1(U)	0(U)	200	360	700(J)	255(J)	173	24(U)		78(U)		
Nitrite (µg/L)		250(U)			50(U)	20(U)	20	54.2(U)	0(U)	0(U)	20(U)	20(U)	100(U)	37.7(J)	24(U)		320(J)		
Phosphate (µg/L)		50(U)																	
Phosphate as P, Ortho (µg/L)								151(U)	0(U)	170(J)	500(U)		200(U)	66(U)	60(U)		130(U)		
Phosphorous, Total (µg/L)			30		30(U)	23	220												
Solids, Total Dissolved (µg/L)		1300000	1370000		1300000	1290000	1340000	1350000	1330000	1300000	1320000		1330000	1320000	1300000		1400000		
Sulfate (µg/L)		621000	600000		400000	702000	803000	577000	653000	64900	618000(J)	596000	587000	625000	570000		670000		
Total Organic Carbon Average (µg/L)								0.0256											
Explosives																			
1,3,5-Trinitrobenzene (µg/L)				0.1(U)				0.1(U)											
2,4,6-Trinitrotoluene (µg/L)				0.1(U)				0.1(U)											
2,4-Dinitrotoluene (µg/L)				0.1(U)				0.1(U)											
2,6-Dinitrotoluene (µg/L)				0.1(U)				0.1(U)											
2-Amino-4,6-dinitrotoluene (µg/L)				0.1(U)				0.1(U)											
2-Nitrotoluene (µg/L)				0.1(U)				0.1(U)											
3-Dinitrobenzene (µg/L)				0.1(U)				0.1(U)											
3-Nitrotoluene (µg/L)				0.1(U)				0.1(U)											
4-Amino-2,6-dinitrotoluene (µg/L)				0.1(U)				0.1(U)											
4-Nitrotoluene (µg/L)				0.1(U)				0.1(U)											
HMX (µg/L)				0.1(U)				0.1(U)											

Table 8. Results for Location A50

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/9/2000	7/21/2000	5/10/2001	5/15/2002	5/15/2003	4/29/2004	5/26/2005	5/18/2006	6/12/2007	6/12/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Nitrobenzene (µg/L)				0.1(U)				0.1(U)											
RDX (µg/L)				0.1(U)				0.1(U)											
Tetryl (µg/L)				0.1(U)				0.1(U)											
Metals																			
Aluminum (µg/L)				321				33(U)					5(U)	5(U)	0.21(U)		4.2(J)		
Aluminum, Dissolved (µg/L)				6.49(U)				88.9(B)											
Antimony (µg/L)				10.3				0.28(U)					0.5(U)	0.5(U)	0.13(U)		0.99		
Antimony, Dissolved (µg/L)				4.49(B)				0.06(U)											
Arsenic (µg/L)				4.65				5.49(B)					1.5(U)	1.5(U)	1.2		1.4		
Arsenic, Dissolved (µg/L)				4.89(B)				2.03(B)											
Barium (µg/L)				19.3				13.3					10.5	12.3	11		12		
Barium, Dissolved (µg/L)				15				11.4											
Beryllium (µg/L)				0.17(U)				0.21(U)					0.1(U)	0.1(U)	0.3(U)		0.12(U)		
Beryllium, Dissolved (µg/L)				0.17(U)				0.21(U)											
Boron (µg/L)				161				147					171	199	500		220		
Boron, Dissolved (µg/L)				144				148											
Cadmium (µg/L)				0.4(B)				0.66(U)					0.11(U)	0.11(U)	0.12(U)		0.16(J)		
Cadmium, Dissolved (µg/L)				0.27(B)				0.66(U)											
Calcium (µg/L)	121000	126000	123000	146000	130000	122000	135000	133000	122000	NA	125000(J)	134000	109000	112000	130000		110000		
Calcium, Dissolved (µg/L)				148000				137000			129000(J)								
Chromium (µg/L)				1.23(B)				1.7(U)					5.1(J)	1.5(U)	0.13(U)		1.5(J)		
Chromium, Dissolved (µg/L)				0.61(U)				1.7(U)											
Cobalt (µg/L)				0.67(U)				1(U)					0.78(J)	0.92(J)	0.12(U)		0.77(J)		
Cobalt, Dissolved (µg/L)				0.62(B)				1(U)											
Copper (µg/L)	3.3	2.3(U)	6	2.12(B)	0.05(U)	10(U)	62.4	9.29	3.03(J)	NA	3.9(J)	3.2	3.7	3.6	5.3		3.9		
Copper, Dissolved (µg/L)				1.19(B)				5.16	1.72(J)		4.2(J)								
Iron (µg/L)				424				77.6(B)					606	435	20(U)		66(J)		
Iron, Dissolved (µg/L)				36.5(B)				105											
Lead (µg/L)	0.9(U)	0.9	<3	1.08(B)	0.01(U)	10(U)	<3	0.18(B)	1.72(U)	NA	0.49(U)	0.49(U)	0.5(U)	0.5(U)	0.13(U)		0.15(J)		
Lead, Dissolved (µg/L)				0.01(U)				0.36(B)	1.72(U)		0.49(U)								
Lithium (µg/L)				43.6				49.3(B)					51.7	54.8	46		100(U)		
Lithium, Dissolved (µg/L)				44				47.9(B)											
Magnesium (µg/L)	148000	154000	157000	166000	150000	149000	153000	160000	155000	NA	170000	163000(J)	141000	141000	160000		150000		
Magnesium, Dissolved (µg/L)				162000				148000			163000								
Manganese (µg/L)				62.7				55.5					33	41.4	43		130		
Manganese, Dissolved (µg/L)				70.7				79.5											
Mercury (µg/L)				0.04(U)				0.1(U)					0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Mercury, Dissolved (µg/L)				0.04(U)				0.1(U)											
Nickel (µg/L)				1.93(B)				1.92(B)					3.5	3.2	3.4		7.9		
Nickel, Dissolved (µg/L)				1.54(B)				1.6(U)											
Potassium (µg/L)	1850	1160	2200	1700	1700	2180	1370	1630	1630	NA	2120	1860(J)	2150	2190	2200		2100		
Potassium, Dissolved (µg/L)				1490				1690			1670								
Selenium (µg/L)				0.91(B)				2.53(B)					1(U)	1(U)	0.45(U)		2.6		
Selenium, Dissolved (µg/L)				1.16(B)				0.28(U)											
Silver (µg/L)				0.22(B)				0.03(U)					0.2(U)	0.2(U)	0.08(U)		0.72		
Silver, Dissolved (µg/L)				0.17(B)				0(U)											
Sodium (µg/L)	71900	78800	79700	80900	74000	76500	72200	83400	78600	NA	80800	73300(J)	76600	67400	83000		80000		
Sodium, Dissolved (µg/L)				82500				83100			78500								
Thallium (µg/L)				0.71				0.02(U)					0.3(U)	0.3(U)	0.16(U)		2		
Thallium, Dissolved (µg/L)				0.65				0(B)											
Vanadium (µg/L)	11.8	2.9(U)	<5	0.63(U)	0.01(U)	10(U)	<10	2.48(U)	0.61(U)	NA	1.6(U)	16(U)	3(U)	3(U)	0.55		0.51		
Vanadium, Dissolved (µg/L)				0.63(U)				2.5(U)	0.61(U)		1.6(U)								
Zinc (µg/L)				16.5				29.6					3.8(J)	4.5(J)	5.9		22		
Zinc, Dissolved (µg/L)				4.85(B)				9.14											
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene (µg/L)				10(U)				0.49(U)											
Acenaphthylene (µg/L)				10(U)				0.49(U)											

Table 8. Results for Location A50

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/9/2000	7/21/2000	5/10/2001	5/15/2002	5/15/2003	4/29/2004	5/26/2005	5/18/2006	6/12/2007	6/12/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Anthracene (µg/L)				10(U)				0.49(U)											
Benzo(a)anthracene (µg/L)				10(U)				0.05(U)											
Benzo(a)pyrene (µg/L)				10(U)				0.05(U)											
Benzo(b)fluoranthene (µg/L)				10(U)				0.05(U)											
Benzo(ghi)perylene (µg/L)				10(U)				0.05(U)											
Benzo(k)fluoranthene (µg/L)				10(U)				0.02(U)											
Chrysene (µg/L)				10(U)				0.05(U)											
Dibenzo(a,h)anthracene (µg/L)				10(U)				0.05(U)											
Fluoranthene (µg/L)				10(U)				0.05(U)											
Fluorene (µg/L)				10(U)				0.49(U)											
Indeno(1,2,3-cd)pyrene (µg/L)				10(U)				0.05(U)											
Naphthalene (µg/L)				10(U)				0.49(U)											
Phenanthrene (µg/L)				10(U)				0.49(U)											
Pyrene (µg/L)				10(U)				0.05(U)											
PCBs																			
Aroclor-1016 (µg/L)				0.11(U)				0.1(U)											
Aroclor-1221 (µg/L)				0.11(U)				0.1(U)											
Aroclor-1232 (µg/L)				0.11(U)				0.1(U)											
Aroclor-1242 (µg/L)				0.11(U)				0.1(U)											
Aroclor-1248 (µg/L)				0.11(U)				0.1(U)											
Aroclor-1254 (µg/L)				0.11(U)				0.1(U)											
Aroclor-1260 (µg/L)				0.11(U)				0.1(U)											
Pesticides																			
4,4'-DDD (µg/L)				0.04(U)				0.04(U)											
4,4'-DDE (µg/L)				0.04(U)				0.04(U)											
4,4'-DDT (µg/L)				0.04(U)				0.04(U)											
Aldrin (µg/L)				0.02(U)				0.02(U)											
alpha-BHC (µg/L)				0.02(U)				0.02(U)											
alpha-Chlordane (µg/L)				0.02(U)				0.02(U)											
beta-BHC (µg/L)				0.02(U)				0.02(U)											
delta-BHC (µg/L)				0.02(U)				0.02(U)											
Dieldrin (µg/L)				0.04(U)				0.04(U)											
Endosulfan I (µg/L)				0.02(U)				0.02(U)											
Endosulfan II (µg/L)				0.04(U)				0.04(U)											
Endosulfan sulfate (µg/L)				0.04(U)				0.04(U)											
Endrin (µg/L)				0.04(U)				0.04(U)											
Endrin aldehyde (µg/L)				0.04(U)				0.04(U)											
Endrin ketone (µg/L)				0.04(U)				0.04(U)											
gamma-BHC (Lindane) (µg/L)				0.02(U)				0.02(U)											
gamma-Chlordane (µg/L)				0.02(U)				0.02(U)											
Heptachlor (µg/L)				0.02(U)				0.02(U)											
Heptachlor epoxide (µg/L)				0.02(U)				0.02(U)											
Methoxychlor (µg/L)				0.2(U)				0.2(U)											
Toxaphene (µg/L)				1(U)				0.99(U)											
Radiological Compounds																			
Actinium-227, Dissolved (pCi/L)								-4.35(U)											
Actinium-227, Gamma (pCi/L)								-10.4(U)											
Alpha (pCi/L)				15.4				13.5											
Alpha, Dissolved (pCi/L)								11.5											
Americium-241, Dissolved (pCi/L)								-7.31(U)											
Americium-241, Gamma (pCi/L)								2.18(U)											
Beta (pCi/L)				6.83				10.2											
Beta, Dissolved (pCi/L)								6.84											
Cesium-137, Dissolved (pCi/L)								0.4(U)											
Cesium-137, Gamma (pCi/L)								0.14(U)											
Cobalt-60, Dissolved (pCi/L)								0.23(U)											
Cobalt-60, Gamma (pCi/L)								0.79(U)											

Table 8. Results for Location A50

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/9/2000	7/21/2000	5/10/2001	5/15/2002	5/15/2003	4/29/2004	5/26/2005	5/18/2006	6/12/2007	6/12/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Protactinium-231, Dissolved (pCi/L)								-4.96(U)											
Protactinium-231, Gamma (pCi/L)								-7.32(U)											
Radium-226 (pCi/L)	0.07	0.21(J)	0.3	0.57(U)	0.35	0.16(U)	0.15(U)	0(U)	0.44(U)	0.09(U)	0.1(U)	0.33(U)	0.42	0.4	0.16(U)	0.34(U)	0.34(U)	0.63(U)	0.41
Radium-226, Dissolved (pCi/L)								0.12(U)	0.34(U)		0.1(J)								
Radium-228 (pCi/L)	0.03	0.17(UJ)	U		0.21		-0.06(U)	1.06	1.97	0.19(U)	0.14(U)	1.18(U)	0.19(U)	1.08(J)	0.67(U)	0.54(U)	0.54(U)	0.41(U)	0.89
Radium-228, Dissolved (pCi/L)								1.13	1.71		0.38(U)								
Radium-228, Gamma (pCi/L)								5.19(U)											
Thorium-228 (pCi/L)				0.1(U)								0.01(U)	0.11(U)	0.29	0.03(U)	0.11(U)	0.11(U)	0.1(U)	-0.21(U)
Thorium-228, Alpha (pCi/L)								0.11(U)											
Thorium-228, Dissolved (pCi/L)								0.08(U)											
Thorium-228, Dissolved Gamma (pCi/L)								0.6(U)											
Thorium-228, Gamma (pCi/L)								3.76(U)											
Thorium-230 (pCi/L)	0.31	0.37	0.7	0.02(U)	0.1	0.37(U)	1.36	0.04(U)	1.07	0.11	0.03(U)	0.06(U)	0.09(U)	-0.01(U)	-0.04(U)	0.05(U)	0.05(U)	0.35	-0.18(U)
Thorium-230, Alpha (pCi/L)								0.04(U)											
Thorium-230, Dissolved (pCi/L)								0.22	0.88*		0.06(J)								
Thorium-232 (pCi/L)	0.18	0.12(UJ)	U	0(U)	0.02	-0.06(U)	0.09	-0.01(U)	0.05(U)	0(U)	0(U)	0.04(U)	0.11(U)	0.02(U)	0.16(U)	0.02(U)	0.02(U)	0.03(U)	0.03(U)
Thorium-232, Alpha (pCi/L)								-0.01(U)											
Thorium-232, Dissolved (pCi/L)								0(U)	0.05(U)		0(U)								
Total Radium (pCi/L)			0.3*		0.56*	U *	U *	1.06*	1.97*	U *	U *	U *	0.42*	1.08*	U *		U *		
Total Radium, Dissolved (pCi/L)									1.71		0.1*								
Total Thorium (pCi/L)													U *	0.29*	U *		U *		
Total Uranium (µg/L)		21.43*	18.36*	17.6	16.75*	23.21*	18.62*	26.08	16.04*	16.77*	17.25*	18.98*	16.67*	17.36*	20.93*		15.55*	18.06*	15.94*
Total Uranium (pCi/L)	12.66	15.41*	14.4*		12.83*	15.12*	13.9*	19.84	12.16*	13.22*	13.29*	14.01*	11.53*	13.18*	15.3*		11.42*		
Total Uranium, Dissolved (µg/L)								18.2	18.24*		18.04*								
Total Uranium, Dissolved (pCi/L)									13.33*		13.16*								
Uranium-233/234 (pCi/L)				5.84								7.38		6.78			6.07		
Uranium-233/234, Alpha (pCi/L)								10.8											
Uranium-233/234, Dissolved (pCi/L)								6.97											
Uranium-234 (pCi/L)		8.16	8		6.65	7.5	7.5	10.8	6.18	7.5	7.2	7.38	5.69		7.92	6.07		6.54	5.45
Uranium-234, Dissolved (pCi/L)									6.69		6.9								
Uranium-235 (pCi/L)		0.21(UJ)	0.4		0.76	0.25(U)	0.3	0.51	0.81	0.22(J)	0.47(J)	0.43	0.4		0.55	0.22		0.69	0.46
Uranium-235, Dissolved (pCi/L)								8.59(U)	0.73		0.36(J)								
Uranium-235, Gamma (pCi/L)								0.06(U)											
Uranium-235/236 (pCi/L)				0.21								0.43		0.67			0.22		
Uranium-235/236, Alpha (pCi/L)								0.51											
Uranium-235/236, Dissolved (pCi/L)								0.68											
Uranium-238 (pCi/L)		7.04	6	4.65	5.41	7.62	6.1	8.53	5.17	5.5	5.62	6.2	5.44	5.73	6.82	5.13	5.13	5.86	5.19
Uranium-238, Alpha (pCi/L)								8.53											
Uranium-238, Dissolved (pCi/L)								5.23	5.91		5.9								
Uranium-238, Dissolved Gamma (pCi/L)								9.5(U)											
Uranium-238, Gamma (pCi/L)								30(U)											

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 9. Results for Location A55

Parameter (unit)	5/17/2003	10/26/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	5(U)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	5(U)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	1(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	9.62(U)	
1,2-Dichlorobenzene (µg/L)	9.62(U)	
1,3-Dichlorobenzene (µg/L)	9.62(U)	
1,4-Dichlorobenzene (µg/L)	9.62(U)	
2,4,5-Trichlorophenol (µg/L)	9.62(U)	
2,4,6-Trichlorophenol (µg/L)	9.62(U)	
2,4-Dichlorophenol (µg/L)	9.62(U)	
2,4-Dimethylphenol (µg/L)	9.62(U)	
2,4-Dinitrophenol (µg/L)	19.2(U)	
2-Chloronaphthalene (µg/L)	0.96(U)	
2-Chlorophenol (µg/L)	9.62(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	9.62(U)	
2-Methylnaphthalene (µg/L)	0.96(U)	
2-Nitroaniline (µg/L)	9.62(U)	
2-Nitrophenol (µg/L)	9.62(U)	
3,3'-Dichlorobenzidine (µg/L)	9.62(U)	
3-Nitroaniline (µg/L)	9.62(U)	
4-Bromophenylphenylether (µg/L)	9.62(U)	
4-Chloro-3-methylphenol (µg/L)	9.62(U)	
4-Chloroaniline (µg/L)	9.62(U)	
4-Chlorophenylphenylether (µg/L)	9.62(U)	

Table 9. Results for Location A55

Parameter (unit)	5/17/2003	10/26/2010
4-Nitroaniline (µg/L)	9.62(U)	
4-Nitrophenol (µg/L)	9.62(U)	
bis(2-Chloroethoxy)methane (µg/L)	9.62(U)	
bis(2-Chloroethyl) ether (µg/L)	9.62(U)	
bis(2-Chloroisopropyl)ether (µg/L)	9.62(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	9.62(U)	
Butylbenzylphthalate (µg/L)	9.62(U)	
Carbazole (µg/L)	9.62(U)	
Dibenzofuran (µg/L)	9.62(U)	
Diethylphthalate (µg/L)	9.62(U)	
Dimethylphthalate (µg/L)	9.62(U)	
Di-n-butylphthalate (µg/L)	9.62(U)	
Di-n-octylphthalate (µg/L)	9.62(U)	
Hexachlorobenzene (µg/L)	9.62(U)	
Hexachlorobutadiene (µg/L)	9.62(U)	
Hexachlorocyclopentadiene (µg/L)	9.62(U)	
Hexachloroethane (µg/L)	9.62(U)	
Isophorone (µg/L)	9.62(U)	
m,p-Cresols (µg/L)	9.62(U)	
N-Nitroso-di-n-propylamine (µg/L)	9.62(U)	
N-Nitrosodiphenylamine (µg/L)	9.62(U)	
o-Cresol (µg/L)	9.62(U)	
Pentachlorophenol (µg/L)	9.62(U)	
Phenol (µg/L)	9.62(U)	
Explosives		
1,3,5-Trinitrobenzene (µg/L)	0.1(U)	
2,4,6-Trinitrotoluene (µg/L)	0.1(U)	
2,4-Dinitrotoluene (µg/L)	0.1(U)	
2,6-Dinitrotoluene (µg/L)	0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)	
2-Nitrotoluene (µg/L)	0.1(U)	
3-Dinitrobenzene (µg/L)	0.1(U)	
3-Nitrotoluene (µg/L)	0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)	
4-Nitrotoluene (µg/L)	0.1(U)	
HMX (µg/L)	0.1(U)	
Nitrobenzene (µg/L)	0.1(U)	
RDX (µg/L)	0.1(U)	
Tetryl (µg/L)	0.1(U)	
Metals		
Aluminum (µg/L)	124	
Aluminum, Dissolved (µg/L)	66(U)	
Antimony (µg/L)	0.71(B)	
Antimony, Dissolved (µg/L)	0.67(B)	
Arsenic (µg/L)	1.59(B)	
Arsenic, Dissolved (µg/L)	2.72(B)	
Barium (µg/L)	62.4	
Barium, Dissolved (µg/L)	44.3	
Beryllium (µg/L)	0.18(U)	
Beryllium, Dissolved (µg/L)	0.21(U)	
Boron (µg/L)	196	
Boron, Dissolved (µg/L)	180	
Cadmium (µg/L)	0.33(U)	
Cadmium, Dissolved (µg/L)	0.66(U)	
Calcium (µg/L)	363000	
Calcium, Dissolved (µg/L)	346000	
Chromium (µg/L)	1.1(U)	

Table 9. Results for Location A55

Parameter (unit)	5/17/2003	10/26/2010
Chromium, Dissolved (µg/L)	1.7(U)	
Cobalt (µg/L)	0.29(U)	
Cobalt, Dissolved (µg/L)	1(U)	
Copper (µg/L)	6.74	
Copper, Dissolved (µg/L)	1.75(B)	
Iron (µg/L)	105	
Iron, Dissolved (µg/L)	5.6(U)	
Lead (µg/L)	1.11(B)	
Lead, Dissolved (µg/L)	0(U)	
Lithium (µg/L)	170(E)	
Lithium, Dissolved (µg/L)	151	
Magnesium (µg/L)	96300	
Magnesium, Dissolved (µg/L)	62200	
Manganese (µg/L)	3.98(B)	
Manganese, Dissolved (µg/L)	0.52(U)	
Mercury (µg/L)	0.1(U)	
Mercury, Dissolved (µg/L)	0.1(U)	
Nickel (µg/L)	0.97(U)	
Nickel, Dissolved (µg/L)	1.6(U)	
Potassium (µg/L)	17200	
Potassium, Dissolved (µg/L)	17100	
Selenium (µg/L)	1.18(B)	
Selenium, Dissolved (µg/L)	0.58(B)	
Silver (µg/L)	0.01(B)	
Silver, Dissolved (µg/L)	0(U)	
Sodium (µg/L)	212000	
Sodium, Dissolved (µg/L)	232000	
Thallium (µg/L)	0.03(B)	
Thallium, Dissolved (µg/L)	0.05(B)	
Vanadium (µg/L)	0.23(U)	
Vanadium, Dissolved (µg/L)	2.5(U)	
Zinc (µg/L)	6.05	
Zinc, Dissolved (µg/L)	0.87(U)	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	0.5(U)	
Acenaphthylene (µg/L)	0.5(U)	
Anthracene (µg/L)	0.5(U)	
Benzo(a)anthracene (µg/L)	0.05(U)	
Benzo(a)pyrene (µg/L)	0.05(U)	
Benzo(b)fluoranthene (µg/L)	0.05(U)	
Benzo(ghi)perylene (µg/L)	0.05(U)	
Benzo(k)fluoranthene (µg/L)	0.02(U)	
Chrysene (µg/L)	0.05(U)	
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	
Fluoranthene (µg/L)	0.05(U)	
Fluorene (µg/L)	0.5(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	
Naphthalene (µg/L)	0.5(U)	
Phenanthrene (µg/L)	0.5(U)	
Pyrene (µg/L)	0.05(U)	
PCBs		
Aroclor-1016 (µg/L)	0.1(U)	
Aroclor-1221 (µg/L)	0.1(U)	
Aroclor-1232 (µg/L)	0.1(U)	
Aroclor-1242 (µg/L)	0.1(U)	
Aroclor-1248 (µg/L)	0.1(U)	
Aroclor-1254 (µg/L)	0.1(U)	

Table 9. Results for Location A55

Parameter (unit)	5/17/2003	10/26/2010
Aroclor-1260 (µg/L)	0.1(U)	
Pesticides		
4,4'-DDD (µg/L)	0.04(U)	
4,4'-DDE (µg/L)	0.04(U)	
4,4'-DDT (µg/L)	0.04(U)	
Aldrin (µg/L)	0.02(U)	
alpha-BHC (µg/L)	0.02(U)	
alpha-Chlordane (µg/L)	0.02(U)	
beta-BHC (µg/L)	0.02(U)	
delta-BHC (µg/L)	0.02(U)	
Dieldrin (µg/L)	0.04(U)	
Endosulfan I (µg/L)	0.02(U)	
Endosulfan II (µg/L)	0.04(U)	
Endosulfan sulfate (µg/L)	0.04(U)	
Endrin (µg/L)	0.04(U)	
Endrin aldehyde (µg/L)	0.04(U)	
Endrin ketone (µg/L)	0.04(U)	
gamma-BHC (Lindane) (µg/L)	0.02(U)	
gamma-Chlordane (µg/L)	0.02(U)	
Heptachlor (µg/L)	0.02(U)	
Heptachlor epoxide (µg/L)	0.02(U)	
Methoxychlor (µg/L)	0.19(U)	
Toxaphene (µg/L)	0.96(U)	
Radiological Compounds		
Actinium-227, Dissolved (pCi/L)	-4.12(U)	
Actinium-227, Gamma (pCi/L)	3.66(U)	
Alpha (pCi/L)	-0.8(U)	
Alpha, Dissolved (pCi/L)	-2.52(U)	
Americium-241, Dissolved (pCi/L)	2.79(U)	
Americium-241, Gamma (pCi/L)	1.3(U)	
Beta (pCi/L)	18.3	
Beta, Dissolved (pCi/L)	453	
Cesium-137, Dissolved (pCi/L)	1.3(U)	
Cesium-137, Gamma (pCi/L)	-0.97(U)	
Cobalt-60, Dissolved (pCi/L)	-0.28(U)	
Cobalt-60, Gamma (pCi/L)	-1.55(U)	
Protactinium-231, Dissolved (pCi/L)	1.35(U)	
Protactinium-231, Gamma (pCi/L)	-12.7(U)	
Radium-226 (pCi/L)	0.2(U)	0.34
Radium-226, Dissolved (pCi/L)	0.42(U)	
Radium-228 (pCi/L)	0.47(U)	1.3(J)
Radium-228, Dissolved (pCi/L)	1.26(U)	
Radium-228, Gamma (pCi/L)	6.19(U)	
Thorium-228 (pCi/L)		0.07(U)
Thorium-228, Alpha (pCi/L)	0(U)	
Thorium-228, Dissolved (pCi/L)	0.19(U)	
Thorium-228, Dissolved Gamma (pCi/L)	2.96(U)	
Thorium-228, Gamma (pCi/L)	0(UUI)	
Thorium-230 (pCi/L)		-0.07(U)
Thorium-230, Alpha (pCi/L)	-0.03(U)	
Thorium-230, Dissolved (pCi/L)	0.14	
Thorium-232 (pCi/L)		0.01(U)
Thorium-232, Alpha (pCi/L)	-0.02(U)	
Thorium-232, Dissolved (pCi/L)	-0.01(U)	
Total Uranium (µg/L)	0(U)	0.99
Total Uranium, Dissolved (µg/L)	0(U)	
Uranium-233/234, Alpha (pCi/L)	0.14(U)	

Table 9. Results for Location A55

Parameter (unit)	5/17/2003	10/26/2010
Uranium-233/234, Dissolved (pCi/L)	0.04(U)	
Uranium-234 (pCi/L)		0.53
Uranium-235 (pCi/L)		0.09
Uranium-235, Dissolved (pCi/L)	0.1(U)	
Uranium-235, Gamma (pCi/L)	12.5(U)	
Uranium-235/236, Alpha (pCi/L)	-0.01(U)	
Uranium-235/236, Dissolved (pCi/L)	0.04(U)	
Uranium-238 (pCi/L)		0.31(J)
Uranium-238, Alpha (pCi/L)	0.02(U)	
Uranium-238, Dissolved (pCi/L)	0.05(U)	
Uranium-238, Dissolved Gamma (pCi/L)	0(UUI)	
Uranium-238, Gamma (pCi/L)	0(UUI)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 10. Results for Location BH49

Parameter (unit)	1/9/2000	10/26/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	3.4(U)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	0.77(U)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	0.75(J)	
Xylenes (total) (µg/L)	3(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	10(U)	
1,2-Dichlorobenzene (µg/L)	10(U)	
1,3-Dichlorobenzene (µg/L)	10(U)	
1,4-Dichlorobenzene (µg/L)	10(U)	
2,4,5-Trichlorophenol (µg/L)	10(U)	
2,4,6-Trichlorophenol (µg/L)	10(U)	
2,4-Dichlorophenol (µg/L)	10(U)	
2,4-Dimethylphenol (µg/L)	10(U)	
2,4-Dinitrophenol (µg/L)	20(U)	
2-Chloronaphthalene (µg/L)	10(U)	
2-Chlorophenol (µg/L)	10(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)	
2-Methylnaphthalene (µg/L)	10(U)	
2-Nitroaniline (µg/L)	10(U)	
2-Nitrophenol (µg/L)	10(U)	
3,3'-Dichlorobenzidine (µg/L)	10(U)	

Table 10. Results for Location BH49

Parameter (unit)	1/9/2000	10/26/2010
3-Nitroaniline (µg/L)	10(U)	
4-Bromophenylphenylether (µg/L)	10(U)	
4-Chloro-3-methylphenol (µg/L)	10(U)	
4-Chloroaniline (µg/L)	10(U)	
4-Chlorophenylphenylether (µg/L)	10(U)	
4-Nitroaniline (µg/L)	10(U)	
4-Nitrophenol (µg/L)	10(U)	
Benzoic Acid (µg/L)	20(U)	
bis(2-Chloroethoxy)methane (µg/L)	10(U)	
bis(2-Chloroethyl) ether (µg/L)	10(U)	
bis(2-Chloroisopropyl)ether (µg/L)	10(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	10(U)	
Butylbenzylphthalate (µg/L)	10(U)	
Carbazole (µg/L)	10(U)	
Dibenzofuran (µg/L)	10(U)	
Diethylphthalate (µg/L)	10(U)	
Dimethylphthalate (µg/L)	10(U)	
Di-n-butylphthalate (µg/L)	10(U)	
Di-n-octylphthalate (µg/L)	10(U)	
Diphenylamine (µg/L)	10(U)	
Hexachlorobenzene (µg/L)	10(U)	
Hexachlorobutadiene (µg/L)	10(U)	
Hexachlorocyclopentadiene (µg/L)	10(U)	
Hexachloroethane (µg/L)	10(U)	
Isophorone (µg/L)	10(U)	
m,p-Cresols (µg/L)	10(U)	
N-Nitroso-di-n-propylamine (µg/L)	10(U)	
o-Cresol (µg/L)	10(U)	
Pentachlorophenol (µg/L)	10(U)	
Phenol (µg/L)	10(U)	
Explosives		
2,4-Dinitrotoluene (µg/L)	10(U)	
2,6-Dinitrotoluene (µg/L)	10(U)	
Nitrobenzene (µg/L)	10(U)	
Metals		
Aluminum (µg/L)	8.77(B)	
Aluminum, Dissolved (µg/L)	6.49(U)	
Antimony (µg/L)	3.38(B)	
Antimony, Dissolved (µg/L)	1.96(U)	
Arsenic (µg/L)	5.89(B)	
Arsenic, Dissolved (µg/L)	5.54(B)	
Barium (µg/L)	13.7	
Barium, Dissolved (µg/L)	13.8	
Beryllium (µg/L)	0.17(U)	
Beryllium, Dissolved (µg/L)	0.17(U)	
Boron (µg/L)	621	
Boron, Dissolved (µg/L)	668	
Cadmium (µg/L)	0.23(U)	
Cadmium, Dissolved (µg/L)	0.27(B)	
Calcium (µg/L)	101000	
Calcium, Dissolved (µg/L)	94900	
Chromium (µg/L)	0.61(U)	
Chromium, Dissolved (µg/L)	0.61(U)	
Cobalt (µg/L)	0.67(U)	
Cobalt, Dissolved (µg/L)	0.67(U)	
Copper (µg/L)	1(U)	

Table 10. Results for Location BH49

Parameter (unit)	1/9/2000	10/26/2010
Copper, Dissolved (µg/L)	2.69(B)	
Iron (µg/L)	38.3(B)	
Iron, Dissolved (µg/L)	11.2(B)	
Lead (µg/L)	0.05(U)	
Lead, Dissolved (µg/L)	0.05(U)	
Lithium (µg/L)	92.5	
Lithium, Dissolved (µg/L)	73.2	
Magnesium (µg/L)	75000	
Magnesium, Dissolved (µg/L)	69000	
Manganese (µg/L)	46	
Manganese, Dissolved (µg/L)	45	
Mercury (µg/L)	0.04(U)	
Mercury, Dissolved (µg/L)	0.04(U)	
Nickel (µg/L)	1.15(U)	
Nickel, Dissolved (µg/L)	2.08(B)	
Potassium (µg/L)	10400	
Potassium, Dissolved (µg/L)	9910	
Selenium (µg/L)	2.5(B)	
Selenium, Dissolved (µg/L)	4.33(B)	
Silver (µg/L)	0.07(U)	
Silver, Dissolved (µg/L)	0.8(B)	
Sodium (µg/L)	178000	
Sodium, Dissolved (µg/L)	182000	
Thallium (µg/L)	0.13(U)	
Thallium, Dissolved (µg/L)	0.13(U)	
Vanadium (µg/L)	0.63(U)	
Vanadium, Dissolved (µg/L)	0.63(U)	
Zinc (µg/L)	0.97(B)	
Zinc, Dissolved (µg/L)	0.47(U)	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	10(U)	
Acenaphthylene (µg/L)	10(U)	
Anthracene (µg/L)	10(U)	
Benzo(a)anthracene (µg/L)	10(U)	
Benzo(a)pyrene (µg/L)	10(U)	
Benzo(b)fluoranthene (µg/L)	10(U)	
Benzo(ghi)perylene (µg/L)	10(U)	
Benzo(k)fluoranthene (µg/L)	10(U)	
Chrysene (µg/L)	10(U)	
Dibenzo(a,h)anthracene (µg/L)	10(U)	
Fluoranthene (µg/L)	10(U)	
Fluorene (µg/L)	10(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)	
Naphthalene (µg/L)	10(U)	
Phenanthrene (µg/L)	10(U)	
Pyrene (µg/L)	10(U)	
Radiological Compounds		
Alpha (pCi/L)	1.4(U)	
Beta (pCi/L)	6.1(U)	
Radium-226 (pCi/L)	0.75(J)	-0.43(U)
Radium-228 (pCi/L)		0.74(J)
Thorium-228 (pCi/L)	0.16(J)	0.05(U)
Thorium-230 (pCi/L)	0.08(J)	0.06(U)

Table 10. Results for Location BH49

Parameter (unit)	1/9/2000	10/26/2010
Thorium-232 (pCi/L)	0(U)	0.1
Total Uranium (µg/L)	0.05(U)	14.25*
Uranium-233/234 (pCi/L)	0.06(U)	
Uranium-234 (pCi/L)		7
Uranium-235 (pCi/L)		0.22(U)
Uranium-235/236 (pCi/L)	-0.02(U)	
Uranium-238 (pCi/L)	0.04(U)	4.67

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 11. Results for Location BH49A

Parameter (unit)	9/30/2000	5/15/2003	6/17/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	5/18/2010	10/26/2010
Volatile Organic Compounds											
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)									
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)									
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)									
1,1-Dichloroethane (µg/L)	1(U)	1(U)									
1,1-Dichloroethene (µg/L)	1(U)	1(U)									
1,2-Dichloroethane (µg/L)	1(U)	1(U)									
1,2-Dichloropropane (µg/L)	1(U)	1(U)									
2-Butanone (µg/L)	5(U)	6.81									
2-Hexanone (µg/L)	5(U)	5(U)									
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)									
Acetone (µg/L)	5(U)	5(U)									
Benzene (µg/L)	1(U)	1(U)									
Bromodichloromethane (µg/L)	1(U)	1(U)									
Bromoform (µg/L)	1(U)	1(U)									
Bromomethane (µg/L)	1(U)	1(U)									
Carbon disulfide (µg/L)	5(U)	5(U)									
Carbon tetrachloride (µg/L)	1(U)	1(U)									
Chlorobenzene (µg/L)	1(U)	1(U)									
Chloroethane (µg/L)	1(U)	1(U)									
Chloroform (µg/L)	1(U)	1(U)									
Chloromethane (µg/L)	1(U)	1(U)									
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)									
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)									
Dibromochloromethane (µg/L)	1(U)	1(U)									
Ethylbenzene (µg/L)	1(U)	1(U)									
Methylene chloride (µg/L)	5(U)	5(U)									
Styrene (µg/L)	1(U)	1(U)									
Tetrachloroethylene (µg/L)	1(U)	1(U)									
Toluene (µg/L)	1(U)	1(U)									
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)									
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)									
Trichloroethylene (µg/L)	1(U)	1(U)									
Vinyl chloride (µg/L)	1(U)	1(U)									
Xylenes (total) (µg/L)	3(U)	1(U)									
Semi-Volatile Organic Compounds											
1,2,4-Trichlorobenzene (µg/L)		9.62(U)									
1,2-Dichlorobenzene (µg/L)		9.62(U)									
1,3-Dichlorobenzene (µg/L)		9.62(U)									
1,4-Dichlorobenzene (µg/L)		9.62(U)									
2,4,5-Trichlorophenol (µg/L)		9.62(U)									
2,4,6-Trichlorophenol (µg/L)		9.62(U)									
2,4-Dichlorophenol (µg/L)		9.62(U)									
2,4-Dimethylphenol (µg/L)		9.62(U)									
2,4-Dinitrophenol (µg/L)		19.2(U)									
2-Chloronaphthalene (µg/L)		0.96(U)									
2-Chlorophenol (µg/L)		9.62(U)									
2-Methyl-4,6-dinitrophenol (µg/L)		9.62(U)									
2-Methylnaphthalene (µg/L)		0.96(U)									
2-Nitroaniline (µg/L)		9.62(U)									
2-Nitrophenol (µg/L)		9.62(U)									
3,3'-Dichlorobenzidine (µg/L)		9.62(U)									
3-Nitroaniline (µg/L)		9.62(U)									
4-Bromophenylphenylether (µg/L)		9.62(U)									
4-Chloro-3-methylphenol (µg/L)		9.62(U)									
4-Chloroaniline (µg/L)		9.62(U)									
4-Chlorophenylphenylether (µg/L)		9.62(U)									

Table 11. Results for Location BH49A

Parameter (unit)	9/30/2000	5/15/2003	6/17/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	5/18/2010	10/26/2010
4-Nitroaniline (µg/L)		9.62(U)									
4-Nitrophenol (µg/L)		9.62(U)									
bis(2-Chloroethoxy)methane (µg/L)		9.62(U)									
bis(2-Chloroethyl) ether (µg/L)		9.62(U)									
bis(2-Chloroisopropyl)ether (µg/L)		9.62(U)									
bis(2-Ethylhexyl)phthalate (µg/L)		9.62(U)									
Butylbenzylphthalate (µg/L)		9.62(U)									
Carbazole (µg/L)		9.62(U)									
Dibenzofuran (µg/L)		9.62(U)									
Diethylphthalate (µg/L)		9.62(U)									
Dimethylphthalate (µg/L)		9.62(U)									
Di-n-butylphthalate (µg/L)		9.62(U)									
Di-n-octylphthalate (µg/L)		9.62(U)									
Hexachlorobenzene (µg/L)		9.62(U)									
Hexachlorobutadiene (µg/L)		9.62(U)									
Hexachlorocyclopentadiene (µg/L)		9.62(U)									
Hexachloroethane (µg/L)		9.62(U)									
Isophorone (µg/L)		9.62(U)									
m,p-Cresols (µg/L)		9.62(U)									
N-Nitroso-di-n-propylamine (µg/L)		9.62(U)									
N-Nitrosodiphenylamine (µg/L)		9.62(U)									
o-Cresol (µg/L)		9.62(U)									
Pentachlorophenol (µg/L)		9.62(U)									
Phenol (µg/L)		9.62(U)									
General Chemistry											
Alkalinity (µg/L)			363000	375000	375000	400000		410000			
Chloride (µg/L)			34000	40300	40300	40000		44000			
Fluoride (µg/L)			282	276	276	30(U)		170(U)			
Nitrate (µg/L)			33(U)	33(U)	33(U)	24(U)		1000(J)			
Nitrite (µg/L)			33(U)	40.8(J)	40.8(J)	380		530(J)			
Ortho-phosphate (µg/L)				66(U)							
Phosphate as P, Ortho (µg/L)			66(U)		66(U)	60(U)		130(U)			
Solids, Total Dissolved (µg/L)			1140000	1150000	1150000	1200000		1300000			
Sulfate (µg/L)			505000	520000	520000	520000		540000			
Explosives											
1,3,5-Trinitrobenzene (µg/L)		0.1(U)									
2,4,6-Trinitrotoluene (µg/L)		0.1(U)									
2,4-Dinitrotoluene (µg/L)		0.1(U)									
2,6-Dinitrotoluene (µg/L)		0.1(U)									
2-Amino-4,6-dinitrotoluene (µg/L)		0.1(U)									
2-Nitrotoluene (µg/L)		0.1(U)									
3-Dinitrobenzene (µg/L)		0.1(U)									
3-Nitrotoluene (µg/L)		0.1(U)									
4-Amino-2,6-dinitrotoluene (µg/L)		0.1(U)									
4-Nitrotoluene (µg/L)		0.1(U)									
HMX (µg/L)		0.1(U)									
Nitrobenzene (µg/L)		0.1(U)									
RDX (µg/L)		0.1(U)									
Tetryl (µg/L)		0.1(U)									
Metals											
Aluminum (µg/L)		40(B)									
Aluminum, Dissolved (µg/L)		33(U)									
Antimony (µg/L)		0.28(U)									
Antimony, Dissolved (µg/L)		0.16(B)									
Arsenic (µg/L)		7.24(B)									
Arsenic, Dissolved (µg/L)		3.64									
Barium (µg/L)		18.8									

Table 11. Results for Location BH49A

Parameter (unit)	9/30/2000	5/15/2003	6/17/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	5/18/2010	10/26/2010
Barium, Dissolved (µg/L)		15.4									
Beryllium (µg/L)		0.21(U)									
Beryllium, Dissolved (µg/L)		0.21(U)									
Boron (µg/L)		221									
Boron, Dissolved (µg/L)		197									
Cadmium (µg/L)		0.66(U)									
Cadmium, Dissolved (µg/L)		0.66(U)									
Calcium (µg/L)		120000									
Calcium, Dissolved (µg/L)		126000									
Chromium (µg/L)		1.7(U)									
Chromium, Dissolved (µg/L)		1.7(U)									
Cobalt (µg/L)		1(U)									
Cobalt, Dissolved (µg/L)		1(U)									
Copper (µg/L)		14.3									
Copper, Dissolved (µg/L)		6.92									
Iron (µg/L)		60.2(B)									
Iron, Dissolved (µg/L)		5.6(U)									
Lead (µg/L)		2.29(B)									
Lead, Dissolved (µg/L)		0.17(B)									
Lithium (µg/L)		82									
Lithium, Dissolved (µg/L)		84.6									
Magnesium (µg/L)		140000									
Magnesium, Dissolved (µg/L)		148000									
Manganese (µg/L)		10									
Manganese, Dissolved (µg/L)		10.4									
Mercury (µg/L)		0.1(U)									
Mercury, Dissolved (µg/L)		0.1(U)									
Nickel (µg/L)		1.6(U)									
Nickel, Dissolved (µg/L)		1.6(U)									
Potassium (µg/L)		3650									
Potassium, Dissolved (µg/L)		3320									
Selenium (µg/L)		2.57(B)									
Selenium, Dissolved (µg/L)		0.28(U)									
Silver (µg/L)		0.03(U)									
Silver, Dissolved (µg/L)		0(U)									
Sodium (µg/L)		65200									
Sodium, Dissolved (µg/L)		63300									
Thallium (µg/L)		0.02(U)									
Thallium, Dissolved (µg/L)		0.02(B)									
Vanadium (µg/L)		2.5(U)									
Vanadium, Dissolved (µg/L)		2.5(U)									
Zinc (µg/L)		76.9									
Zinc, Dissolved (µg/L)		16.2									
Polycyclic Aromatic Hydrocarbons											
Acenaphthene (µg/L)		0.48(U)									
Acenaphthylene (µg/L)		0.48(U)									
Anthracene (µg/L)		0.48(U)									
Benzo(a)anthracene (µg/L)		0.05(U)									
Benzo(a)pyrene (µg/L)		0.05(U)									
Benzo(b)fluoranthene (µg/L)		0.05(U)									
Benzo(ghi)perylene (µg/L)		0.05(U)									
Benzo(k)fluoranthene (µg/L)		0.02(U)									
Chrysene (µg/L)		0.05(U)									
Dibenzo(a,h)anthracene (µg/L)		0.05(U)									
Fluoranthene (µg/L)		0.05(U)									
Fluorene (µg/L)		0.48(U)									
Indeno(1,2,3-cd)pyrene (µg/L)		0.05(U)									

Table 11. Results for Location BH49A

Parameter (unit)	9/30/2000	5/15/2003	6/17/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	5/18/2010	10/26/2010
Naphthalene (µg/L)		0.48(U)									
Phenanthrene (µg/L)		0.48(U)									
Pyrene (µg/L)		0.05(U)									
PCBs											
Aroclor-1016 (µg/L)		0.1(U)									
Aroclor-1221 (µg/L)		0.1(U)									
Aroclor-1232 (µg/L)		0.1(U)									
Aroclor-1242 (µg/L)		0.1(U)									
Aroclor-1248 (µg/L)		0.1(U)									
Aroclor-1254 (µg/L)		0.1(U)									
Aroclor-1260 (µg/L)		0.1(U)									
4,4'-DDD (µg/L)		0.04(U)									
Pesticides											
4,4'-DDE (µg/L)		0.03(J)									
4,4'-DDT (µg/L)		0.03(J)									
Aldrin (µg/L)		0.02(U)									
alpha-BHC (µg/L)		0.02(U)									
alpha-Chlordane (µg/L)		0.02(U)									
beta-BHC (µg/L)		0.02(U)									
delta-BHC (µg/L)		0.02(U)									
Dieldrin (µg/L)		0.04(U)									
Endosulfan I (µg/L)		0.02(U)									
Endosulfan II (µg/L)		0.04(U)									
Endosulfan sulfate (µg/L)		0.04(U)									
Endrin (µg/L)		0.04(U)									
Endrin aldehyde (µg/L)		0.04(U)									
Endrin ketone (µg/L)		0.04(U)									
gamma-BHC (Lindane) (µg/L)		0.02(U)									
gamma-Chlordane (µg/L)		0.02(U)									
Heptachlor (µg/L)		0.02(U)									
Heptachlor epoxide (µg/L)		0.02(U)									
Methoxychlor (µg/L)		0.19(U)									
Toxaphene (µg/L)		0.96(U)									
Radiological Compounds											
Actinium-227 (pCi/L)	-4.98(U)										
Actinium-227, Dissolved (pCi/L)		-3.24(U)									
Actinium-227, Gamma (pCi/L)		3.58(U)									
Alpha (pCi/L)	9.04	10.3									
Alpha, Dissolved (pCi/L)		9.5									
Americium-241 (pCi/L)	-10.8(U)										
Americium-241, Dissolved (pCi/L)		0.7(U)									
Americium-241, Gamma (pCi/L)		-7.65(U)									
Beta (pCi/L)	7.58	30.3									
Beta, Dissolved (pCi/L)		9.21									
Cesium-137 (pCi/L)	28			1.43(U)		-0.59(U)	-1.75(U)			1.94(U)	
Cesium-137, Dissolved (pCi/L)		0.14(U)									
Cesium-137, Gamma (pCi/L)		0.06(U)									
Cobalt-60 (pCi/L)	1.98(U)										
Cobalt-60, Dissolved (pCi/L)		-0.33(U)									
Cobalt-60, Gamma (pCi/L)		0.69(U)									
Plutonium-238 (pCi/L)				-0.07(U)		-0.02(U)	0.08(U)			0(U)	
Plutonium-239 (pCi/L)						-0.01(U)	-0.03(U)			0(U)	
Plutonium-239/240 (pCi/L)				-0.04(U)							
Protactinium-231 (pCi/L)	-31.4(U)										
Protactinium-231, Dissolved (pCi/L)		-4.4(U)									
Protactinium-231, Gamma (pCi/L)		-18.6(U)									
Radium-226 (pCi/L)	0.94	0.15(U)									0.15

Table 11. Results for Location BH49A

Parameter (unit)	9/30/2000	5/15/2003	6/17/2008	Fall 2008	10/30/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	5/18/2010	10/26/2010
Radium-226, Dissolved (pCi/L)		0.15(U)									
Radium-228 (pCi/L)	4.63(U)	-0.02(U)									0.55(J)
Radium-228, Dissolved (pCi/L)		0.63(U)									
Radium-228, Gamma (pCi/L)		3.02(U)									
Strontium-89 (pCi/L)						0.55(U)	-0.9(U)			0.13(U)	
Strontium-90 (pCi/L)				0.02(U)		1.04(U)	0.53(U)			0(U)	
Technetium-99 (pCi/L)				3.04(U)							
Thorium-228 (pCi/L)	4.58(U)										0.02(U)
Thorium-228, Alpha (pCi/L)		0.04(U)									
Thorium-228, Dissolved (pCi/L)	0.07(U)	0.06(U)									
Thorium-228, Dissolved Gamma (pCi/L)	0(U)	4.01									
Thorium-228, Gamma (pCi/L)		0(UUI)									
Thorium-230 (pCi/L)	0.08										0.46
Thorium-230, Alpha (pCi/L)		0.02(U)									
Thorium-230, Dissolved (pCi/L)		-0.01(U)									
Thorium-232 (pCi/L)	0(U)										0.22
Thorium-232, Alpha (pCi/L)		0.01(U)									
Thorium-232, Dissolved (pCi/L)		0.01(U)									
Total Strontium (pCi/L)						1.41(U)	-0.08(U)			0.1(U)	
Total Uranium (µg/L)	14	16.3	17.62*		29.88*	20.23*		14.92*	16.72*		11.23*
Total Uranium (pCi/L)			12.73*		21.32*	14.86*		11.65*			
Total Uranium, Dissolved (µg/L)		42.9									
Tritium (pCi/L)				59.8(U)							
Uranium-233/234 (pCi/L)	5.92			10.9	10.9			6.38			
Uranium-233/234, Alpha (pCi/L)		8.48									
Uranium-233/234, Dissolved (pCi/L)	5.64	7.43									
Uranium-234 (pCi/L)			6.97			7.66	6.38		7.62		5.11
Uranium-235 (pCi/L)	6.06(U)		0.35(U)			0.61	0.34		0.46		0.5
Uranium-235, Dissolved (pCi/L)	6.52(U)	2.57(U)									
Uranium-235, Gamma (pCi/L)		1.58(U)									
Uranium-235/236 (pCi/L)	0.24			0.56	0.56			0.34			
Uranium-235/236, Alpha (pCi/L)		0.44									
Uranium-235/236, Dissolved (pCi/L)	0.24	0.32(U)									
Uranium-238 (pCi/L)	-25.6(U)		5.76	9.86	9.86	6.59	4.92	4.92	5.45		3.63
Uranium-238, Alpha (pCi/L)		5.26									
Uranium-238, Dissolved (pCi/L)	4.39	6.2									
Uranium-238, Dissolved Gamma (pCi/L)	53.4(U)	32.4(U)									
Uranium-238, Gamma (pCi/L)		68.4(U)									

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 12. Results for Location MW313

Parameter (unit)	10/3/2003	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/19/2010	10/28/2010
Volatile Organic Compounds								
1,1,1-Trichloroethane (µg/L)	1(U)							
1,1,2,2-Tetrachloroethane (µg/L)	1(U)							
1,1,2-Trichloroethane (µg/L)	1(U)							
1,1-Dichloroethane (µg/L)	1(U)							
1,1-Dichloroethene (µg/L)	1(U)							
1,2-Dichloroethane (µg/L)	1(U)							
1,2-Dichloropropane (µg/L)	1(U)							
2-Butanone (µg/L)	5(U)							
2-Hexanone (µg/L)	5(U)							
4-Methyl-2-pentanone (µg/L)	5(U)							
Acetone (µg/L)	14.5							
Benzene (µg/L)	1(U)							
Bromodichloromethane (µg/L)	1(U)							
Bromoform (µg/L)	1(U)							
Bromomethane (µg/L)	1(U)							
Carbon disulfide (µg/L)	2.37(J)							
Carbon tetrachloride (µg/L)	1(U)							
Chlorobenzene (µg/L)	1(U)							
Chloroethane (µg/L)	1(U)							
Chloroform (µg/L)	1(U)							
Chloromethane (µg/L)	1(U)							
cis-1,2-Dichloroethene (µg/L)	1(U)							
cis-1,3-Dichloropropene (µg/L)	1(U)							
Dibromochloromethane (µg/L)	1(U)							
Ethylbenzene (µg/L)	1(U)							
Methylene chloride (µg/L)	1.93(J)							
Styrene (µg/L)	1(U)							
Tetrachloroethene (µg/L)	1(U)							
Toluene (µg/L)	1(U)							
trans-1,2-Dichloroethene (µg/L)	1(U)							
trans-1,3-Dichloropropene (µg/L)	1(U)							
Trichloroethene (µg/L)	1(U)							
Vinyl chloride (µg/L)	1(U)							
Xylenes (total) (µg/L)	1(U)							
Semi-Volatile Organic Compounds								
1,2,4-Trichlorobenzene (µg/L)	9.71(U)							
1,2-Dichlorobenzene (µg/L)	9.71(U)							
1,3-Dichlorobenzene (µg/L)	9.71(U)							
1,4-Dichlorobenzene (µg/L)	9.71(U)							
2,4,5-Trichlorophenol (µg/L)	9.71(U)							
2,4,6-Trichlorophenol (µg/L)	9.71(U)							
2,4-Dichlorophenol (µg/L)	9.71(U)							
2,4-Dimethylphenol (µg/L)	9.71(U)							
2,4-Dinitrophenol (µg/L)	19.4(U)							
2-Chloronaphthalene (µg/L)	0.97(U)							
2-Chlorophenol (µg/L)	9.71(U)							
2-Methyl-4,6-dinitrophenol (µg/L)	9.71(U)							
2-Methylnaphthalene (µg/L)	0.97(U)							
2-Nitroaniline (µg/L)	9.71(U)							
2-Nitrophenol (µg/L)	9.71(U)							
3,3'-Dichlorobenzidine (µg/L)	9.71(U)							
3-Nitroaniline (µg/L)	9.71(U)							
4-Bromophenylphenylether (µg/L)	9.71(U)							
4-Chloro-3-methylphenol (µg/L)	9.71(U)							
4-Chloroaniline (µg/L)	9.71(U)							

Table 12. Results for Location MW313

Parameter (unit)	10/3/2003	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/19/2010	10/28/2010
4-Chlorophenylphenylether (µg/L)	9.71(U)							
4-Nitroaniline (µg/L)	9.71(U)							
4-Nitrophenol (µg/L)	9.71(U)							
Acenaphthylene (µg/L)	0.97(U)							
bis(2-Chloroethoxy)methane (µg/L)	9.71(U)							
bis(2-Chloroethyl) ether (µg/L)	9.71(U)							
bis(2-Chloroisopropyl)ether (µg/L)	9.71(U)							
bis(2-Ethylhexyl)phthalate (µg/L)	3.07(J)							
Butylbenzylphthalate (µg/L)	9.71(U)							
Carbazole (µg/L)	9.71(U)							
Dibenzofuran (µg/L)	9.71(U)							
Diethylphthalate (µg/L)	9.71(U)							
Dimethylphthalate (µg/L)	9.71(U)							
Di-n-butylphthalate (µg/L)	9.71(U)							
Di-n-octylphthalate (µg/L)	9.71(U)							
Hexachlorobenzene (µg/L)	9.71(U)							
Hexachlorobutadiene (µg/L)	9.71(U)							
Hexachlorocyclopentadiene (µg/L)	9.71(U)							
Hexachloroethane (µg/L)	9.71(U)							
Isophorone (µg/L)	9.71(U)							
m,p-Cresols (µg/L)	9.71(U)							
N-Nitroso-di-n-propylamine (µg/L)	9.71(U)							
N-Nitrosodiphenylamine (µg/L)	9.71(U)							
o-Cresol (µg/L)	9.71(U)							
Pentachlorophenol (µg/L)	9.71(U)							
Phenol (µg/L)	9.71(U)							
General Chemistry								
Alkalinity (µg/L)		516000	512000	540000		550000		
Chloride (µg/L)		32700	34900	34000		660		
Fluoride (µg/L)		139	44.1(J)	30(U)		170(U)		
Nitrate (µg/L)		165(U)	33(U)	24(U)		78(U)		
Nitrite (µg/L)		33(U)	33(U)	460		72(U)		
Phosphate as P, Ortho (µg/L)		66(U)	66(U)	60(U)		130(U)		
Solids, Total Dissolved (µg/L)		4300000	4380000	4700000		4700000		
Sulfate (µg/L)		2430000	2600000	270000		17000		
Explosives								
2,4-Dinitrotoluene (µg/L)	9.71(U)							
2,6-Dinitrotoluene (µg/L)	9.71(U)							
Nitrobenzene (µg/L)	9.71(U)							
Metals								
Aluminum (µg/L)	164							
Aluminum, Dissolved (µg/L)	71(U)							
Antimony (µg/L)	0.51(U)							
Antimony, Dissolved (µg/L)	2.6(U)							
Arsenic (µg/L)	5.1(U)							
Arsenic, Dissolved (µg/L)	26(U)							
Barium (µg/L)	6.01							
Barium, Dissolved (µg/L)	6.34							
Beryllium (µg/L)	0.23(U)							
Beryllium, Dissolved (µg/L)	0.23(U)							
Boron (µg/L)	356							
Boron, Dissolved (µg/L)	360							
Cadmium (µg/L)	0.64(B)							
Cadmium, Dissolved (µg/L)	0.61(U)							
Calcium (µg/L)	379000							
Calcium, Dissolved (µg/L)	336000							
Chromium (µg/L)	2.1(U)							

Table 12. Results for Location MW313

Parameter (unit)	10/3/2003	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/19/2010	10/28/2010
Chromium, Dissolved (µg/L)	2.1(U)							
Cobalt (µg/L)	19.9							
Cobalt, Dissolved (µg/L)	9.29							
Copper (µg/L)	2.67(B)							
Copper, Dissolved (µg/L)	4.29(B)							
Iron (µg/L)	889							
Iron, Dissolved (µg/L)	25(U)							
Lead (µg/L)	0.08(U)							
Lead, Dissolved (µg/L)	0.4(U)							
Lithium (µg/L)	70.6							
Lithium, Dissolved (µg/L)	82.8(B)							
Magnesium (µg/L)	378000(E)							
Magnesium, Dissolved (µg/L)	307000							
Manganese (µg/L)	1270							
Manganese, Dissolved (µg/L)	760							
Mercury (µg/L)	0.03(U)							
Mercury, Dissolved (µg/L)	0.03(U)							
Nickel (µg/L)	17.8							
Nickel, Dissolved (µg/L)	9.89							
Potassium (µg/L)	6520							
Potassium, Dissolved (µg/L)	6200(E)							
Selenium (µg/L)	7.8(U)							
Selenium, Dissolved (µg/L)	39(UN^{+})							
Silver (µg/L)	0.04(U)							
Silver, Dissolved (µg/L)	0.2(U)							
Sodium (µg/L)	102000(E)							
Sodium, Dissolved (µg/L)	111000							
Thallium (µg/L)	0.04(UE)							
Thallium, Dissolved (µg/L)	0.2(U)							
Vanadium (µg/L)	2.5(U)							
Vanadium, Dissolved (µg/L)	2.5(U)							
Zinc (µg/L)	12.6							
Zinc, Dissolved (µg/L)	3.63(B)							
Polycyclic Aromatic Hydrocarbons								
Acenaphthene (µg/L)	0.48(U)							
Acenaphthylene (µg/L)	0.48(U)							
Anthracene (µg/L)	0.48(U)							
Benzo(a)anthracene (µg/L)	0.05(U)							
Benzo(a)pyrene (µg/L)	0.05(U)							
Benzo(b)fluoranthene (µg/L)	0.05(U)							
Benzo(ghi)perylene (µg/L)	0.05(U)							
Benzo(k)fluoranthene (µg/L)	0.02(U)							
Chrysene (µg/L)	0.05(U)							
Dibenzo(a,h)anthracene (µg/L)	0.05(U)							
Fluoranthene (µg/L)	0.05(U)							
Fluorene (µg/L)	0.48(U)							
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)							
Naphthalene (µg/L)	0.48(U)							
Phenanthrene (µg/L)	0.91(J)							
Pyrene (µg/L)	0.05(U)							
PCBs								
Aroclor-1016 (µg/L)	0.14(U)							
Aroclor-1221 (µg/L)	0.14(U)							
Aroclor-1232 (µg/L)	0.14(U)							
Aroclor-1242 (µg/L)	0.14(U)							
Aroclor-1248 (µg/L)	0.14(U)							
Aroclor-1254 (µg/L)	0.14(U)							

Table 12. Results for Location MW313

Parameter (unit)	10/3/2003	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/19/2010	10/28/2010
Aroclor-1260 (µg/L)	0.14(U)							
Pesticides								
4,4'-DDD (µg/L)	0.04(U)							
4,4'-DDE (µg/L)	0.06							
4,4'-DDT (µg/L)	0.04(J)							
Aldrin (µg/L)	0.02(U)							
alpha-BHC (µg/L)	0.02(U)							
alpha-Chlordane (µg/L)	0.02(U)							
beta-BHC (µg/L)	0.02(U)							
delta-BHC (µg/L)	0.02(U)							
Dieldrin (µg/L)	0.04(U)							
Endosulfan I (µg/L)	0.02(U)							
Endosulfan II (µg/L)	0.04(U)							
Endosulfan sulfate (µg/L)	0.04(U)							
Endrin (µg/L)	0.04(U)							
Endrin aldehyde (µg/L)	0.04(U)							
Endrin ketone (µg/L)	0.04(U)							
gamma-BHC (Lindane) (µg/L)	0.02(U)							
gamma-Chlordane (µg/L)	0.02(U)							
Heptachlor (µg/L)	0.02(U)							
Heptachlor epoxide (µg/L)	0.02(U)							
Methoxychlor (µg/L)	0.21(U)							
Toxaphene (µg/L)	1.03(U)							
Radiological Compounds								
Actinium-227, Dissolved (pCi/L)	10.8(U)							
Actinium-227, Gamma (pCi/L)	-24.3(U)							
Alpha (pCi/L)	14.5							
Alpha, Dissolved (pCi/L)	16							
Americium-241, Dissolved (pCi/L)	4.62(U)							
Americium-241, Gamma (pCi/L)	13.4(U)							
Beta (pCi/L)	15.2							
Beta, Dissolved (pCi/L)	13.1							
Cesium-137, Dissolved (pCi/L)	-0.37(U)							
Cesium-137, Gamma (pCi/L)	0.21(U)							
Cobalt-60, Dissolved (pCi/L)	-0.32(U)							
Cobalt-60, Gamma (pCi/L)	0.53(U)							
Plutonium-238, Alpha (pCi/L)	-0.01(U)							
Plutonium-238, Dissolved (pCi/L)	0.01(U)							
Plutonium-239/240, Alpha (pCi/L)	-0.01(U)							
Plutonium-239/240, Dissolved (pCi/L)	0(U)							
Protactinium-231, Dissolved (pCi/L)	23.4(U)							
Protactinium-231, Gamma (pCi/L)	52.7(U)							
Radium-226 (pCi/L)	0.39							0.38
Radium-226, Dissolved (pCi/L)	0.56							
Radium-228 (pCi/L)	0.4(U)							0.06(U)
Radium-228, Dissolved (pCi/L)	0.09(U)							
Radium-228, Gamma (pCi/L)	14.7(U)							
Strontium-90 (pCi/L)	0.14(U)							
Strontium-90, Dissolved (pCi/L)	0.14(U)							
Thorium-228 (pCi/L)								-0.02(U)
Thorium-228, Alpha (pCi/L)	0.04(U)							
Thorium-228, Dissolved (pCi/L)	0.1(U)							
Thorium-228, Dissolved Gamma (pCi/L)	0.38(U)							
Thorium-228, Gamma (pCi/L)	2.81(U)							
Thorium-230 (pCi/L)								-0.01(U)
Thorium-230, Alpha (pCi/L)	0.4							
Thorium-230, Dissolved (pCi/L)	0.44							

Table 12. Results for Location MW313

Parameter (unit)	10/3/2003	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/29/2009	5/19/2010	10/28/2010
Thorium-232 (pCi/L)								0.07(U)
Thorium-232, Alpha (pCi/L)	0.06(U)							
Thorium-232, Dissolved (pCi/L)	-0.04(U)							
Total Activity (pCi/mL)	1.02(U)							
Total Activity, Dissolved (pCi/mL)	1.19(U)							
Total Uranium (µg/L)	31.7	44.02*	50.91*	53.13*		61.18*	54.44*	43.06*
Total Uranium (pCi/L)		34.63*	39.05*	42.8*		46.47*		
Total Uranium, Dissolved (µg/L)	27.1							
Uranium-233/234 (pCi/L)			21.7			24.74		
Uranium-233/234, Alpha (pCi/L)	13.3							
Uranium-233/234, Dissolved (pCi/L)	13.8							
Uranium-234 (pCi/L)		19.4		24.3	24.74		23.38	19.6
Uranium-235 (pCi/L)		0.83		1.14	1.54		1.04	0.73
Uranium-235, Dissolved (pCi/L)	6.02(U)							
Uranium-235, Gamma (pCi/L)	1.08(U)							
Uranium-235/236 (pCi/L)			0.55			1.54		
Uranium-235/236, Alpha (pCi/L)	1.12							
Uranium-235/236, Dissolved (pCi/L)	0.69							
Uranium-238 (pCi/L)		14.4	16.8	17.36	20.19	20.19	17.81	14.1
Uranium-238, Alpha (pCi/L)	10.6							
Uranium-238, Dissolved (pCi/L)	11.1							
Uranium-238, Gamma (pCi/L)	89.3(U)							

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 13. Results for Location MW862

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Volatile Organic Compounds			
1,1,1-Trichloroethane (µg/L)	1(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)		
1,1,2-Trichloroethane (µg/L)	1(U)		
1,1-Dichloroethane (µg/L)	1(U)		
1,1-Dichloroethene (µg/L)	1(U)		
1,2-Dichloroethane (µg/L)	1(U)		
1,2-Dichloropropane (µg/L)	1(U)		
2-Butanone (µg/L)	7.9		
2-Hexanone (µg/L)	5(U)		
4-Methyl-2-pentanone (µg/L)	5(U)		
Acetone (µg/L)	14.4		
Benzene (µg/L)	0.76(J)		
Bromodichloromethane (µg/L)	1(U)		
Bromoform (µg/L)	1(U)		
Bromomethane (µg/L)	1(U)		
Carbon disulfide (µg/L)	4.66(J)		
Carbon tetrachloride (µg/L)	1(U)		
Chlorobenzene (µg/L)	1(U)		
Chloroethane (µg/L)	1(U)		
Chloroform (µg/L)	1(U)		
Chloromethane (µg/L)	1(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)		
Dibromochloromethane (µg/L)	1(U)		
Ethylbenzene (µg/L)	1(U)		
Methylene chloride (µg/L)	5(U)		
Styrene (µg/L)	1(U)		
Tetrachloroethylene (µg/L)	1(U)		
Toluene (µg/L)	1(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)		
Trichloroethylene (µg/L)	1(U)		
Vinyl chloride (µg/L)	1(U)		
Xylenes (total) (µg/L)	1(U)		
Semi-Volatile Organic Compounds			
1,2,4-Trichlorobenzene (µg/L)	9.62(U)		
1,2-Dichlorobenzene (µg/L)	9.62(U)		
1,3-Dichlorobenzene (µg/L)	9.62(U)		
1,4-Dichlorobenzene (µg/L)	9.62(U)		
2,4,5-Trichlorophenol (µg/L)	9.62(U)		
2,4,6-Trichlorophenol (µg/L)	9.62(U)		
2,4-Dichlorophenol (µg/L)	9.62(U)		
2,4-Dimethylphenol (µg/L)	9.62(U)		
2,4-Dinitrophenol (µg/L)	19.2(U)		
2-Chloronaphthalene (µg/L)	0.96(U)		
2-Chlorophenol (µg/L)	9.62(U)		
2-Methyl-4,6-dinitrophenol (µg/L)	9.62(U)		
2-Methylnaphthalene (µg/L)	0.96(U)		
2-Nitroaniline (µg/L)	9.62(U)		
2-Nitrophenol (µg/L)	9.62(U)		
3,3'-Dichlorobenzidine (µg/L)	9.62(U)		
3-Nitroaniline (µg/L)	9.62(U)		
4-Bromophenylphenylether (µg/L)	9.62(U)		
4-Chloro-3-methylphenol (µg/L)	9.62(U)		
4-Chloroaniline (µg/L)	9.62(U)		
4-Chlorophenylphenylether (µg/L)	9.62(U)		

Table 13. Results for Location MW862

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
4-Nitroaniline (µg/L)	9.62(U)		
4-Nitrophenol (µg/L)	9.62(U)		
bis(2-Chloroethoxy)methane (µg/L)	9.62(U)		
bis(2-Chloroethyl) ether (µg/L)	9.62(U)		
bis(2-Chloroisopropyl)ether (µg/L)	9.62(U)		
bis(2-Ethylhexyl)phthalate (µg/L)	4.43(J)		
Butylbenzylphthalate (µg/L)	9.62(U)		
Carbazole (µg/L)	9.62(U)		
Dibenzofuran (µg/L)	9.62(U)		
Diethylphthalate (µg/L)	9.62(U)		
Dimethylphthalate (µg/L)	9.62(U)		
Di-n-butylphthalate (µg/L)	9.62(U)		
Di-n-octylphthalate (µg/L)	9.62(U)		
Hexachlorobenzene (µg/L)	9.62(U)		
Hexachlorobutadiene (µg/L)	9.62(U)		
Hexachlorocyclopentadiene (µg/L)	9.62(U)		
Hexachloroethane (µg/L)	9.62(U)		
Isophorone (µg/L)	9.62(U)		
m,p-Cresols (µg/L)	9.62(U)		
N-Nitroso-di-n-propylamine (µg/L)	9.62(U)		
N-Nitrosodiphenylamine (µg/L)	9.62(U)		
o-Cresol (µg/L)	9.62(U)		
Pentachlorophenol (µg/L)	9.62(U)		
Phenol (µg/L)	9.62(U)		
Explosives			
2,4-Dinitrotoluene (µg/L)	9.62(U)		
2,6-Dinitrotoluene (µg/L)	9.62(U)		
Nitrobenzene (µg/L)	9.62(U)		
Metals			
Aluminum (µg/L)	171		
Aluminum, Dissolved (µg/L)	71(U)		
Antimony (µg/L)	0.51(U)		
Antimony, Dissolved (µg/L)	0.51(U)		
Arsenic (µg/L)	5.1(U)		
Arsenic, Dissolved (µg/L)	5.1(U)		
Barium (µg/L)	10.6		
Barium, Dissolved (µg/L)	6.73		
Beryllium (µg/L)	0.23(U)		
Beryllium, Dissolved (µg/L)	0.23(U)		
Boron (µg/L)	237		
Boron, Dissolved (µg/L)	241		
Cadmium (µg/L)	1.14(B)		
Cadmium, Dissolved (µg/L)	0.61(U)		
Calcium (µg/L)	158000		
Calcium, Dissolved (µg/L)	134000		
Chromium (µg/L)	2.1(U)		
Chromium, Dissolved (µg/L)	2.1(U)		
Cobalt (µg/L)	21.9		
Cobalt, Dissolved (µg/L)	7.19		
Copper (µg/L)	4.32(B)		
Copper, Dissolved (µg/L)	6.81		
Iron (µg/L)	727		
Iron, Dissolved (µg/L)	79.7(B)		
Lead (µg/L)	0.24(B)		
Lead, Dissolved (µg/L)	0.76(B)		
Lithium (µg/L)	45.5(B)		
Lithium, Dissolved (µg/L)	44.9(B)		

Table 13. Results for Location MW862

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Magnesium (µg/L)	188000(E)		
Magnesium, Dissolved (µg/L)	194000(NE)		
Manganese (µg/L)	870		
Manganese, Dissolved (µg/L)	397		
Mercury (µg/L)	0.03(U)		
Mercury, Dissolved (µg/L)	0.03(U)		
Nickel (µg/L)	15.6		
Nickel, Dissolved (µg/L)	5.07		
Potassium (µg/L)	5210		
Potassium, Dissolved (µg/L)	4240		
Selenium (µg/L)	7.8(U)		
Selenium, Dissolved (µg/L)	7.8(U)		
Silver (µg/L)	0.04(U)		
Silver, Dissolved (µg/L)	0.04(U)		
Sodium (µg/L)	68900(E)		
Sodium, Dissolved (µg/L)	70000		
Thallium (µg/L)	0.28(B)		
Thallium, Dissolved (µg/L)	0.04(U)		
Vanadium (µg/L)	2.5(U)		
Vanadium, Dissolved (µg/L)	2.5(U)		
Zinc (µg/L)	24		
Zinc, Dissolved (µg/L)	12.9		
Polycyclic Aromatic Hydrocarbons			
Acenaphthene (µg/L)	0.5(U)		
Acenaphthylene (µg/L)	0.5(U)		
Anthracene (µg/L)	0.5(U)		
Benzo(a)anthracene (µg/L)	0.05(U)		
Benzo(a)pyrene (µg/L)	0.05(U)		
Benzo(b)fluoranthene (µg/L)	0.05(U)		
Benzo(ghi)perylene (µg/L)	0.05(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)		
Chrysene (µg/L)	0.05(U)		
Dibenzo(a,h)anthracene (µg/L)	0.05(U)		
Fluoranthene (µg/L)	0.05(U)		
Fluorene (µg/L)	0.5(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)		
Naphthalene (µg/L)	0.5(U)		
Phenanthrene (µg/L)	0.7(J)		
Pyrene (µg/L)	0.05(U)		
Aroclor-1016 (µg/L)	0.1(U)		
Aroclor-1221 (µg/L)	0.1(U)		
Aroclor-1232 (µg/L)	0.1(U)		
Aroclor-1242 (µg/L)	0.1(U)		
Aroclor-1248 (µg/L)	0.1(U)		
Aroclor-1254 (µg/L)	0.1(U)		
Aroclor-1260 (µg/L)	0.1(U)		
Pesticides			
4,4'-DDD (µg/L)	0.04(U)		
4,4'-DDE (µg/L)	0.04(U)		
4,4'-DDT (µg/L)	0.04(U)		
Aldrin (µg/L)	0.02(U)		
alpha-BHC (µg/L)	0.02(U)		
alpha-Chlordane (µg/L)	0.02(U)		
beta-BHC (µg/L)	0.02(U)		
delta-BHC (µg/L)	0.02(U)		
Dieldrin (µg/L)	0.04(U)		
Endosulfan I (µg/L)	0.02(U)		

Table 13. Results for Location MW862

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Endosulfan II (µg/L)	0.04(U)		
Endosulfan sulfate (µg/L)	0.04(U)		
Endrin (µg/L)	0.04(U)		
Endrin aldehyde (µg/L)	0.04(U)		
Endrin ketone (µg/L)	0.04(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)		
gamma-Chlordane (µg/L)	0.02(U)		
Heptachlor (µg/L)	0.02(U)		
Heptachlor epoxide (µg/L)	0.02(U)		
Methoxychlor (µg/L)	0.19(U)		
Toxaphene (µg/L)	0.96(U)		
Radiological Compounds			
Actinium-227, Dissolved (pCi/L)	-11.4(U)		
Actinium-227, Gamma (pCi/L)	9.56(U)		
Alpha (pCi/L)	14.5		
Alpha, Dissolved (pCi/L)	7.81		
Americium-241, Dissolved (pCi/L)	6.05(U)		
Americium-241, Gamma (pCi/L)	-10.6(U)		
Beta (pCi/L)	6.41		
Beta, Dissolved (pCi/L)	8.51		
Cesium-137, Dissolved (pCi/L)	-0.29(U)		
Cesium-137, Gamma (pCi/L)	-0.56(U)		
Cobalt-60, Dissolved (pCi/L)	0.65(U)		
Cobalt-60, Gamma (pCi/L)	0.72(U)		
Protactinium-231, Dissolved (pCi/L)	-36.1(U)		
Protactinium-231, Gamma (pCi/L)	-31.3(U)		
Radium-226 (pCi/L)	0.03(U)	0.15(U)	0.18(U)
Radium-226, Dissolved (pCi/L)	0.16(U)	0.46	
Radium-228 (pCi/L)	0.26(U)	0.94	1.02
Radium-228, Dissolved (pCi/L)	0.14(U)	0.14(U)	
Radium-228, Gamma (pCi/L)	2.92(U)		
Thorium-228 (pCi/L)		0.1(U)	0.15(U)
Thorium-228, Alpha (pCi/L)	0.19(U)		
Thorium-228, Dissolved (pCi/L)	0.32(U)	0.23	
Thorium-228, Dissolved Gamma (pCi/L)	5.64(U)		
Thorium-228, Gamma (pCi/L)	1.19(U)		
Thorium-230 (pCi/L)		0.16(U)	0.22(U)
Thorium-230, Alpha (pCi/L)	0.4		
Thorium-230, Dissolved (pCi/L)	0.1(U)	0.44	
Thorium-232 (pCi/L)		0.16	0.2(U)
Thorium-232, Alpha (pCi/L)	-0.03(U)		
Thorium-232, Dissolved (pCi/L)	0.19(U)	0.14	
Total Activity (pCi/mL)	0.75(U)		
Total Activity, Dissolved (pCi/mL)	1.97(U)		
Total Radium (pCi/L)		0.94*	
Total Radium, Dissolved (pCi/L)		0.46*	
Total Thorium (pCi/L)		0.16*	
Total Thorium, Dissolved (pCi/L)		0.82*	
Total Uranium (µg/L)	17.4		25.94*
Total Uranium (pCi/L)		6.91*	
Total Uranium, Dissolved (µg/L)	12.6		
Total Uranium, Dissolved (pCi/L)		7.99*	
Uranium-233/234, Alpha (pCi/L)	6.39		
Uranium-233/234, Dissolved (pCi/L)	7.26		
Uranium-234 (pCi/L)		4.36	10.4
Uranium-234, Dissolved (pCi/L)		4.46	
Uranium-235 (pCi/L)		0(U)	0.53

Table 13. Results for Location MW862

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Uranium-235, Dissolved (pCi/L)	16.3(U)	0.18(U)	
Uranium-235, Gamma (pCi/L)	7.79(U)		
Uranium-235/236, Alpha (pCi/L)	0.45		
Uranium-235/236, Dissolved (pCi/L)	0.43		
Uranium-238 (pCi/L)		2.55	8.48
Uranium-238, Alpha (pCi/L)	5.95		
Uranium-238, Dissolved (pCi/L)	5.91	3.53	
Uranium-238, Gamma (pCi/L)	63.1(U)		

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 14. Results for Location MW863

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Volatile Organic Compounds			
1,1,1-Trichloroethane (µg/L)	1(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)		
1,1,2-Trichloroethane (µg/L)	1(U)		
1,1-Dichloroethane (µg/L)	1(U)		
1,1-Dichloroethene (µg/L)	1(U)		
1,2-Dichloroethane (µg/L)	1(U)		
1,2-Dichloropropane (µg/L)	1(U)		
2-Butanone (µg/L)	4.92(J)		
2-Hexanone (µg/L)	5(U)		
4-Methyl-2-pentanone (µg/L)	5(U)		
Acetone (µg/L)	3.08(J)		
Benzene (µg/L)	1(U)		
Bromodichloromethane (µg/L)	1(U)		
Bromoform (µg/L)	1(U)		
Bromomethane (µg/L)	1(U)		
Carbon disulfide (µg/L)	5(U)		
Carbon tetrachloride (µg/L)	1(U)		
Chlorobenzene (µg/L)	1(U)		
Chloroethane (µg/L)	1(U)		
Chloroform (µg/L)	1(U)		
Chloromethane (µg/L)	1(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)		
Dibromochloromethane (µg/L)	1(U)		
Ethylbenzene (µg/L)	1(U)		
Methylene chloride (µg/L)	5(U)		
Styrene (µg/L)	1(U)		
Tetrachloroethylene (µg/L)	1(U)		
Toluene (µg/L)	1(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)		
Trichloroethylene (µg/L)	1(U)		
Vinyl chloride (µg/L)	1(U)		
Xylenes (total) (µg/L)	1(U)		
Semi-Volatile Organic Compounds			
1,2,4-Trichlorobenzene (µg/L)	40(U)		
1,2-Dichlorobenzene (µg/L)	40(U)		
1,3-Dichlorobenzene (µg/L)	40(U)		
1,4-Dichlorobenzene (µg/L)	40(U)		
2,4,5-Trichlorophenol (µg/L)	40(U)		
2,4,6-Trichlorophenol (µg/L)	40(U)		
2,4-Dichlorophenol (µg/L)	40(U)		
2,4-Dimethylphenol (µg/L)	40(U)		
2,4-Dinitrophenol (µg/L)	80(U)		
2-Chloronaphthalene (µg/L)	4(U)		
2-Chlorophenol (µg/L)	40(U)		
2-Methyl-4,6-dinitrophenol (µg/L)	40(U)		
2-Methylnaphthalene (µg/L)	4(U)		
2-Nitroaniline (µg/L)	40(U)		
2-Nitrophenol (µg/L)	40(U)		
3,3'-Dichlorobenzidine (µg/L)	40(U)		
3-Nitroaniline (µg/L)	40(U)		
4-Bromophenylphenylether (µg/L)	40(U)		
4-Chloro-3-methylphenol (µg/L)	40(U)		
4-Chloroaniline (µg/L)	40(U)		
4-Chlorophenylphenylether (µg/L)	40(U)		

Table 14. Results for Location MW863

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
4-Nitroaniline (µg/L)	40(U)		
4-Nitrophenol (µg/L)	40(U)		
bis(2-Chloroethoxy)methane (µg/L)	40(U)		
bis(2-Chloroethyl) ether (µg/L)	40(U)		
bis(2-Chloroisopropyl)ether (µg/L)	40(U)		
bis(2-Ethylhexyl)phthalate (µg/L)	40(U)		
Butylbenzylphthalate (µg/L)	40(U)		
Carbazole (µg/L)	40(U)		
Dibenzofuran (µg/L)	40(U)		
Diethylphthalate (µg/L)	40(U)		
Dimethylphthalate (µg/L)	40(U)		
Di-n-butylphthalate (µg/L)	40(U)		
Di-n-octylphthalate (µg/L)	40(U)		
Hexachlorobenzene (µg/L)	40(U)		
Hexachlorobutadiene (µg/L)	40(U)		
Hexachlorocyclopentadiene (µg/L)	40(U)		
Hexachloroethane (µg/L)	40(U)		
Isophorone (µg/L)	40(U)		
m,p-Cresols (µg/L)	40(U)		
N-Nitroso-di-n-propylamine (µg/L)	40(U)		
N-Nitrosodiphenylamine (µg/L)	40(U)		
o-Cresol (µg/L)	40(U)		
Pentachlorophenol (µg/L)	40(U)		
Phenol (µg/L)	40(U)		
Explosives			
2,4-Dinitrotoluene (µg/L)	40(U)		
2,6-Dinitrotoluene (µg/L)	40(U)		
Nitrobenzene (µg/L)	40(U)		
Metals			
Aluminum (µg/L)	78.4(B)		
Aluminum, Dissolved (µg/L)	71(U)		
Antimony (µg/L)	0.51(U)		
Antimony, Dissolved (µg/L)	0.29(B)		
Arsenic (µg/L)	5.1(U)		
Arsenic, Dissolved (µg/L)	6.33		
Barium (µg/L)	7.34		
Barium, Dissolved (µg/L)	6.71		
Beryllium (µg/L)	0.3(B)		
Beryllium, Dissolved (µg/L)	0.23(U)		
Boron (µg/L)	1090		
Boron, Dissolved (µg/L)	1200		
Cadmium (µg/L)	0.69(B)		
Cadmium, Dissolved (µg/L)	0.61(U)		
Calcium (µg/L)	183000		
Calcium, Dissolved (µg/L)	145000		
Chromium (µg/L)	2.1(U)		
Chromium, Dissolved (µg/L)	2.1(U)		
Cobalt (µg/L)	1.95(B)		
Cobalt, Dissolved (µg/L)	1.1(U)		
Copper (µg/L)	13.3		
Copper, Dissolved (µg/L)	31.6		
Iron (µg/L)	56.6(B)		
Iron, Dissolved (µg/L)	27.2(B)		
Lead (µg/L)	0.84(B)		
Lead, Dissolved (µg/L)	0.2(B)		
Lithium (µg/L)	83.9		
Lithium, Dissolved (µg/L)	92.7		

Table 14. Results for Location MW863

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Magnesium (µg/L)	145000(E)		
Magnesium, Dissolved (µg/L)	155000(NE)		
Manganese (µg/L)	234		
Manganese, Dissolved (µg/L)	227		
Mercury (µg/L)	0.03(U)		
Mercury, Dissolved (µg/L)	0.03(U)		
Nickel (µg/L)	3.59(B)		
Nickel, Dissolved (µg/L)	3(U)		
Potassium (µg/L)	20500		
Potassium, Dissolved (µg/L)	20100		
Selenium (µg/L)	7.8(U)		
Selenium, Dissolved (µg/L)	1.6(U)		
Silver (µg/L)	0.08(B)		
Silver, Dissolved (µg/L)	0.01(U)		
Sodium (µg/L)	152000(E)		
Sodium, Dissolved (µg/L)	153000		
Thallium (µg/L)	2.34(B)		
Thallium, Dissolved (µg/L)	0.02(B)		
Vanadium (µg/L)	2.5(U)		
Vanadium, Dissolved (µg/L)	2.5(U)		
Zinc (µg/L)	24.5		
Zinc, Dissolved (µg/L)	22.1		
Polycyclic Aromatic Hydrocarbons			
Acenaphthene (µg/L)	2.4(U)		
Acenaphthylene (µg/L)	2.4(U)		
Anthracene (µg/L)	2.4(U)		
Benzo(a)anthracene (µg/L)	0.24(U)		
Benzo(a)pyrene (µg/L)	0.24(U)		
Benzo(b)fluoranthene (µg/L)	0.24(U)		
Benzo(ghi)perylene (µg/L)	0.24(U)		
Benzo(k)fluoranthene (µg/L)	0.12(U)		
Chrysene (µg/L)	0.24(U)		
Dibenzo(a,h)anthracene (µg/L)	0.24(U)		
Fluoranthene (µg/L)	0.24(U)		
Fluorene (µg/L)	2.4(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.24(U)		
Naphthalene (µg/L)	2.4(U)		
Phenanthrene (µg/L)	2.4(J)		
Pyrene (µg/L)	0.24(U)		
PCBs			
Aroclor-1016 (µg/L)	0.1(U)		
Aroclor-1221 (µg/L)	0.1(U)		
Aroclor-1232 (µg/L)	0.1(U)		
Aroclor-1242 (µg/L)	0.1(U)		
Aroclor-1248 (µg/L)	0.1(U)		
Aroclor-1254 (µg/L)	0.1(U)		
Aroclor-1260 (µg/L)	0.1(U)		
Pesticides			
4,4'-DDD (µg/L)	0.04(U)		
4,4'-DDE (µg/L)	0.04(U)		
4,4'-DDT (µg/L)	0.04(U)		
Aldrin (µg/L)	0.02(U)		
alpha-BHC (µg/L)	0.02(U)		
alpha-Chlordane (µg/L)	0.02(U)		
beta-BHC (µg/L)	0.02(U)		
delta-BHC (µg/L)	0.02(U)		
Dieldrin (µg/L)	0.04(U)		

Table 14. Results for Location MW863

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Endosulfan I (µg/L)	0.02(U)		
Endosulfan II (µg/L)	0.04(U)		
Endosulfan sulfate (µg/L)	0.04(U)		
Endrin (µg/L)	0.04(U)		
Endrin aldehyde (µg/L)	0.04(U)		
Endrin ketone (µg/L)	0.04(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)		
gamma-Chlordane (µg/L)	0.02(U)		
Heptachlor (µg/L)	0.02(U)		
Heptachlor epoxide (µg/L)	0.02(U)		
Methoxychlor (µg/L)	0.2(U)		
Toxaphene (µg/L)	0.98(U)		
Radiological Compounds			
Actinium-227, Dissolved (pCi/L)	-7.94(U)		
Actinium-227, Gamma (pCi/L)	-2.99(U)		
Alpha (pCi/L)	4.68		
Alpha, Dissolved (pCi/L)	3.52		
Americium-241, Dissolved (pCi/L)	-11.5(U)		
Americium-241, Gamma (pCi/L)	-2.54(U)		
Beta (pCi/L)	24.1		
Beta, Dissolved (pCi/L)	18.6		
Cesium-137, Dissolved (pCi/L)	-1.02(U)		
Cesium-137, Gamma (pCi/L)	0(UUI)		
Cobalt-60, Dissolved (pCi/L)	1.31(U)		
Cobalt-60, Gamma (pCi/L)	-0.28(U)		
Protactinium-231, Dissolved (pCi/L)	46.5(U)		
Protactinium-231, Gamma (pCi/L)	-28.9(U)		
Radium-226 (pCi/L)	0.4(U)	0.19(U)	0.33
Radium-226, Dissolved (pCi/L)	0.66		
Radium-228 (pCi/L)	0.32(U)	1.58	1.09
Radium-228, Dissolved (pCi/L)	-0.01(U)		
Radium-228, Gamma (pCi/L)	0(UUI)		
Thorium-228 (pCi/L)		0.5	-0.03(U)
Thorium-228, Alpha (pCi/L)	0.22(U)		
Thorium-228, Dissolved (pCi/L)	0.03(U)		
Thorium-228, Dissolved Gamma (pCi/L)	0(UUI)		
Thorium-228, Gamma (pCi/L)	0.39(U)		
Thorium-230 (pCi/L)		0.71	0.1(U)
Thorium-230, Alpha (pCi/L)	0.56		
Thorium-230, Dissolved (pCi/L)	-0.08(U)		
Thorium-232 (pCi/L)		0.22	0.08(U)
Thorium-232, Alpha (pCi/L)	0.03(U)		
Thorium-232, Dissolved (pCi/L)	0.05(U)		
Total Activity (pCi/mL)	0.02(U)		
Total Activity, Dissolved (pCi/mL)	-0.2(U)		
Total Radium (pCi/L)		0.19*	
Total Thorium (pCi/L)		1.42*	
Total Uranium (µg/L)	8.39		3.3*
Total Uranium (pCi/L)		2.16	
Total Uranium, Dissolved (µg/L)	8.2		
Uranium-233/234, Alpha (pCi/L)	3.58		
Uranium-233/234, Dissolved (pCi/L)	3.09		
Uranium-234 (pCi/L)		1.2(J)	2.12
Uranium-235 (pCi/L)		0.15	0.25(U)
Uranium-235, Dissolved (pCi/L)	5.56(U)		
Uranium-235, Gamma (pCi/L)	1.55(U)		
Uranium-235/236, Alpha (pCi/L)	0.24(U)		

Table 14. Results for Location MW863

Parameter (unit)	10/2/2003	6/24/2010	10/25/2010
Uranium-235/236, Dissolved (pCi/L)	0.23		
Uranium-238 (pCi/L)		0.8(J)	1.05
Uranium-238, Alpha (pCi/L)	2.64		
Uranium-238, Dissolved (pCi/L)	2.45		
Uranium-238, Gamma (pCi/L)	0(UUI)		

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 15. Results for Location MW922

Parameter (unit)	12/22/2009	12/23/2009	11/1/2010
Volatile Organic Compounds			
1,1,1-Trichloroethane (µg/L)	0.32(U)		
1,1,2,2-Tetrachloroethane (µg/L)	0.25(U)		
1,1,2-Trichloroethane (µg/L)	0.25(U)		
1,1-Dichloroethane (µg/L)	0.3(U)		
1,1-Dichloroethylene (µg/L)	0.3(U)		
1,2-Dichloroethane (µg/L)	0.25(U)		
1,2-Dichloropropane (µg/L)	0.25(U)		
2-Butanone (µg/L)	1.25(U)		
2-Hexanone (µg/L)	1.25(U)		
4-Methyl-2-pentanone (µg/L)	1.25(U)		
Acetone (µg/L)	1.5(U)		
Benzene (µg/L)	0.3(U)		
Bromodichloromethane (µg/L)	0.25(U)		
Bromoform (µg/L)	0.25(U)		
Bromomethane (µg/L)	0.3(U)		
Carbon disulfide (µg/L)	1.25(U)		
Carbon tetrachloride (µg/L)	0.3(U)		
Chlorobenzene (µg/L)	0.25(U)		
Chloroethane (µg/L)	0.3(U)		
Chloroform (µg/L)	0.25(U)		
Chloromethane (µg/L)	0.3(U)		
cis-1,2-Dichloroethylene (µg/L)	0.3(U)		
cis-1,3-Dichloropropylene (µg/L)	0.25(U)		
Ethylbenzene (µg/L)	0.25(U)		
Methylene chloride (µg/L)	2(U)		
Styrene (µg/L)	0.25(U)		
Tetrachloroethylene (µg/L)	0.3(U)		
Toluene (µg/L)	0.25(U)		
trans-1,2-Dichloroethylene (µg/L)	0.3(U)		
trans-1,3-Dichloropropylene (µg/L)	0.25(U)		
Trichloroethylene (µg/L)	0.25(U)		
Vinyl chloride (µg/L)	0.5(U)		
Xylenes (total) (µg/L)	0.3(U)		
Semi-Volatile Organic Compounds			
1,1'-Biphenyl (µg/L)	3(U)		
2,4,5-Trichlorophenol (µg/L)	2(U)		
2,4,6-Trichlorophenol (µg/L)	2(U)		
2,4-Dichlorophenol (µg/L)	2(U)		
2,4-Dimethylphenol (µg/L)	2(U)		
2,4-Dinitrophenol (µg/L)	5(U)		
2-Chloronaphthalene (µg/L)	0.3(U)		
2-Chlorophenol (µg/L)	2(U)		
2-Methyl-4,6-dinitrophenol (µg/L)	3(U)		
2-Methylnaphthalene (µg/L)	0.3(U)		
2-Nitrophenol (µg/L)	2(U)		
3,3'-Dichlorobenzidine (µg/L)	2(U)		
4-Bromophenylphenylether (µg/L)	2(U)		
4-Chloro-3-methylphenol (µg/L)	2(U)		
4-Chloroaniline (µg/L)	2(U)		
4-Chlorophenylphenylether (µg/L)	2(U)		
4-Nitrophenol (µg/L)	2(U)		
Acetophenone (µg/L)	2(U)		
Atrazine (µg/L)	3(U)		
Benzaldehyde (µg/L)	3(U)		
bis(2-Chloroethoxy)methane (µg/L)	3(U)		
bis(2-Chloroethyl) ether (µg/L)	2(U)		

Table 15. Results for Location MW922

Parameter (unit)	12/22/2009	12/23/2009	11/1/2010
bis(2-Chloroisopropyl)ether (µg/L)	2(U)		
bis(2-Ethylhexyl)phthalate (µg/L)	2(U)		
Butylbenzylphthalate (µg/L)	2(U)		
Caprolactam (µg/L)	2(U)		
Carbazole (µg/L)	0.2(U)		
Dibenzofuran (µg/L)	2(U)		
Diethylphthalate (µg/L)	2(U)		
Dimethylphthalate (µg/L)	2(U)		
Di-n-butylphthalate (µg/L)	2(U)		
Di-n-octylphthalate (µg/L)	3(U)		
Diphenylamine (µg/L)	3(U)		
Hexachlorobenzene (µg/L)	2(U)		
Hexachlorobutadiene (µg/L)	2(U)		
Hexachlorocyclopentadiene (µg/L)	3(U)		
Hexachloroethane (µg/L)	2(U)		
Isophorone (µg/L)	3(U)		
m,p-Cresols (µg/L)	3(U)		
m-Nitroaniline (µg/L)	2(U)		
N-Nitrosodipropylamine (µg/L)	2(U)		
o-Cresol (µg/L)	2(U)		
o-Nitroaniline (µg/L)	2(U)		
Pentachlorophenol (µg/L)	2(U)		
Phenol (µg/L)	1(U)		
p-Nitroaniline (µg/L)	3(U)		
Explosives			
2,4-Dinitrotoluene (µg/L)	2(U)		
2,6-Dinitrotoluene (µg/L)	2(U)		
Nitrobenzene (µg/L)	3(U)		
Metals			
Antimony (µg/L)	3(U)		
Antimony, Dissolved (µg/L)		3(U)	
Arsenic (µg/L)	1.6(U)		
Arsenic, Dissolved (µg/L)		1.6(U)	
Barium (µg/L)	12.7		
Barium, Dissolved (µg/L)		6.62	
Beryllium (µg/L)	0.1(U)		
Beryllium, Dissolved (µg/L)		0.1(U)	
Cadmium (µg/L)	0.11(U)		
Cadmium, Dissolved (µg/L)		0.11(U)	
Chromium (µg/L)	2.55(J)		
Chromium, Dissolved (µg/L)		3.16(J)	
Lead (µg/L)	1.69(J)		
Lead, Dissolved (µg/L)		0.5(U)	
Mercury (µg/L)	0.07(U)		
Mercury, Dissolved (µg/L)		0.07(U)	
Nickel (µg/L)	9.77		
Nickel, Dissolved (µg/L)		11.5	
Selenium (µg/L)	1.71(J)		
Selenium, Dissolved (µg/L)		1(U)	
Silver (µg/L)	1(U)		
Silver, Dissolved (µg/L)		1(U)	
Thallium (µg/L)	0.3(U)		
Thallium, Dissolved (µg/L)		0.3(U)	
Zinc (µg/L)	53.4		
Zinc, Dissolved (µg/L)		22.6	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene (µg/L)	0.11(J)		

Table 15. Results for Location MW922

Parameter (unit)	12/22/2009	12/23/2009	11/1/2010
Acenaphthylene (µg/L)	0.11(U)		
Anthracene (µg/L)	0.12(U)		
Benzo(a)anthracene (µg/L)	0.01(U)		
Benzo(a)pyrene (µg/L)	0.01(U)		
Benzo(b)fluoranthene (µg/L)	0.01(U)		
Benzo(ghi)perylene (µg/L)	0.01(U)		
Benzo(k)fluoranthene (µg/L)	0.01(J)		
Chrysene (µg/L)	0.01(U)		
Dibenzo(a,h)anthracene (µg/L)	0.01(U)		
Fluoranthene (µg/L)	0.01(U)		
Fluorene (µg/L)	0.11(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.01(U)		
Naphthalene (µg/L)	0.11(U)		
Phenanthrene (µg/L)	0.11(U)		
Pyrene (µg/L)	0.01(U)		
PCBs			
Aroclor-1016 (µg/L)	0.03(U)		
Aroclor-1221 (µg/L)	0.03(U)		
Aroclor-1232 (µg/L)	0.03(U)		
Aroclor-1242 (µg/L)	0.03(U)		
Aroclor-1248 (µg/L)	0.03(U)		
Aroclor-1254 (µg/L)	0.03(U)		
Aroclor-1260 (µg/L)	0.03(U)		
Pesticides			
4,4'-DDD (µg/L)	0.01(U)		
4,4'-DDE (µg/L)	0(U)		
4,4'-DDT (µg/L)	0.01(U)		
Aldrin (µg/L)	0(U)		
alpha-BHC (µg/L)	0(U)		
alpha-Chlordane (µg/L)	0(U)		
beta-BHC (µg/L)	0.01(U)		
delta-BHC (µg/L)	0(U)		
Dieldrin (µg/L)	0.01(U)		
Endosulfan I (µg/L)	0(U)		
Endosulfan II (µg/L)	0.01(U)		
Endosulfan sulfate (µg/L)	0.01(U)		
Endrin (µg/L)	0.01(U)		
Endrin aldehyde (µg/L)	0(U)		
Endrin ketone (µg/L)	0.01(U)		
gamma-BHC (Lindane) (µg/L)	0(U)		
gamma-Chlordane (µg/L)	0(U)		
Heptachlor (µg/L)	0(U)		
Heptachlor epoxide (µg/L)	0(U)		
Methoxychlor (µg/L)	0.05(U)		
Toxaphene (µg/L)	0.15(U)		
Radiological Compounds			
Actinium-227 (pCi/L)	-8.62(U)		
Actinium-227, Dissolved (pCi/L)		-11.4(U)	
Americium-241 (pCi/L)	3.7(U)		
Americium-241, Dissolved (pCi/L)		-5.23(U)	
Cesium-137 (pCi/L)	-0.31(U)		
Cesium-137, Dissolved (pCi/L)		1.06(U)	
Cobalt-60 (pCi/L)	0.31(U)		
Cobalt-60, Dissolved (pCi/L)		0.84(U)	
Plutonium-238 (pCi/L)	0(U)		
Plutonium-238, Dissolved (pCi/L)		0(U)	
Plutonium-239/240 (pCi/L)	-0.01(U)		

Table 15. Results for Location MW922

Parameter (unit)	12/22/2009	12/23/2009	11/1/2010
Plutonium-239/240, Dissolved (pCi/L)		0(U)	
Potassium-40 (pCi/L)	-26.6(U)		
Potassium-40, Dissolved (pCi/L)		0(U)	
Protactinium-231 (pCi/L)	-1.54(U)		
Protactinium-231, Dissolved (pCi/L)		-4.99(U)	
Radium-226 (pCi/L)	53.1(U)		0.08(U)
Radium-226, Dissolved (pCi/L)		3.79(U)	
Radium-228 (pCi/L)	-2.16(U)		0.16(U)
Radium-228, Dissolved (pCi/L)		-4.77(U)	
Strontium-90 (pCi/L)	0.71		
Strontium-90, Dissolved (pCi/L)		0.18(U)	
Thorium-228 (pCi/L)	0.72		0.23
Thorium-228, Dissolved (pCi/L)		2.46(U)	
Thorium-230 (pCi/L)	0.32		0.07(U)
Thorium-230, Dissolved (pCi/L)		0.02(U)	
Thorium-232 (pCi/L)	0.15		0.24
Thorium-232, Dissolved (pCi/L)		0(U)	
Total Uranium (µg/L)			27.71*
Uranium-233/234 (pCi/L)	12.3		
Uranium-233/234, Dissolved (pCi/L)		12.5	
Uranium-234 (pCi/L)			11.2
Uranium-235 (pCi/L)	10.7(U)		0.82
Uranium-235, Dissolved (pCi/L)		-1.98(U)	
Uranium-235/236 (pCi/L)	0.42		
Uranium-235/236, Dissolved (pCi/L)		0.58	
Uranium-238 (pCi/L)	10.2		9.02
Uranium-238, Dissolved (pCi/L)		8.24(U)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 16. Results for Location MW934

Parameter (unit)	12/22/2009	10/28/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	0.32(U)	
1,1,2,2-Tetrachloroethane (µg/L)	0.25(U)	
1,1,2-Trichloroethane (µg/L)	0.25(U)	
1,1-Dichloroethane (µg/L)	0.3(U)	
1,1-Dichloroethylene (µg/L)	0.3(U)	
1,2-Dichloroethane (µg/L)	0.25(U)	
1,2-Dichloropropane (µg/L)	0.25(U)	
2-Butanone (µg/L)	1.25(U)	
2-Hexanone (µg/L)	1.25(U)	
4-Methyl-2-pentanone (µg/L)	1.25(U)	
Acetone (µg/L)	1.5(U)	
Benzene (µg/L)	0.3(U)	
Bromodichloromethane (µg/L)	0.25(U)	
Bromoform (µg/L)	0.25(U)	
Bromomethane (µg/L)	0.3(U)	
Carbon disulfide (µg/L)	1.25(U)	
Carbon tetrachloride (µg/L)	0.3(U)	
Chlorobenzene (µg/L)	0.25(U)	
Chloroethane (µg/L)	0.3(U)	
Chloroform (µg/L)	3.61	
Chloromethane (µg/L)	0.3(U)	
cis-1,2-Dichloroethylene (µg/L)	0.3(U)	
cis-1,3-Dichloropropylene (µg/L)	0.25(U)	
Ethylbenzene (µg/L)	0.25(U)	
Methylene chloride (µg/L)	2(U)	
Styrene (µg/L)	0.25(U)	
Tetrachloroethylene (µg/L)	0.3(U)	
Toluene (µg/L)	0.25(U)	
trans-1,2-Dichloroethylene (µg/L)	0.3(U)	
trans-1,3-Dichloropropylene (µg/L)	0.25(U)	
Trichloroethylene (µg/L)	0.25(U)	
Vinyl chloride (µg/L)	0.5(U)	
Xylenes (total) (µg/L)	0.3(U)	
Semi-Volatile Organic Compounds		
1,1'-Biphenyl (µg/L)	3(U)	
2,4,5-Trichlorophenol (µg/L)	2(U)	
2,4,6-Trichlorophenol (µg/L)	2(U)	
2,4-Dichlorophenol (µg/L)	2(U)	
2,4-Dimethylphenol (µg/L)	2(U)	
2,4-Dinitrophenol (µg/L)	5(U)	
2-Chloronaphthalene (µg/L)	0.3(U)	
2-Chlorophenol (µg/L)	2(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	3(U)	
2-Methylnaphthalene (µg/L)	0.3(U)	
2-Nitrophenol (µg/L)	2(U)	
3,3'-Dichlorobenzidine (µg/L)	2(U)	
4-Bromophenylphenylether (µg/L)	2(U)	
4-Chloro-3-methylphenol (µg/L)	2(U)	
4-Chloroaniline (µg/L)	2(U)	
4-Chlorophenylphenylether (µg/L)	2(U)	
4-Nitrophenol (µg/L)	2(U)	
Acetophenone (µg/L)	2(U)	
Atrazine (µg/L)	3(U)	
Benzaldehyde (µg/L)	3(U)	
bis(2-Chloroethoxy)methane (µg/L)	3(U)	
bis(2-Chloroethyl) ether (µg/L)	2(U)	

Table 16. Results for Location MW934

Parameter (unit)	12/22/2009	10/28/2010
bis(2-Chloroisopropyl)ether (µg/L)	2(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	2(U)	
Butylbenzylphthalate (µg/L)	2(U)	
Caprolactam (µg/L)	2(U)	
Carbazole (µg/L)	0.2(U)	
Dibenzofuran (µg/L)	2(U)	
Diethylphthalate (µg/L)	2(U)	
Dimethylphthalate (µg/L)	2(U)	
Di-n-butylphthalate (µg/L)	2(U)	
Di-n-octylphthalate (µg/L)	3(U)	
Diphenylamine (µg/L)	3(U)	
Hexachlorobenzene (µg/L)	2(U)	
Hexachlorobutadiene (µg/L)	2(U)	
Hexachlorocyclopentadiene (µg/L)	3(U)	
Hexachloroethane (µg/L)	2(U)	
Isophorone (µg/L)	3(U)	
m,p-Cresols (µg/L)	3(U)	
m-Nitroaniline (µg/L)	2(U)	
N-Nitrosodipropylamine (µg/L)	2(U)	
o-Cresol (µg/L)	2(U)	
o-Nitroaniline (µg/L)	2(U)	
Pentachlorophenol (µg/L)	2(U)	
Phenol (µg/L)	1(U)	
p-Nitroaniline (µg/L)	3(U)	
Explosives		
2,4-Dinitrotoluene (µg/L)	2(U)	
2,6-Dinitrotoluene (µg/L)	2(U)	
Nitrobenzene (µg/L)	3(U)	
Metals		
Antimony (µg/L)	3(U)	
Antimony, Dissolved (µg/L)	3(U)	
Arsenic (µg/L)	2.68(J)	
Arsenic, Dissolved (µg/L)	1.6(U)	
Barium (µg/L)	17	
Barium, Dissolved (µg/L)	17	
Beryllium (µg/L)	0.1(U)	
Beryllium, Dissolved (µg/L)	0.1(U)	
Cadmium (µg/L)	0.11(U)	
Cadmium, Dissolved (µg/L)	0.11(U)	
Chromium (µg/L)	2.19(J)	
Chromium, Dissolved (µg/L)	2.45(J)	
Lead (µg/L)	0.68(J)	
Lead, Dissolved (µg/L)	0.5(U)	
Mercury (µg/L)	0.07	
Mercury, Dissolved (µg/L)	0.07(U)	
Nickel (µg/L)	8.27	
Nickel, Dissolved (µg/L)	8.88	
Selenium (µg/L)	1(U)	
Selenium, Dissolved (µg/L)	1(J)	
Silver (µg/L)	1(U)	
Silver, Dissolved (µg/L)	1(U)	
Thallium (µg/L)	0.3(U)	
Thallium, Dissolved (µg/L)	0.3(U)	
Zinc (µg/L)	30.5	
Zinc, Dissolved (µg/L)	8.16(J)	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	0.12(U)	

Table 16. Results for Location MW934

Parameter (unit)	12/22/2009	10/28/2010
Acenaphthylene (µg/L)	0.12(U)	
Anthracene (µg/L)	0.12(U)	
Benzo(a)anthracene (µg/L)	0.02(U)	
Benzo(a)pyrene (µg/L)	0.02(U)	
Benzo(b)fluoranthene (µg/L)	0.02(U)	
Benzo(ghi)perylene (µg/L)	0.02(U)	
Benzo(k)fluoranthene (µg/L)	0.02(U)	
Chrysene (µg/L)	0.02(U)	
Dibenzo(a,h)anthracene (µg/L)	0.02(U)	
Fluoranthene (µg/L)	0.02(U)	
Fluorene (µg/L)	0.12(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	0.02(U)	
Naphthalene (µg/L)	0.12(U)	
Phenanthrene (µg/L)	0.12(U)	
Pyrene (µg/L)	0.02(U)	
PCBs		
Aroclor-1016 (µg/L)	0.03(U)	
Aroclor-1221 (µg/L)	0.03(U)	
Aroclor-1232 (µg/L)	0.03(U)	
Aroclor-1242 (µg/L)	0.03(U)	
Aroclor-1248 (µg/L)	0.03(U)	
Aroclor-1254 (µg/L)	0.03(U)	
Aroclor-1260 (µg/L)	0.03(U)	
Pesticides		
4,4'-DDD (µg/L)	0.01(U)	
4,4'-DDE (µg/L)	0(U)	
4,4'-DDT (µg/L)	0.01(U)	
Aldrin (µg/L)	0(U)	
alpha-BHC (µg/L)	0(U)	
alpha-Chlordane (µg/L)	0(U)	
beta-BHC (µg/L)	0.01(U)	
delta-BHC (µg/L)	0(U)	
Dieldrin (µg/L)	0.01(U)	
Endosulfan I (µg/L)	0(U)	
Endosulfan II (µg/L)	0.01(U)	
Endosulfan sulfate (µg/L)	0.01(U)	
Endrin (µg/L)	0.01(U)	
Endrin aldehyde (µg/L)	0(U)	
Endrin ketone (µg/L)	0.01(U)	
gamma-BHC (Lindane) (µg/L)	0(U)	
gamma-Chlordane (µg/L)	0(U)	
Heptachlor (µg/L)	0(U)	
Heptachlor epoxide (µg/L)	0(U)	
Methoxychlor (µg/L)	0.05(U)	
Toxaphene (µg/L)	0.15(U)	
Radiological Compounds		
Actinium-227 (pCi/L)	-11.2(U)	
Actinium-227, Dissolved (pCi/L)	-17.6(U)	
Americium-241 (pCi/L)	-4.53(U)	
Americium-241, Dissolved (pCi/L)	3.09(U)	
Cesium-137 (pCi/L)	-0.72(U)	
Cesium-137, Dissolved (pCi/L)	1.56(U)	
Cobalt-60 (pCi/L)	0.47(U)	
Cobalt-60, Dissolved (pCi/L)	0.14(U)	
Potassium-40 (pCi/L)	13.9(U)	
Potassium-40, Dissolved (pCi/L)	9.01(U)	
Protactinium-231 (pCi/L)	53.7(U)	

Table 16. Results for Location MW934

Parameter (unit)	12/22/2009	10/28/2010
Protactinium-231, Dissolved (pCi/L)	11.1(U)	
Radium-226 (pCi/L)	2.58	0.14(U)
Radium-226, Dissolved (pCi/L)	3.93(U)	
Radium-228 (pCi/L)	-5.83(U)	0.36
Radium-228, Dissolved (pCi/L)	0.04(U)	
Thorium-228 (pCi/L)	0.56(U)	0.28
Thorium-228, Dissolved (pCi/L)	2.08(U)	
Thorium-230 (pCi/L)	-0.01(U)	0.46
Thorium-230, Dissolved (pCi/L)	-0.04(U)	
Thorium-232 (pCi/L)	0.02(U)	0.08
Thorium-232, Dissolved (pCi/L)	-0.01(U)	
Total Uranium (µg/L)		26.19*
Uranium-233/234 (pCi/L)	11.7	
Uranium-233/234, Dissolved (pCi/L)	13.3	
Uranium-234 (pCi/L)		11.5
Uranium-235 (pCi/L)	4.05(U)	0.41
Uranium-235, Dissolved (pCi/L)	1.22(U)	
Uranium-235/236 (pCi/L)	0.73	
Uranium-235/236, Dissolved (pCi/L)	0.72	
Uranium-238 (pCi/L)	9.35	8.58
Uranium-238, Dissolved (pCi/L)	12(U)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2. Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 17. Results for Location MW935

Parameter (unit)	1/16/2010	1/27/2010	10/27/2010
Volatile Organic Compounds			
1,1,1-Trichloroethane (µg/L)	0.32(U)		
1,1,2,2-Tetrachloroethane (µg/L)	0.25(U)		
1,1,2-Trichloroethane (µg/L)	0.25(U)		
1,1-Dichloroethane (µg/L)	0.3(U)		
1,1-Dichloroethylene (µg/L)	0.3(U)		
1,2-Dichloroethane (µg/L)	0.25(U)		
1,2-Dichloropropane (µg/L)	0.25(U)		
2-Butanone (µg/L)	1.25(U)		
2-Hexanone (µg/L)	1.25(U)		
4-Methyl-2-pentanone (µg/L)	1.25(U)		
Acetone (µg/L)	1.5(U)		
Benzene (µg/L)	0.3(U)		
Bromodichloromethane (µg/L)	0.25(U)		
Bromoform (µg/L)	0.25(U)		
Bromomethane (µg/L)	0.3(U)		
Carbon disulfide (µg/L)	1.25(U)		
Carbon tetrachloride (µg/L)	0.3(U)		
Chlorobenzene (µg/L)	0.25(U)		
Chloroethane (µg/L)	0.3(U)		
Chloroform (µg/L)	0.25(U)		
Chloromethane (µg/L)	0.3(U)		
cis-1,2-Dichloroethylene (µg/L)	0.3(U)		
cis-1,3-Dichloropropylene (µg/L)	0.25(U)		
Ethylbenzene (µg/L)	0.25(U)		
Methylene chloride (µg/L)	2(U)		
Styrene (µg/L)	0.25(U)		
Tetrachloroethylene (µg/L)	0.3(U)		
Toluene (µg/L)	0.25(U)		
trans-1,2-Dichloroethylene (µg/L)	0.3(U)		
trans-1,3-Dichloropropylene (µg/L)	0.25(U)		
Trichloroethylene (µg/L)	0.25(U)		
Vinyl chloride (µg/L)	0.5(U)		
Xylenes (total) (µg/L)	0.3(U)		
Semi-Volatile Organic Compounds			
1,1'-Biphenyl (µg/L)	2.78(U)		
2,4,5-Trichlorophenol (µg/L)	1.85(U)		
2,4,6-Trichlorophenol (µg/L)	1.85(U)		
2,4-Dichlorophenol (µg/L)	1.85(U)		
2,4-Dimethylphenol (µg/L)	1.85(U)		
2,4-Dinitrophenol (µg/L)	4.63(U)		
2-Chloronaphthalene (µg/L)	0.28(U)		
2-Chlorophenol (µg/L)	1.85(U)		
2-Methyl-4,6-dinitrophenol (µg/L)	2.78(U)		
2-Methylnaphthalene (µg/L)	0.28(U)		
2-Nitrophenol (µg/L)	1.85(U)		
3,3'-Dichlorobenzidine (µg/L)	1.85(U)		
4-Bromophenylphenylether (µg/L)	1.85(U)		
4-Chloro-3-methylphenol (µg/L)	1.85(U)		
4-Chloroaniline (µg/L)	1.85(U)		
4-Chlorophenylphenylether (µg/L)	1.85(U)		
4-Nitrophenol (µg/L)	1.85(U)		
Acetophenone (µg/L)	1.85(U)		
Atrazine (µg/L)	2.78(U)		
Benzaldehyde (µg/L)	2.78(U)		
bis(2-Chloroethoxy)methane (µg/L)	2.78(U)		
bis(2-Chloroethyl) ether (µg/L)	1.85(U)		

Table 17. Results for Location MW935

Parameter (unit)	1/16/2010	1/27/2010	10/27/2010
bis(2-Chloroisopropyl)ether (µg/L)	1.85(U)		
bis(2-Ethylhexyl)phthalate (µg/L)	1.85(U)		
Butylbenzylphthalate (µg/L)	1.85(U)		
Caprolactam (µg/L)	1.85(U)		
Carbazole (µg/L)	0.18(U)		
Dibenzofuran (µg/L)	1.85(U)		
Diethylphthalate (µg/L)	1.85(U)		
Dimethylphthalate (µg/L)	1.85(U)		
Di-n-butylphthalate (µg/L)	1.85(U)		
Di-n-octylphthalate (µg/L)	2.78(U)		
Diphenylamine (µg/L)	2.78(U)		
Hexachlorobenzene (µg/L)	1.85(U)		
Hexachlorobutadiene (µg/L)	1.85(U)		
Hexachlorocyclopentadiene (µg/L)	2.78(U)		
Hexachloroethane (µg/L)	1.85(U)		
Isophorone (µg/L)	2.78(U)		
m,p-Cresols (µg/L)	2.78(U)		
m-Nitroaniline (µg/L)	1.85(U)		
N-Nitrosodipropylamine (µg/L)	1.85(U)		
o-Cresol (µg/L)	1.85(U)		
o-Nitroaniline (µg/L)	1.85(U)		
Pentachlorophenol (µg/L)	1.85(U)		
Phenol (µg/L)	0.93(U)		
p-Nitroaniline (µg/L)	2.78(U)		
Explosives			
2,4-Dinitrotoluene (µg/L)	1.85(U)		
2,6-Dinitrotoluene (µg/L)	1.85(U)		
Nitrobenzene (µg/L)	2.78(U)		
Metals			
Antimony (µg/L)	3(U)		
Antimony, Dissolved (µg/L)		3(U)	
Arsenic (µg/L)	1.6(U)		
Arsenic, Dissolved (µg/L)		1.6(U)	
Barium (µg/L)	5.98		
Barium, Dissolved (µg/L)		7.47	
Beryllium (µg/L)	0.1(U)		
Beryllium, Dissolved (µg/L)		0.1(U)	
Cadmium (µg/L)	0.11(U)		
Cadmium, Dissolved (µg/L)		0.11(U)	
Chromium (µg/L)	4.05(J)		
Chromium, Dissolved (µg/L)		2(U)	
Lead (µg/L)	0.5(U)		
Lead, Dissolved (µg/L)		0.5(U)	
Mercury (µg/L)	0.07(U)		
Mercury, Dissolved (µg/L)		0.07(U)	
Nickel (µg/L)	9.75		
Nickel, Dissolved (µg/L)		11.5	
Selenium (µg/L)	1(U)		
Selenium, Dissolved (µg/L)		1(U)	
Silver (µg/L)	1(U)		
Silver, Dissolved (µg/L)		1(U)	
Thallium (µg/L)	0.39(J)		
Thallium, Dissolved (µg/L)		0.3(U)	
Zinc (µg/L)	34.2		
Zinc, Dissolved (µg/L)		8.56(J)	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene (µg/L)	0.12(U)		

Table 17. Results for Location MW935

Parameter (unit)	1/16/2010	1/27/2010	10/27/2010
Acenaphthylene (µg/L)	0.12(U)		
Anthracene (µg/L)	0.12(U)		
Benzo(a)anthracene (µg/L)	0.02(U)		
Benzo(a)pyrene (µg/L)	0.02(U)		
Benzo(b)fluoranthene (µg/L)	0.02(U)		
Benzo(ghi)perylene (µg/L)	0.02(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)		
Chrysene (µg/L)	0.02(U)		
Dibenzo(a,h)anthracene (µg/L)	0.02(U)		
Fluoranthene (µg/L)	0.02(U)		
Fluorene (µg/L)	0.12(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.02(U)		
Naphthalene (µg/L)	0.12(U)		
Phenanthrene (µg/L)	0.12(U)		
Pyrene (µg/L)	0.02(U)		
PCBs			
Aroclor-1016 (µg/L)	0.16(U)		
Aroclor-1221 (µg/L)	0.16(U)		
Aroclor-1232 (µg/L)	0.16(U)		
Aroclor-1242 (µg/L)	0.16(U)		
Aroclor-1248 (µg/L)	0.16(U)		
Aroclor-1254 (µg/L)	0.16(U)		
Aroclor-1260 (µg/L)	0.16(U)		
Pesticides			
4,4'-DDD (µg/L)	0.01(U)		
4,4'-DDE (µg/L)	0(U)		
4,4'-DDT (µg/L)	0.01(U)		
Aldrin (µg/L)	0.02		
alpha-BHC (µg/L)	0(U)		
alpha-Chlordane (µg/L)	0(U)		
beta-BHC (µg/L)	0.01(U)		
delta-BHC (µg/L)	0(U)		
Dieldrin (µg/L)	0.01(U)		
Endosulfan I (µg/L)	0.04		
Endosulfan II (µg/L)	0.01(U)		
Endosulfan sulfate (µg/L)	0.01(U)		
Endrin (µg/L)	0.01(U)		
Endrin aldehyde (µg/L)	0(U)		
Endrin ketone (µg/L)	0.01(U)		
gamma-BHC (Lindane) (µg/L)	0(U)		
gamma-Chlordane (µg/L)	0(U)		
Heptachlor (µg/L)	0(U)		
Heptachlor epoxide (µg/L)	0(U)		
Methoxychlor (µg/L)	0.05(U)		
Toxaphene (µg/L)	0.15(U)		
Radiological Compounds			
Actinium-227 (pCi/L)	-7.17(U)		
Actinium-227, Dissolved (pCi/L)		-10.6(U)	
Americium-241 (pCi/L)	4.99(U)		
Americium-241, Dissolved (pCi/L)		-2.15(U)	
Cesium-137 (pCi/L)	-0.78(U)		
Cesium-137, Dissolved (pCi/L)		0.47(U)	
Cobalt-60 (pCi/L)	-0.22(U)		
Cobalt-60, Dissolved (pCi/L)		-0.34(U)	
Potassium-40 (pCi/L)	26.7(U)		
Potassium-40, Dissolved (pCi/L)		27.2(U)	
Protactinium-231 (pCi/L)	-78.9(U)		

Table 17. Results for Location MW935

Parameter (unit)	1/16/2010	1/27/2010	10/27/2010
Protactinium-231, Dissolved (pCi/L)		17.4(U)	
Radium-226 (pCi/L)	22.7(U)		0.06(U)
Radium-226, Dissolved (pCi/L)		25.6(U)	
Radium-228 (pCi/L)	-2.85(U)		0.22(U)
Radium-228, Dissolved (pCi/L)		5.36(U)	
Thorium-228 (pCi/L)	3.46(U)		0.11(U)
Thorium-228, Dissolved (pCi/L)		0.05(U)	
Thorium-230 (pCi/L)	0.01(U)		0.16(U)
Thorium-230, Dissolved (pCi/L)		0.02(U)	
Thorium-232 (pCi/L)	0.1		0.25
Thorium-232, Dissolved (pCi/L)		0.02(U)	
Total Uranium (µg/L)			34.55*
Uranium-233/234 (pCi/L)	12.6		
Uranium-233/234, Dissolved (pCi/L)		13.1	
Uranium-234 (pCi/L)			13.8
Uranium-235 (pCi/L)	1.45(U)		0.68
Uranium-235, Dissolved (pCi/L)		-9.75(U)	
Uranium-235/236 (pCi/L)	0.67		
Uranium-235/236, Dissolved (pCi/L)		0.7	
Uranium-238 (pCi/L)	10.6(U)		11.3
Uranium-238, Dissolved (pCi/L)		11.8(U)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 18. Results for Location OW03A

Parameter (unit)	1/8/2000	10/25/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	3.5(U)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	0.72(U)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	3(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	10(U)	
1,2-Dichlorobenzene (µg/L)	10(U)	
1,3-Dichlorobenzene (µg/L)	10(U)	
1,4-Dichlorobenzene (µg/L)	10(U)	
2,4,5-Trichlorophenol (µg/L)	10(U)	
2,4,6-Trichlorophenol (µg/L)	10(U)	
2,4-Dichlorophenol (µg/L)	10(U)	
2,4-Dimethylphenol (µg/L)	10(U)	
2,4-Dinitrophenol (µg/L)	20(U)	
2-Chloronaphthalene (µg/L)	10(U)	
2-Chlorophenol (µg/L)	10(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)	
2-Methylnaphthalene (µg/L)	10(U)	
2-Nitroaniline (µg/L)	10(U)	
2-Nitrophenol (µg/L)	10(U)	
3,3'-Dichlorobenzidine (µg/L)	10(U)	
3-Nitroaniline (µg/L)	10(U)	
4-Bromophenylphenylether (µg/L)	10(U)	
4-Chloro-3-methylphenol (µg/L)	10(U)	
4-Chloroaniline (µg/L)	10(U)	
4-Chlorophenylphenylether (µg/L)	10(U)	

Table 18. Results for Location OW03A

Parameter (unit)	1/8/2000	10/25/2010
4-Nitroaniline (µg/L)	10(U)	
4-Nitrophenol (µg/L)	10(U)	
Benzoic Acid (µg/L)	20(U)	
bis(2-Chloroethoxy)methane (µg/L)	10(U)	
bis(2-Chloroethyl) ether (µg/L)	10(U)	
bis(2-Chloroisopropyl)ether (µg/L)	10(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	10(U)	
Butylbenzylphthalate (µg/L)	10(U)	
Carbazole (µg/L)	10(U)	
Dibenzofuran (µg/L)	10(U)	
Diethylphthalate (µg/L)	10(U)	
Dimethylphthalate (µg/L)	10(U)	
Di-n-butylphthalate (µg/L)	10(U)	
Di-n-octylphthalate (µg/L)	10(U)	
Diphenylamine (µg/L)	10(U)	
Hexachlorobenzene (µg/L)	10(U)	
Hexachlorobutadiene (µg/L)	10(U)	
Hexachlorocyclopentadiene (µg/L)	10(U)	
Hexachloroethane (µg/L)	10(U)	
Isophorone (µg/L)	10(U)	
m,p-Cresols (µg/L)	10(U)	
N-Nitroso-di-n-propylamine (µg/L)	10(U)	
o-Cresol (µg/L)	10(U)	
Pentachlorophenol (µg/L)	10(U)	
Phenol (µg/L)	10(U)	
Explosives		
1,3,5-Trinitrobenzene (µg/L)	0.1(U)	
2,4,6-Trinitrotoluene (µg/L)	0.1(U)	
2,4-Dinitrotoluene (µg/L)	0.1(U)	
2,6-Dinitrotoluene (µg/L)	0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)	
2-Nitrotoluene (µg/L)	0.1(U)	
3-Dinitrobenzene (µg/L)	0.1(U)	
3-Nitrotoluene (µg/L)	0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)	
4-Nitrotoluene (µg/L)	0.1(U)	
HMX (µg/L)	0.1(U)	
Nitrobenzene (µg/L)	0.1(U)	
RDX (µg/L)	0.1(U)	
Tetryl (µg/L)	0.1(U)	
Metals		
Aluminum (µg/L)	44(B)	
Aluminum, Dissolved (µg/L)	6.49(U)	
Antimony (µg/L)	3.09(B)	
Antimony, Dissolved (µg/L)	3.12(B)	
Arsenic (µg/L)	6.49(B)	
Arsenic, Dissolved (µg/L)	8.12(B)	
Barium (µg/L)	10.6	
Barium, Dissolved (µg/L)	10.8	
Beryllium (µg/L)	0.17(U)	
Beryllium, Dissolved (µg/L)	0.21(B)	
Boron (µg/L)	298	
Boron, Dissolved (µg/L)	316	
Cadmium (µg/L)	0.23(U)	
Cadmium, Dissolved (µg/L)	0.23(U)	
Calcium (µg/L)	116000	
Calcium, Dissolved (µg/L)	107000	

Table 18. Results for Location OW03A

Parameter (unit)	1/8/2000	10/25/2010
Chromium (µg/L)	1.2(B)	
Chromium, Dissolved (µg/L)	0.61(U)	
Cobalt (µg/L)	0.67(U)	
Cobalt, Dissolved (µg/L)	0.7(B)	
Copper (µg/L)	1(U)	
Copper, Dissolved (µg/L)	3.98(B)	
Iron (µg/L)	98	
Iron, Dissolved (µg/L)	2(U)	
Lead (µg/L)	0.05(U)	
Lead, Dissolved (µg/L)	0.05(U)	
Lithium (µg/L)	121	
Lithium, Dissolved (µg/L)	93.1	
Magnesium (µg/L)	225000	
Magnesium, Dissolved (µg/L)	200000	
Manganese (µg/L)	53	
Manganese, Dissolved (µg/L)	45.5	
Mercury (µg/L)	0.04(U)	
Mercury, Dissolved (µg/L)	0.04(U)	
Nickel (µg/L)	3.46(B)	
Nickel, Dissolved (µg/L)	3.58(B)	
Potassium (µg/L)	4680	
Potassium, Dissolved (µg/L)	4400	
Selenium (µg/L)	1.6(B)	
Selenium, Dissolved (µg/L)	2.99(B)	
Silver (µg/L)	0.07(U)	
Silver, Dissolved (µg/L)	0.9(B)	
Sodium (µg/L)	111000	
Sodium, Dissolved (µg/L)	110000	
Thallium (µg/L)	0.13(U)	
Thallium, Dissolved (µg/L)	0.13(U)	
Vanadium (µg/L)	0.63(U)	
Vanadium, Dissolved (µg/L)	0.63(U)	
Zinc (µg/L)	8.27	
Zinc, Dissolved (µg/L)	7.29	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	10(U)	
Acenaphthylene (µg/L)	10(U)	
Anthracene (µg/L)	10(U)	
Benzo(a)anthracene (µg/L)	10(U)	
Benzo(a)pyrene (µg/L)	10(U)	
Benzo(b)fluoranthene (µg/L)	10(U)	
Benzo(ghi)perylene (µg/L)	10(U)	
Benzo(k)fluoranthene (µg/L)	10(U)	
Chrysene (µg/L)	10(U)	
Dibenzo(a,h)anthracene (µg/L)	10(U)	
Fluoranthene (µg/L)	10(U)	
Fluorene (µg/L)	10(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)	
Naphthalene (µg/L)	10(U)	
Phenanthrene (µg/L)	10(U)	
Pyrene (µg/L)	10(U)	
PCBs		
Aroclor-1016 (µg/L)	0.1(U)	
Aroclor-1221 (µg/L)	0.1(U)	
Aroclor-1232 (µg/L)	0.1(U)	
Aroclor-1242 (µg/L)	0.1(U)	
Aroclor-1248 (µg/L)	0.1(U)	

Table 18. Results for Location OW03A

Parameter (unit)	1/8/2000	10/25/2010
Aroclor-1254 (µg/L)	0.1(U)	
Aroclor-1260 (µg/L)	0.1(U)	
Pesticides		
4,4'-DDD (µg/L)	0.04(U)	
4,4'-DDE (µg/L)	0.04(U)	
4,4'-DDT (µg/L)	0.04(U)	
Aldrin (µg/L)	0.02(U)	
alpha-BHC (µg/L)	0.02(U)	
alpha-Chlordane (µg/L)	0.02(U)	
beta-BHC (µg/L)	0.02(U)	
delta-BHC (µg/L)	0.02(U)	
Dieldrin (µg/L)	0.04(U)	
Endosulfan I (µg/L)	0.02(U)	
Endosulfan II (µg/L)	0.04(U)	
Endosulfan sulfate (µg/L)	0.04(U)	
Endrin (µg/L)	0.04(U)	
Endrin aldehyde (µg/L)	0.04(U)	
Endrin ketone (µg/L)	0.04(U)	
gamma-BHC (Lindane) (µg/L)	0.02(U)	
gamma-Chlordane (µg/L)	0.02(U)	
Heptachlor (µg/L)	0.02(U)	
Heptachlor epoxide (µg/L)	0.02(U)	
Methoxychlor (µg/L)	0.2(U)	
Toxaphene (µg/L)	1(U)	
Radiological Compounds		
Alpha (pCi/L)	10.3	
Beta (pCi/L)	7.81	
Radium-226 (pCi/L)	0.47(J)	-0.06(U)
Radium-228 (pCi/L)		1.58
Thorium-228 (pCi/L)	0.09(U)	-0.02(U)
Thorium-230 (pCi/L)	0.07(J)	-0.04(U)
Thorium-232 (pCi/L)	-0.01(U)	0.11(U)
Total Uranium (µg/L)	10.8	13.11*
Uranium-233/234 (pCi/L)	4.9	
Uranium-234 (pCi/L)		5.55
Uranium-235 (pCi/L)		0.38
Uranium-235/236 (pCi/L)	0.15(J)	
Uranium-238 (pCi/L)	3.58	4.27

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.

Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 19. Results for Location OW03B

Parameter (unit)	1/9/2000	10/25/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	2.8(J)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	0.6(U)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	3(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	10(U)	
1,2-Dichlorobenzene (µg/L)	10(U)	
1,3-Dichlorobenzene (µg/L)	10(U)	
1,4-Dichlorobenzene (µg/L)	10(U)	
2,4,5-Trichlorophenol (µg/L)	10(U)	
2,4,6-Trichlorophenol (µg/L)	10(U)	
2,4-Dichlorophenol (µg/L)	10(U)	
2,4-Dimethylphenol (µg/L)	10(U)	
2,4-Dinitrophenol (µg/L)	20(U)	
2-Chloronaphthalene (µg/L)	10(U)	
2-Chlorophenol (µg/L)	10(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)	
2-Methylnaphthalene (µg/L)	10(U)	
2-Nitroaniline (µg/L)	10(U)	
2-Nitrophenol (µg/L)	10(U)	
3,3'-Dichlorobenzidine (µg/L)	10(U)	
3-Nitroaniline (µg/L)	10(U)	
4-Bromophenylphenylether (µg/L)	10(U)	
4-Chloro-3-methylphenol (µg/L)	10(U)	
4-Chloroaniline (µg/L)	10(U)	
4-Chlorophenylphenylether (µg/L)	10(U)	
4-Nitroaniline (µg/L)	10(U)	

Table 19. Results for Location OW03B

Parameter (unit)	1/9/2000	10/25/2010
4-Nitrophenol (µg/L)	10(U)	
Benzoic Acid (µg/L)	20(U)	
bis(2-Chloroethoxy)methane (µg/L)	10(U)	
bis(2-Chloroethyl) ether (µg/L)	10(U)	
bis(2-Chloroisopropyl)ether (µg/L)	10(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	10(U)	
Butylbenzylphthalate (µg/L)	10(U)	
Carbazole (µg/L)	10(U)	
Dibenzofuran (µg/L)	10(U)	
Diethylphthalate (µg/L)	10(U)	
Dimethylphthalate (µg/L)	10(U)	
Di-n-butylphthalate (µg/L)	10(U)	
Di-n-octylphthalate (µg/L)	10(U)	
Diphenylamine (µg/L)	10(U)	
Hexachlorobenzene (µg/L)	10(U)	
Hexachlorobutadiene (µg/L)	10(U)	
Hexachlorocyclopentadiene (µg/L)	10(U)	
Hexachloroethane (µg/L)	10(U)	
Isophorone (µg/L)	10(U)	
m,p-Cresols (µg/L)	10(U)	
N-Nitroso-di-n-propylamine (µg/L)	10(U)	
o-Cresol (µg/L)	10(U)	
Pentachlorophenol (µg/L)	10(U)	
Phenol (µg/L)	10(U)	
Explosives		
1,3,5-Trinitrobenzene (µg/L)	0.1(U)	
2,4,6-Trinitrotoluene (µg/L)	0.1(U)	
2,4-Dinitrotoluene (µg/L)	0.1(U)	
2,6-Dinitrotoluene (µg/L)	0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)	
2-Nitrotoluene (µg/L)	0.1(U)	
3-Dinitrobenzene (µg/L)	0.1(U)	
3-Nitrotoluene (µg/L)	0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)	
4-Nitrotoluene (µg/L)	0.1(U)	
HMX (µg/L)	0.1(U)	
Nitrobenzene (µg/L)	0.1(U)	
RDX (µg/L)	0.1(U)	
Tetryl (µg/L)	0.1(U)	
Metals		
Aluminum (µg/L)	6.49(U)	
Aluminum, Dissolved (µg/L)	6.49(U)	
Antimony (µg/L)	7.27(B)	
Antimony, Dissolved (µg/L)	1.96(U)	
Arsenic (µg/L)	3.06	
Arsenic, Dissolved (µg/L)	3.47(B)	
Barium (µg/L)	9.22	
Barium, Dissolved (µg/L)	8.83	
Beryllium (µg/L)	0.17(U)	
Beryllium, Dissolved (µg/L)	0.17(U)	
Boron (µg/L)	142	
Boron, Dissolved (µg/L)	138	
Cadmium (µg/L)	0.23(U)	
Cadmium, Dissolved (µg/L)	0.23(U)	
Calcium (µg/L)	12100	
Calcium, Dissolved (µg/L)	109000	
Chromium (µg/L)	2.65(B)	

Table 19. Results for Location OW03B

Parameter (unit)	1/9/2000	10/25/2010
Chromium, Dissolved (µg/L)	0.94(B)	
Cobalt (µg/L)	1.06(B)	
Cobalt, Dissolved (µg/L)	2.99(B)	
Copper (µg/L)	4.24(B)	
Copper, Dissolved (µg/L)	4.61(B)	
Iron (µg/L)	37(B)	
Iron, Dissolved (µg/L)	126	
Lead (µg/L)	0.01(U)	
Lead, Dissolved (µg/L)	0.01(U)	
Lithium (µg/L)	96.1	
Lithium, Dissolved (µg/L)	99.5	
Magnesium (µg/L)	228000	
Magnesium, Dissolved (µg/L)	208000	
Manganese (µg/L)	1.4(B)	
Manganese, Dissolved (µg/L)	12.9	
Mercury (µg/L)	0.04(U)	
Mercury, Dissolved (µg/L)	0.04(U)	
Nickel (µg/L)	4.43(B)	
Nickel, Dissolved (µg/L)	3.99(B)	
Potassium (µg/L)	4270	
Potassium, Dissolved (µg/L)	5140	
Selenium (µg/L)	1.62(B)	
Selenium, Dissolved (µg/L)	1.61(B)	
Silver (µg/L)	0.22(B)	
Silver, Dissolved (µg/L)	0.2(B)	
Sodium (µg/L)	111000	
Sodium, Dissolved (µg/L)	110000	
Thallium (µg/L)	0.03(U)	
Thallium, Dissolved (µg/L)	0.03(B)	
Vanadium (µg/L)	0.63(U)	
Vanadium, Dissolved (µg/L)	0.63(U)	
Zinc (µg/L)	0.47(U)	
Zinc, Dissolved (µg/L)	0.47(U)	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	10(U)	
Acenaphthylene (µg/L)	10(U)	
Anthracene (µg/L)	10(U)	
Benzo(a)anthracene (µg/L)	10(U)	
Benzo(a)pyrene (µg/L)	10(U)	
Benzo(b)fluoranthene (µg/L)	10(U)	
Benzo(ghi)perylene (µg/L)	10(U)	
Benzo(k)fluoranthene (µg/L)	10(U)	
Chrysene (µg/L)	10(U)	
Dibenzo(a,h)anthracene (µg/L)	10(U)	
Fluoranthene (µg/L)	10(U)	
Fluorene (µg/L)	10(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)	
Naphthalene (µg/L)	10(U)	
Phenanthrene (µg/L)	10(U)	
Pyrene (µg/L)	10(U)	
PCBs		
Aroclor-1016 (µg/L)	0.1(U)	
Aroclor-1221 (µg/L)	0.1(U)	
Aroclor-1232 (µg/L)	0.1(U)	
Aroclor-1242 (µg/L)	0.1(U)	
Aroclor-1248 (µg/L)	0.1(U)	
Aroclor-1254 (µg/L)	0.1(U)	

Table 19. Results for Location OW03B

Parameter (unit)	1/9/2000	10/25/2010
Aroclor-1260 (µg/L)	0.1(U)	
Pesticides		
4,4'-DDD (µg/L)	0.04(U)	
4,4'-DDE (µg/L)	0.04(U)	
4,4'-DDT (µg/L)	0.04(U)	
Aldrin (µg/L)	0.02(U)	
alpha-BHC (µg/L)	0.02(U)	
alpha-Chlordane (µg/L)	0.02(U)	
beta-BHC (µg/L)	0.02(U)	
delta-BHC (µg/L)	0.02(U)	
Dieldrin (µg/L)	0.04(U)	
Endosulfan I (µg/L)	0.02(U)	
Endosulfan II (µg/L)	0.04(U)	
Endosulfan sulfate (µg/L)	0.04(U)	
Endrin (µg/L)	0.04(U)	
Endrin aldehyde (µg/L)	0.04(U)	
Endrin ketone (µg/L)	0.04(U)	
gamma-BHC (Lindane) (µg/L)	0.02(U)	
gamma-Chlordane (µg/L)	0.02(U)	
Heptachlor (µg/L)	0.02(U)	
Heptachlor epoxide (µg/L)	0.02(U)	
Methoxychlor (µg/L)	0.2(U)	
Toxaphene (µg/L)	1(U)	
Radiological Compounds		
Alpha (pCi/L)	17.7	
Beta (pCi/L)	10	
Radium-226 (pCi/L)	0.33(U)	-0.42(U)
Radium-228 (pCi/L)		1.93(J)
Thorium-228 (pCi/L)	0.13(U)	0.05(U)
Thorium-230 (pCi/L)	0.06(U)	0.08(U)
Thorium-232 (pCi/L)	0(U)	0.16
Total Uranium (µg/L)	18.1	19.79*
Uranium-233/234 (pCi/L)	7.9	
Uranium-234 (pCi/L)		8.9
Uranium-235 (pCi/L)		0.33
Uranium-235/236 (pCi/L)	0.28	
Uranium-238 (pCi/L)	6.55	6.48

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 20. Results for Location OW04A

Parameter (unit)	1/9/2000	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Volatile Organic Compounds									
1,1,1-Trichloroethane (µg/L)	1(U)								
1,1,2,2-Tetrachloroethane (µg/L)	1(U)								
1,1,2-Trichloroethane (µg/L)	1(U)								
1,1-Dichloroethane (µg/L)	1(U)								
1,1-Dichloroethene (µg/L)	1(U)								
1,2-Dichloroethane (µg/L)	1(U)								
1,2-Dichloropropane (µg/L)	1(U)								
2-Butanone (µg/L)	3.3(U)								
2-Hexanone (µg/L)	5(U)								
4-Methyl-2-pentanone (µg/L)	5(U)								
Acetone (µg/L)	1.2(U)								
Benzene (µg/L)	1(U)								
Bromodichloromethane (µg/L)	1(U)								
Bromoform (µg/L)	1(U)								
Bromomethane (µg/L)	1(U)								
Carbon disulfide (µg/L)	5(U)								
Carbon tetrachloride (µg/L)	1(U)								
Chlorobenzene (µg/L)	1(U)								
Chloroethane (µg/L)	1(U)								
Chloroform (µg/L)	1(U)								
Chloromethane (µg/L)	1(U)								
cis-1,2-Dichloroethylene (µg/L)	1(U)								
cis-1,3-Dichloropropylene (µg/L)	1(U)								
Dibromochloromethane (µg/L)	1(U)								
Ethylbenzene (µg/L)	1(U)								
Methylene chloride (µg/L)	5(U)								
Styrene (µg/L)	1(U)								
Tetrachloroethylene (µg/L)	1(U)								
Toluene (µg/L)	1(U)								
trans-1,2-Dichloroethylene (µg/L)	1(U)								
trans-1,3-Dichloropropylene (µg/L)	1(U)								
Trichloroethylene (µg/L)	1(U)								
Vinyl chloride (µg/L)	1(U)								
Xylenes (total) (µg/L)	3(U)								
Semi-Volatile Organic Compounds									
1,2,4-Trichlorobenzene (µg/L)	10(U)								
1,2-Dichlorobenzene (µg/L)	10(U)								
1,3-Dichlorobenzene (µg/L)	10(U)								
1,4-Dichlorobenzene (µg/L)	10(U)								
2,4,5-Trichlorophenol (µg/L)	10(U)								
2,4,6-Trichlorophenol (µg/L)	10(U)								
2,4-Dichlorophenol (µg/L)	10(U)								
2,4-Dimethylphenol (µg/L)	10(U)								
2,4-Dinitrophenol (µg/L)	20(U)								
2-Chloronaphthalene (µg/L)	10(U)								
2-Chlorophenol (µg/L)	10(U)								
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)								
2-Methylnaphthalene (µg/L)	10(U)								
2-Nitroaniline (µg/L)	10(U)								
2-Nitrophenol (µg/L)	10(U)								
3,3'-Dichlorobenzidine (µg/L)	10(U)								
3-Nitroaniline (µg/L)	10(U)								
4-Bromophenylphenylether (µg/L)	10(U)								
4-Chloro-3-methylphenol (µg/L)	10(U)								
4-Chloroaniline (µg/L)	10(U)								
4-Chlorophenylphenylether (µg/L)	10(U)								

Table 20. Results for Location OW04A

Parameter (unit)	1/9/2000	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
4-Nitroaniline (µg/L)	10(U)								
4-Nitrophenol (µg/L)	10(U)								
Benzoic Acid (µg/L)	20(U)								
bis(2-Chloroethoxy)methane (µg/L)	10(U)								
bis(2-Chloroethyl) ether (µg/L)	10(U)								
bis(2-Chloroisopropyl)ether (µg/L)	10(U)								
bis(2-Ethylhexyl)phthalate (µg/L)	10(U)								
Butylbenzylphthalate (µg/L)	10(U)								
Carbazole (µg/L)	10(U)								
Dibenzofuran (µg/L)	10(U)								
Diethylphthalate (µg/L)	10(U)								
Dimethylphthalate (µg/L)	10(U)								
Di-n-butylphthalate (µg/L)	10(U)								
Di-n-octylphthalate (µg/L)	10(U)								
Diphenylamine (µg/L)	10(U)								
Hexachlorobenzene (µg/L)	10(U)								
Hexachlorobutadiene (µg/L)	10(U)								
Hexachlorocyclopentadiene (µg/L)	10(U)								
Hexachloroethane (µg/L)	10(U)								
Isophorone (µg/L)	10(U)								
m,p-Cresols (µg/L)	10(U)								
N-Nitroso-di-n-propylamine (µg/L)	10(U)								
o-Cresol (µg/L)	10(U)								
Pentachlorophenol (µg/L)	10(U)								
Phenol (µg/L)	10(U)								
General Chemistry									
Alkalinity (µg/L)		158000	169000			160000			
Chloride (µg/L)		28500	30200	28000		35000			
Fluoride (µg/L)		233	269	30(U)		1000			
Nitrate (µg/L)		132	33(U)	24(U)		78(J)			
Nitrite (µg/L)		33(U)	37.7(J)	24(U)		72(J)			
Phosphate as P, Ortho (µg/L)		66(U)	66(U)	60(U)		130(J)			
Solids, Total Dissolved (µg/L)		897000	943000			1000000			
Sulfate (µg/L)		480000	528000	430000		530000			
Explosives									
2,4-Dinitrotoluene (µg/L)	10(U)								
2,6-Dinitrotoluene (µg/L)	10(U)								
Nitrobenzene (µg/L)	10(U)								
Metals									
Aluminum (µg/L)	89.5								
Aluminum, Dissolved (µg/L)	6.59(B)								
Antimony (µg/L)	12.2								
Antimony, Dissolved (µg/L)	2.24(B)								
Arsenic (µg/L)	5.62(B)								
Arsenic, Dissolved (µg/L)	5.34(B)								
Barium (µg/L)	13.6								
Barium, Dissolved (µg/L)	11.9								
Beryllium (µg/L)	0.17(U)								
Beryllium, Dissolved (µg/L)	0.17(U)								
Boron (µg/L)	564								
Boron, Dissolved (µg/L)	513								
Cadmium (µg/L)	0.23(B)								
Cadmium, Dissolved (µg/L)	0.45(B)								
Calcium (µg/L)	67600								
Calcium, Dissolved (µg/L)	58400								
Chromium (µg/L)	0.83(B)								
Chromium, Dissolved (µg/L)	0.61(U)								

Table 20. Results for Location OW04A

Parameter (unit)	1/9/2000	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Cobalt (µg/L)	0.67(U)								
Cobalt, Dissolved (µg/L)	0.7(B)								
Copper (µg/L)	3.14(B)								
Copper, Dissolved (µg/L)	1(U)								
Iron (µg/L)	237								
Iron, Dissolved (µg/L)	7.69(B)								
Lead (µg/L)	0.84(B)								
Lead, Dissolved (µg/L)	0.05(U)								
Lithium (µg/L)	42.3								
Lithium, Dissolved (µg/L)	37.5								
Magnesium (µg/L)	89500								
Magnesium, Dissolved (µg/L)	80800								
Manganese (µg/L)	19.6								
Manganese, Dissolved (µg/L)	15.1								
Mercury (µg/L)	0.04(U)								
Mercury, Dissolved (µg/L)	0.04(U)								
Nickel (µg/L)	24.8								
Nickel, Dissolved (µg/L)	23.3								
Potassium (µg/L)	4760								
Potassium, Dissolved (µg/L)	4730								
Selenium (µg/L)	2.13(B)								
Selenium, Dissolved (µg/L)	2.75(B)								
Silver (µg/L)	0.07(U)								
Silver, Dissolved (µg/L)	0.8(B)								
Sodium (µg/L)	122000								
Sodium, Dissolved (µg/L)	107000								
Thallium (µg/L)	0.13(U)								
Thallium, Dissolved (µg/L)	0.13(U)								
Vanadium (µg/L)	0.64(B)								
Vanadium, Dissolved (µg/L)	0.7(B)								
Zinc (µg/L)	7.18								
Zinc, Dissolved (µg/L)	4.89(B)								
Polycyclic Aromatic Hydrocarbons									
Acenaphthene (µg/L)	10(U)								
Acenaphthylene (µg/L)	10(U)								
Anthracene (µg/L)	10(U)								
Benzo(a)anthracene (µg/L)	10(U)								
Benzo(a)pyrene (µg/L)	10(U)								
Benzo(b)fluoranthene (µg/L)	10(U)								
Benzo(ghi)perylene (µg/L)	10(U)								
Benzo(k)fluoranthene (µg/L)	10(U)								
Chrysene (µg/L)	10(U)								
Dibenzo(a,h)anthracene (µg/L)	10(U)								
Fluoranthene (µg/L)	10(U)								
Fluorene (µg/L)	10(U)								
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)								
Naphthalene (µg/L)	10(U)								
Phenanthrene (µg/L)	10(U)								
Pyrene (µg/L)	10(U)								
Radiological Compounds									
Alpha (pCi/L)	1.62(U)								
Beta (pCi/L)	5.65								
Radium-226 (pCi/L)	0.25(U)							0.28(U)	-0.32(U)
Radium-226, Dissolved (pCi/L)								0.08(U)	
Radium-228 (pCi/L)								0(U)	0.65(J)
Radium-228, Dissolved (pCi/L)								0.14(U)	
Thorium-228 (pCi/L)	0.05(U)							0.09(U)	0.03(U)

Table 20. Results for Location OW04A

Parameter (unit)	1/9/2000	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Thorium-228, Dissolved (pCi/L)								0.05(U)	
Thorium-230 (pCi/L)	0.02(U)							0.34	0.58
Thorium-230, Dissolved (pCi/L)								0.35	
Thorium-232 (pCi/L)	0(U)							0(U)	0.21
Thorium-232, Dissolved (pCi/L)								0.11(U)	
Total Thorium (pCi/L)								0.34*	
Total Thorium, Dissolved (pCi/L)								0.35*	
Total Uranium (µg/L)	2.84	1.3*	2.44*	1.76*		1.27*	2.38*		2.17*
Total Uranium (pCi/L)		0.93*	2.09*	1.3*		1.51*		1.83*	
Total Uranium, Dissolved (pCi/L)								1.54*	
Uranium-233/234 (pCi/L)	1.59		1.21			1.09			
Uranium-234 (pCi/L)		0.49		0.73	1.09		0.99	1.06	0.93
Uranium-234, Dissolved (pCi/L)								0.91(J)	
Uranium-235 (pCi/L)		-0.05(U)		0.05(U)	0.1(U)		0.07(U)	0.27	0.1
Uranium-235, Dissolved (pCi/L)								0.13	
Uranium-235/236 (pCi/L)	0.06		0.07			0.1(U)			
Uranium-238 (pCi/L)	0.8	0.44	0.81	0.57	0.42	0.42	0.78	0.5(J)	0.7
Uranium-238, Dissolved (pCi/L)								0.49(J)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 21. Results for Location OW04B

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	8/26/2002	5/14/2003	5/15/2003	4/30/2004	11/2/2004	5/24/2005	5/25/2005	11/8/2005	5/18/2006	6/13/2007	11/27/2007	6/13/2008	10/27/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Volatile Organic Compounds																									
1,1,1-Trichloroethane (µg/L)									1(U)																
1,1,2,2-Tetrachloroethane (µg/L)									1(U)																
1,1,2-Trichloroethane (µg/L)									1(U)																
1,1-Dichloroethane (µg/L)									1(U)																
1,1-Dichloroethene (µg/L)									1(U)																
1,2-Dichloroethane (µg/L)									1(U)																
1,2-Dichloropropane (µg/L)									1(U)																
2-Butanone (µg/L)									5(U)																
2-Hexanone (µg/L)									5(U)																
4-Methyl-2-pentanone (µg/L)									5(U)																
Acetone (µg/L)									5(U)																
Benzene (µg/L)									1(U)																
Bromodichloromethane (µg/L)									1(U)																
Bromoform (µg/L)									1(U)																
Bromomethane (µg/L)									1(U)																
Carbon disulfide (µg/L)									5(U)																
Carbon tetrachloride (µg/L)									1(U)																
Chlorobenzene (µg/L)									1(U)																
Chloroethane (µg/L)									1(U)																
Chloroform (µg/L)									1(U)																
Chloromethane (µg/L)									1(U)																
cis-1,2-Dichloroethylene (µg/L)									1(U)																
cis-1,3-Dichloropropylene (µg/L)									1(U)																
Dibromochloromethane (µg/L)									1(U)																
Ethylbenzene (µg/L)									1(U)																
Methylene chloride (µg/L)									5(U)																
Styrene (µg/L)									1(U)																
Tetrachloroethylene (µg/L)									1(U)																
Toluene (µg/L)									1(U)																
trans-1,2-Dichloroethylene (µg/L)									1(U)																
trans-1,3-Dichloropropylene (µg/L)									1(U)																
Trichloroethylene (µg/L)									1(U)																
Vinyl chloride (µg/L)									1(U)																
Xylenes (total) (µg/L)									1(U)																
Semi-Volatile Organic Compounds																									
1,2,4-Trichlorobenzene (µg/L)									10(U)																
1,2-Dichlorobenzene (µg/L)									10(U)																
1,3-Dichlorobenzene (µg/L)									10(U)																
1,4-Dichlorobenzene (µg/L)									10(U)																
2,4,5-Trichlorophenol (µg/L)									10(U)																
2,4,6-Trichlorophenol (µg/L)									10(U)																
2,4-Dichlorophenol (µg/L)									10(U)																
2,4-Dimethylphenol (µg/L)									10(U)																
2,4-Dinitrophenol (µg/L)									20(U)																
2-Chloronaphthalene (µg/L)									1(U)																
2-Chlorophenol (µg/L)									10(U)																
2-Methyl-4,6-dinitrophenol (µg/L)									10(U)																
2-Methylnaphthalene (µg/L)									1(U)																
2-Nitroaniline (µg/L)									10(U)																
2-Nitrophenol (µg/L)									10(U)																
3,3'-Dichlorobenzidine (µg/L)									10(U)																
3-Nitroaniline (µg/L)									10(U)																
4-Bromophenylphenylether (µg/L)									10(U)																
4-Chloro-3-methylphenol (µg/L)									10(U)																
4-Chloroaniline (µg/L)									10(U)																
4-Chlorophenylphenylether (µg/L)									10(U)																

Table 21. Results for Location OW04B

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	8/26/2002	5/14/2003	5/15/2003	4/30/2004	11/2/2004	5/24/2005	5/25/2005	11/8/2005	5/18/2006	6/13/2007	11/27/2007	6/13/2008	10/27/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
4-Nitroaniline (µg/L)									10(U)																
4-Nitrophenol (µg/L)									10(U)																
bis(2-Chloroethoxy)methane (µg/L)									10(U)																
bis(2-Chloroethyl) ether (µg/L)									10(U)																
bis(2-Chloroisopropyl)ether (µg/L)									10(U)																
bis(2-Ethylhexyl)phthalate (µg/L)									10(U)																
Butylbenzylphthalate (µg/L)									10(U)																
Carbazole (µg/L)									10(U)																
Dibenzofuran (µg/L)									10(U)																
Diethylphthalate (µg/L)									10(U)																
Dimethylphthalate (µg/L)									10(U)																
Di-n-butylphthalate (µg/L)									10(U)																
Di-n-octylphthalate (µg/L)									10(U)																
Hexachlorobenzene (µg/L)									10(U)																
Hexachlorobutadiene (µg/L)									10(U)																
Hexachlorocyclopentadiene (µg/L)									10(U)																
Hexachloroethane (µg/L)									10(U)																
Isophorone (µg/L)									10(U)																
m,p-Cresols (µg/L)									10(U)																
N-Nitroso-di-n-propylamine (µg/L)									10(U)																
N-Nitrosodiphenylamine (µg/L)									10(U)																
o-Cresol (µg/L)									10(U)																
Pentachlorophenol (µg/L)									10(U)																
Phenol (µg/L)									10(U)																
General Chemistry																									
Alkalinity (µg/L)		366000	282000	350000	304000	324000			303000	305000		340000			480000			302000	314000	330000		330000			
Bicarbonate Alkalinity (µg/L)		366000	344000	350000	304000	324000			302000	304000		340000			480000										
Carbonate (µg/L)		4000(U)	1000(U)	1000(U)	1000(U)	<5000																			
Carbonate Alkalinity (µg/L)									1450(U)	1140(U)		0(U)			5000(U)										
Chloride (µg/L)		91000	88700	92000	84400	78700			90400	80500		73400			81600(J)	75100		123000	114000	120000		89000			
Fluoride (µg/L)		250(U)							521							570		567	493	370		970			
Methane (µg/L)									14(U)																
Nitrate (µg/L)		250(U)	100(U)	100(U)	50(U)	<18			161	114		140			53	490(J)		100(U)	136	37		78(J)			
Nitrite (µg/L)		250(U)		50(U)	20(U)	<20			54.2(U)	0(U)		0(U)			20(U)	20(U)		100(U)	33(U)	340		72(J)			
Phosphate (µg/L)		50(U)																							
Phosphate as P, Ortho (µg/L)									151(U)	0(U)		290(J)			500(U)			200(U)	66(U)	60(U)		130(J)			
Phosphorous, Total (µg/L)			30	30(U)	13	500																			
Solids, Total Dissolved (µg/L)		1500000	1400000	1500000	1410000	1570000			1630000	1440000		1320000			1350000			1600000	1560000	1500000		1400000			
Sulfate (µg/L)		648000	700000	600000	724000	754000			725000	634000		591000			621000(J)	566000		719000	714000	660000		630000			
Explosives																									
1,3,5-Trinitrobenzene (µg/L)									0.1(U)																
2,4,6-Trinitrotoluene (µg/L)									0.1(U)																
2,4-Dinitrotoluene (µg/L)									0.1(U)																
2,6-Dinitrotoluene (µg/L)									0.1(U)																
2-Amino-4,6-dinitrotoluene (µg/L)									0.1(U)																
2-Nitrotoluene (µg/L)									0.1(U)																
3-Dinitrobenzene (µg/L)									0.1(U)																
3-Nitrotoluene (µg/L)									0.1(U)																
4-Amino-2,6-dinitrotoluene (µg/L)									0.1(U)																
4-Nitrotoluene (µg/L)									0.1(U)																
HMX (µg/L)									0.1(U)																
Nitrobenzene (µg/L)									0.1(U)																
RDX (µg/L)									0.1(U)																
Tetryl (µg/L)									0.1(U)																

Table 21. Results for Location OW04B

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	8/26/2002	5/14/2003	5/15/2003	4/30/2004	11/2/2004	5/24/2005	5/25/2005	11/8/2005	5/18/2006	6/13/2007	11/27/2007	6/13/2008	10/27/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Metals																									
Aluminum (µg/L)									33.7(B)									5.1(J)	5(U)	430		5.6(J)			
Aluminum, Dissolved (µg/L)									36.9(B)																
Antimony (µg/L)									0.06(B)									0.5(U)	3(J)	0.13(U)		0.72			
Antimony, Dissolved (µg/L)									0.06(U)																
Arsenic (µg/L)									2.58(B)									1.5(U)	1.5(U)	1		0.76			
Arsenic, Dissolved (µg/L)									2.17(B)																
Barium (µg/L)									17.3									18.1(J)	19.4	18		17			
Barium, Dissolved (µg/L)									18.1																
Beryllium (µg/L)									0.21(U)									0.1(U)	0.1(U)	0.12(U)		0.12(U)			
Beryllium, Dissolved (µg/L)									0.21(U)																
Boron (µg/L)									346									316	362	500		320			
Boron, Dissolved (µg/L)									347																
Cadmium (µg/L)									0.66(U)									0.11(U)	0.11(U)	0.12(U)		0.12(U)			
Cadmium, Dissolved (µg/L)									0.66(U)																
Calcium (µg/L)	175000	187000	179000	200000	184000	200000			218000	191000		175000			181000(J)	182000(J)		201000	177000	180000		150000			
Calcium, Dissolved (µg/L)									235000																
Chromium (µg/L)									1.7(U)									2.9(J)	2(J)	2.8		1.7(J)			
Chromium, Dissolved (µg/L)									1.7(U)																
Cobalt (µg/L)									1(U)									0.89(J)	0.73(J)	0.12(U)		0.27(J)			
Cobalt, Dissolved (µg/L)									1(U)																
Copper (µg/L)	13.7	10.9	<5	0.05(U)	10(U)	<9.2			5.96	3.82(J)		2.9(J)			5.3(J)	2.8		4.8	7	6.2		2.9			
Copper, Dissolved (µg/L)									22.1																
Iron (µg/L)									5.6(U)									758	957	1000		60(J)			
Iron, Dissolved (µg/L)									5.6(U)																
Lead (µg/L)	2(U)	2.3	<3	0.01(U)	10(U)	<3			0.03(B)	1.72(U)		0.57(U)			0.49(U)	2.5(U)		0.5(U)	0.5(U)	0.13(U)		0.13(U)			
Lead, Dissolved (µg/L)									0(U)																
Lithium (µg/L)									29.5(B)									35.4	36.9	31		100(U)			
Lithium, Dissolved (µg/L)									22.6																
Magnesium (µg/L)	139000	143000	124000	140000	134000	138000			144000	128000		120000			138000	129000(J)		138000	130000	150000		110000			
Magnesium, Dissolved (µg/L)									151000																
Manganese (µg/L)									16.9									33.8	27	150		23			
Manganese, Dissolved (µg/L)									15.3																
Mercury (µg/L)									0.1(U)									0.03(U)	0.07(U)	0.03(U)		0.03(U)			
Mercury, Dissolved (µg/L)									0.1(U)																
Nickel (µg/L)									2.28(B)									5.7	6.7	6.7		8			
Nickel, Dissolved (µg/L)									1.77(B)																
Potassium (µg/L)	4260	3610	2200	2500	2400	3300			1950	2020		1940			2050	2100		2220	2350	2500		1900			
Potassium, Dissolved (µg/L)									1900																
Selenium (µg/L)									3.98(B)									1.9(J)	3.1(J)	3.7		2.3			
Selenium, Dissolved (µg/L)									3.1(B)																
Silver (µg/L)									0.01(U)									0.2(U)	0.2(U)	0.08(U)		0.39(U)			
Silver, Dissolved (µg/L)									0(U)																
Sodium (µg/L)	56300	55500	60100	65000	63400	63300			70400	61400		53400			61600	56800(J)		62700	61400	70000		54000			
Sodium, Dissolved (µg/L)									69500																
Thallium (µg/L)									0.15(B)									0.3(U)	0.3(U)	0.16(U)		0.16(U)			
Thallium, Dissolved (µg/L)									0.04(B)																
Vanadium (µg/L)	22.7	8.6	<5	0.01(U)	10(U)	<10			2.48(U)	0.61(U)		1.6(U)			1.6(U)	2.1(U)		3(U)	3(U)	1.3		1			
Vanadium, Dissolved (µg/L)									2.5(U)																
Zinc (µg/L)									2(B)									5.5(J)	6.4(J)	7		13			
Zinc, Dissolved (µg/L)									24.4																
Polycyclic Aromatic Hydrocarbons																									
Acenaphthene (µg/L)									0.49(U)																
Acenaphthylene (µg/L)									0.49(U)																
Anthracene (µg/L)									0.49(U)																
Benzo(a)anthracene (µg/L)									0.05(U)																
Benzo(a)pyrene (µg/L)									0.05(U)																

Table 21. Results for Location OW04B

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	8/26/2002	5/14/2003	5/15/2003	4/30/2004	11/2/2004	5/24/2005	5/25/2005	11/8/2005	5/18/2006	6/13/2007	11/27/2007	6/13/2008	10/27/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Benzo(b)fluoranthene (µg/L)									0.05(U)																
Benzo(ghi)perylene (µg/L)									0.05(U)																
Benzo(k)fluoranthene (µg/L)									0.02(U)																
Chrysene (µg/L)									0.05(U)																
Dibenzo(a,h)anthracene (µg/L)									0.05(U)																
Fluoranthene (µg/L)									0.05(U)																
Fluorene (µg/L)									0.49(U)																
Indeno(1,2,3-cd)pyrene (µg/L)									0.05(U)																
Naphthalene (µg/L)									0.49(U)																
Phenanthrene (µg/L)									0.49(U)																
Pyrene (µg/L)									0.05(U)																
Aroclor-1016 (µg/L)									0.1(U)																
Aroclor-1221 (µg/L)									0.1(U)																
Aroclor-1232 (µg/L)									0.1(U)																
Aroclor-1242 (µg/L)									0.1(U)																
Aroclor-1248 (µg/L)									0.1(U)																
Aroclor-1254 (µg/L)									0.1(U)																
Aroclor-1260 (µg/L)									0.1(U)																
Pesticides																									
4,4'-DDD (µg/L)									0.04(U)																
4,4'-DDE (µg/L)									0.01(J)																
4,4'-DDT (µg/L)									0.02(J)																
Aldrin (µg/L)									0.02(U)																
alpha-BHC (µg/L)									0.02(U)																
alpha-Chlordane (µg/L)									0.02(U)																
beta-BHC (µg/L)									0.02(U)																
delta-BHC (µg/L)									0.02(U)																
Dieldrin (µg/L)									0.04(U)																
Endosulfan I (µg/L)									0.02(U)																
Endosulfan II (µg/L)									0.04(U)																
Endosulfan sulfate (µg/L)									0.04(U)																
Endrin (µg/L)									0.04(U)																
Endrin aldehyde (µg/L)									0.04(U)																
Endrin ketone (µg/L)									0.04(U)																
gamma-BHC (Lindane) (µg/L)									0.02(U)																
gamma-Chlordane (µg/L)									0.02(U)																
Heptachlor (µg/L)									0.02(U)																
Heptachlor epoxide (µg/L)									0.02(U)																
Methoxychlor (µg/L)									0.2(U)																
Toxaphene (µg/L)									0.99(U)																
Radiological Compounds																									
Actinium-227, Dissolved (pCi/L)									-18(U)																
Actinium-227, Gamma (pCi/L)									2.17(U)																
Alpha (pCi/L)									46.7																
Alpha, Dissolved (pCi/L)									48.1																
Americium-241, Dissolved (pCi/L)									0.19(U)																
Americium-241, Gamma (pCi/L)									2.88(U)																
Beta (pCi/L)									15.9																
Beta, Dissolved (pCi/L)									12.1																
Cesium-137, Dissolved (pCi/L)									-0.76(U)																
Cesium-137, Gamma (pCi/L)									0.53(U)																
Cobalt-60, Dissolved (pCi/L)									0.95(U)																
Cobalt-60, Gamma (pCi/L)									0.28(U)																
Protactinium-231, Dissolved (pCi/L)									20.5(U)																
Protactinium-231, Gamma (pCi/L)									-26.3(U)																
Radium-226 (pCi/L)	0.14	0.23(J)	U	0.29	0.1(U)	0.1(U)		0.04(U)	0.33(U)	0.28(U)	1.29		-0.01(UU)		0.09(U)	0.52		0.28	0.51	0.73(U)	0.56	0.56	0.29(U)	0.05(U)	0.16
Radium-226, Dissolved (pCi/L)									0.42																

Table 21. Results for Location OW04B

Parameter (unit)	4/29/1997	4/8/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	8/26/2002	5/14/2003	5/15/2003	4/30/2004	11/2/2004	5/24/2005	5/25/2005	11/8/2005	5/18/2006	6/13/2007	11/27/2007	6/13/2008	10/27/2008	5/20/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/26/2010
Radium-228 (pCi/L)	0.05	0.44	1	0.13	0.22(U)	0.22(U)		0.41(U)	0.42(U)	1.22	0.24(U)		0.27(U)		0.11(U)	-0.57(U)		0.27(U)	0.08(U)	0.57(U)	0.98(U)	0.98(U)	0.76(U)	0.42(U)	1.4(J)
Radium-228, Dissolved (pCi/L)									0.33(U)																
Radium-228, Gamma (pCi/L)									5.62(U)																
Thorium-228 (pCi/L)											-0.12(U)							0.14(U)	0.17(U)	0(U)	0.08(U)	0.08(U)	0.07(U)	0(U)	0.04(U)
Thorium-228, Alpha (pCi/L)									0(U)																
Thorium-228, Dissolved (pCi/L)									0.09(UJ)																
Thorium-228, Dissolved Gamma (pCi/L)									0(UUI)																
Thorium-228, Gamma (pCi/L)									0.49(U)																
Thorium-230 (pCi/L)	0.34	0.29	0.1	0.34	0.49	1.11		0.04(U)	0.38(U)	0.16(U)	0.06(U)		0.05(J)		0.05	0.67		1.3	0.02(U)	0.19(U)	0.13	0.13	0.32(J)	0.11(U)	0.09(U)
Thorium-230, Alpha (pCi/L)									0.04(U)																
Thorium-230, Dissolved (pCi/L)									1.15(UJ)																
Thorium-232 (pCi/L)	0.03	0.38	U	0.03	0.08(U)	0.12		0(U)	0(U)	-0.01(U)	-0.03(U)		0(U)		0	0.11(U)		0.08(U)	0(U)	0.21	0.06(U)	0.06(U)	0.05(U)	0.21	0.22
Thorium-232, Alpha (pCi/L)									0(U)																
Thorium-232, Dissolved (pCi/L)									0(UJ)																
Total Radium (pCi/L)			1*	0.42*	U *	U *		U *	0.42*	1.22*			U *		U *	0.52*		U *	U *	U *		0.56*		*	
Total Thorium (pCi/L)																		1.3*	U *	0.21*		0.13*		0.21*	
Total Uranium (µg/L)		49.83*	30.58*	59.87*	76.15*	72.42*	48.2	74.96*	64.15	62.53*	48.5		58.34*		51.98*	55.01*		71.16*	54.55*	72.4*		49.55*	59.12*		43.04*
Total Uranium (pCi/L)	29.5	33.87*	20.6*	41.21*	52.15*	49.72*	34.5*	51.56*	46.48	43.56*			40.1*	41.6*	37.02*	35.78*		48.5*	39.49*	47.74*		34.73*		18.41*	
Total Uranium, Dissolved (µg/L)									73.5																
Uranium-233/234 (pCi/L)											15.1								20.7			17.64			
Uranium-233/234, Alpha (pCi/L)									25.5																
Uranium-233/234, Dissolved (pCi/L)									23.8																
Uranium-234 (pCi/L)		16.45	10	20.83	26.47	24.7	17.4	25.5	23.8	21.6			20	20.9	19	16.2	11.8	24		22.31	17.64		18.29	9.27	14.6
Uranium-235 (pCi/L)		1.15	0.6	0.74	0.65	1.32	0.9	1.56	1.78	1.56			1	1.1	1.02	1.68		1.2		1.81	0.74		0.99	0.25	0.68
Uranium-235, Dissolved (pCi/L)									13.5(U)																
Uranium-235, Gamma (pCi/L)									4.9(U)																
Uranium-235/236 (pCi/L)											0.96						0.31(J)		0.79			0.74			
Uranium-235/236, Alpha (pCi/L)									1.56																
Uranium-235/236, Dissolved (pCi/L)									1.78																
Uranium-238 (pCi/L)		16.27	10	19.64	25.03	23.7	16.2	24.5	20.9	20.4	15.5		19.1	19.6	17	17.9	10.9	23.3	18	23.62	16.35	16.35	19.36	8.89	14.1
Uranium-238, Alpha (pCi/L)									24.5																
Uranium-238, Dissolved (pCi/L)									20.9																
Uranium-238, Dissolved Gamma (pCi/L)									104(U)																
Uranium-238, Gamma (pCi/L)									85.8(U)																

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 22. Results for Location OW05A

Parameter (unit)	1/9/2000	10/26/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	2.9(U)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	0.86(U)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	3(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	10(U)	
1,2-Dichlorobenzene (µg/L)	10(U)	
1,3-Dichlorobenzene (µg/L)	10(U)	
1,4-Dichlorobenzene (µg/L)	10(U)	
2,4,5-Trichlorophenol (µg/L)	10(U)	
2,4,6-Trichlorophenol (µg/L)	10(U)	
2,4-Dichlorophenol (µg/L)	10(U)	
2,4-Dimethylphenol (µg/L)	10(U)	
2,4-Dinitrophenol (µg/L)	20(U)	
2-Chloronaphthalene (µg/L)	10(U)	
2-Chlorophenol (µg/L)	10(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)	
2-Methylnaphthalene (µg/L)	10(U)	
2-Nitroaniline (µg/L)	10(U)	
2-Nitrophenol (µg/L)	10(U)	
3,3'-Dichlorobenzidine (µg/L)	10(U)	
3-Nitroaniline (µg/L)	10(U)	
4-Bromophenylphenylether (µg/L)	10(U)	
4-Chloro-3-methylphenol (µg/L)	10(U)	
4-Chloroaniline (µg/L)	10(U)	
4-Chlorophenylphenylether (µg/L)	10(U)	

Table 22. Results for Location OW05A

Parameter (unit)	1/9/2000	10/26/2010
4-Nitroaniline (µg/L)	10(U)	
4-Nitrophenol (µg/L)	10(U)	
Benzoic Acid (µg/L)	20(U)	
bis(2-Chloroethoxy)methane (µg/L)	10(U)	
bis(2-Chloroethyl) ether (µg/L)	10(U)	
bis(2-Chloroisopropyl)ether (µg/L)	10(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	10(U)	
Butylbenzylphthalate (µg/L)	10(U)	
Carbazole (µg/L)	10(U)	
Dibenzofuran (µg/L)	10(U)	
Diethylphthalate (µg/L)	10(U)	
Dimethylphthalate (µg/L)	10(U)	
Di-n-butylphthalate (µg/L)	10(U)	
Di-n-octylphthalate (µg/L)	10(U)	
Diphenylamine (µg/L)	10(U)	
Hexachlorobenzene (µg/L)	10(U)	
Hexachlorobutadiene (µg/L)	10(U)	
Hexachlorocyclopentadiene (µg/L)	10(U)	
Hexachloroethane (µg/L)	10(U)	
Isophorone (µg/L)	10(U)	
m,p-Cresols (µg/L)	10(U)	
N-Nitroso-di-n-propylamine (µg/L)	10(U)	
o-Cresol (µg/L)	10(U)	
Pentachlorophenol (µg/L)	10(U)	
Phenol (µg/L)	10(U)	
Explosives		
2,4-Dinitrotoluene (µg/L)	10(U)	
2,6-Dinitrotoluene (µg/L)	10(U)	
Nitrobenzene (µg/L)	10(U)	
Metals		
Aluminum (µg/L)	1210	
Aluminum, Dissolved (µg/L)	9.28(B)	
Antimony (µg/L)	23.1	
Antimony, Dissolved (µg/L)	1.96(U)	
Arsenic (µg/L)	13.4(B)	
Arsenic, Dissolved (µg/L)	12.7(B)	
Barium (µg/L)	18.4	
Barium, Dissolved (µg/L)	11	
Beryllium (µg/L)	0.17(U)	
Beryllium, Dissolved (µg/L)	0.18(B)	
Boron (µg/L)	540	
Boron, Dissolved (µg/L)	525	
Cadmium (µg/L)	0.39(B)	
Cadmium, Dissolved (µg/L)	0.26(B)	
Calcium (µg/L)	56900	
Calcium, Dissolved (µg/L)	45600	
Chromium (µg/L)	5.45	
Chromium, Dissolved (µg/L)	0.61(U)	
Cobalt (µg/L)	0.67(U)	
Cobalt, Dissolved (µg/L)	0.67(U)	
Copper (µg/L)	12.7	
Copper, Dissolved (µg/L)	4.09(B)	
Iron (µg/L)	1790	
Iron, Dissolved (µg/L)	18.5(B)	
Lead (µg/L)	0.32(B)	
Lead, Dissolved (µg/L)	0.05(U)	
Lithium (µg/L)	92.2	

Table 22. Results for Location OW05A

Parameter (unit)	1/9/2000	10/26/2010
Lithium, Dissolved (µg/L)	57.7	
Magnesium (µg/L)	117000	
Magnesium, Dissolved (µg/L)	102000	
Manganese (µg/L)	62.7	
Manganese, Dissolved (µg/L)	15.6	
Mercury (µg/L)	0.04(U)	
Mercury, Dissolved (µg/L)	0.04(U)	
Nickel (µg/L)	11.6	
Nickel, Dissolved (µg/L)	3.9(B)	
Potassium (µg/L)	7320	
Potassium, Dissolved (µg/L)	6900	
Selenium (µg/L)	2.7(B)	
Selenium, Dissolved (µg/L)	3.09(B)	
Silver (µg/L)	0.07(U)	
Silver, Dissolved (µg/L)	0.82(B)	
Sodium (µg/L)	114000	
Sodium, Dissolved (µg/L)	101000	
Thallium (µg/L)	0.13(U)	
Thallium, Dissolved (µg/L)	0.13(U)	
Vanadium (µg/L)	2.6(B)	
Vanadium, Dissolved (µg/L)	0.63(U)	
Zinc (µg/L)	5.11	
Zinc, Dissolved (µg/L)	1.29(B)	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	10(U)	
Acenaphthylene (µg/L)	10(U)	
Anthracene (µg/L)	10(U)	
Benzo(a)anthracene (µg/L)	10(U)	
Benzo(a)pyrene (µg/L)	10(U)	
Benzo(b)fluoranthene (µg/L)	10(U)	
Benzo(ghi)perylene (µg/L)	10(U)	
Benzo(k)fluoranthene (µg/L)	10(U)	
Chrysene (µg/L)	10(U)	
Dibenzo(a,h)anthracene (µg/L)	10(U)	
Fluoranthene (µg/L)	10(U)	
Fluorene (µg/L)	10(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)	
Naphthalene (µg/L)	10(U)	
Phenanthrene (µg/L)	10(U)	
Pyrene (µg/L)	10(U)	
Radiological Compounds		
Alpha (pCi/L)	2.43(U)	
Beta (pCi/L)	5.39	
Radium-226 (pCi/L)	0.34(U)	-0.04(U)
Radium-228 (pCi/L)		0.7(J)
Thorium-228 (pCi/L)	0.11(J)	0(U)
Thorium-230 (pCi/L)	0.04(J)	-0.16(U)
Thorium-232 (pCi/L)	-0.01(U)	0.09
Total Uranium (µg/L)	1.53	1.27*
Uranium-233/234 (pCi/L)	0.67	
Uranium-234 (pCi/L)		0.63

Table 22. Results for Location OW05A

Parameter (unit)	1/9/2000	10/26/2010
Uranium-235 (pCi/L)		0.12(U)
Uranium-235/236 (pCi/L)	0(U)	
Uranium-238 (pCi/L)	0.57	0.4(J)

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 23. Results for Location OW05B

Parameter (unit)	6/1/2003	10/26/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	5(U)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	4.35(J)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	1(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	9.71(U)	
1,2-Dichlorobenzene (µg/L)	9.71(U)	
1,3-Dichlorobenzene (µg/L)	9.71(U)	
1,4-Dichlorobenzene (µg/L)	9.71(U)	
2,4,5-Trichlorophenol (µg/L)	9.71(U)	
2,4,6-Trichlorophenol (µg/L)	9.71(U)	
2,4-Dichlorophenol (µg/L)	9.71(U)	
2,4-Dimethylphenol (µg/L)	9.71(U)	
2,4-Dinitrophenol (µg/L)	19.4(U)	
2-Chloronaphthalene (µg/L)	0.97(U)	
2-Chlorophenol (µg/L)	9.71(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	9.71(U)	
2-Methylnaphthalene (µg/L)	0.97(U)	
2-Nitroaniline (µg/L)	9.71(U)	
2-Nitrophenol (µg/L)	9.71(U)	
3,3'-Dichlorobenzidine (µg/L)	9.71(U)	
3-Nitroaniline (µg/L)	9.71(U)	
4-Bromophenylphenylether (µg/L)	9.71(U)	
4-Chloro-3-methylphenol (µg/L)	9.71(U)	
4-Chloroaniline (µg/L)	9.71(U)	
4-Chlorophenylphenylether (µg/L)	9.71(U)	

Table 23. Results for Location OW05B

Parameter (unit)	6/1/2003	10/26/2010
4-Nitroaniline (µg/L)	9.71(U)	
4-Nitrophenol (µg/L)	9.71(U)	
bis(2-Chloroethoxy)methane (µg/L)	9.71(U)	
bis(2-Chloroethyl) ether (µg/L)	9.71(U)	
bis(2-Chloroisopropyl)ether (µg/L)	9.71(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	9.71(U)	
Butylbenzylphthalate (µg/L)	9.71(U)	
Carbazole (µg/L)	9.71(U)	
Dibenzofuran (µg/L)	9.71(U)	
Diethylphthalate (µg/L)	9.71(U)	
Dimethylphthalate (µg/L)	9.71(U)	
Di-n-butylphthalate (µg/L)	9.71(U)	
Di-n-octylphthalate (µg/L)	9.71(U)	
Hexachlorobenzene (µg/L)	9.71(U)	
Hexachlorobutadiene (µg/L)	9.71(U)	
Hexachlorocyclopentadiene (µg/L)	9.71(U)	
Hexachloroethane (µg/L)	9.71(U)	
Isophorone (µg/L)	9.71(U)	
m,p-Cresols (µg/L)	9.71(U)	
N-Nitroso-di-n-propylamine (µg/L)	9.71(U)	
N-Nitrosodiphenylamine (µg/L)	9.71(U)	
o-Cresol (µg/L)	9.71(U)	
Pentachlorophenol (µg/L)	9.71(U)	
Phenol (µg/L)	6.38(J)	
Explosives		
1,3,5-Trinitrobenzene (µg/L)	0.1(U)	
2,4,6-Trinitrotoluene (µg/L)	0.1(U)	
2,4-Dinitrotoluene (µg/L)	0.1(U)	
2,6-Dinitrotoluene (µg/L)	0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)	
2-Nitrotoluene (µg/L)	0.1(U)	
3-Dinitrobenzene (µg/L)	0.1(U)	
3-Nitrotoluene (µg/L)	0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)	
4-Nitrotoluene (µg/L)	0.1(U)	
HMX (µg/L)	0.1(U)	
Nitrobenzene (µg/L)	0.1(U)	
RDX (µg/L)	0.1(U)	
Tetryl (µg/L)	0.1(U)	
Metals		
Aluminum (µg/L)	65.4(B)	
Aluminum, Dissolved (µg/L)	33.1(B)	
Antimony (µg/L)	0.36(B)	
Antimony, Dissolved (µg/L)	0.13(B)	
Arsenic (µg/L)	6.74(B)	
Arsenic, Dissolved (µg/L)	0.84(B)	
Barium (µg/L)	11.4	
Barium, Dissolved (µg/L)	10.6	
Beryllium (µg/L)	0.21(U)	
Beryllium, Dissolved (µg/L)	0.18(U)	
Boron (µg/L)	118	
Boron, Dissolved (µg/L)	105	
Cadmium (µg/L)	0.66(U)	
Cadmium, Dissolved (µg/L)	0.33(U)	
Calcium (µg/L)	110000	
Calcium, Dissolved (µg/L)	104000(E)	
Chromium (µg/L)	3.82(B)	

Table 23. Results for Location OW05B

Parameter (unit)	6/1/2003	10/26/2010
Chromium, Dissolved (µg/L)	1.56(B)	
Cobalt (µg/L)	1(U)	
Cobalt, Dissolved (µg/L)	0.29(U)	
Copper (µg/L)	13.9	
Copper, Dissolved (µg/L)	34.6	
Iron (µg/L)	123	
Iron, Dissolved (µg/L)	4.66(B)	
Lead (µg/L)	1.58(B)	
Lead, Dissolved (µg/L)	0.04(B)	
Lithium (µg/L)	90.4	
Lithium, Dissolved (µg/L)	90.3(N)	
Magnesium (µg/L)	127000	
Magnesium, Dissolved (µg/L)	140000(E)	
Manganese (µg/L)	6.65(B)	
Manganese, Dissolved (µg/L)	0.65(U)	
Mercury (µg/L)	0.1(U)	
Mercury, Dissolved (µg/L)	0.1(UN)	
Nickel (µg/L)	32.6	
Nickel, Dissolved (µg/L)	30.6	
Potassium (µg/L)	3520	
Potassium, Dissolved (µg/L)	3260(E)	
Selenium (µg/L)	1.8(U)	
Selenium, Dissolved (µg/L)	5.25	
Silver (µg/L)	0.03(U)	
Silver, Dissolved (µg/L)	0(U)	
Sodium (µg/L)	65800	
Sodium, Dissolved (µg/L)	69300	
Thallium (µg/L)	0.02(U)	
Thallium, Dissolved (µg/L)	0.02(B)	
Vanadium (µg/L)	2.5(U)	
Vanadium, Dissolved (µg/L)	0.23(U^+)	
Zinc (µg/L)	61.6	
Zinc, Dissolved (µg/L)	17.5	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	0.49(U)	
Acenaphthylene (µg/L)	0.49(U)	
Anthracene (µg/L)	0.49(U)	
Benzo(a)anthracene (µg/L)	0.05(U)	
Benzo(a)pyrene (µg/L)	0.05(U)	
Benzo(b)fluoranthene (µg/L)	0.05(U)	
Benzo(ghi)perylene (µg/L)	0.05(U)	
Benzo(k)fluoranthene (µg/L)	0.02(U)	
Chrysene (µg/L)	0.05(U)	
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	
Fluoranthene (µg/L)	0.05(U)	
Fluorene (µg/L)	0.49(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	
Naphthalene (µg/L)	0.49(U)	
Phenanthrene (µg/L)	0.49(U)	
Pyrene (µg/L)	0.05(U)	
PCBs		
Aroclor-1016 (µg/L)	0.1(U)	
Aroclor-1221 (µg/L)	0.1(U)	
Aroclor-1232 (µg/L)	0.1(U)	
Aroclor-1242 (µg/L)	0.1(U)	
Aroclor-1248 (µg/L)	0.1(U)	
Aroclor-1254 (µg/L)	0.1(U)	

Table 23. Results for Location OW05B

Parameter (unit)	6/1/2003	10/26/2010
Aroclor-1260 (µg/L)	0.1(U)	
Pesticides		
4,4'-DDD (µg/L)	0.04(U)	
4,4'-DDE (µg/L)	0.04(U)	
4,4'-DDT (µg/L)	0.04(U)	
Aldrin (µg/L)	0.02(U)	
alpha-BHC (µg/L)	0.02(U)	
alpha-Chlordane (µg/L)	0.02(U)	
beta-BHC (µg/L)	0.02(U)	
delta-BHC (µg/L)	0.02(U)	
Dieldrin (µg/L)	0.04(U)	
Endosulfan I (µg/L)	0.02(U)	
Endosulfan II (µg/L)	0.04(U)	
Endosulfan sulfate (µg/L)	0.04(U)	
Endrin (µg/L)	0.04(U)	
Endrin aldehyde (µg/L)	0.04(U)	
Endrin ketone (µg/L)	0(J)	
gamma-BHC (Lindane) (µg/L)	0.02(U)	
gamma-Chlordane (µg/L)	0.02(U)	
Heptachlor (µg/L)	0.02(U)	
Heptachlor epoxide (µg/L)	0.02(U)	
Methoxychlor (µg/L)	0.2(U)	
Toxaphene (µg/L)	1(U)	
Radiological Compounds		
Actinium-227, Dissolved (pCi/L)	-19.1(U)	
Actinium-227, Gamma (pCi/L)	-0.54(U)	
Alpha (pCi/L)	8.39	
Alpha, Dissolved (pCi/L)	4.95	
Americium-241, Dissolved (pCi/L)	-4.92(U)	
Americium-241, Gamma (pCi/L)	-5.94(U)	
Beta (pCi/L)	9.07	
Beta, Dissolved (pCi/L)	8.24	
Cesium-137, Dissolved (pCi/L)	0(UUI)	
Cesium-137, Gamma (pCi/L)	-0.57(U)	
Cobalt-60, Dissolved (pCi/L)	0.72(U)	
Cobalt-60, Gamma (pCi/L)	0.43(U)	
Protactinium-231, Dissolved (pCi/L)	11(U)	
Protactinium-231, Gamma (pCi/L)	-27.8(U)	
Radium-226 (pCi/L)	0.05(U)	0.52
Radium-226, Dissolved (pCi/L)	-0.17(U)	
Radium-228 (pCi/L)	0.44(U)	-0.04(U)
Radium-228, Dissolved (pCi/L)	0.84(U)	
Radium-228, Gamma (pCi/L)	4.06(U)	
Thorium-228 (pCi/L)		0.1
Thorium-228, Alpha (pCi/L)	-0.11(U)	
Thorium-228, Dissolved (pCi/L)	0(UJ)	
Thorium-228, Dissolved Gamma (pCi/L)	0(UUI)	
Thorium-228, Gamma (pCi/L)	0(UUI)	
Thorium-230 (pCi/L)		0.07(U)
Thorium-230, Alpha (pCi/L)	-0.03(U)	
Thorium-230, Dissolved (pCi/L)	0.33(UJ)	
Thorium-232 (pCi/L)		0.06
Thorium-232, Alpha (pCi/L)	-0.02(U)	
Thorium-232, Dissolved (pCi/L)	0(UJ)	
Total Uranium (µg/L)	13.4	20.74*
Total Uranium, Dissolved (µg/L)	13.4	
Uranium-233/234, Alpha (pCi/L)	7.84	

Table 23. Results for Location OW05B

Parameter (unit)	6/1/2003	10/26/2010
Uranium-233/234, Dissolved (pCi/L)	5.84	
Uranium-234 (pCi/L)		8.19
Uranium-235 (pCi/L)		0.56
Uranium-235, Dissolved (pCi/L)	10.2(U)	
Uranium-235, Gamma (pCi/L)	11(U)	
Uranium-235/236, Alpha (pCi/L)	0.12(U)	
Uranium-235/236, Dissolved (pCi/L)	0.23	
Uranium-238 (pCi/L)		6.76
Uranium-238, Alpha (pCi/L)	5.41	
Uranium-238, Dissolved (pCi/L)	4.42	
Uranium-238, Dissolved Gamma (pCi/L)	0(UUI)	
Uranium-238, Gamma (pCi/L)	0(UUI)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 24. Results for Location OW06A

Parameter (unit)	1/8/2000	6/24/2010	10/25/2010
Volatile Organic Compounds			
1,1,1-Trichloroethane (µg/L)	1(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)		
1,1,2-Trichloroethane (µg/L)	1(U)		
1,1-Dichloroethane (µg/L)	1(U)		
1,1-Dichloroethene (µg/L)	1(U)		
1,2-Dichloroethane (µg/L)	1(U)		
1,2-Dichloropropane (µg/L)	1(U)		
2-Butanone (µg/L)	3(U)		
2-Hexanone (µg/L)	5(U)		
4-Methyl-2-pentanone (µg/L)	5(U)		
Acetone (µg/L)	0.97(U)		
Benzene (µg/L)	1(U)		
Bromodichloromethane (µg/L)	1(U)		
Bromoform (µg/L)	1(U)		
Bromomethane (µg/L)	1(U)		
Carbon disulfide (µg/L)	5(U)		
Carbon tetrachloride (µg/L)	1(U)		
Chlorobenzene (µg/L)	1(U)		
Chloroethane (µg/L)	1(U)		
Chloroform (µg/L)	1(U)		
Chloromethane (µg/L)	1(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)		
Dibromochloromethane (µg/L)	1(U)		
Ethylbenzene (µg/L)	1(U)		
Methylene chloride (µg/L)	5(U)		
Styrene (µg/L)	1(U)		
Tetrachloroethylene (µg/L)	1(U)		
Toluene (µg/L)	1(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)		
Trichloroethylene (µg/L)	1(U)		
Vinyl chloride (µg/L)	1(U)		
Xylenes (total) (µg/L)	3(U)		
Semi-Volatile Organic Compounds			
1,2,4-Trichlorobenzene (µg/L)	10.1(U)		
1,2-Dichlorobenzene (µg/L)	10.1(U)		
1,3-Dichlorobenzene (µg/L)	10.1(U)		
1,4-Dichlorobenzene (µg/L)	10.1(U)		
2,4,5-Trichlorophenol (µg/L)	10.1(U)		
2,4,6-Trichlorophenol (µg/L)	10.1(U)		
2,4-Dichlorophenol (µg/L)	10.1(U)		
2,4-Dimethylphenol (µg/L)	10.1(U)		
2,4-Dinitrophenol (µg/L)	20.2(U)		
2-Chloronaphthalene (µg/L)	10.1(U)		
2-Chlorophenol (µg/L)	10.1(U)		
2-Methyl-4,6-dinitrophenol (µg/L)	10.1(U)		
2-Methylnaphthalene (µg/L)	10.1(U)		
2-Nitroaniline (µg/L)	10.1(U)		
2-Nitrophenol (µg/L)	10.1(U)		
3,3'-Dichlorobenzidine (µg/L)	10.1(U)		
3-Nitroaniline (µg/L)	10.1(U)		
4-Bromophenylphenylether (µg/L)	10.1(U)		
4-Chloro-3-methylphenol (µg/L)	10.1(U)		
4-Chloroaniline (µg/L)	10.1(U)		
4-Chlorophenylphenylether (µg/L)	10.1(U)		

Table 24. Results for Location OW06A

Parameter (unit)	1/8/2000	6/24/2010	10/25/2010
4-Nitroaniline (µg/L)	10.1(U)		
4-Nitrophenol (µg/L)	10.1(U)		
Benzoic Acid (µg/L)	20.2(U)		
bis(2-Chloroethoxy)methane (µg/L)	10.1(U)		
bis(2-Chloroethyl) ether (µg/L)	10.1(U)		
bis(2-Chloroisopropyl)ether (µg/L)	10.1(U)		
bis(2-Ethylhexyl)phthalate (µg/L)	10.1(U)		
Butylbenzylphthalate (µg/L)	10.1(U)		
Carbazole (µg/L)	10.1(U)		
Dibenzofuran (µg/L)	10.1(U)		
Diethylphthalate (µg/L)	10.1(U)		
Dimethylphthalate (µg/L)	10.1(U)		
Di-n-butylphthalate (µg/L)	10.1(U)		
Di-n-octylphthalate (µg/L)	10.1(U)		
Diphenylamine (µg/L)	10.1(U)		
Hexachlorobenzene (µg/L)	10.1(U)		
Hexachlorobutadiene (µg/L)	10.1(U)		
Hexachlorocyclopentadiene (µg/L)	10.1(U)		
Hexachloroethane (µg/L)	10.1(U)		
Isophorone (µg/L)	10.1(U)		
m,p-Cresols (µg/L)	10.1(U)		
N-Nitroso-di-n-propylamine (µg/L)	10.1(U)		
o-Cresol (µg/L)	10.1(U)		
Pentachlorophenol (µg/L)	10.1(U)		
Phenol (µg/L)	10.1(U)		
Explosives			
1,3,5-Trinitrobenzene (µg/L)	0.1(U)		
2,4,6-Trinitrotoluene (µg/L)	0.1(U)		
2,4-Dinitrotoluene (µg/L)	0.1(U)		
2,6-Dinitrotoluene (µg/L)	0.1(U)		
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)		
2-Nitrotoluene (µg/L)	0.1(U)		
3-Dinitrobenzene (µg/L)	0.1(U)		
3-Nitrotoluene (µg/L)	0.1(U)		
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)		
4-Nitrotoluene (µg/L)	0.1(U)		
HMX (µg/L)	0.1(U)		
Nitrobenzene (µg/L)	0.1(U)		
RDX (µg/L)	0.1(U)		
Tetryl (µg/L)	0.1(U)		
Metals			
Aluminum (µg/L)	39.1(B)		
Aluminum, Dissolved (µg/L)	6.49(U)		
Antimony (µg/L)	28.2		
Antimony, Dissolved (µg/L)	1.96(U)		
Arsenic (µg/L)	11.8(B)		
Arsenic, Dissolved (µg/L)	9.01(B)		
Barium (µg/L)	9.93		
Barium, Dissolved (µg/L)	9.88		
Beryllium (µg/L)	0.17(U)		
Beryllium, Dissolved (µg/L)	0.2(B)		
Boron (µg/L)	1120		
Boron, Dissolved (µg/L)	998		
Cadmium (µg/L)	0.31(B)		
Cadmium, Dissolved (µg/L)	0.23(U)		
Calcium (µg/L)	157000		
Calcium, Dissolved (µg/L)	125000		

Table 24. Results for Location OW06A

Parameter (unit)	1/8/2000	6/24/2010	10/25/2010
Chromium (µg/L)	0.93(B)		
Chromium, Dissolved (µg/L)	0.61(U)		
Cobalt (µg/L)	0.67(U)		
Cobalt, Dissolved (µg/L)	0.67(U)		
Copper (µg/L)	16.5		
Copper, Dissolved (µg/L)	9.18		
Iron (µg/L)	229		
Iron, Dissolved (µg/L)	29.3(B)		
Lead (µg/L)	0.05(U)		
Lead, Dissolved (µg/L)	0.05(U)		
Lithium (µg/L)	121		
Lithium, Dissolved (µg/L)	89.3		
Magnesium (µg/L)	157000		
Magnesium, Dissolved (µg/L)	140000		
Manganese (µg/L)	128		
Manganese, Dissolved (µg/L)	83.1		
Mercury (µg/L)	0.04(U)		
Mercury, Dissolved (µg/L)	0.04(U)		
Nickel (µg/L)	10.5		
Nickel, Dissolved (µg/L)	12.6		
Potassium (µg/L)	11800		
Potassium, Dissolved (µg/L)	10900		
Selenium (µg/L)	2.03(B)		
Selenium, Dissolved (µg/L)	2.96(B)		
Silver (µg/L)	0.07(U)		
Silver, Dissolved (µg/L)	1(B)		
Sodium (µg/L)	142000		
Sodium, Dissolved (µg/L)	123000		
Thallium (µg/L)	0.13(U)		
Thallium, Dissolved (µg/L)	0.13(U)		
Vanadium (µg/L)	0.63(U)		
Vanadium, Dissolved (µg/L)	0.63(U)		
Zinc (µg/L)	13		
Zinc, Dissolved (µg/L)	6.3		
Polycyclic Aromatic Hydrocarbons			
Acenaphthene (µg/L)	10.1(U)		
Acenaphthylene (µg/L)	10.1(U)		
Anthracene (µg/L)	10.1(U)		
Benzo(a)anthracene (µg/L)	10.1(U)		
Benzo(a)pyrene (µg/L)	10.1(U)		
Benzo(b)fluoranthene (µg/L)	10.1(U)		
Benzo(ghi)perylene (µg/L)	10.1(U)		
Benzo(k)fluoranthene (µg/L)	10.1(U)		
Chrysene (µg/L)	10.1(U)		
Dibenzo(a,h)anthracene (µg/L)	10.1(U)		
Fluoranthene (µg/L)	10.1(U)		
Fluorene (µg/L)	10.1(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	10.1(U)		
Naphthalene (µg/L)	10.1(U)		
Phenanthrene (µg/L)	10.1(U)		
Pyrene (µg/L)	10.1(U)		
PCBs			
Aroclor-1016 (µg/L)	0.11(U)		
Aroclor-1221 (µg/L)	0.11(U)		
Aroclor-1232 (µg/L)	0.11(U)		
Aroclor-1242 (µg/L)	0.11(U)		
Aroclor-1248 (µg/L)	0.11(U)		

Table 24. Results for Location OW06A

Parameter (unit)	1/8/2000	6/24/2010	10/25/2010
Aroclor-1254 (µg/L)	0.11(U)		
Aroclor-1260 (µg/L)	0.11(U)		
Pesticides			
4,4'-DDD (µg/L)	0.04(U)		
4,4'-DDE (µg/L)	0.04(U)		
4,4'-DDT (µg/L)	0.04(U)		
Aldrin (µg/L)	0.02(U)		
alpha-BHC (µg/L)	0.02(U)		
alpha-Chlordane (µg/L)	0.02(U)		
beta-BHC (µg/L)	0.02(U)		
delta-BHC (µg/L)	0.02(U)		
Dieldrin (µg/L)	0.04(U)		
Endosulfan I (µg/L)	0.02(U)		
Endosulfan II (µg/L)	0.04(U)		
Endosulfan sulfate (µg/L)	0.04(U)		
Endrin (µg/L)	0.04(U)		
Endrin aldehyde (µg/L)	0.04(U)		
Endrin ketone (µg/L)	0.04(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)		
gamma-Chlordane (µg/L)	0.02(U)		
Heptachlor (µg/L)	0.02(U)		
Heptachlor epoxide (µg/L)	0.02(U)		
Methoxychlor (µg/L)	0.2(U)		
Toxaphene (µg/L)	1(U)		
Radiological Compounds			
Alpha (pCi/L)	0.87(U)		
Beta (pCi/L)	13.8		
Radium-226 (pCi/L)	0.33(U)	0.09(U)	0.19
Radium-228 (pCi/L)		0.05(U)	0.8
Thorium-228 (pCi/L)	0.05(U)	0.25	-0.1(U)
Thorium-230 (pCi/L)	0.03(U)	0.1(U)	0.34(U)
Thorium-232 (pCi/L)	-0.01(U)	0.16	0.29(J)
Total Thorium (pCi/L)		0.51*	
Total Uranium (µg/L)	1.93		3.11*
Total Uranium (pCi/L)		0.58*	
Uranium-233/234 (pCi/L)	1		
Uranium-234 (pCi/L)		0.38(R)	1.04(J)
Uranium-235 (pCi/L)		0.09	0.35(U)
Uranium-235/236 (pCi/L)	0.07(J)		
Uranium-238 (pCi/L)	0.63	0.11(R)	0.97

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.

Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 25. Results for Location OW06B

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/8/2000	7/21/2000	5/9/2001	5/21/2002	5/16/2003	4/29/2004	5/25/2005	5/17/2006	6/11/2007	6/16/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/25/2010
Volatile Organic Compounds																				
1,1,1-Trichloroethane (µg/L)				1(U)				1(U)												
1,1,2,2-Tetrachloroethane (µg/L)				1(U)				1(U)												
1,1,2-Trichloroethane (µg/L)				1(U)				1(U)												
1,1-Dichloroethane (µg/L)				1(U)				1(U)												
1,1-Dichloroethene (µg/L)				1(U)				1(U)												
1,2-Dichloroethane (µg/L)				1(U)				1(U)												
1,2-Dichloropropane (µg/L)				1(U)				1(U)												
2-Butanone (µg/L)				2.4(J)				5(U)												
2-Hexanone (µg/L)				5(U)				5(U)												
4-Methyl-2-pentanone (µg/L)				5(U)				5(U)												
Acetone (µg/L)				5(U)				5(U)												
Benzene (µg/L)				1(U)				1(U)												
Bromodichloromethane (µg/L)				1(U)				1(U)												
Bromoform (µg/L)				1(U)				1(U)												
Bromomethane (µg/L)				1(U)				1(U)												
Carbon disulfide (µg/L)				5(U)				5(U)												
Carbon tetrachloride (µg/L)				1(U)				1(U)												
Chlorobenzene (µg/L)				1(U)				1(U)												
Chloroethane (µg/L)				1(U)				1(U)												
Chloroform (µg/L)				1(U)				1(U)												
Chloromethane (µg/L)				1(U)				1(U)												
cis-1,2-Dichloroethylene (µg/L)				1(U)				1(U)												
cis-1,3-Dichloropropylene (µg/L)				1(U)				1(U)												
Dibromochloromethane (µg/L)								1(U)												
Ethylbenzene (µg/L)				1(U)				1(U)												
Methylene chloride (µg/L)				5(U)				5(U)												
Styrene (µg/L)				1(U)				1(U)												
Tetrachloroethylene (µg/L)				1(U)				1(U)												
Toluene (µg/L)				1(U)				1(U)												
trans-1,2-Dichloroethylene (µg/L)				1(U)				1(U)												
trans-1,3-Dichloropropylene (µg/L)				1(U)				1(U)												
Trichloroethylene (µg/L)				1(U)				1(U)												
Vinyl chloride (µg/L)				1(U)				1(U)												
Xylenes (total) (µg/L)				3(U)				1(U)												
Semi-Volatile Organic Compounds																				
1,2,4-Trichlorobenzene (µg/L)				10(U)				9.71(U)												
1,2-Dichlorobenzene (µg/L)				10(U)				9.71(U)												
1,3-Dichlorobenzene (µg/L)				10(U)				9.71(U)												
1,4-Dichlorobenzene (µg/L)				10(U)				9.71(U)												
2,4,5-Trichlorophenol (µg/L)				10(U)				9.71(U)												
2,4,6-Trichlorophenol (µg/L)				10(U)				9.71(U)												
2,4-Dichlorophenol (µg/L)				10(U)				9.71(U)												
2,4-Dimethylphenol (µg/L)				10(U)				9.71(U)												
2,4-Dinitrophenol (µg/L)				20(U)				19.4(U)												
2-Chloronaphthalene (µg/L)				10(U)				0.97(U)												
2-Chlorophenol (µg/L)				10(U)				9.71(U)												
2-Methyl-4,6-dinitrophenol (µg/L)				10(U)				9.71(U)												
2-Methylnaphthalene (µg/L)				10(U)				0.97(U)												
2-Nitroaniline (µg/L)				10(U)				9.71(U)												
2-Nitrophenol (µg/L)				10(U)				9.71(U)												
3,3'-Dichlorobenzidine (µg/L)				10(U)				9.71(U)												
3-Nitroaniline (µg/L)				10(U)				9.71(U)												
4-Bromophenylphenylether (µg/L)				10(U)				9.71(U)												
4-Chloro-3-methylphenol (µg/L)				10(U)				9.71(U)												
4-Chloroaniline (µg/L)				10(U)				9.71(U)												
4-Chlorophenylphenylether (µg/L)				10(U)				9.71(U)												

Table 25. Results for Location OW06B

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/8/2000	7/21/2000	5/9/2001	5/21/2002	5/16/2003	4/29/2004	5/25/2005	5/17/2006	6/11/2007	6/16/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/25/2010
4-Nitroaniline (µg/L)				10(U)				9.71(U)												
4-Nitrophenol (µg/L)				10(U)				9.71(U)												
Benzoic Acid (µg/L)				20(U)																
bis(2-Chloroethoxy)methane (µg/L)				10(U)				9.71(U)												
bis(2-Chloroethyl) ether (µg/L)				10(U)				9.71(U)												
bis(2-Chloroisopropyl)ether (µg/L)				10(U)				9.71(U)												
bis(2-Ethylhexyl)phthalate (µg/L)				10(U)				9.5(U)												
Butylbenzylphthalate (µg/L)				10(U)				9.71(U)												
Carbazole (µg/L)				10(U)				9.71(U)												
Dibenzofuran (µg/L)				10(U)				9.71(U)												
Diethylphthalate (µg/L)				10(U)				9.71(U)												
Dimethylphthalate (µg/L)				10(U)				9.71(U)												
Di-n-butylphthalate (µg/L)				10(U)				9.71(U)												
Di-n-octylphthalate (µg/L)				10(U)				9.71(U)												
Diphenylamine (µg/L)				10(U)																
Hexachlorobenzene (µg/L)				10(U)				9.71(U)												
Hexachlorobutadiene (µg/L)				10(U)				9.71(U)												
Hexachlorocyclopentadiene (µg/L)				10(U)				9.71(U)												
Hexachloroethane (µg/L)				10(U)				9.71(U)												
Isophorone (µg/L)				10(U)				9.71(U)												
m,p-Cresols (µg/L)				10(U)				9.71(U)												
N-Nitroso-di-n-propylamine (µg/L)				10(U)				9.71(U)												
N-Nitrosodiphenylamine (µg/L)								9.71(U)												
o-Cresol (µg/L)				10(U)				9.71(U)												
Pentachlorophenol (µg/L)				10(U)				9.71(U)												
Phenol (µg/L)				10(U)				9.71(U)												
General Chemistry																				
Alkalinity (µg/L)	685000	655000	660000		650000	557000	576000	586000	592000	583000	610000		580000	560000	330000		550000			
Bicarbonate Alkalinity (µg/L)	685000	655000	805000		650000	557000	576000	585000	591000	583000	610000									
Carbonate (µg/L)	4000(U)	4000(U)	1000(U)		1000(U)	1000(U)	<5000													
Carbonate Alkalinity (µg/L)								1700(U)	1530(J)	0(U)	5000(U)									
Chloride (µg/L)	50500	29900	30700		31000	29800	26900	27300	29100	27900	32100(J)	32200	33000	34300	35000		41000			
Fluoride (µg/L)		250(U)						308				370(J)	277	272	30(U)		170(U)			
Methane (µg/L)								14(U)												
Nitrate (µg/L)	130	250(U)	100(U)		100(U)	50(U)	37	34.1(U)	0(U)	31	73	330	194	33(U)	24(U)		78(U)			
Nitrite (µg/L)	20(U)	250(U)			50(U)	20(U)	<20	54.2(U)	0(U)	0(U)	20(U)	20(U)	100(U)	33(U)	24(U)		620(J)			
Phosphate (µg/L)	50(U)	66																		
Phosphate as P, Ortho (µg/L)								238	0(U)	0(U)	500(U)		200(U)	66(U)	60(U)		130(J)			
Phosphorous, Total (µg/L)			20		30(U)	25	<50													
Solids, Total Dissolved (µg/L)	1560000	1600000	1600000		1600000	1550000	1550000	1490000	1450000	1750000	1440000		1300000	1260000			1300000			
Sulfate (µg/L)	614000	654000	700000		600000	732000	658000	571000	571000	560000	493000	557000	517000	530000	540000		540000			
Total Organic Carbon Average (µg/L)								3280												
Explosives																				
1,3,5-Trinitrobenzene (µg/L)				0.1(U)				0.1(U)												
2,4,6-Trinitrotoluene (µg/L)				0.1(U)				0.1(U)												
2,4-Dinitrotoluene (µg/L)				0.1(U)				0.1(U)												
2,6-Dinitrotoluene (µg/L)				0.1(U)				0.1(U)												
2-Amino-4,6-dinitrotoluene (µg/L)				0.1(U)				0.1(U)												
2-Nitrotoluene (µg/L)				0.1(U)				0.1(U)												
3-Dinitrobenzene (µg/L)				0.1(U)				0.1(U)												
3-Nitrotoluene (µg/L)				0.1(U)				0.1(U)												
4-Amino-2,6-dinitrotoluene (µg/L)				0.1(U)				0.1(U)												
4-Nitrotoluene (µg/L)				0.1(U)				0.1(U)												
HMX (µg/L)				0.1(U)				0.1(U)												

Table 25. Results for Location OW06B

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/8/2000	7/21/2000	5/9/2001	5/21/2002	5/16/2003	4/29/2004	5/25/2005	5/17/2006	6/11/2007	6/16/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/25/2010
Nitrobenzene (µg/L)				0.1(U)				0.1(U)												
RDX (µg/L)				0.1(U)				0.1(U)												
Tetryl (µg/L)				0.1(U)				0.1(U)												
Metals																				
Aluminum (µg/L)				6.49(U)				24.6(B)					5(U)	5(U)	0.21(U)		7.2(J)			
Aluminum, Dissolved (µg/L)				6.49(U)				48.6(B)												
Antimony (µg/L)				6.54(B)				0.18(B)					0.5(U)	0.5(U)	0.13(U)		0.89			
Antimony, Dissolved (µg/L)				2.06(B)				0.12(B)												
Arsenic (µg/L)				4.17				2.67(B)					1.5(U)	1.5(U)	0.95		0.44			
Arsenic, Dissolved (µg/L)				4.48(B)				3.17												
Barium (µg/L)				12.6				13.4					10.5	12.7	12		11			
Barium, Dissolved (µg/L)				11.9				12.9												
Beryllium (µg/L)				0.17(U)				0.18(U)					0.1(U)	0.1(U)	0.3(U)		0.12(U)			
Beryllium, Dissolved (µg/L)				0.17(U)				0.21(U)												
Boron (µg/L)				110				79.1					63.7	88	500		83(J)			
Boron, Dissolved (µg/L)				107				68.1												
Cadmium (µg/L)				0.23(U)				0.33(U)					0.11(U)	0.11(U)	0.12(U)		0.12(U)			
Cadmium, Dissolved (µg/L)				0.23(U)				0.66(U)												
Calcium (µg/L)	144000	147000	141000	162000	150000	136000	129000	134000	131000	118000(N)	118000	124000	113000	115000	130000		110000			
Calcium, Dissolved (µg/L)				150000				145000												
Chromium (µg/L)				5.31				2.22(B)					3.2(J)	2.4(J)	2.2		4.4			
Chromium, Dissolved (µg/L)				3.45(B)				1.7(U)												
Cobalt (µg/L)				1.1(B)				1.37(B)					1.4	1.6	0.12(U)		0.54(J)			
Cobalt, Dissolved (µg/L)				0.67(U)				2.41(B)												
Copper (µg/L)	1.8	2.3(U)	<5	10.9	0.05(U)	9.21	<8.3	114	5.98	3.8(J)	2.1(J)	3.3	2.5	2.5	2.2		1.2			
Copper, Dissolved (µg/L)				10.6				108												
Iron (µg/L)				42.1(B)				66(B)					1000	1320	150		88			
Iron, Dissolved (µg/L)				2(U)				5.6(U)												
Lead (µg/L)	0.9(U)	2.1	<3	0.01(U)	0.01(U)	2.55	<3	1.1(B)	2.58(J)	2.1(J)	0.49(U)	3.2	0.51(J)	0.8(J)	0.13(U)		0.29(J)			
Lead, Dissolved (µg/L)				0.01(U)				0.22(B)												
Lithium (µg/L)				95.4				75.3(E)					90.2	97.9	84		100(U)			
Lithium, Dissolved (µg/L)				97.8				87.5												
Magnesium (µg/L)	227000	226000	216000	244000	220000	203000	208000	199000	200000	175000	172000	206000(J)	174000	166000	190000		170000			
Magnesium, Dissolved (µg/L)				228000				216000												
Manganese (µg/L)				33.2				192					122	107	250		57			
Manganese, Dissolved (µg/L)				27.9				194												
Mercury (µg/L)				0.04(U)				0.1(U)					0.03(U)	0.07(U)	0.03(U)		0.03(U)			
Mercury, Dissolved (µg/L)				0.04(U)				0.1(U)												
Nickel (µg/L)				33.5				16.3					14.3	16.6	26		13			
Nickel, Dissolved (µg/L)				29.4				16.8												
Potassium (µg/L)	3950	3080	3300	3710	3600	3400	3490	3240	3030	2900	2400(J)	2730(J)	2580	3160	3100		2800			
Potassium, Dissolved (µg/L)				4230				3060												
Selenium (µg/L)				1.23(B)				0.79(B)					1(U)	1(U)	0.45(U)		0.67(J)			
Selenium, Dissolved (µg/L)				1.58(B)				0.28(U)												
Silver (µg/L)				0.17(B)				0.05(B)					0.2(U)	0.2(U)	0.08(U)		0.39(U)			
Silver, Dissolved (µg/L)				0.16(B)				0(U)												
Sodium (µg/L)	64400	71300	68300	71500	69000	68600	69900	69700	69300	62600	72100	66200(J)	63800	58300	73000		69000			
Sodium, Dissolved (µg/L)				72200				71400												
Thallium (µg/L)				0.21(B)				0.06(B)					0.3(U)	0.3(U)	0.16(U)		0.16(U)			
Thallium, Dissolved (µg/L)				0.21(B)				0.01(B)												
Vanadium (µg/L)	10.9	2.9(U)	<5	0.63(U)	0.01(U)	10(U)	<10	2.48(U)	0.61(U)	1.6(U)	1.6(U)	16(U)	3(U)	3(U)	0.48		0.43			
Vanadium, Dissolved (µg/L)				0.63(U)				2.5(U)												
Zinc (µg/L)				19.3				105					4.2(J)	4.2(J)	12		18			
Zinc, Dissolved (µg/L)				17.2				134												
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene (µg/L)				10(U)				0.5(U)												
Acenaphthylene (µg/L)				10(U)				0.5(U)												

Table 25. Results for Location OW06B

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/8/2000	7/21/2000	5/9/2001	5/21/2002	5/16/2003	4/29/2004	5/25/2005	5/17/2006	6/11/2007	6/16/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/25/2010
Anthracene (µg/L)				10(U)				0.5(U)												
Benzo(a)anthracene (µg/L)				10(U)				0.05(U)												
Benzo(a)pyrene (µg/L)				10(U)				0.05(U)												
Benzo(b)fluoranthene (µg/L)				10(U)				0.05(U)												
Benzo(ghi)perylene (µg/L)				10(U)				0.05(U)												
Benzo(k)fluoranthene (µg/L)				10(U)				0.02(U)												
Chrysene (µg/L)				10(U)				0.05(U)												
Dibenzo(a,h)anthracene (µg/L)				10(U)				0.05(U)												
Fluoranthene (µg/L)				10(U)				0.05(U)												
Fluorene (µg/L)				10(U)				0.5(U)												
Indeno(1,2,3-cd)pyrene (µg/L)				10(U)				0.05(U)												
Naphthalene (µg/L)				10(U)				0.5(U)												
Phenanthrene (µg/L)				10(U)				0.5(U)												
Pyrene (µg/L)				10(U)				0.05(U)												
PCBs																				
Aroclor-1016 (µg/L)				0.1(U)				0.1(U)												
Aroclor-1221 (µg/L)				0.1(U)				0.1(U)												
Aroclor-1232 (µg/L)				0.1(U)				0.1(U)												
Aroclor-1242 (µg/L)				0.1(U)				0.1(U)												
Aroclor-1248 (µg/L)				0.1(U)				0.1(U)												
Aroclor-1254 (µg/L)				0.1(U)				0.1(U)												
Aroclor-1260 (µg/L)				0.1(U)				0.1(U)												
Pesticides																				
4,4'-DDD (µg/L)				0.04(U)				0.04(U)												
4,4'-DDE (µg/L)				0.04(U)				0.04(U)												
4,4'-DDT (µg/L)				0.04(U)				0.04(U)												
Aldrin (µg/L)				0.02(U)				0.02(U)												
alpha-BHC (µg/L)				0.02(U)				0.02(U)												
alpha-Chlordane (µg/L)				0.02(U)				0.02(U)												
beta-BHC (µg/L)				0.02(U)				0.02(U)												
delta-BHC (µg/L)				0.02(U)				0.02(U)												
Dieldrin (µg/L)				0.04(U)				0.04(U)												
Endosulfan I (µg/L)				0.02(U)				0.02(U)												
Endosulfan II (µg/L)				0.04(U)				0.04(U)												
Endosulfan sulfate (µg/L)				0.04(U)				0.04(U)												
Endrin (µg/L)				0.04(U)				0.04(U)												
Endrin aldehyde (µg/L)				0.04(U)				0.04(U)												
Endrin ketone (µg/L)				0.04(U)				0.04(U)												
gamma-BHC (Lindane) (µg/L)				0.02(U)				0.02(U)												
gamma-Chlordane (µg/L)				0.02(U)				0.02(U)												
Heptachlor (µg/L)				0.02(U)				0.02(U)												
Heptachlor epoxide (µg/L)				0.02(U)				0.02(U)												
Methoxychlor (µg/L)				0.2(U)				0.2(U)												
Toxaphene (µg/L)				1(U)				0.98(U)												
Radiological Compounds																				
Actinium-227, Dissolved (pCi/L)								-1.41(U)												
Actinium-227, Gamma (pCi/L)								2.77(U)												
Alpha (pCi/L)				27.9				20.7												
Alpha, Dissolved (pCi/L)								21.7												
Americium-241, Dissolved (pCi/L)								3.65(U)												
Americium-241, Gamma (pCi/L)								7.32(U)												
Beta (pCi/L)				19				13.1												
Beta, Dissolved (pCi/L)								11.4												
Cesium-137, Dissolved (pCi/L)								0.86(U)												
Cesium-137, Gamma (pCi/L)								0.74(U)												
Cobalt-60, Dissolved (pCi/L)								0.46(U)												
Cobalt-60, Gamma (pCi/L)								0.41(U)												

Table 25. Results for Location OW06B

Parameter (unit)	4/29/1997	4/7/1998	6/9/1999	1/8/2000	7/21/2000	5/9/2001	5/21/2002	5/16/2003	4/29/2004	5/25/2005	5/17/2006	6/11/2007	6/16/2008	10/28/2008	5/21/2009	Fall 2009	10/26/2009	5/18/2010	6/24/2010	10/25/2010
Protactinium-231, Dissolved (pCi/L)								-47.6(U)												
Protactinium-231, Gamma (pCi/L)								48.6(U)												
Radium-226 (pCi/L)	0.09	0.19(UJ)	0.1	0.34(U)	0.02	0.49(U)	0.15(U)	-0.04(U)	0.97	0.15(U)	0.17(J)	0.23(U)	0.08	0.44	0.1(U)	0.81	0.81	0.51(U)	0.16(U)	0.33
Radium-226, Dissolved (pCi/L)								0.09(U)												
Radium-228 (pCi/L)	0.12	0.09(UJ)	1		0.33	0.89(U)	-0.04(U)	0.12(U)	2.1	0.35(U)	0.25(U)	0.99(U)	0.33(U)	1.02(J)	0.29(U)	0.33(U)	0.33(U)	1.54(U)	0.79	0.64
Radium-228, Dissolved (pCi/L)								0.17(U)												
Radium-228, Gamma (pCi/L)								5.58(U)												
Thorium-228 (pCi/L)				0.01(U)								0.2(U)	0.11(U)	0.19(U)	0.08(U)	0(U)	0(U)	0.02(U)	0.24	0.08(U)
Thorium-228, Alpha (pCi/L)								0.07(U)												
Thorium-228, Dissolved (pCi/L)								0.18(U)												
Thorium-228, Dissolved Gamma (pCi/L)								3.34(U)												
Thorium-228, Gamma (pCi/L)								0(UUI)												
Thorium-230 (pCi/L)	0.27	0.27(UJ)	0.2	-0.01(U)	0.34	0.14(U)	0.67	0.04(U)	0.79	0.06(J)	0.08(J)	0.31(U)	0.06(U)	0.03(U)	0.04(U)	0.09(U)	0.09(U)	0.09(U)	0.7	-0.11(U)
Thorium-230, Alpha (pCi/L)								0.04(U)												
Thorium-230, Dissolved (pCi/L)								0.03(U)												
Thorium-232 (pCi/L)	0.06	0.18(UJ)	U	0.01(U)	0	0.15(U)	0.05	0.01(U)	-0.02(U)	0(U)	-0.01(U)	-0.04(U)	-0.04(U)	0(U)	-0.01(U)	0(U)	0(U)	0(U)	0.1(U)	0.06(U)
Thorium-232, Alpha (pCi/L)								0.01(U)												
Thorium-232, Dissolved (pCi/L)								-0.01(U)												
Total Radium (pCi/L)			1.1*		0.35*	U *		U *	3.07*	U *	0.17*	U *	0.08*	1.46*	U *		0.81*		0.79*	
Total Thorium (pCi/L)													U *	U *	U *		U *		0.94*	
Total Uranium (µg/L)		37.3*	30.49*	37.2	9.43*	30.42*	31.18*	23.19	21.39*	22.85*	20.48*	21.37*	23.93*	20.39*	21.49*		20.75*	21.28*		28.59*
Total Uranium (pCi/L)	24.2	29*	20.4*		7.92*	24.44*	24.2*	17.61	16.48*	17.23*	16.49*	15.55*	18.2*	15.11*	16.47*		16.96*		7.79*	
Total Uranium, Dissolved (µg/L)								28.2												
Uranium-233/234 (pCi/L)				16								8.04		8.07			9.49			
Uranium-233/234, Alpha (pCi/L)								9.38												
Uranium-233/234, Dissolved (pCi/L)								12.1												
Uranium-234 (pCi/L)		16.03	10		4.7	14.45	13.4	9.38	8.93	9.4	9.4	8.04	9.82		9.41	9.49		7.73	4.31	12.3
Uranium-235 (pCi/L)		0.78	0.4		0.13	0.32(U)	0.6	0.68	0.58	0.34(J)	0.39(J)	0.54	0.57		0.25(U)	0.63		0.72	0.2(U)	0.96
Uranium-235, Dissolved (pCi/L)								3.09(U)												
Uranium-235, Gamma (pCi/L)								9.84(U)												
Uranium-235/236 (pCi/L)				0.6								0.54		0.31			0.63			
Uranium-235/236, Alpha (pCi/L)								0.68												
Uranium-235/236, Dissolved (pCi/L)								0.47												
Uranium-238 (pCi/L)		12.19	10	13	3.09	9.99	10.2	7.55	6.97	7.49	6.7	6.97	7.81	6.73	7.06	6.85	6.85	6.91	3.48	9.29
Uranium-238, Alpha (pCi/L)								7.55												
Uranium-238, Dissolved (pCi/L)								9.07												
Uranium-238, Dissolved Gamma (pCi/L)								0(UUI)												
Uranium-238, Gamma (pCi/L)								139(U)												

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; + = Duplicate sample analysis for an analyte is out of control.

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Table 26. Results for Location OW07A

Parameter (unit)	6/8/1999	10/2/2000	5/31/2003	10/27/2010
General Chemistry				
Alkalinity (µg/L)	260000			
Bicarbonate Alkalinity (µg/L)	317000			
Carbonate (µg/L)	1000(U)			
Chloride (µg/L)	42400			
Nitrate (µg/L)	200			
Phosphorous, Total (µg/L)	310			
Solids, Total Dissolved (µg/L)	1630000			
Sulfate (µg/L)	900000			
Metals				
Calcium (µg/L)	113000			
Copper (µg/L)	<5			
Lead (µg/L)	<3			
Magnesium (µg/L)	166000			
Potassium (µg/L)	8100			
Sodium (µg/L)	135000			
Vanadium (µg/L)	<5			
Radiological Compounds				
Actinium-227 (pCi/L)		14.9(U)		
Actinium-227, Dissolved (pCi/L)			-0.82(U)	
Actinium-227, Gamma (pCi/L)			-3.58(U)	
Alpha (pCi/L)		7.38	3.81(U)	
Alpha, Dissolved (pCi/L)			-1.41(U)	
Americium-241 (pCi/L)		4.47(U)		
Americium-241, Dissolved (pCi/L)			3.2(U)	
Americium-241, Gamma (pCi/L)			7.42(U)	
Beta (pCi/L)		9.86	9.21	
Beta, Dissolved (pCi/L)			9.17	
Cesium-137 (pCi/L)		4.41		
Cesium-137, Dissolved (pCi/L)			0.45(U)	
Cesium-137, Gamma (pCi/L)			0.76(U)	
Cobalt-60 (pCi/L)		0.31(U)		
Cobalt-60, Dissolved (pCi/L)			0.46(U)	
Cobalt-60, Gamma (pCi/L)			0.71(U)	
Protactinium-231 (pCi/L)		72(U)		
Protactinium-231, Dissolved (pCi/L)			33.9(U)	
Protactinium-231, Gamma (pCi/L)			-35(U)	
Radium-226 (pCi/L)	0.4	0.91	0.49(U)	0.23(U)
Radium-226, Dissolved (pCi/L)			0.19(U)	
Radium-228 (pCi/L)	U	1.82(U)	0.67(U)	0.52
Radium-228, Dissolved (pCi/L)			1.14(U)	
Radium-228, Gamma (pCi/L)			2.96(U)	
Thorium-228 (pCi/L)		3.68(U)		0.08(U)
Thorium-228, Alpha (pCi/L)			0.04(U)	
Thorium-228, Dissolved (pCi/L)		0.07(U)	-0.1(U)	
Thorium-228, Dissolved Gamma (pCi/L)		3.53(U)	0(UUI)	
Thorium-228, Gamma (pCi/L)			0(UUI)	
Thorium-230 (pCi/L)	0.8	0.08		-0.07(U)
Thorium-230, Alpha (pCi/L)			0.22(U)	
Thorium-230, Dissolved (pCi/L)			-0.03(U)	
Thorium-232 (pCi/L)	0.1	0.03(U)		0.01(U)
Thorium-232, Alpha (pCi/L)			0.05(U)	
Thorium-232, Dissolved (pCi/L)			0.02(U)	
Total Radium (pCi/L)	0.4*			
Total Uranium (µg/L)	2.47*	1.44	1.25	2.34*
Total Uranium (pCi/L)	1.9*			
Total Uranium, Dissolved (µg/L)			1.41	

Table 26. Results for Location OW07A

Parameter (unit)	6/8/1999	10/2/2000	5/31/2003	10/27/2010
Uranium-233/234 (pCi/L)		0.78		
Uranium-233/234, Alpha (pCi/L)			0.92	
Uranium-233/234, Dissolved (pCi/L)		0.54	0.52	
Uranium-234 (pCi/L)	1			1.28
Uranium-235 (pCi/L)	0.1	6.24(U)		0.08(U)
Uranium-235, Dissolved (pCi/L)		6.69(U)	-3.17(U)	
Uranium-235, Gamma (pCi/L)			3.23(U)	
Uranium-235/236 (pCi/L)		0.04(U)		
Uranium-235/236, Alpha (pCi/L)			0.05(U)	
Uranium-235/236, Dissolved (pCi/L)		0.12(U)	-0.02(U)	
Uranium-238 (pCi/L)	0.8	64.5(U)		0.76
Uranium-238, Alpha (pCi/L)			0.39	
Uranium-238, Dissolved (pCi/L)		0.5	0.18(U)	
Uranium-238, Dissolved Gamma (pCi/L)		0(U)	76.2(U)	
Uranium-238, Gamma (pCi/L)			54.3(U)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 27. Results for Location OW07B

Parameter (unit)	4/29/1997	4/7/1998	4/8/1998	7/21/2000	5/9/2001	5/13/2002	5/13/2003	5/14/2003	5/19/2003	10/27/2010
Volatile Organic Compounds										
1,1,1-Trichloroethane (µg/L)								1(U)		
1,1,2,2-Tetrachloroethane (µg/L)								1(U)		
1,1,2-Trichloroethane (µg/L)								1(U)		
1,1-Dichloroethane (µg/L)								1(U)		
1,1-Dichloroethene (µg/L)								1(U)		
1,2-Dichloroethane (µg/L)								1(U)		
1,2-Dichloropropane (µg/L)								1(U)		
2-Butanone (µg/L)								4.49(J)		
2-Hexanone (µg/L)								5(U)		
4-Methyl-2-pentanone (µg/L)								5(U)		
Acetone (µg/L)								5(U)		
Benzene (µg/L)								1(U)		
Bromodichloromethane (µg/L)								1(U)		
Bromoform (µg/L)								1(U)		
Bromomethane (µg/L)								1(U)		
Carbon disulfide (µg/L)								5(U)		
Carbon tetrachloride (µg/L)								1(U)		
Chlorobenzene (µg/L)								1(U)		
Chloroethane (µg/L)								1(U)		
Chloroform (µg/L)								1(U)		
Chloromethane (µg/L)								1(U)		
cis-1,2-Dichloroethylene (µg/L)								1(U)		
cis-1,3-Dichloropropylene (µg/L)								1(U)		
Dibromochloromethane (µg/L)								1(U)		
Ethylbenzene (µg/L)								1(U)		
Methylene chloride (µg/L)								5(U)		
Styrene (µg/L)								1(U)		
Tetrachloroethylene (µg/L)								1(U)		
Toluene (µg/L)								1(U)		
trans-1,2-Dichloroethylene (µg/L)								1(U)		
trans-1,3-Dichloropropylene (µg/L)								1(U)		
Trichloroethylene (µg/L)								1(U)		
Vinyl chloride (µg/L)								1(U)		
Xylenes (total) (µg/L)								1(U)		
Semi-Volatile Organic Compounds										
1,2,4-Trichlorobenzene (µg/L)								9.71(U)		
1,2-Dichlorobenzene (µg/L)								9.71(U)		
1,3-Dichlorobenzene (µg/L)								9.71(U)		
1,4-Dichlorobenzene (µg/L)								9.71(U)		
2,4,5-Trichlorophenol (µg/L)								9.71(U)		
2,4,6-Trichlorophenol (µg/L)								9.71(U)		
2,4-Dichlorophenol (µg/L)								9.71(U)		
2,4-Dimethylphenol (µg/L)								9.71(U)		
2,4-Dinitrophenol (µg/L)								19.4(U)		
2-Chloronaphthalene (µg/L)								0.97(U)		
2-Chlorophenol (µg/L)								9.71(U)		
2-Methyl-4,6-dinitrophenol (µg/L)								9.71(U)		
2-Methylnaphthalene (µg/L)								0.97(U)		
2-Nitroaniline (µg/L)								9.71(U)		
2-Nitrophenol (µg/L)								9.71(U)		
3,3'-Dichlorobenzidine (µg/L)								9.71(U)		
3-Nitroaniline (µg/L)								9.71(U)		
4-Bromophenylphenylether (µg/L)								9.71(U)		
4-Chloro-3-methylphenol (µg/L)								9.71(U)		
4-Chloroaniline (µg/L)								9.71(U)		
4-Chlorophenylphenylether (µg/L)								9.71(U)		

Table 27. Results for Location OW07B

Parameter (unit)	4/29/1997	4/7/1998	4/8/1998	7/21/2000	5/9/2001	5/13/2002	5/13/2003	5/14/2003	5/19/2003	10/27/2010
4-Nitroaniline (µg/L)								9.71(U)		
4-Nitrophenol (µg/L)								9.71(U)		
bis(2-Chloroethoxy)methane (µg/L)								9.71(U)		
bis(2-Chloroethyl) ether (µg/L)								9.71(U)		
bis(2-Chloroisopropyl)ether (µg/L)								9.71(U)		
bis(2-Ethylhexyl)phthalate (µg/L)								9.71(U)		
Butylbenzylphthalate (µg/L)								9.71(U)		
Carbazole (µg/L)								9.71(U)		
Dibenzofuran (µg/L)								9.71(U)		
Diethylphthalate (µg/L)								9.71(U)		
Dimethylphthalate (µg/L)								9.71(U)		
Di-n-butylphthalate (µg/L)								9.71(U)		
Di-n-octylphthalate (µg/L)								9.71(U)		
Hexachlorobenzene (µg/L)								9.71(U)		
Hexachlorobutadiene (µg/L)								9.71(U)		
Hexachlorocyclopentadiene (µg/L)								9.71(U)		
Hexachloroethane (µg/L)								9.71(U)		
Isophorone (µg/L)								9.71(U)		
m,p-Cresols (µg/L)								9.71(U)		
N-Nitroso-di-n-propylamine (µg/L)								9.71(U)		
N-Nitrosodiphenylamine (µg/L)								9.71(U)		
o-Cresol (µg/L)								9.71(U)		
Pentachlorophenol (µg/L)								9.71(U)		
Phenol (µg/L)								9.71(U)		
General Chemistry										
Alkalinity (µg/L)		427000		450000	412000	396000		36400	364000	
Bicarbonate Alkalinity (µg/L)		427000		450000	412000	396000		363000	363000	
Carbonate (µg/L)		4000(U)		1000(U)	1000(U)	<5000				
Carbonate Alkalinity (µg/L)								1450(U)	1450(U)	
Chloride (µg/L)		13800		18000	19400	15700		19500		
Fluoride (µg/L)		250(U)						305		
Methane (µg/L)								14(U)		
Nitrate (µg/L)		250(U)		100(U)	1780	62		2960		
Nitrite (µg/L)		250(U)		50(U)	20(U)	<20		54.2(U)		
Phosphate (µg/L)		50(U)								
Phosphate as P, Ortho (µg/L)								151(U)		
Phosphorous, Total (µg/L)				40	20(U)	<500				
Solids, Total Dissolved (µg/L)		1500000		1700000	1550000	1640000		1660000	1660000	
Sulfate (µg/L)		713000		700000	850000	821000		773000		
Total Organic Carbon Average (µg/L)								2200		
Explosives										
1,3,5-Trinitrobenzene (µg/L)								0.1(U)		
2,4,6-Trinitrotoluene (µg/L)								0.1(U)		
2,4-Dinitrotoluene (µg/L)								0.1(U)		
2,6-Dinitrotoluene (µg/L)								0.1(U)		
2-Amino-4,6-dinitrotoluene (µg/L)								0.1(U)		
2-Nitrotoluene (µg/L)								0.1(U)		
3-Dinitrobenzene (µg/L)								0.1(U)		
3-Nitrotoluene (µg/L)								0.1(U)		
4-Amino-2,6-dinitrotoluene (µg/L)								0.1(U)		
4-Nitrotoluene (µg/L)								0.1(U)		
HMX (µg/L)								0.1(U)		
Nitrobenzene (µg/L)								0.1(U)		
RDX (µg/L)								0.1(U)		

Table 27. Results for Location OW07B

Parameter (unit)	4/29/1997	4/7/1998	4/8/1998	7/21/2000	5/9/2001	5/13/2002	5/13/2003	5/14/2003	5/19/2003	10/27/2010
Tetryl (µg/L)								0.1(U)		
Metals										
Aluminum (µg/L)								75.3(B)		
Aluminum, Dissolved (µg/L)								574		
Antimony (µg/L)								0.11(B)		
Antimony, Dissolved (µg/L)								0.14(B)		
Arsenic (µg/L)								4.95		
Arsenic, Dissolved (µg/L)								3.18		
Barium (µg/L)								16.2		
Barium, Dissolved (µg/L)								21.8		
Beryllium (µg/L)								0.21(U)		
Beryllium, Dissolved (µg/L)								0.21(U)		
Boron (µg/L)								157		
Boron, Dissolved (µg/L)								150		
Cadmium (µg/L)								0.66(U)		
Cadmium, Dissolved (µg/L)								0.66(U)		
Calcium (µg/L)	118000	115000		140000	135000	140000		150000		
Calcium, Dissolved (µg/L)								150000		
Chromium (µg/L)								1.7(U)		
Chromium, Dissolved (µg/L)								5.68		
Cobalt (µg/L)								1(U)		
Cobalt, Dissolved (µg/L)								1(U)		
Copper (µg/L)	11.7		4.8	0.05(U)	9.01	17.8	2.69	2.69(B)		
Copper, Dissolved (µg/L)							5.22	5.22		
Iron (µg/L)								5.6(U)		
Iron, Dissolved (µg/L)								355		
Lead (µg/L)	1.9(U)		1.2	0.01(U)	3.12	<2.8	0.12	0.12(B)		
Lead, Dissolved (µg/L)							0.92	0.92(B)		
Lithium (µg/L)								104		
Lithium, Dissolved (µg/L)								88.6		
Magnesium (µg/L)	185000	188000		220000	195000	203000	209000	209000		
Magnesium, Dissolved (µg/L)								203000		
Manganese (µg/L)								0.52(U)		
Manganese, Dissolved (µg/L)								6.1(B)		
Mercury (µg/L)								0.1(U)		
Mercury, Dissolved (µg/L)								0.1(U)		
Nickel (µg/L)								2.86(B)		
Nickel, Dissolved (µg/L)								3.99(B)		
Potassium (µg/L)	3570	2780		3400	3950	4440	3630	3630		
Potassium, Dissolved (µg/L)								3270		
Selenium (µg/L)								4.49(B)		
Selenium, Dissolved (µg/L)								3.93(B)		
Silver (µg/L)								0.01(U)		
Silver, Dissolved (µg/L)								0(B)		
Sodium (µg/L)	63700	65600		73000	74500	69500	75300	75300		
Sodium, Dissolved (µg/L)								73400		
Thallium (µg/L)								0.01(B)		
Thallium, Dissolved (µg/L)								0.01(B)		
Vanadium (µg/L)	12.3		2.9(U)	0.01(U)	10(U)	<10	2.48(U)	2.5(U)		
Vanadium, Dissolved (µg/L)							2.48(U)	2.5(U)		
Zinc (µg/L)								7.39		
Zinc, Dissolved (µg/L)								22.7		
Polycyclic Aromatic Hydrocarbons										
Acenaphthene (µg/L)								0.57(U)		
Acenaphthylene (µg/L)								0.57(U)		
Anthracene (µg/L)								0.57(U)		
Benzo(a)anthracene (µg/L)								0.06(U)		

Table 27. Results for Location OW07B

Parameter (unit)	4/29/1997	4/7/1998	4/8/1998	7/21/2000	5/9/2001	5/13/2002	5/13/2003	5/14/2003	5/19/2003	10/27/2010
Benzo(a)pyrene (µg/L)								0.06(U)		
Benzo(b)fluoranthene (µg/L)								0.06(U)		
Benzo(ghi)perylene (µg/L)								0.06(U)		
Benzo(k)fluoranthene (µg/L)								0.03(U)		
Chrysene (µg/L)								0.06(U)		
Dibenzo(a,h)anthracene (µg/L)								0.06(U)		
Fluoranthene (µg/L)								0.06(U)		
Fluorene (µg/L)								0.57(U)		
Indeno(1,2,3-cd)pyrene (µg/L)								0.06(U)		
Naphthalene (µg/L)								0.57(U)		
Phenanthrene (µg/L)								0.57(U)		
Pyrene (µg/L)								0.06(U)		
PCBs										
Aroclor-1016 (µg/L)								0.1(U)		
Aroclor-1221 (µg/L)								0.1(U)		
Aroclor-1232 (µg/L)								0.1(U)		
Aroclor-1242 (µg/L)								0.1(U)		
Aroclor-1248 (µg/L)								0.1(U)		
Aroclor-1254 (µg/L)								0.1(U)		
Aroclor-1260 (µg/L)								0.1(U)		
Pesticides										
4,4'-DDD (µg/L)								0.04(U)		
4,4'-DDE (µg/L)								0.04(U)		
4,4'-DDT (µg/L)								0.03(J)		
Aldrin (µg/L)								0.02(U)		
alpha-BHC (µg/L)								0.02(U)		
alpha-Chlordane (µg/L)								0.02(U)		
beta-BHC (µg/L)								0.02(U)		
delta-BHC (µg/L)								0.02(U)		
Dieldrin (µg/L)								0.04(U)		
Endosulfan I (µg/L)								0.02(U)		
Endosulfan II (µg/L)								0.04(U)		
Endosulfan sulfate (µg/L)								0.04(U)		
Endrin (µg/L)								0.04(U)		
Endrin aldehyde (µg/L)								0.04(U)		
Endrin ketone (µg/L)								0.04(U)		
gamma-BHC (Lindane) (µg/L)								0.02(U)		
gamma-Chlordane (µg/L)								0.02(U)		
Heptachlor (µg/L)								0.02(U)		
Heptachlor epoxide (µg/L)								0.02(U)		
Methoxychlor (µg/L)								0.2(U)		
Toxaphene (µg/L)								0.98(U)		
Radiological Compounds										
Actinium-227, Dissolved (pCi/L)								3.08(U)		
Actinium-227, Gamma (pCi/L)								-9.92(U)		
Alpha (pCi/L)								12.9		
Alpha, Dissolved (pCi/L)								16.3		
Americium-241, Dissolved (pCi/L)								1.73(U)		
Americium-241, Gamma (pCi/L)								-0.87(U)		
Beta (pCi/L)								6.72		
Beta, Dissolved (pCi/L)								16.9		
Cesium-137, Dissolved (pCi/L)								-0.14(U)		
Cesium-137, Gamma (pCi/L)								2.12		
Cobalt-60, Dissolved (pCi/L)								0.87(U)		
Cobalt-60, Gamma (pCi/L)								1.15(U)		
Protactinium-231, Dissolved (pCi/L)								20.3(U)		
Protactinium-231, Gamma (pCi/L)								41.8(U)		

Table 27. Results for Location OW07B

Parameter (unit)	4/29/1997	4/7/1998	4/8/1998	7/21/2000	5/9/2001	5/13/2002	5/13/2003	5/14/2003	5/19/2003	10/27/2010
Radium-226 (pCi/L)	0.05	1.29(J)		0.27	0.74	0.03	0.21(U)	0.21(U)		0.08(U)
Radium-226, Dissolved (pCi/L)							0.23(U)	0.23(U)		
Radium-228 (pCi/L)	0.11	0.09(UJ)		0.27	0.11(U)	0.86	0.92(U)	0.92(U)		0.49
Radium-228, Dissolved (pCi/L)							1.87	1.87		
Radium-228, Gamma (pCi/L)								1.87(U)		
Thorium-228 (pCi/L)										0.06(U)
Thorium-228, Alpha (pCi/L)								0.05(U)		
Thorium-228, Dissolved (pCi/L)								0.17(U)		
Thorium-228, Dissolved Gamma (pCi/L)								3.86(U)		
Thorium-228, Gamma (pCi/L)								4.9(U)		
Thorium-230 (pCi/L)	0.24	0.26(U)		0.11	0.19(U)	0.31	-0.02(U)			-0.16(U)
Thorium-230, Alpha (pCi/L)								-0.02(U)		
Thorium-230, Dissolved (pCi/L)							0.11(U)	0.11(U)		
Thorium-232 (pCi/L)	0.05	0.17(UJ)		0.02	0.07(U)	0.03	-0.01(U)			0.05
Thorium-232, Alpha (pCi/L)								-0.01(U)		
Thorium-232, Dissolved (pCi/L)							0.01(U)	0.01(U)		
Total Radium (pCi/L)				0.54*	0.74*	0.89*	U *			
Total Radium, Dissolved (pCi/L)							0.23*			
Total Uranium (µg/L)		26.25*		27.44*	30.27*	23.53*	24.46*	19.1		53.75*
Total Uranium (pCi/L)	11.3	17.03*		21.44*	23.21*	19.23*	18.5*			
Total Uranium, Dissolved (µg/L)							26.97*	19.6		
Total Uranium, Dissolved (pCi/L)							21.31*			
Uranium-233/234, Alpha (pCi/L)								9.62		
Uranium-233/234, Dissolved (pCi/L)								11.4		
Uranium-234 (pCi/L)		8.12		12.09	12.77	11.1	9.62			22.6
Uranium-234, Dissolved (pCi/L)							11.4			
Uranium-235 (pCi/L)		0.29(UJ)		0.34	0.53	0.43	0.95			1.58
Uranium-235, Dissolved (pCi/L)							1.19	-0.84(U)		
Uranium-235, Gamma (pCi/L)								12.7(U)		
Uranium-235/236, Alpha (pCi/L)								0.95		
Uranium-235/236, Dissolved (pCi/L)								1.19		
Uranium-238 (pCi/L)		8.62		9.01	9.91	7.7	7.93			17.5
Uranium-238, Alpha (pCi/L)								7.93		
Uranium-238, Dissolved (pCi/L)							8.72	8.72		
Uranium-238, Dissolved Gamma (pCi/L)								125		
Uranium-238, Gamma (pCi/L)								5.91(U)		

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 28. Results for Location OW11A

Parameter (unit)	5/31/2003	10/28/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	12.5	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	3.82(J)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	1(U)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	1(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	9.71(U)	
1,2-Dichlorobenzene (µg/L)	9.71(U)	
1,3-Dichlorobenzene (µg/L)	9.71(U)	
1,4-Dichlorobenzene (µg/L)	9.71(U)	
2,4,5-Trichlorophenol (µg/L)	9.71(U)	
2,4,6-Trichlorophenol (µg/L)	9.71(U)	
2,4-Dichlorophenol (µg/L)	9.71(U)	
2,4-Dimethylphenol (µg/L)	9.71(U)	
2,4-Dinitrophenol (µg/L)	19.4(U)	
2-Chloronaphthalene (µg/L)	0.97(U)	
2-Chlorophenol (µg/L)	9.71(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	9.71(U)	
2-Methylnaphthalene (µg/L)	0.97(U)	
2-Nitroaniline (µg/L)	9.71(U)	
2-Nitrophenol (µg/L)	9.71(U)	
3,3'-Dichlorobenzidine (µg/L)	9.71(U)	
3-Nitroaniline (µg/L)	9.71(U)	
4-Bromophenylphenylether (µg/L)	9.71(U)	
4-Chloro-3-methylphenol (µg/L)	9.71(U)	
4-Chloroaniline (µg/L)	9.71(U)	
4-Chlorophenylphenylether (µg/L)	9.71(U)	

Table 28. Results for Location OW11A

Parameter (unit)	5/31/2003	10/28/2010
4-Nitroaniline (µg/L)	9.71(U)	
4-Nitrophenol (µg/L)	9.71(U)	
bis(2-Chloroethoxy)methane (µg/L)	9.71(U)	
bis(2-Chloroethyl) ether (µg/L)	9.71(U)	
bis(2-Chloroisopropyl)ether (µg/L)	9.71(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	9.71(U)	
Butylbenzylphthalate (µg/L)	9.71(U)	
Carbazole (µg/L)	9.71(U)	
Dibenzofuran (µg/L)	9.71(U)	
Diethylphthalate (µg/L)	9.71(U)	
Dimethylphthalate (µg/L)	9.71(U)	
Di-n-butylphthalate (µg/L)	9.71(U)	
Di-n-octylphthalate (µg/L)	9.71(U)	
Hexachlorobenzene (µg/L)	9.71(U)	
Hexachlorobutadiene (µg/L)	9.71(U)	
Hexachlorocyclopentadiene (µg/L)	9.71(U)	
Hexachloroethane (µg/L)	9.71(U)	
Isophorone (µg/L)	9.71(U)	
m,p-Cresols (µg/L)	9.71(U)	
N-Nitroso-di-n-propylamine (µg/L)	9.71(U)	
N-Nitrosodiphenylamine (µg/L)	9.71(U)	
o-Cresol (µg/L)	9.71(U)	
Pentachlorophenol (µg/L)	9.71(U)	
Phenol (µg/L)	9.71(U)	
Explosives		
1,3,5-Trinitrobenzene (µg/L)	0.1(U)	
2,4,6-Trinitrotoluene (µg/L)	0.1(U)	
2,4-Dinitrotoluene (µg/L)	0.1(U)	
2,6-Dinitrotoluene (µg/L)	0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)	
2-Nitrotoluene (µg/L)	0.1(U)	
3-Dinitrobenzene (µg/L)	0.1(U)	
3-Nitrotoluene (µg/L)	0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)	
4-Nitrotoluene (µg/L)	0.1(U)	
HMX (µg/L)	0.1(U)	
Nitrobenzene (µg/L)	0.1(U)	
RDX (µg/L)	0.1(U)	
Tetryl (µg/L)	0.1(U)	
Metals		
Aluminum (µg/L)	77.8(B)	
Aluminum, Dissolved (µg/L)	24.8(B)	
Antimony (µg/L)	0.13(B)	
Antimony, Dissolved (µg/L)	0.12(B)	
Arsenic (µg/L)	18.7	
Arsenic, Dissolved (µg/L)	14.5	
Barium (µg/L)	10.2	
Barium, Dissolved (µg/L)	8.74	
Beryllium (µg/L)	0.18(U)	
Beryllium, Dissolved (µg/L)	0.18(U)	
Boron (µg/L)	800	
Boron, Dissolved (µg/L)	756	
Cadmium (µg/L)	0.33(U)	
Cadmium, Dissolved (µg/L)	0.33(U)	
Calcium (µg/L)	97700	
Calcium, Dissolved (µg/L)	79800(E)	
Chromium (µg/L)	1.1(U)	

Table 28. Results for Location OW11A

Parameter (unit)	5/31/2003	10/28/2010
Chromium, Dissolved (µg/L)	1.1(U)	
Cobalt (µg/L)	0.29(U)	
Cobalt, Dissolved (µg/L)	0.29(U)	
Copper (µg/L)	4.45(B)	
Copper, Dissolved (µg/L)	4.17(B)	
Iron (µg/L)	465	
Iron, Dissolved (µg/L)	212	
Lead (µg/L)	0.15(B)	
Lead, Dissolved (µg/L)	0(U)	
Lithium (µg/L)	91	
Lithium, Dissolved (µg/L)	78.7(N)	
Magnesium (µg/L)	123000(E)	
Magnesium, Dissolved (µg/L)	126000(E)	
Manganese (µg/L)	59.2	
Manganese, Dissolved (µg/L)	44.1	
Mercury (µg/L)	0.1(UN)	
Mercury, Dissolved (µg/L)	0.1(UN)	
Nickel (µg/L)	0.97(U)	
Nickel, Dissolved (µg/L)	0.97(U)	
Potassium (µg/L)	8740(E)	
Potassium, Dissolved (µg/L)	7840(E)	
Selenium (µg/L)	0.62(B)	
Selenium, Dissolved (µg/L)	0.6(B)	
Silver (µg/L)	0.01(B)	
Silver, Dissolved (µg/L)	0(U)	
Sodium (µg/L)	92500	
Sodium, Dissolved (µg/L)	89700	
Thallium (µg/L)	0(U)	
Thallium, Dissolved (µg/L)	0(U)	
Vanadium (µg/L)	0.23(U)	
Vanadium, Dissolved (µg/L)	0.23(U^+)	
Zinc (µg/L)	123	
Zinc, Dissolved (µg/L)	64.3	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	0.48(U)	
Acenaphthylene (µg/L)	0.48(U)	
Anthracene (µg/L)	0.48(U)	
Benzo(a)anthracene (µg/L)	0.05(U)	
Benzo(a)pyrene (µg/L)	0.05(U)	
Benzo(b)fluoranthene (µg/L)	0.05(U)	
Benzo(ghi)perylene (µg/L)	0.05(U)	
Benzo(k)fluoranthene (µg/L)	0.02(U)	
Chrysene (µg/L)	0.05(U)	
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	
Fluoranthene (µg/L)	0.05(U)	
Fluorene (µg/L)	0.48(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	
Naphthalene (µg/L)	0.48(U)	
Phenanthrene (µg/L)	0.48(U)	
Pyrene (µg/L)	0.05(U)	
PCBs		
Aroclor-1016 (µg/L)	0.1(U)	
Aroclor-1221 (µg/L)	0.1(U)	
Aroclor-1232 (µg/L)	0.1(U)	
Aroclor-1242 (µg/L)	0.1(U)	
Aroclor-1248 (µg/L)	0.1(U)	
Aroclor-1254 (µg/L)	0.1(U)	

Table 28. Results for Location OW11A

Parameter (unit)	5/31/2003	10/28/2010
Aroclor-1260 (µg/L)	0.1(U)	
Pesticides		
4,4'-DDD (µg/L)	0.04(U)	
4,4'-DDE (µg/L)	0.04(U)	
4,4'-DDT (µg/L)	0.04(U)	
Aldrin (µg/L)	0.02(U)	
alpha-BHC (µg/L)	0.02(U)	
alpha-Chlordane (µg/L)	0.02(U)	
beta-BHC (µg/L)	0.02(U)	
delta-BHC (µg/L)	0.02(U)	
Dieldrin (µg/L)	0.04(U)	
Endosulfan I (µg/L)	0.02(U)	
Endosulfan II (µg/L)	0.04(U)	
Endosulfan sulfate (µg/L)	0.04(U)	
Endrin (µg/L)	0.04(U)	
Endrin aldehyde (µg/L)	0.04(U)	
Endrin ketone (µg/L)	0.04(U)	
gamma-BHC (Lindane) (µg/L)	0.02(U)	
gamma-Chlordane (µg/L)	0.02(U)	
Heptachlor (µg/L)	0.02(U)	
Heptachlor epoxide (µg/L)	0.02(U)	
Methoxychlor (µg/L)	0.19(U)	
Toxaphene (µg/L)	0.97(U)	
Radiological Compounds		
Actinium-227, Dissolved (pCi/L)	0.56(U)	
Actinium-227, Gamma (pCi/L)	-7.61(U)	
Alpha (pCi/L)	0.88(U)	
Alpha, Dissolved (pCi/L)	0.81(U)	
Americium-241, Dissolved (pCi/L)	-3.91(U)	
Americium-241, Gamma (pCi/L)	-1.32(U)	
Beta (pCi/L)	11.5	
Beta, Dissolved (pCi/L)	9.49	
Cesium-137, Dissolved (pCi/L)	1.12(U)	
Cesium-137, Gamma (pCi/L)	-0.7(U)	
Cobalt-60, Dissolved (pCi/L)	1.54(U)	
Cobalt-60, Gamma (pCi/L)	-0.25(U)	
Protactinium-231, Dissolved (pCi/L)	-46.9(U)	
Protactinium-231, Gamma (pCi/L)	-55.4(U)	
Radium-226 (pCi/L)	0.64	0.16(U)
Radium-226, Dissolved (pCi/L)	0.16(U)	
Radium-228 (pCi/L)	0.85(U)	0.07(U)
Radium-228, Dissolved (pCi/L)	0.46(U)	
Radium-228, Gamma (pCi/L)	6.37(U)	
Thorium-228 (pCi/L)		0.06(U)
Thorium-228, Alpha (pCi/L)	0.06(U)	
Thorium-228, Dissolved (pCi/L)	0.14(U)	
Thorium-228, Dissolved Gamma (pCi/L)	4.12(U)	
Thorium-228, Gamma (pCi/L)	1.2(U)	
Thorium-230 (pCi/L)		0.16(U)
Thorium-230, Alpha (pCi/L)	0.15(U)	
Thorium-230, Dissolved (pCi/L)	0.01(U)	
Thorium-232 (pCi/L)		0.13
Thorium-232, Alpha (pCi/L)	-0.02(U)	
Thorium-232, Dissolved (pCi/L)	-0.03(U)	
Total Uranium (µg/L)	1.47	1.47*
Total Uranium, Dissolved (µg/L)	1.28	
Uranium-233/234, Alpha (pCi/L)	0.99	

Table 28. Results for Location OW11A

Parameter (unit)	5/31/2003	10/28/2010
Uranium-233/234, Dissolved (pCi/L)	0.45	
Uranium-234 (pCi/L)		1.49
Uranium-235 (pCi/L)		0.26(U)
Uranium-235, Dissolved (pCi/L)	7.59(U)	
Uranium-235, Gamma (pCi/L)	1.88(U)	
Uranium-235/236, Alpha (pCi/L)	0.01(U)	
Uranium-235/236, Dissolved (pCi/L)	0.1(U)	
Uranium-238 (pCi/L)		0.44(U)
Uranium-238, Alpha (pCi/L)	0.6	
Uranium-238, Dissolved (pCi/L)	0.42	
Uranium-238, Dissolved Gamma (pCi/L)	48.9(U)	
Uranium-238, Gamma (pCi/L)	77.1(U)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2. Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 29. Results for Location OW11B

Parameter (unit)	10/2/2000	5/14/2002	8/27/2002	5/28/2003	11/2/2004	5/26/2005	11/8/2005	5/22/2006	6/14/2007	6/18/2008	Fall 2008	10/30/2008	5/20/2009	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/28/2010
Volatile Organic Compounds																		
1,1,1-Trichloroethane (µg/L)				1(U)														
1,1,2,2-Tetrachloroethane (µg/L)				1(U)														
1,1,2-Trichloroethane (µg/L)				1(U)														
1,1-Dichloroethane (µg/L)				1(U)														
1,1-Dichloroethene (µg/L)				1(U)														
1,2-Dichloroethane (µg/L)				1(U)														
1,2-Dichloropropane (µg/L)				1(U)														
2-Butanone (µg/L)				5(U)														
2-Hexanone (µg/L)				5(U)														
4-Methyl-2-pentanone (µg/L)				5(U)														
Acetone (µg/L)				5(U)														
Benzene (µg/L)				1(U)														
Bromodichloromethane (µg/L)				1(U)														
Bromoform (µg/L)				1(U)														
Bromomethane (µg/L)				1(U)														
Carbon disulfide (µg/L)				5(U)														
Carbon tetrachloride (µg/L)				1(U)														
Chlorobenzene (µg/L)				1(U)														
Chloroethane (µg/L)				1(U)														
Chloroform (µg/L)				1(U)														
Chloromethane (µg/L)				1(U)														
cis-1,2-Dichloroethylene (µg/L)				1(U)														
cis-1,3-Dichloropropylene (µg/L)				1(U)														
Dibromochloromethane (µg/L)				1(U)														
Ethylbenzene (µg/L)				1(U)														
Methylene chloride (µg/L)				5(U)														
Styrene (µg/L)				1(U)														
Tetrachloroethylene (µg/L)				1(U)														
Toluene (µg/L)				1(U)														
trans-1,2-Dichloroethylene (µg/L)				1(U)														
trans-1,3-Dichloropropylene (µg/L)				1(U)														
Trichloroethylene (µg/L)				1(U)														
Vinyl chloride (µg/L)				1(U)														
Xylenes (total) (µg/L)				1(U)														
Semi-Volatile Organic Compounds																		
1,2,4-Trichlorobenzene (µg/L)				9.71(U)														
1,2-Dichlorobenzene (µg/L)				9.71(U)														
1,3-Dichlorobenzene (µg/L)				9.71(U)														
1,4-Dichlorobenzene (µg/L)				9.71(U)														
2,4,5-Trichlorophenol (µg/L)				9.71(U)														
2,4,6-Trichlorophenol (µg/L)				9.71(U)														
2,4-Dichlorophenol (µg/L)				9.71(U)														
2,4-Dimethylphenol (µg/L)				9.71(U)														
2,4-Dinitrophenol (µg/L)				19.4(U)														
2-Chloronaphthalene (µg/L)				0.97(U)														
2-Chlorophenol (µg/L)				9.71(U)														
2-Methyl-4,6-dinitrophenol (µg/L)				9.71(U)														
2-Methylnaphthalene (µg/L)				0.97(U)														
2-Nitroaniline (µg/L)				9.71(U)														
2-Nitrophenol (µg/L)				9.71(U)														
3,3'-Dichlorobenzidine (µg/L)				9.71(U)														
3-Nitroaniline (µg/L)				9.71(U)														
4-Bromophenylphenylether (µg/L)				9.71(U)														
4-Chloro-3-methylphenol (µg/L)				9.71(U)														
4-Chloroaniline (µg/L)				9.71(U)														
4-Chlorophenylphenylether (µg/L)				9.71(U)														

Table 29. Results for Location OW11B

Parameter (unit)	10/2/2000	5/14/2002	8/27/2002	5/28/2003	11/2/2004	5/26/2005	11/8/2005	5/22/2006	6/14/2007	6/18/2008	Fall 2008	10/30/2008	5/20/2009	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/28/2010
4-Nitroaniline (µg/L)				9.71(U)														
4-Nitrophenol (µg/L)				9.71(U)														
bis(2-Chloroethoxy)methane (µg/L)				9.71(U)														
bis(2-Chloroethyl) ether (µg/L)				9.71(U)														
bis(2-Chloroisopropyl)ether (µg/L)				9.71(U)														
bis(2-Ethylhexyl)phthalate (µg/L)				9.71(U)														
Butylbenzylphthalate (µg/L)				9.71(U)														
Carbazole (µg/L)				9.71(U)														
Dibenzofuran (µg/L)				9.71(U)														
Diethylphthalate (µg/L)				9.71(U)														
Dimethylphthalate (µg/L)				9.71(U)														
Di-n-butylphthalate (µg/L)				9.71(U)														
Di-n-octylphthalate (µg/L)				9.71(U)														
Hexachlorobenzene (µg/L)				9.71(U)														
Hexachlorobutadiene (µg/L)				9.71(U)														
Hexachlorocyclopentadiene (µg/L)				9.71(U)														
Hexachloroethane (µg/L)				9.71(U)														
Isophorone (µg/L)				9.71(U)														
m,p-Cresols (µg/L)				9.71(U)														
N-Nitroso-di-n-propylamine (µg/L)				9.71(U)														
N-Nitrosodiphenylamine (µg/L)				9.71(U)														
o-Cresol (µg/L)				9.71(U)														
Pentachlorophenol (µg/L)				9.71(U)														
Phenol (µg/L)				0.29(J)														
General Chemistry																		
Alkalinity (µg/L)										307000	340000	340000		330000		340000		
Chloride (µg/L)										15200	16100	16100		14000		15000		
Fluoride (µg/L)										293	328	328		30(U)		770		
Nitrate (µg/L)										100(U)	33(U)	33(U)		24(U)		78(U)		
Nitrite (µg/L)										100(U)	36.5(J)	36.5(J)		24(U)		310(J)		
Ortho-phosphate (µg/L)											66(U)							
Phosphate as P, Ortho (µg/L)										200(U)		66(U)		60(U)		130(U)		
Solids, Total Dissolved (µg/L)										1190000	1210000	1210000		1200000		1200000		
Sulfate (µg/L)										556000	587000	587000		570000		570000		
Explosives																		
1,3,5-Trinitrobenzene (µg/L)				0.1(U)														
2,4,6-Trinitrotoluene (µg/L)				0.1(U)														
2,4-Dinitrotoluene (µg/L)				0.1(U)														
2,6-Dinitrotoluene (µg/L)				0.1(U)														
2-Amino-4,6-dinitrotoluene (µg/L)				0.1(U)														
2-Nitrotoluene (µg/L)				0.1(U)														
3-Dinitrobenzene (µg/L)				0.1(U)														
3-Nitrotoluene (µg/L)				0.1(U)														
4-Amino-2,6-dinitrotoluene (µg/L)				0.1(U)														
4-Nitrotoluene (µg/L)				0.1(U)														
HMX (µg/L)				0.1(U)														
Nitrobenzene (µg/L)				0.1(U)														
RDX (µg/L)				0.1(U)														
Tetryl (µg/L)				0.1(U)														
Metals																		
Aluminum (µg/L)				33(U)														
Aluminum, Dissolved (µg/L)				48.7(BN[+])														
Antimony (µg/L)				0.28(U)														
Antimony, Dissolved (µg/L)				0.28(U)														
Arsenic (µg/L)				13.7(B)														
Arsenic, Dissolved (µg/L)				8.88(B)														
Barium (µg/L)				9.73														

Table 29. Results for Location OW11B

Parameter (unit)	10/2/2000	5/14/2002	8/27/2002	5/28/2003	11/2/2004	5/26/2005	11/8/2005	5/22/2006	6/14/2007	6/18/2008	Fall 2008	10/30/2008	5/20/2009	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/28/2010
Barium, Dissolved (µg/L)				9.83														
Beryllium (µg/L)				0.21(U)														
Beryllium, Dissolved (µg/L)				0.21(U)														
Boron (µg/L)				44.4(B)														
Boron, Dissolved (µg/L)				46.6(B)														
Cadmium (µg/L)				0.66(U)														
Cadmium, Dissolved (µg/L)				0.66(U)														
Calcium (µg/L)				125000														
Calcium, Dissolved (µg/L)				130000														
Chromium (µg/L)				1.7(U)														
Chromium, Dissolved (µg/L)				1.7(U)														
Cobalt (µg/L)				1(U)														
Cobalt, Dissolved (µg/L)				1(U)														
Copper (µg/L)				26.7														
Copper, Dissolved (µg/L)				107														
Iron (µg/L)				5.6(U)														
Iron, Dissolved (µg/L)				5.6(U)														
Lead (µg/L)				0.78(B)														
Lead, Dissolved (µg/L)				0.27(B)														
Lithium (µg/L)				64.2														
Lithium, Dissolved (µg/L)				65.5														
Magnesium (µg/L)				146000														
Magnesium, Dissolved (µg/L)				140000														
Manganese (µg/L)				0.52(U)														
Manganese, Dissolved (µg/L)				2.17(B)														
Mercury (µg/L)				0.1(U)														
Mercury, Dissolved (µg/L)				0.1(U)														
Nickel (µg/L)				1.6(U)														
Nickel, Dissolved (µg/L)				1.6(U)														
Potassium (µg/L)				2130														
Potassium, Dissolved (µg/L)				2240														
Selenium (µg/L)				2.28(B)														
Selenium, Dissolved (µg/L)				1.8(U)														
Silver (µg/L)				0.03(U)														
Silver, Dissolved (µg/L)				0.03(U)														
Sodium (µg/L)				41600														
Sodium, Dissolved (µg/L)				43500														
Thallium (µg/L)				0.09(B)														
Thallium, Dissolved (µg/L)				0.02(U)														
Vanadium (µg/L)				2.5(U)														
Vanadium, Dissolved (µg/L)				2.5(U)														
Zinc (µg/L)				111														
Zinc, Dissolved (µg/L)				91.4														
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene (µg/L)				0.48(U)														
Acenaphthylene (µg/L)				0.48(U)														
Anthracene (µg/L)				0.48(U)														
Benzo(a)anthracene (µg/L)				0.05(U)														
Benzo(a)pyrene (µg/L)				0.05(U)														
Benzo(b)fluoranthene (µg/L)				0.05(U)														
Benzo(ghi)perylene (µg/L)				0.05(U)														
Benzo(k)fluoranthene (µg/L)				0.02(U)														
Chrysene (µg/L)				0.05(U)														
Dibenzo(a,h)anthracene (µg/L)				0.05(U)														
Fluoranthene (µg/L)				0.05(U)														
Fluorene (µg/L)				0.48(U)														
Indeno(1,2,3-cd)pyrene (µg/L)				0.05(U)														

Table 29. Results for Location OW11B

Parameter (unit)	10/2/2000	5/14/2002	8/27/2002	5/28/2003	11/2/2004	5/26/2005	11/8/2005	5/22/2006	6/14/2007	6/18/2008	Fall 2008	10/30/2008	5/20/2009	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/28/2010
Naphthalene (µg/L)				0.48(U)														
Phenanthrene (µg/L)				0.48(U)														
Pyrene (µg/L)				0.05(U)														
PCBs																		
Aroclor-1016 (µg/L)				0.1(U)														
Aroclor-1221 (µg/L)				0.1(U)														
Aroclor-1232 (µg/L)				0.1(U)														
Aroclor-1242 (µg/L)				0.1(U)														
Aroclor-1248 (µg/L)				0.1(U)														
Aroclor-1254 (µg/L)				0.1(U)														
Aroclor-1260 (µg/L)				0.1(U)														
Pesticides																		
4,4'-DDD (µg/L)				0.04(U)														
4,4'-DDE (µg/L)				0.04(U)														
4,4'-DDT (µg/L)				0.04(U)														
Aldrin (µg/L)				0.02(U)														
alpha-BHC (µg/L)				0.02(U)														
alpha-Chlordane (µg/L)				0.02(U)														
beta-BHC (µg/L)				0.02(U)														
delta-BHC (µg/L)				0.02(U)														
Dieldrin (µg/L)				0.04(U)														
Endosulfan I (µg/L)				0.02(U)														
Endosulfan II (µg/L)				0.04(U)														
Endosulfan sulfate (µg/L)				0.04(U)														
Endrin (µg/L)				0.04(U)														
Endrin aldehyde (µg/L)				0.04(U)														
Endrin ketone (µg/L)				0.04(U)														
gamma-BHC (Lindane) (µg/L)				0.02(U)														
gamma-Chlordane (µg/L)				0.02(U)														
Heptachlor (µg/L)				0.02(U)														
Heptachlor epoxide (µg/L)				0.02(U)														
Methoxychlor (µg/L)				0.2(U)														
Toxaphene (µg/L)				0.99(U)														
Radiological Compounds																		
Actinium-227 (pCi/L)	-1.2(U)																	
Actinium-227, Dissolved (pCi/L)				3.57(U)														
Actinium-227, Gamma (pCi/L)				-10.8(U)														
Alpha (pCi/L)	127			128														
Alpha, Dissolved (pCi/L)				134														
Americium-241 (pCi/L)	-3.76(U)																	
Americium-241, Dissolved (pCi/L)				-4.69(U)														
Americium-241, Gamma (pCi/L)				-0.5(U)														
Beta (pCi/L)	59.9			101														
Beta, Dissolved (pCi/L)				115														
Cesium-137 (pCi/L)	57.1	-1.8									0.08(U)		-0.16(U)		-2.04(U)		-1.08(U)	
Cesium-137, Dissolved (pCi/L)				0.58(U)														
Cesium-137, Gamma (pCi/L)				0.26(U)														
Cobalt-60 (pCi/L)	2.72(U)																	
Cobalt-60, Dissolved (pCi/L)				-0.25(U)														
Cobalt-60, Gamma (pCi/L)				0.77(U)														
Plutonium-238 (pCi/L)											-0.01(U)		0.01(U)		-0.01(U)		0(U)	
Plutonium-239 (pCi/L)													0.03(U)		0.05(U)		-0.02(U)	
Plutonium-239/240 (pCi/L)											0(U)							
Protactinium-231 (pCi/L)	-173(U)																	
Protactinium-231, Dissolved (pCi/L)				-94.7(U)														
Protactinium-231, Gamma (pCi/L)				8.34(U)														
Radium-226 (pCi/L)	0.99	0.08		0.19(U)	2.25	-0.16(U)		0.23(J)	0.47									0.67

Table 29. Results for Location OW11B

Parameter (unit)	10/2/2000	5/14/2002	8/27/2002	5/28/2003	11/2/2004	5/26/2005	11/8/2005	5/22/2006	6/14/2007	6/18/2008	Fall 2008	10/30/2008	5/20/2009	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/28/2010
Radium-226, Dissolved (pCi/L)				0(U)	0.98			0.28(J)										
Radium-228 (pCi/L)	8.53(U)	0.25		0.52(U)	1.09(U)	0.41(U)		0.3(U)	0.27(U)									1.59
Radium-228, Dissolved (pCi/L)				0.42(U)	1.01			0.2(U)										
Radium-228, Gamma (pCi/L)				4.17(U)														
Strontium-89 (pCi/L)													-0.68(U)		-0.52(U)		-1.39(U)	
Strontium-90 (pCi/L)											-0.01(U)		1.47(U)		0.22(U)		0.49(U)	
Technetium-99 (pCi/L)											-6.72(U)							
Thorium-228 (pCi/L)	1.59(U)	0.2			0.12(U)	0.11(U)		0.04(U)	0.04(U)									0.03(U)
Thorium-228, Alpha (pCi/L)				0.08(UJ)														
Thorium-228, Dissolved (pCi/L)	0.15(U)			0.01(UJ)	0.03(U)			0(U)										
Thorium-228, Dissolved Gamma (pCi/L)	0.41(U)			0.69(U)														
Thorium-228, Gamma (pCi/L)				1.03(U)														
Thorium-230 (pCi/L)	0.14	0.83			0.05(U)	0.04(U)		0.39(J)	0.1(U)									0.11(U)
Thorium-230, Alpha (pCi/L)				0.16(UJ)														
Thorium-230, Dissolved (pCi/L)				0.3(UJ)	0.62			0.37(J)										
Thorium-232 (pCi/L)	0.02(U)	0.02			0.06(U)	-0.01(U)		0(U)	-0.01(U)									0.23
Thorium-232, Alpha (pCi/L)				0(UJ)														
Thorium-232, Dissolved (pCi/L)				0.03(UJ)	0.05(U)			0.04(U)										
Total Strontium (pCi/L)													1.01(U)		-0.14(U)		-0.52(U)	
Total Uranium (µg/L)	172			250	365					366.69*		254.85*		380.51*		359.39*	984.37*	478.8*
Total Uranium (pCi/L)		196.8*				289.6*	280.9*			253.68*		175.97*		274*		247.42*		320.6*
Total Uranium, Dissolved (%REC)			112															
Total Uranium, Dissolved (µg/L)			190	248	442													
Total Uranium, Dissolved (pCi/L)			136.31*															
Tritium (pCi/L)											164(U)							
Uranium-233/234 (pCi/L)	67.2				117				143		87.6	87.6				123		
Uranium-233/234, Alpha (pCi/L)				102														
Uranium-233/234, Dissolved (pCi/L)	93			106	164													
Uranium-234 (pCi/L)		98				143	137	121		127			137.9	137.9	123		157.2	157
Uranium-234, Dissolved (pCi/L)			68					160										
Uranium-235 (pCi/L)	8.46(U)	4.8				7.6	8.9	5.5		6.68			12.4	12.4	5.82		6.88	6.64
Uranium-235, Dissolved (pCi/L)	14.3(U)		3.31	1.66(U)				6.8										
Uranium-235, Gamma (pCi/L)				7.4(U)														
Uranium-235/236 (pCi/L)	2.72				5.63				11.3		4.27	4.27				5.82		
Uranium-235/236, Alpha (pCi/L)				10.5														
Uranium-235/236, Dissolved (pCi/L)	4.12			4.95	8.3													
Uranium-238 (pCi/L)	70.7	94			118	139	135	119	142	120	84.1	84.1	123.7	123.7	118.6	118.6	161.9	157
Uranium-238, Alpha (pCi/L)				104														
Uranium-238, Dissolved (pCi/L)	89.3		65	101	162			156										
Uranium-238, Dissolved Gamma (pCi/L)	183			0(UUI)														
Uranium-238, Gamma (pCi/L)				32(U)														

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 30. Results for Location OW12A

Parameter (unit)	10/28/2010
Radiological Compounds	
Radium-226 (pCi/L)	0.21(U)
Radium-228 (pCi/L)	0.37
Thorium-228 (pCi/L)	0.17
Thorium-230 (pCi/L)	0.19(U)
Thorium-232 (pCi/L)	0.16
Total Uranium (µg/L)	4.72*
Uranium-234 (pCi/L)	2.12
Uranium-235 (pCi/L)	0.18
Uranium-238 (pCi/L)	1.53

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 31. Results for Location OW13A

Parameter (unit)	10/1/2000	5/31/2003	10/27/2010
Radiological Compounds			
Actinium-227 (pCi/L)	-15.3(U)		
Actinium-227, Dissolved (pCi/L)		-26.6(U)	
Actinium-227, Gamma (pCi/L)		-8.07(U)	
Alpha (pCi/L)	2.48(U)	1.32(U)	
Alpha, Dissolved (pCi/L)		2.18(U)	
Americium-241 (pCi/L)	10.1(U)		
Americium-241, Dissolved (pCi/L)		-0.2(U)	
Americium-241, Gamma (pCi/L)		-1.03(U)	
Beta (pCi/L)	11.6	58.5	
Beta, Dissolved (pCi/L)		14.4	
Cesium-137 (pCi/L)	-0.3(U)		
Cesium-137, Dissolved (pCi/L)		1.07(U)	
Cesium-137, Gamma (pCi/L)		-0.33(U)	
Cobalt-60 (pCi/L)	1.35(U)		
Cobalt-60, Dissolved (pCi/L)		2(U)	
Cobalt-60, Gamma (pCi/L)		-0.8(U)	
Protactinium-231 (pCi/L)	38.9(U)		
Protactinium-231, Dissolved (pCi/L)		3.42(U)	
Protactinium-231, Gamma (pCi/L)		-26.8(U)	
Radium-226 (pCi/L)	0.18(U)	0.12(U)	0.23
Radium-226, Dissolved (pCi/L)		0.47	
Radium-228 (pCi/L)	5.26(U)	0.59(U)	0.36(U)
Radium-228, Dissolved (pCi/L)		1.36	
Radium-228, Gamma (pCi/L)		5.13(U)	
Thorium-228 (pCi/L)	0.08		0.09(U)
Thorium-228, Alpha (pCi/L)		0.07(UJ)	
Thorium-228, Dissolved (pCi/L)	0.12(U)	0.1(U)	
Thorium-228, Dissolved Gamma (pCi/L)	6.82(U)	6.24(U)	
Thorium-228, Gamma (pCi/L)		0(UUI)	
Thorium-230 (pCi/L)	0.01(U)		0.13(U)
Thorium-230, Alpha (pCi/L)		0.26(UJ)	
Thorium-230, Dissolved (pCi/L)		0(U)	
Thorium-232 (pCi/L)	0(U)		0.08(U)
Thorium-232, Alpha (pCi/L)		0.03(UJ)	
Thorium-232, Dissolved (pCi/L)		-0.01(U)	
Total Uranium (µg/L)	2.04	2.4	2.62*
Total Uranium, Dissolved (µg/L)		2.18	
Uranium-233/234 (pCi/L)	0.96		
Uranium-233/234, Alpha (pCi/L)		1.14	
Uranium-233/234, Dissolved (pCi/L)	1.19	1.43	
Uranium-234 (pCi/L)			1.46
Uranium-235 (pCi/L)	-6.97(U)		0.28(U)
Uranium-235, Dissolved (pCi/L)	3.92(U)	4.24(U)	
Uranium-235, Gamma (pCi/L)		7.2(U)	
Uranium-235/236 (pCi/L)	0.02(U)		
Uranium-235/236, Alpha (pCi/L)		0.09(U)	
Uranium-235/236, Dissolved (pCi/L)	0.05(U)	0.17(U)	
Uranium-238 (pCi/L)	91.7(U)		0.82
Uranium-238, Alpha (pCi/L)		1.24	
Uranium-238, Dissolved (pCi/L)	1.2	1.26	
Uranium-238, Dissolved Gamma (pCi/L)	38.4(U)	19.8(U)	
Uranium-238, Gamma (pCi/L)		0(UUI)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2. Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 32. Results for Location OW13B

Parameter (unit)	5/13/2003	5/14/2003	4/28/2004	5/23/2005	5/17/2006	6/11/2007	6/11/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Volatile Organic Compounds													
1,1,1-Trichloroethane (µg/L)		1(U)											
1,1,2,2-Tetrachloroethane (µg/L)		1(U)											
1,1,2-Trichloroethane (µg/L)		1(U)											
1,1-Dichloroethane (µg/L)		1(U)											
1,1-Dichloroethene (µg/L)		1(U)											
1,2-Dichloroethane (µg/L)		1(U)											
1,2-Dichloropropane (µg/L)		1(U)											
2-Butanone (µg/L)		5(U)											
2-Hexanone (µg/L)		5(U)											
4-Methyl-2-pentanone (µg/L)		5(U)											
Acetone (µg/L)		5(U)											
Benzene (µg/L)		1(U)											
Bromodichloromethane (µg/L)		1(U)											
Bromoform (µg/L)		1(U)											
Bromomethane (µg/L)		1(U)											
Carbon disulfide (µg/L)		5(U)											
Carbon tetrachloride (µg/L)		1(U)											
Chlorobenzene (µg/L)		1(U)											
Chloroethane (µg/L)		1(U)											
Chloroform (µg/L)		1(U)											
Chloromethane (µg/L)		1(U)											
cis-1,2-Dichloroethylene (µg/L)		1(U)											
cis-1,3-Dichloropropylene (µg/L)		1(U)											
Dibromochloromethane (µg/L)		1(U)											
Ethylbenzene (µg/L)		1(U)											
Methylene chloride (µg/L)		5(U)											
Styrene (µg/L)		1(U)											
Tetrachloroethylene (µg/L)		1(U)											
Toluene (µg/L)		1(U)											
trans-1,2-Dichloroethylene (µg/L)		1(U)											
trans-1,3-Dichloropropylene (µg/L)		1(U)											
Trichloroethylene (µg/L)		1(U)											
Vinyl chloride (µg/L)		1(U)											
Xylenes (total) (µg/L)		1(U)											
Semi-Volatile Organic Compounds													
1,2,4-Trichlorobenzene (µg/L)		10(U)											
1,2-Dichlorobenzene (µg/L)		10(U)											
1,3-Dichlorobenzene (µg/L)		10(U)											
1,4-Dichlorobenzene (µg/L)		10(U)											
2,4,5-Trichlorophenol (µg/L)		10(U)											
2,4,6-Trichlorophenol (µg/L)		10(U)											
2,4-Dichlorophenol (µg/L)		10(U)											
2,4-Dimethylphenol (µg/L)		10(U)											
2,4-Dinitrophenol (µg/L)		20(U)											
2-Chloronaphthalene (µg/L)		1(U)											
2-Chlorophenol (µg/L)		10(U)											
2-Methyl-4,6-dinitrophenol (µg/L)		10(U)											
2-Methylnaphthalene (µg/L)		1(U)											
2-Nitroaniline (µg/L)		10(U)											
2-Nitrophenol (µg/L)		10(U)											
3,3'-Dichlorobenzidine (µg/L)		10(U)											
3-Nitroaniline (µg/L)		10(U)											
4-Bromophenylphenylether (µg/L)		10(U)											
4-Chloro-3-methylphenol (µg/L)		10(U)											
4-Chloroaniline (µg/L)		10(U)											

Table 32. Results for Location OW13B

Parameter (unit)	5/13/2003	5/14/2003	4/28/2004	5/23/2005	5/17/2006	6/11/2007	6/11/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
4-Chlorophenylphenylether (µg/L)		10(U)											
4-Nitroaniline (µg/L)		10(U)											
4-Nitrophenol (µg/L)		10(U)											
bis(2-Chloroethoxy)methane (µg/L)		10(U)											
bis(2-Chloroethyl) ether (µg/L)		10(U)											
bis(2-Chloroisopropyl)ether (µg/L)		10(U)											
bis(2-Ethylhexyl)phthalate (µg/L)		10(U)											
Butylbenzylphthalate (µg/L)		10(U)											
Carbazole (µg/L)		10(U)											
Dibenzofuran (µg/L)		10(U)											
Diethylphthalate (µg/L)		10(U)											
Dimethylphthalate (µg/L)		10(U)											
Di-n-butylphthalate (µg/L)		10(U)											
Di-n-octylphthalate (µg/L)		10(U)											
Hexachlorobenzene (µg/L)		10(U)											
Hexachlorobutadiene (µg/L)		10(U)											
Hexachlorocyclopentadiene (µg/L)		10(U)											
Hexachloroethane (µg/L)		10(U)											
Isophorone (µg/L)		10(U)											
m,p-Cresols (µg/L)		10(U)											
N-Nitroso-di-n-propylamine (µg/L)		10(U)											
N-Nitrosodiphenylamine (µg/L)		10(U)											
o-Cresol (µg/L)		10(U)											
Pentachlorophenol (µg/L)		10(U)											
Phenol (µg/L)		10(U)											
General Chemistry													
Alkalinity (µg/L)			501000	432000	530000		502000	493000	510000		490000		
Bicarbonate Alkalinity (µg/L)			499000	432000	530000								
Carbonate Alkalinity (µg/L)			1380(U)	0(U)	5000(U)								
Chloride (µg/L)			34000	32600	42200(J)	39900	33800	34700	39000		41000		
Fluoride (µg/L)						450(J)	355	287	30(U)		170(U)		
Nitrate (µg/L)			0(U)	26	93	15(J)	100(U)	33(U)	24(U)		310(J)		
Nitrite (µg/L)			0(U)	0(U)	20(U)	20(U)	100(U)	33(U)	350		540(J)		
Phosphate as P, Ortho (µg/L)			0(U)	82(J)	500(U)		200(U)	66(U)	60(U)		130(J)		
Solids, Total Dissolved (µg/L)			1960000	1950000	2270000		2120000	2060000	2300000		2200000		
Sulfate (µg/L)			937000	93900	50000	1090000	1050000	1030000	1200000		1200000		
Explosives													
1,3,5-Trinitrobenzene (µg/L)		0.1(U)											
2,4,6-Trinitrotoluene (µg/L)		0.1(U)											
2,4-Dinitrotoluene (µg/L)		0.1(U)											
2,6-Dinitrotoluene (µg/L)		0.1(U)											
2-Amino-4,6-dinitrotoluene (µg/L)		0.1(U)											
2-Nitrotoluene (µg/L)		0.1(U)											
3-Dinitrobenzene (µg/L)		0.1(U)											
3-Nitrotoluene (µg/L)		0.1(U)											
4-Amino-2,6-dinitrotoluene (µg/L)		0.1(U)											
4-Nitrotoluene (µg/L)		0.1(U)											
HMX (µg/L)		0.1(U)											
Nitrobenzene (µg/L)		0.1(U)											
RDX (µg/L)		0.1(U)											
Tetryl (µg/L)		0.1(U)											
Metals													
Aluminum (µg/L)		297					314	81.1(J)	41		64		
Aluminum, Dissolved (µg/L)		40(B)											
Antimony (µg/L)		0.24(B)					0.5(U)	0.98(U)	0.13(U)		5.2		
Antimony, Dissolved (µg/L)		0.09(B)											
Arsenic (µg/L)		3.88					1.5(U)	1.5(U)	0.51		0.93		

Table 32. Results for Location OW13B

Parameter (unit)	5/13/2003	5/14/2003	4/28/2004	5/23/2005	5/17/2006	6/11/2007	6/11/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Arsenic, Dissolved (µg/L)		1.58(B)											
Barium (µg/L)		12.9					9.6	11	9.3		9.6		
Barium, Dissolved (µg/L)		10.1											
Beryllium (µg/L)		0.21(U)					0.1(U)	0.1(U)	0.3(U)		0.12(U)		
Beryllium, Dissolved (µg/L)		0.21(U)											
Boron (µg/L)		81.8					106	126	500				
Boron, Dissolved (µg/L)		83.6											
Cadmium (µg/L)		0.66(U)					0.11(U)	0.11(U)	0.12(U)		0.14(J)		
Cadmium, Dissolved (µg/L)		0.66(U)											
Calcium (µg/L)		172000	164000	172000	159000	179000	164000	167000	170000		170000		
Calcium, Dissolved (µg/L)		169000			193000								
Chromium (µg/L)		2.32(B)					5.5(J)	3.2	4.7		2.1		
Chromium, Dissolved (µg/L)		1.92(B)											
Cobalt (µg/L)		1(U)					0.94(J)	1.4	0.12(U)		2.4		
Cobalt, Dissolved (µg/L)		1(U)											
Copper (µg/L)		1.74(B)	3.83(J)	4.4(J)	5.8(J)	3.7	6	6.6	2.3		1.2		
Copper, Dissolved (µg/L)		1.64(U)	4.95(J)		5.8(J)								
Iron (µg/L)		176					1060	770	120		330		
Iron, Dissolved (µg/L)		5.6(U)											
Lead (µg/L)		0.98(B)	1.72(U)	0.57(U)	0.49(U)	0.49(U)	0.5(U)	0.5(U)	0.13(U)		0.13(U)		
Lead, Dissolved (µg/L)		0.39(B)	1.72(U)		0.49(U)								
Lithium (µg/L)		90.7					87.5	100	80				
Lithium, Dissolved (µg/L)		64.9											
Magnesium (µg/L)		274000	258000	247000	246000	303000(J)	258000	241000	290000		270000		
Magnesium, Dissolved (µg/L)		269000			273000								
Manganese (µg/L)		3.04(B)					13.3	27.9	3.2		180		
Manganese, Dissolved (µg/L)		0.52(U)											
Mercury (µg/L)		0.1(U)					0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Mercury, Dissolved (µg/L)		0.1(U)											
Nickel (µg/L)		1.89(B)					5.5	7.8	6.9		34		
Nickel, Dissolved (µg/L)		1.6(U)											
Potassium (µg/L)		2030	2050	1920	1670	1860(J)	2310	2430	2200		1800		
Potassium, Dissolved (µg/L)		1750			1670(J)								
Selenium (µg/L)		1.25(B)					1(U)	1(U)	0.45(U)		2.7		
Selenium, Dissolved (µg/L)		0.37(B)											
Silver (µg/L)		0.01(B)					0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Silver, Dissolved (µg/L)		0(U)											
Sodium (µg/L)		90800	88400	78500	74700	75300(J)	80200	72800	92000		83000		
Sodium, Dissolved (µg/L)		88500			83600								
Thallium (µg/L)		0.06(B)					0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Thallium, Dissolved (µg/L)		0.05(B)											
Vanadium (µg/L)		2.48(U)	0.61(U)	1.6(U)	1.6(U)	16(U)	3(U)	3(U)	0.7		0.65		
Vanadium, Dissolved (µg/L)		2.48(U)	0.61(U)		1.6(U)								
Zinc (µg/L)		15					6.3(J)	8.4(J)	5		16		
Zinc, Dissolved (µg/L)		3.74(B)											
Polycyclic Aromatic Hydrocarbons													
Acenaphthene (µg/L)		0.49(U)											
Acenaphthylene (µg/L)		0.49(U)											
Anthracene (µg/L)		0.49(U)											
Benzo(a)anthracene (µg/L)		0.05(U)											
Benzo(a)pyrene (µg/L)		0.05(U)											
Benzo(b)fluoranthene (µg/L)		0.05(U)											
Benzo(ghi)perylene (µg/L)		0.05(U)											
Benzo(k)fluoranthene (µg/L)		0.02(U)											
Chrysene (µg/L)		0.05(U)											
Dibenzo(a,h)anthracene (µg/L)		0.05(U)											
Fluoranthene (µg/L)		0.05(U)											

Table 32. Results for Location OW13B

Parameter (unit)	5/13/2003	5/14/2003	4/28/2004	5/23/2005	5/17/2006	6/11/2007	6/11/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Fluorene (µg/L)		0.49(U)											
Indeno(1,2,3-cd)pyrene (µg/L)		0.05(U)											
Naphthalene (µg/L)		0.49(U)											
Phenanthrene (µg/L)		0.49(U)											
Pyrene (µg/L)		0.05(U)											
PCBs													
Aroclor-1016 (µg/L)		0.1(U)											
Aroclor-1221 (µg/L)		0.1(U)											
Aroclor-1232 (µg/L)		0.1(U)											
Aroclor-1242 (µg/L)		0.1(U)											
Aroclor-1248 (µg/L)		0.1(U)											
Aroclor-1254 (µg/L)		0.1(U)											
Aroclor-1260 (µg/L)		0.1(U)											
Pesticides													
4,4'-DDD (µg/L)		0.04(U)											
4,4'-DDE (µg/L)		0.04(U)											
4,4'-DDT (µg/L)		0.04(U)											
Aldrin (µg/L)		0.02(U)											
alpha-BHC (µg/L)		0.02(U)											
alpha-Chlordane (µg/L)		0.02(U)											
beta-BHC (µg/L)		0.02(U)											
delta-BHC (µg/L)		0.02(U)											
Dieldrin (µg/L)		0.04(U)											
Endosulfan I (µg/L)		0.02(U)											
Endosulfan II (µg/L)		0.04(U)											
Endosulfan sulfate (µg/L)		0.04(U)											
Endrin (µg/L)		0.04(U)											
Endrin aldehyde (µg/L)		0.04(U)											
Endrin ketone (µg/L)		0.04(U)											
gamma-BHC (Lindane) (µg/L)		0.02(U)											
gamma-Chlordane (µg/L)		0.02(U)											
Heptachlor (µg/L)		0.02(U)											
Heptachlor epoxide (µg/L)		0.02(U)											
Methoxychlor (µg/L)		0.2(U)											
Toxaphene (µg/L)		0.99(U)											
Radiological Compounds													
Actinium-227, Dissolved (pCi/L)		7.06(U)											
Actinium-227, Gamma (pCi/L)		-17.6(U)											
Alpha (pCi/L)		18											
Alpha, Dissolved (pCi/L)		12.3											
Americium-241, Dissolved (pCi/L)		1.98(U)											
Americium-241, Gamma (pCi/L)		1.93(U)											
Beta (pCi/L)		7.91											
Beta, Dissolved (pCi/L)		6.76											
Cesium-137, Dissolved (pCi/L)		1.42(U)											
Cesium-137, Gamma (pCi/L)		0.36(U)											
Cobalt-60, Dissolved (pCi/L)		0.3(U)											
Cobalt-60, Gamma (pCi/L)		0.08(U)											
Protactinium-231, Dissolved (pCi/L)		68.8(U)											
Protactinium-231, Gamma (pCi/L)		-17.2(U)											
Radium-226 (pCi/L)	0.27(U)	0.27(U)	0.36(U)	0.07(U)	0.06(U)	0.16(U)	0.49	1.05	0.8(U)	0.52	0.52	0.89(J)	0.07(U)
Radium-226, Dissolved (pCi/L)	0.21(U)	0.21(U)	0.4(U)		0.1(U)								
Radium-228 (pCi/L)	0.59(U)	0.59(U)	3.75	0.51(U)	0.16(U)	1.28(U)	0.52(U)	0.33	0.91(J)	0.57(U)	0.57(U)	0.71(U)	0.44
Radium-228, Dissolved (pCi/L)	0.59(U)	0.59(U)	2.28		0.24(U)								
Radium-228, Gamma (pCi/L)		2.71(U)											
Thorium-228 (pCi/L)						-0.05(U)	0.31	-0.03(U)	-0.01(U)	0.1(U)	0.1(U)	0.02(U)	-0.04(U)
Thorium-228, Alpha (pCi/L)		-0.03(U)											

Table 32. Results for Location OW13B

Parameter (unit)	5/13/2003	5/14/2003	4/28/2004	5/23/2005	5/17/2006	6/11/2007	6/11/2008	10/28/2008	5/21/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Thorium-228, Dissolved (pCi/L)		0.12(U)											
Thorium-228, Dissolved Gamma (pCi/L)		3.2(U)											
Thorium-228, Gamma (pCi/L)		0(UUI)											
Thorium-230 (pCi/L)	0.04(U)		-0.04(U)	0.05(J)	0.03(U)	0.1(U)	0.17	0.31	0.78	0.12(U)	0.12(U)	0.07(U)	-0.12(U)
Thorium-230, Alpha (pCi/L)		0.04(U)											
Thorium-230, Dissolved (pCi/L)	0.02(U)	0.02(U)	0.25(U)		0.04(U)								
Thorium-232 (pCi/L)	0(U)		0.07(U)	0.01(U)	0(U)	-0.04(U)	0(U)	0.06(U)	0(U)	0(U)	0(U)	0.11(J)	0.05(U)
Thorium-232, Alpha (pCi/L)		0(U)											
Thorium-232, Dissolved (pCi/L)	-0.01(U)	-0.01(U)	0.16(U)		-0.01(U)								
Total Radium (pCi/L)	U *		3.75*	U *	U *	U *	0.49*	1.38*	0.91*		0.52*		
Total Radium, Dissolved (pCi/L)	U *		2.28*		U *								
Total Thorium (pCi/L)							0.48*	0.31*	0.78*		U *		
Total Uranium (µg/L)	1.68*	23.5	28.5*	31.4*	30.22*	34.2*	28.13*	29.94*	36.35*		26.71*	28.75*	33.01*
Total Uranium (pCi/L)	1.59*		22.54*	22.82*	22.99*	25.58*	21.34*	22.87*	26.63*		19.77*		
Total Uranium, Dissolved (µg/L)	25.64*	29.2	27.48*		33.61*								
Total Uranium, Dissolved (pCi/L)	19.12*		20.78*		25.7*								
Uranium-233/234 (pCi/L)						13.8		12.5			10.44		
Uranium-233/234, Alpha (pCi/L)		0.88											
Uranium-233/234, Dissolved (pCi/L)		10.2											
Uranium-234 (pCi/L)	0.88		13.2	12.1	12.6	13.8	11.6		14.1	10.44		12.29	12.6
Uranium-234, Dissolved (pCi/L)	10.2		11.1		14.1								
Uranium-235 (pCi/L)	0.18		0.42(U)	0.42(J)	0.49(J)	0.58	0.54		0.63	0.52		0.72	0.61
Uranium-235, Dissolved (pCi/L)	0.54	4.29(U)	0.72		0.6								
Uranium-235, Gamma (pCi/L)		7.12(U)											
Uranium-235/236 (pCi/L)						0.58		0.49			0.52		
Uranium-235/236, Alpha (pCi/L)		0.18											
Uranium-235/236, Dissolved (pCi/L)		0.54											
Uranium-238 (pCi/L)	0.53		9.34	10.3	9.9	11.2	9.2	9.88	11.9	8.82	8.82	9.38	10.8
Uranium-238, Alpha (pCi/L)		0.53											
Uranium-238, Dissolved (pCi/L)	8.38	8.38	8.96		11								
Uranium-238, Dissolved Gamma (pCi/L)		3.94(U)											
Uranium-238, Gamma (pCi/L)		0(UUI)											

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.

Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; * = Duplicate sample analysis for an analyte is out of control.

Table 33. Results for Location OW15A

Parameter (unit)	6/24/2010	10/27/2010
Radiological Compounds		
Radium-226 (pCi/L)	0.26(U)	0.35
Radium-226, Dissolved (pCi/L)	0.14(U)	
Radium-228 (pCi/L)	1.43	0.9(J)
Radium-228, Dissolved (pCi/L)	0.07(U)	
Thorium-228 (pCi/L)	0.29	0.11(U)
Thorium-228, Dissolved (pCi/L)	0.19	
Thorium-230 (pCi/L)	0.43	0.17(U)
Thorium-230, Dissolved (pCi/L)	0.48	
Thorium-232 (pCi/L)	0.3	0.04(U)
Thorium-232, Dissolved (pCi/L)	0.1(U)	
Total Radium (pCi/L)	1.43*	
Total Thorium (pCi/L)	1.03*	
Total Thorium, Dissolved (pCi/L)	0.67*	
Total Uranium (µg/L)		1.27*
Total Uranium (pCi/L)	1.23*	
Total Uranium, Dissolved (pCi/L)	0.77*	
Uranium-234 (pCi/L)	0.84(J)	0.6(J)
Uranium-234, Dissolved (pCi/L)	0.49(J)	
Uranium-235 (pCi/L)	0.14	0.16
Uranium-235, Dissolved (pCi/L)	0.12	
Uranium-238 (pCi/L)	0.25(J)	0.4(J)
Uranium-238, Dissolved (pCi/L)	0.16(J)	

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 34. Results for Location OW15B

Parameter (unit)	4/29/1997	4/8/1998	6/8/1999	7/19/2000	7/20/2000	7/21/2000	9/30/2000	5/8/2001	5/20/2002	5/14/2003	4/27/2004	5/24/2005	5/25/2005	5/17/2006	6/11/2007	6/13/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/18/2010	10/27/2010
Volatile Organic Compounds																						
1,1,1-Trichloroethane (µg/L)										1(U)												
1,1,2,2-Tetrachloroethane (µg/L)										1(U)												
1,1,2-Trichloroethane (µg/L)										1(U)												
1,1-Dichloroethane (µg/L)										1(U)												
1,1-Dichloroethene (µg/L)										1(U)												
1,2-Dichloroethane (µg/L)										1(U)												
1,2-Dichloropropane (µg/L)										1(U)												
2-Butanone (µg/L)										5(U)												
2-Hexanone (µg/L)										5(U)												
4-Methyl-2-pentanone (µg/L)										5(U)												
Acetone (µg/L)										5(U)												
Benzene (µg/L)										1(U)												
Bromodichloromethane (µg/L)										1(U)												
Bromoform (µg/L)										1(U)												
Bromomethane (µg/L)										1(U)												
Carbon disulfide (µg/L)										5(U)												
Carbon tetrachloride (µg/L)										1(U)												
Chlorobenzene (µg/L)										1(U)												
Chloroethane (µg/L)										1(U)												
Chloroform (µg/L)										1(U)												
Chloromethane (µg/L)										1(U)												
cis-1,2-Dichloroethylene (µg/L)										1(U)												
cis-1,3-Dichloropropylene (µg/L)										1(U)												
Dibromochloromethane (µg/L)										1(U)												
Ethylbenzene (µg/L)										1(U)												
Methylene chloride (µg/L)										5(U)												
Styrene (µg/L)										1(U)												
Tetrachloroethylene (µg/L)										1(U)												
Toluene (µg/L)										1(U)												
trans-1,2-Dichloroethylene (µg/L)										1(U)												
trans-1,3-Dichloropropylene (µg/L)										1(U)												
Trichloroethylene (µg/L)										1(U)												
Vinyl chloride (µg/L)										1(U)												
Xylenes (total) (µg/L)										1(U)												
Semi-Volatile Organic Compounds																						
1,2,4-Trichlorobenzene (µg/L)										9.9(U)												
1,2-Dichlorobenzene (µg/L)										9.9(U)												
1,3-Dichlorobenzene (µg/L)										9.9(U)												
1,4-Dichlorobenzene (µg/L)										9.9(U)												
2,4,5-Trichlorophenol (µg/L)										9.9(U)												
2,4,6-Trichlorophenol (µg/L)										9.9(U)												
2,4-Dichlorophenol (µg/L)										9.9(U)												
2,4-Dimethylphenol (µg/L)										9.9(U)												
2,4-Dinitrophenol (µg/L)										19.8(U)												
2-Chloronaphthalene (µg/L)										0.99(U)												
2-Chlorophenol (µg/L)										9.9(U)												
2-Methyl-4,6-dinitrophenol (µg/L)										9.9(U)												
2-Methylnaphthalene (µg/L)										0.99(U)												
2-Nitroaniline (µg/L)										9.9(U)												
2-Nitrophenol (µg/L)										9.9(U)												
3,3'-Dichlorobenzidine (µg/L)										9.9(U)												
3-Nitroaniline (µg/L)										9.9(U)												
4-Bromophenylphenylether (µg/L)										9.9(U)												
4-Chloro-3-methylphenol (µg/L)										9.9(U)												
4-Chloroaniline (µg/L)										9.9(U)												
4-Chlorophenylphenylether (µg/L)										9.9(U)												

Table 34. Results for Location OW15B

Parameter (unit)	4/29/1997	4/8/1998	6/8/1999	7/19/2000	7/20/2000	7/21/2000	9/30/2000	5/8/2001	5/20/2002	5/14/2003	4/27/2004	5/24/2005	5/25/2005	5/17/2006	6/11/2007	6/13/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/18/2010	10/27/2010
4-Nitroaniline (µg/L)										9.9(U)												
4-Nitrophenol (µg/L)										9.9(U)												
bis(2-Chloroethoxy)methane (µg/L)										9.9(U)												
bis(2-Chloroethyl) ether (µg/L)										9.9(U)												
bis(2-Chloroisopropyl)ether (µg/L)										9.9(U)												
bis(2-Ethylhexyl)phthalate (µg/L)										9.9(U)												
Butylbenzylphthalate (µg/L)										9.9(U)												
Carbazole (µg/L)										9.9(U)												
Dibenzofuran (µg/L)										9.9(U)												
Diethylphthalate (µg/L)										9.9(U)												
Dimethylphthalate (µg/L)										9.9(U)												
Di-n-butylphthalate (µg/L)										9.9(U)												
Di-n-octylphthalate (µg/L)										9.9(U)												
Hexachlorobenzene (µg/L)										9.9(U)												
Hexachlorobutadiene (µg/L)										9.9(U)												
Hexachlorocyclopentadiene (µg/L)										9.9(U)												
Hexachloroethane (µg/L)										9.9(U)												
Isophorone (µg/L)										9.9(U)												
m,p-Cresols (µg/L)										9.9(U)												
N-Nitroso-di-n-propylamine (µg/L)										9.9(U)												
N-Nitrosodiphenylamine (µg/L)										9.9(U)												
o-Cresol (µg/L)										9.9(U)												
Pentachlorophenol (µg/L)										9.9(U)												
Phenol (µg/L)										9.9(U)												
General Chemistry																						
Alkalinity (µg/L)	447000	470000	420000		340000			345000	348000	332000	387000	434000		310000		315000	402000	380000		410000		
Bicarbonate Alkalinity (µg/L)	447000	470000	512000		340000			345000	348000	331000	384000	434000		310000								
Carbonate (µg/L)	4000(U)	4000(U)	1000(U)		1000(U)			1000(U)	<5000													
Carbonate Alkalinity (µg/L)										1490(U)	2930	0(U)		5000(U)								
Chloride (µg/L)	10000	10000	9100		4200			8930	9000	6450	7160	7400		4600(J)	6700	6250	9570	5600		5800		
Fluoride (µg/L)		250(U)								591					570(J)	564	479	30(U)		960		
Methane (µg/L)										14(U)												
Nitrate (µg/L)	20(U)	250(U)	200		100(U)			186	5000	1050	768	34		590	270	6810(J)	2030	1300		590(J)		
Nitrite (µg/L)	20(U)	250(U)				50(U)		20(U)	<20	54.2(U)	54.2(U)	0(U)		20(U)	20(U)	100(U)	38.5(J)	24(U)		72(J)		
Phosphate (µg/L)	92	50(U)																				
Phosphate as P, Ortho (µg/L)										151(U)	151(U)	190(J)		500(U)		200(U)	66(U)	60(U)		130(J)		
Phosphorous, Total (µg/L)			10		40			78	500													
Solids, Total Dissolved (µg/L)	1250000	1300000	1130000		590000			826000	983000	840000	919000	1140000		798000		777000	1060000	840000		900000		
Sulfate (µg/L)	135000	573000	400000		90000			240000	376000	317000	375000	491000		301000	435000	294000	484000	650000		400000		
Total Organic Carbon Average (µg/L)										2980												
Explosives																						
1,3,5-Trinitrobenzene (µg/L)										0.1(U)												
2,4,6-Trinitrotoluene (µg/L)										0.1(U)												
2,4-Dinitrotoluene (µg/L)										0.1(U)												
2,6-Dinitrotoluene (µg/L)										0.1(U)												
2-Amino-4,6-dinitrotoluene (µg/L)										0.1(U)												
2-Nitrotoluene (µg/L)										0.1(U)												
3-Dinitrobenzene (µg/L)										0.1(U)												
3-Nitrotoluene (µg/L)										0.1(U)												
4-Amino-2,6-dinitrotoluene (µg/L)										0.1(U)												
4-Nitrotoluene (µg/L)										0.1(U)												
HMX (µg/L)										0.1(U)												
Nitrobenzene (µg/L)										0.1(U)												
RDX (µg/L)										0.1(U)												

Table 34. Results for Location OW15B

Parameter (unit)	4/29/1997	4/8/1998	6/8/1999	7/19/2000	7/20/2000	7/21/2000	9/30/2000	5/8/2001	5/20/2002	5/14/2003	4/27/2004	5/24/2005	5/25/2005	5/17/2006	6/11/2007	6/13/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/18/2010	10/27/2010
Tetryl (µg/L)										0.1(U)												
Metals																						
Aluminum (µg/L)										51.5(B)						73.6	20.1	19		290		
Aluminum, Dissolved (µg/L)										35(B)												
Antimony (µg/L)										0.24(B)						0.5(U)	2(J)	0.94		0.97		
Antimony, Dissolved (µg/L)										0.18(B)												
Arsenic (µg/L)										0.9(U)						1.5(U)	1.6(J)	0.18(U)		0.79		
Arsenic, Dissolved (µg/L)										0.81(U)												
Barium (µg/L)										23.2						20.8(J)	19	21		26		
Barium, Dissolved (µg/L)										25.2												
Beryllium (µg/L)										0.21(U)						0.1(U)	0.1(U)	0.3(U)		0.12(U)		
Beryllium, Dissolved (µg/L)										0.21(U)												
Boron (µg/L)										34.8(B)						40.4	74.7	500				
Boron, Dissolved (µg/L)										34.1(B)												
Cadmium (µg/L)										0.66(U)						0.11(U)	0.33(J)	0.12(U)		0.17(J)		
Cadmium, Dissolved (µg/L)										0.66(U)												
Calcium (µg/L)	96900	115000	96400		95000			110000	112000	98000	107000	110000		88600	107000	81100	92100	110000		97000		
Calcium, Dissolved (µg/L)										101000				98500								
Chromium (µg/L)										1.7(U)						7.7	6.9	5.1		15		
Chromium, Dissolved (µg/L)										1.7(U)												
Cobalt (µg/L)										1(U)						0.43(J)	0.53(J)	0.12(U)		0.33(J)		
Cobalt, Dissolved (µg/L)										1(U)												
Copper (µg/L)	8.7	3.1	1	0.05(U)				11.6	8.3	6.69	4.76(J)	4.3(J)		4.7(J)	4.5	6.4	7.8	4.6		7.4		
Copper, Dissolved (µg/L)										8.5	4.03(J)			5.6(J)								
Iron (µg/L)										46.3(B)						474	515	20(U)		520		
Iron, Dissolved (µg/L)										5.6(U)												
Lead (µg/L)	1.2(U)	0.9	5	0.01(U)				10(U)	<3	0.46(B)	1.72(U)	0.57(U)		0.49(U)	0.49(U)	0.5(U)	0.5(U)	0.13(U)		1.5		
Lead, Dissolved (µg/L)										0.14(B)	1.72(U)			0.49(U)								
Lithium (µg/L)										34.3(B)						38	58.3	41				
Lithium, Dissolved (µg/L)										30.2												
Magnesium (µg/L)	154000	184000	141000		61000			82500	99300	88000	106000	137000		87000	124000(J)	87100	120000	120000		110000		
Magnesium, Dissolved (µg/L)										83900				109000								
Manganese (µg/L)										0.52(U)						2.2(J)	9.1	0.11(U)		11		
Manganese, Dissolved (µg/L)										0.52(U)												
Mercury (µg/L)										0.1(U)						0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Mercury, Dissolved (µg/L)										0.1(U)												
Nickel (µg/L)										2.35(B)						4.7	7.9	5.4		10		
Nickel, Dissolved (µg/L)										1.6(U)												
Potassium (µg/L)	1470	1190	1800		1600			1830	1500	1230	1440	1320		1130	1180(J)	1290	2170	1700		1300		
Potassium, Dissolved (µg/L)										1110				1200(J)								
Selenium (µg/L)										1.74(B)						1(U)	1(U)	0.45(U)		3.4		
Selenium, Dissolved (µg/L)										1.42(B)												
Silver (µg/L)										0.01(U)						0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Silver, Dissolved (µg/L)										0.01(B)												
Sodium (µg/L)	67000	76000	67400		27000			43100	43400	39900	52300	57900		38000	51100(J)	36800	62200	53000		52000		
Sodium, Dissolved (µg/L)										42600				50400								
Thallium (µg/L)										0.42(B)						0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Thallium, Dissolved (µg/L)										0.33(B)												
Vanadium (µg/L)	11.4	2.9(U)	<5	0.01(U)				10(U)	<10	2.48(U)	0.61(U)	1.6(U)		1.6(U)	16(U)	3(U)	3(U)	0.68		0.18(J)		
Vanadium, Dissolved (µg/L)										2.5(U)	0.61(U)			1.6(U)								
Zinc (µg/L)										22.5						4.3(J)	8.2(J)	6.3		21		
Zinc, Dissolved (µg/L)										9.67												
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene (µg/L)										0.48(U)												
Acenaphthylene (µg/L)										0.48(U)												
Anthracene (µg/L)										0.48(U)												
Benzo(a)anthracene (µg/L)										0.05(U)												

Table 34. Results for Location OW15B

Parameter (unit)	4/29/1997	4/8/1998	6/8/1999	7/19/2000	7/20/2000	7/21/2000	9/30/2000	5/8/2001	5/20/2002	5/14/2003	4/27/2004	5/24/2005	5/25/2005	5/17/2006	6/11/2007	6/13/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/18/2010	10/27/2010
Benzo(a)pyrene (µg/L)										0.05(U)												
Benzo(b)fluoranthene (µg/L)										0.05(U)												
Benzo(ghi)perylene (µg/L)										0.05(U)												
Benzo(k)fluoranthene (µg/L)										0.02(U)												
Chrysene (µg/L)										0.05(U)												
Dibenzo(a,h)anthracene (µg/L)										0.05(U)												
Fluoranthene (µg/L)										0.05(U)												
Fluorene (µg/L)										0.48(U)												
Indeno(1,2,3-cd)pyrene (µg/L)										0.05(U)												
Naphthalene (µg/L)										0.48(U)												
Phenanthrene (µg/L)										0.48(U)												
Pyrene (µg/L)										0.05(U)												
PCBs																						
Aroclor-1016 (µg/L)										0.1(U)												
Aroclor-1221 (µg/L)										0.1(U)												
Aroclor-1232 (µg/L)										0.1(U)												
Aroclor-1242 (µg/L)										0.1(U)												
Aroclor-1248 (µg/L)										0.1(U)												
Aroclor-1254 (µg/L)										0.1(U)												
Aroclor-1260 (µg/L)										0.1(U)												
Pesticides																						
4,4'-DDD (µg/L)										0.04(U)												
4,4'-DDE (µg/L)										0.04(U)												
4,4'-DDT (µg/L)										0.04(U)												
Aldrin (µg/L)										0.02(U)												
alpha-BHC (µg/L)										0.02(U)												
alpha-Chlordane (µg/L)										0.02(U)												
beta-BHC (µg/L)										0.02(U)												
delta-BHC (µg/L)										0.02(U)												
Dieldrin (µg/L)										0.04(U)												
Endosulfan I (µg/L)										0.02(U)												
Endosulfan II (µg/L)										0.04(U)												
Endosulfan sulfate (µg/L)										0.04(U)												
Endrin (µg/L)										0.04(U)												
Endrin aldehyde (µg/L)										0.04(U)												
Endrin ketone (µg/L)										0.04(U)												
gamma-BHC (Lindane) (µg/L)										0.02(U)												
gamma-Chlordane (µg/L)										0.02(U)												
Heptachlor (µg/L)										0.02(U)												
Heptachlor epoxide (µg/L)										0.02(U)												
Methoxychlor (µg/L)										0.2(U)												
Toxaphene (µg/L)										0.99(U)												
Radiological Compounds																						
Actinium-227 (pCi/L)							-8.92(U)															
Actinium-227, Dissolved (pCi/L)										11(U)												
Actinium-227, Gamma (pCi/L)										-6.2(U)												
Alpha (pCi/L)							6.75			6.42												
Alpha, Dissolved (pCi/L)										9.56												
Americium-241 (pCi/L)							-1.71(U)															
Americium-241, Dissolved (pCi/L)										-0.24(U)												
Americium-241, Gamma (pCi/L)										1.89(U)												
Beta (pCi/L)							4.5			4.17												
Beta, Dissolved (pCi/L)										2.82												
Cesium-137 (pCi/L)							1.71(U)															
Cesium-137, Dissolved (pCi/L)										-0.13(U)												
Cesium-137, Gamma (pCi/L)										1.04(U)												
Cobalt-60 (pCi/L)							-1.37(U)															

Table 34. Results for Location OW15B

Parameter (unit)	4/29/1997	4/8/1998	6/8/1999	7/19/2000	7/20/2000	7/21/2000	9/30/2000	5/8/2001	5/20/2002	5/14/2003	4/27/2004	5/24/2005	5/25/2005	5/17/2006	6/11/2007	6/13/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/18/2010	10/27/2010
Cobalt-60, Dissolved (pCi/L)										-0.27(U)												
Cobalt-60, Gamma (pCi/L)										0.51(U)												
Protactinium-231 (pCi/L)							8.11(U)															
Protactinium-231, Dissolved (pCi/L)										-89.6(U)												
Protactinium-231, Gamma (pCi/L)										13.7(U)												
Radium-226 (pCi/L)	0.08	0.24(J)	0.1(J)		0.27		0.2(U)	0.21(U)	0.21	0.36(U)	0.41(U)		0.18(U)	0.18(U)	0.11(U)	0.23	0.25	0.19(U)	0.73	0.73	0.66(J)	0.24
Radium-226, Dissolved (pCi/L)										0.03(U)	0.05(U)			0.18(J)								
Radium-228 (pCi/L)	0.26	0.31(UJ)	0.2(UJ)		0.79		10.8(U)	0.73(U)	0.42(U)	0.38(U)	-0.67(U)		0.7(U)	0.25(U)	0.51(U)	0.81	-0.05(U)	-0.33(U)	0.51(U)	0.51(U)	0.9(U)	0.3(U)
Radium-228, Dissolved (pCi/L)										0.55(U)	-0.52(U)			0.11(U)								
Radium-228, Gamma (pCi/L)										6.76(U)												
Thorium-228 (pCi/L)							2.77(U)								0.1(U)	0.07(U)	0.03(U)	0.07(U)	0.01(U)	0.01(U)	0.21(U)	0.06(U)
Thorium-228, Alpha (pCi/L)										0.05(U)												
Thorium-228, Dissolved (pCi/L)							0.08(U)			0(U)												
Thorium-228, Dissolved Gamma (pCi/L)							0.3(U)			1.73(U)												
Thorium-228, Gamma (pCi/L)										3.78(U)												
Thorium-230 (pCi/L)	0.64	0.6	0.8		0.11		0.03(U)	0.16(U)	0.12	0.17	0.57		0.07(J)	0.04(U)	0.2	0.18	0.01(U)	0.4(U)	0.12(U)	0.12(U)	0.12(U)	0.16(U)
Thorium-230, Alpha (pCi/L)										0.17												
Thorium-230, Dissolved (pCi/L)										0.01(U)	0.31(U)			0.06(U)								
Thorium-232 (pCi/L)	0.12	0.21(UJ)	0.1(UJ)		0.02		-0.01(U)	-0.05(U)	0.01	0.01(U)	0.15(U)		0.01(U)	0(U)	0.08(U)	0.02(U)	0.05(U)	0.07(U)	0(U)	0(U)	0.04(U)	0.06(U)
Thorium-232, Alpha (pCi/L)										0.01(U)												
Thorium-232, Dissolved (pCi/L)										0(U)	0.12(U)			0.01(U)								
Total Radium (pCi/L)			0.3*		1.06*			U *	0.21*	U *	U *		U *	U *	U *	0.81*	U *	U *		U *		
Total Radium, Dissolved (pCi/L)											U *			0.18*								
Total Thorium (pCi/L)																0.18*	U *	U *		U *		
Total Uranium (µg/L)		15.14*	1.35*		9.43*		10.3	13.77*	13.76*	9.74	15.42*		12.62*	10.42*	13.77*	9.83*	11*	10.83*		12.16*	13.98*	13.93*
Total Uranium (pCi/L)	8.69	12.24*	9.3*		7.92*			10.25*	12.13*	8.06	12.09*		10.34*	9.21*	11.37*	7.61*	8.57*	9.44*		9.64*		
Total Uranium, Dissolved (µg/L)										10.1	11.47*			10.5*								
Total Uranium, Dissolved (pCi/L)											11.61*			8.85*								
Uranium-233/234 (pCi/L)							6.51								6.46		4.66			5.63		
Uranium-233/234, Alpha (pCi/L)										4.15												
Uranium-233/234, Dissolved (pCi/L)							5.19			4.47												
Uranium-234 (pCi/L)		6.87	5		4.7			5.75	7.3	4.15	6.45		5.99	5.56	6.46	4.18		5.51	5.63		6.53	6.62
Uranium-234, Dissolved (pCi/L)											7.91			5.18								
Uranium-235 (pCi/L)		0.44	0.3		0.13		-0.06(U)	0.29(U)	0.34	0.82	0.65		0.22(J)	0.25(J)	0.43	0.22		0.42	0.15(U)		0.46	0.32
Uranium-235, Dissolved (pCi/L)							10.9(U)			6.47(U)	0.57(U)			0.24(J)								
Uranium-235, Gamma (pCi/L)										7.15(U)												
Uranium-235/236 (pCi/L)							0.33								0.43		0.28			0.15(U)		
Uranium-235/236, Alpha (pCi/L)										0.82												
Uranium-235/236, Dissolved (pCi/L)							0.16			0.32												
Uranium-238 (pCi/L)		4.93	0.4		3.09		3.62(U)	4.5	4.49	3.09	4.99		4.13	3.4	4.48	3.21	3.63	3.51	4.01	4.01	4.55	4.55
Uranium-238, Alpha (pCi/L)										3.09												
Uranium-238, Dissolved (pCi/L)							3.68			3.09	3.7			3.43								
Uranium-238, Dissolved Gamma (pCi/L)							192(U)			3.08(U)												
Uranium-238, Gamma (pCi/L)										89(U)												

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 35. Results for Location OW17A

Parameter (unit)	1/10/2000	10/27/2010
Volatile Organic Compounds		
1,1,1-Trichloroethane (µg/L)	1(U)	
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	
1,1,2-Trichloroethane (µg/L)	1(U)	
1,1-Dichloroethane (µg/L)	1(U)	
1,1-Dichloroethene (µg/L)	1(U)	
1,2-Dichloroethane (µg/L)	1(U)	
1,2-Dichloropropane (µg/L)	1(U)	
2-Butanone (µg/L)	5(U)	
2-Hexanone (µg/L)	5(U)	
4-Methyl-2-pentanone (µg/L)	5(U)	
Acetone (µg/L)	0.93(U)	
Benzene (µg/L)	1(U)	
Bromodichloromethane (µg/L)	1(U)	
Bromoform (µg/L)	1(U)	
Bromomethane (µg/L)	1(U)	
Carbon disulfide (µg/L)	5(U)	
Carbon tetrachloride (µg/L)	1(U)	
Chlorobenzene (µg/L)	1(U)	
Chloroethane (µg/L)	1(U)	
Chloroform (µg/L)	1(U)	
Chloromethane (µg/L)	1(U)	
cis-1,2-Dichloroethylene (µg/L)	1(U)	
cis-1,3-Dichloropropylene (µg/L)	1(U)	
Dibromochloromethane (µg/L)	1(U)	
Ethylbenzene (µg/L)	1(U)	
Methylene chloride (µg/L)	5(U)	
Styrene (µg/L)	1(U)	
Tetrachloroethylene (µg/L)	1(U)	
Toluene (µg/L)	0.26(J)	
trans-1,2-Dichloroethylene (µg/L)	1(U)	
trans-1,3-Dichloropropylene (µg/L)	1(U)	
Trichloroethylene (µg/L)	1(U)	
Vinyl chloride (µg/L)	1(U)	
Xylenes (total) (µg/L)	3(U)	
Semi-Volatile Organic Compounds		
1,2,4-Trichlorobenzene (µg/L)	10(U)	
1,2-Dichlorobenzene (µg/L)	10(U)	
1,3-Dichlorobenzene (µg/L)	10(U)	
1,4-Dichlorobenzene (µg/L)	10(U)	
2,4,5-Trichlorophenol (µg/L)	10(U)	
2,4,6-Trichlorophenol (µg/L)	10(U)	
2,4-Dichlorophenol (µg/L)	10(U)	
2,4-Dimethylphenol (µg/L)	10(U)	
2,4-Dinitrophenol (µg/L)	20(U)	
2-Chloronaphthalene (µg/L)	10(U)	
2-Chlorophenol (µg/L)	10(U)	
2-Methyl-4,6-dinitrophenol (µg/L)	10(U)	
2-Methylnaphthalene (µg/L)	10(U)	
2-Nitroaniline (µg/L)	10(U)	
2-Nitrophenol (µg/L)	10(U)	
3,3'-Dichlorobenzidine (µg/L)	10(U)	
3-Nitroaniline (µg/L)	10(U)	
4-Bromophenylphenylether (µg/L)	10(U)	
4-Chloro-3-methylphenol (µg/L)	10(U)	
4-Chloroaniline (µg/L)	10(U)	
4-Chlorophenylphenylether (µg/L)	10(U)	

Table 35. Results for Location OW17A

Parameter (unit)	1/10/2000	10/27/2010
4-Nitroaniline (µg/L)	10(U)	
4-Nitrophenol (µg/L)	10(U)	
Benzoic Acid (µg/L)	20(U)	
bis(2-Chloroethoxy)methane (µg/L)	10(U)	
bis(2-Chloroethyl) ether (µg/L)	10(U)	
bis(2-Chloroisopropyl)ether (µg/L)	10(U)	
bis(2-Ethylhexyl)phthalate (µg/L)	10(U)	
Butylbenzylphthalate (µg/L)	10(U)	
Carbazole (µg/L)	10(U)	
Dibenzofuran (µg/L)	10(U)	
Diethylphthalate (µg/L)	10(U)	
Dimethylphthalate (µg/L)	10(U)	
Di-n-butylphthalate (µg/L)	10(U)	
Di-n-octylphthalate (µg/L)	10(U)	
Diphenylamine (µg/L)	10(U)	
Hexachlorobenzene (µg/L)	10(U)	
Hexachlorobutadiene (µg/L)	10(U)	
Hexachlorocyclopentadiene (µg/L)	10(U)	
Hexachloroethane (µg/L)	10(U)	
Isophorone (µg/L)	10(U)	
m,p-Cresols (µg/L)	10(U)	
N-Nitroso-di-n-propylamine (µg/L)	10(U)	
o-Cresol (µg/L)	10(U)	
Pentachlorophenol (µg/L)	10(U)	
Phenol (µg/L)	10(U)	
Explosives		
1,3,5-Trinitrobenzene (µg/L)	0.1(U)	
2,4,6-Trinitrotoluene (µg/L)	0.1(U)	
2,4-Dinitrotoluene (µg/L)	0.1(U)	
2,6-Dinitrotoluene (µg/L)	0.1(U)	
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)	
2-Nitrotoluene (µg/L)	0.1(U)	
3-Dinitrobenzene (µg/L)	0.1(U)	
3-Nitrotoluene (µg/L)	0.1(U)	
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)	
4-Nitrotoluene (µg/L)	0.1(U)	
HMX (µg/L)	0.1(U)	
Nitrobenzene (µg/L)	0.1(U)	
RDX (µg/L)	0.1(U)	
Tetryl (µg/L)	0.1(U)	
Metals		
Aluminum (µg/L)	6.49(U)	
Aluminum, Dissolved (µg/L)	6.49(U)	
Antimony (µg/L)	2.76(B)	
Antimony, Dissolved (µg/L)	2.94(B)	
Arsenic (µg/L)	3.77(B)	
Arsenic, Dissolved (µg/L)	5.81(B)	
Barium (µg/L)	8.7	
Barium, Dissolved (µg/L)	9.09	
Beryllium (µg/L)	0.17(U)	
Beryllium, Dissolved (µg/L)	0.21(B)	
Boron (µg/L)	865	
Boron, Dissolved (µg/L)	899	
Cadmium (µg/L)	0.23(U)	
Cadmium, Dissolved (µg/L)	0.4(B)	
Calcium (µg/L)	202000	
Calcium, Dissolved (µg/L)	183000	

Table 35. Results for Location OW17A

Parameter (unit)	1/10/2000	10/27/2010
Chromium (µg/L)	0.73(B)	
Chromium, Dissolved (µg/L)	1.39(B)	
Cobalt (µg/L)	0.67(U)	
Cobalt, Dissolved (µg/L)	1.12(B)	
Copper (µg/L)	1(U)	
Copper, Dissolved (µg/L)	1.88(B)	
Iron (µg/L)	78.6	
Iron, Dissolved (µg/L)	34.4(B)	
Lead (µg/L)	0.05(U)	
Lead, Dissolved (µg/L)	0.05(U)	
Lithium (µg/L)	85.5	
Lithium, Dissolved (µg/L)	66.3	
Magnesium (µg/L)	223000	
Magnesium, Dissolved (µg/L)	195000	
Manganese (µg/L)	168	
Manganese, Dissolved (µg/L)	156	
Mercury (µg/L)	0.04(U)	
Mercury, Dissolved (µg/L)	0.04(U)	
Nickel (µg/L)	6.31	
Nickel, Dissolved (µg/L)	7.31	
Potassium (µg/L)	13400	
Potassium, Dissolved (µg/L)	12400	
Selenium (µg/L)	3.38(B)	
Selenium, Dissolved (µg/L)	2.14(B)	
Silver (µg/L)	0.07(U)	
Silver, Dissolved (µg/L)	0.28(B)	
Sodium (µg/L)	180000	
Sodium, Dissolved (µg/L)	202000	
Thallium (µg/L)	0.13(U)	
Thallium, Dissolved (µg/L)	0.13(U)	
Vanadium (µg/L)	0.63(U)	
Vanadium, Dissolved (µg/L)	0.63(U)	
Zinc (µg/L)	0.47(U)	
Zinc, Dissolved (µg/L)	0.47(U)	
Polycyclic Aromatic Hydrocarbons		
Acenaphthene (µg/L)	10(U)	
Acenaphthylene (µg/L)	10(U)	
Anthracene (µg/L)	10(U)	
Benzo(a)anthracene (µg/L)	10(U)	
Benzo(a)pyrene (µg/L)	10(U)	
Benzo(b)fluoranthene (µg/L)	10(U)	
Benzo(ghi)perylene (µg/L)	10(U)	
Benzo(k)fluoranthene (µg/L)	10(U)	
Chrysene (µg/L)	10(U)	
Dibenzo(a,h)anthracene (µg/L)	10(U)	
Fluoranthene (µg/L)	10(U)	
Fluorene (µg/L)	10(U)	
Indeno(1,2,3-cd)pyrene (µg/L)	10(U)	
Naphthalene (µg/L)	10(U)	
Phenanthrene (µg/L)	10(U)	
Pyrene (µg/L)	10(U)	
PCBs		
Aroclor-1016 (µg/L)	0.1(U)	
Aroclor-1221 (µg/L)	0.1(U)	
Aroclor-1232 (µg/L)	0.1(U)	
Aroclor-1242 (µg/L)	0.1(U)	
Aroclor-1248 (µg/L)	0.1(U)	

Table 35. Results for Location OW17A

Parameter (unit)	1/10/2000	10/27/2010
Aroclor-1254 (µg/L)	0.1(U)	
Aroclor-1260 (µg/L)	0.1(U)	
Pesticides		
4,4'-DDD (µg/L)	0.04(U)	
4,4'-DDE (µg/L)	0.04(U)	
4,4'-DDT (µg/L)	0.04(U)	
Aldrin (µg/L)	0.02(U)	
alpha-BHC (µg/L)	0.02(U)	
alpha-Chlordane (µg/L)	0.02(U)	
beta-BHC (µg/L)	0.02(U)	
delta-BHC (µg/L)	0.02(U)	
Dieldrin (µg/L)	0.04(U)	
Endosulfan I (µg/L)	0.02(U)	
Endosulfan II (µg/L)	0.04(U)	
Endosulfan sulfate (µg/L)	0.04(U)	
Endrin (µg/L)	0.04(U)	
Endrin aldehyde (µg/L)	0.04(U)	
Endrin ketone (µg/L)	0.04(U)	
gamma-BHC (Lindane) (µg/L)	0.02(U)	
gamma-Chlordane (µg/L)	0.02(U)	
Heptachlor (µg/L)	0.02(U)	
Heptachlor epoxide (µg/L)	0.02(U)	
Methoxychlor (µg/L)	0.2(U)	
Toxaphene (µg/L)	1(U)	
Radiological Compounds		
Alpha (pCi/L)	1.85(U)	
Beta (pCi/L)	41.9	
Radium-226 (pCi/L)	0.39(U)	0.13(U)
Radium-228 (pCi/L)		0.58(J)
Thorium-228 (pCi/L)	0.07(U)	0.09(U)
Thorium-230 (pCi/L)	0.07(J)	0.12(U)
Thorium-232 (pCi/L)	0.01(U)	0.16(U)
Total Uranium (µg/L)	0.79(J)	2.52*
Uranium-233/234 (pCi/L)	0.38(J)	
Uranium-234 (pCi/L)		1.09
Uranium-235 (pCi/L)		0.12(U)
Uranium-235/236 (pCi/L)	0.01(U)	
Uranium-238 (pCi/L)	0.34(J)	0.81

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 36. Results for Location OW17B

Parameter (unit)	4/29/1997	4/7/1998	6/7/1999	7/20/2000	5/9/2001	5/13/2002	5/14/2003	5/19/2003	5/31/2003	4/28/2004	5/23/2005	5/18/2006	6/11/2007	6/16/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Volatile Organic Compounds																				
1,1,1-Trichloroethane (µg/L)									1(U)											
1,1,2,2-Tetrachloroethane (µg/L)									1(U)											
1,1,2-Trichloroethane (µg/L)									1(U)											
1,1-Dichloroethane (µg/L)									1(U)											
1,1-Dichloroethene (µg/L)									1(U)											
1,2-Dichloroethane (µg/L)									1(U)											
1,2-Dichloropropane (µg/L)									1(U)											
2-Butanone (µg/L)									5(U)											
2-Hexanone (µg/L)									5(U)											
4-Methyl-2-pentanone (µg/L)									5(U)											
Acetone (µg/L)									5(U)											
Benzene (µg/L)									1(U)											
Bromodichloromethane (µg/L)									1(U)											
Bromoform (µg/L)									1(U)											
Bromomethane (µg/L)									1(U)											
Carbon disulfide (µg/L)									5(U)											
Carbon tetrachloride (µg/L)									1(U)											
Chlorobenzene (µg/L)									1(U)											
Chloroethane (µg/L)									1(U)											
Chloroform (µg/L)									1(U)											
Chloromethane (µg/L)									1(U)											
cis-1,2-Dichloroethylene (µg/L)									1(U)											
cis-1,3-Dichloropropylene (µg/L)									1(U)											
Dibromochloromethane (µg/L)									1(U)											
Ethylbenzene (µg/L)									1(U)											
Methylene chloride (µg/L)									5(U)											
Styrene (µg/L)									1(U)											
Tetrachloroethylene (µg/L)									1(U)											
Toluene (µg/L)									1(U)											
trans-1,2-Dichloroethylene (µg/L)									1(U)											
trans-1,3-Dichloropropylene (µg/L)									1(U)											
Trichloroethylene (µg/L)									1(U)											
Vinyl chloride (µg/L)									1(U)											
Xylenes (total) (µg/L)									1(U)											
Semi-Volatile Organic Compounds																				
1,2,4-Trichlorobenzene (µg/L)									9.8(U)											
1,2-Dichlorobenzene (µg/L)									9.8(U)											
1,3-Dichlorobenzene (µg/L)									9.8(U)											
1,4-Dichlorobenzene (µg/L)									9.8(U)											
2,4,5-Trichlorophenol (µg/L)									9.8(U)											
2,4,6-Trichlorophenol (µg/L)									9.8(U)											
2,4-Dichlorophenol (µg/L)									9.8(U)											
2,4-Dimethylphenol (µg/L)									9.8(U)											
2,4-Dinitrophenol (µg/L)									19.6(U)											
2-Chloronaphthalene (µg/L)									0.98(U)											
2-Chlorophenol (µg/L)									9.8(U)											
2-Methyl-4,6-dinitrophenol (µg/L)									9.8(U)											
2-Methylnaphthalene (µg/L)									0.98(U)											
2-Nitroaniline (µg/L)									9.8(U)											
2-Nitrophenol (µg/L)									9.8(U)											
3,3'-Dichlorobenzidine (µg/L)									9.8(U)											
3-Nitroaniline (µg/L)									9.8(U)											
4-Bromophenylphenylether (µg/L)									9.8(U)											
4-Chloro-3-methylphenol (µg/L)									9.8(U)											
4-Chloroaniline (µg/L)									9.8(U)											
4-Chlorophenylphenylether (µg/L)									9.8(U)											

Table 36. Results for Location OW17B

Parameter (unit)	4/29/1997	4/7/1998	6/7/1999	7/20/2000	5/9/2001	5/13/2002	5/14/2003	5/19/2003	5/31/2003	4/28/2004	5/23/2005	5/18/2006	6/11/2007	6/16/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
4-Nitroaniline (µg/L)									9.8(U)											
4-Nitrophenol (µg/L)									9.8(U)											
bis(2-Chloroethoxy)methane (µg/L)									9.8(U)											
bis(2-Chloroethyl) ether (µg/L)									9.8(U)											
bis(2-Chloroisopropyl)ether (µg/L)									9.8(U)											
bis(2-Ethylhexyl)phthalate (µg/L)									1.91(J)											
Butylbenzylphthalate (µg/L)									9.8(U)											
Carbazole (µg/L)									9.8(U)											
Dibenzofuran (µg/L)									9.8(U)											
Diethylphthalate (µg/L)									9.8(U)											
Dimethylphthalate (µg/L)									9.8(U)											
Di-n-butylphthalate (µg/L)									9.8(U)											
Di-n-octylphthalate (µg/L)									9.8(U)											
Hexachlorobenzene (µg/L)									9.8(U)											
Hexachlorobutadiene (µg/L)									9.8(U)											
Hexachlorocyclopentadiene (µg/L)									9.8(U)											
Hexachloroethane (µg/L)									9.8(U)											
Isophorone (µg/L)									9.8(U)											
m,p-Cresols (µg/L)									9.8(U)											
N-Nitroso-di-n-propylamine (µg/L)									9.8(U)											
N-Nitrosodiphenylamine (µg/L)									9.8(U)											
o-Cresol (µg/L)									9.8(U)											
Pentachlorophenol (µg/L)									9.8(U)											
Phenol (µg/L)									9.8(U)											
General Chemistry																				
Alkalinity (µg/L)		412000	420000	470000	383000	434000		409000	409000	415000	92000	440000		422000	421000	420000		430000		
Bicarbonate Alkalinity (µg/L)		412000	512000	470000	383000	434000		407000	407000	413000	92000	440000								
Carbonate (µg/L)		4000(U)	1000(U)	1000(U)	1000(U)	<5000														
Carbonate Alkalinity (µg/L)								1920(U)	1920(J)	1770(J)	0(U)	5000(U)								
Chloride (µg/L)		9600	9300	11000	12400	7600	11300		11300	10900	9500	10400(J)	11500	10900	9090	9400		9200		
Fluoride (µg/L)		250(U)							324				380(J)	307	323	30(U)		840		
Methane (µg/L)									14(U)											
Nitrate (µg/L)		250(U)	100(U)	100(U)	4220	32	99		99	34.1(U)	91	92	58	100(U)	33(U)	24(U)		1000(J)		
Nitrite (µg/L)		250(U)		50(U)	36	20	54.2(U)		54.2	54.2(U)	0(U)	20(U)	20(U)	100(U)	33(U)	24(U)		370(J)		
Phosphate (µg/L)		50(U)																		
Phosphate as P, Ortho (µg/L)							151(U)		151(U)	151(U)	0(U)	500(U)		200(U)	66(U)	60(U)		130(J)		
Phosphorous, Total (µg/L)			10	80	20(U)	<500														
Solids, Total Dissolved (µg/L)		1000000	1070000	1000000	1080000	998000		1090000	1090000	1020000	991000	982000		997000	910000	980000		960000		
Sulfate (µg/L)		465000	400000	400000	658000	397000	410000		410000	427000	402000	425000(J)	429000	450000	419000	440000		420000		
Total Organic Carbon Average (µg/L)									1840											
Explosives																				
1,3,5-Trinitrobenzene (µg/L)									0.1(U)											
2,4,6-Trinitrotoluene (µg/L)									0.1(U)											
2,4-Dinitrotoluene (µg/L)									0.1(U)											
2,6-Dinitrotoluene (µg/L)									0.1(U)											
2-Amino-4,6-dinitrotoluene (µg/L)									0.1(U)											
2-Nitrotoluene (µg/L)									0.1(U)											
3-Dinitrobenzene (µg/L)									0.1(U)											
3-Nitrotoluene (µg/L)									0.1(U)											
4-Amino-2,6-dinitrotoluene (µg/L)									0.1(U)											
4-Nitrotoluene (µg/L)									0.1(U)											
HMX (µg/L)									0.1(U)											
Nitrobenzene (µg/L)									0.1(U)											
RDX (µg/L)									0.1(U)											

Table 36. Results for Location OW17B

Parameter (unit)	4/29/1997	4/7/1998	6/7/1999	7/20/2000	5/9/2001	5/13/2002	5/14/2003	5/19/2003	5/31/2003	4/28/2004	5/23/2005	5/18/2006	6/11/2007	6/16/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Tetryl (µg/L)									0.1(U)											
Metals																				
Aluminum (µg/L)									32.4(B)					28.3	6.1(J)	0.21(U)		9(J)		
Aluminum, Dissolved (µg/L)									61.5(B)											
Antimony (µg/L)									0.21(B)					0.5(U)	0.98(U)	0.5		1.5		
Antimony, Dissolved (µg/L)									0.12(B)											
Arsenic (µg/L)									3.37					1.5(U)	1.5(U)	0.46		1.3		
Arsenic, Dissolved (µg/L)									3.41											
Barium (µg/L)									13					11.5	8.6	10		11		
Barium, Dissolved (µg/L)									10.4											
Beryllium (µg/L)									0.18(U)					0.1(U)	0.1(U)	0.3(U)		0.21(J)		
Beryllium, Dissolved (µg/L)									0.21(U)											
Boron (µg/L)									95.4					111	100	500				
Boron, Dissolved (µg/L)									103											
Cadmium (µg/L)									0.33(U)					0.11(U)	0.11(U)	0.12(U)		0.51(J)		
Cadmium, Dissolved (µg/L)									0.66(U)											
Calcium (µg/L)	43800	58400	83600	59000	85900	86000	91700		91700	81100	79100	71500(J)	65200	79500	59700	80000		67000		
Calcium, Dissolved (µg/L)									83700			70800(J)								
Chromium (µg/L)									4.07(B)					7.9	1.5(U)	3.6		3.7		
Chromium, Dissolved (µg/L)									2.2(B)											
Cobalt (µg/L)									0.29(U)					0.56(J)	0.54(J)	0.12(U)		0.66(J)		
Cobalt, Dissolved (µg/L)									1(U)											
Copper (µg/L)	3.9	2.3(U)	6	0.05(U)	5.93	<3	7.14		7.14	3.24(J)	3(J)	3.5(J)	2.6	8.6	3.4	2.2		3.9		
Copper, Dissolved (µg/L)									2.23(B)	4.25(J)		4.7(J)								
Iron (µg/L)									71.9(B)					395	237	20(U)		130		
Iron, Dissolved (µg/L)									5.6(U)											
Lead (µg/L)	0.9(U)	0.9(U)	<3	0.01(U)	10(U)	<3	2.21		2.21	1.72(U)	0.57(U)	0.49(U)	0.49(U)	0.89(J)	0.5(U)	0.13(U)		0.35(J)		
Lead, Dissolved (µg/L)									0.79(B)	1.72(U)		0.49(U)								
Lithium (µg/L)									50.5(E)					55.2	57.2	53				
Lithium, Dissolved (µg/L)									42.3											
Magnesium (µg/L)	147000	145000	140000	150000	137000	132000	135000		135000	144000	131000	144000	135000(J)	124000	127000	150000		130000		
Magnesium, Dissolved (µg/L)									152000			138000								
Manganese (µg/L)									2.19(B)					25.9	5.7	6.6		5.9		
Manganese, Dissolved (µg/L)									0.52(U)											
Mercury (µg/L)									0.1(U)					0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Mercury, Dissolved (µg/L)									0.1(U)											
Nickel (µg/L)									5.53					7.5	4.4	5.6		15		
Nickel, Dissolved (µg/L)									4.48(B)											
Potassium (µg/L)	2370	1790	1700	2500	2350	2490	1970		1970	2240	1990	2100	1850(J)	1870	2000	2400		2200		
Potassium, Dissolved (µg/L)									2040			1970								
Selenium (µg/L)									1.57(B)					1(U)	1(U)	0.45(U)		3.7		
Selenium, Dissolved (µg/L)									0.72(B)											
Silver (µg/L)									0.03(B)					0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Silver, Dissolved (µg/L)									0(U)											
Sodium (µg/L)	67000	66000	69700	74000	72100	57500	61400		61400	73300	61300	72700	60900(J)	60400	58600	74000		60000		
Sodium, Dissolved (µg/L)									71900			67100								
Thallium (µg/L)									0.04(B)					0.4(J)	0.42(J)	0.16(U)		0.3(J)		
Thallium, Dissolved (µg/L)									0.03(B)											
Vanadium (µg/L)	6.8	2.9(U)	<5	0.01(U)	10(U)	<10	2.48(U)		0.23(U)	0.61(U)	1.6(U)	1.6(U)	16(U)	3(U)	3(U)	0.71		1		
Vanadium, Dissolved (µg/L)									2.5(U)	0.61(U)		1.6(U)								
Zinc (µg/L)									12.9					8.1(J)	5.7(J)	8.1		20		
Zinc, Dissolved (µg/L)									28.7											
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene (µg/L)									0.48(U)											
Acenaphthylene (µg/L)									0.48(U)											
Anthracene (µg/L)									0.48(U)											
Benzo(a)anthracene (µg/L)									0.05(U)											

Table 36. Results for Location OW17B

Parameter (unit)	4/29/1997	4/7/1998	6/7/1999	7/20/2000	5/9/2001	5/13/2002	5/14/2003	5/19/2003	5/31/2003	4/28/2004	5/23/2005	5/18/2006	6/11/2007	6/16/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Benzo(a)pyrene (µg/L)									0.05(U)											
Benzo(b)fluoranthene (µg/L)									0.05(U)											
Benzo(ghi)perylene (µg/L)									0.05(U)											
Benzo(k)fluoranthene (µg/L)									0.02(U)											
Chrysene (µg/L)									0.05(U)											
Dibenzo(a,h)anthracene (µg/L)									0.05(U)											
Fluoranthene (µg/L)									0.05(U)											
Fluorene (µg/L)									0.48(U)											
Indeno(1,2,3-cd)pyrene (µg/L)									0.05(U)											
Naphthalene (µg/L)									0.48(U)											
Phenanthrene (µg/L)									0.48(U)											
Pyrene (µg/L)									0.05(U)											
PCBs																				
Aroclor-1016 (µg/L)									0.1(U)											
Aroclor-1221 (µg/L)									0.1(U)											
Aroclor-1232 (µg/L)									0.1(U)											
Aroclor-1242 (µg/L)									0.1(U)											
Aroclor-1248 (µg/L)									0.1(U)											
Aroclor-1254 (µg/L)									0.1(U)											
Aroclor-1260 (µg/L)									0.1(U)											
Pesticides																				
4,4'-DDD (µg/L)									0.04(U)											
4,4'-DDE (µg/L)									0.04(U)											
4,4'-DDT (µg/L)									0.04(U)											
Aldrin (µg/L)									0.02(U)											
alpha-BHC (µg/L)									0.02(U)											
alpha-Chlordane (µg/L)									0.02(U)											
beta-BHC (µg/L)									0.02(U)											
delta-BHC (µg/L)									0.02(U)											
Dieldrin (µg/L)									0.04(U)											
Endosulfan I (µg/L)									0.02(U)											
Endosulfan II (µg/L)									0.04(U)											
Endosulfan sulfate (µg/L)									0.04(U)											
Endrin (µg/L)									0.04(U)											
Endrin aldehyde (µg/L)									0.04(U)											
Endrin ketone (µg/L)									0.04(U)											
gamma-BHC (Lindane) (µg/L)									0.02(U)											
gamma-Chlordane (µg/L)									0.02(U)											
Heptachlor (µg/L)									0.02(U)											
Heptachlor epoxide (µg/L)									0.02(U)											
Methoxychlor (µg/L)									0.2(U)											
Toxaphene (µg/L)									0.98(U)											
Radiological Compounds																				
Actinium-227, Dissolved (pCi/L)									-1.25(U)											
Actinium-227, Gamma (pCi/L)									-1.71(U)											
Alpha (pCi/L)									6.49											
Alpha, Dissolved (pCi/L)									6.05											
Americium-241, Dissolved (pCi/L)									-7.53(U)											
Americium-241, Gamma (pCi/L)									-2.79(U)											
Beta (pCi/L)									4.39											
Beta, Dissolved (pCi/L)									11.1											
Cesium-137, Dissolved (pCi/L)									-0.02(U)											
Cesium-137, Gamma (pCi/L)									0.37(U)											
Cobalt-60, Dissolved (pCi/L)									0.55(U)											
Cobalt-60, Gamma (pCi/L)									-0.26(U)											
Protactinium-231, Dissolved (pCi/L)									17.7(U)											
Protactinium-231, Gamma (pCi/L)									86.3(U)											

Table 36. Results for Location OW17B

Parameter (unit)	4/29/1997	4/7/1998	6/7/1999	7/20/2000	5/9/2001	5/13/2002	5/14/2003	5/19/2003	5/31/2003	4/28/2004	5/23/2005	5/18/2006	6/11/2007	6/16/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Radium-226 (pCi/L)	0.11	0.1(UJ)	U	0.13	0.17(U)	0.09(U)	0.24(U)		0.24(U)	-0.09(U)	0.03(U)	0.04(U)	0.26(U)	0.11	0.59	0.4(U)	0.98	0.98	0.36(U)	0.08(U)
Radium-226, Dissolved (pCi/L)									0.57	0.1(U)		0.1(U)								
Radium-228 (pCi/L)	0.08	0.14(UJ)	0.2	1.05	0.15(U)	0.24(U)	0.61(U)		0.61(U)	0.67(U)	0.55(U)	-0.18(U)	-1.05(U)	0.83	0.48	0.08(U)	0.47(U)	0.47(U)	0.21(U)	1.09(J)
Radium-228, Dissolved (pCi/L)									0.52(U)	0.62(U)		0.13(U)								
Radium-228, Gamma (pCi/L)									5.47(U)											
Thorium-228 (pCi/L)													0.2(U)	0.12(U)	0.01(U)	0.06(U)	0.02(U)	0.02(U)	0.15(U)	0.09(U)
Thorium-228, Alpha (pCi/L)									0.14(U)											
Thorium-228, Dissolved (pCi/L)									0(U)											
Thorium-228, Dissolved Gamma (pCi/L)									1.87(U)											
Thorium-228, Gamma (pCi/L)									5.55											
Thorium-230 (pCi/L)	0.34	0.41	0.7	0.02	0.41	0.63	0.17(U)			0.2(U)	0.12	0.05(J)	0.06(U)	0.05(U)	0.03(U)	0.15(U)	0.09(U)	0.09(U)	-0.01(U)	0.59
Thorium-230, Alpha (pCi/L)									0.17(U)											
Thorium-230, Dissolved (pCi/L)									0.08(U)	0.17(U)		0.05(J)								
Thorium-232 (pCi/L)	0.07	0.14(UJ)	U	0.01	0.32	0.02	-0.01(U)			0.07(U)	0.02(U)	-0.01(UJ)	-0.06(U)	0.02(U)	0.03(U)	0.04(U)	0.07(U)	0.07(U)	0.08(U)	0.32
Thorium-232, Alpha (pCi/L)									-0.01(U)											
Thorium-232, Dissolved (pCi/L)									0.02(U)	-0.03(U)		0(UJ)								
Total Radium (pCi/L)			0.2*	0.13*	U *	U *	U *			U *	U *	U *	U *	0.94*	1.06*	U *		0.98*		
Total Radium, Dissolved (pCi/L)										U *		U *								
Total Thorium (pCi/L)														U *	U *	U *		U *		
Total Uranium (µg/L)		9.52*	6.11*	7.17*	8.62*	7.12*	7.58*		7.79	7.07*	6.21*	5.93*	5.74*	6.08*	8.97*	7.65*		6.97*	8.47*	7.66*
Total Uranium (pCi/L)	3.03	6.54*	6.1*	5.61*	7.61*	5.82*	5.66*			6.41*	5.54*	4.45*	4.49*	5.02*	5.77*	5.7*		5.61*		
Total Uranium, Dissolved (µg/L)									6.68	9.01*		5.84*								
Total Uranium, Dissolved (pCi/L)										7.08*		4.42*								
Uranium-233/234 (pCi/L)													2.39		2.81			3.08		
Uranium-233/234, Alpha (pCi/L)									3.04											
Uranium-233/234, Dissolved (pCi/L)									2.98											
Uranium-234 (pCi/L)		3.11	4	3.18	4.45	3.36	3.04			4.11	3.38	2.4	2.39	2.86		3.19	3.08		3.87	2.99
Uranium-234, Dissolved (pCi/L)										4.11		2.4								
Uranium-235 (pCi/L)		0.34	0.1	0.08	0.37	0.13	0.14			0.21(U)	0.13(J)	0.11(J)	0.24	0.18		0.06(U)	0.24		0.56	0.19(U)
Uranium-235, Dissolved (pCi/L)									9.01(U)	0.02(U)		0.11(J)								
Uranium-235, Gamma (pCi/L)									9.36(U)											
Uranium-235/236 (pCi/L)													0.24		0.2(U)			0.24		
Uranium-235/236, Alpha (pCi/L)									0.14(U)											
Uranium-235/236, Dissolved (pCi/L)									0.22											
Uranium-238 (pCi/L)		3.09	2	2.36	2.79	2.33	2.48			2.3	2.03	1.94	1.86	1.98	2.96	2.51	2.3	2.3	2.71	2.5
Uranium-238, Alpha (pCi/L)									2.48											
Uranium-238, Dissolved (pCi/L)									2.65	2.97		1.91								
Uranium-238, Dissolved Gamma (pCi/L)									0(UUI)											
Uranium-238, Gamma (pCi/L)									149											

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 37. Results for Location OW18B

Parameter (unit)	5/18/2003	6/18/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Volatile Organic Compounds								
1,1,1-Trichloroethane (µg/L)	1(U)							
1,1,2,2-Tetrachloroethane (µg/L)	1(U)							
1,1,2-Trichloroethane (µg/L)	1(U)							
1,1-Dichloroethane (µg/L)	1(U)							
1,1-Dichloroethene (µg/L)	1(U)							
1,2-Dichloroethane (µg/L)	1(U)							
1,2-Dichloropropane (µg/L)	1(U)							
2-Butanone (µg/L)	5(U)							
2-Hexanone (µg/L)	5(U)							
4-Methyl-2-pentanone (µg/L)	5(U)							
Acetone (µg/L)	5(U)							
Benzene (µg/L)	1(U)							
Bromodichloromethane (µg/L)	1(U)							
Bromoform (µg/L)	1(U)							
Bromomethane (µg/L)	1(U)							
Carbon disulfide (µg/L)	5(U)							
Carbon tetrachloride (µg/L)	1(U)							
Chlorobenzene (µg/L)	1(U)							
Chloroethane (µg/L)	1(U)							
Chloroform (µg/L)	1(U)							
Chloromethane (µg/L)	1(U)							
cis-1,2-Dichloroethylene (µg/L)	1(U)							
cis-1,3-Dichloropropylene (µg/L)	1(U)							
Dibromochloromethane (µg/L)	1(U)							
Ethylbenzene (µg/L)	1(U)							
Methylene chloride (µg/L)	5(U)							
Styrene (µg/L)	1(U)							
Tetrachloroethylene (µg/L)	1(U)							
Toluene (µg/L)	1(U)							
trans-1,2-Dichloroethylene (µg/L)	1(U)							
trans-1,3-Dichloropropylene (µg/L)	1(U)							
Trichloroethylene (µg/L)	1(U)							
Vinyl chloride (µg/L)	1(U)							
Xylenes (total) (µg/L)	1(U)							
Semi-Volatile Organic Compounds								
1,2,4-Trichlorobenzene (µg/L)	9.71(U)							
1,2-Dichlorobenzene (µg/L)	9.71(U)							
1,3-Dichlorobenzene (µg/L)	9.71(U)							
1,4-Dichlorobenzene (µg/L)	9.71(U)							
2,4,5-Trichlorophenol (µg/L)	9.71(U)							
2,4,6-Trichlorophenol (µg/L)	9.71(U)							
2,4-Dichlorophenol (µg/L)	9.71(U)							
2,4-Dimethylphenol (µg/L)	9.71(U)							
2,4-Dinitrophenol (µg/L)	19.4(U)							
2-Chloronaphthalene (µg/L)	0.97(U)							
2-Chlorophenol (µg/L)	9.71(U)							
2-Methyl-4,6-dinitrophenol (µg/L)	9.71(U)							
2-Methylnaphthalene (µg/L)	0.97(U)							
2-Nitroaniline (µg/L)	9.71(U)							
2-Nitrophenol (µg/L)	9.71(U)							
3,3'-Dichlorobenzidine (µg/L)	9.71(U)							
3-Nitroaniline (µg/L)	9.71(U)							
4-Bromophenylphenylether (µg/L)	9.71(U)							
4-Chloro-3-methylphenol (µg/L)	9.71(U)							
4-Chloroaniline (µg/L)	9.71(U)							
4-Chlorophenylphenylether (µg/L)	9.71(U)							

Table 37. Results for Location OW18B

Parameter (unit)	5/18/2003	6/18/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
4-Nitroaniline (µg/L)	9.71(U)							
4-Nitrophenol (µg/L)	9.71(U)							
bis(2-Chloroethoxy)methane (µg/L)	9.71(U)							
bis(2-Chloroethyl) ether (µg/L)	9.71(U)							
bis(2-Chloroisopropyl)ether (µg/L)	9.71(U)							
bis(2-Ethylhexyl)phthalate (µg/L)	9.71(U)							
Butylbenzylphthalate (µg/L)	9.71(U)							
Carbazole (µg/L)	9.71(U)							
Dibenzofuran (µg/L)	9.71(U)							
Diethylphthalate (µg/L)	9.71(U)							
Dimethylphthalate (µg/L)	9.71(U)							
Di-n-butylphthalate (µg/L)	9.71(U)							
Di-n-octylphthalate (µg/L)	9.71(U)							
Hexachlorobenzene (µg/L)	9.71(U)							
Hexachlorobutadiene (µg/L)	9.71(U)							
Hexachlorocyclopentadiene (µg/L)	9.71(U)							
Hexachloroethane (µg/L)	9.71(U)							
Isophorone (µg/L)	9.71(U)							
m,p-Cresols (µg/L)	9.71(U)							
N-Nitroso-di-n-propylamine (µg/L)	9.71(U)							
N-Nitrosodiphenylamine (µg/L)	9.71(U)							
o-Cresol (µg/L)	9.71(U)							
Pentachlorophenol (µg/L)	9.71(U)							
Phenol (µg/L)	11.4							
General Chemistry								
Alkalinity (µg/L)		540000	520000	530000		560000		
Chloride (µg/L)		26300	19500	22000		25000		
Fluoride (µg/L)		343	358	30(U)		710		
Nitrate (µg/L)		100(U)	462	24(U)		78(U)		
Nitrite (µg/L)		100(U)	37.9(J)	24(U)		490(J)		
Phosphate as P, Ortho (µg/L)		200(U)	66(U)	60(U)		130(U)		
Solids, Total Dissolved (µg/L)		1830000	1650000	1700000		1800000		
Sulfate (µg/L)		926000	812000	900000		890000		
Explosives								
1,3,5-Trinitrobenzene (µg/L)	0.1(U)							
2,4,6-Trinitrotoluene (µg/L)	0.1(U)							
2,4-Dinitrotoluene (µg/L)	0.1(U)							
2,6-Dinitrotoluene (µg/L)	0.1(U)							
2-Amino-4,6-dinitrotoluene (µg/L)	0.1(U)							
2-Nitrotoluene (µg/L)	0.1(U)							
3-Dinitrobenzene (µg/L)	0.1(U)							
3-Nitrotoluene (µg/L)	0.1(U)							
4-Amino-2,6-dinitrotoluene (µg/L)	0.1(U)							
4-Nitrotoluene (µg/L)	0.1(U)							
HMX (µg/L)	0.1(U)							
Nitrobenzene (µg/L)	0.1(U)							
RDX (µg/L)	0.1(U)							
Tetryl (µg/L)	0.1(U)							
Metals								
Aluminum (µg/L)	96.9(B)							
Aluminum, Dissolved (µg/L)	62.4(B)							
Antimony (µg/L)	0.16(B)							
Antimony, Dissolved (µg/L)	0.2(B)							
Arsenic (µg/L)	4.43							
Arsenic, Dissolved (µg/L)	4.98							
Barium (µg/L)	8.76							
Barium, Dissolved (µg/L)	7.57							

Table 37. Results for Location OW18B

Parameter (unit)	5/18/2003	6/18/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Beryllium (µg/L)	0.18(U)							
Beryllium, Dissolved (µg/L)	0.21(U)							
Boron (µg/L)	109							
Boron, Dissolved (µg/L)	64.1							
Cadmium (µg/L)	0.33(U)							
Cadmium, Dissolved (µg/L)	0.66(U)							
Calcium (µg/L)	105000							
Calcium, Dissolved (µg/L)	121000							
Chromium (µg/L)	2.83(B)							
Chromium, Dissolved (µg/L)	1.7(U)							
Cobalt (µg/L)	0.29(U)							
Cobalt, Dissolved (µg/L)	1(U)							
Copper (µg/L)	6.76							
Copper, Dissolved (µg/L)	26.4							
Iron (µg/L)	106							
Iron, Dissolved (µg/L)	5.6(U)							
Lead (µg/L)	0.75(B)							
Lead, Dissolved (µg/L)	0.1(B)							
Lithium (µg/L)	78.4(E)							
Lithium, Dissolved (µg/L)	85.3							
Magnesium (µg/L)	252000							
Magnesium, Dissolved (µg/L)	267000							
Manganese (µg/L)	13.9							
Manganese, Dissolved (µg/L)	0.52(U)							
Mercury (µg/L)	0.1(U)							
Mercury, Dissolved (µg/L)	0.1(U)							
Nickel (µg/L)	3.96(B)							
Nickel, Dissolved (µg/L)	1.99(B)							
Potassium (µg/L)	2720							
Potassium, Dissolved (µg/L)	2230							
Selenium (µg/L)	1.15(B)							
Selenium, Dissolved (µg/L)	1.42(B)							
Silver (µg/L)	0.01(B)							
Silver, Dissolved (µg/L)	0(U)							
Sodium (µg/L)	156000							
Sodium, Dissolved (µg/L)	149000							
Thallium (µg/L)	0.03(B)							
Thallium, Dissolved (µg/L)	0.01(B)							
Vanadium (µg/L)	0.23(U)							
Vanadium, Dissolved (µg/L)	2.5(U)							
Zinc (µg/L)	8.13							
Zinc, Dissolved (µg/L)	16.6							
Polycyclic Aromatic Hydrocarbons								
Acenaphthene (µg/L)	0.5(U)							
Acenaphthylene (µg/L)	0.5(U)							
Anthracene (µg/L)	0.5(U)							
Benzo(a)anthracene (µg/L)	0.05(U)							
Benzo(a)pyrene (µg/L)	0.05(U)							
Benzo(b)fluoranthene (µg/L)	0.05(U)							
Benzo(ghi)perylene (µg/L)	0.05(U)							
Benzo(k)fluoranthene (µg/L)	0.02(U)							
Chrysene (µg/L)	0.05(U)							
Dibenzo(a,h)anthracene (µg/L)	0.05(U)							
Fluoranthene (µg/L)	0.05(U)							
Fluorene (µg/L)	0.5(U)							
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)							
Naphthalene (µg/L)	0.5(U)							

Table 37. Results for Location OW18B

Parameter (unit)	5/18/2003	6/18/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Phenanthrene (µg/L)	0.5(U)							
Pyrene (µg/L)	0.05(U)							
PCBs								
Aroclor-1016 (µg/L)	0.1(U)							
Aroclor-1221 (µg/L)	0.1(U)							
Aroclor-1232 (µg/L)	0.1(U)							
Aroclor-1242 (µg/L)	0.1(U)							
Aroclor-1248 (µg/L)	0.1(U)							
Aroclor-1254 (µg/L)	0.1(U)							
Aroclor-1260 (µg/L)	0.1(U)							
Pesticides								
4,4'-DDD (µg/L)	0.04(U)							
4,4'-DDE (µg/L)	0.01(J)							
4,4'-DDT (µg/L)	0.04(U)							
Aldrin (µg/L)	0.02(U)							
alpha-BHC (µg/L)	0.02(U)							
alpha-Chlordane (µg/L)	0.02(U)							
beta-BHC (µg/L)	0.02(U)							
delta-BHC (µg/L)	0.02(U)							
Dieldrin (µg/L)	0.04(U)							
Endosulfan I (µg/L)	0.02(U)							
Endosulfan II (µg/L)	0.04(U)							
Endosulfan sulfate (µg/L)	0.04(U)							
Endrin (µg/L)	0.04(U)							
Endrin aldehyde (µg/L)	0.04(U)							
Endrin ketone (µg/L)	0.04(U)							
gamma-BHC (Lindane) (µg/L)	0.02(U)							
gamma-Chlordane (µg/L)	0.02(U)							
Heptachlor (µg/L)	0.02(U)							
Heptachlor epoxide (µg/L)	0.02(U)							
Methoxychlor (µg/L)	0.2(U)							
Toxaphene (µg/L)	1(U)							
Radiological Compounds								
Actinium-227, Dissolved (pCi/L)	-14(U)							
Actinium-227, Gamma (pCi/L)	-3.95(U)							
Alpha (pCi/L)	6.21							
Alpha, Dissolved (pCi/L)	14.5							
Americium-241, Dissolved (pCi/L)	-1.18(U)							
Americium-241, Gamma (pCi/L)	0.33(U)							
Beta (pCi/L)	5.16							
Beta, Dissolved (pCi/L)	8.88							
Cesium-137, Dissolved (pCi/L)	0.69(U)							
Cesium-137, Gamma (pCi/L)	-0.57(U)							
Cobalt-60, Dissolved (pCi/L)	1.21(U)							
Cobalt-60, Gamma (pCi/L)	-0.12(U)							
Protactinium-231, Dissolved (pCi/L)	40.7(U)							
Protactinium-231, Gamma (pCi/L)	-59.4(U)							
Radium-226 (pCi/L)	0.66							-0.33(U)
Radium-226, Dissolved (pCi/L)	0.14(U)							
Radium-228 (pCi/L)	0.36(U)							0.68(J)
Radium-228, Dissolved (pCi/L)	0.34(U)							
Radium-228, Gamma (pCi/L)	6.97(U)							
Thorium-228 (pCi/L)								-0.03(U)
Thorium-228, Alpha (pCi/L)	0.15(U)							
Thorium-228, Dissolved (pCi/L)	0.1(U)							
Thorium-228, Dissolved Gamma (pCi/L)	1.47(U)							
Thorium-228, Gamma (pCi/L)	5.02							

Table 37. Results for Location OW18B

Parameter (unit)	5/18/2003	6/18/2008	10/28/2008	5/20/2009	Fall 2009	10/27/2009	5/17/2010	10/27/2010
Thorium-230 (pCi/L)								0.1(U)
Thorium-230, Alpha (pCi/L)	0.06(U)							
Thorium-230, Dissolved (pCi/L)	-0.01(U)							
Thorium-232 (pCi/L)								0.13
Thorium-232, Alpha (pCi/L)	-0.03(U)							
Thorium-232, Dissolved (pCi/L)	0.01(U)							
Total Uranium (µg/L)	20.5	16.17*	17.33*	19.03*		17*	12.5*	12.68*
Total Uranium (pCi/L)		11.75*	13.32*	14.07*		12.55*		
Total Uranium, Dissolved (µg/L)	22							
Uranium-233/234 (pCi/L)			7.35			6.53		
Uranium-233/234, Alpha (pCi/L)	8.15							
Uranium-233/234, Dissolved (pCi/L)	8.23							
Uranium-234 (pCi/L)		5.92		6.93	6.53		4.01	5.79
Uranium-235 (pCi/L)		0.58		1.01	0.41		0.44	0.5
Uranium-235, Dissolved (pCi/L)	0(UUI)							
Uranium-235, Gamma (pCi/L)	6.5(U)							
Uranium-235/236 (pCi/L)			0.25			0.41		
Uranium-235/236, Alpha (pCi/L)	0.28							
Uranium-235/236, Dissolved (pCi/L)	0.6							
Uranium-238 (pCi/L)		5.25	5.72	6.13	5.61	5.61	4.06	4.11
Uranium-238, Alpha (pCi/L)	6.92							
Uranium-238, Dissolved (pCi/L)	6.15							
Uranium-238, Dissolved Gamma (pCi/L)	0(UUI)							
Uranium-238, Gamma (pCi/L)	17.9(U)							

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 38. Results for Location OW20S (ESP Location B02W20S)

Parameter (unit)	4/30/1997	4/8/1998	6/10/1999	1/7/2000	7/20/2000	5/8/2001	5/21/2002	5/15/2003	5/16/2003	4/26/2004	5/23/2005	5/17/2006	6/12/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/17/2010	10/28/2010
Volatile Organic Compounds																				
1,1,1-Trichloroethane (µg/L)				1(U)																
1,1,2,2-Tetrachloroethane (µg/L)				1(U)																
1,1,2-Trichloroethane (µg/L)				1(U)																
1,1-Dichloroethane (µg/L)				1(U)																
1,1-Dichloroethene (µg/L)				1(U)																
1,2-Dichloroethane (µg/L)				1(U)																
1,2-Dichloropropane (µg/L)				1(U)																
2-Butanone (µg/L)				5(U)																
2-Hexanone (µg/L)				5(U)																
4-Methyl-2-pentanone (µg/L)				5(U)																
Acetone (µg/L)				0.69(U)																
Benzene (µg/L)				1(U)																
Bromodichloromethane (µg/L)				1(U)																
Bromoform (µg/L)				1(U)																
Bromomethane (µg/L)				1(U)																
Carbon disulfide (µg/L)				5(U)																
Carbon tetrachloride (µg/L)				1(U)																
Chlorobenzene (µg/L)				1(U)																
Chloroethane (µg/L)				1(U)																
Chloroform (µg/L)				1(U)																
Chloromethane (µg/L)				1(U)																
cis-1,2-Dichloroethylene (µg/L)				1(U)																
cis-1,3-Dichloropropylene (µg/L)				1(U)																
Dibromochloromethane (µg/L)				1(U)																
Ethylbenzene (µg/L)				0.05(J)																
Methylene chloride (µg/L)				5(U)																
Styrene (µg/L)				1(U)																
Tetrachloroethylene (µg/L)				1(U)																
Toluene (µg/L)				1(U)																
trans-1,2-Dichloroethylene (µg/L)				1(U)																
trans-1,3-Dichloropropylene (µg/L)				1(U)																
Trichloroethylene (µg/L)				1(U)																
Vinyl chloride (µg/L)				1(U)																
Xylenes (total) (µg/L)				3(U)																
Semi-Volatile Organic Compounds																				
1,2,4-Trichlorobenzene (µg/L)				9.8(U)																
1,2-Dichlorobenzene (µg/L)				9.8(U)																
1,3-Dichlorobenzene (µg/L)				9.8(U)																
1,4-Dichlorobenzene (µg/L)				9.8(U)																
2,4,5-Trichlorophenol (µg/L)				9.8(U)																
2,4,6-Trichlorophenol (µg/L)				9.8(U)																
2,4-Dichlorophenol (µg/L)				9.8(U)																
2,4-Dimethylphenol (µg/L)				9.8(U)																
2,4-Dinitrophenol (µg/L)				19.6(U)																
2-Chloronaphthalene (µg/L)				9.8(U)																
2-Chlorophenol (µg/L)				9.8(U)																
2-Methyl-4,6-dinitrophenol (µg/L)				9.8(U)																
2-Methylnaphthalene (µg/L)				9.8(U)																
2-Nitroaniline (µg/L)				9.8(U)																
2-Nitrophenol (µg/L)				9.8(U)																
3,3'-Dichlorobenzidine (µg/L)				9.8(U)																
3-Nitroaniline (µg/L)				9.8(U)																
4-Bromophenylphenylether (µg/L)				9.8(U)																
4-Chloro-3-methylphenol (µg/L)				9.8(U)																
4-Chloroaniline (µg/L)				9.8(U)																
4-Chlorophenylphenylether (µg/L)				9.8(U)																

Table 38. Results for Location OW20S (ESP Location B02W20S)

Parameter (unit)	4/30/1997	4/8/1998	6/10/1999	1/7/2000	7/20/2000	5/8/2001	5/21/2002	5/15/2003	5/16/2003	4/26/2004	5/23/2005	5/17/2006	6/12/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/17/2010	10/28/2010
4-Nitroaniline (µg/L)				9.8(U)																
4-Nitrophenol (µg/L)				9.8(U)																
Benzoic Acid (µg/L)				19.6(U)																
bis(2-Chloroethoxy)methane (µg/L)				9.8(U)																
bis(2-Chloroethyl) ether (µg/L)				9.8(U)																
bis(2-Chloroisopropyl)ether (µg/L)				9.8(U)																
bis(2-Ethylhexyl)phthalate (µg/L)				9.8(U)																
Butylbenzylphthalate (µg/L)				9.8(U)																
Carbazole (µg/L)				9.8(U)																
Dibenzofuran (µg/L)				9.8(U)																
Diethylphthalate (µg/L)				9.8(U)																
Dimethylphthalate (µg/L)				9.8(U)																
Di-n-butylphthalate (µg/L)				9.8(U)																
Di-n-octylphthalate (µg/L)				9.8(U)																
Diphenylamine (µg/L)				9.8(U)																
Hexachlorobenzene (µg/L)				9.8(U)																
Hexachlorobutadiene (µg/L)				9.8(U)																
Hexachlorocyclopentadiene (µg/L)				9.8(U)																
Hexachloroethane (µg/L)				9.8(U)																
Isophorone (µg/L)				9.8(U)																
m,p-Cresols (µg/L)				9.8(U)																
N-Nitroso-di-n-propylamine (µg/L)				9.8(U)																
o-Cresol (µg/L)				9.8(U)																
Pentachlorophenol (µg/L)				9.8(U)																
Phenol (µg/L)				9.8(U)																
General Chemistry																				
Alkalinity (µg/L)	398000	408000	420000		500000	402000	432000		455000	446000	500000	440000		443000	423000	450000		460000		
Bicarbonate Alkalinity (µg/L)	398000	408000	512000		500000	402000	432000		452000	444000	500000	440000								
Carbonate (µg/L)	4000(U)	4000(U)	1000(U)		1000(U)	1000(U)	<5000													
Carbonate Alkalinity (µg/L)									2340	1910(J)	0(U)	5000(U)								
Chloride (µg/L)	5800	5400	5100		8000	7940	7100	8960		7960	8900	7900(J)	10200	12700	12100	13000		13000		
Fluoride (µg/L)		250(U)											410	395	441	30(U)		710		
Nitrate (µg/L)	80	250(U)	100(U)		100(U)	50(U)	45	99		117	460	130	400(J)	0(J)	33(U)	24(U)		78(U)		
Nitrite (µg/L)	20(U)	250(U)			50(U)	20(U)	<20	54.2(U)		542(U)	0(U)	20(U)	20(U)	0(J)	33(U)	24(U)		72(U)		
Phosphate (µg/L)	52	50(U)																		
Phosphate as P, Ortho (µg/L)								151(U)		151(U)	0(U)	500(U)		-19(J)	66(U)	60(U)		130(U)		
Phosphorous, Total (µg/L)			30		30	20(U)	<500													
Solids, Total Dissolved (µg/L)	791000	820000	880000		830000	915000	907000		895000	891000	901000	905000		922000	905000	930000		900000		
Sulfate (µg/L)	258000	342000	300000		200000	635000	318000	305000		345000	337000	356000	342000	357000	348000	360000		430000		
Explosives																				
2,4-Dinitrotoluene (µg/L)				9.8(U)																
2,6-Dinitrotoluene (µg/L)				9.8(U)																
Nitrobenzene (µg/L)				9.8(U)																
Metals																				
Aluminum (µg/L)				90.8										17.2(J)	5.5(J)	85		6.3(J)		
Aluminum, Dissolved (µg/L)				7.8(B)																
Antimony (µg/L)				2.9(B)										0.5(U)	0.5(U)	0.13(U)		1(J)		
Antimony, Dissolved (µg/L)				3(B)																
Arsenic (µg/L)				3(B)										1.5(U)	1.5(U)	0.18(U)		0.56		
Arsenic, Dissolved (µg/L)				3.6(B)																
Barium (µg/L)				19										16.9	17.8	17		16		
Barium, Dissolved (µg/L)				18.9																
Beryllium (µg/L)				0.17(U)										0.1(U)	0.1(U)	0.3(U)		0.12(U)		
Beryllium, Dissolved (µg/L)				0.18(B)																
Boron (µg/L)				230(E)										210	222	500				
Boron, Dissolved (µg/L)				232																
Cadmium (µg/L)				0.23(U)										0.12(J)	0.11(U)	0.12(U)		0.12(U)		

Table 38. Results for Location OW20S (ESP Location B02W20S)

Parameter (unit)	4/30/1997	4/8/1998	6/10/1999	1/7/2000	7/20/2000	5/8/2001	5/21/2002	5/15/2003	5/16/2003	4/26/2004	5/23/2005	5/17/2006	6/12/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/17/2010	10/28/2010
Cadmium, Dissolved (µg/L)				0.23(U)																
Calcium (µg/L)	71200	69100	74200	79100	74200	75900	76300	81300		79700	75800	75900	72200	72400	71500	83000		71000		
Calcium, Dissolved (µg/L)				76500								78900								
Chromium (µg/L)				9.6										3.9(J)	1.5(U)	0.13(U)		3.2		
Chromium, Dissolved (µg/L)				5.3																
Cobalt (µg/L)				0.67(U)										0.84(J)	0.47(J)	0.12(U)		0.13(J)		
Cobalt, Dissolved (µg/L)				0.85(B)																
Copper (µg/L)	2.7	2.3(U)	<5	1(U)	0.05(U)	10(U)	<15	1.64(U)		1.39(J)	1.5(J)	1.8(J)	1.8	2.4	2.4	2.5		1.2		
Copper, Dissolved (µg/L)				1(U)						2.15(U)		1.8(J)								
Iron (µg/L)				105										390	378	180		81		
Iron, Dissolved (µg/L)				10.1(B)																
Lead (µg/L)	1.2(U)	0.9(U)	<3	0.05(U)	0.01(U)	10(U)	<3	0.4		1.72(U)	0.57(U)	0.49(U)	0.49(U)	0.5(U)	0.5(U)	0.13(U)		0.13(U)		
Lead, Dissolved (µg/L)				0.05(U)						1.72(U)		0.49(U)								
Lithium (µg/L)				57.1(E)										59.2	53.3	49				
Lithium, Dissolved (µg/L)				63.8(NE)																
Magnesium (µg/L)	115000	128000	119000	123000	120000	118000	127000	123000		128000	114000	116000	118000(J)	112000	128000	140000		130000		
Magnesium, Dissolved (µg/L)				117000								122000								
Manganese (µg/L)				4.9(B)										28.1	18.1	20		4.9		
Manganese, Dissolved (µg/L)				1.4(B)																
Mercury (µg/L)				0.04(U)										0.03(U)	0.07(U)	0.03(U)		0.04(U)		
Mercury, Dissolved (µg/L)				0.04(U)																
Nickel (µg/L)				2.2(B)										3.8	3.2	4		4		
Nickel, Dissolved (µg/L)				2.3(B)																
Potassium (µg/L)	1670	971	2400	1750	2400	2040	1610	1800		1810	1660	1660(J)	1430(J)	2000	1640	2200		1900		
Potassium, Dissolved (µg/L)				1970								1600(J)								
Selenium (µg/L)				1.5(U)										1(U)	1.6(J)	0.45(U)		0.9(J)		
Selenium, Dissolved (µg/L)				1.5(U)																
Silver (µg/L)				0.25(B)										0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Silver, Dissolved (µg/L)				0.67(B)																
Sodium (µg/L)	40400	43800	47200	51700(E)	47000	57900	51800	56700		63000	53700	59100	55300(J)	58800	59600(J)	70000		62000		
Sodium, Dissolved (µg/L)				48800(E)								60200								
Thallium (µg/L)				0.13(U)										0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Thallium, Dissolved (µg/L)				0.13(U)																
Vanadium (µg/L)	8.8	2.9(U)	<5	0.63(U)	0.01(U)	10(U)	<10	2.48(U)		0.61(U)	1.6(U)	1.6(U)	16(U)	3(U)	3(U)	0.92		0.28(J)		
Vanadium, Dissolved (µg/L)				0.63(U)						0.61(U)		1.6(U)								
Zinc (µg/L)				0.47(U)										4.2(J)	4.7(J)	7.6		65		
Zinc, Dissolved (µg/L)				0.47(U)																
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene (µg/L)				9.8(U)																
Acenaphthylene (µg/L)				9.8(U)																
Anthracene (µg/L)				9.8(U)																
Benzo(a)anthracene (µg/L)				9.8(U)																
Benzo(a)pyrene (µg/L)				9.8(U)																
Benzo(b)fluoranthene (µg/L)				9.8(U)																
Benzo(ghi)perylene (µg/L)				9.8(U)																
Benzo(k)fluoranthene (µg/L)				9.8(U)																
Chrysene (µg/L)				9.8(U)																
Dibenzo(a,h)anthracene (µg/L)				9.8(U)																
Fluoranthene (µg/L)				9.8(U)																
Fluorene (µg/L)				9.8(U)																
Indeno(1,2,3-cd)pyrene (µg/L)				9.8(U)																
Naphthalene (µg/L)				9.8(U)																
Phenanthrene (µg/L)				9.8(U)																
Pyrene (µg/L)				9.8(U)																
Radiological Compounds																				
Alpha (pCi/L)				12.5																
Beta (pCi/L)				7.54																

Table 38. Results for Location OW20S (ESP Location B02W20S)

Parameter (unit)	4/30/1997	4/8/1998	6/10/1999	1/7/2000	7/20/2000	5/8/2001	5/21/2002	5/15/2003	5/16/2003	4/26/2004	5/23/2005	5/17/2006	6/12/2007	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/28/2009	5/17/2010	10/28/2010
Radium-226 (pCi/L)	0.03	0.24(J)	0.1	0.14(U)	0.1	0.23(U)	0.09(U)	0.08(U)		0.18(U)	0.08(U)	0.09(U)	0.21	0.25	0.37	0.39(U)	0.77	0.77	0.28(U)	0.16(U)
Radium-226, Dissolved (pCi/L)										0.08(U)		0.05(U)								
Radium-228 (pCi/L)	0.09	0.34	U		0.5	0.7(U)	0.38(U)	0.01(U)		0.36(U)	0.18(U)	0.11(U)	0.3(U)	0.23(U)	1.09(J)	1.5(J)	0.46(U)	0.46(U)	0.62(U)	0.25(U)
Radium-228, Dissolved (pCi/L)										1.07(U)		0.32(U)								
Thorium-228 (pCi/L)				0.14(U)									-0.02(U)	0.24(U)	0.03(U)	0.04(U)	0.03(U)	0.03(U)	0(U)	0.01(U)
Thorium-230 (pCi/L)	0.37	0.37	0.5	0.08(U)	0.03	U	0.61	0.11		1.86	0.08(J)	0.02(U)	0.02(U)	0.1(U)	0.02(U)	0.11(U)	0.15(U)	0.15(U)	0.02(U)	-0.15(U)
Thorium-230, Dissolved (pCi/L)										0.58(U)		0.01(U)								
Thorium-232 (pCi/L)	0.14	0.41	U	0(U)	0.01	0.01(U)	0.03	0(U)		0.37(U)	0.01(U)	0.01(U)	0.07(U)	0.05(U)	-0.02(U)	0.09(U)	-0.02(U)	-0.02(U)	-0.01(U)	-0.01(U)
Thorium-232, Dissolved (pCi/L)										0.22(U)		0.02(U)								
Total Radium (pCi/L)			0.1*		0.6*	U *	U *	U *		U *	U *	U *	0.21*	U *	1.09*	1.5*		0.77*		
Total Radium, Dissolved (pCi/L)										U *		U *								
Total Thorium (pCi/L)														U *	U *	U *		U *		
Total Uranium (µg/L)		13.69*	12.21*	11.4	11.93*	11.32*	13.18*	12.59*		12.18*	12.46*	10.72*	9.01*	12.45*	11.55*	11.23*		12.64*	12.26*	13.59*
Total Uranium (pCi/L)	7.68	9.95*	8.2*		8.67*	9.37*	9.66*	10.6*		8.83*	9.81*	8.2*	7.32*	9.54*	8.85*	9.75*		9.83*		
Total Uranium, Dissolved (µg/L)										9.39*		11.9*								
Total Uranium, Dissolved (pCi/L)										7.81*		9.34*								
Uranium-233/234 (pCi/L)				4.68									4.38		4.84			5.21		
Uranium-234 (pCi/L)		5.23	4		4.57	5.37	5.1	5.39		4.47	5.57	4.51	4.38	5.16		5.74	5.21		5.2	5.21
Uranium-234, Dissolved (pCi/L)										4.79		5.26								
Uranium-235 (pCi/L)		0.24(UJ)	0.2		0.19	0.31	0.25	1.24		0.4	0.15(J)	0.18(J)	0.21(U)	0.32		0.35	0.44		0.28(U)	0.16
Uranium-235, Dissolved (pCi/L)										0.53(U)		0.18(J)								
Uranium-235/236 (pCi/L)				0.08(U)									0.21(U)		0.2			0.44		
Uranium-238 (pCi/L)		4.48	4	3.18	3.91	3.69	4.31	3.97		3.96	4.09	3.51	2.94	4.06	3.81	3.65	4.17	4.17	4	4.46
Uranium-238, Dissolved (pCi/L)										3.02		3.9								

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect. Total uranium values reported in µg/L are calculated per Section 4.1.2.
Qualifiers: B = analyte detected between IDL and CRDL/CRQL; D = analyte quantified in an analysis performed at a secondary dilution factor; E= concentration exceeds the upper level of the calibration range; J = analytical result is an estimated concentration; N = Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte; R = analytical result is unusable; U = analyte is a non-detect at the reporting limit; $^{+}$ = Duplicate sample analysis for an analyte is out of control.

Table 39. Surface Water Results for Location SWSD009

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Volatile Organic Compounds																		
1,1,1-Trichloroethane (µg/L)												1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)												1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)												1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)												1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)												1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)												1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)												1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)												1.46(J)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)												5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)												6.4	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)												33.2(J)	5(U)	4.3(J)		3.2(J)		
Benzene (µg/L)												0.67(J)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)												1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)												1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)												1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)												5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)												1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)												0.41(J)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)												1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)												1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)												1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)												1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)												1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)												1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)												5(U)	10(U)	0.2(U)		0.2(U)		
Styrene (µg/L)												1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)												1(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)												0.26(J)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)												1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)												1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)												1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)												1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)												1(U)	1(U)	0.66(U)		0.66(U)		
Metals																		
Aluminum (µg/L)												1470	2210	280		570		
Antimony (µg/L)												12.2	2	2		0.97		
Arsenic (µg/L)												2.1(J)	2.3(J)	3.7		5.1		
Barium (µg/L)												95.3	84.4	71		64		
Beryllium (µg/L)												0.12(J)	0.1(U)	0.12(U)		0.12(U)		
Boron (µg/L)												373	531	500(U)				
Cadmium (µg/L)												0.19(J)	0.16(J)	0.12(U)		0.37(J)		
Calcium (µg/L)												190000	204000	160000		190000		
Chromium (µg/L)												2.6(J)	6.8	2.4		3.2		
Cobalt (µg/L)												1.8	1.8	0.12(U)		1.3(J)		
Copper (µg/L)												12.7	10.9	5.6		12		
Iron (µg/L)												2990	3880	1200		1100		
Lead (µg/L)												7.9	8.2	1.4		3.6		
Lithium (µg/L)												31.8	23	67				
Magnesium (µg/L)												51700	63100	95000		84000		

Table 39. Surface Water Results for Location SWSD009

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Manganese (µg/L)												140	119	310		230		
Mercury (µg/L)												0.03(U)	0.07(U)	0.03(U)		0.04(U)		
Nickel (µg/L)												10.1	9.2	8.2		14		
Potassium (µg/L)												18600	5940	12000		14000		
Selenium (µg/L)												2(J)	1.7(J)	6.7		12		
Silver (µg/L)												0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)												101000	164000(J)	170000		160000		
Thallium (µg/L)												0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)												6.6(J)	5.5(J)	1.1		4.1		
Zinc (µg/L)												43.1	48.7	36		45		
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene (µg/L)												0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)												0.2(J)	0.47(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)												0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)												0.04(J)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)												0.04(J)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)												0.08(J)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)												0.02(J)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)												0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)												0.03(J)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)												0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)												0.15	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)												0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)												0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)												0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)												0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)												0.12	0.05(U)	0.03(U)		0.01(U)		
PCB																		
Aroclor-1016 (µg/L)												0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)												0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)												0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)												0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)												0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)												0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)												0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides																		
4,4'-DDD (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		

Table 39. Surface Water Results for Location SWSD009

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Endrin aldehyde (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
Endrin ketone (µg/L)												0.19(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)												0.09(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)												0.94(U)	0.18(U)	0(U)		0(U)		
Toxaphene (µg/L)												2.36(U)	0.45(U)	0.04(U)		0.04(U)		
Radiological Compounds																		
Radium-226 (pCi/L)	0.1	0.41(UJ)	0.1	0.21	0.37	0.31	0.19(U)	0.3(U)	0.34(Jf)	0.29(J)	0.32(U)	0.57(U)	0.28	0.97(J)	0.32(U)	0.32(U)	0.2(U)	0.35(U)
Radium-228 (pCi/L)	0.04	0.58(UJ)	U	0.11	0.75	0.36	0.77(U)	0.66(U)	-0.1(Ug)	0.33(U)	1.71(U)	0.1(U)	0.2	0.63(U)	0.49(U)	0.49(U)	0.56(U)	0.23(U)
Thorium-228 (pCi/L)											0.58	0.11(U)	0.03(U)	0.17(U)	0.12(U)	0.12(U)	0.12(U)	-0.21(U)
Thorium-230 (pCi/L)	0.22	0.63	0.1	0.1	0.24	0.53	0.6	0.56	-0.02(U)	0.15(U)	0.4	0.11(U)	-0.01(U)	0.12(U)	0.34(J)	0.34(J)	0.24(J)	0.03(U)
Thorium-232 (pCi/L)	0.12	0.46(UJ)	0.1	0.07	0.14	0.06	0.09(U)	0.07(U)	0.01(U)	0(J)	0(U)	0.08(U)	-0.02(U)	-0.01(U)	0.06(U)	0.06(U)	0(U)	-0.05(U)
Total Radium (pCi/L)											U *	U *	0.48*	0.97*		U *		
Total Thorium (pCi/L)												U *	U *	U *		0.34*		
Total Uranium (pCi/L)	2.77	8.67*	1.8*	1.96*	5.53*	3.86*	4.11*	3.67*	3.55*	4.53*	2.94*	2.96*	8.68*	3.41*		3.09*		
Uranium-234 (pCi/L)		4.42	1	1.08	3.55	2.07	1.9	2.35	1.99	2.46	1.64(J)	1.15	4.4	1.93	1.44	1.44	1.79	1.53
Uranium-235 (pCi/L)		0.34	U	0.09	0.19	0.05	0.19(U)	0.14(U)	0.05(J)	0.1(J)	0.09	0.26(U)	0.2	-0.01(U)	0.26	0.26	0.15(U)	0.1(U)
Uranium-238 (pCi/L)		3.91	0.8	0.8	1.79	1.74	2.02	1.32	1.51	1.97	1.21(J)	1.81	4.08	1.48	1.38	1.38	1.78	1.1

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 40. Sediment Results for SWSD009

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010
Volatile Organic Compounds																	
1,1,1-Trichloroethane (µg/kg)												1.98(U)	2.22(U)	17(U)		0.33(U)	
1,1,2,2-Tetrachloroethane (µg/kg)												1.98(U)	2.22(U)	32(U)		0.61(U)	
1,1,2-Trichloroethane (µg/kg)												1.98(U)	2.22(U)	22(U)		0.42(U)	
1,1-Dichloroethane (µg/kg)												1.98(U)	2.22(U)	22(U)		0.42(U)	
1,1-Dichloroethylene (µg/kg)												1.98(U)	2.22(U)	22(U)		0.43(U)	
1,2-Dichloroethane (µg/kg)												1.98(U)	2.22(U)	19(U)		0.37(U)	
1,2-Dichloropropane (µg/kg)												1.98(U)	2.22(U)	28(U)		0.54(U)	
2-Butanone (µg/kg)												4.65(J)	11.1(U)	71(U)		1.4(U)	
2-Hexanone (µg/kg)												9.89(U)	11.1(U)	36(U)		0.68(U)	
4-Methyl-2-pentanone (µg/kg)												9.89(U)	11.1(U)	27(U)		0.53(U)	
Acetone (µg/kg)												39.8	11.1(U)	57(U)		140(R)	
Benzene (µg/kg)												1.98(U)	2.22(U)	17(U)		0.33(U)	
Bromodichloromethane (µg/kg)												1.98(U)	2.22(U)	17(U)		0.32(U)	
Bromoform (µg/kg)												1.98(U)	2.22(U)	22(U)		0.42(U)	
Bromomethane (µg/kg)												1.98(U)	2.22(U)	170(U)		3.2(U)	
Carbon disulfide (µg/kg)												9.89(U)	11.1(U)	48(U)		0.91(U)	
Carbon tetrachloride (µg/kg)												1.98(U)	2.22(U)	20(U)		0.39(U)	
Chlorobenzene (µg/kg)												1.98(U)	2.22(U)	18(U)		0.34(U)	
Chloroethane (µg/kg)												1.98(U)	2.22(U)	190(U)		3.6(U)	
Chloroform (µg/kg)												1.98(U)	2.22(U)	17(U)		0.33(U)	
Chloromethane (µg/kg)												1.98(U)	2.22(U)	23(U)		0.45(U)	
cis-1,2-Dichloroethylene (µg/kg)												1.98(U)	2.22(U)	22(U)		0.43(U)	
cis-1,3-Dichloropropylene (µg/kg)												1.98(U)	2.22(U)	15(U)		0.29(U)	
Ethylbenzene (µg/kg)												1.98(U)	2.22(U)	22(U)		0.42(U)	
Methylene chloride (µg/kg)												9.89(U)	22.2(U)	67(J)		11(J)	
Styrene (µg/kg)												1.98(U)	2.22(U)	17(U)		0.32(U)	
Tetrachloroethylene (µg/kg)												1.98(U)	2.22(U)	25(U)		0.47(U)	
Toluene (µg/kg)												1.98(U)	2.22(U)	22(U)		0.41(U)	
trans-1,2-Dichloroethylene (µg/kg)												1.98(U)	2.22(U)	17(U)		0.32(U)	
trans-1,3-Dichloropropylene (µg/kg)												1.98(U)	2.22(U)	21(U)		0.41(U)	
Trichloroethylene (µg/kg)												1.98(U)	2.22(U)	40(U)		0.77(U)	
Vinyl chloride (µg/kg)												1.98(U)	2.22(U)	21(U)		0.39(U)	
Xylenes (total) (µg/kg)												0.64(J)	2.22(U)	64(U)		1.2(U)	
Metals																	
Aluminum (mg/kg)												12800	11500	21000		18000	
Antimony (mg/kg)												2.1(J)	2.9	0.31		1.4	
Arsenic (mg/kg)												4.4	4.8	5.2		4.8	
Barium (mg/kg)												86.9	93.6	110		130	
Beryllium (mg/kg)												0.58	0.62	0.64		1.1	
Boron (mg/kg)												24.4	18.8				
Cadmium (mg/kg)												0.71	0.8	1.6		0.99	
Calcium (mg/kg)												44200	31900	60000		52000	
Chromium (mg/kg)												35.1	31.1	44		44	
Cobalt (mg/kg)												8.1	8.4	11		12	
Copper (mg/kg)												46.1	79.6(J)	60		65	
Iron (mg/kg)												17900	18100	23000		23000	
Lead (mg/kg)												36.7	36.8	41		44	
Lithium (mg/kg)												20.5	21				
Magnesium (mg/kg)												9530	10200	16000		15000	

Table 40. Sediment Results for SWSD009

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010
Manganese (mg/kg)												518	387	640		600	
Mercury (mg/kg)												0.16	0.19	0.17		0.11	
Nickel (mg/kg)												20.6	20.8	28		30	
Potassium (mg/kg)												2470	2550(J)	3800		3400	
Selenium (mg/kg)												1.1(U)	1.11(U)	0.83		0.74	
Silver (mg/kg)												1.1(J)	0.21(U)	0.56		0.24	
Sodium (mg/kg)												433	425	410		620	
Thallium (mg/kg)												0.15(J)	0.18(J)	0.15		0.18	
Vanadium (mg/kg)												22.9	26.4	32		22	
Zinc (mg/kg)												233	217	410		280	
Polycyclic Aromatic Hydrocarbons																	
Acenaphthene (µg/kg)												37.7(U)	147(U)	150(J)		320	
Acenaphthylene (µg/kg)												37.7(U)	147(U)	9.3(U)		7.7(U)	
Anthracene (µg/kg)												37.7(U)	79.8(J)	74(J)		67	
Benzo(a)anthracene (µg/kg)												77.9	463	290(J)		490	
Benzo(a)pyrene (µg/kg)												86	477	540(J)		510	
Benzo(b)fluoranthene (µg/kg)												150(J)	499	410(J)		460	
Benzo(ghi)perylene (µg/kg)												43	207	420(J)		350	
Benzo(k)fluoranthene (µg/kg)												1.89(U)	7.36(U)	150(J)		190	
Chrysene (µg/kg)												60.7	352	270(J)		410	
Dibenzo(a,h)anthracene (µg/kg)												3.77(U)	14.7(U)	66(J)		11(U)	
Fluoranthene (µg/kg)												123	572	1400(J)		1300	
Fluorene (µg/kg)												37.7(U)	147(U)	63(J)		2.7(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)												3.77(U)	14.7(U)	170(J)		5.4	
Naphthalene (µg/kg)												37.7(U)	147(U)	6.5(U)		5.4(U)	
Phenanthrene (µg/kg)												60.4	271	340(J)		310	
Pyrene (µg/kg)												115	620	770(J)		630	
PCB																	
Aroclor-1016 (µg/kg)												74.9(U)	36.7(U)	7.2(U)		6(U)	
Aroclor-1221 (µg/kg)												74.9(U)	36.7(U)	7.1(U)		5.9(U)	
Aroclor-1232 (µg/kg)												74.9(U)	36.7(U)	11(U)		8.9(U)	
Aroclor-1242 (µg/kg)												54.7(J)	36.7(U)	8.9(U)		7.4(U)	
Aroclor-1248 (µg/kg)												74.9(U)	29.6(J)	8.4(U)		7(U)	
Aroclor-1254 (µg/kg)												51.8(J)	23.5(J)	10(U)		8.4(U)	
Aroclor-1260 (µg/kg)												74.9(U)	36.7(U)	7(U)		5.8(U)	
Pesticides																	
4,4'-DDD (µg/kg)												30(U)	29.4(U)	1.1(U)		1.1(U)	
4,4'-DDE (µg/kg)												30(U)	29.4(U)	0.39(U)		0.4(U)	
4,4'-DDT (µg/kg)												30(U)	29.4(U)	0.4(U)		0.4(U)	
Aldrin (µg/kg)												15(U)	14.7(U)	0.37(U)		0.37(U)	
alpha-BHC (µg/kg)												15(U)	14.7(U)	0.31(U)		0.31(U)	
alpha-Chlordane (µg/kg)												15(U)	14.7(U)	0.37(U)		0.38(U)	
beta-BHC (µg/kg)												15(U)	14.7(U)	7.6(U)		0.38(U)	
delta-BHC (µg/kg)												15(U)	14.7(U)	6.1(U)		0.31(U)	
Dieldrin (µg/kg)												30(U)	29.4(U)	0.36(U)		0.36(U)	
Endosulfan I (µg/kg)												15(U)	14.7(U)	0.36(U)		0.36(U)	
Endosulfan II (µg/kg)												30(U)	29.4(U)	0.45(U)		0.46(U)	
Endosulfan sulfate (µg/kg)												30(U)	29.4(U)	0.45(U)		0.46(U)	
Endrin (µg/kg)												30(U)	29.4(U)	0.5(U)		0.5(U)	
Endrin aldehyde (µg/kg)												30(U)	29.4(U)	0.43(U)		0.43(U)	

Table 40. Sediment Results for SWSD009

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010
Endrin ketone (µg/kg)												30(U)	29.4(U)	0.41(U)		0.42(U)	
gamma-BHC (Lindane) (µg/kg)												15(U)	14.7(U)	7(U)		0.36(U)	
gamma-Chlordane (µg/kg)												15(U)	14.7(U)	0.48(U)		0.48(U)	
Heptachlor (µg/kg)												15(U)	14.7(U)	7.8(U)		0.4(U)	
Heptachlor epoxide (µg/kg)												15(U)	14.7(U)	7.6(U)		0.38(U)	
Methoxychlor (µg/kg)												150(U)	147(U)	0.52(U)		0.52(U)	
Toxaphene (µg/kg)												749(U)	734(U)	9.8(U)		10(U)	
Radiological Compounds																	
Radium-226 (pCi/g)	0.41	1.51	1.8	0.21	0.93	0.81	1	0.74	1.1	0.98	0.88	1	1.18	0.91	0.37(J)	0.37(J)	0.97
Radium-228 (pCi/g)	1.13	0.99	2.5	1.15	0.89	0.48	0.79	0.86	0.89(U)	0.8	0.79	1.23	1.87	0.96(U)	1.39	1.39	1.65
Thorium-228 (pCi/g)												1.6(J)	0.63	1.1	1.28	1.28	1.71
Thorium-230 (pCi/g)	1.75	1.14	1.3	3.34	2.57	1.4	1.08	1.27	1.04	1.32	1.29	1.14	0.98(J)	1.22	1(J)	1(J)	2.25
Thorium-232 (pCi/g)	1.39	0.85	1.4	1.11	1.19	0.76	1.07	0.82	0.69	0.99	1.29	0.97	1.06	1.21	1.02	1.02	5.97
Total Radium (pCi/g)											1.67*	2.23*	3.05*	0.91*		1.77*	
Total Uranium (pCi/g)	2.27	3.96*	2.6*	2.09*	4.27*	5.97*	3.74*	2.33*	2.46*	2.72*	3.75*	2.82*	2.3*	2.08*		2.7*	
Uranium-233/234 (pCi/g)											1.94(J)						
Uranium-234 (pCi/g)		2.14	1.2	1.01	1.85	3.14	1.94	1.11	1.17	1.37		1.41	1.1	1.14	1.28	1.28	1.33
Uranium-235 (pCi/g)		- 0.01(UJ)	0.1	0.06	0.12	0.28	0.56	0.08(U)	0.07(J)	0.06(J)		0.19	0.07	0.08	0.11	0.11	0.15
Uranium-235/236 (pCi/g)											0.22						
Uranium-238 (pCi/g)		1.83	1.3	1.02	2.3	2.55	1.24	1.22	1.22	1.29	1.59	1.22	1.13	0.87	1.32	1.32	0.99

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 41. Surface Water Results for SWSD010

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	11/8/2005	5/18/2006	6/14/2007	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010	10/28/2010
Volatile Organic Compounds																			
1,1,1-Trichloroethane (µg/L)													1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)													1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)													1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)													1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)													1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)													1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)													1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)													5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)													5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)													3.56(J)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)													5.57(J)	5(U)	3.8(J)		2.6(J)		
Benzene (µg/L)													1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)													1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)													1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)													1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)													5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)													1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)													1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)													1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)													1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)													1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)													1(U)	3.58	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)													1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)													1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)													5(U)	10(U)	0.2(U)		0.88(U)		
Styrene (µg/L)													1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)													1(U)	7.91	0.26(U)		0.26(U)		
Toluene (µg/L)													1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)													1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)													1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)													1(U)	3.63	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)													1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)													1(U)	1(U)	0.66(U)		0.66(U)		
Metals																			
Aluminum (µg/L)													227	1320	570		690		
Antimony (µg/L)													6.2	1.8(J)	1.2		2.5		
Arsenic (µg/L)													5(U)	1.9(J)	2.1		3.7		
Barium (µg/L)													88.4	74.7	81		98		
Beryllium (µg/L)													0.1(U)	0.1(U)	0.12(U)		0.12(U)		
Boron (µg/L)													534	984	590				
Cadmium (µg/L)													0.11(U)	0.11(U)	0.12(U)		0.12(U)		
Calcium (µg/L)													172000	146000	160000		160000		
Chromium (µg/L)													5.5	23.9	4.5		5.8		
Cobalt (µg/L)													0.94(J)	1.2	0.12(U)		1(J)		
Copper (µg/L)													5.8	7.3	4.9		4.7		
Iron (µg/L)													1190	2430	1200		1600		
Lead (µg/L)													2.8	4.4	2.8		2.3		
Lithium (µg/L)													29	22.6	38				
Magnesium (µg/L)													42400	36600	66000		63000		
Manganese (µg/L)													250	156	240		240		
Mercury (µg/L)													0.03(U)	0.07(U)	0.03(U)		0.04(U)		
Nickel (µg/L)													7.9	6.9	6.8		11		
Potassium (µg/L)													14700	6010	8900		10000		
Selenium (µg/L)													1.3(J)	3.2(J)	4.4		11		
Silver (µg/L)													0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)													97300	76300(J)	120000		120000		

Table 41. Surface Water Results for SWSD010

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	11/8/2005	5/18/2006	6/14/2007	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010	10/28/2010
Thallium (µg/L)													0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)													3(U)	4.4(J)	2		3.6		
Zinc (µg/L)													21.1	31.2	16		29		
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene (µg/L)													0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)													0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)													0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)													0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)													0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)													0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)													0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)													0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)													0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)													0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)													0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)													0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)													0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)													0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)													0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)													0.02(J)	0.05(U)	0.03(U)		0.01(U)		
PCB																			
Aroclor-1016 (µg/L)													0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)													0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)													0.1(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)													0.1(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)													0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)													0.1(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)													0.1(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides																			
4,4'-DDD (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)													0.1(U)	0.01(J)	0(U)		0(U)		
Dieldrin (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)													0.1(U)	0.08	0(U)		0(U)		
Endosulfan II (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
Endrin ketone (µg/L)													0.19(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)													0.1(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)													0.96(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)													2.4(U)	0.47(U)	0.04(U)		0.04(U)		
Radiological Compounds																			
Radium-226 (pCi/L)	0.15	0.38(UJ)	U	0.24	0.59	0.1	0.43(U)	3.34	0.44(J)	0.73	0.16(J)	0.43	0.62(U)	0.88	1.45(J)	0.35(U)	0.35(U)	0.27(U)	0.69
Radium-228 (pCi/L)	0.1	0.09(UJ)	U	0.26	0.28	0.19	0.62(U)	0.67(U)	0.45(U)	1.6	-0.5(U)	-0.08(U)	0.2(U)	1.07(J)	0.93(U)	0.7(U)	0.7(U)	-0.35(U)	0.46
Thorium-228 (pCi/L)										0.4		-0.02(U)	-0.04(U)	0.08(U)	0.11(U)	0.03(U)	0.03(U)	0.08(U)	0.03(U)
Thorium-230 (pCi/L)	0.34	0.61	0.2	0.34	0.66	0.65	0.41	12.2	0.14	1.5	0.03(UJ)	0.36	0.03(U)	0.02(U)	0.17(U)	0.15(U)	0.27(U)	0.1(U)	0.04(U)
Thorium-232 (pCi/L)	0.1	0.25(UJ)	U	0.17	0.12	0.07	0.09(U)	14.7	0.1	0.4	0.02(UJ)	0.04(U)	-0.01(U)	0.01(U)	0.17(U)	0.03(U)	0.03(U)	0.03(U)	0.08(U)
Total Radium (pCi/L)												0.43*	U *	1.95*	1.45*		U *		

Table 41. Surface Water Results for SWSD010

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	11/8/2005	5/18/2006	6/14/2007	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010	10/28/2010
Total Thorium (pCi/L)													U *	U *	U *		U *		
Total Uranium (pCi/L)	5.45	9.85*	1.8*	3.93*	10.44*	5.88*	7.07*	37.32*	7.07*	7.3*	4.63*	4.19*	4.21*	4.66*	13.66*		4.21*		
Uranium-234 (pCi/L)		5.44	1	2.14	5.35	3.1	3.97	19.1	3.66	4.1	2.66	2.45	2.14	2.55	7.12	2.23	2.23	6.4	1.22
Uranium-235 (pCi/L)		0.66	U	0.1	0.43	0.14	0.15(U)	1.62(U)	0.11(J)	0.1	0.09(J)	0.15(U)	-0.02(U)	0.2	0.85	0.08(U)	0.08(U)	0.74	0.08(U)
Uranium-238 (pCi/L)		3.75	0.8	1.69	4.66	2.64	2.95	16.6	3.3	3.1	1.88	1.74	2.07	1.92	5.69	1.98	1.98	5.1	0.83

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 42. Sediment Results for SWSD010

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	11/8/2005	5/18/2006	6/14/2007	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010
Volatile Organic Compounds																		
1,1,1-Trichloroethane (µg/kg)													2.27(U)	3.82(U)	24(U)		0.75(U)	
1,1,2,2-Tetrachloroethane (µg/kg)													2.27(U)	3.82(U)	45(U)		1.4(U)	
1,1,2-Trichloroethane (µg/kg)													2.27(U)	3.82(U)	31(U)		0.97(U)	
1,1-Dichloroethane (µg/kg)													2.27(U)	3.82(U)	30(U)		0.96(U)	
1,1-Dichloroethylene (µg/kg)													2.27(U)	3.82(U)	31(U)		0.98(U)	
1,2-Dichloroethane (µg/kg)													2.27(U)	3.82(U)	27(U)		0.85(U)	
1,2-Dichloropropane (µg/kg)													2.27(U)	3.82(U)	40(U)		1.2(U)	
2-Butanone (µg/kg)													12	19.1(U)	99(U)		19(J)	
2-Hexanone (µg/kg)													11.4(U)	19.1(U)	50(U)		1.6(U)	
4-Methyl-2-pentanone (µg/kg)													11.4(U)	19.1(U)	38(U)		1.2(U)	
Acetone (µg/kg)													38.2	19.1(U)	80(U)		2.5(U)	
Benzene (µg/kg)													2.27(U)	3.82(U)	24(U)		0.75(U)	
Bromodichloromethane (µg/kg)													2.27(U)	3.82(U)	23(U)		0.73(U)	
Bromoform (µg/kg)													2.27(U)	3.82(U)	31(U)		0.97(U)	
Bromomethane (µg/kg)													2.27(U)	3.82(U)	240(U)		7.4(U)	
Carbon disulfide (µg/kg)													11.4(U)	19.1(U)	67(U)		2.1(U)	
Carbon tetrachloride (µg/kg)													2.27(U)	3.82(U)	28(U)		0.89(U)	
Chlorobenzene (µg/kg)													2.27(U)	3.82(U)	25(U)		0.79(U)	
Chloroethane (µg/kg)													2.27(U)	3.82(U)	260(U)		8.2(U)	
Chloroform (µg/kg)													2.27(U)	3.82(U)	24(U)		0.75(U)	
Chloromethane (µg/kg)													2.27(U)	3.82(U)	33(U)		1(U)	
cis-1,2-Dichloroethylene (µg/kg)													2.27(U)	3.82(U)	31(U)		0.98(U)	
cis-1,3-Dichloropropylene (µg/kg)													2.27(U)	3.82(U)	21(U)		0.66(U)	
Ethylbenzene (µg/kg)													2.27(U)	3.82(U)	30(U)		0.96(U)	
Methylene chloride (µg/kg)													11.4(U)	38.2(U)	100(J)		21(J)	
Styrene (µg/kg)													2.27(U)	3.82(U)	23(U)		0.73(U)	
Tetrachloroethylene (µg/kg)													2.27(U)	3.82(U)	34(U)		1.1(U)	
Toluene (µg/kg)													2.27(U)	3.82(U)	30(U)		0.95(U)	
trans-1,2-Dichloroethylene (µg/kg)													2.27(U)	3.82(U)	24(U)		0.74(U)	
trans-1,3-Dichloropropylene (µg/kg)													2.27(U)	3.82(U)	30(U)		0.93(U)	
Trichloroethylene (µg/kg)													2.27(U)	3.82(U)	56(U)		1.8(U)	
Vinyl chloride (µg/kg)													2.27(U)	3.82(U)	29(U)		0.9(U)	
Xylenes (total) (µg/kg)													2.27(U)	3.82(U)	90(U)		2.8(U)	
Metals																		
Aluminum (mg/kg)													19900(J)	13500	21000		27000	
Antimony (mg/kg)													0.74(J)	2.7(J)	1.3		3.4	
Arsenic (mg/kg)													7(J)	5.6	6.7		12	
Barium (mg/kg)													148(J)	98.7	99		150	
Beryllium (mg/kg)													0.97(J)	0.71	0.68		1.4	
Boron (mg/kg)													36.4(J)	27.1	25			
Cadmium (mg/kg)													0.78(J)	0.51(J)	1.3		1.4	
Calcium (mg/kg)													59300(J)	18600	46000		56000	
Chromium (mg/kg)													49.7(J)	46.5	65		120	
Cobalt (mg/kg)													11.5(J)	9.2	12		19	
Copper (mg/kg)													64.9(J)	124(J)	73		110	
Iron (mg/kg)													34500(J)	19000	25000		38000	
Lead (mg/kg)													67.6(J)	46.6	55		88	
Lithium (mg/kg)													32.4(J)	23.3	44			
Magnesium (mg/kg)													13800(J)	9480	16000		20000	
Manganese (mg/kg)													798(J)	287	650		860	
Mercury (mg/kg)													0.3(J)	0.31	0.26		0.24	
Nickel (mg/kg)													28.4(J)	23.6	30		46	
Potassium (mg/kg)													5440(J)	3720(J)	4500		5200	
Selenium (mg/kg)													1.12(U)	1.89(U)	1.1		2.3	
Silver (mg/kg)													0.63(J)	0.37(U)	0.32		0.36	
Sodium (mg/kg)													698(J)	591	460		890	

Table 42. Sediment Results for SWSD010

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	11/8/2005	5/18/2006	6/14/2007	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010
Thallium (mg/kg)													0.25(J)	0.22(J)	0.18		0.3(J)	
Vanadium (mg/kg)													36.1(J)	28.1	35		33	
Zinc (mg/kg)													364(J)	236	460		470	
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene (µg/kg)													37.9(U)	63.6(U)	110		15(U)	
Acenaphthylene (µg/kg)													37.9(U)	63.6(U)	12(U)		17(U)	
Anthracene (µg/kg)													37.9(U)	63.6(U)	46(J)		41(J)	
Benzo(a)anthracene (µg/kg)													88.6	117	270		430	
Benzo(a)pyrene (µg/kg)													88.5	129	670		710	
Benzo(b)fluoranthene (µg/kg)													176	160	570		610	
Benzo(ghi)perylene (µg/kg)													55.1	88.7(J)	710		520	
Benzo(k)fluoranthene (µg/kg)													1.9(U)	71.5	260		290	
Chrysene (µg/kg)													76	94.7	230		380	
Dibenzo(a,h)anthracene (µg/kg)													3.79(U)	6.36(U)	18(U)		25(U)	
Fluoranthene (µg/kg)													124	170	1300		1300	
Fluorene (µg/kg)													37.9(U)	63.6(U)	23(J)		6(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)													3.79(U)	91.4(J)	270		430	
Naphthalene (µg/kg)													37.9(U)	63.6(U)	8.5(U)		12(U)	
Phenanthrene (µg/kg)													56.7(J)	86.8	280		260	
Pyrene (µg/kg)													136	172	830		590	
PCB																		
Aroclor-1016 (µg/kg)													75.3(U)	63.4(U)	9.5(U)		13(U)	
Aroclor-1221 (µg/kg)													75.3(U)	63.4(U)	9.4(U)		13(U)	
Aroclor-1232 (µg/kg)													75.3(U)	63.4(U)	14(U)		20(U)	
Aroclor-1242 (µg/kg)													75.3(U)	63.4(U)	12(U)		17(U)	
Aroclor-1248 (µg/kg)													75.3(U)	42.1(J)	11(U)		16(U)	
Aroclor-1254 (µg/kg)													51.3(J)	40.2(J)	13(U)		19(U)	
Aroclor-1260 (µg/kg)													75.3(U)	28.5(J)	9.2(U)		13(U)	
Pesticides																		
4,4'-DDD (µg/kg)													30.2(U)	50.6(U)	1.7(U)		2.4(U)	
4,4'-DDE (µg/kg)													30.2(U)	50.6(U)	0.63(U)		0.89(U)	
4,4'-DDT (µg/kg)													30.2(U)	50.6(U)	0.64(U)		0.9(U)	
Aldrin (µg/kg)													15.1(U)	25.3(U)	0.59(U)		0.84(U)	
alpha-BHC (µg/kg)													15.1(U)	25.3(U)	0.5(U)		0.71(U)	
alpha-Chlordane (µg/kg)													15.1(U)	25.3(U)	0.6(U)		0.85(U)	
beta-BHC (µg/kg)													15.1(U)	25.3(U)	0.61(U)		0.86(U)	
delta-BHC (µg/kg)													15.1(U)	25.3(U)	0.49(U)		0.69(U)	
Dieldrin (µg/kg)													30.2(U)	50.6(U)	0.58(U)		0.82(U)	
Endosulfan I (µg/kg)													15.1(U)	25.3(U)	0.57(U)		0.81(U)	
Endosulfan II (µg/kg)													30.2(U)	50.6(U)	0.73(U)		1(U)	
Endosulfan sulfate (µg/kg)													30.2(U)	50.6(U)	0.73(U)		1(U)	
Endrin (µg/kg)													30.2(U)	50.6(U)	0.8(U)		1.1(U)	
Endrin aldehyde (µg/kg)													30.2(U)	50.6(U)	0.68(U)		0.97(U)	
Endrin ketone (µg/kg)													30.2(U)	50.6(U)	0.66(U)		0.94(U)	
gamma-BHC (Lindane) (µg/kg)													15.1(U)	25.3(U)	0.56(U)		0.8(U)	
gamma-Chlordane (µg/kg)													15.1(U)	25.3(U)	0.76(U)		1.1(U)	
Heptachlor (µg/kg)													15.1(U)	25.3(U)	0.63(U)		0.89(U)	
Heptachlor epoxide (µg/kg)													15.1(U)	25.3(U)	0.61(U)		0.87(U)	
Methoxychlor (µg/kg)													151(U)	253(U)	0.83(U)		1.2(U)	
Toxaphene (µg/kg)													756(U)	1260(U)	16(U)		22(U)	
Radiological Compounds																		
Radium-226 (pCi/g)	0.17	1.25	3.4	0.24	0.91	0.79	0.99	0.89	1.23	1.42	0.63	0.86	1.33	0.95	0.78	0.44(J)	0.44(J)	1.08
Radium-228 (pCi/g)	1.39	1.14	2.6	1.88	1.03	0.64	0.91	0.94	1.49(Uh)	1.23	0.98	1.14	0.24(U)	0.92	0.97(U)	1.19	1.19	0.43(U)
Thorium-228 (pCi/g)										0.91			1.53(J)	1.26	1.57	1.13(J)	1.13(J)	1.08
Thorium-230 (pCi/g)	2.3	1.48	1.4	1.25	1.33	1.56	2.04	1.27	1.01	1.95	1.11	1	1.23	1.31	1.39	1.29	1.29	1.13
Thorium-232 (pCi/g)	1.57	1.03	1.1	0.98	1.28	1.12	1.35	1.14	0.99	0.84	0.98	1.01	1	1.19	1.21	1.08	1.08	1.1
Total Radium (pCi/g)												2*	1.33*	1.86*	0.78*		1.64*	

Table 42. Sediment Results for SWSD010

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	11/8/2005	5/18/2006	6/14/2007	6/18/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010
Total Uranium (pCi/g)	1.89	4.2*	3.9*	2.17*	3.76*	3.94*	2.68*	2.9*	3.7*	2.98*	3.21*	3.15*	3.18*	5.83*	4.9*		6.16*	
Uranium-233/234 (pCi/g)												1.41(J)						
Uranium-234 (pCi/g)		2.08(J)	2	1.03	1.96	2.04	1.12	1.61	1.88	1.37	1.68		1.33	2.96	2.44	3.4	3.4	2.13
Uranium-235 (pCi/g)		0.1(UJ)	0.1	0.06	0.08	0.16	0.14(U)	0.16	0.08(Uh)	0.17	0.1(J)		0.18	0.11	0.18	0.14	0.14	0.12
Uranium-235/236 (pCi/g)												0.19(U)						
Uranium-238 (pCi/g)		2.02(J)	1.8	1.08	1.72	1.74	1.42	1.13	1.82	1.44	1.43	1.74	1.67	2.76	2.28	2.62	2.62	2.35

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 43. Surface Water Results for SWSD011

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	11/27/2007	6/16/2008	Fall 2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Volatile Organic Compounds																				
1,1,1-Trichloroethane (µg/L)													1(U)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)													1(U)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)													1(U)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)													1(U)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)													1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)													1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)													1(U)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)													5(U)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)													5(U)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)													3.7(J)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)													3.2(J)	5(U)	5(U)	5(U)		0.44(U)		
Benzene (µg/L)													1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)													1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)													1(U)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)													1(U)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)													5(U)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)													1(U)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)													1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)													1(U)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)													1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)													1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)													1(U)	1(U)	1(U)	0.47(J)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)													1(U)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)													1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)													5(U)	10(U)	10(U)	5(U)		0.88(U)		
Styrene (µg/L)													1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)													1(U)	2(U)	2(U)	0.7(J)		0.26(U)		
Toluene (µg/L)													1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)													1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)													1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)													1(U)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)													1(U)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)													1(U)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals																				
Aluminum (µg/L)													273	351	351	540		190		
Antimony (µg/L)													5.7	1.3(J)	1.3(J)	1.7(J)		1.4		
Arsenic (µg/L)													1.5(U)	1.5(U)	1.5(U)	1.1		3.4		
Barium (µg/L)													87.6	49.5	49.5	63		94		
Beryllium (µg/L)													0.1(U)	0.1(U)	0.1(U)	0.12(U)		0.12(U)		
Boron (µg/L)													496	750	750	350		730		
Cadmium (µg/L)													0.11(U)	0.11(U)	0.11(U)	0.12(U)		0.12(U)		
Calcium (µg/L)													138000	175000	175000	140000		160000		
Chromium (µg/L)													4.3(J)	2.2(J)	2.2(J)	4.7		2.3		
Cobalt (µg/L)													0.77(J)	0.78(J)	0.78(J)	0.12(U)		0.58(J)		
Copper (µg/L)													6	4	4	7		3.8		
Iron (µg/L)													1460	1440	1440	820		650		
Lead (µg/L)													2.3	0.54(J)	0.54(J)	0.13(U)		0.83(J)		
Lithium (µg/L)													26	22.6	22.6	19		100(U)		
Magnesium (µg/L)													46000	46600	46600	52000		66000		

Table 43. Surface Water Results for SWSD011

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	11/27/2007	6/16/2008	Fall 2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Manganese (µg/L)													77.7	159	159	260		180		
Mercury (µg/L)													0.03(U)	0.07(U)	0.07(U)	0.03(U)		0.03(U)		
Nickel (µg/L)													6.4	6	6	5		10		
Potassium (µg/L)													13000	8460(J)	8460(J)	5100		10000		
Selenium (µg/L)													1(U)	1(U)	1(U)	2.6		12		
Silver (µg/L)													0.2(U)	0.2(U)	0.2(U)	0.47(J)		0.39(U)		
Sodium (µg/L)													69400	68200	68200	53000		120000		
Thallium (µg/L)													0.3(U)	0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)													3(U)	3(U)	3(U)	1.5		2.8		
Zinc (µg/L)													19.4	14.6	14.6	14		26		
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene (µg/L)													0.48(U)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)													0.48(U)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)													0.48(U)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)													0.02(U)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)													0.48(U)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)													0.48(U)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)													0.48(U)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)													0.05(U)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB																				
Aroclor-1016 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)													0.09(U)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides																				
4,4'-DDD (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 43. Surface Water Results for SWSD011

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	11/27/2007	6/16/2008	Fall 2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/25/2010
Endrin ketone (µg/L)													0.18(U)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)													0.09(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)													0.89(U)	0.2(U)	0.2(U)	0(U)		0(U)		
Toxaphene (µg/L)													2.23(U)	0.5(U)	0.5(U)	0.04(U)		0.04(U)		
Radiological Compounds																				
Radium-226 (pCi/L)	0.08	0.3(UJ)	U	0.24	0.46	0.09	0.68	0.41	0.33(J)	0.16(J)	0.61	0.25(J)	0.26	0.71(U)	0.71(U)	0.52(U)	0.41(U)	0.41(U)		0.37
Radium-228 (pCi/L)	0.27	0.16(UJ)	U	0.8	-0.23	0.27	1.02	0.43(U)	0.56(U)	0(U)	-5.19(U)	0(U)	0.44(U)	0.27(U)	0.27(U)	0.45(U)	0.56(U)	0.56(U)	-0.11(U)	0.45
Thorium-228 (pCi/L)												0.05(U)	-0.01(U)	-0.01(U)	-0.01(U)	0.2(U)	0.02(U)	0.02(U)	0.03(U)	0.04(U)
Thorium-230 (pCi/L)	0.35	0.47	0.5	0.12	0.24	0.93	0.64	0.59(U)	0.02(U)	0.24(J)	0.33	0.05(U)	0.25(U)	0.02(U)	0.02(U)	0.29	0.1(U)	0.1(U)	0.38	0.03(U)
Thorium-232 (pCi/L)	0.04	0.11(UJ)	U	0.08	0.16	0.04	0.09(U)	0.09(U)	0.01(U)	0.02(UJ)	0.06(U)	0.1(U)	0.04(U)	-0.03(U)	-0.03(U)	0.09(U)	0.06(U)	0.06(U)	-0.02(U)	0.06(U)
Total Radium (pCi/L)											0.61*		0.26*		U *	U *		U *		
Total Thorium (pCi/L)													U *		U *	0.29*		U *		
Total Uranium (pCi/L)	8.04	8.99*	3*	3.6*	6.71*	8.22*	7.28*	9.15*	8.05*	6.37*	4.56*		2.31*		6.09*	9.65*		4.74*		
Uranium-233/234 (pCi/L)														3.19						
Uranium-234 (pCi/L)		4.78	2	1.82	4.12	4.36	3.44	4.05	4.12	3.31	2.24	2.38	1.25		3.19	4.85	2.61	2.61	4.04	3.37
Uranium-235 (pCi/L)		0.09(UJ)	U	0.11	0.17	0.19	0.76	0.74	0.16(J)	0.15(J)	0.25		0.09(U)		0.1(U)	0.2	0.17	0.17	-0.03(U)	0.31
Uranium-235/236 (pCi/L)												0.1(J)		0.1(U)						
Uranium-238 (pCi/L)		4.12	1	1.66	2.42	3.67	3.07	4.36	3.77	2.91	2.07	1.74	1.06	2.9	2.9	4.6	1.95	1.95	3.09	2.52

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 44. Sediment Results for SWSD011

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/16/2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Volatile Organic Compounds																	
1,1,1-Trichloroethane (µg/kg)												2.69(U)	2.73(U)	24(U)		0.57(U)	
1,1,2,2-Tetrachloroethane (µg/kg)												2.69(U)	2.73(U)	45(U)		1.1(U)	
1,1,2-Trichloroethane (µg/kg)												2.69(U)	2.73(U)	31(U)		0.73(U)	
1,1-Dichloroethane (µg/kg)												2.69(U)	2.73(U)	30(U)		0.72(U)	
1,1-Dichloroethylene (µg/kg)												2.69(U)	2.73(U)	31(U)		0.74(U)	
1,2-Dichloroethane (µg/kg)												2.69(U)	2.73(U)	27(U)		0.64(U)	
1,2-Dichloropropane (µg/kg)												2.69(U)	2.73(U)	40(U)		0.94(U)	
2-Butanone (µg/kg)												12.2(J)	13.7(U)	99(U)		2.4(U)	
2-Hexanone (µg/kg)												13.4(U)	13.7(U)	50(U)		1.2(U)	
4-Methyl-2-pentanone (µg/kg)												13.4(U)	13.7(U)	38(U)		0.91(U)	
Acetone (µg/kg)												44.4	13.7(U)	80(U)		95(R)	
Benzene (µg/kg)												2.69(U)	2.73(U)	24(U)		0.57(U)	
Bromodichloromethane (µg/kg)												2.69(U)	2.73(U)	23(U)		0.55(U)	
Bromoform (µg/kg)												2.69(U)	2.73(U)	31(U)		0.73(U)	
Bromomethane (µg/kg)												2.69(U)	2.73(U)	240(U)		5.6(U)	
Carbon disulfide (µg/kg)												13.4(U)	13.7(U)	67(U)		1.6(U)	
Carbon tetrachloride (µg/kg)												2.69(U)	2.73(U)	28(U)		0.67(U)	
Chlorobenzene (µg/kg)												2.69(U)	2.73(U)	25(U)		0.6(U)	
Chloroethane (µg/kg)												2.69(U)	2.73(U)	260(U)		6.2(U)	
Chloroform (µg/kg)												2.69(U)	2.73(U)	24(U)		0.57(U)	
Chloromethane (µg/kg)												2.69(U)	2.73(U)	33(U)		0.78(U)	
cis-1,2-Dichloroethylene (µg/kg)												2.69(U)	2.73(U)	31(U)		0.74(U)	
cis-1,3-Dichloropropylene (µg/kg)												2.69(U)	2.73(U)	21(U)		0.5(U)	
Ethylbenzene (µg/kg)												2.69(U)	2.73(U)	30(U)		0.72(U)	
Methylene chloride (µg/kg)												13.4(U)	27.3(U)	100(J)		19(J)	
Styrene (µg/kg)												2.69(U)	2.73(U)	23(U)		0.55(U)	
Tetrachloroethylene (µg/kg)												2.69(U)	2.73(U)	34(U)		0.81(U)	
Toluene (µg/kg)												2.69(U)	2.73(U)	30(U)		0.72(U)	
trans-1,2-Dichloroethylene (µg/kg)												2.69(U)	2.73(U)	24(U)		0.56(U)	
trans-1,3-Dichloropropylene (µg/kg)												2.69(U)	2.73(U)	30(U)		0.71(U)	
Trichloroethylene (µg/kg)												2.69(U)	2.73(U)	56(U)		1.3(U)	
Vinyl chloride (µg/kg)												2.69(U)	2.73(U)	29(U)		0.68(U)	
Xylenes (total) (µg/kg)												2.69(U)	2.73(U)	90(U)		2.1(U)	
Metals																	
Aluminum (mg/kg)												16500	20500(J)	24000		19000	
Antimony (mg/kg)												2.1(J)	2.8	0.47		1	
Arsenic (mg/kg)												4.3	6.5	5.1		5.2	
Barium (mg/kg)												109	154	120		120	
Beryllium (mg/kg)												0.68	0.97	0.96		0.86	
Boron (mg/kg)												21.1	28.9	31		36	
Cadmium (mg/kg)												0.48(J)	0.81	1.2		0.66	
Calcium (mg/kg)												36500	61600(J)	60000		51000	
Chromium (mg/kg)												39.4	59.2	53		53	
Cobalt (mg/kg)												9.6	14.6	12		13	
Copper (mg/kg)												38.5	57.9	50		52	
Iron (mg/kg)												22200	34000	30000		27000	
Lead (mg/kg)												27.4	42.6(J)	33		33	
Lithium (mg/kg)												24.5	36.3	54		34	
Magnesium (mg/kg)												9130	12000(J)	15000		12000	

Table 44. Sediment Results for SWSD011

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/16/2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Manganese (mg/kg)												792	1380	1200		950	
Mercury (mg/kg)												0.13	0.15	0.15		0.19	
Nickel (mg/kg)												23.3	35.6	31		30	
Potassium (mg/kg)												3420	4710	5000		3600	
Selenium (mg/kg)												1.32(U)	1.35(U)	0.88		0.92	
Silver (mg/kg)												1.2(J)	0.26	0.22		0.21	
Sodium (mg/kg)												455	512	330		560	
Thallium (mg/kg)												0.18(J)	0.27(J)	0.22		0.2(J)	
Vanadium (mg/kg)												28.4	39.1(J)	38		23	
Zinc (mg/kg)												202	332	370		320	
Polycyclic Aromatic Hydrocarbons																	
Acenaphthene (µg/kg)												44.9(U)	45.4(U)	11		11(U)	
Acenaphthylene (µg/kg)												44.9(U)	45.4(U)	12		13(U)	
Anthracene (µg/kg)												44.9(U)	45.4(U)	23(J)		22(J)	
Benzo(a)anthracene (µg/kg)												34.1(J)	101	140		220	
Benzo(a)pyrene (µg/kg)												38.1(J)	99.8	270		340	
Benzo(b)fluoranthene (µg/kg)												4.49(U)	126	270		320	
Benzo(ghi)perylene (µg/kg)												4.49(U)	69.3	320		260	
Benzo(k)fluoranthene (µg/kg)												2.24(U)	2.27(U)	110		120	
Chrysene (µg/kg)												28.9(J)	80.8	110		210	
Dibenzo(a,h)anthracene (µg/kg)												4.49(U)	4.54(U)	17(U)		19(U)	
Fluoranthene (µg/kg)												59.9(J)	142	710		700	
Fluorene (µg/kg)												44.9(U)	45.4(U)	82		4.5(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)												4.49(U)	4.54(U)	310		190	
Naphthalene (µg/kg)												44.9(U)	45.4(U)	8.3(U)		9(U)	
Phenanthrene (µg/kg)												27.4(J)	58.2	170		160	
Pyrene (µg/kg)												57.6(J)	141	350		290	
PCB																	
Aroclor-1016 (µg/kg)												89.6(U)	45.4(U)	9.2(U)		10(U)	
Aroclor-1221 (µg/kg)												89.6(U)	45.4(U)	9.1(U)		9.9(U)	
Aroclor-1232 (µg/kg)												89.6(U)	45.4(U)	14(U)		15(U)	
Aroclor-1242 (µg/kg)												89.6(U)	39.4(U)	11(U)		12(U)	
Aroclor-1248 (µg/kg)												89.6(U)	45.4(U)	11(U)		12(U)	
Aroclor-1254 (µg/kg)												89.6(U)	36.1(U)	13(U)		14(U)	
Aroclor-1260 (µg/kg)												89.6(U)	20(U)	8.9(U)		9.7(U)	
Pesticides																	
4,4'-DDD (µg/kg)												71.3(U)	36.3(U)	1.7(U)		1.8(U)	
4,4'-DDE (µg/kg)												71.3(U)	36.3(U)	0.61(U)		0.66(U)	
4,4'-DDT (µg/kg)												71.3(U)	36.3(U)	0.62(U)		0.67(U)	
Aldrin (µg/kg)												35.6(U)	18.2(U)	5.7(U)		0.62(U)	
alpha-BHC (µg/kg)												35.6(U)	18.2(U)	4.8(U)		0.52(U)	
alpha-Chlordane (µg/kg)												35.6(U)	18.2(U)	0.58(U)		0.63(U)	
beta-BHC (µg/kg)												35.6(U)	18.2(U)	5.9(U)		0.64(U)	
delta-BHC (µg/kg)												35.6(U)	18.2(U)	4.7(U)		0.51(U)	
Dieldrin (µg/kg)												71.3(U)	36.3(U)	0.56(U)		0.61(U)	
Endosulfan I (µg/kg)												35.6(U)	18.2(U)	0.55(U)		0.6(U)	
Endosulfan II (µg/kg)												71.3(U)	36.3(U)	0.71(U)		0.76(U)	
Endosulfan sulfate (µg/kg)												71.3(U)	36.3(U)	0.71(U)		0.76(U)	
Endrin (µg/kg)												71.3(U)	36.3(U)	0.77(U)		0.84(U)	
Endrin aldehyde (µg/kg)												71.3(U)	36.3(U)	0.66(U)		0.72(U)	

Table 44. Sediment Results for SWSD011

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/21/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/16/2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Endrin ketone (µg/kg)												71.3(U)	36.3(U)	0.64(U)		0.7(U)	
gamma-BHC (Lindane) (µg/kg)												35.6(U)	18.2(U)	5.5(U)		0.59(U)	
gamma-Chlordane (µg/kg)												35.6(U)	18.2(U)	0.74(U)		0.8(U)	
Heptachlor (µg/kg)												35.6(U)	18.2(U)	6.1(U)		0.66(U)	
Heptachlor epoxide (µg/kg)												35.6(U)	18.2(U)	5.9(U)		0.64(U)	
Methoxychlor (µg/kg)												356(U)	182(U)	0.8(U)		0.87(U)	
Toxaphene (µg/kg)												1780(U)	908(U)	15(U)		17(U)	
Radiological Compounds																	
Radium-226 (pCi/g)	0.44	1.21	2.6	0.24	1.19	1.7	1.08	1.08	1.17	1.02	0.98	1.14	0.88	0.94	0.51(J)	0.51(J)	0.91
Radium-228 (pCi/g)	1.34	1.06	3.1	2.03	1.6	1.26	1.09	1.09	1.23(U)	1.17	1.29	1.64	1.88	1.36(J)	1.5	1.5	0.91(U)
Thorium-228 (pCi/g)												1.61	1.21	1.52	1.41	1.41	1.05
Thorium-230 (pCi/g)	2.17	1.51	2	1.24	2.22	1.53	1.02	1.02	1.35	1.22	1.33	1.78	1.32	1.55	1.6	1.6	1.61
Thorium-232 (pCi/g)	1.22	1.11	0.6	1.05	1.27	1.11	0.6	0.6	0.85	0.87	1.27	1	1.45	1.22	0.96	0.96	0.93
Total Radium (pCi/g)											2.27*	2.78*	2.76*	2.3*		2.01*	
Total Uranium (pCi/g)	2.39	3.36*	3.6*	2.06*	7.65*	2.7*	2.84*	2.84*	2.65*	3.02*	2.13*	2.7*	2.59*	2.82*		2.47*	
Uranium-233/234 (pCi/g)											1(J)						
Uranium-234 (pCi/g)		1.49(J)	1.9	1	2.92	1.37	1.3	1.3	1.15	1.46		1.16	1.37	1.47	1.27	1.27	1.39
Uranium-235 (pCi/g)		0.3(UJ)	0.1	0.05	0.39	0.14	0.39	0.39	0.17(J)	0.09(J)		0.14	0.02(U)	0.1	0.08(U)	0.08(U)	0.06(U)
Uranium-235/236 (pCi/g)											0.08(U)						
Uranium-238 (pCi/g)		1.57(J)	1.6	1.01	4.34	1.19	1.15	1.15	1.33	1.47	1.13	1.4	1.22	1.25	1.2	1.2	1.19

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 45. Surface Water Results for SWSD021

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/11/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010	10/28/2010
Volatile Organic Compounds																			
1,1,1-Trichloroethane (µg/L)												1(U)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)												1(U)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)												1(U)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)												1(U)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)												1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)												1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)												1(U)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)												5(U)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)												5(U)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)												5(U)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)												5(U)	5(U)	5(U)	U		4.5(J)		
Benzene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)												1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)												1(U)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)												1(U)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)												5(U)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)												1(U)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)												1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)												1(U)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)												1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)												1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)												1(U)	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)												1(U)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)												5(U)	10(U)	10(U)	U		0.2(U)		
Styrene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)												1(U)	2(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)												1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)												1(U)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)												1(U)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)												1(U)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals																			
Aluminum (µg/L)												322	4090	4090	920		560		
Antimony (µg/L)												0.5(U)	0.5(U)	0.5(U)	0.45		0.87		
Arsenic (µg/L)												2.2(J)	1.5(U)	1.5(U)	2		0.87		
Barium (µg/L)												61	76.5	76.5	64		58		
Beryllium (µg/L)												0.1(U)	0.16(J)	0.16(J)	0.12(U)		0.12(U)		
Boron (µg/L)												99.7	66.2	66.2	100(U)				
Cadmium (µg/L)												0.11(U)	0.11(U)	0.11(U)	0.12(U)		0.12(U)		
Calcium (µg/L)												93000	63900	63900	96000		73000		
Chromium (µg/L)												50.1	267	267	41		120		
Cobalt (µg/L)												0.87(J)	1.6	1.6	0.12(U)		0.51(J)		
Copper (µg/L)												2.7	6.6	6.6	4.2		4.7		
Iron (µg/L)												1160	3910	3910	1200		1100		
Lead (µg/L)												0.5(U)	1.5(J)	1.5(J)	0.13(U)		0.28(J)		
Lithium (µg/L)												10	10.9	10.9	9.4				
Magnesium (µg/L)												28700	19900	19900	40000		21000		

Table 45. Surface Water Results for SWSD021

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/11/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010	10/28/2010
Manganese (µg/L)												529	47.7	47.7	40		54		
Mercury (µg/L)												0.03(U)	0.07(U)	0.07(U)	0.03(U)		0.04(U)		
Nickel (µg/L)												3.1	5	5	3.9		4.6		
Potassium (µg/L)												2880	5100(J)	5100(J)	1300		6400		
Selenium (µg/L)												1(U)	1(U)	1(U)	0.45		1.7(J)		
Silver (µg/L)												0.2(U)	0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)												14700	9010	9010	24000		13000		
Thallium (µg/L)												0.3(U)	0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)												3(U)	16.5	16.5	1.7		0.14(U)		
Zinc (µg/L)												6.9(J)	11	11	4.1		15		
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene (µg/L)												0.47(U)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)												0.47(U)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)												0.47(U)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)												0.02(U)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)												0.47(U)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)												0.47(U)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)												0.47(U)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB																			
Aroclor-1016 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)												0.1(U)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides																			
4,4'-DDD (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 45. Surface Water Results for SWSD021

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/11/2008	Fall 2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010	10/28/2010
Endrin ketone (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)												0.19(U)	0.19(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)												0.47(U)	0.47(U)	0.47(U)	0.04(U)		0.04(U)		
Radiological Compounds																			
Radium-226 (pCi/L)	0.15	0.43(UJ)	U	0.36	0.37	0.02	0.45	0.32(U)	0.08(U)	0.07(U)	0.4(U)	0.24(U)	0.12(U)	0.12(U)	0.93(J)	0.37(U)	0.37(U)	0.22(U)	0.51(U)
Radium-228 (pCi/L)	0.14	0.05(UJ)	U	0.04	1.02	0.69	0.51(U)	0.35(U)	0.37(U)	0.58	-0.28(U)	-0.85(U)		0.69	0.27(U)	1.13	1.13	0.77(U)	0.16(U)
Thorium-228 (pCi/L)											0.1(U)	-0.03(U)	0(U)	0(U)	0.02(U)	0.12(U)	0.12(U)	0.12(U)	0(U)
Thorium-230 (pCi/L)	0.19	0.23(UJ)	0.5	0.08	0.52	1.2	0.48	0.65	0.09(J)	0.04(UJ)	0.15(U)	-0.03(U)	0.08(U)	0.08(U)	0.27	0.6(J)	0.6(J)	0.18	0.68
Thorium-232 (pCi/L)	0.06	0.09(UJ)	U	0.06	0.17	0.12	0.28	0.61	0.01(U)	0.04(UJ)	0.14(U)	-0.05(U)	0.01(U)	0.01(U)	0.1(U)	-0.02(U)	-0.02(U)	0.11(U)	0.34
Total Radium (pCi/L)											U *	U *		0.69*	0.93*		1.13*		
Total Thorium (pCi/L)												U *		U *	0.27*		*		
Total Uranium (pCi/L)	10.5	15.02*	10.1*	6.73*	19.92*	25.56*	17.7*	12.95*	11.67*	8.84*	7.92*	9.82*		4.42*	13.27*		5.44*		
Uranium-233/234 (pCi/L)													2.64						
Uranium-234 (pCi/L)		7.62	5	3.6	10.92	13.6	9.26	7.78	6.4	4.77	3.88	5.07		2.64	7.21	2.31	2.31	4.05	2.51
Uranium-235 (pCi/L)		0.14(UJ)	0.1	0.28	0.23	0.66	1.16	0.46(U)	0.25(J)	0.19(J)	0.33	0.66		0.15(U)	0.87	0.3	0.3	0.15(U)	0.15
Uranium-235/236 (pCi/L)													0.15(U)						
Uranium-238 (pCi/L)		7.26	5	2.86	8.77	11.3	7.28	5.17	5.02	3.88	3.71	4.09	1.78	1.78	5.19	2.83	2.83	3.12	1.84

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 46. Sediment Results for SWSD021

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/11/2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010
Volatile Organic Compounds																	
1,1,1-Trichloroethane (µg/kg)												1.51(U)	1.79(U)	16(U)		0.41(U)	
1,1,2,2-Tetrachloroethane (µg/kg)												1.51(U)	1.79(U)	30(U)		0.77(U)	
1,1,2-Trichloroethane (µg/kg)												1.51(U)	1.79(U)	21(U)		0.53(U)	
1,1-Dichloroethane (µg/kg)												1.51(U)	1.79(U)	21(U)		0.52(U)	
1,1-Dichloroethylene (µg/kg)												1.51(U)	1.79(U)	21(U)		0.53(U)	
1,2-Dichloroethane (µg/kg)												1.51(U)	1.79(U)	18(U)		0.46(U)	
1,2-Dichloropropane (µg/kg)												1.51(U)	1.79(U)	27(U)		0.68(U)	
2-Butanone (µg/kg)												7.53(U)	8.93(U)	68(U)		13	
2-Hexanone (µg/kg)												7.53(U)	8.93(U)	34(U)		0.85(U)	
4-Methyl-2-pentanone (µg/kg)												7.53(U)	8.93(U)	26(U)		0.66(U)	
Acetone (µg/kg)												7.53(U)	8.93(U)	54(U)		400(R)	
Benzene (µg/kg)												1.51(U)	1.79(U)	16(U)		0.41(U)	
Bromodichloromethane (µg/kg)												1.51(U)	1.79(U)	16(U)		0.4(U)	
Bromoform (µg/kg)												1.51(U)	1.79(U)	21(U)		0.53(U)	
Bromomethane (µg/kg)												1.51(U)	1.79(U)	160(U)		4(U)	
Carbon disulfide (µg/kg)												7.53(U)	8.93(U)	45(U)		1.1(U)	
Carbon tetrachloride (µg/kg)												1.51(U)	1.79(U)	19(U)		0.48(U)	
Chlorobenzene (µg/kg)												1.51(U)	1.79(U)	17(U)		0.43(U)	
Chloroethane (µg/kg)												1.51(U)	1.79(U)	180(U)		4.5(U)	
Chloroform (µg/kg)												1.51(U)	1.79(U)	16(U)		0.41(U)	
Chloromethane (µg/kg)												1.51(U)	1.79(U)	22(U)		0.56(U)	
cis-1,2-Dichloroethylene (µg/kg)												1.51(U)	1.79(U)	21(U)		0.54(U)	
cis-1,3-Dichloropropylene (µg/kg)												1.51(U)	1.79(U)	14(U)		0.36(U)	
Ethylbenzene (µg/kg)												1.51(U)	1.79(U)	21(U)		0.52(U)	
Methylene chloride (µg/kg)												7.53(U)	17.9(U)	64(J)		19(J)	
Styrene (µg/kg)												1.51(U)	1.79(U)	16(U)		0.4(U)	
Tetrachloroethylene (µg/kg)												1.51(U)	1.79(U)	23(U)		0.59(U)	
Toluene (µg/kg)												1.51(U)	1.79(U)	21(U)		0.52(U)	
trans-1,2-Dichloroethylene (µg/kg)												1.51(U)	1.79(U)	16(U)		0.4(U)	
trans-1,3-Dichloropropylene (µg/kg)												1.51(U)	1.79(U)	20(U)		0.51(U)	
Trichloroethylene (µg/kg)												1.51(U)	1.79(U)	38(U)		0.96(U)	
Vinyl chloride (µg/kg)												1.51(U)	1.79(U)	20(U)		0.49(U)	
Xylenes (total) (µg/kg)												1.51(U)	1.79(U)	61(U)		1.5(U)	
Metals																	
Aluminum (mg/kg)												25100	19000(J)	28000		26000	
Antimony (mg/kg)												0.46(U)	1.1	0.24		0.16	
Arsenic (mg/kg)												4.3(J)	3.3	4.1		3.9	
Barium (mg/kg)												165	119	110		150	
Beryllium (mg/kg)												1.2(J)	0.86	0.89		1.3	
Boron (mg/kg)												21.1(J)	15.8	16			
Cadmium (mg/kg)												0.27(J)	0.27(J)	0.85		0.18(J)	
Calcium (mg/kg)												51900	37000(J)	54000		47000	
Chromium (mg/kg)												38.1(J)	47.7	46		94	
Cobalt (mg/kg)												12.4(J)	11.7	13		15	
Copper (mg/kg)												30.6(J)	28.9	29		38	
Iron (mg/kg)												36000	26400	32000		32000	
Lead (mg/kg)												10.6(J)	10.5(J)	9.3		12	
Lithium (mg/kg)												38.1	30.6	56			
Magnesium (mg/kg)												13400	10000(J)	15000		14000	

Table 46. Sediment Results for SWSD021

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/11/2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010
Manganese (mg/kg)												649	507	700		540	
Mercury (mg/kg)												0.02	0.03	0(U)		0.02(J)	
Nickel (mg/kg)												30.9(J)	27.4	32		38	
Potassium (mg/kg)												5700	4280	5500		5400	
Selenium (mg/kg)												0.75	0.86(U)	0.35		0.43(J)	
Silver (mg/kg)												0.69(J)	0.17	0.1		0.07	
Sodium (mg/kg)												308(J)	190	230		570	
Thallium (mg/kg)												0.26(J)	0.18(J)	0.15		0.23	
Vanadium (mg/kg)												56.9	34.1(J)	39		29	
Zinc (mg/kg)												78.1	68	160		100	
Polycyclic Aromatic Hydrocarbons																	
Acenaphthene (µg/kg)												25.6(U)	29.7(U)	7.5(U)		8.4(U)	
Acenaphthylene (µg/kg)												25.6(U)	29.7(U)	8.4(U)		9.5(U)	
Anthracene (µg/kg)												25.6(U)	29.7(U)	0.44(U)		0.5(U)	
Benzo(a)anthracene (µg/kg)												18.2(J)	2.97(U)	2(U)		36(J)	
Benzo(a)pyrene (µg/kg)												19(J)	2.97(U)	80		76	
Benzo(b)fluoranthene (µg/kg)												40.7(J)	2.97(U)	27(J)		48(J)	
Benzo(ghi)perylene (µg/kg)												2.56(U)	2.97(U)	6.7(U)		190	
Benzo(k)fluoranthene (µg/kg)												1.28(U)	1.49(U)	1.4(U)		1.6(U)	
Chrysene (µg/kg)												16.5(J)	9.86	24(J)		37(J)	
Dibenzo(a,h)anthracene (µg/kg)												2.56(U)	2.97(U)	12(U)		14(U)	
Fluoranthene (µg/kg)												26.5(J)	21.8	200		170	
Fluorene (µg/kg)												25.6(U)	29.7(U)	2.9(U)		3.3(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)												2.56(U)	2.97(U)	3.2(U)		3.6(U)	
Naphthalene (µg/kg)												25.6(U)	29.7(U)	5.8(U)		6.6(U)	
Phenanthrene (µg/kg)												12.4(J)	13.9(J)	40(J)		57(J)	
Pyrene (µg/kg)												23.5(J)	19.7	9.3(U)		11(U)	
PCB																	
Aroclor-1016 (µg/kg)												5.09(U)	29.7(U)	6.5(U)		7.3(U)	
Aroclor-1221 (µg/kg)												5.09(U)	29.7(U)	6.5(U)		7.3(U)	
Aroclor-1232 (µg/kg)												5.09(U)	29.7(U)	9.7(U)		11(U)	
Aroclor-1242 (µg/kg)												4(J)	29.7(U)	8(U)		9.1(U)	
Aroclor-1248 (µg/kg)												5.09(U)	29.7(U)	7.6(U)		8.6(U)	
Aroclor-1254 (µg/kg)												2.8(J)	29.7(U)	9.1(U)		10(U)	
Aroclor-1260 (µg/kg)												5.09(U)	29.7(U)	6.3(U)		7.1(U)	
Pesticides																	
4,4'-DDD (µg/kg)												2.04(U)	23.7(U)	1.2(U)		1.3(U)	
4,4'-DDE (µg/kg)												2.04(U)	23.7(U)	0.43(U)		0.49(U)	
4,4'-DDT (µg/kg)												2.04(U)	23.7(U)	0.44(U)		0.49(U)	
Aldrin (µg/kg)												1.02(U)	11.8(U)	0.41(U)		0.46(U)	
alpha-BHC (µg/kg)												1.02(U)	11.8(U)	0.34(U)		0.38(U)	
alpha-Chlordane (µg/kg)												1.02(U)	11.8(U)	0.41(U)		0.47(U)	
beta-BHC (µg/kg)												1.02(U)	11.8(U)	0.42(U)		0.47(U)	
delta-BHC (µg/kg)												1.02(U)	11.8(U)	0.33(U)		0.38(U)	
Dieldrin (µg/kg)												2.04(U)	23.7(U)	0.39(U)		0.45(U)	
Endosulfan I (µg/kg)												1.02(U)	11.8(U)	0.39(U)		0.44(U)	
Endosulfan II (µg/kg)												2.04(U)	23.7(U)	0.5(U)		0.56(U)	
Endosulfan sulfate (µg/kg)												2.04(U)	23.7(U)	0.5(U)		0.56(U)	
Endrin (µg/kg)												2.04(U)	23.7(U)	0.55(U)		0.62(U)	
Endrin aldehyde (µg/kg)												2.04(U)	23.7(U)	0.47(U)		0.53(U)	

Table 46. Sediment Results for SWSD021

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/11/2008	10/30/2008	5/19/2009	Fall 2009	10/27/2009	5/18/2010
Endrin ketone (µg/kg)												2.04(U)	23.7(U)	0.45(U)		0.51(U)	
gamma-BHC (Lindane) (µg/kg)												1.02(U)	11.8(U)	0.39(U)		0.44(U)	
gamma-Chlordane (µg/kg)												1.02(U)	11.8(U)	0.52(U)		0.59(U)	
Heptachlor (µg/kg)												1.02(U)	11.8(U)	0.43(U)		0.49(U)	
Heptachlor epoxide (µg/kg)												1.02(U)	11.8(U)	0.42(U)		0.47(U)	
Methoxychlor (µg/kg)												10.2(U)	118(U)	0.57(U)		0.64(U)	
Toxaphene (µg/kg)												51(U)	592(U)	11(U)		12(U)	
Radiological Compounds																	
Radium-226 (pCi/g)	0.34	1.12	2	0.33	0.62	0.91	1.38	0.92	0.99(J)	0.91	0.81	1.12	1	0.43	0.72	0.72	0.64
Radium-228 (pCi/g)	1.3	1.19	2.4	2.28	0.79	1.16	0.81	1.07	1.13(U)	1.15	1.2	1.45	1.03	2.13(J)	1	1	1.31(U)
Thorium-228 (pCi/g)												1.38	1.69	1.67	1.45	1.45	1.51
Thorium-230 (pCi/g)	1.86	1.2	2	1.15	1.42	1.49	1.31	1.42	1.11	1.25	0.74(J)	0.96	1.16	1.6	1.14	1.14	1.35
Thorium-232 (pCi/g)	1.27	1.48	1.2	1.13	1.78	1.19	1.65	1.21	1.02	1.12	1.07	1.29	1.25	1.8	1.16	1.16	1.52
Total Radium (pCi/g)											2.01*	2.57*	2.03*	2.56*		1.73*	
Total Uranium (pCi/g)	2.23	3.5*	3.8*	2.16*	3.68*	2.65*	2.64*	2.26*	2.37*	2.53*	2.04*	2.81*	2.36*	2.49*		2.72*	
Uranium-233/234 (pCi/g)											1.18(J)						
Uranium-234 (pCi/g)		1.64	2.2	1.04	1.95	1.26	1.19	1.12	1.04	1.25		1.17	1.17	1.2	1.38	1.38	1.14
Uranium-235 (pCi/g)		0.17(J)	0.2	0.05	0	0.15	0.21	0.28	0.12(J)	0.05(J)		0.18	0.08(U)	0.12	0.03(U)	0.03(U)	0.04(U)
Uranium-235/236 (pCi/g)											0.09(U)						
Uranium-238 (pCi/g)		1.69	1.4	1.07	1.73	1.24	1.24	0.87	1.21	1.23	0.86	1.46	1.19	1.17	1.34	1.34	1.22

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 47. Surface Water Results for SWSD022

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	Fall 2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010	10/28/2010
Volatile Organic Compounds																			
1,1,1-Trichloroethane (µg/L)												1(U)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)												1(U)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)												1(U)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)												1(U)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)												1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)												1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)												1(U)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)												5(U)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)												5(U)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)												5(U)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)												5(U)	5(U)	5(U)	U		0.44(U)		
Benzene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)												1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)												1(U)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)												1(U)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)												5(U)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)												1(U)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)												1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)												1(U)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)												1(U)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)												1(U)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)												3.95	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)												1(U)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)												5(U)	10(U)	10(U)	U		0.2(U)		
Styrene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)												2.08	2(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)												1(U)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)												1(U)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)												1.73	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)												1(U)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)												1(U)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals																			
Aluminum (µg/L)												626	65.8	65.8	38		420		
Antimony (µg/L)												0.72(J)	1.5(J)	1.5(J)	0.56		0.95		
Arsenic (µg/L)												1.5(U)	1.5(U)	1.5(U)	1.6		3.2		
Barium (µg/L)												67.4	60	60	66		94		
Beryllium (µg/L)												0.1(U)	0.1(U)	0.1(U)	0.3(U)		0.12(U)		
Boron (µg/L)												454	760	760	510		750		
Cadmium (µg/L)												0.11(U)	0.11(U)	0.11(U)	2(U)		0.16(J)		
Calcium (µg/L)												106000	149000	149000	190000		170000		
Chromium (µg/L)												6.5	3.5	3.5	0.13(U)		2.5		
Cobalt (µg/L)												0.57(J)	0.61(J)	0.61(J)	0.12(U)		0.54(J)		
Copper (µg/L)												7.3	3.4	3.4	3.3		11		
Iron (µg/L)												1090	1110	1110	320		470		
Lead (µg/L)												0.71(J)	0.5(U)	0.5(U)	0.13(U)		1.4		
Lithium (µg/L)												9.5(J)	24.4	24.4	35		100(U)		
Magnesium (µg/L)												22600	38400	38400	72000		66000		

Table 47. Surface Water Results for SWSD022

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	Fall 2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010	10/28/2010
Manganese (µg/L)												137	71.4	71.4	460		77		
Mercury (µg/L)												0.03(U)	0.07(U)	0.07(U)	0.03(U)		0.03(U)		
Nickel (µg/L)												3.7	5.9	5.9	6.7		9.5		
Potassium (µg/L)												4440	7540(J)	7540(J)	9200		10000		
Selenium (µg/L)												1(U)	1(U)	1(U)	5.9		10		
Silver (µg/L)												0.2(U)	0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)												15400	84300	84300	130000		120000		
Thallium (µg/L)												0.37(J)	0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)												4.1(J)	3(U)	3(U)	0.14(U)		2.3		
Zinc (µg/L)												7.9(J)	8.7(J)	8.7(J)	15		23		
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)												0.02(U)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)												0.05(U)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB																			
Aroclor-1016 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)												0.09(U)	0.1(U)	0.1(U)	0.03(U)		0.04(U)		
Pesticides																			
4,4'-DDD (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 47. Surface Water Results for SWSD022

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	Fall 2008	10/30/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010	10/28/2010
Endrin ketone (µg/L)												0.04(U)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)												0.02(U)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)												0.19(U)	0.19(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)												0.48(U)	0.47(U)	0.47(U)	0.04(U)		0.04(U)		
Radiological Compounds																			
Radium-226 (pCi/L)	0.17	0.62(UJ)	0.1	0.1	0.37	0.28	0.2(U)	0.49	1.06	0.14(J)	0.8	-0.15(U)	0.58	0.58	0.87(U)	0.27(U)	0.27(U)		0.2(U)
Radium-228 (pCi/L)	0.18	0.15(UJ)	U	0.72	0.51	0.4	1.18	0.68(U)	1.14	0.17(U)	-1.35(U)	1.03	0.38(U)	0.38(U)	0.33(U)	1.23	1.23	-0.05(U)	0.49
Thorium-228 (pCi/L)											0.76	0.03(U)	0.06(U)	0.06(U)	0.21(U)	-0.09(U)	-0.09(U)	0.06(U)	-0.04(U)
Thorium-230 (pCi/L)	0.29	0.41	0.1	0.76	0.28	0.9	0.40(U)	0.38(U)	0.41	0.05(UJ)	0.72	0.06(U)	0.02(U)	0.02(U)	0.19(U)	0.14(U)	0.14(U)	0.15(U)	0.12(U)
Thorium-232 (pCi/L)	0.38	0.11(UJ)	U	0.62	0.18	0.05	0.09(U)	0.07(U)	0.37	0(UJ)	0.52	0.05(U)	-0.04(U)	-0.04(U)	-0.01(U)	-0.03(U)	-0.03(U)	0.05(U)	0.09(U)
Total Radium (pCi/L)											0.8*	1.03*		0.58*	U *		1.23*		
Total Thorium (pCi/L)												U *		U *	U *		U *		
Total Uranium (pCi/L)	7.47	14.08*	4*	4.15*	5.8*	7.19*	3.76	10.51*	5.75*	4.46*	3.81*	10.28*		3.85*	7.58*		4.9*		
Uranium-233/234 (pCi/L)													2.16						
Uranium-234 (pCi/L)		6.42	2	2.23	2.65	3.58	0.418	5.44	2.9	2.33	2.07	5.03		2.16	3.64	2.64	2.64	3.52	4.98
Uranium-235 (pCi/L)		0.44	U	0.13	0.4	0.2	3.21	0.43(U)	0.13(J)	0.17(J)	0.16(U)	0.35(U)		0.2	0.55	0.13(U)	0.13(U)	0.26	0.34
Uranium-235/236 (pCi/L)													0.2						
Uranium-238 (pCi/L)		7.22	2	1.79	2.75	3.41	7.39*	5.07	2.72	1.96	1.74	5.25	1.49	1.49	3.4	2.26	2.26	3.36	4.66

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 48. Sediment Results for SWSD022

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/30/2008	5/18/2009	Fall 2009	10/27/2009	5/18/2010
Volatile Organic Compounds																	
1,1,1-Trichloroethane (µg/kg)												2.45(U)	4.51(U)	26(U)		0.7(U)	
1,1,2,2-Tetrachloroethane (µg/kg)												2.45(U)	4.51(U)	48(U)		1.3(U)	
1,1,2-Trichloroethane (µg/kg)												2.45(U)	4.51(U)	33(U)		0.9(U)	
1,1-Dichloroethane (µg/kg)												2.45(U)	4.51(U)	33(U)		0.88(U)	
1,1-Dichloroethylene (µg/kg)												2.45(U)	4.51(U)	34(U)		0.9(U)	
1,2-Dichloroethane (µg/kg)												2.45(U)	4.51(U)	29(U)		0.78(U)	
1,2-Dichloropropane (µg/kg)												2.45(U)	4.51(U)	43(U)		1.2(U)	
2-Butanone (µg/kg)												12.2(J)	22.5(U)	110(U)		30	
2-Hexanone (µg/kg)												12.3(U)	22.5(U)	54(U)		1.4(U)	
4-Methyl-2-pentanone (µg/kg)												12.3(U)	22.5(U)	41(U)		1.1(U)	
Acetone (µg/kg)												37.7	22.5(U)	86(U)		66000(R)	
Benzene (µg/kg)												2.45(U)	4.51(U)	26(U)		0.69(U)	
Bromodichloromethane (µg/kg)												2.45(U)	4.51(U)	25(U)		0.67(U)	
Bromoform (µg/kg)												2.45(U)	4.51(U)	33(U)		0.89(U)	
Bromomethane (µg/kg)												2.45(U)	4.51(U)	250(U)		6.9(U)	
Carbon disulfide (µg/kg)												12.3(U)	22.5(U)	72(U)		1.9(U)	
Carbon tetrachloride (µg/kg)												2.45(U)	4.51(U)	30(U)		0.82(U)	
Chlorobenzene (µg/kg)												2.45(U)	4.51(U)	27(U)		0.73(U)	
Chloroethane (µg/kg)												2.45(U)	4.51(U)	280(U)		7.6(U)	
Chloroform (µg/kg)												2.45(U)	4.51(U)	26(U)		0.7(U)	
Chloromethane (µg/kg)												2.45(U)	4.51(U)	35(U)		0.95(U)	
cis-1,2-Dichloroethylene (µg/kg)												1.61(J)	4.51(U)	34(U)		0.91(U)	
cis-1,3-Dichloropropylene (µg/kg)												2.45(U)	4.51(U)	23(U)		0.61(U)	
Ethylbenzene (µg/kg)												2.45(U)	4.51(U)	33(U)		0.88(U)	
Methylene chloride (µg/kg)												12.3(U)	45.1(U)	120(J)		27(J)	
Styrene (µg/kg)												2.45(U)	4.51(U)	25(U)		0.68(U)	
Tetrachloroethylene (µg/kg)												2.45(U)	4.51(U)	37(U)		0.99(U)	
Toluene (µg/kg)												2.45(U)	4.51(U)	33(U)		0.88(U)	
trans-1,2-Dichloroethylene (µg/kg)												2.45(U)	4.51(U)	25(U)		0.68(U)	
trans-1,3-Dichloropropylene (µg/kg)												2.45(U)	4.51(U)	32(U)		0.86(U)	
Trichloroethylene (µg/kg)												2.45(U)	4.51(U)	60(U)		1.6(U)	
Vinyl chloride (µg/kg)												2.45(U)	4.51(U)	31(U)		0.83(U)	
Xylenes (total) (µg/kg)												2.45(U)	4.51(U)	96(U)		2.6(U)	
Metals																	
Aluminum (mg/kg)												14500	21000(J)	20000		22000	
Antimony (mg/kg)												1.6(J)	5.5	0.76		1.9	
Arsenic (mg/kg)												4.5	9.4	7.2		11	
Barium (mg/kg)												127	183	150		160	
Beryllium (mg/kg)												0.71	1	0.73		1.2	
Boron (mg/kg)												20.2	36.5	23		38	
Cadmium (mg/kg)												0.41(J)	0.99	1.2		1.1	
Calcium (mg/kg)												29200	30500(J)	42000		34000	
Chromium (mg/kg)												32	64.6	45		74	
Cobalt (mg/kg)												10	15.2	14		16	
Copper (mg/kg)												36.3	67.4	49		80	
Iron (mg/kg)												20900	32800	26000		32000	
Lead (mg/kg)												25.4	51.8(J)	33		63	
Lithium (mg/kg)												23.3	34.2	47		42	
Magnesium (mg/kg)												8580	12700(J)	13000		14000	

Table 48. Sediment Results for SWSD022

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/30/2008	5/18/2009	Fall 2009	10/27/2009	5/18/2010
Manganese (mg/kg)												801	819	1600		870	
Mercury (mg/kg)												0.07	0.16	0.17		0.25	
Nickel (mg/kg)												23.8	36.7	32		37	
Potassium (mg/kg)												2720	5660	3600		4300	
Selenium (mg/kg)												1.3(J)	2.17(U)	1.1		2	
Silver (mg/kg)												1.1(J)	0.43	0.24		0.24	
Sodium (mg/kg)												243	582	230		950	
Thallium (mg/kg)												0.18(J)	0.28(J)	0.15		0.26(J)	
Vanadium (mg/kg)												27.3	42.9(J)	34		29	
Zinc (mg/kg)												135	291	450		340	
Polycyclic Aromatic Hydrocarbons																	
Acenaphthene (µg/kg)												41.7(U)	74.9(U)	12(U)		14(U)	
Acenaphthylene (µg/kg)												41.7(U)	74.9(U)	13(U)		16(U)	
Anthracene (µg/kg)												41.7(U)	74.9(U)	25(J)		33(J)	
Benzo(a)anthracene (µg/kg)												35.5	76.4	140(J)		390	
Benzo(a)pyrene (µg/kg)												39.9	68.4	480(J)		710	
Benzo(b)fluoranthene (µg/kg)												4.17(U)	79.3	280(J)		630	
Benzo(ghi)perylene (µg/kg)												4.17(U)	52.9	410(J)		450	
Benzo(k)fluoranthene (µg/kg)												2.08(U)	3.74(U)	85(J)		310	
Chrysene (µg/kg)												34.7	54.1	130(J)		360	
Dibenzo(a,h)anthracene (µg/kg)												4.17(U)	7.49(U)	19(U)		23(U)	
Fluoranthene (µg/kg)												51.9	84.2	670(J)		1300	
Fluorene (µg/kg)												41.7(U)	74.9(U)	100(J)		5.4(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)												4.17(U)	7.49(U)	320(J)		470	
Naphthalene (µg/kg)												41.7(U)	74.9(U)	9(U)		11(U)	
Phenanthrene (µg/kg)												32.1(J)	41.2(J)	190(J)		220	
Pyrene (µg/kg)												58.4	84.4	330(J)		470	
PCB																	
Aroclor-1016 (µg/kg)												83.3(U)	74.7(U)	10(U)		12(U)	
Aroclor-1221 (µg/kg)												83.3(U)	74.7(U)	9.9(U)		12(U)	
Aroclor-1232 (µg/kg)												83.3(U)	74.7(U)	15(U)		18(U)	
Aroclor-1242 (µg/kg)												83.3(U)	74.7(U)	12(U)		15(U)	
Aroclor-1248 (µg/kg)												83.3(U)	74.7(U)	12(U)		14(U)	
Aroclor-1254 (µg/kg)												83.3(U)	48.5(J)	14(U)		17(U)	
Aroclor-1260 (µg/kg)												83.3(U)	30.1(J)	9.7(U)		12(U)	
Pesticides																	
4,4'-DDD (µg/kg)												33.2(U)	59.8(U)	1.8(U)		2.2(U)	
4,4'-DDE (µg/kg)												33.2(U)	59.8(U)	0.66(U)		0.81(U)	
4,4'-DDT (µg/kg)												33.2(U)	59.8(U)	0.67(U)		0.82(U)	
Aldrin (µg/kg)												16.6(U)	29.9(U)	0.62(U)		0.76(U)	
alpha-BHC (µg/kg)												16.6(U)	29.9(U)	0.52(U)		0.64(U)	
alpha-Chlordane (µg/kg)												16.6(U)	29.9(U)	0.63(U)		0.77(U)	
beta-BHC (µg/kg)												16.6(U)	29.9(U)	0.64(U)		0.78(U)	
delta-BHC (µg/kg)												16.6(U)	29.9(U)	0.51(U)		0.63(U)	
Dieldrin (µg/kg)												33.2(U)	59.8(U)	0.61(U)		0.74(U)	
Endosulfan I (µg/kg)												16.6(U)	29.9(U)	0.6(U)		0.73(U)	
Endosulfan II (µg/kg)												33.2(U)	59.8(U)	0.77(U)		0.93(U)	
Endosulfan sulfate (µg/kg)												33.2(U)	59.8(U)	0.77(U)		0.93(U)	
Endrin (µg/kg)												33.2(U)	59.8(U)	0.84(U)		1(U)	
Endrin aldehyde (µg/kg)												33.2(U)	59.8(U)	0.72(U)		0.88(U)	

Table 48. Sediment Results for SWSD022

Parameter (unit)	4/30/1997	4/9/1998	6/9/1999	7/19/2000	5/7/2001	5/20/2002	5/15/2003	4/27/2004	5/25/2005	5/18/2006	6/14/2007	6/17/2008	10/30/2008	5/18/2009	Fall 2009	10/27/2009	5/18/2010
Endrin ketone (µg/kg)												33.2(U)	59.8(U)	0.7(U)		0.85(U)	
gamma-BHC (Lindane) (µg/kg)												16.6(U)	29.9(U)	0.59(U)		0.72(U)	
gamma-Chlordane (µg/kg)												16.6(U)	29.9(U)	0.81(U)		0.98(U)	
Heptachlor (µg/kg)												16.6(U)	29.9(U)	0.66(U)		0.81(U)	
Heptachlor epoxide (µg/kg)												16.6(U)	29.9(U)	0.64(U)		0.78(U)	
Methoxychlor (µg/kg)												166(U)	299(U)	0.87(U)		1.1(U)	
Toxaphene (µg/kg)												829(U)	1490(U)	17(U)		20(U)	
Radiological Compounds																	
Radium-226 (pCi/g)	0.39	2.53	2.2	0.2	0.97	1.77	1.01	1.21	1.38	1.7	1.63	1.82	1.14	1.08	0.97	0.97	0.85
Radium-228 (pCi/g)	1.1	1	2.5	1.46	1.26	0.91	1.25	0.91	0.95	1.19	1.33	0.88(U)	1.88	1.4(J)	1.69	1.69	1.13(U)
Thorium-228 (pCi/g)												1.8(J)	1.52	2.13	1.58	1.58	1.53
Thorium-230 (pCi/g)	1.53	1.34	2	1.12	2.05	1.83	2.44	1.58	1.28	1.26	1.85	1.27	1.25	1.69	1.18	1.18	1.41
Thorium-232 (pCi/g)	1.34	0.7	1.4	1.4	1.57	0.9	0.86	0.9	0.85	1.05	1.5	1.27	1.21	1.02	1.02	1.02	1.32
Total Radium (pCi/g)											2.96*	1.82*	3.02*	2.48*		2.66*	
Total Uranium (pCi/g)	1.85	3.07*	3.6*	1.9*	4.3*	3.55*	2.68*	2.29*	2.59*	3.37*	2.37*	4.68*	3.96*	4.48*		6.48*	
Uranium-233/234 (pCi/g)											1.04(J)						
Uranium-234 (pCi/g)		1.46	1.8	0.89	2.01	1.83	1.49	1.11	1.21	1.82		2.33	1.99	2.15	3.11	3.11	2.59
Uranium-235 (pCi/g)		0.01(UJ)	0.1	0.06	0.29	0.18	0.15(U)	0.22	0.06(U)	0.08(J)		0.15	0.13(U)	0.21	0.32	0.32	0.07(U)
Uranium-235/236 (pCi/g)											0.15(U)						
Uranium-238 (pCi/g)		1.6	1.7	0.95	2	1.54	1.04	0.95	1.38	1.55	1.33	2.2	1.97	2.12	3.06	3.06	2.57

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 49. Surface Water Results for SWSD023

Parameter (unit)	6/10/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Volatile Organic Compounds							
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)	5(U)	5(U)	7.3(J)		0.44(U)		
Benzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)	5(U)	10(U)	0.2(U)		0.2(U)		
Styrene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)	1(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals							
Aluminum (µg/L)	622	166	340		69		
Antimony (µg/L)	1.8(J)	1.6(J)	2.5		2.2		
Arsenic (µg/L)	1.7(J)	1.5(J)	3.6		0.85		
Barium (µg/L)	73.7	44.2	97		70		
Beryllium (µg/L)	0.1(U)	0.1(U)	0.12(U)		0.12(U)		
Boron (µg/L)	356	211	210				
Cadmium (µg/L)	0.11(U)	0.11(U)	0.12(U)		0.12(U)		
Calcium (µg/L)	170000	162000	84000		150000		
Chromium (µg/L)	2.8(J)	1.5(U)	0.13(U)		0.8(J)		
Cobalt (µg/L)	1	0.55(J)	0.12(U)		0.3(J)		
Copper (µg/L)	8.8	6.7	4.2		4.7		
Iron (µg/L)	1770	980	840		230		
Lead (µg/L)	3.7	1.6(J)	3.6		1.1(J)		
Lithium (µg/L)	28.3	10.3	13				

Table 49. Surface Water Results for SWSD023

Parameter (unit)	6/10/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Magnesium (µg/L)	54000	44100	48000		41000		
Manganese (µg/L)	262	18.9	78		33		
Mercury (µg/L)	0.03(U)	0.07(U)	0.03(U)		0.04(U)		
Nickel (µg/L)	10.4	8.5	6.7		6.9		
Potassium (µg/L)	8790	4330	5700		5900		
Selenium (µg/L)	1.4(J)	1.2(J)	0.45(U)		1.3(J)		
Silver (µg/L)	0.2(U)	0.2(U)			0.39(U)		
Sodium (µg/L)	127000	87800(J)	75000		44000		
Thallium (µg/L)	0.46(J)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)	3(U)	3(U)	1.6		0.26(J)		
Zinc (µg/L)	26.2(J)	22.8	24		41		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
Aroclor-1016 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides							
4,4'-DDD (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)	0.09	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 49. Surface Water Results for SWSD023

Parameter (unit)	6/10/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Endrin aldehyde (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin ketone (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)	0.19(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.04(U)		
Radiological Compounds							
Radium-226 (pCi/L)	0.42	0.48(U)	0.18(U)	0.88	0.88	0.16(U)	0.58
Radium-228 (pCi/L)	0.13(U)	1.73(J)	1.02(U)	0.45(U)	0.45(U)	0.44(U)	0.06(U)
Thorium-228 (pCi/L)	0.1(U)	0.06(U)	0.02(U)	0.02(U)	0.02(U)	0.04(U)	0.02(U)
Thorium-230 (pCi/L)	-0.03(U)	-0.01(U)	1.18	0.28(J)	0.28(J)	0.17(J)	0.02(U)
Thorium-232 (pCi/L)	0.04(U)	0(U)	0.11(U)	0.03(U)	0.03(U)	0.02(U)	0.15(U)
Total Radium (pCi/L)	0.42*	1.73*	U *		0.88*		
Total Thorium (pCi/L)	U *	U *	1.18*		0.28*		
Total Uranium (pCi/L)	3.27*	3.15*	1.6*		2.91*		
Uranium-234 (pCi/L)	1.87	1.6	0.99(J)	1.81	1.81	1.4	1.79
Uranium-235 (pCi/L)	0.05(U)	0.04(U)	-0.02(U)	0.06(U)	0.06(U)	-0.01(U)	0.11(U)
Uranium-238 (pCi/L)	1.4	1.55	0.61	1.1	1.1	0.66	0.9

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 50. Sediment Results for SWSD023

Parameter (unit)	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010
Volatile Organic Compounds						
1,1,1-Trichloroethane (µg/kg)	1.51(U)	1.72(U)	21(U)		0.31(U)	
1,1,2,2-Tetrachloroethane (µg/kg)	1.51(U)	1.72(U)	39(U)		0.57(U)	
1,1,2-Trichloroethane (µg/kg)	1.51(U)	1.72(U)	27(U)		0.39(U)	
1,1-Dichloroethane (µg/kg)	1.51(U)	1.72(U)	27(U)		0.39(U)	
1,1-Dichloroethylene (µg/kg)	1.51(U)	1.72(U)	27(U)		0.4(U)	
1,2-Dichloroethane (µg/kg)	1.51(U)	1.72(U)	24(U)		0.34(U)	
1,2-Dichloropropane (µg/kg)	1.51(U)	1.72(U)	35(U)		0.5(U)	
2-Butanone (µg/kg)	4.35(J)	8.6(U)	87(U)		16(U)	
2-Hexanone (µg/kg)	7.57(U)	8.6(U)	43(U)		0.63(U)	
4-Methyl-2-pentanone (µg/kg)	7.57(U)	8.6(U)	34(U)		0.49(U)	
Acetone (µg/kg)	7.57(U)	12.7	69(U)		3500(R)	
Benzene (µg/kg)	1.51(U)	1.72(U)	21(U)		0.3(U)	
Bromodichloromethane (µg/kg)	1.51(U)	1.72(U)	20(U)		0.29(U)	
Bromoform (µg/kg)	1.51(U)	1.72(U)	27(U)		0.39(U)	
Bromomethane (µg/kg)	1.51(U)	1.72(U)	210(U)		3(U)	
Carbon disulfide (µg/kg)	7.57(U)	8.6(U)	58(U)		0.84(U)	
Carbon tetrachloride (µg/kg)	1.51(U)	1.72(U)	25(U)		0.36(U)	
Chlorobenzene (µg/kg)	1.51(U)	1.72(U)	22(U)		0.32(U)	
Chloroethane (µg/kg)	1.51(U)	1.72(U)	230(U)		3.3(U)	
Chloroform (µg/kg)	1.51(U)	1.72(U)	21(U)		0.31(U)	
Chloromethane (µg/kg)	1.51(U)	1.72(U)	29(U)		0.42(U)	
cis-1,2-Dichloroethylene (µg/kg)	1.51(U)	11.9	27(U)		0.4(U)	
cis-1,3-Dichloropropylene (µg/kg)	1.51(U)	1.72(U)	18(U)		0.27(U)	
Ethylbenzene (µg/kg)	1.51(U)	1.72(U)	27(U)		0.39(U)	
Methylene chloride (µg/kg)	7.57(U)	17.2(U)	74(J)		13(J)	
Styrene (µg/kg)	1.51(U)	1.72(U)	20(U)		0.3(U)	
Tetrachloroethylene (µg/kg)	1.51(U)	28.9	30(U)		0.44(U)	
Toluene (µg/kg)	1.51(U)	1.72(U)	26(U)		0.39(U)	
trans-1,2-Dichloroethylene (µg/kg)	1.51(U)	1.72(U)	21(U)		0.3(U)	
trans-1,3-Dichloropropylene (µg/kg)	1.51(U)	1.72(U)	26(U)		0.38(U)	
Trichloroethylene (µg/kg)	1.51(U)	14.1	49(U)		0.71(U)	
Vinyl chloride (µg/kg)	1.51(U)	1.72(U)	25(U)		0.36(U)	
Xylenes (total) (µg/kg)	1.51(U)	1.72(U)	78(U)		1.1(U)	
Metals						
Aluminum (mg/kg)	12300	5960	21000		15000	
Antimony (mg/kg)	1(J)	2.1	1.2		0.84	
Arsenic (mg/kg)	4.7(J)	2.5	7.7		5.1	
Barium (mg/kg)	115	54.5	150		120	
Beryllium (mg/kg)	0.59(J)	0.27	0.6		0.77	
Boron (mg/kg)	13.6(J)	9.5	18			
Cadmium (mg/kg)	0.58(J)	0.35(J)	1.5		0.76	
Calcium (mg/kg)	45700	21300	83000		60000	
Chromium (mg/kg)	19.9(J)	11	32		24	
Cobalt (mg/kg)	7.8(J)	3.8	11		9.4	
Copper (mg/kg)	54.4(J)	72(J)	81		64	
Iron (mg/kg)	20900	8310	25000		20000	
Lead (mg/kg)	63.7(J)	39.8	130		71	
Lithium (mg/kg)	20.5	9.5	40			
Magnesium (mg/kg)	18500	9260	32000		23000	

Table 50. Sediment Results for SWSD023

Parameter (unit)	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010
Manganese (mg/kg)	568	234	810		530	
Mercury (mg/kg)	0.13	0.19	0.26		0.21	
Nickel (mg/kg)	19.6(J)	10.2	33		26	
Potassium (mg/kg)	2550	1460(J)	3800		2600	
Selenium (mg/kg)	0.85	0.89(U)	0.4		0.8	
Silver (mg/kg)	0.87	0.26(J)	0.57		0.28	
Sodium (mg/kg)	267(J)	251	380		370	
Thallium (mg/kg)	0.13(J)	0.15(J)	0.16		0.15(J)	
Vanadium (mg/kg)	24.9	13.2	33		20	
Zinc (mg/kg)	294	163	780		430	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene (µg/kg)	29.8(U)	61.8(U)	350(J)		340	
Acenaphthylene (µg/kg)	29.8(U)	61.8(U)	10(U)		6.8(U)	
Anthracene (µg/kg)	48.5(J)	57.3(J)	93(J)		41(J)	
Benzo(a)anthracene (µg/kg)	276(J)	323	530(J)		360	
Benzo(a)pyrene (µg/kg)	298(J)	351	1400(J)		530	
Benzo(b)fluoranthene (µg/kg)	1040(J)	408	860(J)		490	
Benzo(ghi)perylene (µg/kg)	247(J)	251	1300(J)		460	
Benzo(k)fluoranthene (µg/kg)	1.49(U)	3.09(U)	430(J)		260	
Chrysene (µg/kg)	237(J)	256	510(J)		390	
Dibenzo(a,h)anthracene (µg/kg)	2.98(U)	6.18(U)	65(J)		130	
Fluoranthene (µg/kg)	482(J)	492	2300(J)		1100	
Fluorene (µg/kg)	29.8(U)	61.8(U)	210(J)		92	
Indeno(1,2,3-cd)pyrene (µg/kg)	2.98(U)	6.18(U)	430(J)		530	
Naphthalene (µg/kg)	29.8(U)	61.8(U)	7.1(U)		4.7(U)	
Phenanthrene (µg/kg)	227(J)	275	570(J)		260	
Pyrene (µg/kg)	371(J)	444	1100(J)		490	
PCB						
Aroclor-1016 (µg/kg)	59.2(U)	30.9(U)	7.9(U)		5.2(U)	
Aroclor-1221 (µg/kg)	59.2(U)	30.9(U)	7.8(U)		5.2(U)	
Aroclor-1232 (µg/kg)	59.2(U)	30.9(U)	12(U)		7.8(U)	
Aroclor-1242 (µg/kg)	58.9(J)	30.9(U)	9.7(U)		6.5(U)	
Aroclor-1248 (µg/kg)	59.2(U)	33.6	9.2(U)		6.1(U)	
Aroclor-1254 (µg/kg)	61.8	33.4	11(U)		7.3(U)	
Aroclor-1260 (µg/kg)	59.2(U)	38.3(J)	7.6(U)		5.1(U)	
Pesticides						
4,4'-DDD (µg/kg)	47.5(U)	24.6(U)	1.4(U)		0.94(U)	
4,4'-DDE (µg/kg)	47.5(U)	24.6(U)	0.52(U)		0.35(U)	
4,4'-DDT (µg/kg)	47.5(U)	24.6(U)	0.53(U)		0.35(U)	
Aldrin (µg/kg)	23.8(U)	12.3(U)	0.49(U)		0.33(U)	
alpha-BHC (µg/kg)	23.8(U)	12.3(U)	0.41(U)		0.27(U)	
alpha-Chlordane (µg/kg)	23.8(U)	12.3(U)	0.5(U)		0.33(U)	
beta-BHC (µg/kg)	23.8(U)	12.3(U)	0.5(U)		0.34(U)	
delta-BHC (µg/kg)	23.8(U)	12.3(U)	0.4(U)		0.27(U)	
Dieldrin (µg/kg)	47.5(U)	24.6(U)	0.48(U)		0.32(U)	
Endosulfan I (µg/kg)	23.8(U)	12.3(U)	0.47(U)		0.31(U)	
Endosulfan II (µg/kg)	47.5(U)	24.6(U)	0.6(U)		0.4(U)	
Endosulfan sulfate (µg/kg)	47.5(U)	24.6(U)	0.6(U)		0.4(U)	
Endrin (µg/kg)	47.5(U)	24.6(U)	0.66(U)		0.44(U)	
Endrin aldehyde (µg/kg)	47.5(U)	24.6(U)	0.57(U)		0.38(U)	

Table 50. Sediment Results for SWSD023

Parameter (unit)	6/11/2008	10/29/2008	5/19/2009	Fall 2009	10/27/2009	5/19/2010
Endrin ketone (µg/kg)	47.5(U)	24.6(U)	0.55(U)		0.37(U)	
gamma-BHC (Lindane) (µg/kg)	23.8(U)	12.3(U)	0.47(U)		0.31(U)	
gamma-Chlordane (µg/kg)	23.8(U)	12.3(U)	0.63(U)		0.42(U)	
Heptachlor (µg/kg)	23.8(U)	12.3(U)	0.52(U)		0.35(U)	
Heptachlor epoxide (µg/kg)	23.8(U)	12.3(U)	0.51(U)		0.34(U)	
Methoxychlor (µg/kg)	238(U)	123(U)	0.69(U)		0.46(U)	
Toxaphene (µg/kg)	1190(U)	616(U)	13(U)		8.7(U)	
Radiological Compounds						
Radium-226 (pCi/g)	1.31	0.98	0.28(U)	0.53(J)	0.53(J)	0.76
Radium-228 (pCi/g)	0.96	1.85	0.86(U)	0.54(U)	0.54(U)	1.1
Thorium-228 (pCi/g)	1.23	0.76	1.04	1.2(J)	1.2(J)	1.15
Thorium-230 (pCi/g)	0.88	0.52(J)	0.9	1.19	1.19	1.04
Thorium-232 (pCi/g)	0.88	0.91	0.82	1.18	1.18	1.13
Total Radium (pCi/g)	2.27*	2.82*	U *		1.06*	
Total Uranium (pCi/g)	1.82*	1.8*	2.38*		1.95*	
Uranium-234 (pCi/g)	0.6	0.9	1.1	1.09	1.09	1.13
Uranium-235 (pCi/g)	0.04(U)	0.02	0.1	0.07	0.07	0.09(U)
Uranium-238 (pCi/g)	1.22	0.88	1.18	0.79	0.79	0.82

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 51. Surface Water Results for SWSD024

Parameter (unit)	6/13/2008	10/28/2008	5/18/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Volatile Organic Compounds							
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)	2.7(J)		0.4(U)		
Acetone (µg/L)	5(U)	5(U)	5(U)		3.8(J)		
Benzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)	5(U)	10(U)	0.2(U)		0.2(U)		
Styrene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)	1(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals							
Aluminum (µg/L)	289	1030(J)	410		120		
Antimony (µg/L)	0.58(J)	2.3	11		1.6		
Arsenic (µg/L)	1.5(U)	1.5(U)	2.2		1.5		
Barium (µg/L)	59.6(J)	26.4	36		54		
Beryllium (µg/L)	0.1(U)	0.1(U)	0.12(U)		0.12(U)		
Boron (µg/L)	558	348	170				
Cadmium (µg/L)	0.11(U)	0.11(U)	0.12		0.12(U)		
Calcium (µg/L)	169000	172000	140000		110000		
Chromium (µg/L)	3.1(J)	2(J)	0.13(U)		1.3(J)		
Cobalt (µg/L)	1.5	0.98(J)	0.12(U)		0.58(J)		
Copper (µg/L)	4	5.5	3.4		2.6		
Iron (µg/L)	2700	1960	1300		700		
Lead (µg/L)	0.5(U)	1.1(J)	0.13(U)		0.15(J)		
Lithium (µg/L)	17.4	16.7	12				
Magnesium (µg/L)	90100	58100	51000		32000		

Table 51. Surface Water Results for SWSD024

Parameter (unit)	6/13/2008	10/28/2008	5/18/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Manganese (µg/L)	1230	49.9	640		250		
Mercury (µg/L)	0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Nickel (µg/L)	5	4.9	5.7		6.5		
Potassium (µg/L)	15100	13200	7000		6400		
Selenium (µg/L)	1(U)	1(U)	2.9		3.2		
Silver (µg/L)	0.2(U)	0.2(U)	0.84		0.39(U)		
Sodium (µg/L)	14700	6750	16000		10000		
Thallium (µg/L)	0.3(U)	0.3(U)	0.16		0.16(U)		
Vanadium (µg/L)	3(U)	3(U)	1.1		0.53		
Zinc (µg/L)	18.1	21	23		30		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB							
Aroclor-1016 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)	0.1(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)	0.1(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides							
4,4'-DDD (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 51. Surface Water Results for SWSD024

Parameter (unit)	6/13/2008	10/28/2008	5/18/2009	Fall 2009	10/27/2009	5/19/2010	11/1/2010
Endrin ketone (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)	0.19(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)	0.48(U)	0.48(U)	0.04(U)		0.04(U)		
Radiological Compounds							
Radium-226 (pCi/L)	0.56	0.31(U)	1.56(J)	0.19(U)	0.19(U)	0.36(U)	0.72
Radium-228 (pCi/L)	0.29(U)	1.76(J)	0.52(U)	0.78(U)	0.78(U)	0.3(U)	0.39
Thorium-228 (pCi/L)	0.11(U)	0.07(U)	0.09(U)	0.04(U)	0.04(U)	0.14(U)	0.07(U)
Thorium-230 (pCi/L)	1.43	0.12(U)	0.12(U)	0.55(J)	0.55(J)	0.19(J)	-0.14(U)
Thorium-232 (pCi/L)	0.04(U)	0(U)	0(U)	0.02(U)	0.02(U)	0.06(U)	0.16
Total Radium (pCi/L)	0.56*	1.76*	1.56*		U *		
Total Thorium (pCi/L)	1.43*	U *	U *		0.55*		
Total Uranium (pCi/L)	3.97*	2.76*	8.18*		8.41*		
Uranium-234 (pCi/L)	2.18	1.74	3.71	4.16	4.16	5.43	5.1
Uranium-235 (pCi/L)	0.16	0.03(U)	0.54	0.24	0.24	0.22(U)	0.21
Uranium-238 (pCi/L)	1.63	1.02	3.93	4.01	4.01	4.45	3.96

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 52. Sediment Results for SWSD024

Parameter (unit)	6/13/2008	10/28/2008	5/18/2009	Fall 2009	10/27/2009	5/19/2010
Volatile Organic Compounds						
1,1,1-Trichloroethane (µg/kg)	3.05(U)	2.95(U)	25(U)		0.4(U)	
1,1,2,2-Tetrachloroethane (µg/kg)	3.05(U)	2.95(U)	47(U)		0.75(U)	
1,1,2-Trichloroethane (µg/kg)	3.05(U)	2.95(U)	33(U)		0.52(U)	
1,1-Dichloroethane (µg/kg)	3.05(U)	2.95(U)	32(U)		0.51(U)	
1,1-Dichloroethylene (µg/kg)	3.05(U)	2.95(U)	33(U)		0.52(U)	
1,2-Dichloroethane (µg/kg)	3.05(U)	2.95(U)	29(U)		0.45(U)	
1,2-Dichloropropane (µg/kg)	3.05(U)	2.95(U)	42(U)		0.66(U)	
2-Butanone (µg/kg)	52.5(J)	14.7(U)	110(U)		1.7(U)	
2-Hexanone (µg/kg)	15.2(U)	14.7(U)	53(U)		0.83(U)	
4-Methyl-2-pentanone (µg/kg)	15.2(U)	14.7(U)	41(U)		0.64(U)	
Acetone (µg/kg)	150(J)	14.7(U)	84(U)		310(R)	
Benzene (µg/kg)	3.05(U)	2.95(U)	25(U)		0.4(U)	
Bromodichloromethane (µg/kg)	3.05(U)	2.95(U)	24(U)		0.39(U)	
Bromoform (µg/kg)	3.05(U)	2.95(U)	33(U)		0.51(U)	
Bromomethane (µg/kg)	3.05(U)	2.95(U)	250(U)		3.9(U)	
Carbon disulfide (µg/kg)	15.2(U)	14.7(U)	70(U)		1.1(U)	
Carbon tetrachloride (µg/kg)	3.05(U)	2.95(U)	30(U)		0.47(U)	
Chlorobenzene (µg/kg)	3.05(U)	2.95(U)	27(U)		0.42(U)	
Chloroethane (µg/kg)	3.05(U)	2.95(U)	280(U)		4.4(U)	
Chloroform (µg/kg)	3.05(U)	2.95(U)	25(U)		0.4(U)	
Chloromethane (µg/kg)	3.05(U)	2.95(U)	35(U)		0.55(U)	
cis-1,2-Dichloroethylene (µg/kg)	3.05(U)	6.18	33(U)		0.52(U)	
cis-1,3-Dichloropropylene (µg/kg)	3.05(U)	2.95(U)	22(U)		0.35(U)	
Ethylbenzene (µg/kg)	3.05(U)	2.95(U)	32(U)		0.51(U)	
Methylene chloride (µg/kg)	15.2(U)	29.5(U)	90(J)		15(J)	
Styrene (µg/kg)	3.05(U)	2.95(U)	25(U)		0.39(U)	
Tetrachloroethylene (µg/kg)	3.05(U)	16.1	36(U)		0.57(U)	
Toluene (µg/kg)	3.05(U)	2.95(U)	32(U)		0.51(U)	
trans-1,2-Dichloroethylene (µg/kg)	3.05(U)	2.95(U)	25(U)		0.39(U)	
trans-1,3-Dichloropropylene (µg/kg)	3.05(U)	2.95(U)	31(U)		0.5(U)	
Trichloroethylene (µg/kg)	3.05(U)	7.07	59(U)		0.94(U)	
Vinyl chloride (µg/kg)	3.05(U)	2.95(U)	30(U)		0.48(U)	
Xylenes (total) (µg/kg)	3.05(U)	2.95(U)	95(U)		1.5(U)	
Metals						
Aluminum (mg/kg)	26900	21500(J)	26000		22000	
Antimony (mg/kg)	2.6(J)	1.5(J)	0.85		0.9	
Arsenic (mg/kg)	6.3(J)	6.1(J)	5.2		5.8	
Barium (mg/kg)	195	129(J)	110		130	
Beryllium (mg/kg)	1.4(J)	0.9(J)	0.82		0.98	
Boron (mg/kg)	40.1(J)	38.7(J)	26			
Cadmium (mg/kg)	1.1(J)	0.92	1.4		0.47	
Calcium (mg/kg)	40000	22700(J)	38000		32000	
Chromium (mg/kg)	37.2(J)	27.4(J)	29		28	
Cobalt (mg/kg)	16(J)	11.9(J)	13		14	
Copper (mg/kg)	96.6(J)	65.3(J)	65		52	
Iron (mg/kg)	40900	29000(J)	29000		28000	
Lead (mg/kg)	43.1(J)	32.7(J)	30		27	
Lithium (mg/kg)	47.3	29.3(J)	53			

Table 52. Sediment Results for SWSD024

Parameter (unit)	6/13/2008	10/28/2008	5/18/2009	Fall 2009	10/27/2009	5/19/2010
Magnesium (mg/kg)	17300	11600(J)	17000		14000	
Manganese (mg/kg)	655	375(J)	550		540	
Mercury (mg/kg)	0.2	0.15(J)	0.25		0.23	
Nickel (mg/kg)	40.6(J)	29.2(J)	34		32	
Potassium (mg/kg)	6490	4030(J)	4800		3600	
Selenium (mg/kg)	1.48	1.53(U)	1		0.8	
Silver (mg/kg)	1.5	0.3(U)	0.26		0.18	
Sodium (mg/kg)	425(J)	220(J)	290		280	
Thallium (mg/kg)	0.3(J)	0.25(J)	0.2		0.23	
Vanadium (mg/kg)	50.9	43.2(J)	37		26	
Zinc (mg/kg)	401	426(J)	600		330	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene (µg/kg)	50.6(U)	51.1(U)	1300		8.4(U)	
Acenaphthylene (µg/kg)	50.6(U)	51.1(U)	13(U)		9.4(U)	
Anthracene (µg/kg)	50.6(U)	51.1(U)	29(J)		14(J)	
Benzo(a)anthracene (µg/kg)	33.3(J)	88.8	140		78	
Benzo(a)pyrene (µg/kg)	27.9(J)	93.7	400		120	
Benzo(b)fluoranthene (µg/kg)	5.06(U)	5.11(U)	220		130	
Benzo(ghi)perylene (µg/kg)	5.06(U)	116(J)	150		100	
Benzo(k)fluoranthene (µg/kg)	2.53(U)	2.56(U)	54(J)		42(J)	
Chrysene (µg/kg)	32.9(J)	5.11(U)	170		97	
Dibenzo(a,h)anthracene (µg/kg)	5.06(U)	5.11(U)	18(U)		14(U)	
Fluoranthene (µg/kg)	41.9(J)	104	780		480	
Fluorene (µg/kg)	50.6(U)	51.1(U)	4.3(U)		3.3(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)	5.06(U)	5.11(U)	55(J)		61	
Naphthalene (µg/kg)	50.6(U)	51.1(U)	8.7(U)		6.6(U)	
Phenanthrene (µg/kg)	29.7(J)	60.8	190		86	
Pyrene (µg/kg)	50.1(J)	106	330		96	
PCB						
Aroclor-1016 (µg/kg)	101(U)	10.1(U)	9.7(U)		7.3(U)	
Aroclor-1221 (µg/kg)	101(U)	10.1(U)	9.6(U)		7.2(U)	
Aroclor-1232 (µg/kg)	101(U)	10.1(U)	14(U)		11(U)	
Aroclor-1242 (µg/kg)	101(J)	10.1(U)	12(U)		9(U)	
Aroclor-1248 (µg/kg)	101(U)	29.1	11(U)		8.5(U)	
Aroclor-1254 (µg/kg)	45.6(J)	22.2	14(U)		10(U)	
Aroclor-1260 (µg/kg)	101(U)	12.2	9.4(U)		7.1(U)	
Pesticides						
4,4'-DDD (µg/kg)	40.5(U)	40.9(U)	1.7(U)		1.3(U)	
4,4'-DDE (µg/kg)	40.5(U)	40.9(U)	0.64(U)		0.48(U)	
4,4'-DDT (µg/kg)	40.5(U)	40.9(U)	0.65(U)		0.49(U)	
Aldrin (µg/kg)	20.3(U)	20.4(U)	0.6(U)		0.45(U)	
alpha-BHC (µg/kg)	20.3(U)	20.4(U)	0.51(U)		0.38(U)	
alpha-Chlordane (µg/kg)	20.3(U)	20.4(U)	0.61(U)		0.46(U)	
beta-BHC (µg/kg)	20.3(U)	20.4(U)	12(U)		0.47(U)	
delta-BHC (µg/kg)	20.3(U)	20.4(U)	10(U)		0.37(U)	
Dieldrin (µg/kg)	40.5(U)	40.9(U)	0.59(U)		0.44(U)	
Endosulfan I (µg/kg)	20.3(U)	20.4(U)	0.58(U)		0.44(U)	
Endosulfan II (µg/kg)	40.5(U)	40.9(U)	0.74(U)		0.56(U)	
Endosulfan sulfate (µg/kg)	40.5(U)	40.9(U)	0.74(U)		0.56(U)	

Table 52. Sediment Results for SWSD024

Parameter (unit)	6/13/2008	10/28/2008	5/18/2009	Fall 2009	10/27/2009	5/19/2010
Endrin (µg/kg)	40.5(U)	40.9(U)	0.81(U)		0.61(U)	
Endrin aldehyde (µg/kg)	40.5(U)	40.9(U)	0.7(U)		0.52(U)	
Endrin ketone (µg/kg)	40.5(U)	40.9(U)	0.68(U)		0.51(U)	
gamma-BHC (Lindane) (µg/kg)	20.3(U)	20.4(U)	12(U)		0.43(U)	
gamma-Chlordane (µg/kg)	20.3(U)	20.4(U)	0.78(U)		0.59(U)	
Heptachlor (µg/kg)	20.3(U)	20.4(U)	13(U)		0.48(U)	
Heptachlor epoxide (µg/kg)	20.3(U)	20.4(U)	12(U)		0.47(U)	
Methoxychlor (µg/kg)	203(U)	204(U)	0.85(U)		0.64(U)	
Toxaphene (µg/kg)	1010(U)	1020(U)	16(U)		12(U)	
Radiological Compounds						
Radium-226 (pCi/g)	0.97	0.66	0.61	0.5(J)	0.5(J)	1.04
Radium-228 (pCi/g)	0.5	1.1	0.52(U)	0.92	0.92	1.47
Thorium-228 (pCi/g)	1.35	0.88	1.69	1.09	1.09	1.52
Thorium-230 (pCi/g)	0.81	0.92(J)	1.28	1.21	1.21	1.06
Thorium-232 (pCi/g)	0.81	1.22	1.83	1.24	1.24	1.32
Total Radium (pCi/g)	1.46*	1.76*	0.61*		1.42*	
Total Uranium (pCi/g)	5.62*	6.29*	5.93*		4.24*	
Uranium-234 (pCi/g)	2.8	3.06	2.97	2.33	2.33	2.27
Uranium-235 (pCi/g)	0.23	0.21	0.28	0.1	0.1	0.14
Uranium-238 (pCi/g)	2.59	3.02	2.68	1.8	1.8	2.12

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 53. Surface Water Results for SWSD025

Parameter (unit)	10/26/2010
Radiological Copounds	
Radium-226 (pCi/L)	0.01(U)
Radium-228 (pCi/L)	0.4(J)
Thorium-228 (pCi/L)	-0.07(U)
Thorium-230 (pCi/L)	-0.01(U)
Thorium-232 (pCi/L)	0.02(U)
Uranium-234 (pCi/L)	2.17
Uranium-235 (pCi/L)	0.12(U)
Uranium-238 (pCi/L)	2.26
Total Uranium (pCi/L)	4.43*

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 54. Surface Water Results for WDD

Parameter (unit)	5/22/2006	11/27/2007
Radiological Compounds		
Radium-226 (pCi/L)	0.11(U)	0.02(U)
Radium-228 (pCi/L)	0.2(U)	-0.04(U)
Thorium-228 (pCi/L)		0.1(U)
Thorium-230 (pCi/L)		0.08(U)
Thorium-232 (pCi/L)		0.05(U)
Uranium-234 (pCi/L)		1.3
Uranium-235/236 (pCi/L)		0.04(U)
Uranium-238 (pCi/L)		0.88
Total Uranium (pCi/L)		2.18*

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.
Sample WDD was collected in a similar location as WDD3. Coordinates unknown.

Table 55. Surface Water Results for WDD1

Parameter (unit)	6/11/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010	11/1/2010
Volatile Organic Compounds							
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)	5(U)	5(U)	5(U)		2.6(J)		
Benzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)		1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)	5(U)	10(U)	0.2(U)		0.2(U)		
Styrene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)	1(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals							
Aluminum (µg/L)	115	417	260		520		
Antimony (µg/L)	2(U)	1.1(J)	0.52		9		
Arsenic (µg/L)	2.8(J)	3.3(J)	2		4.9		
Barium (µg/L)	51	36.2	60		49		
Beryllium (µg/L)	0.1(U)	0.1(U)	0.12(U)		2.4		
Boron (µg/L)	305	265	200		320		
Cadmium (µg/L)	0.23(J)	0.11(U)	0.12(U)		2.9		
Calcium (µg/L)	87800	93100	140000		150000		
Chromium (µg/L)	3.2(J)	1.5(U)	0.13(U)		4.8		
Cobalt (µg/L)	4.7	1.8	2.1		5.5		
Copper (µg/L)	24.3	15.6	34		36		
Iron (µg/L)	910	970	500		1200		
Lead (µg/L)	1.3(J)	0.77(J)	1.7		4.5		
Lithium (µg/L)	16.9	17.4	13		100(U)		

Table 55. Surface Water Results for WDD1

Parameter (unit)	6/11/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010	11/1/2010
Magnesium (µg/L)	29900	33100	47000		42000		
Manganese (µg/L)	445	20.5	140		110		
Mercury (µg/L)	0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Nickel (µg/L)	11.1	8.3	8.8		14		
Potassium (µg/L)	101000	74000	100000		120000		
Selenium (µg/L)	1(U)	1(U)	0.45(U)		4.6		
Silver (µg/L)	0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)	43100	52200	52000		45000		
Thallium (µg/L)	0.3(U)	0.3(U)	0.16(U)		2.6		
Vanadium (µg/L)	3(U)	3(U)	1.5		3.6		
Zinc (µg/L)	274(J)	112	230		230		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB							
Aroclor-1016 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)	0.1(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)	0.1(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)	0.1(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides							
4,4'-DDD (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 55. Surface Water Results for WDD1

Parameter (unit)	6/11/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010	11/1/2010
Endrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin ketone (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)	0.18(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)	0.45(U)	0.48(U)	0.04(U)		0.04(U)		
Radiological Compounds							
Radium-226 (pCi/L)	0.34(U)	0.39(U)	1.22(J)	0.13(U)	0.13(U)	0.11(U)	0.64
Radium-228 (pCi/L)	0.88	0.52(U)	1.07	0.76(U)	0.76(U)	0.65(U)	0.08(U)
Thorium-228 (pCi/L)	0.22(U)	0.13(U)	0.11(U)	0(U)	0(U)	-0.07(U)	-0.08(U)
Thorium-230 (pCi/L)	0.06(U)	0.27	0.08(U)	0.37(J)	0.37(J)	-0.05(U)	-0.06(U)
Thorium-232 (pCi/L)	0.07(U)	0.06(U)	-0.01(U)	-0.01(U)	-0.01(U)	0.01(U)	0.06(U)
Total Radium (pCi/L)	0.88*	U *	2.29*		U *		
Total Thorium (pCi/L)	U *	0.27*	U *		0.37*		
Total Uranium (pCi/L)	0.79*	1.31*	2.12*		0.86*		
Uranium-234 (pCi/L)	0.39	0.88	1.01(J)	0.64	0.64	1.46	1.25
Uranium-235 (pCi/L)	-0.01(U)	0.08(U)	0.05(U)	0.11(U)	0.11(U)	0.16(U)	0.07(U)
Uranium-238 (pCi/L)	0.4	0.42	1.1	0.22	0.22	0.55	1.4

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 56. Sediment Results for WDD1

Parameter (unit)	6/11/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010
Volatile Organic Compounds						
1,1,1-Trichloroethane (µg/kg)	2.67(U)	2.47(U)	36(U)		0.54(U)	
1,1,2,2-Tetrachloroethane (µg/kg)	2.67(U)	2.47(U)	67(U)		1(U)	
1,1,2-Trichloroethane (µg/kg)	2.67(U)	2.47(U)	47(U)		0.69(U)	
1,1-Dichloroethane (µg/kg)	2.67(U)	2.47(U)	46(U)		0.68(U)	
1,1-Dichloroethylene (µg/kg)	2.67(U)	2.47(U)	47(U)		0.7(U)	
1,2-Dichloroethane (µg/kg)	2.67(U)	2.47(U)	41(U)		0.6(U)	
1,2-Dichloropropane (µg/kg)	2.67(U)	2.47(U)	60(U)		0.89(U)	
2-Butanone (µg/kg)	11.6(J)	12.4(U)	150(U)		2.2(U)	
2-Hexanone (µg/kg)	13.3(U)	12.4(U)	75(U)		1.1(U)	
4-Methyl-2-pentanone (µg/kg)	13.3(U)	12.4(U)	58(U)		0.86(U)	
Acetone (µg/kg)	20.3(J)	12.4(U)	120(U)		61(R)	
Benzene (µg/kg)	2.67(U)	2.47(U)	36(U)		0.53(U)	
Bromodichloromethane (µg/kg)	2.67(U)	2.47(U)	35(U)		0.52(U)	
Bromoform (µg/kg)	2.67(U)	2.47(U)	46(U)		0.69(U)	
Bromomethane (µg/kg)	2.67(U)	2.47(U)	360(U)		5.3(U)	
Carbon disulfide (µg/kg)	13.3(U)	12.4(U)	100(U)		1.5(U)	
Carbon tetrachloride (µg/kg)	2.67(U)	2.47(U)	43(U)		0.63(U)	
Chlorobenzene (µg/kg)	2.67(U)	2.47(U)	38(U)		0.56(U)	
Chloroethane (µg/kg)	2.67(U)	2.47(U)	390(U)		5.9(U)	
Chloroform (µg/kg)	2.67(U)	2.47(U)	36(U)		0.54(U)	
Chloromethane (µg/kg)	2.67(U)	2.47(U)	49(U)		0.73(U)	
cis-1,2-Dichloroethylene (µg/kg)	2.67(U)	2.47(U)	47(U)		0.7(U)	
cis-1,3-Dichloropropylene (µg/kg)	2.67(U)	2.47(U)	32(U)		0.47(U)	
Ethylbenzene (µg/kg)	2.67(U)	2.47(U)	46(U)		0.68(U)	
Methylene chloride (µg/kg)	13.3(U)	24.7(U)	96(U)		17(J)	
Styrene (µg/kg)	2.67(U)	2.47(U)	35(U)		0.52(U)	
Tetrachloroethylene (µg/kg)	2.67(U)	2.47(U)	52(U)		0.77(U)	
Toluene (µg/kg)	2.67(U)	2.47(U)	88(J)		0.68(U)	
trans-1,2-Dichloroethylene (µg/kg)	2.67(U)	2.47(U)	36(U)		0.53(U)	
trans-1,3-Dichloropropylene (µg/kg)	2.67(U)	2.47(U)	45(U)		0.66(U)	
Trichloroethylene (µg/kg)	2.67(U)	2.47(U)	84(U)		1.3(U)	
Vinyl chloride (µg/kg)	2.67(U)	2.47(U)	43(U)		0.64(U)	
Xylenes (total) (µg/kg)	2.67(U)	2.47(U)	130(U)		2(U)	
Metals						
Aluminum (mg/kg)	23700	12100(J)	57000		26000	
Antimony (mg/kg)	0.84(U)	1.2(J)	0.07(U)		0.52	
Arsenic (mg/kg)	3.3(J)	2.1(J)	7.5		3.4	
Barium (mg/kg)	156	88.1(J)	340		160	
Beryllium (mg/kg)	1.1(J)	0.57	2		1.2	
Boron (mg/kg)	27.6(J)	13.8	66			
Cadmium (mg/kg)	0.37(J)	0.19(J)	1.6		0.31	
Calcium (mg/kg)	33600	15700(J)	75000		28000	
Chromium (mg/kg)	34.1(J)	19.9	72		42	
Cobalt (mg/kg)	13.3(J)	7.7	27		14	
Copper (mg/kg)	40.1(J)	18	78		44	
Iron (mg/kg)	35100	14600(J)	67000		30000	
Lead (mg/kg)	16.2(J)	8.6	37		18	
Lithium (mg/kg)	43.6	20.8	130			

Table 56. Sediment Results for WDD1

Parameter (unit)	6/11/2008	10/27/2008	5/18/2009	9/1/2009	10/26/2009	5/18/2010
Magnesium (mg/kg)	14100	7370(J)	23000		12000	
Manganese (mg/kg)	834	382(J)	3000		880	
Mercury (mg/kg)	0.04	0.02	0.01(U)		0.06(J)	
Nickel (mg/kg)	31.6(J)	17.2	71		34	
Potassium (mg/kg)	6270	3120(J)	12000		5800	
Selenium (mg/kg)	1.35	1.2(U)	1.2		1.2	
Silver (mg/kg)	1.4	0.24(U)	0.34		0.2	
Sodium (mg/kg)	480(J)	268	720		630	
Thallium (mg/kg)	0.22(J)	0.13(J)	0.16(U)		0.21(J)	
Vanadium (mg/kg)	41.7	20.1	83		29	
Zinc (mg/kg)	152	90.7(J)	930		210	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene (µg/kg)	46.1(U)	41.2(U)	16(U)		11(U)	
Acenaphthylene (µg/kg)	46.1(U)	41.2(U)	18(U)		13(U)	
Anthracene (µg/kg)	46.1(U)	41.2(U)	0.96(U)		2.8(J)	
Benzo(a)anthracene (µg/kg)	4.61(U)	4.12(U)	40(J)		82	
Benzo(a)pyrene (µg/kg)	4.61(U)	20.2	290		110	
Benzo(b)fluoranthene (µg/kg)	4.61(U)	4.12(U)	3.2(U)		120	
Benzo(ghi)perylene (µg/kg)	4.61(U)	12.7	150		140	
Benzo(k)fluoranthene (µg/kg)	2.31(U)	2.06(U)	33(J)		34(J)	
Chrysene (µg/kg)	4.61(U)	23.7	59(J)		79(J)	
Dibenzo(a,h)anthracene (µg/kg)	4.61(U)	4.12(U)	26(U)		18(U)	
Fluoranthene (µg/kg)	20(J)	35.9	330		370	
Fluorene (µg/kg)	46.1(U)	41.2(U)	6.3(U)		4.4(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)	4.61(U)	4.12(U)	7(U)		64(J)	
Naphthalene (µg/kg)	46.1(U)	41.2(U)	13(U)		8.8(U)	
Phenanthrene (µg/kg)	12.5(J)	19.4(J)	99(J)		100	
Pyrene (µg/kg)	19.3(J)	25.4	170		350	
PCB						
Aroclor-1016 (µg/kg)	92.3(U)	8.21(U)	14(U)		9.7(U)	
Aroclor-1221 (µg/kg)	92.3(U)	8.21(U)	14(U)		9.7(U)	
Aroclor-1232 (µg/kg)	92.3(U)	8.21(U)	21(U)		15(U)	
Aroclor-1242 (µg/kg)	92.3(U)	8.21(U)	18(U)		12(U)	
Aroclor-1248 (µg/kg)	92.3(U)	8.21(U)	17(U)		11(U)	
Aroclor-1254 (µg/kg)	92.3(U)	6.8(J)	20(U)		14(U)	
Aroclor-1260 (µg/kg)	92.3(U)	8.21(U)	14(U)		9.5(U)	
Pesticides						
4,4'-DDD (µg/kg)	73.7(U)	32.9(U)	2.6(U)		1.8(U)	
4,4'-DDE (µg/kg)	73.7(U)	32.9(U)	0.94(U)		0.65(U)	
4,4'-DDT (µg/kg)	73.7(U)	32.9(U)	0.95(U)		0.65(U)	
Aldrin (µg/kg)	36.9(U)	16.5(U)	0.88(U)		0.61(U)	
alpha-BHC (µg/kg)	36.9(U)	16.5(U)	0.74(U)		0.51(U)	
alpha-Chlordane (µg/kg)	36.9(U)	16.5(U)	0.9(U)		0.62(U)	
beta-BHC (µg/kg)	36.9(U)	16.5(U)	0.91(U)		0.62(U)	
delta-BHC (µg/kg)	36.9(U)	16.5(U)	0.73(U)		0.5(U)	
Dieldrin (µg/kg)	73.7(U)	32.9(U)	0.86(U)		0.59(U)	
Endosulfan I (µg/kg)	36.9(U)	16.5(U)	0.85(U)		0.59(U)	
Endosulfan II (µg/kg)	73.7(U)	32.9(U)	1.1(U)		0.75(U)	
Endosulfan sulfate (µg/kg)	73.7(U)	32.9(U)	1.1(U)		0.75(U)	

Table 56. Sediment Results for WDD1

Parameter (unit)	6/11/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/18/2010
Endrin (µg/kg)	73.7(U)	32.9(U)	1.2(U)		0.82(U)	
Endrin aldehyde (µg/kg)	73.7(U)	32.9(U)	1(U)		0.7(U)	
Endrin ketone (µg/kg)	73.7(U)	32.9(U)	0.99(U)		0.68(U)	
gamma-BHC (Lindane) (µg/kg)	36.9(U)	16.5(U)	0.84(U)		0.58(U)	
gamma-Chlordane (µg/kg)	36.9(U)	16.5(U)	1.1(U)		0.79(U)	
Heptachlor (µg/kg)	36.9(U)	16.5(U)	0.94(U)		0.65(U)	
Heptachlor epoxide (µg/kg)	36.9(U)	16.5(U)	0.91(U)		0.63(U)	
Methoxychlor (µg/kg)	369(U)	165(U)	1.2(U)		0.85(U)	
Toxaphene (µg/kg)	1840(U)	823(U)	24(U)		16(U)	
Radiological Compounds						
Radium-226 (pCi/g)	1.07	0.83	0.48	0.81	0.81	1.56
Radium-228 (pCi/g)	1.17	2.42	0.82(U)	0.93	0.93	1.41
Thorium-228 (pCi/g)	1.23	1.38	1.72	1.3	1.3	1.17
Thorium-230 (pCi/g)	1.07	1.57	1.46	1.29	1.29	1
Thorium-232 (pCi/g)	1.36	1.23	1.56	1.35	1.35	1.01
Total Radium (pCi/g)	2.24*	3.25*	0.48*		1.74*	
Total Uranium (pCi/g)	2.05*	3.31*	2.49*		2.98*	
Uranium-234 (pCi/g)	1.04	1.41	1.26	1.41	1.41	1.32
Uranium-235 (pCi/g)	0.02(U)	0.06(U)	0.06	0.11(U)	0.11(U)	0.05(U)
Uranium-238 (pCi/g)	1.01	1.9	1.17	1.45	1.45	1.36

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 57. Surface Water Results for WDD2

Parameter (unit)	6/12/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/27/2010
Volatile Organic Compounds							
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)	5(U)	5(U)	5(U)		3(J)		
Benzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)	5(U)	10(U)	5(U)		0.2(U)		
Styrene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)	1(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals							
Aluminum (µg/L)	41.9	309	480		330		
Antimony (µg/L)	0.5(U)	1.1(J)	0.13(U)		0.74		
Arsenic (µg/L)	1.5(U)	3.8(J)	2.2		3.1		
Barium (µg/L)	55.9	39	63		57		
Beryllium (µg/L)	0.1(U)	0.1(U)	0.16(U)		0.12(U)		
Boron (µg/L)	354	281	160		300		
Cadmium (µg/L)	0.29(J)	0.11(U)	0.12(U)		0.3(J)		
Calcium (µg/L)	110000	97000	130000		150000		
Chromium (µg/L)	3.6(J)	1.5(U)	0.13(U)		1.7(J)		
Cobalt (µg/L)	6.9	1.9	2.4		3.1		
Copper (µg/L)	20.8	15.3	26		33		
Iron (µg/L)	843	888	760		820		
Lead (µg/L)	1.2(J)	0.59(J)	1.5		1.8		
Lithium (µg/L)	16.6	17.9	12		100(U)		
Magnesium (µg/L)	37300	34500	45000		47000		

Table 57. Surface Water Results for WDD2

Parameter (unit)	6/12/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/27/2010
Manganese (µg/L)	168	17.5	120		55		
Mercury (µg/L)	0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Nickel (µg/L)	13	8.8	10		14		
Potassium (µg/L)	120000	74300	79000		130000		
Selenium (µg/L)	1(U)	1.1(J)	0.45(U)		1.4(J)		
Silver (µg/L)	0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)	52400	54100	44000		46000		
Thallium (µg/L)	0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)	3(U)	3(U)	1.5		1.1		
Zinc (µg/L)	304(J)	112	220		240		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)	0.47(U)	0.47(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)	0.47(U)	0.48(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB							
Aroclor-1016 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)	0.09(U)	0.09(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)	0.09(U)	0.09(U)	0.03(U)		0.04(U)		
Pesticides							
4,4'-DDD (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 57. Surface Water Results for WDD2

Parameter (unit)	6/12/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/27/2010
Endrin ketone (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)	0.19(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.04(U)		
Radiological Compounds							
Radium-226 (pCi/L)	0.31(U)	0.33(U)	0.18(U)	0.06(U)	0.06(U)	0.17(U)	-.17(U)
Radium-228 (pCi/L)	0.31(U)	1.65	1.04	0.88(U)	0.88(U)	-.02(U)	0.55(J)
Thorium-228 (pCi/L)	0.07(U)	0.09(U)	0.11(U)	0.06(U)	0.06(U)	0.02(U)	-.01(U)
Thorium-230 (pCi/L)	0.21	0.11(U)	0.33	0.15(U)	0.15(U)	0.21	-.15(U)
Thorium-232 (pCi/L)	0.04(U)	0.03(U)	0.08(U)	0.01(U)	0.01(U)	0.02(U)	0.03(U)
Total Radium (pCi/L)	U *	1.65*	1.04*		U *		
Total Thorium (pCi/L)	0.21*	U *	0.33*		U *		
Total Uranium (pCi/L)	1.81*	1.24*	2.53*		1.87*		
Uranium-234 (pCi/L)	0.89	0.75	1.61(J)	0.99	0.99	0.87	1.14
Uranium-235 (pCi/L)	0.1	0.1	0.26(U)	-.01(U)	-.01(U)	0.21	0.49
Uranium-238 (pCi/L)	0.82	0.39	0.91	0.88	0.88	0.76	1.14

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 58. Sediment Results for WDD2

Parameter (unit)	6/12/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Volatile Organic Compounds						
1,1,1-Trichloroethane (µg/kg)	2.14(U)	2.82(U)	24(U)		0.49(U)	
1,1,2,2-Tetrachloroethane (µg/kg)	2.14(U)	2.82(U)	45(U)		0.92(U)	
1,1,2-Trichloroethane (µg/kg)	2.14(U)	2.82(U)	31(U)		0.63(U)	
1,1-Dichloroethane (µg/kg)	2.14(U)	2.82(U)	30(U)		0.62(U)	
1,1-Dichloroethylene (µg/kg)	2.14(U)	2.82(U)	31(U)		0.64(U)	
1,2-Dichloroethane (µg/kg)	2.14(U)	2.82(U)	27(U)		0.55(U)	
1,2-Dichloropropane (µg/kg)	2.14(U)	2.82(U)	40(U)		0.81(U)	
2-Butanone (µg/kg)	10.7(U)	14.1(U)	99(U)		2(U)	
2-Hexanone (µg/kg)	10.7(U)	14.1(U)	50(U)		1(U)	
4-Methyl-2-pentanone (µg/kg)	10.7(U)	14.1(U)	38(U)		0.79(U)	
Acetone (µg/kg)	10.7(U)	14.1(U)	80(U)		31(R)	
Benzene (µg/kg)	2.14(U)	2.82(U)	24(U)		0.49(U)	
Bromodichloromethane (µg/kg)	2.14(U)	2.82(U)	23(U)		0.47(U)	
Bromoform (µg/kg)	2.14(U)	2.82(U)	31(U)		0.63(U)	
Bromomethane (µg/kg)	2.14(U)	2.82(U)	240(U)		4.8(U)	
Carbon disulfide (µg/kg)	10.7(U)	14.1(U)	67(U)		1.4(U)	
Carbon tetrachloride (µg/kg)	2.14(U)	2.82(U)	28(U)		0.58(U)	
Chlorobenzene (µg/kg)	2.14(U)	2.82(U)	25(U)		0.52(U)	
Chloroethane (µg/kg)	2.14(U)	2.82(U)	260(U)		5.4(U)	
Chloroform (µg/kg)	2.14(U)	2.82(U)	24(U)		0.49(U)	
Chloromethane (µg/kg)	2.14(U)	2.82(U)	33(U)		0.67(U)	
cis-1,2-Dichloroethylene (µg/kg)	2.14(U)	2.82(U)	31(U)		0.64(U)	
cis-1,3-Dichloropropylene (µg/kg)	2.14(U)	2.82(U)	21(U)		0.43(U)	
Ethylbenzene (µg/kg)	2.14(U)	2.82(U)	30(U)		0.62(U)	
Methylene chloride (µg/kg)	10.7(U)	28.2(U)	64(U)		11(J)	
Styrene (µg/kg)	2.14(U)	2.82(U)	23(U)		0.48(U)	
Tetrachloroethylene (µg/kg)	2.14(U)	2.82(U)	34(U)		0.7(U)	
Toluene (µg/kg)	2.14(U)	2.82(U)	30(U)		0.62(U)	
trans-1,2-Dichloroethylene (µg/kg)	2.14(U)	2.82(U)	24(U)		0.48(U)	
trans-1,3-Dichloropropylene (µg/kg)	2.14(U)	2.82(U)	30(U)		0.61(U)	
Trichloroethylene (µg/kg)	2.14(U)	2.82(U)	56(U)		1.2(U)	
Vinyl chloride (µg/kg)	2.14(U)	2.82(U)	29(U)		0.59(U)	
Xylenes (total) (µg/kg)	2.14(U)	2.82(U)	90(U)		1.8(U)	
Metals						
Aluminum (mg/kg)	17900	11500(J)	20000		24000	
Antimony (mg/kg)	1.1(J)	1.2(J)	0.05(U)		0.35	
Arsenic (mg/kg)	2.7(J)	2.7	3.6		5.1	
Barium (mg/kg)	130	100(J)	130		180	
Beryllium (mg/kg)	0.82(J)	0.49	0.63		1.4	
Boron (mg/kg)	18.8(J)	16.4	16		27	
Cadmium (mg/kg)	0.24(J)	0.28	0.83		0.26	
Calcium (mg/kg)	21500	20000(J)	32000		38000	
Chromium (mg/kg)	28.9(J)	19.5	23		37	
Cobalt (mg/kg)	9.1(J)	6.6	9		16	
Copper (mg/kg)	35.2(J)	32.7	32		56	
Iron (mg/kg)	25200	17200(J)	21000		33000	
Lead (mg/kg)	13.5(J)	9.7	12		19	
Lithium (mg/kg)	31.5	19.4	44		45	

Table 58. Sediment Results for WDD2

Parameter (unit)	6/12/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Magnesium (mg/kg)	8730	5040(J)	6300		12000	
Manganese (mg/kg)	794	723(J)	960		2200	
Mercury (mg/kg)	0.05	0.04	0(U)		0.06	
Nickel (mg/kg)	21.8(J)	17.3	21		37	
Potassium (mg/kg)	4330	2860(J)	4400		5400	
Selenium (mg/kg)	1.1	1.39(U)	0.82		1.3	
Silver (mg/kg)	1.1(J)	0.48(J)	0.11		0.32	
Sodium (mg/kg)	276(J)	258	340		630	
Thallium (mg/kg)	0.16(J)	0.13(J)	0.11		0.19(J)	
Vanadium (mg/kg)	28.9	21.2	27		29	
Zinc (mg/kg)	159	130(J)	280		230	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene (µg/kg)	37.2(U)	46.9(U)	10(U)		10(U)	
Acenaphthylene (µg/kg)	37.2(U)	46.9(U)	12(U)		11(U)	
Anthracene (µg/kg)	37.2(U)	46.9(U)	0.61(U)		0.59(U)	
Benzo(a)anthracene (µg/kg)	18.4(J)	150	48(J)		120	
Benzo(a)pyrene (µg/kg)	15.1(J)	109	45(J)		120	
Benzo(b)fluoranthene (µg/kg)	3.72(U)	127	46(J)		140	
Benzo(ghi)perylene (µg/kg)	3.72(U)	66.4	35(J)		240	
Benzo(k)fluoranthene (µg/kg)	1.86(U)	79.9	2(U)		40(J)	
Chrysene (µg/kg)	15.9(J)	145	20(J)		140	
Dibenzo(a,h)anthracene (µg/kg)	3.72(U)	4.69(U)	17(U)		78	
Fluoranthene (µg/kg)	23.1(J)	167	55(J)		350	
Fluorene (µg/kg)	37.2(U)	46.9(U)	4(U)		3.9(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)	3.72(U)	4.69(U)	4.4(U)		130	
Naphthalene (µg/kg)	37.2(U)	46.9(U)	8.1(U)		7.8(U)	
Phenanthrene (µg/kg)	37.2(U)	30.6(J)	47(J)		48(J)	
Pyrene (µg/kg)	26.4(J)	201	13(U)		140	
PCB						
Aroclor-1016 (µg/kg)	74(U)	9.28(U)	9(U)		8.7(U)	
Aroclor-1221 (µg/kg)	74(U)	9.28(U)	8.9(U)		8.6(U)	
Aroclor-1232 (µg/kg)	74(U)	9.28(U)	13(U)		13(U)	
Aroclor-1242 (µg/kg)	74(U)	9.28(U)	11(U)		11(U)	
Aroclor-1248 (µg/kg)	74(U)	9.28(U)	10(U)		10(U)	
Aroclor-1254 (µg/kg)	74(U)	9.28(U)	13(U)		12(U)	
Aroclor-1260 (µg/kg)	74(U)	9.28(U)	8.7(U)		8.4(U)	
Pesticides						
4,4'-DDD (µg/kg)	59.4(U)	37.3(U)	1.6(U)		1.6(U)	
4,4'-DDE (µg/kg)	59.4(U)	37.3(U)	0.6(U)		0.58(U)	
4,4'-DDT (µg/kg)	59.4(U)	37.3(U)	0.6(U)		0.58(U)	
Aldrin (µg/kg)	29.7(U)	18.7(U)	0.56(U)		0.54(U)	
alpha-BHC (µg/kg)	29.7(U)	18.7(U)	0.47(U)		0.46(U)	
alpha-Chlordane (µg/kg)	29.7(U)	18.7(U)	0.57(U)		0.55(U)	
beta-BHC (µg/kg)	29.7(U)	18.7(U)	0.57(U)		0.56(U)	
delta-BHC (µg/kg)	29.7(U)	18.7(U)	0.46(U)		0.45(U)	
Dieldrin (µg/kg)	59.4(U)	37.3(U)	0.54(U)		0.53(U)	
Endosulfan I (µg/kg)	29.7(U)	18.7(U)	0.54(U)		0.52(U)	
Endosulfan II (µg/kg)	59.4(U)	37.3(U)	0.69(U)		0.67(U)	
Endosulfan sulfate (µg/kg)	59.4(U)	37.3(U)	0.69(U)		0.67(U)	

Table 58. Sediment Results for WDD2

Parameter (unit)	6/12/2008	10/27/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Endrin (µg/kg)	59.4(U)	37.3(U)	0.75(U)		0.73(U)	
Endrin aldehyde (µg/kg)	59.4(U)	37.3(U)	0.65(U)		0.63(U)	
Endrin ketone (µg/kg)	59.4(U)	37.3(U)	0.63(U)		0.61(U)	
gamma-BHC (Lindane) (µg/kg)	29.7(U)	18.7(U)	0.53(U)		0.52(U)	
gamma-Chlordane (µg/kg)	29.7(U)	18.7(U)	0.72(U)		0.7(U)	
Heptachlor (µg/kg)	29.7(U)	18.7(U)	0.6(U)		0.58(U)	
Heptachlor epoxide (µg/kg)	29.7(U)	18.7(U)	0.58(U)		0.56(U)	
Methoxychlor (µg/kg)	297(U)	187(U)	0.78(U)		0.76(U)	
Toxaphene (µg/kg)	1480(U)	934(U)	15(U)		14(U)	
Radiological Compounds						
Radium-226 (pCi/g)	0.68	0.96	1.22	0.42(J)	0.42(J)	0.72
Radium-228 (pCi/g)	0.95	0.83	0.87(U)	0.7	0.7	0.66(U)
Thorium-228 (pCi/g)	1.1	0.93	2.25	0.88(J)	0.88(J)	0.9
Thorium-230 (pCi/g)	0.83	0.8(J)	1.62	0.83(J)	0.83(J)	0.94
Thorium-232 (pCi/g)	0.76	0.85	1.81	0.98	0.98	0.88
Total Radium (pCi/g)	1.63*	1.8*	1.22*		1.12*	
Total Uranium (pCi/g)	1.72*	2.25*	2.51*		1.9*	
Uranium-234 (pCi/g)	0.86	1.14	1.15	0.98	0.98	1.15
Uranium-235 (pCi/g)	0.09(U)	0.11(U)	0.14	0.07(U)	0.07(U)	0.13
Uranium-238 (pCi/g)	0.87	1.11	1.22	0.92	0.92	1.24

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 59. Surface Water Results for WDD3

Parameter (unit)	6/12/2008	10/28/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/26/2010
Volatile Organic Compounds							
1,1,1-Trichloroethane (µg/L)	1(U)	1(U)	0.16(U)		0.16(U)		
1,1,2,2-Tetrachloroethane (µg/L)	1(U)	1(U)	0.29(U)		0.29(U)		
1,1,2-Trichloroethane (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
1,1-Dichloroethane (µg/L)	1(U)	1(U)	0.25(U)		0.25(U)		
1,1-Dichloroethylene (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloroethane (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
1,2-Dichloropropane (µg/L)	1(U)	1(U)	0.35(U)		0.35(U)		
2-Butanone (µg/L)	5(U)	5(U)	0.28(U)		0.28(U)		
2-Hexanone (µg/L)	5(U)	5(U)	0.21(U)		0.21(U)		
4-Methyl-2-pentanone (µg/L)	5(U)	5(U)	0.4(U)		0.4(U)		
Acetone (µg/L)	5(U)	5(U)	5(U)		5(J)		
Benzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Bromodichloromethane (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
Bromoform (µg/L)	1(U)	1(U)	0.33(U)		0.33(U)		
Bromomethane (µg/L)	1(U)	1(U)	1.2(U)		1.2(U)		
Carbon disulfide (µg/L)	5(U)	5(U)	0.15(U)		0.15(U)		
Carbon tetrachloride (µg/L)	1(U)	1(U)	0.36(U)		0.36(U)		
Chlorobenzene (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
Chloroethane (µg/L)	1(U)	1(U)	0.42(U)		0.42(U)		
Chloroform (µg/L)	1(U)	1(U)	0.19(U)		0.19(U)		
Chloromethane (µg/L)	1(U)	1(U)	0.22(U)		0.22(U)		
cis-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
cis-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.17(U)		0.17(U)		
Ethylbenzene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Methylene chloride (µg/L)	5(U)	10(U)	0.2(U)		0.88(U)		
Styrene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Tetrachloroethylene (µg/L)	1(U)	2(U)	0.26(U)		0.26(U)		
Toluene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
trans-1,2-Dichloroethylene (µg/L)	1(U)	1(U)	0.18(U)		0.18(U)		
trans-1,3-Dichloropropylene (µg/L)	1(U)	1(U)	0.2(U)		0.2(U)		
Trichloroethylene (µg/L)	1(U)	1(U)	0.27(U)		0.27(U)		
Vinyl chloride (µg/L)	1(U)	1(U)	0.24(U)		0.24(U)		
Xylenes (total) (µg/L)	1(U)	1(U)	0.66(U)		0.66(U)		
Metals							
Aluminum (µg/L)	79.5	1870(J)	140		540		
Antimony (µg/L)	2(U)	1.1(J)	0.13(U)		4.6		
Arsenic (µg/L)	1.5(U)	1.8(J)	2.1		2.9		
Barium (µg/L)	58.5	54.4	60		60		
Beryllium (µg/L)	0.1(U)	0.1(U)	0.12(U)		0.12(U)		
Boron (µg/L)	339	298	170		300		
Cadmium (µg/L)	0.42(J)	0.11(U)	0.12(U)		0.24(J)		
Calcium (µg/L)	108000	105000	130000		150000		
Chromium (µg/L)	3.3	3.2	0.13(U)		2.1		
Cobalt (µg/L)	7	2.6	2.2		3.2		
Copper (µg/L)	20.5	17.1	25		33		
Iron (µg/L)	869	2860	270		1200		
Lead (µg/L)	1.4(J)	1.8(J)	0.13(U)		2		
Lithium (µg/L)	16.4	19.4	11		100(U)		
Magnesium (µg/L)	36900	34700	46000		48000		

Table 59. Surface Water Results for WDD3

Parameter (unit)	6/12/2008	10/28/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/26/2010
Manganese (µg/L)	138	169	80		65		
Mercury (µg/L)	0.03(U)	0.07(U)	0.03(U)		0.03(U)		
Nickel (µg/L)	13.2	10.2	9.4		14		
Potassium (µg/L)	113000	68700	84000		120000		
Selenium (µg/L)	1(U)	1(U)	0.45(U)		3.1		
Silver (µg/L)	0.2(U)	0.2(U)	0.08(U)		0.39(U)		
Sodium (µg/L)	51400	54200	48000		45000		
Thallium (µg/L)	0.3(U)	0.3(U)	0.16(U)		0.16(U)		
Vanadium (µg/L)	3(U)	4.2(J)	0.89		0.99		
Zinc (µg/L)	306(J)	116	210		240		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Acenaphthylene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Anthracene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Benzo(a)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(a)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(b)fluoranthene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(ghi)perylene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Benzo(k)fluoranthene (µg/L)	0.02(U)	0.02(U)	0.04(U)		0.02(U)		
Chrysene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.02(U)		
Dibenzo(a,h)anthracene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Fluoranthene (µg/L)	0.05(U)	0.05(U)	0.04(U)		0.02(U)		
Fluorene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Indeno(1,2,3-cd)pyrene (µg/L)	0.05(U)	0.05(U)	0.02(U)		0.01(U)		
Naphthalene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Phenanthrene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.02(U)		
Pyrene (µg/L)	0.05(U)	0.05(U)	0.03(U)		0.01(U)		
PCB							
Aroclor-1016 (µg/L)	0.1(U)	0.1(U)	0.03(U)		0.03(U)		
Aroclor-1221 (µg/L)	0.1(U)	0.1(U)	0.03(U)		0.03(U)		
Aroclor-1232 (µg/L)	0.1(U)	0.1(U)	0.04(U)		0.04(U)		
Aroclor-1242 (µg/L)	0.1(U)	0.1(U)	0.03(U)		0.04(U)		
Aroclor-1248 (µg/L)	0.1(U)	0.1(U)	0.03(U)		0.03(U)		
Aroclor-1254 (µg/L)	0.1(U)	0.1(U)	0.04(U)		0.04(U)		
Aroclor-1260 (µg/L)	0.1(U)	0.1(U)	0.03(U)		0.04(U)		
Pesticides							
4,4'-DDD (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDE (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
4,4'-DDT (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Aldrin (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
alpha-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
beta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
delta-BHC (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Dieldrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan I (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Endosulfan II (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endosulfan sulfate (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
Endrin aldehyde (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		

Table 59. Surface Water Results for WDD3

Parameter (unit)	6/12/2008	10/28/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010	10/26/2010
Endrin ketone (µg/L)	0.04(U)	0.04(U)	0(U)		0(U)		
gamma-BHC (Lindane) (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
gamma-Chlordane (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Heptachlor epoxide (µg/L)	0.02(U)	0.02(U)	0(U)		0(U)		
Methoxychlor (µg/L)	0.19(U)	0.19(U)	0(U)		0(U)		
Toxaphene (µg/L)	0.48(U)	0.47(U)	0.04(U)		0.04(U)		
Radiological Compounds							
Radium-226 (pCi/L)	0.16(U)	0.52(U)	0.29(U)	0.13(U)	0.13(U)	0.29(U)	0.08(U)
Radium-228 (pCi/L)	0.31(U)	1.75(J)	0.45(U)	0.7(U)	0.7(U)	-0.78(U)	0.12(U)
Thorium-228 (pCi/L)	0.14(U)	0.16(U)	0.26(U)	0.13(U)	0.13(U)	-0.02(U)	0(U)
Thorium-230 (pCi/L)	-0.06(U)	0.12(U)	0.23(U)	0.15	0.15	0.11(U)	0.23(U)
Thorium-232 (pCi/L)	-0.05(U)	0(U)	0.07(U)	0.05(U)	0.05(U)	0.05(U)	0.02(U)
Total Radium (pCi/L)	U *	1.75*	U *		U *		
Total Thorium (pCi/L)	U *	U *	U *		0.15*		
Total Uranium (pCi/L)	2.06*	0.96*	2.23*		1.7*		
Uranium-234 (pCi/L)	1.2	0.34	1.55(J)	1.02	1.02	0.89	1.01
Uranium-235 (pCi/L)	0.06(U)	0.02(U)	0.09(U)	0.02(U)	0.02(U)	0.1(U)	0.11
Uranium-238 (pCi/L)	0.86	0.62	0.67	0.68	0.68	0.64	0.89

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

Table 60. Sediment Results for WDD3

Parameter (unit)	6/12/2008	10/28/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Volatile Organic Compounds						
1,1,1-Trichloroethane (µg/kg)	2.82(U)	3.26(U)	22(U)		0.35(U)	
1,1,2,2-Tetrachloroethane (µg/kg)	2.82(U)	3.26(U)	40(U)		0.65(U)	
1,1,2-Trichloroethane (µg/kg)	2.82(U)	3.26(U)	28(U)		0.45(U)	
1,1-Dichloroethane (µg/kg)	2.82(U)	3.26(U)	27(U)		0.44(U)	
1,1-Dichloroethylene (µg/kg)	2.82(U)	3.26(U)	28(U)		0.45(U)	
1,2-Dichloroethane (µg/kg)	2.82(U)	3.26(U)	24(U)		0.39(U)	
1,2-Dichloropropane (µg/kg)	2.82(U)	3.26(U)	36(U)		0.58(U)	
2-Butanone (µg/kg)	12.4(J)	16.3(U)	89(U)		1.4(U)	
2-Hexanone (µg/kg)	14.1(U)	16.3(U)	45(U)		0.72(U)	
4-Methyl-2-pentanone (µg/kg)	14.1(U)	16.3(U)	34(U)		0.56(U)	
Acetone (µg/kg)	18.5(J)	16.3(U)	71(U)		1.2(U)	
Benzene (µg/kg)	2.82(U)	3.26(U)	21(U)		0.35(U)	
Bromodichloromethane (µg/kg)	2.82(U)	3.26(U)	21(U)		0.34(U)	
Bromoform (µg/kg)	2.82(U)	3.26(U)	28(U)		0.45(U)	
Bromomethane (µg/kg)	2.82(U)	3.26(U)	210(U)		3.4(U)	
Carbon disulfide (µg/kg)	14.1(U)	16.3(U)	60(U)		0.97(U)	
Carbon tetrachloride (µg/kg)	2.82(U)	3.26(U)	25(U)		0.41(U)	
Chlorobenzene (µg/kg)	2.82(U)	3.26(U)	23(U)		0.37(U)	
Chloroethane (µg/kg)	2.82(U)	3.26(U)	240(U)		3.8(U)	
Chloroform (µg/kg)	2.82(U)	3.26(U)	22(U)		0.35(U)	
Chloromethane (µg/kg)	2.82(U)	3.26(U)	29(U)		0.48(U)	
cis-1,2-Dichloroethylene (µg/kg)	2.82(U)	3.78	28(U)		0.45(U)	
cis-1,3-Dichloropropylene (µg/kg)	2.82(U)	3.26(U)	19(U)		0.3(U)	
Ethylbenzene (µg/kg)	2.82(U)	3.26(U)	27(U)		0.44(U)	
Methylene chloride (µg/kg)	14.1(U)	32.6(U)	57(J)		14(J)	
Styrene (µg/kg)	2.82(U)	3.26(U)	21(U)		0.34(U)	
Tetrachloroethylene (µg/kg)	2.82(U)	7.3	31(U)		0.5(U)	
Toluene (µg/kg)	1(J)	3.26(U)	27(U)		0.44(U)	
trans-1,2-Dichloroethylene (µg/kg)	2.82(U)	3.26(U)	21(U)		0.34(U)	
trans-1,3-Dichloropropylene (µg/kg)	2.82(U)	3.26(U)	27(U)		0.43(U)	
Trichloroethylene (µg/kg)	2.82(U)	3.91	50(U)		0.81(U)	
Vinyl chloride (µg/kg)	2.82(U)	3.26(U)	26(U)		0.42(U)	
Xylenes (total) (µg/kg)	2.82(U)	3.26(U)	80(U)		1.3(U)	
Metals						
Aluminum (mg/kg)	30300	16400(J)	19000		19000	
Antimony (mg/kg)	0.88(U)	1.3(J)	0.15		0.2	
Arsenic (mg/kg)	4.5(J)	3.2(J)	4.2		2.4	
Barium (mg/kg)	191	123(J)	110		99	
Beryllium (mg/kg)	1.4(J)	0.66(J)	0.61		0.97	
Boron (mg/kg)	29.6(J)	25.3(J)	14		22	
Cadmium (mg/kg)	0.5(J)	0.32(J)	0.72		0.13	
Calcium (mg/kg)	59100	13700(J)	33000		17000	
Chromium (mg/kg)	38.7(J)	23(J)	26		30	
Cobalt (mg/kg)	17(J)	8.4(J)	9.7		10	
Copper (mg/kg)	48.9(J)	32(J)	40		25	
Iron (mg/kg)	42100	21400(J)	23000		21000	
Lead (mg/kg)	18.2(J)	13.1(J)	12		13	
Lithium (mg/kg)	49.6	24.1(J)	45		37	

Table 60. Sediment Results for WDD3

Parameter (unit)	6/12/2008	10/28/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Magnesium (mg/kg)	18400	6730(J)	6900		7600	
Manganese (mg/kg)	1000	715(J)	1000		660	
Mercury (mg/kg)	0.05	0.05	0(U)		0.02	
Nickel (mg/kg)	37.4(J)	18.8(J)	25		23	
Potassium (mg/kg)	7700	3840(J)	3900		4700	
Selenium (mg/kg)	1.44	1.55(U)	0.46		0.43	
Silver (mg/kg)	1.5	0.31(U)	0.38		0.07	
Sodium (mg/kg)	513(J)	305(J)	430		390	
Thallium (mg/kg)	0.26(J)	0.18(J)	0.05(U)		0.16(J)	
Vanadium (mg/kg)	51.2	30.1(J)	28		20	
Zinc (mg/kg)	176	159(J)	380		130	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene (µg/kg)	48(U)	54.4(U)	290		7.1(U)	
Acenaphthylene (µg/kg)	48(U)	54.4(U)	11(U)		8(U)	
Anthracene (µg/kg)	48(U)	257	6.6(J)		0.42(U)	
Benzo(a)anthracene (µg/kg)	4.8(U)	1610	130		1.9(U)	
Benzo(a)pyrene (µg/kg)	4.8(U)	2820	210		17(J)	
Benzo(b)fluoranthene (µg/kg)	4.8(U)	2820	200		19(J)	
Benzo(ghi)perylene (µg/kg)	4.8(U)	1230	120		6.3(U)	
Benzo(k)fluoranthene (µg/kg)	2.4(U)	1320	75		1.4(U)	
Chrysene (µg/kg)	4.8(U)	1500	200		8.4(J)	
Dibenzo(a,h)anthracene (µg/kg)	4.8(U)	195(J)	16(U)		11(U)	
Fluoranthene (µg/kg)	4.8(U)	682	430		1.8(U)	
Fluorene (µg/kg)	48(U)	54.4(U)	3.8(U)		2.8(U)	
Indeno(1,2,3-cd)pyrene (µg/kg)	4.8(U)	1380	140		3(U)	
Naphthalene (µg/kg)	48(U)	54.4(U)	7.7(U)		5.5(U)	
Phenanthrene (µg/kg)	48(U)	54.4(U)	72		1.2(U)	
Pyrene (µg/kg)	4.8(U)	1380	270		8.9(U)	
PCB						
Aroclor-1016 (µg/kg)	95.6(U)	10.7(U)	8.6(U)		6.1(U)	
Aroclor-1221 (µg/kg)	95.6(U)	10.7(U)	8.5(U)		6.1(U)	
Aroclor-1232 (µg/kg)	95.6(U)	10.7(U)	13(U)		9.2(U)	
Aroclor-1242 (µg/kg)	95.6(U)	10.7(U)	11(U)		7.6(U)	
Aroclor-1248 (µg/kg)	95.6(U)	10.7(U)	10(U)		7.2(U)	
Aroclor-1254 (µg/kg)	95.6(U)	10.7(U)	12(U)		8.6(U)	
Aroclor-1260 (µg/kg)	95.6(U)	10.7(U)	8.3(U)		6(U)	
Pesticides						
4,4'-DDD (µg/kg)	76.3(U)	43.4(U)	1.5(U)		1.1(U)	
4,4'-DDE (µg/kg)	76.3(U)	43.4(U)	0.57(U)		0.41(U)	
4,4'-DDT (µg/kg)	76.3(U)	43.4(U)	0.58(U)		0.41(U)	
Aldrin (µg/kg)	38.2(U)	21.7(U)	0.54(U)		0.38(U)	
alpha-BHC (µg/kg)	38.2(U)	21.7(U)	0.45(U)		0.32(U)	
alpha-Chlordane (µg/kg)	38.2(U)	21.7(U)	0.54(U)		0.39(U)	
beta-BHC (µg/kg)	38.2(U)	21.7(U)	0.55(U)		0.39(U)	
delta-BHC (µg/kg)	38.2(U)	21.7(U)	0.44(U)		0.32(U)	
Dieldrin (µg/kg)	76.3(U)	43.4(U)	0.52(U)		0.37(U)	
Endosulfan I (µg/kg)	38.2(U)	21.7(U)	0.52(U)		0.37(U)	
Endosulfan II (µg/kg)	76.3(U)	43.4(U)	0.66(U)		0.47(U)	
Endosulfan sulfate (µg/kg)	76.3(U)	43.4(U)	0.66(U)		0.47(U)	

Table 60. Sediment Results for WDD3

Parameter (unit)	6/12/2008	10/28/2008	5/18/2009	Fall 2009	10/26/2009	5/17/2010
Endrin (µg/kg)	76.3(U)	43.4(U)	0.72(U)		0.52(U)	
Endrin aldehyde (µg/kg)	76.3(U)	43.4(U)	0.62(U)		0.44(U)	
Endrin ketone (µg/kg)	76.3(U)	43.4(U)	0.6(U)		0.43(U)	
gamma-BHC (Lindane) (µg/kg)	38.2(U)	21.7(U)	0.51(U)		0.37(U)	
gamma-Chlordane (µg/kg)	38.2(U)	21.7(U)	0.69(U)		0.5(U)	
Heptachlor (µg/kg)	38.2(U)	21.7(U)	0.57(U)		0.41(U)	
Heptachlor epoxide (µg/kg)	38.2(U)	21.7(U)	0.55(U)		0.4(U)	
Methoxychlor (µg/kg)	382(U)	217(U)	0.75(U)		0.54(U)	
Toxaphene (µg/kg)	1910(U)	1080(U)	14(U)		10(U)	
Radiological Compounds						
Radium-226 (pCi/g)	1.23	1.68	0.35(U)	0.57(J)	0.57(J)	0.82
Radium-228 (pCi/g)	0.83	1.29	0.75(U)	1.33(U)	1.33(U)	2.66
Thorium-228 (pCi/g)	1.1	0.82	1.3	1.59	1.59	1.03
Thorium-230 (pCi/g)	1.35	1.45	0.8	1.21	1.21	1.11
Thorium-232 (pCi/g)	1.1	0.79	0.88	1.38	1.38	1.06
Total Radium (pCi/g)	2.06*	2.97*	U *		0.57*	
Total Uranium (pCi/g)	2.16*	2.33*	2.28*		2.44*	
Uranium-234 (pCi/g)	0.96	1	1.06	1.29	1.29	1.44
Uranium-235 (pCi/g)	0.13(U)	0.06(U)	0.14	-0.01(U)	-0.01(U)	0.09
Uranium-238 (pCi/g)	1.2	1.33	1.07	1.15	1.15	1.55

* indicates calculated result. Total radiological values reported in pCi/L are the result of summing the detected isotopes; if no isotopes were detected the total value is also a non-detect.
Qualifiers: J = analytical result is an estimated concentration; U = analyte is a non-detect at the reporting limit; R = analytical result is unusable.

APPENDIX 4-B

Ambient Air Calculations for VOCs in EU 4 Soil and Groundwater

Ambient Air Calculations in EU 4

Chemical Name: **TETRACHLOROETHENE**

Solve For	Description	value	units
C_{air}	Air Concentration		
	$Cair = Vf_{warnb} * Gw_{conc}$	4.22E-02	mg/m^3
Variables	**Description**	**value**	**units**
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors	6.12E-07	$(mg/m^{3)}/(mg/L)$
Gw_{conc}	Concentration of contaminant in groundwater	6.89E+04	mg/L

Solve For	Description	value	units
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors		
	$VF_{warnb} = (H/((1 + (U_{air} * \delta_{air} * L_{GW}))/(W*D^{eff}_{ws}))) * 10^3$	6.12E-07	$(mg/m^3)/(mg/L)$
Variables	**Description**	**value**	**units**
H	Henry's Law Constant	7.20E-01	unitless
U_{air}	wind speed above ground surface in ambient mixing zone	454.7	cm/sec
δ_{air}	ambient air mixing zone height	200	cm
L_{GW}	depth to groundwater	158.496	cm
W	width of source parallel to groundwater flow (or wind)	609.6	cm
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface	2.01E-05	cm^2/sec

Solve For	Description	value	units
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface		
	$D^{eff}_{ws} = (h_{cap} + h_v) * [(h_{cap}/D^{eff}_{cap}) + (h_v/D^{eff}_s)]^{-1}$	2.01E-05	cm^2/sec
Variables	**Description**	**value**	**units**
h_{cap}	thickness of capillary fringe	71.628	cm
h_v	thickness of vadose zone	158.496	cm
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe	6.31E-06	cm^2/sec
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration	1.81E-03	cm^2/sec

Solve For	Description	value	units
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe		
	$D^{eff}_{cap} = (D^{air} * (\theta^{3.33}_{acap}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{wcap}/\theta^2_T))$	6.31E-06	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	0.05	cm^2/sec
θ_{acap}	volumetric air content in capillary fringe soils	0.038	unitless
θ_{wcap}	volumetric water content in capillary fringe soils	0.342	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	9.50E-06	cm^2/sec
H	Henry's Law Constant	7.20E-01	unitless

Solve For	Description	value	units
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration		
	$D^{eff}_s = (D^{air} * (\theta^{3.33}_{as}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{ws}/\theta^2_T))$	1.81E-03	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	5.00E-02	cm^2/sec
θ_{as}	volumetric air content in vadose zone soils	0.23	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	9.50E-06	cm^2/sec
H	Henry's Law Constant	7.20E-01	unitless
θ_{ws}	volumetric water content in vadose zone soils	0.12	unitless

Ambient Air Calculations in EU 4

Chemical Name: **TRICHLOROETHENE**

Solve For	Description	value	units
C_{air}	Air Concentration		
	Cair = Vf_{warnb} * Gw_{conc}	2.54E-03	mg/m^3
Variables	**Description**	**value**	**units**
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors	5.19E-07	$(mg/m^{3)}/(mg/L)$
Gw_{conc}	Concentration of contaminant in groundwater	4.89E+03	mg/L

Solve For	Description	value	units
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors		
	$VF_{warnb} = (H/((1 + (U_{air} * \delta_{air} * L_{GW}))/(W*D^{eff}_{ws}))) * 10^3$	5.19E-07	$(mg/m^3)/(mg/L)$
Variables	**Description**	**value**	**units**
H	Henry's Law Constant	4.00E-01	unitless
U_{air}	wind speed above ground surface in ambient mixing zone	454.7	cm/sec
δ_{air}	ambient air mixing zone height	200	cm
L_{GW}	depth to groundwater	158.496	cm
W	width of source parallel to groundwater flow (or wind)	609.6	cm
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface	3.07E-05	cm^2/sec

Solve For	Description	value	units
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface		
	$D^{eff}_{ws} = (h_{cap} + h_v) * [(h_{cap}/D^{eff}_{cap}) + (h_v/D^{eff}_s)]^{-1}$	3.07E-05	cm^2/sec
Variables	**Description**	**value**	**units**
h_{cap}	thickness of capillary fringe	71.628	cm
h_v	thickness of vadose zone	158.496	cm
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe	9.63E-06	cm^2/sec
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration	2.50E-03	cm^2/sec

Solve For	Description	value	units
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe		
	$D^{eff}_{cap} = (D^{air} * (\theta^{3.33}_{acap}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{wcap}/\theta^2_T))$	9.63E-06	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	0.069	cm^2/sec
θ_{acap}	volumetric air content in capillary fringe soils	0.038	unitless
θ_{wcap}	volumetric water content in capillary fringe soils	0.342	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.00E-05	cm^2/sec
H	Henry's Law Constant	4.00E-01	unitless

Solve For	Description	value	units
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration		
	$D^{eff}_s = (D^{air} * (\theta^{3.33}_{as}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{ws}/\theta^2_T))$	2.50E-03	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	6.90E-02	cm^2/sec
θ_{as}	volumetric air content in vadose zone soils	0.23	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.00E-05	cm^2/sec
H	Henry's Law Constant	4.00E-01	unitless
θ_{ws}	volumetric water content in vadose zone soils	0.12	unitless

Ambient Air Calculations in EU 4

Chemical Name: **CIS-1,2-DICHLOROETHENE**

Solve For	Description	value	units
C_{air}	Air Concentration		
	Cair = Vf_{warnb} * Gw_{conc}	8.95E-07	mg/m^3
Variables	**Description**	**value**	**units**
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors	3.82E-07	$(mg/m^{3)}/(mg/L)$
Gw_{conc}	Concentration of contaminant in groundwater	2.34E+00	mg/L

Solve For	Description	value	units
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors		
	$VF_{warnb} = (H/((1 + (U_{air} * \delta_{air} * L_{GW}))/(W*D^{eff}_{ws}))) * 10^3$	3.82E-07	$(mg/m^3)/(mg/L)$
Variables	**Description**	**value**	**units**
H	Henry's Law Constant	1.70E-01	unitless
U_{air}	wind speed above ground surface in ambient mixing zone	454.7	cm/sec
δ_{air}	ambient air mixing zone height	200	cm
L_{GW}	depth to groundwater	158.496	cm
W	width of source parallel to groundwater flow (or wind)	609.6	cm
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface	5.32E-05	cm^2/sec

Solve For	Description	value	units
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface		
	$D^{eff}_{ws} = (h_{cap} + h_v) * [(h_{cap}/D^{eff}_{cap}) + (h_v/D^{eff}_s)]^{-1}$	5.32E-05	cm^2/sec
Variables	**Description**	**value**	**units**
h_{cap}	thickness of capillary fringe	71.628	cm
h_v	thickness of vadose zone	158.496	cm
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe	1.67E-05	cm^2/sec
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration	3.19E-03	cm^2/sec

Solve For	Description	value	units
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe		
	$D^{eff}_{cap} = (D^{air} * (\theta^{3.33}_{acap}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{wcap}/\theta^2_T))$	1.67E-05	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	0.088	cm^2/sec
θ_{acap}	volumetric air content in capillary fringe soils	0.038	unitless
θ_{wcap}	volumetric water content in capillary fringe soils	0.342	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.10E-05	cm^2/sec
H	Henry's Law Constant	1.70E-01	unitless

Solve For	Description	value	units
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration		
	$D^{eff}_s = (D^{air} * (\theta^{3.33}_{as}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{ws}/\theta^2_T))$	3.19E-03	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	8.80E-02	cm^2/sec
θ_{as}	volumetric air content in vadose zone soils	0.23	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.10E-05	cm^2/sec
H	Henry's Law Constant	1.70E-01	unitless
θ_{ws}	volumetric water content in vadose zone soils	0.12	unitless

Ambient Air Calculations in EU 4

Chemical Name: **TRANS-1,2-DICHLOROETHENE**

Solve For	Description	value	units
C_{air}	Air Concentration		
	$Cair = Vf_{warnb} * Gw_{conc}$	5.53E-08	mg/m^3
Variables	**Description**	**value**	**units**
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors	4.00E-07	$(mg/m^{3)}/(mg/L)$
Gw_{conc}	Concentration of contaminant in groundwater	1.38E-01	mg/L

Solve For	Description	value	units
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors		
	$VF_{warnb} = (H/((1 + (U_{air} * \delta_{air} * L_{GW}))/(W*D^{eff}_{ws}))) * 10^3$	4.00E-07	$(mg/m^3)/(mg/L)$
Variables	**Description**	**value**	**units**
H	Henry's Law Constant	1.70E-01	unitless
U_{air}	wind speed above ground surface in ambient mixing zone	454.7	cm/sec
δ_{air}	ambient air mixing zone height	200	cm
L_{GW}	depth to groundwater	158.496	cm
W	width of source parallel to groundwater flow (or wind)	609.6	cm
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface	5.57E-05	cm^2/sec

Solve For	Description	value	units
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface		
	$D^{eff}_{ws} = (h_{cap} + h_v) * [(h_{cap}/D^{eff}_{cap}) + (h_v/D^{eff}_s)]^{-1}$	5.57E-05	cm^2/sec
Variables	**Description**	**value**	**units**
h_{cap}	thickness of capillary fringe	71.6	cm
h_v	thickness of vadose zone	158.496	cm
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe	1.75E-05	cm^2/sec
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration	3.19E-03	cm^2/sec

Solve For	Description	value	units
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe		
	$D^{eff}_{cap} = (D^{air} * (\theta^{3.33}_{acap}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{wcap}/\theta^2_T))$	1.75E-05	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	0.088	cm^2/sec
θ_{acap}	volumetric air content in capillary fringe soils	0.038	unitless
θ_{wcap}	volumetric water content in capillary fringe soils	0.342	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.20E-05	cm^2/sec
H	Henry's Law Constant	1.70E-01	unitless

Solve For	Description	value	units
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration		
	$D^{eff}_s = (D^{air} * (\theta^{3.33}_{as}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{ws}/\theta^2_T))$	3.19E-03	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	8.80E-02	cm^2/sec
θ_{as}	volumetric air content in vadose zone soils	0.23	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.20E-05	cm^2/sec
H	Henry's Law Constant	1.70E-01	unitless
θ_{ws}	volumetric water content in vadose zone soils	0.12	unitless

Ambient Air Calculations in EU 4

Chemical Name: **VINYL CHLORIDE**

Solve For	Description	value	units
C_{air}	Air Concentration		
	Cair = Vf_{warnb} * Gw_{conc}	7.17E-07	mg/m^3
Variables	**Description**	**value**	**units**
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors	1.70E-06	$(mg/m^{3)}/(mg/L)$
Gw_{conc}	Concentration of contaminant in groundwater	4.23E-01	mg/L

Solve For	Description	value	units
VF_{warnb}	Volatization factor groundwater to ambient outdoor vapors		
	$VF_{warnb} = (H/((1 + (U_{air} * \delta_{air} * L_{GW}))/(W*D^{eff}_{ws}))) * 10^3$	1.70E-06	$(mg/m^3)/(mg/L)$
Variables	**Description**	**value**	**units**
H	Henry's Law Constant	1.10E+00	unitless
U_{air}	wind speed above ground surface in ambient mixing zone	454.7	cm/sec
δ_{air}	ambient air mixing zone height	200	cm
L_{GW}	depth to groundwater	158.496	cm
W	width of source parallel to groundwater flow (or wind)	609.6	cm
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface	3.64E-05	cm^2/sec

Solve For	Description	value	units
D^{eff}_{ws}	Effective diffusion coeffcient between groundwater and soil surface		
	$D^{eff}_{ws} = (h_{cap} + h_v) * [(h_{cap}/D^{eff}_{cap}) + (h_v/D^{eff}_s)]^{-1}$	3.64E-05	cm^2/sec
Variables	**Description**	**value**	**units**
h_{cap}	thickness of capillary fringe	71.628	cm
h_v	thickness of vadose zone	158.496	cm
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe	1.14E-05	cm^2/sec
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration	3.99E-03	cm^2/sec

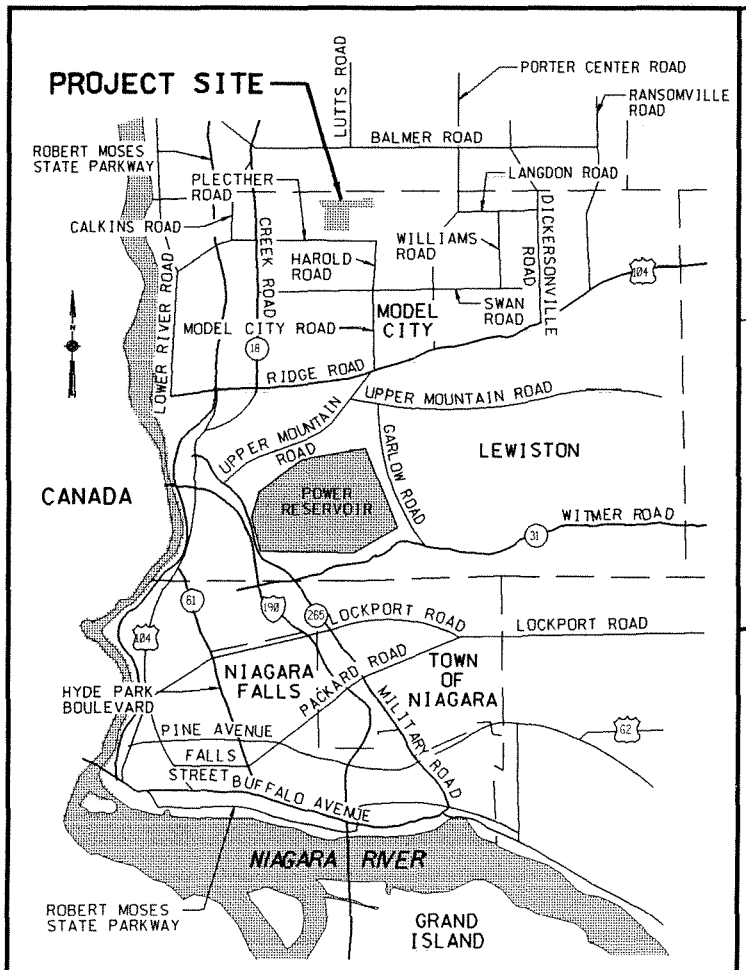
Solve For	Description	value	units
D^{eff}_{cap}	effective diffusion coefficent through capillary fringe		
	$D^{eff}_{cap} = (D^{air} * (\theta^{3.33}_{acap}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{wcap}/\theta^2_T))$	1.14E-05	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	0.11	cm^2/sec
θ_{acap}	volumetric air content in capillary fringe soils	0.038	unitless
θ_{wcap}	volumetric water content in capillary fringe soils	0.342	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.20E-05	cm^2/sec
H	Henry's Law Constant	1.10E+00	unitless

Solve For	Description	value	units
D^{eff}_s	effective diffusion in soil based on vapor-phase concentration		
	$D^{eff}_s = (D^{air} * (\theta^{3.33}_{as}/\theta^2_T)) + (D^{wat} * (1/H) * (\theta^{3.33}_{ws}/\theta^2_T))$	3.99E-03	cm^2/sec
Variables	**Description**	**value**	**units**
D^{air}	diffusion coeffiecent in air	1.10E-01	cm^2/sec
θ_{as}	volumetric air content in vadose zone soils	0.23	unitless
θ_T	Total soil porosity	0.4545	unitless
D^{wat}	diffusion coeffiecent in water	1.20E-05	cm^2/sec
H	Henry's Law Constant	1.10E+00	unitless
θ_{ws}	volumetric water content in vadose zone soils	0.12	unitless

APPENDIX 5-A

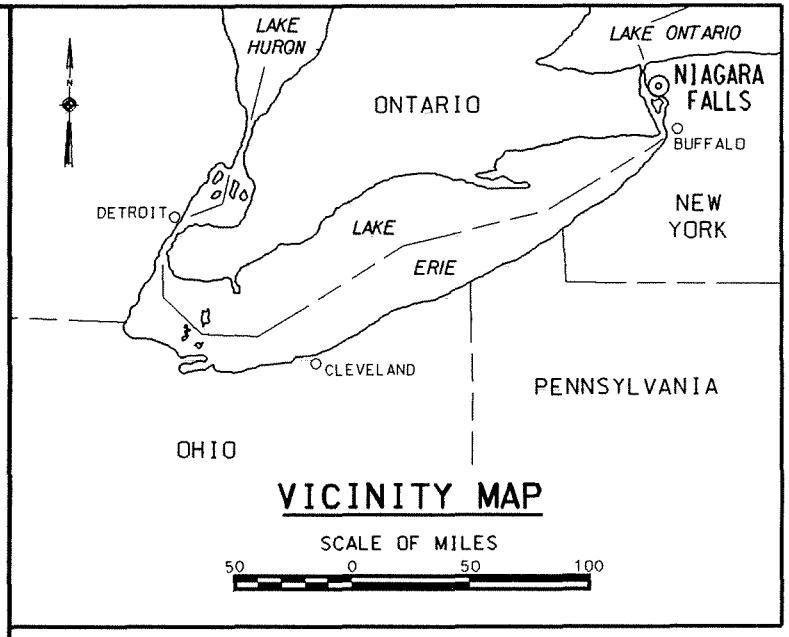
Turf Maintenance Program
for the Waste Containment Structure
Niagara Falls Storage Site
Lewiston, New York

ATTACHMENT 1



LOCALITY MAP

NOT TO SCALE



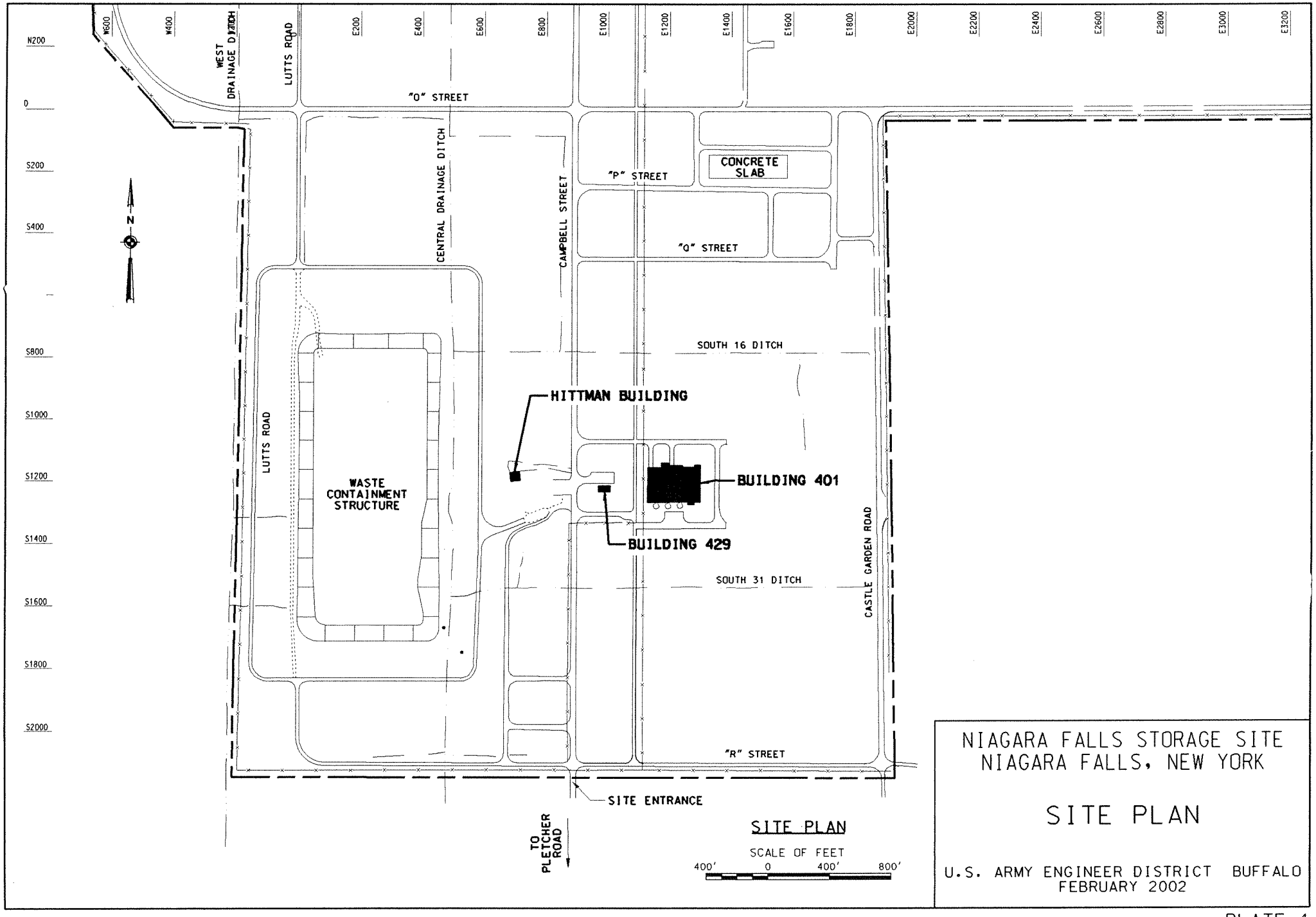
VICINITY MAP

NIAGARA FALLS STORAGE SITE
NIAGARA FALLS, NEW YORK

LOCALITY AND VICINITY MAPS

U.S. ARMY ENGINEER DISTRICT BUFFALO
FEBRUARY 2002

DATE: 02-Feb-02 12:52



NIAGARA FALLS STORAGE SITE
NIAGARA FALLS, NEW YORK

SITE PLAN

U.S. ARMY ENGINEER DISTRICT BUFFALO
FEBRUARY 2002

ATTACHMENT 2

~~080790~~ 164308

~~47078~~

TURF MANAGEMENT PROGRAM
FOR
WASTE CONTAINMENT STRUCTURE

NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

NO.	DATE	REVISIONS	BY	CHK'D	SUPV.	PE		
△								
△	05/19/93	Revised as noted	MMB	RC	MMB			
△	09/15/92	Revised Sections 4.7 and 6.7	MMB	RC	MMB	HWD		
△	9/05/91	REVISE SECTIONS 4-7		MMB	MMB			
△	1/19/87	ISSUED FOR USE		CRJ				

ORIGIN			JOB NO. 14501	
AT	BECHTEL	TURF MANAGEMENT PROGRAM FOR WASTE CONTAINMENT STRUCTURE	Instr. Guide	REV.
			202-00-IG-02	3

TURF MANAGEMENT PROGRAM

FOR

WASTE CONTAINMENT STRUCTURE

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TURF MANAGEMENT PROGRAM
FOR
WASTE CONTAINMENT STRUCTURE

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1.0 PURPOSE AND APPLICABILITY

The purpose of this Instruction Guide is to establish a turf management program for maintaining and promoting the grass cover on the Waste Containment Structure (WCS) at the Niagara Falls Storage Site (NFSS) in Lewiston, New York.

This Instruction Guide applies to the WCS for the duration of the interim cover.

2.0 SCOPE

This Instruction Guide delineates the guidelines and procedures for the care and maintenance of the grass cover of the WCS to help ensure the integrity of the engineered containment structure.

3.0 BACKGROUND

Low-level radioactive wastes are stored in an engineered containment structure at the NFSS. The WCS is in its interim configuration pending a decision on the final disposition of all or some of the wastes. The interim containment cover consists of 3 ft of compacted clay topped with 1.5 ft of topsoil and a turfgrass cover. Additional information on the interim cover may be found in the Design Report for the Interim Waste Containment Facility at the Niagara Falls Storage Site (Reference 6).

4.0 MATERIALS

4.1 EROSION CONTROL AND REVEGETATION MATTING (ECRM)

The type of material of ECRM shall be determined by Project Engineering on an as-needed basis.

4.2 FERTILIZER

- Fertilizer shall be a standard quality commercial carrier of available plant nutrients and shall be of the slow-release type.

- Fertilizer shall be granular or pelletized. Fertilizer shall not be pulverized or contain excessive dust. Fertilizer shall not be liquid.

- Fertilizer content shall be based on the results of the soil testing, if available.

If results of the soil testing are not available, the following fertilizer mixes shall be used:

		PERCENT OF WEIGHT		
		Total Nitrogen	Available Phosphoric Acid	Soluble Potash
Mix 1:	Areas with existing turf	20	10	10
Mix 2:	Areas without existing turf	5	10	10

- Fertilizer shall be packaged in the manufacturer's standard containers weighing not over 100 pounds each with the following information listed on each container: manufacturer's name, material name, net weight, and guaranteed analysis/composition.

4.3 HERBICIDE

- Herbicide type and application rate shall be as determined by a turf management consultant, subject to the review of Project Engineering and Environmental Health and Safety (EH&S). Herbicide shall be commercially available material and be able to control the following plants as well as any other weeds identified on the site.

  - Fungus
  - Broad leaf plants
  - Deep-rooted plant
  - Woody plants

- Herbicide shall not be a material restricted by federal or state regulations. Material Safety Data Sheets (MSDS) shall be included with the herbicide.

4.4 LIMESTONE

- Limestone shall be agricultural-grade, ground limestone having a minimum total neutralizing value of 90 percent calcium carbonate ($CaCO_3$) equivalence. At least 90 percent shall pass the #20 U.S. standard sieve and no more than 30 percent shall pass the #100 U.S. standard sieve.

- Limestone shall be packaged in the manufacturer's standard containers weighing not over 100 pounds each with the following information listed on each container: manufacturer's name, material name, net weight, and guaranteed analysis/composition and $CaCO_3$ equivalence.

4.5 MULCH

Mulch shall be weed-free straw. Hay is not acceptable. Mulch shall be free of damprot, mold, and decay.

4.6 PESTICIDE

- Pesticide type and application rate shall be as determined by a turf management consultant, subject to the review of Project Engineering and EH&S.
- Pesticide shall not be a material restricted by federal or state regulations. Material Safety Data Sheets (MSDS) shall be included with the pesticide.

4.7 SEED

- Grass seed and seed mixture shall be as follows:

Species	Percent* by Weight Live Seed	Percent Minimum Purity	Percent Minimum Germination
Pennlawn Red Fescue (or equivalent)	34%	95%	80%
Kentucky Bluegrass	30%	90%	75%
Aquarius Perennial Ryegrass (or equivalent)	19%	95%	90%
Rodeo Perennial Ryegrass (or equivalent)	15%	95%	90%
Inert Material (not to exceed 2%)	2%	N/A	N/A

*These values for seed may not vary by more than +/- 2%.

- Seed mixture shall be uniformly mixed and shall be free from seeds of deep-rooted plants.
- Seed mixture shall be packaged in sealed containers weighing not over 50 pounds each with the following information listed on each container: manufacturer's name, material name, net weight, guaranteed analysis/composition, purity, and germination rate.

4.8 SULFUR

Sulfur shall be elemental sulfur.

4.9 TOPSOIL

- Topsoil shall be suitable for promoting and sustaining growth of the specified grass seed. Topsoil shall be shredded sandy loam soil.

- Topsoil shall be free from woody vegetation, stumps, roots, brush, stone, clay lumps, sod, and similar objects larger than 2 inches in greatest dimension, debris, refuse, material toxic to plant growth, subsoil, herbaceous growth, and other deleterious materials.

- The pH of the material shall be between 6.2 and 7.0, as verified in the field.

- The organic content shall be not less than 2 percent nor more than 20 percent.

- The gradation shall be as follows:

Sieve Size	Percent Passing by Weight
2 inch	100
1 inch	95 to 100
1/4 inch	55 to 100
No. 200 mesh	20 to 80

- Topsoil shall be subject to analysis for radiological and/or chemical contamination where requested by the EHWS Supervisor.

4.10 WATER

Water for irrigation shall be suitable for promoting growth of the specified grass.

5.0 EQUIPMENT

5.1 GENERAL

- Equipment shall be suitable for its intended use and shall be such that it does not damage the WCS.

- Equipment shall be as recommended by a turf management consultant or Project Engineering.

5.2 EXISTING EQUIPMENT

5.2.1 Aerator

- Aerator shall be a Ferguson Model AR-60T-S7 combination aerator/drop spreader as manufactured by Ferguson Manufacturing Company, Inc. of Suffolk, Virginia, or an equal item as approved by Project Engineering.

- For small areas, aerator shall be either the aerator/drop spreader specified above or a hand fork.

5.2.2 Spreader

Mechanical spreader may be drop type, broadcast type, hand-operated broadcast type, or any other type that uniformly distributes the material to be spread.

5.2.3 Roller

Roller shall be of sufficient size and weight to level frost heaves and other minor surface undulations without damaging the grass.

6.0 FIELD OPERATIONS

6.1 GENERAL

- Actual time of performance for field operations shall be recorded on Attachment A. Materials data shall be recorded on Attachment B.

- Where direction is to be given from the Oak Ridge Office (e.g., Engineering, EMIS, etc.), direction shall be accompanied with approval from the Project Manager. Directions shall be written or oral followed by written verification. Engineering shall provide additional technical directions (e.g., drawings, sketches, etc.) where requested by Construction/Operations.

- Existing wells, benchmarks, fences, and other site improvements shall not be damaged.

- Prior to performing field operations that involve seeds, fertilizers, pesticides, herbicides, or other chemicals, the monitoring wells around the WCS and within 300 ft of the WCS shall be inspected to ensure that riser pipe caps and surface casing caps are in place and secured.

- Applicable safety precautions, including those established by OSHA and other governmental agencies, shall be followed.

- Equipment shall be used and materials handled in accordance with manufacturer's directions.

- Vehicular traffic, other than mowers, shall not operate on or along the east slope of the WCS from the top of the slope to the east side of the Central Drainage Ditch.

- Vehicles shall operate on the WCS on an as-needed basis only. Vehicles shall not be operated on the WCS if a visible impression results from such operation.

- Except for designated access routes up the side slopes, traffic patterns shall be varied to minimize concentrated traffic flow and resulting turf damage.

- Unless approved otherwise by Project Engineering, chemicals (e.g., fertilizer, insecticide, pesticide, fungicide, etc.) shall not be applied to the WCS during the months of July and August.

- Where practicable, all vehicular and pedestrian traffic shall be restricted from the WCS when the ground is saturated, frozen, or frosted. This is particularly important when the ground is thawing in the spring.

- Accurate records shall be maintained for field operations involving the turf management program. As a minimum, the following information shall be recorded: dates and application rates (where applicable) for aeration, dethatching, fertilizing, filling, irrigation, pest control, pH adjustment, rolling, seeding, soil sampling/testing, weed control, and other significant activities. Problem areas and anomalies shall also be recorded.

6.2 AERATION

- Aeration shall be performed annually before the autumn overseed to increase the rate of air and water transfer to the grass roots.

- The ground surface shall be aerated using a mechanical aerator with at least two perpendicular passes of the aerator.

- Depth of aeration shall be at least 2 inches.

- Aeration shall be by mechanical aerator or by hand using a fork.

6.3 DETHATCHING

- Schedule and specific instructions for dethatching shall be per a turf management consultant.

- Leaves and miscellaneous debris shall be removed at the time of dethatching.

6.4 ECRM

- ECRM shall be installed as required by Project Engineering. The limits and directions for installing the ECRM will be established by Project Engineering on an as-needed basis.

- ECRM shall be installed per manufacturer's directions.

6.5 FERTILIZING

6.5.1 General

- Where practicable, fertilizer shall be applied when the soil is moist.

- Fertilizer shall be applied only when the grass blades are dry to minimize burning the foliage.

- An ammonium or urea-based fertilizer shall not be applied within 2 weeks of liming.

- The actual applications rates of nitrogen (N), phosphoric acid (P), and soluble potash (K) may be determined by multiplying the percentage listed on the fertilizer bag by the actual applied weight. (Example: 1000 lbs/ 1000 ft^2 of 20-10-10 fertilizer equates to 200 lbs/ 1000 ft^2 of nitrogen, 100 lbs/1000 ft^2 of phosphoric acid, and 100 lbs/1000 ft^2 of soluble potash.)

6.5.2 Areas Without Existing Turf

- Areas without existing turf shall be fertilized and the fertilizer blended (by raking or similar method) into the soil prior to seeding. A follow-up application shall be made 3-4 weeks after germination of seeds.

- Fertilizer application rate shall be per the results of the most recent soil analysis, except that the application rate shall not exceed 1 lb. N/1000 ft^2, 2 lb P/1000 ft^2, or 2 lb. K/1000 ft^2 for a single application.

  When an application rate is not available per a soil analysis, application rate shall provide for 1 lb. N/1000 ft^2, 2 lb. P/1000 ft^2, and 2 lb. K/1000 ft^2 (i.e., 20 lb./1000 ft^2 of 5-10-10 fertilizer).

6.5.3 Areas With Existing Turf

- See Attachment A for fertilizing schedule.

- Fertilizer application rate shall be per the results of the most recent soil analysis, except for the following:

  Application rate for a single application shall not exceed 2 lb. N/1000 ft^2 when using a slow-release type, or more than 1 lb. N/1000 ft^2 when using a conventional type. Application rate for a single application shall not exceed 2 lb. P/1000 ft^2 or 2 lb. K/1000 ft^2.

  When an application rate is not available per a soil analysis, application rate shall provide for

2 lb. N/1000 ft^2, 1 lb. P/1000 ft^2, and 1 lb. K/1000 ft^2 (i.e., 10 lb./1000 ft^2 of 20-10-10 fertilizer), except that the final fall application shall be at 1/2 the above amount.

6.6 FILLING

- Areas to be filled which are greater than 2 inches deep will be designated by Project Engineering based upon information obtained during site investigations and upon input from field personnel. For areas to be filled which are greater than 2 inches deep, only those areas designated by Engineering shall be filled so that consolidation monitoring is not affected. Areas less than 2 inches deep may be filled based upon field determination.

- Fill material shall consist of topsoil.

- Areas to be filled shall be scarified and hand raked prior to filling. Existing vegetation need not be removed.

- Unless directed otherwise by Project Engineering, fill shall be compacted by rolling per Section 6.13. Moisture content shall be adjusted (by drying or wetting) so that the fill being placed is neither dry/dusty nor wet/viscous.

6.7 INSPECTION

- The Site Superintendent shall report completion of the monthly inspection to the Project Engineer via interoffice memorandum. Included in the report shall be date(s) of inspection and, if observed, any potential problems. Areas of particular concern include:

  - Ponded water

  - Apparent settlement

  - Cracking

  - Excessive vegetation growth

  - Excessive weeds, insects, or pests

  - Burrowing by small animals

- Field personnel will inspect the WCS on a monthly basis to monitor the areas of concern described above. Any rocks, pieces of wood, tree stumps and roots, and other materials found on the surface of the structure will be removed immediately by the field personnel and

the resulting holes/openings will be filled with topsoil, compacted, and seeded. These tasks will not require any written and/or verbal directions from Project Engineering.

- Systematic inspections, as required by the Report on the Performance Monitoring System for the Waste Containment at the Niagara Falls Site, (BNI, May 1986), are not in the scope of this instruction guide.

6.8 IRRIGATION

6.8.1 General

- The entire WCS shall be irrigated during periods of drought or very low precipitation (i.e., less than 1 inch per 10 days) during the growing season (i.e., May - October). Irrigation, including natural precipitation, shall be at the minimum rate of 1 inch of water per week.

- Irrigation shall be such that erosion does not result. Extra care shall be exercised on the sideslopes of the WCS.

- To minimize the potential for erosion, the rate of irrigation shall not exceed the soil's capacity to absorb the water.

- Irrigation shall be sufficient to prevent desiccation cracking, dusting, and vegetation stress.

- Irrigation in the late afternoon and evenings tends to promote the growth of fungi, and therefore, shall be minimized.

- The final irrigation shall be performed just before the anticipated initial freeze of the autumn.

6.8.2 Newly Seeded Areas

Newly seeded areas shall be kept moist, not saturated or puddled, until the new grass is 2 inches high. Newly seeded areas shall then be irrigated weekly until grass is 3 inches high. The surface shall be prevented from drying at all times.

6.8.3 Areas of Existing Turf

Areas of existing turf shall be irrigated deeply but infrequently (approximately every 7-10 days) to encourage deeper root penetration. Irrigation shall be sufficient to saturate the upper 4-6 inches of the soil.

6.9 MOWING

- Mowing shall be performed when the grass is dry or nearly dry.
- Mowing shall be performed with a sharp mower blade to minimize damage to the grass.
- Mowing shall be such that rutting does not occur.
- Caution shall be exercised when mowing newly seeded areas to prevent uprooting or otherwise damaging the young plants.
- Mowing clippings shall generally be left in place; however, where clippings are overly thick so that underlying vegetation is stressed, clippings shall be removed from the WCS.
- Grass height shall not exceed 4 1/2 inches and shall be cut to a height of 2 1/2 - 3 inches except for the following cases:
  - When new grass is approximately 5 inches tall, newly seeded areas shall be cut to 3 1/2 - 4 inches for the first four mowings, except that small localized newly seeded areas may be mowed at the same height as the surrounding areas.
  - Before the autumn overseed, the grass shall be cut to 1 1/2 - 2 inches prior to seeding.
  - No more than 1/3 of the grass height shall be removed in a single mowing. Therefore, if grass height is such that mowing to the specified height removes more than 1/3 of the plant height, multiple mowings shall be made at least 4 days apart to gradually bring the grass height to within guidelines.

6.10 MULCHING

- Mulch shall be applied to newly seeded areas immediately after seeding to prevent erosion and encourage turf establishment. This does not apply to overseeded areas of existing turf.
- Additional mulch need not be applied to areas where ECRM is used.
- Straw mulch shall be separated to prevent matting.
- Straw mulch shall be applied in a loose thickness of approximately 1-2 inch so that the soil is still visible; this is a rate of approximately 80-100 pounds/1000 ft².

- Following placement of the straw, the seeded area shall be irrigated to "water-in" the straw into the topsoil.

- Straw mulch need not be removed.

6.11 PEST CONTROL

- The pest control program shall be developed and recommended by a turf management consultant to prevent damage to the WCS by insects and other pests.

- The pesticide types, Material Safety Data Sheets (MSDS), and application rates for the pesticides proposed by the turf management consultant shall be submitted to Project Engineering and EH&S for review prior to use.

6.12 pH ADJUSTMENT

- The soil pH shall be checked and maintained between 6.0 and 7.0.

- If pH adjustment is necessary, it shall be adjusted per the schedule in Attachment A.

- Adjustments to the soil pH shall be made by adding limestone to raise the pH or sulfur to lower the pH. Approximate amounts of limestone and sulfur for adjusting the soil pH are shown on Table 6.12.

- For areas not yet seeded, limestone or sulfur shall be blended into the upper 6 inches of topsoil.

- For areas of existing turf, limestone or sulfur shall be uniformly broadcast atop the surface.

6.13 ROLLING

6.13.1 Newly Seeded Areas

- Newly seeded areas shall be rolled following seeding.

6.13.2 Areas With Existing Turf

- Prior to the spring rolling, the WCS shall be mowed so that frost heaves and other uneven areas can be identified. In addition, the soil shall be moist but not saturated at the time of rolling.

- The WCS shall be rolled after the first spring mowing to smooth minor undulations.

6.14 SEEDING

6.14.1 General

- The ground shall be moist to at least a depth of 4 inches prior to seeding.

- A mechanical spreader shall be used for seeding areas greater than 100 ft^2.

- Seed shall be uniformly distributed at the specified rate over the required area. The seed to be applied shall be equally divided and one-half applied in one direction over the entire area and the other half applied in a perpendicular direction.

- Seed application rates stated in this Instruction Guide are for germination rates described in Section 4.7. If actual germination rates and percents of pure live seed differ and if the change is approved by Project Engineering, the specified application rate shall be adjusted as follows:

$$\text{Required Application Rate} = \frac{\text{Recommended \% Purity}}{\text{Labeled \% Purity}} \times \frac{\text{Recommended \% Germination}}{\text{Labeled \% Germination}} \times \text{Recommended Application Rate}$$

(Example: 10 lb./1000 ft^2 of pure live seed is specified. Available seed mix has 95% pure live seed and 80% germination but otherwise meets specified requirements. Therefore, the required application rate for this example would be:

$$\text{Required Application Rate} = \frac{100\%}{95\%} \times \frac{85\%}{80\%} \times \frac{10 \text{ lb.}}{1000 \text{ ft}^2} = \frac{11.2 \text{ lb}}{1000 \text{ ft}^2}$$

6.14.2 Areas Without Existing Turf

- Areas without existing turf shall be seeded throughout the growing season as required to establish turf.

- Areas to be seeded shall be prepared before seeding. Rocks, thatch, debris, clods, and other deleterious material shall be removed. The soil shall be loosened and thoroughly mixed to a depth of 6-10 inches.

- Fertilizer shall be added per Section 6.5. Lime or sulfur, if required, shall be added per Section 6.12. Amendments shall be blended into the soil.

TABLE 6.12: pH ADJUSTMENT
(FROM REFERENCE 2)

To raise pH to 6.5, apply ground limestone. ($lb\ CaCO_3$ equivalant/1000 ft^2)				To lower pH to 6.5, apply elemental sulfur (lb elemental sulfur/1000 ft^2)			
If pH	Sandy loam	Loamy	Clayey	If pH	Sandy	Loamy	Clayey
4.5	126	253	238	7.0	5	10	14
4.6	124	248	341	7.1	6	12	16
4.7	120	241	331	7.2	7	14	19
4.8	117	234	322	7.3	8	16	22
4.9	112	223	307	7.4	9	18	25
5.0	106	211	290	7.5	10	20	27
5.1	99	198	272	7.6	11	22	31
5.2	89	177	243	7.7	13	25	35
5.3	72	143	197	7.8	14	28	39
5.4	53	107	146	7.9	16	31	43
5.5	42	84	116	8.0	17	34	47
5.6	36	72	98				
5.7	31	62	86				
5.8	26	51	71				
5.9	20	40	56				
6.0	17	33	45				

NOTES:

1. Calcium carbonate is denoted by $CaCO_3$.
2. Topsoil on the WCS at NFSS is generally clayey.
3. Above application rates are for material to be incorporated into the upper 6 inches of soil before planting. For lime applications to established turfs use 1/3 of the indicated rate, but do not exceed 50 lb. of lime/1000 ft^2 per application. For sulfur applications to established turfs, do not exceed 5 lb. of sulfur/1000 ft^2 per year.
4. Above liming rates are based on a 100% $CaCO_3$ equivalence. Actual equivalence may vary; see manufacturer's data listed on each shipping container for actual value. To determine the approximate liming rate, use the following formula:

$$\frac{\text{Rate @ 100\% } CaCO_3 \text{ equivalence}}{\text{Actual \% } CaCO_3 \text{ equivalence of Mat'l to be used} \times 0.01} = \text{Approx. Liming Rate}$$

(Example: Given established turf with pH of 5.5. Available limestone has $CaCO_3$ equivalence of 91%. Approximate liming rate is $1/3 \times \frac{116}{91 \times 0.01}$ = 42.5 lb. of available limestone per 1000 ft^2)

- If necessary to fill a low area, additional fill material shall be added and blended with the existing topsoil. No more than 2 inches of fill material may be added without prior approval from Project Engineering.

- The area shall be leveled to match surrounding grade and provide proper drainage.

- Prepared areas shall be uniformly seeded at a rate of 10-15 lb. seed/1000 ft^2.

- Seeded area shall be gently raked to blend the seed into the upper 1/4 inch of topsoil. As an alternative to raking, the seeded area may be covered with 1/4 inch of topsoil. Care shall be taken to ensure that the seed is evenly distributed and not buried too deeply.

- The seeded area shall be rolled per Section 6.13, mulched per Section 6.10, and irrigated per Section 6.8.

- Where practicable, all traffic, including vehicular and pedestrian, shall be prevented from entering newly seeded areas.

6.14.3 Areas With Existing Turf (Overseeding)

- The entire WCS shall be overseeded per the schedule in Attachment A.

- Area to be seeded shall be prepared before seeding.

  - Bare spots shall be seeded per Section 6.14.2 prior to overseeding.

  - Area to be seeded shall be mowed to one-half the normal height per Section 6.9.

  - Rocks, debris, and other deleterious material shall be removed.

  - The area shall be aerated per Section 6.2.

- Prepared area shall be uniformly seeded at a rate of 2-4 lb. seed/1000 ft^2.

- The seeded area shall be irrigated per Section 6.8.

6.15 TESTING SOIL

- Schedule and specific instruction for obtaining and testing soil samples shall be per a turf management consultant.

- Soil shall be tested to provide information necessary to determine the type of fertilizer and establish application rates for fertilizer, lime, sulfur, and other soil amendments.

- Soil samples shall be collected by Cooperative Extension Agent or the field personnel as recommended by the soil testing laboratory and shall be tested for at least the following:

  - pH

  - fertilizer requirements

- Soil testing shall be performed by the Cooperative Extension Agent or other testing laboratory approved by Project Engineering.

- Soil testing shall be coordinated with the soil testing laboratory so that results are available prior to application of soil amendments.

  Soil samples shall not be obtained within 4 weeks following fertilizing, pH adjustment, herbicide or pesticide application, etc., unless approved otherwise by Project Engineering.

6.16 WEED CONTROL

- The weed control program shall be developed and recommended by a turf management consultant to prevent the growth of fungus, broadleaf plants, woody plants, deep-rooted plants, and other noxious vegetation that might penetrate the clay layer or otherwise endanger the containment structure.

- Herbicide should be applied in accordance with the recommendation of a turf management consultant. In general, the following recommendations should be considered in the weed control program. Herbicide application should be made in the Spring to wet weed leaves when no rain is expected for at least 6-8 hours. A repeat application rate should be made in 7-10 days to kill more hardy weeds. Temperature should be 60-85°F during herbicide application. Herbicide should not be applied to new seedings until so recommended by a turf management consultant. These general guidelines may vary depending on the actual weed control program.

- The herbicide types, Material Safety Data Sheets (MSDS), and application rates for the herbicides proposed by the turf management consultant shall be submitted to Project Engineering and EH&S for review prior to use.

7.0 DOCUMENTATION AND REPORTING

7.1 The "Schedule for Turf Management Program," Attachment A, shall be marked-up to show actual time of performance for each of the activities listed. Additional operations deemed significant by the Site Superintendent shall also be recorded.

7.2 Information listed on "Material Data," Attachment B, shall be recorded. Additional information deemed significant by the Site Superintendent shall also be recorded.

7.3 Schedule (Attachments A and C) and material data (Attachment B) shall be updated and submitted to the Oak Ridge Office per the attached Documentation Requirements Form (Form 14501-DR). Attachment C is the proposed schedule for calendar year 1987. Some of the operations listed on Attachment C are shown scheduled prior to implementation of this Instruction Guide, and therefore, cannot be performed in 1987, but may be used as a basis for developing schedules for subsequent years. The schedule for subsequent years, Attachment A, shall be proposed by Operations and submitted to Engineering for review per the DR Form.

7.4 Documentation shall be obtained and reported to the Oak Ridge Office in accordance with the DR Form.

8.0 REFERENCES

1. Bonnie and Thompson, Growing Lawns and Ground Covers, Oxmoor House, Birmingham, 1975.

2. Hummel, et. al., Cornell Cultural Recommendations for Commercial Turfgrass Management, Cornell University, Ithaca, NY, 1986.

3. Rockwell and Grayson, The Complete Book of Lawns, Doubleday, Garden City, NY, 1956.

4. Schery, The Lawn Book, Macmillan, New York, 1961.

5. Voykin, A Perfect Lawn the Easy Way, Rand McNally, Chicago, 1969.

6. Bechtel National, Inc., Design Report for the Interim Waste Containment Facility at the Niagara Falls Storage Site, DOE/OR/20722-21, Oak Ridge, TN, May 1986.

7. Bechtel National, Inc., Report on the Performance Monitoring System for the Waste Containment at the Niagara Falls Site, DOE/OR/20722-71, Oak Ridge, TN, May 1986.

ATTACHMENT A

ATTACHMENT A

SCHEDULE FOR TURF MANAGEMENT PROGRAM AT NIAGARA FALLS STORAGE SITE (1,2,3)

OPERATION	CALENDAR YEAR 19											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AERATION												
DETHATCHING												
FERTILIZING												
IRRIGATION												
MOWING												
PEST CONTROL												
PH ADJUSTMENT												
ROLLING												
SEEDING (OVERSEEDING)												
TESTING SOIL												
WEED CONTROL												

SCHEDULE
FORECAST
ACTUAL

NOTES: (1) SCHEDULE LISTED ABOVE IS FOR OPERATIONS GENERALLY APPLICABLE TO THE ENTIRE WCS OR A LARGE PORTION THEREOF. ADDITIONAL OPERATIONS AND/OR SCHEDULING FOR ABOVE OPERATIONS ARE SET FORTH IN THE INSTRUCTION GUIDE.

(2) WHERE A FORECAST SCHEDULE IS NOT GIVEN, EXACT SCHEDULE SHALL BE DETERMINED IN THE FIELD PER INSTRUCTION GUIDE.

(3) ACTUAL SCHEDULE/TIME OF PERFORMANCE FOR PERFORMING OPERATIONS SHALL BE RECORDED IN THE FIELD AND SUBMITTED TO PROJECT ENGINEERING PER THE DR FORM.

(4) SPOT SEEDING SHALL BE DONE AS NEEDED.

030790

REV.	DATE	DESCRIPTION	BY	FIELD CHKD	OAK RIDGE OFFICE ENGR	PE	PM

DS11(50,2)191W9925.DGN,BHC

ATTACHMENT B

ATTACHMENT B

MATERIALS DATA FOR THE TURF MANAGEMENT PROGRAM

NIAGARA FALLS STORAGE SITE

FOR MONTH/YEAR: _____

SITE SUPERINTENDENT: _____ DATE: _____

Material/ Operation	Dates(s)	Remarks	Instruction Guide Reference
1. Aeration		Area: _____	6.2
2. Dethatching		Area: _____	6.3
3. ECRM Placement		Source: _____ Type: _____ Area: _____	4.1; 6.4
4. Fertilizing		Source: _____ Type & Mix: _____ Area: _____	4.2; 6.5
5. Filling		Source: _____ pH: _____ Area: _____ Attach photographs and survey notes.	4.9; 6.6

Material/ Operation	Dates(s)	Remarks	Instruction Guide Reference
6. Inspection		Record anomalies, locations, and potential problems, if any.	6.7
7. Irrigation		Water Source: _____ Area: _____	6.8
8. Mowing			6.9
9. Mulching		Source: _____ Type: _____ Area: _____	6.10
10. Pest Control		Pesticide: Source _____ Type _____ MSDS _____ Applicator: _____ Area: _____	4.3; 6.11
11. pH Adjustment		Source: _____ Applicator: _____ Type: Limestone or Sulfur Limestone $CaCO_3$ Equivalence: _____ Area: _____	4.4; 4.8; 6.12

Material/ Operation	Dates(s)	Remarks	Instruction Guide Reference
12. Rolling		Area: _____	6.13
13. Seeding		Source: _____ Species / % Pure Live Seed / Germination Rate _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ Area: _____	4.7
14. Soil Testing	Sample: _____ Results: _____	Sampled by: _____ Tested by: _____ Results: (Attached) Area: _____	6.15
15. Weed Control		Herbicide: Source _____ Type _____ MSDS _____ Applicator: _____ Area: _____	

Notes: For "Area," indicate "All" if the indicated operation is performed on the entire WCS. Otherwise, indicate limits of operations on a field sketch, and include with submittal of Attachment B.

ATTACHMENT C

ATTACHMENT C

SCHEDULE FOR TURF MANAGEMENT PROGRAM AT NIAGARA FALLS STORAGE SITE (1,2,3)

CALENDAR YEAR 1987

OPERATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AERATION												
DETHATCHING (2)												
FERTILIZING												
IRRIGATION (2)												
MOWING (2)												
PEST CONTROL (2)												
PH ADJUSTMENT												
ROLLING												
SEEDING (OVERSEEDING) (4)												
TESTING SOIL												
WEED CONTROL (2)												

SCHEDULE
FORECAST
ACTUAL

NOTES: (1) SCHEDULE LISTED ABOVE IS FOR OPERATIONS GENERALLY APPLICABLE TO THE ENTIRE WCS OR A LARGE PORTION THEREOF. ADDITIONAL OPERATIONS AND/OR SCHEDULING FOR ABOVE OPERATIONS ARE SET FORTH IN THE INSTRUCTION GUIDE.

(2) WHERE A FORECAST SCHEDULE IS NOT GIVEN, EXACT SCHEDULE SHALL BE DETERMINED IN THE FIELD PER INSTRUCTION GUIDE.

(3) ACTUAL SCHEDULE/TIME OF PERFORMANCE FOR PERFORMING OPERATIONS SHALL BE RECORDED IN THE FIELD AND SUBMITTED TO PROJECT ENGINEERING PER THE DR FORM.

(4) SPOT SEEDING SHALL BE DONE AS NEEDED.

REV.	DATE	DESCRIPTION	BY	CHKD.	FIELD ENGR.	OAK RIDGE OFFICE PE	PM

05111150,2319199325.DGN,BHC

080790 LTDLN

ATTACHMENT D

03-0790 47078

ATTACHMENT D

DOCUMENTATION REQUIREMENTS

ACTION REQUIRED

1 REVIEW BY SITE SUPERINTENDENT
2 INFO TO SITE SUPERINTENDENT
3 REVIEW BY ENGINEERING
4 INFO TO ENGINEERING
5 REVIEW BY E&S
6 INFO TO E&S

DOCUMENT REQUIRED

A - ANNUALLY, BY GIVEN DATE
D - PRIOR TO COMMENCING WORK
M - MONTHLY
R - UPON RECEIPT OF DATA
S - PRIOR TO SHIPMENT
U - PRIOR TO USE
W - WITHIN 1 WEEK OF OCCURRENCE
X - PRIOR TO PURCHASE

PARTS OF EACH ITEM, SYSTEM, SYSTEM COMPONENT, ELEMENT OR PORTION THEREOF REQUIRING DOCUMENTATION	DOCUMENTATION REQUIRED			
	DOCUMENT TITLE	ACTION CODES		
		DOC. REQD.	ACTION REQD.	INSTRUCTION GUIDE REFERENCE
1.0 Safety Data	1.1 Herbicide MSDS	X	2,4,5	4.3;6.16
	1.2 Pesticide MSDS	X	2,4,5	4.6;6.11
2.0 Vendor Data	2.1 Proposed pest control program & pesticide application rate	U	2,3,6	6.11
	2.2 Soil test results	R	2,3	6.15
	2.3 Proposed weed control program & herbicide application rate	U	2,3,6	6.16
3.0 Maintenance Data	3.1 Fill area records	W	2,3	6.6
	3.2 Anomalies & potential problem areas	W	2,3,6	6.1;6.7
	3.3 Schedule: Actual time of performance	A	2,3	7.3; Attachment A,B,C
	3.4 Schedule and material updates	M	2,3,6	7.3; Attachments A,B,C
	3.5 Proposed schedule for subsequent years	A	2,3,6	7.3; Attachment A
Submittal Nos. 2.1 through 3.5 will be required only if the work is performed by a Subcontractor.				

094588

DOCUMENT ISSUE MEMORANDUM

To: ~~[illegible]~~ H. Howe, NESS

From: S. R. Parikh
Dept. Supervisor/Proj. Eng./PEM
(PRINT NAME)

- ☐ G. K. Hovey w/o
- ☐ R. R. Harbert w/o
- ☒ G. P. Crotwell w/o
- ☒ C. R. Hickey w/o
- ☐ S. D. Liedle w/o
- ☐ G. L. Palau w/a
- ☐ J.S. Allison w/o
- ☒ K.M. Skinner w/a
- ☐ T.E. Morris w/o
- ☒ S. R. Parikh w/o
- ☐ J. D. Fletcher w/o
- ☒ PDCC ~~[illegible]~~

- ☐ Others _____ w/
- _____ w/
- ☒ Engineering Team Lead Mark Benge w/o
- ☒ ET Team Lead Mark Kaye w/o
- ☐ A. M. Feldman w/o
- ☐ L. R. Goodwin w/o
- ☐ M. D. Apfel w/o
- ☐ G. Atchinson w/o
- ☒ R. I. Orewiler w/o/a
- ☒ Site Superintendent Howard Howe, NESS w/a
- ☐ TMA/Eberline Project Manager _____ w/
- ☐ TMA/Eberline Site Lead _____ w/

Attachments:

Generic Specification No. _____ Rev. _____

Instruction Guide No. 202-02 -IG- 02 Rev. 2

Design Basis No. _____ -DB- _____ Rev. _____

QAA/QAP No. _____ Rev. _____

Scoping/Planning Documents: _____

Other _____ No. _____ Rev. _____

ACTION:

☒ Issued for Implementation by ☒ Construction
☐ Operations
☐ _____

☐ DB Issued for Use by Engineering & Technology

☐ "Generic" Specification Issued to PDCC for Project Use.

☐ Other _____

Additional Information: _____

The attached scoping/planning documents, as identified and listed above have been prepared for and are hereby authorized to be used as the basis for conducting and directing FUSRAP project field activities at sites (and designated vicinity properties) as follows (WBS No./Description): _____

PM signature is required for scoping & planning documents only.

Originator / Date — Department Supervisor / Date — Project Manager / Date

ATTACHMENT 3

Company Name_____

Address_____

Contract Number:_____ FUSRAP Worksite:_____

SUBJECT: STATEMENT OF EMPLOYEE CERTIFICTATION DOCUMENT

This certifies that _____ has met the training requirements listed below (if applicable).

Training	Date Completed
40-hr. Hazardous Waste (29 CFR 1926.65)	_____
Annual 8-hr. Hazardous Waste Refresher (29 CFR 1926.65)	_____
Hazardous Waste Operations Supervisor (29 CFR 1926.65)	_____
Respirator Training & Fit Test (29 CFR 1910.134)	_____
Radiation Worker II Training (10 CFR 835)	_____
Radiological Control Technician Training (10 CFR 835)	_____
3-Day On-the-Job Training (29 CFR 1926.65)	_____
DOT HAZMAT Training (49 CFR 172)	_____
Asbestos Awareness Training (29 CFR 1926.1101)	_____
Asbestos Supervisor Training (29 CFR 1926.1101)	_____
Lead Awareness Training (29 CFR 1926.62)	_____
Confined Space Training (29 CFR 1910.146)	_____
Cardiopulmonary Resuscitation Training	_____
First Aid Training	_____
Bloodborne Pathogens Training	_____

Safety & Health Representative.....Yes _____ No _____

Medical

Baseline Medical Examination	_____
Annual Physical Examination	_____

Medical Restrictions?.....Yes _____ No _____

_____ _____

(Safety & Health Representative) (Company Representative)

ATTACHMENT 4

BIDDING SCHEDULE
OPERATIONS AND MAINTENANCE AT THE NIAGARA FALLS STORAGE SITE,
LEWISTON, NEW YORK

BID ITEM	DESCRIPTION	BASE CONTRACT PAYMENT SCHEDULE							
		BASE CONTRACT YEAR 1				BASE CONTRACT YEAR 2			
		Quantity	Unit	Unit Price	Amount	Quantity	Unit	Unit Price	Amount
1	**Labor, services, and materials to perform grounds maintenance at NFSS**								
1.1	Superintendent	2,040	Hour			2,040	Hour		
1.2	Laborer	2,040	Hour			2,040	Hour		
1.3	Tractor/Brush Hog/Mower	8	Month			8	Month		
1.4	Tractor with Deck Mower	8	Month			8	Month		
1.5	Walking Mower	8	Month			8	Month		
1.6	Aerator	2	Month			2	Month		
1.7	Rollers	2	Month			2	Month		
1.8	Dethatching Equipment	2	Month			2	Month		
1.9	Sprayers/Spreaders	3	Month			3	Month		
1.10	Snow Plowing	1	LS			1	LS		
1.11	Trailers	8	Month			8	Month		
1.12	Chain Saws	8	Month			8	Month		
1.13	(2) Weed Wackers	8	Month			8	Month		
1.14	1/2-ton Truck	12	Month			12	Month		
1.15	Small Tool Allowance	2,040	Hour			2,040	Hour		

BIDDING SCHEDULE
OPERATIONS AND MAINTENANCE AT THE NIAGARA FALLS STORAGE SITE,
LEWISTON, NEW YORK

BID ITEM	DESCRIPTION	BASE CONTRACT PAYMENT SCHEDULE							
		BASE CONTRACT YEAR 1				BASE CONTRACT YEAR 2			
		Quantity	Unit	Unit Price	Amount	Quantity	Unit	Unit Price	Amount
1.16	Fencing Material	1	LS			1	LS		
1.17	Fertilizer	1	LS			1	LS		
1.18	Herbicide/Pesticide	1	LS			1	LS		
1.19	Seed	1	LS			1	LS		
1.20	Topsoil	1	LS			1	LS		
1.21	Lime	1	LS			1	LS		
1.22	Sulphur	1	LS			1	LS		
1.23	Security Guard	4,380	Hour			4,380	Hour		
2	**Equipment Rental and Purchase, and Purchase of Supplies and General Maintenance not covered under Bid Item 1**	**1**	**LS**	**$12,000.00**	**$12,000.00**	**1**	**LS**	**$12,000.00**	**$12,000.00**
	TOTALS								

ATTACHMENT 5

Additional Equipment Rental Rate Schedule

Item No.	Equipment Type	Rates
1.	1/2 Ton Pickup Truck or Equal	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____
2.	Forklift - 10 Ton Capacity	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____
3.	Air Compressor - 120 CFM	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____
4.	Skid Steer Loader - (1300 lb Capacity)	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____
5.	JD 210C Backhoe or Equal	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____
6.	Scissor Lift - 2000 lb Capacity	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____
7.	Hand Tamper	
	a. Mobilize/Demobilize	_____
	b. Daily Rental Rate	_____
	c. Weekly Rental Rate	_____
	d. Monthly Rental Rate	_____

8. John Deere - 690 Excavator or Equal

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

9. 25 Ton Grove - RT 525B Series Hydraulic Crane or Equal

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

10. Cat 320 Backhoe or Equal

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

11. Cat 928 Loader or Equal

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

12. Cat D3 LGP Dozer or Equal

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

13. Single Axle Dump Truck

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

14. Tandem Axle Dump Truck

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

15. Forklift - 20 Ton Capacity

a. Mobilize/Demobilize _____
b. Daily Rental Rate _____
c. Weekly Rental Rate _____
d. Monthly Rental Rate _____

Total _____

Rental rates for Items 1 through 15 shall include fuel, lubricants, repair and maintenance parts and service, applicable taxes, overhead and profit. Operators will be paid for as direct labor under Pay Item Labor.

APPENDIX 5-B

Select Drawings from the Design Report for the Interim Waste Containment Facility at the Niagara Falls Storage Site

DOE/OR/20722-21
(DE86012601)
Distribution Category UC-70A

DESIGN REPORT FOR THE INTERIM WASTE CONTAINMENT FACILITY AT THE NIAGARA FALLS STORAGE SITE

MAY 1986

Prepared for

UNITED STATES DEPARTMENT OF ENERGY

OAK RIDGE OPERATIONS OFFICE

Under Contract No. DE-AC05-81OR20722

By

Bechtel National, Inc.

Advanced Technology Division

Oak Ridge, Tennessee

Bechtel Job No. 14501

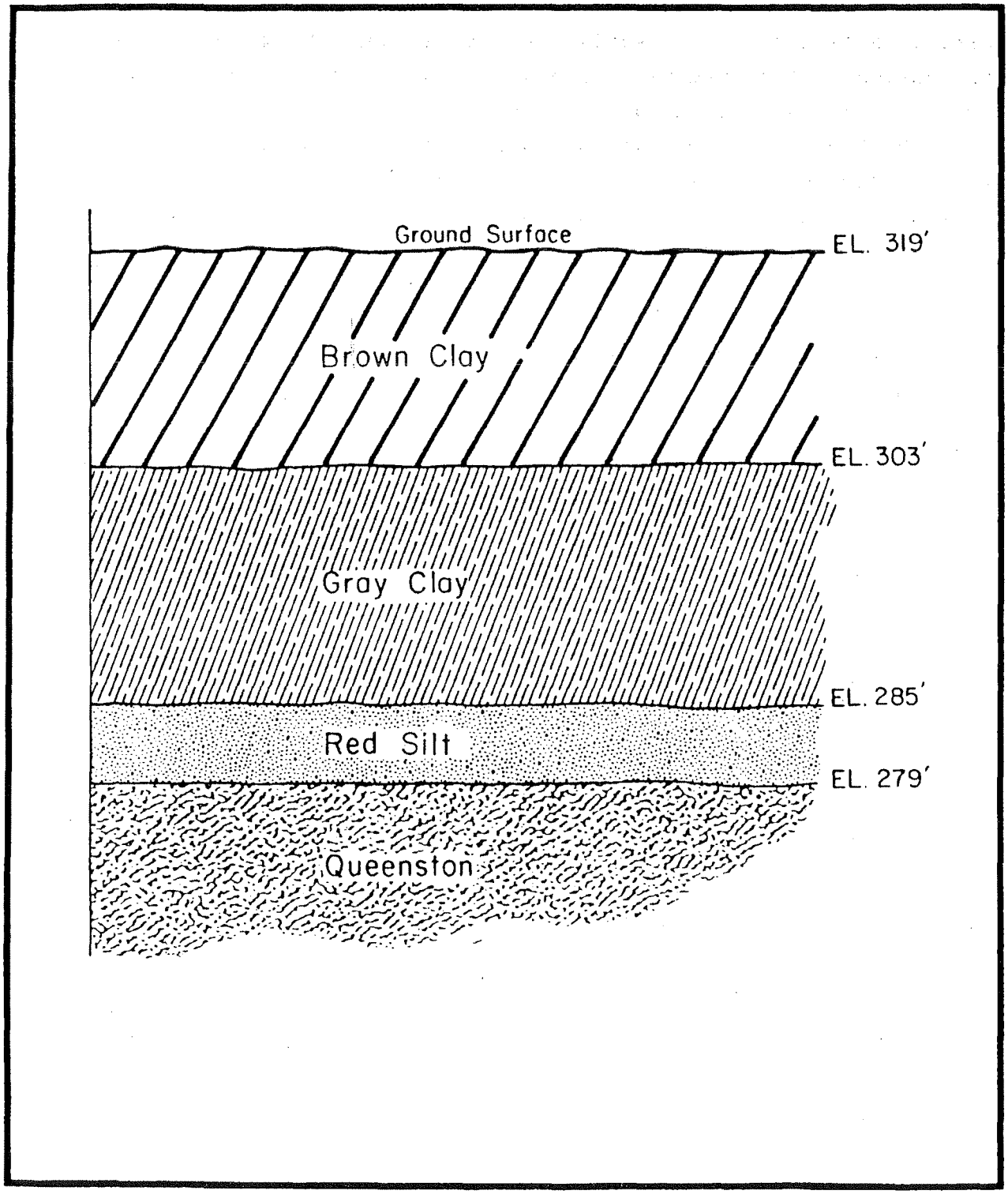


FIGURE GENERALIZED GEOLOGIC SECTION OF THE NFSS

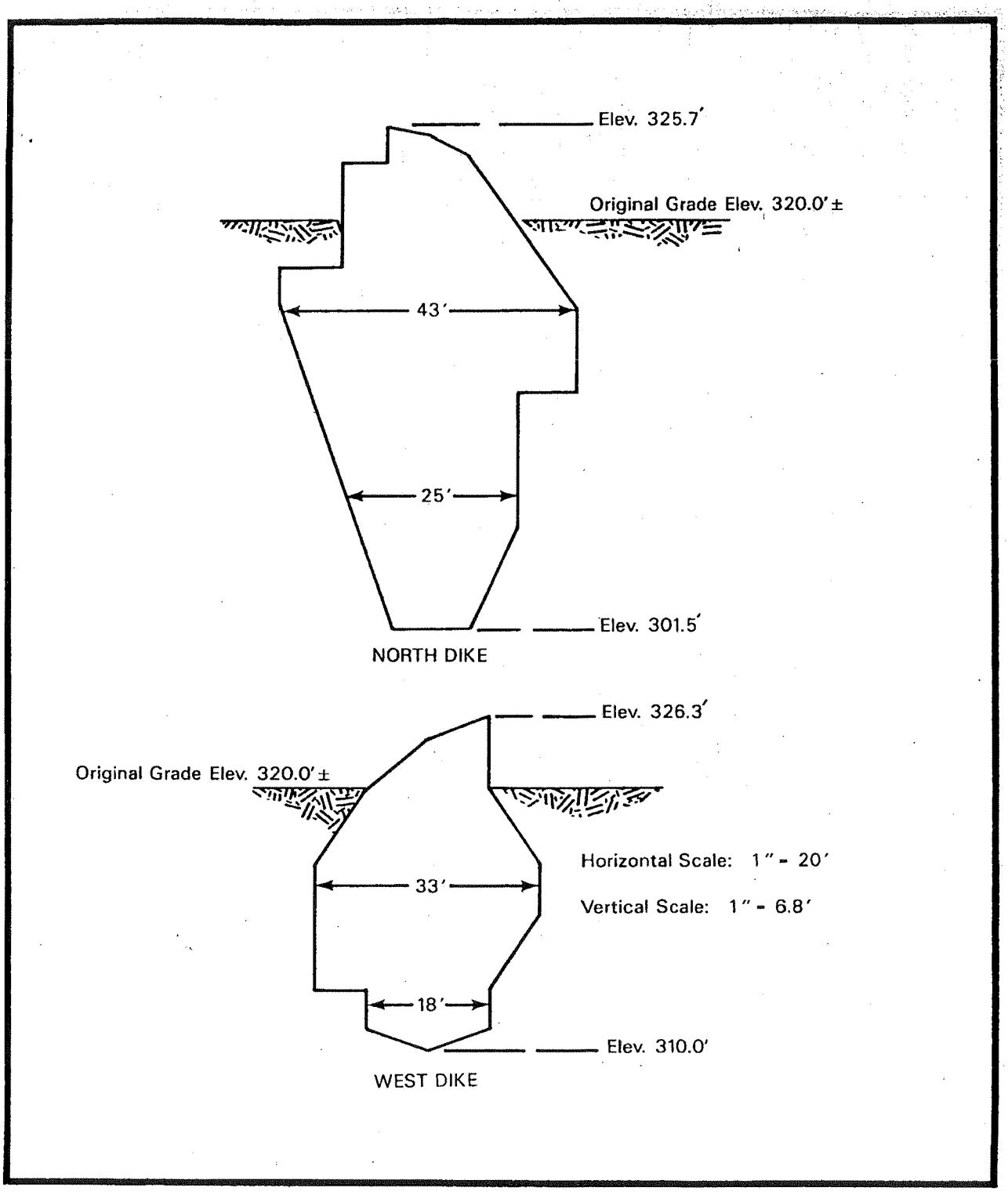
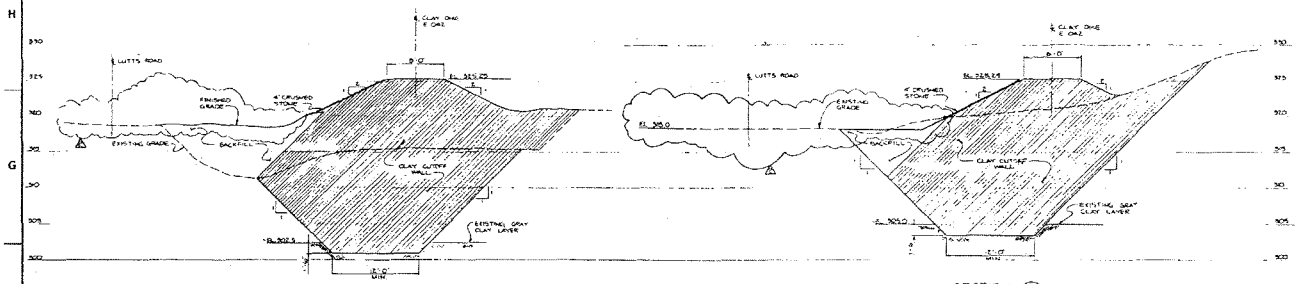


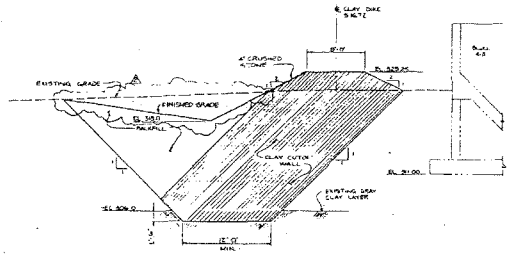
FIGURE FINITE ELEMENT MESH DIKE SECTIONS

15-DD19-C-03

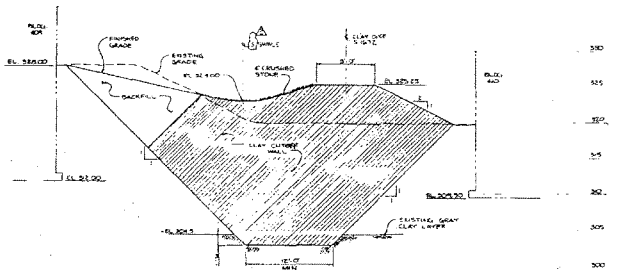


SECTION A
15-DD19-C-02

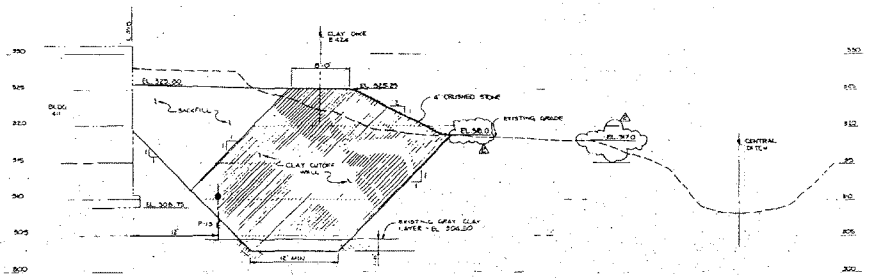
SECTION B
15-DD19-C-02



SECTION C
15-DD19-C-02



SECTION D
15-DD19-C-02



SECTION E
15-DD19-C-02

NOTES

1. FOR GENERAL NOTES SEE DWG. 15-DD19-C-01
2. FOR EXCAVATION LIMITS SEE DWG. 15-DD19-C-04
3. CRUSHED STONE USED FOR SLOPE PROTECTION ON DIKE SHALL BE IN ACCORDANCE WITH NEW YORK DOT STANDARD SPECIFICATIONS SECTION 703-02 TYPE 4.

REFERENCE DRAWINGS

15-DD19-C-01	SITE AND VICINITY PLAN
15-DD19-C-02	PLAN AND SECTIONS
15-DD19-C-05	SOIL PROFILE & CROW LAYOUT
15-DD19-C-06	PIPING PLAN AND SCHEDULE

SCALE: 1"=5' HORIZ. 1"=5' VERT.

NO.	DATE	REVISION DESCRIPTION	BY	DRAWN	DESIGN	CHECK	DATE
3							
2							
1	7/96	ISSUED FOR AS-BUILT	BJG				
0	7/94	REVISED AS PER FOR 15-26	JRG				
0	10/93	ISSUED FOR CONSTRUCTION					

SCALE NOTED | DRAWN BY: CRJ | CHKD. BMD

U.S. DEPARTMENT OF ENERGY
FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

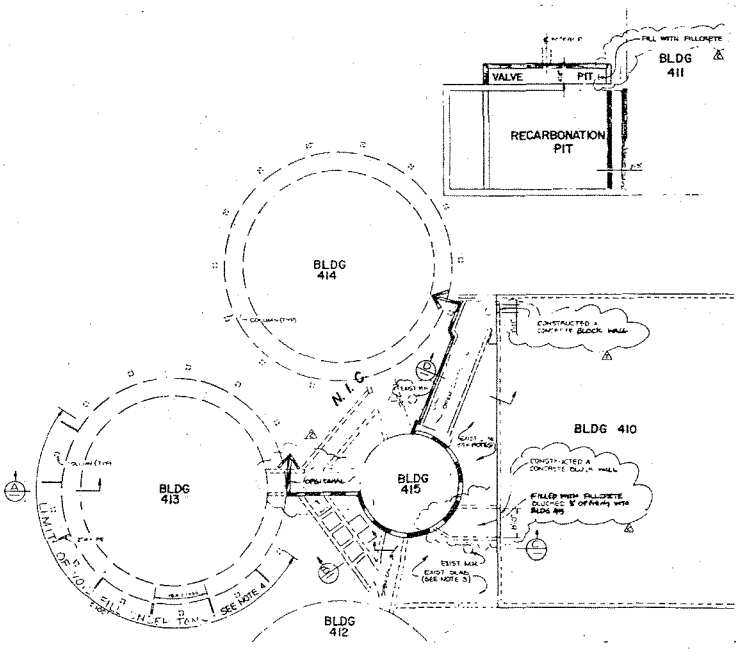
BECHTEL NATIONAL, INC.
OAK RIDGE, TENNESSEE

NIAGARA FALLS STORAGE SITE
SOUTH DIKE
SECTIONS

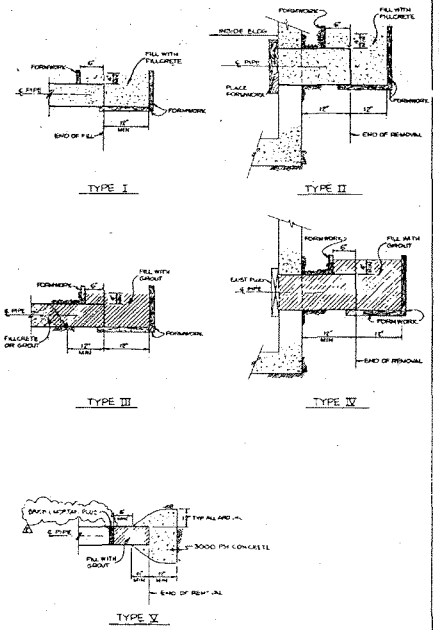
CONTRACT DWG. NO.	DOE CONTRACT NO.
14501	DE-AC05-81OR20722

DRAWING NO.	REV.	DATE
15-DD19-C-03	2	

15-DD19-C-04



DETAIL 1
NTS
15-DD19-C-02



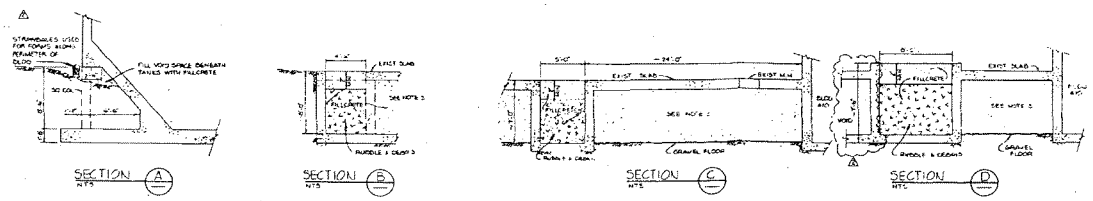
PIPE PLUG DETAILS
NTS

NOTES

1. FOR GENERAL NOTES SEE DWG 15-DD19-C-01
2. ALL DIMENSIONS ON WEST PAGE OF PLAN AND SHALL BE DRAWN WITH FILLCRETE IN ACCORDANCE WITH SPECIFICATION 15-DD19-A-C-01
3. TRENCH FILL VOIDS UNDER EXISTING SLABS WITH FILLCRETE.

REFERENCE DRAWINGS

15-DD19-C-01	SITE AND VICINITY PLAN
15-DD19-C-02	PLAN AND SECTIONS
15-DD19-C-06	PIPING PLAN AND SCHEDULE



SECTION A NTS
SECTION B NTS
SECTION C NTS
SECTION D NTS

3	9/93	ISSUED FOR AS-BUILT			
2	6/93	REV AND REISSUED FOR CONSTR.			
1	4/87	ISSUED FOR CONSTRUCTION			
NO	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D

DRAWN NOTED | DATE/INITIAL C.R.J. | TRACE E.M.S. | CHECK

U.S. DEPARTMENT OF ENERGY
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

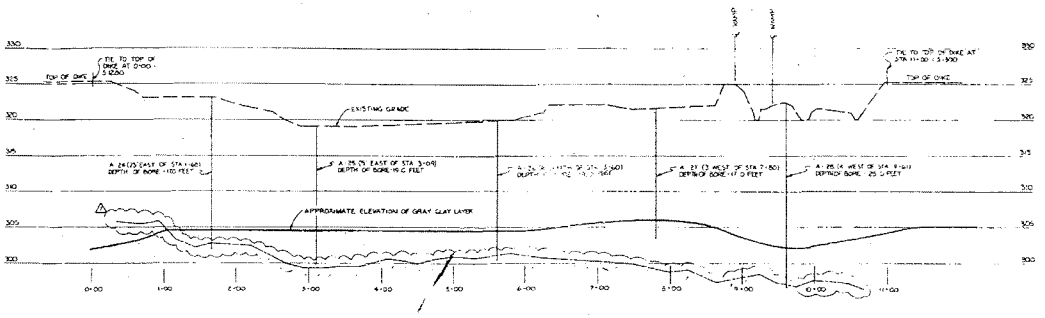
BECHTEL NATIONAL, INC.
SAN RAMON, CALIFORNIA

NIAGARA FALLS STORAGE SITE
SOUTH DIKE
SECTIONS & DETAILS

14501	DE-AC05-81OR20722

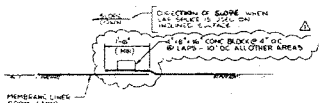
15-DD19-C-04 | 2

15-DD19-C-05

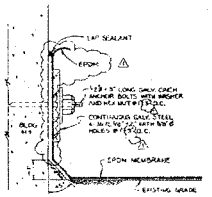


SOIL PROFILE ALONG SOUTH DIKE CENTERLINE

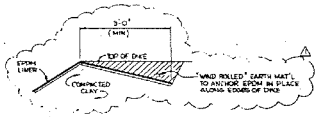
SCALE: HOR. 1" = 50'
VERT. 1" = 5'



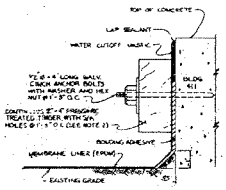
TYPICAL LAP SPLICE



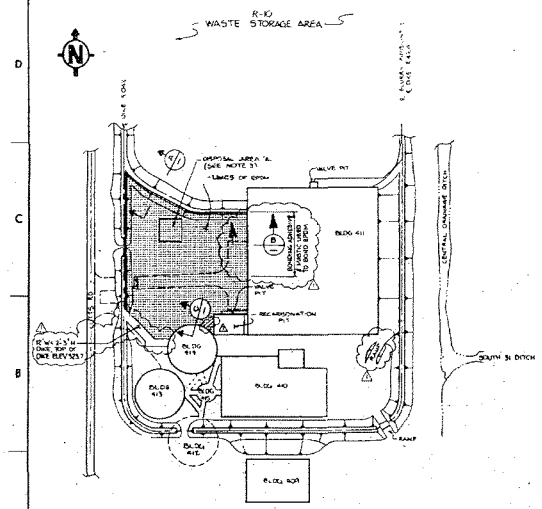
SECTION C
NTS



SECTION A
NTS



SECTION B
NTS



PLAN
1"=50'

EPDM LAYOUT

NOTES

1. FOR GENERAL NOTES SEE DRAWING 15-DD19-C-02.
2. PRESSURE TREATED TIMBER TO BE TREATED WITH CHROMATED COPPER ARSENATE (CCA) PER AWPA STD. M18. IN ACCORDANCE WITH AMERICAN WOOD PRESERVERS BUREAU SPECIFICATION 17-72. METHOD TO BE AT LEAST 0.5 LBS/CF.
3. DISPOSAL AREA "A" SHALL BE COVERED WITH A SINGLE SHEET MEMBRANE OF AN ACCEPTABLE MATERIAL SUCH AS EPDM. REFER TO DRAWING 15-DD19-C-06 FOR ANY MISCELLANEOUS DETAILS OR REQUIREMENTS.

LEGEND

A-24 EXPLORATORY BORING HOLE

ACTUAL DEPTH OF EXCAVATION

REFERENCE DRAWINGS

15-DD19-C-01	SITE AND VICINITY PLAN
15-DD19-C-02	PLAN AND SECTIONS
15-DD19-C-03	SECTIONS
15-DD19-C-06	PIPING PLAN AND SCHEDULE

1	7/86	"AS-BUILT" / PCR LO-38	
0	5/86	ISSUED FOR CONSTRUCTION	

U.S. DEPARTMENT OF ENERGY
FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

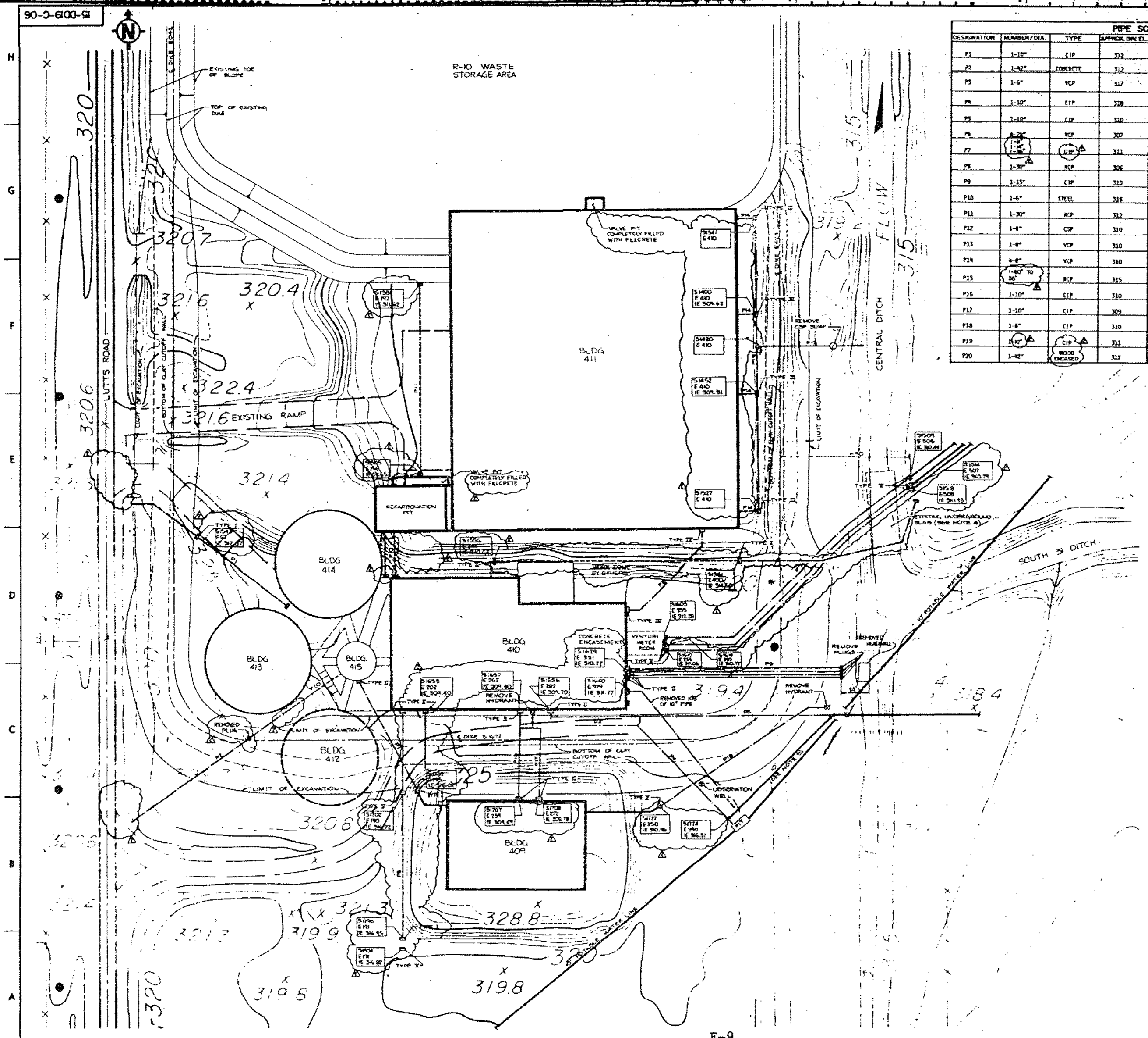
BECHTEL NATIONAL, INC.

NIAGARA FALLS STORAGE SITE
SOUTH DIKE
SOIL PROFILE & EPDM LAYOUT

BECHTEL JOB NO. 14501

DOE CONTRACT NO. DE-AC05-81OR20722

DRAWING NO. 15-DD19-C-05 REV. 1



PIPE SCHEDULE

DESIGNATION	NUMBER/DIA.	TYPE	APPROX. INV. EL.	APPROX. REMOVAL LE.	REMARKS
P1	1-10"	CIP	312	30'	REMOVE IN AREA OF EXCAVATION & FILLCRETE REMAINING PORTION & PLUG AS SHOWN.
P2	1-42"	CONCRETE	312	119'	REMOVE PIPE TO EXISTING PLUG AT EAST END.
P3	1-6"	VCP	317	53'	REMOVE FROM BLDG. 410 TO END OF EXCAVATION, FILLCRETE PORTION FROM END OF EXCAVATION TO ~50' SOUTH OF BLDG. 409. PLUG AS SHOWN.
P4	1-10"	CIP	310	125'	REMOVE PIPE. RECONNECT AS SHOWN (SEE NOTE 3)
P5	1-10"	CIP	310	135'	REMOVE ENTIRE PIPE TO EXISTING TEE AT HYDRANT. RECONNECT AS SHOWN (SEE NOTE 3).
P6	4-24"	RCP	307	130'	REMOVE ALL 4 PIPES FROM BLDG. 410 TO END OF EXCAVATION & PLUG AS NOTED.
P7	1-8" 1-16" 1-36"	CIP	311	147' 150' 173'	REMOVE FROM BLDG. 410 TO ~40' EAST OF DIKE & PLUG AS NOTED.
P8	1-30"	RCP	306	0	REMOVE PIPE & PLUG (CONDITIONAL)
P9	1-15"	CIP	310	56'	REMOVE PIPE & PLUG AS NOTED.
P10	1-6"	STEEL	316	--	FILL PIPE WITH GROUT AND PLUG AS NOTED.
P11	1-30"	RCP	312	-	FILL PIPE WITH FILLCRETE, NO PLUGGING REQUIRED.
P12	1-8"	CSP	310	65'	REMOVE ENTIRE PIPE, INCLUDING CSP SUMP.
P13	1-8"	VCP	310	185'	REMOVE ENTIRE PIPE.
P14	4-8"	VCP	310	-	FILL ALL PIPES WITH GROUT AND PLUG AS NOTED.
P15	1-60" TO 36"	RCP	315	-	FILL ENTIRE PIPE WITH FILLCRETE AND PLUG AS NOTED.
P16	1-10"	CIP	310	50'	REMOVE ENTIRE PIPE AND PLUG AS NOTED.
P17	1-10"	CIP	309	50'	REMOVE ENTIRE PIPE AND PLUG AS NOTED.
P18	1-6"	CIP	320	95'	REMOVE PIPE AS SHOWN AND PLUG AS NOTED.
P19	1-10"	CIP	311	135'	REMOVE IN AREA OF EXCAVATION AND FILLCRETE REMAINING PORTION AND PLUG BOTH ENDS.
P20	1-42"	WOOD ENCASED	312	-	FILLCRETE PIPE AT SAME TIME AS VOIDS UNDER EXISTING SLABS.

NOTES

1. FOR GENERAL NOTES SEE DRAWING 15-DD19-C-01.
2. FOR PLUG TYPES SEE DRAWING 15-DD19-C-04.
3. MATERIALS, ACCESSORIES, AND WORK REQUIRED FOR THE FIRE WATER LINE RE-ROUTING AND CONNECTIONS SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE NATIONAL FIRE PROTECTION CODE.
4. AFTER BUILDING 410 HAS BEEN DEWATERED AND SURFACE SOIL COVERING THE P7 PIPES HAS BEEN EXCAVATED BY OTHERS, SUBCONTRACTOR SHALL REMOVE AND PLUG P7 PIPES TO LIMITS SHOWN. THE SUBCONTRACTOR SHALL THEN REMOVE THE CONCRETE SLAB.
5. BUILDINGS WITHIN THE WORK AREA SHALL BE DEWATERED PRIOR TO ANY REMOVAL OR FILLING OF U/G PIPELINES ENTERING BUILDING.

LEGEND

- EXISTING PIPE PLUG
- PIPE PLUG
- NEW PIPE (INSTALLED)
- EXISTING PIPE (NOT TO BE DISTURBED)
- EXISTING PIPE (REMOVED)
- EXISTING PIPE (FILLED)
- HYDRANT
- S / E / IE — "AS-BUILT" COORDINATES AND INVERT ELEVATION

REFERENCE DRAWINGS

15-DD19-C-01	SITE AND VICINITY PLAN
15-DD19-C-02	PLAN AND SECTIONS
15-DD19-C-03	SECTIONS
15-DD19-C-04	SECTIONS AND DETAILS

NO.	DATE	REVISION DESCRIPTION
3		"AS-BUILT" / FCR 15-29, 15-226-…
1		REVISED AS PER FCR 15-26
0		ISSUED FOR CONSTRUCTION

SCALE: 1" = 20' DESIGNED: CBJ DRAWN: ET

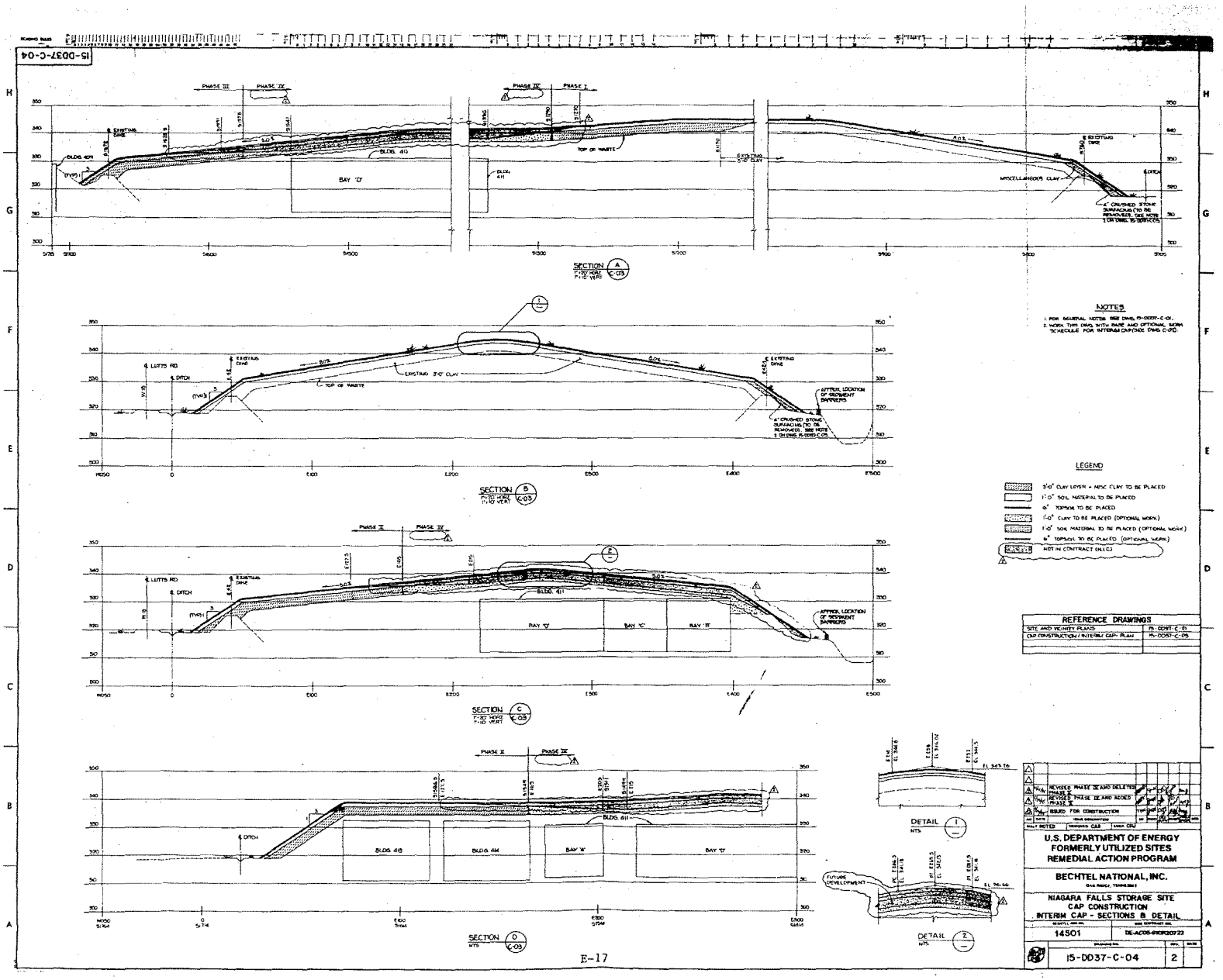
U.S. DEPARTMENT OF ENERGY
FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

BECHTEL NATIONAL, INC.

NIAGARA FALLS STORAGE SITE
SOUTH DIKE
PIPING PLAN AND SCHEDULE -

14501

15-DD19-C-06 | 2


15-D037-C-04
PHASE III
PHASE IV
PHASE I
BLDG. 409
BLDG. 411
BAY 'D'
TOP OF WASTE
EXISTING DIKE
MISCELLANEOUS CLAY
4" CRUSHED STONE SURFACING (TO BE REMOVED)
SECTION A
SECTION B
SECTION C
SECTION D
4 LUTTS RD.
4 DITCH
EXISTING 3'-0" CLAY
APPROX. LOCATION OF SEDIMENT BARRIERS
BAY 'A'
BAY 'B'
BAY 'C'
BLDG. 415
BLDG. 414
FUTURE DEVELOPMENT
DETAIL 1
DETAIL 2
NOTES
1. FOR GENERAL NOTES SEE DWG. 15-D037-C-01.
2. WORK TYPE DWG. WITH BASE AND OPTIONAL WORK SCHEDULE FOR INTERIM CAP/DIKE DWG. C-07.
LEGEND
3'-0" CLAY LAYER + MISC CLAY TO BE PLACED
1'-0" SOIL MATERIAL TO BE PLACED
6" TOPSOIL TO BE PLACED
1'-0" CLAY TO BE PLACED (OPTIONAL WORK)
1'-0" SOIL MATERIAL TO BE PLACED (OPTIONAL WORK)
6" TOPSOIL TO BE PLACED (OPTIONAL WORK)
NOT IN CONTRACT (N.I.C.)
REFERENCE DRAWINGS
SITE AND VICINITY PLANS 15-D037-C-01
CAP CONSTRUCTION / INTERIM CAP - PLAN 15-D037-C-05
REVISED PHASE IX AND DELETED PHASE X
REVISED PHASE IX AND ADDED 15-D37-X
ISSUED FOR CONSTRUCTION
U.S. DEPARTMENT OF ENERGY
FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM
BECHTEL NATIONAL, INC.
NIAGARA FALLS STORAGE SITE
CAP CONSTRUCTION
INTERIM CAP - SECTIONS & DETAIL
14501
DE-AC05-81OR20722
15-D037-C-04
2

APPENDIX 5-C

Trending Analyses for Total Uranium and Radium-226 in Groundwater

8 February 2011

Niagara Falls Storage Site FUSRAP Project

Total U Trend Evaluations

Remarks: The data sets were imported into Minitab (commercial statistical software) to do temporal trend analyses for a set of groundwater monitoring wells. Temporal trends were evaluated from **1997 – 2010.**

Descriptive Statistics

Variable	Total Count	N	Mean	StDev	Minimum	Median	Maximum
B02W20S	23	16	9.091	0.900	7.320	9.286	10.600
A45	23	18	31.01	5.89	21.14	30.69	47.41
A50	23	18	13.523	2.128	10.703	13.200	19.840
OW04B	23	21	38.07	9.24	18.41	38.60	52.15
OW06B	23	19	18.75	5.91	7.79	17.23	29.60
OW07A	23	**2**	1.9695	0.0983	1.9000	1.9695	2.0390
OW07B	23	7	21.77	9.56	11.30	19.23	41.68
OW13B	23	11	21.14	6.75	1.59	22.82	26.63
OW15B	23	18	10.101	1.569	7.609	10.064	12.240
OW17B	23	17	5.662	1.057	3.030	5.660	7.610
A42	23	16	63.50	13.00	37.50	60.68	85.60
BH49A	23	8	13.53	3.68	9.24	13.29	21.32
OW04A	23	8	1.712	0.469	0.875	1.750	2.448
OW11B	23	15	242.2	60.5	133.3	247.4	326.0
OW18B	23	7	12.279	2.304	8.510	12.552	15.354

The sample size (n = 2) for Well OW07A is too small to do trend evaluations.

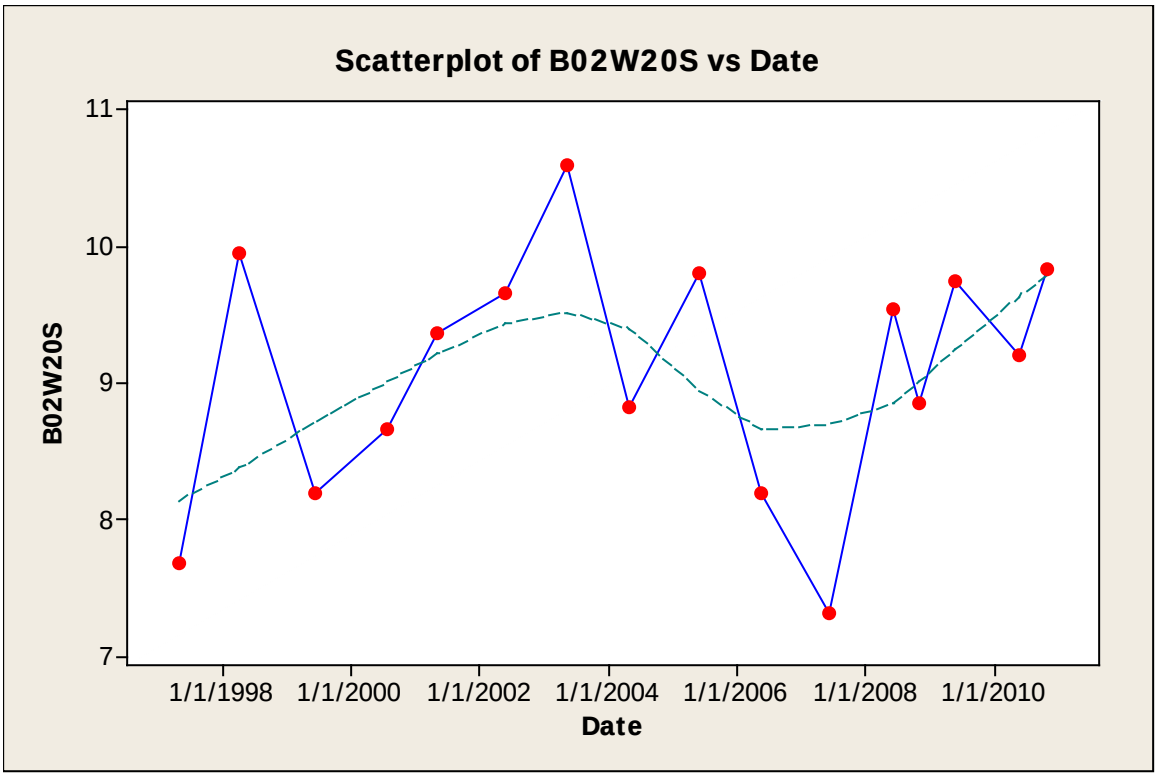
All units are in pCi/L.

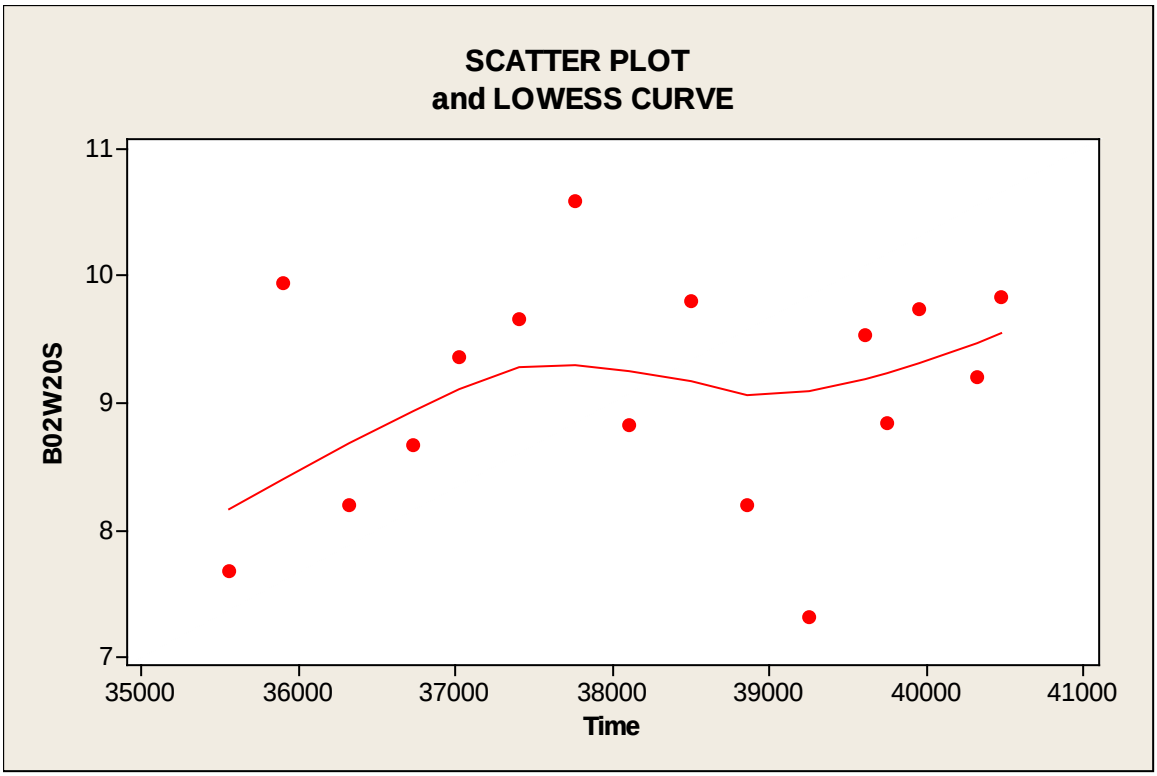
Summary of Total U Temporal Trend Evaluations

Well	*n*	Kendall's τ	p-value	Remarks*
B02W20S	16	0.18	0.37	No trend.
A45	18	**-0.44**	**0.012**	**Downward trend.**
A50	18	-0.22	0.23	No trend. (Possible weak downward trend.)
OW04B	21	-0.095	0.57	No trend.
OW06B	19	**-0.42**	**0.013**	**Downward trend.**
OW7B	7	0.52	0.13	No trend. (Possible upward trend; *n* is small)
OW13B	11	0.24	0.35	No trend.
OW15B	18	-0.0065	1.0	No trend.
OW17B	17	-0.10	0.59	No trend.
A42	16	0.15	0.44	No trend.
BH49A	8	-0.14	0.71	No trend.
OW04A	8	0.0	1.0	No trend.
OW11B	15	**0.54**	**0.0056**	**Upward trend.**
OW18B	7	-0.52	0.13	No trend. (Possible downward trend; *n* is small)

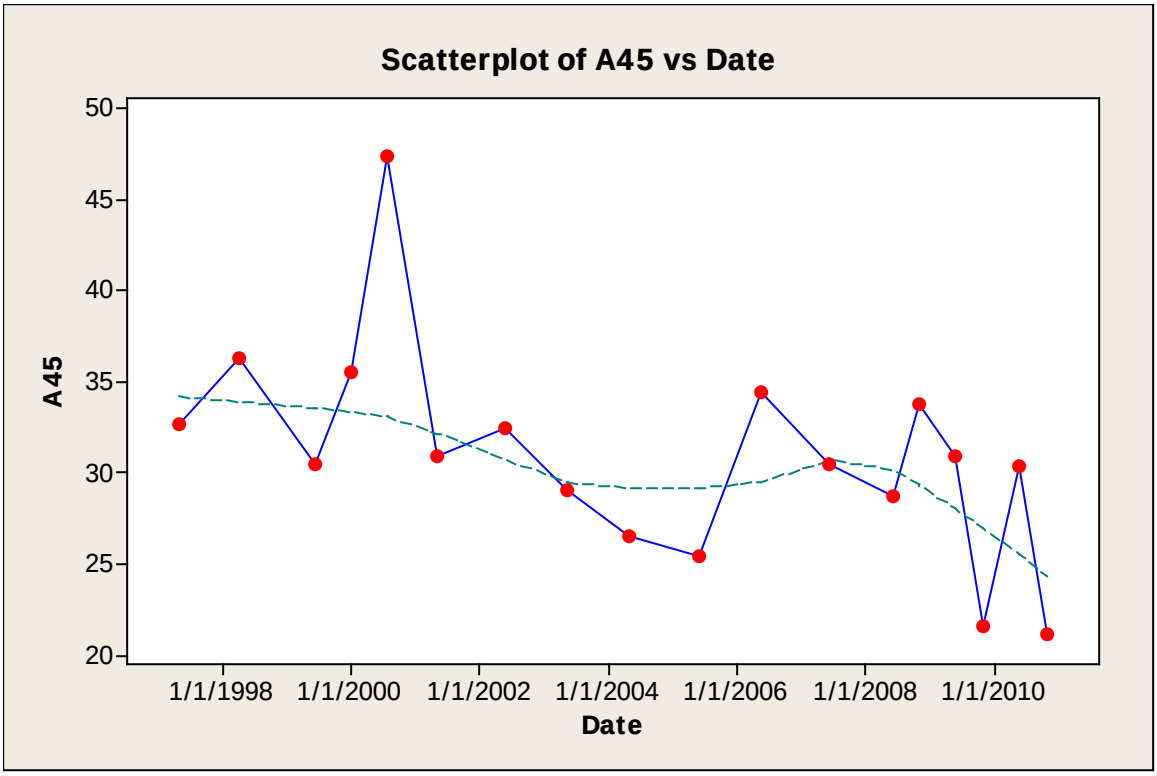
* 95% level of confidence used for all trend evaluations.

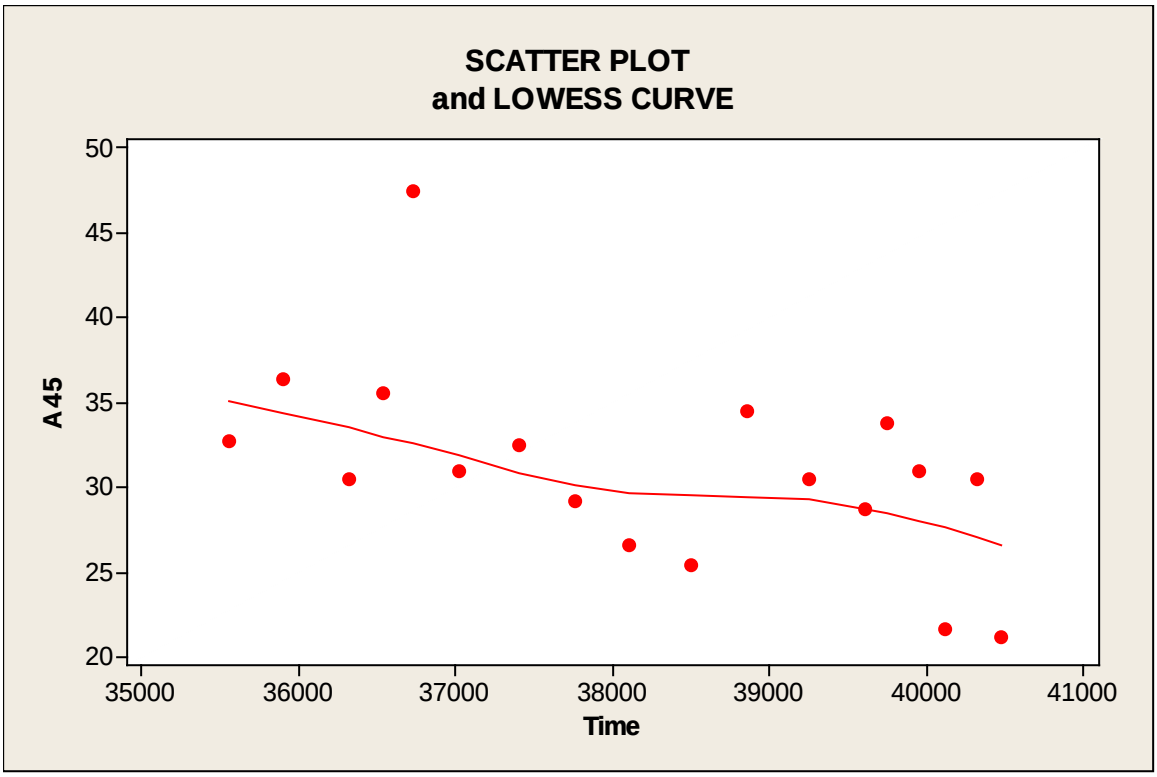
Time Series Plots and Results of Mann-Kendall Test by Well for Total U



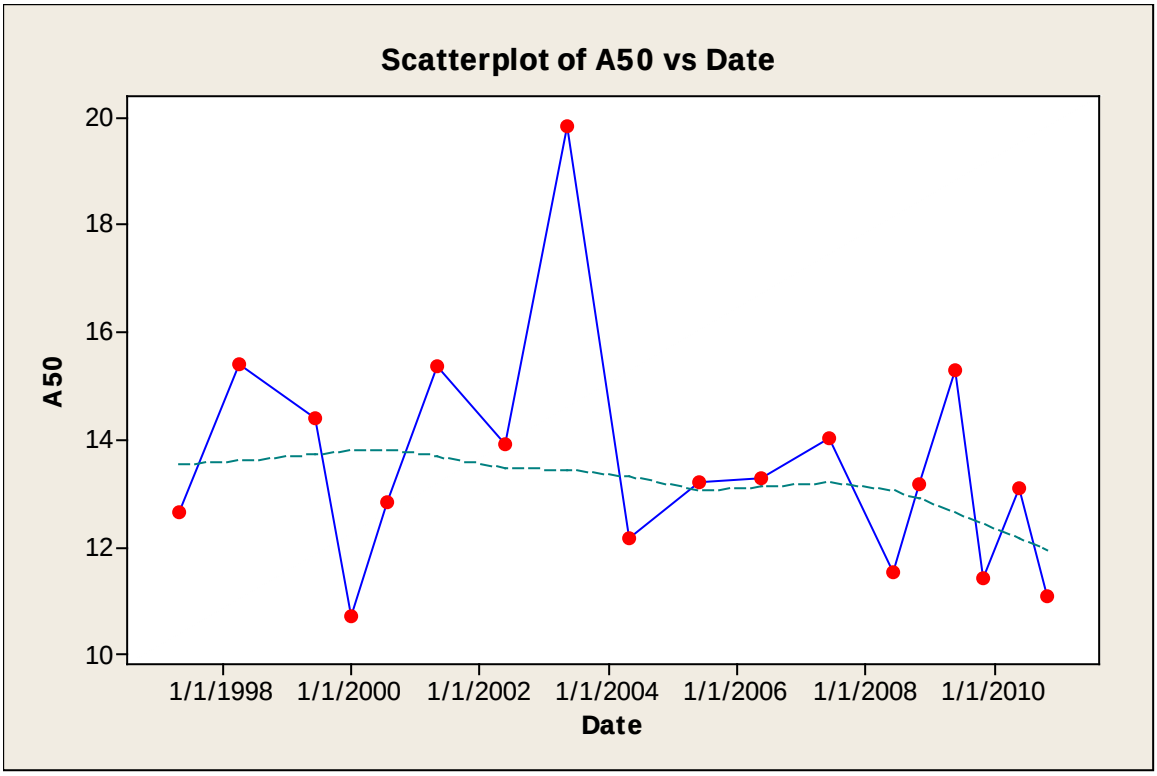


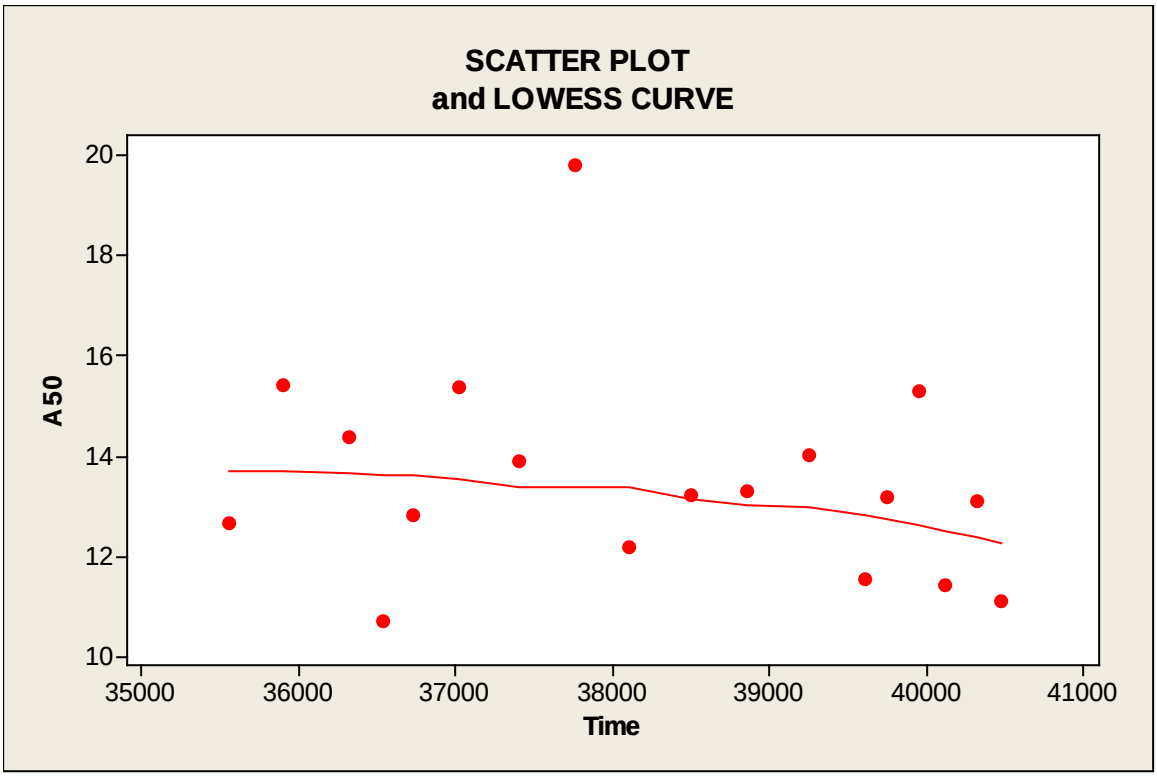
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.171247	0.525992
SPEARMAN'S RHO	0.186902	0.488240
KENDALL'S TAU_A	0.175000	0.367395
KENDALL'S TAU_B	0.175734	0.367395


Scatterplot of A45 vs Date
A45
50
45
40
35
30
25
20
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

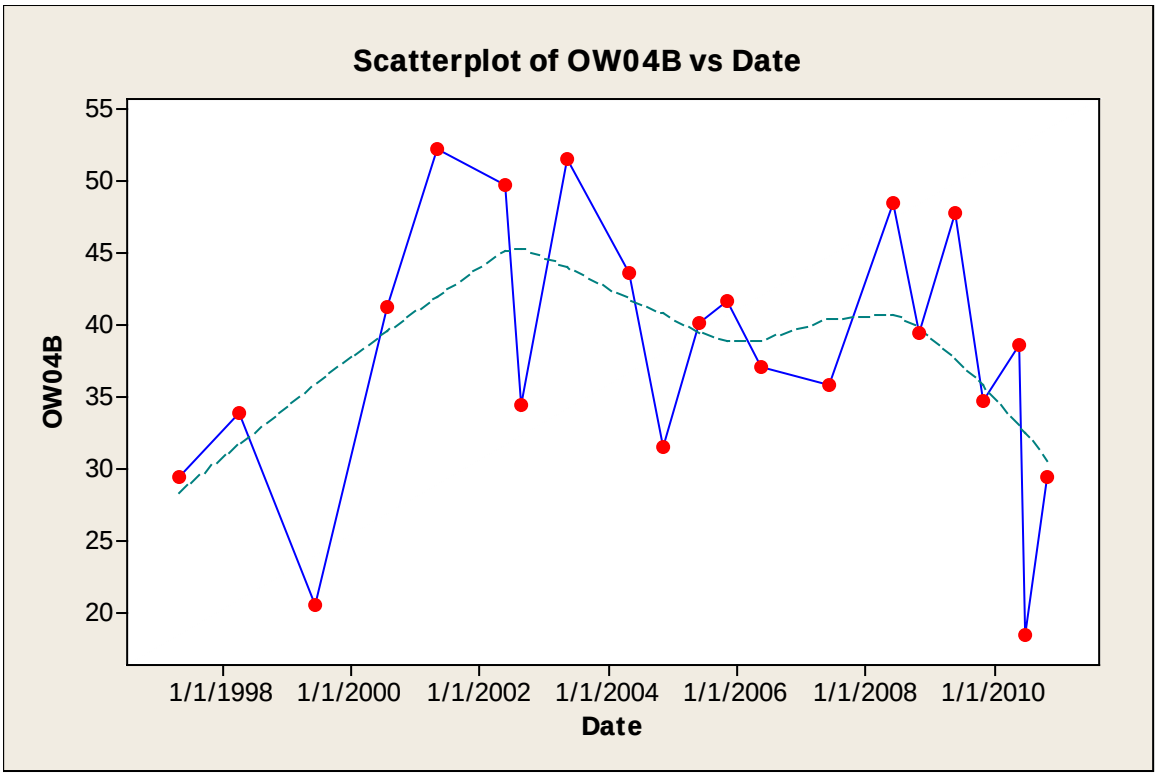

SCATTER PLOT
and LOWESS CURVE
A45
50
45
40
35
30
25
20
35000
36000
37000
38000
39000
40000
41000
Time

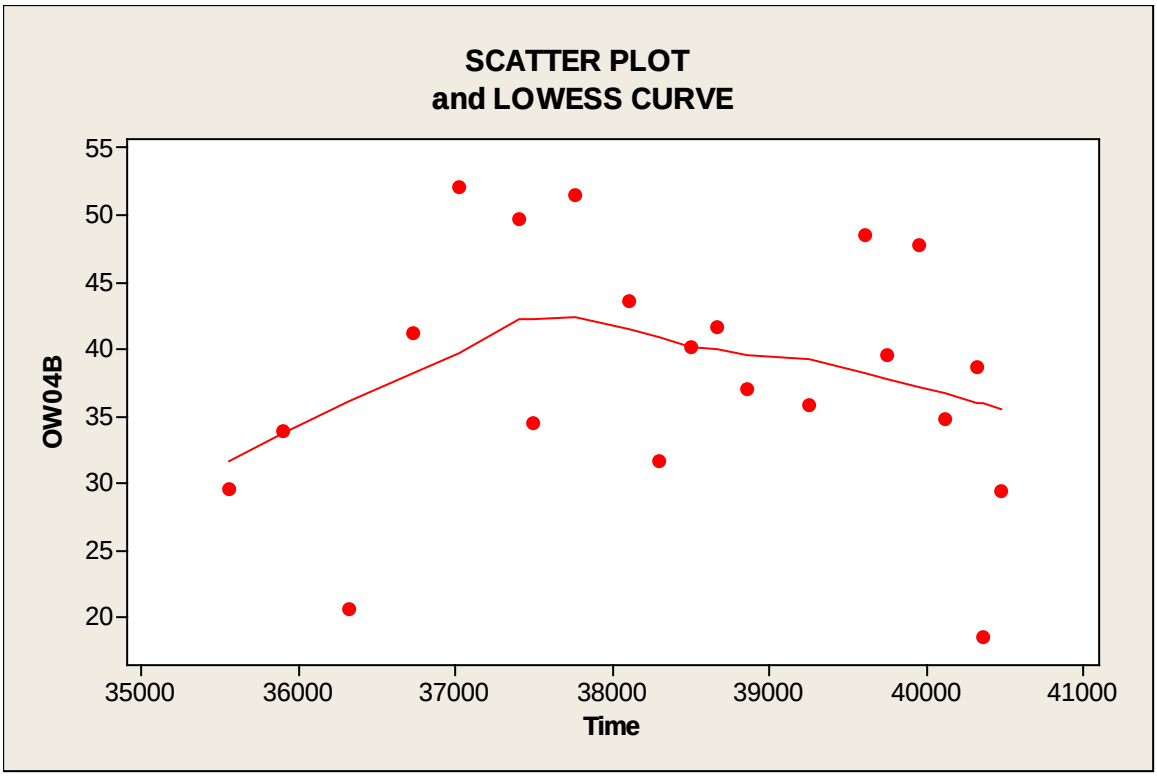
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.538478	0.0211388
SPEARMAN'S RHO	-0.583075	0.0110924
KENDALL'S TAU_A	-0.437908	0.0124218
KENDALL'S TAU_B	-0.437908	0.0124218


Scatterplot of A50 vs Date
A50
20
18
16
14
12
10
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

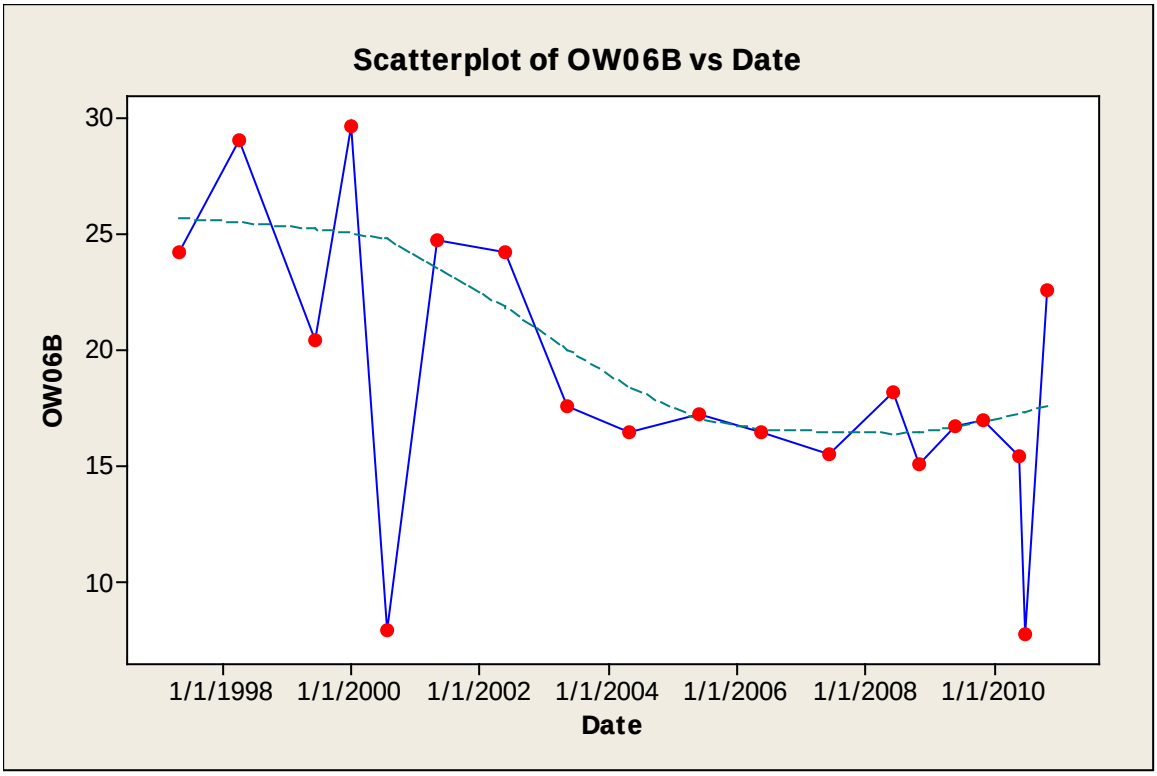

SCATTER PLOT
and LOWESS CURVE
A50
20
18
16
14
12
10
35000
36000
37000
38000
39000
40000
41000
Time

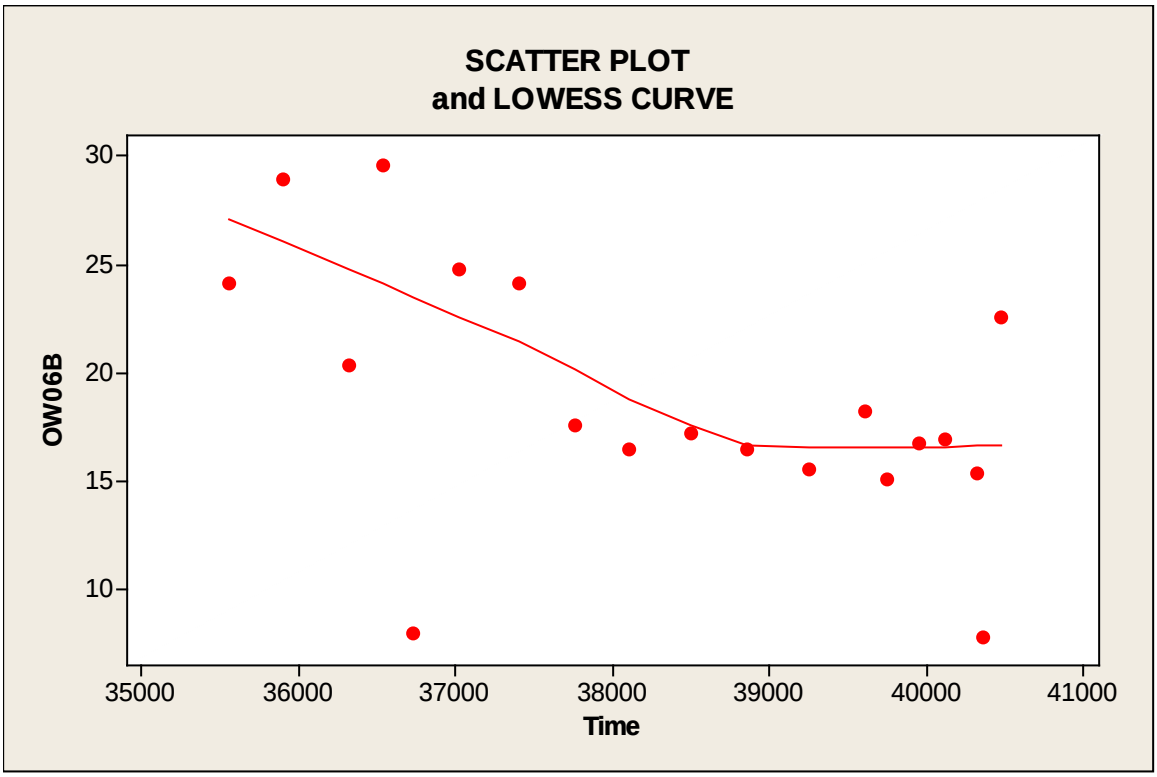
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.229070	0.360543
SPEARMAN'S RHO	-0.277606	0.264710
KENDALL'S TAU_A	-0.215686	0.225479
KENDALL'S TAU_B	-0.215686	0.225479


Scatterplot of OW04B vs Date
OW04B
55
50
45
40
35
30
25
20
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

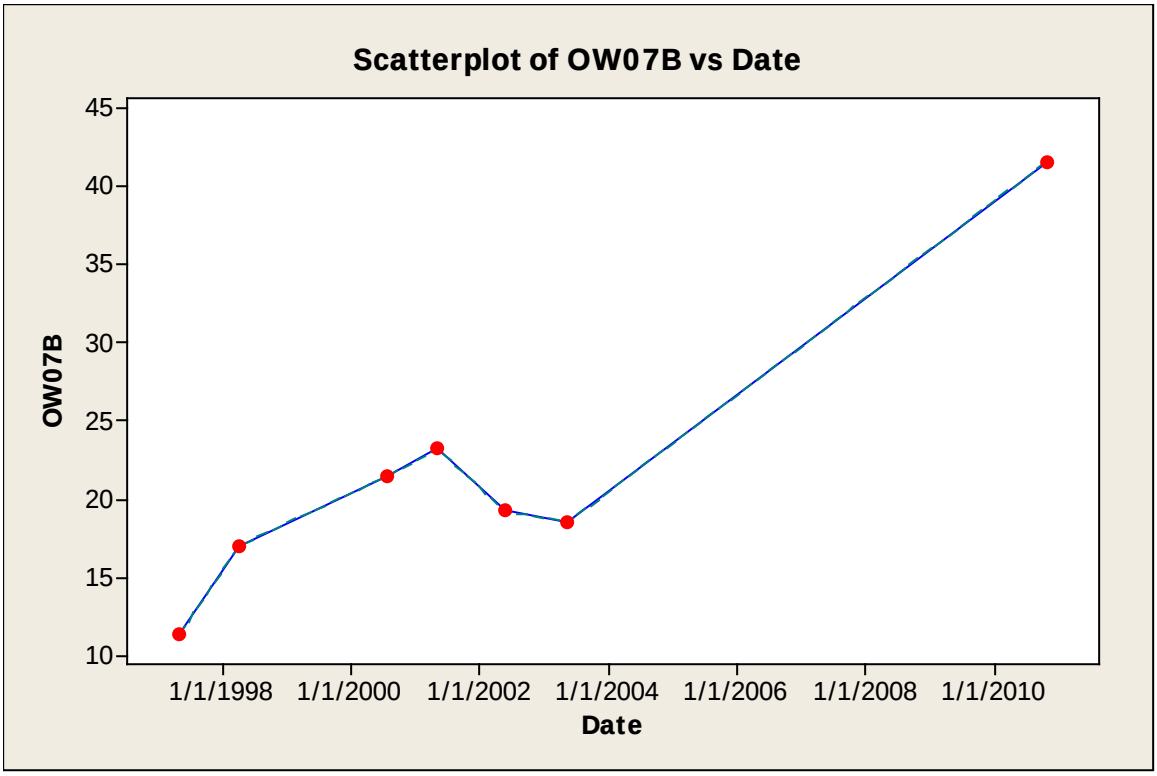


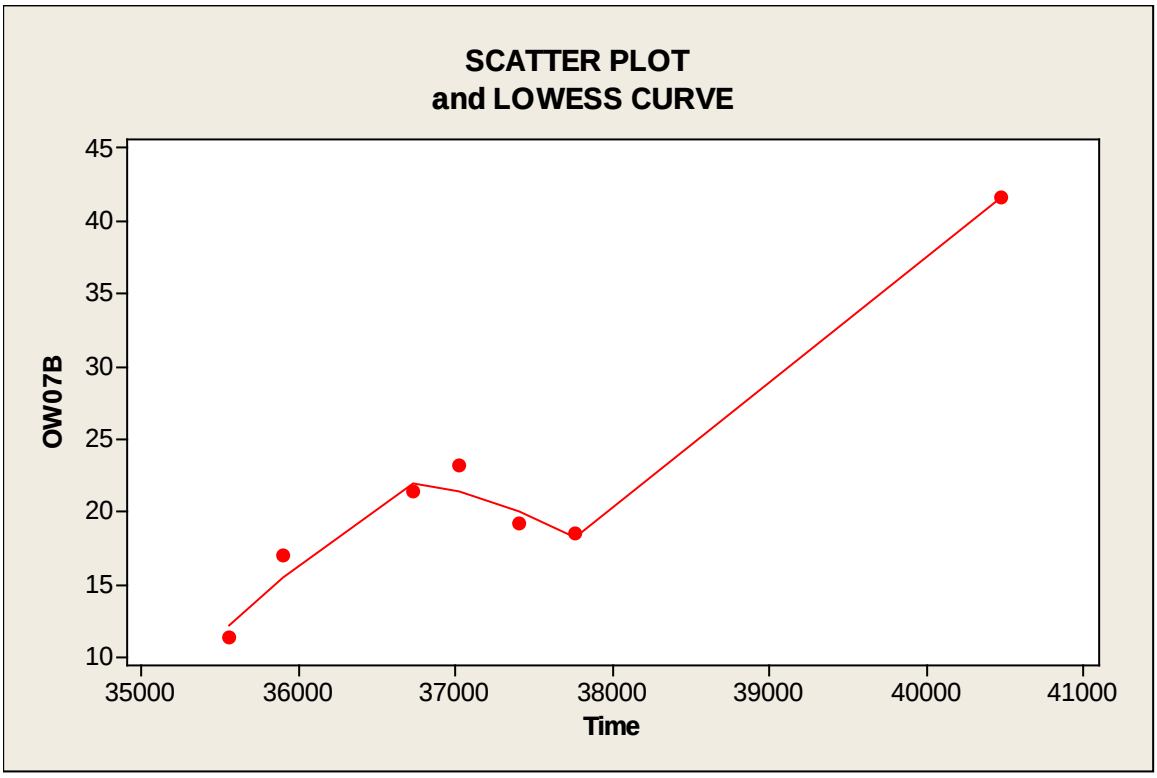
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.0153989	0.947179
SPEARMAN'S RHO	-0.0974026	0.674468
KENDALL'S TAU_A	-0.0952381	0.566143
KENDALL'S TAU_B	-0.0952381	0.566143


Scatterplot of OW06B vs Date
OW06B
30
25
20
15
10
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

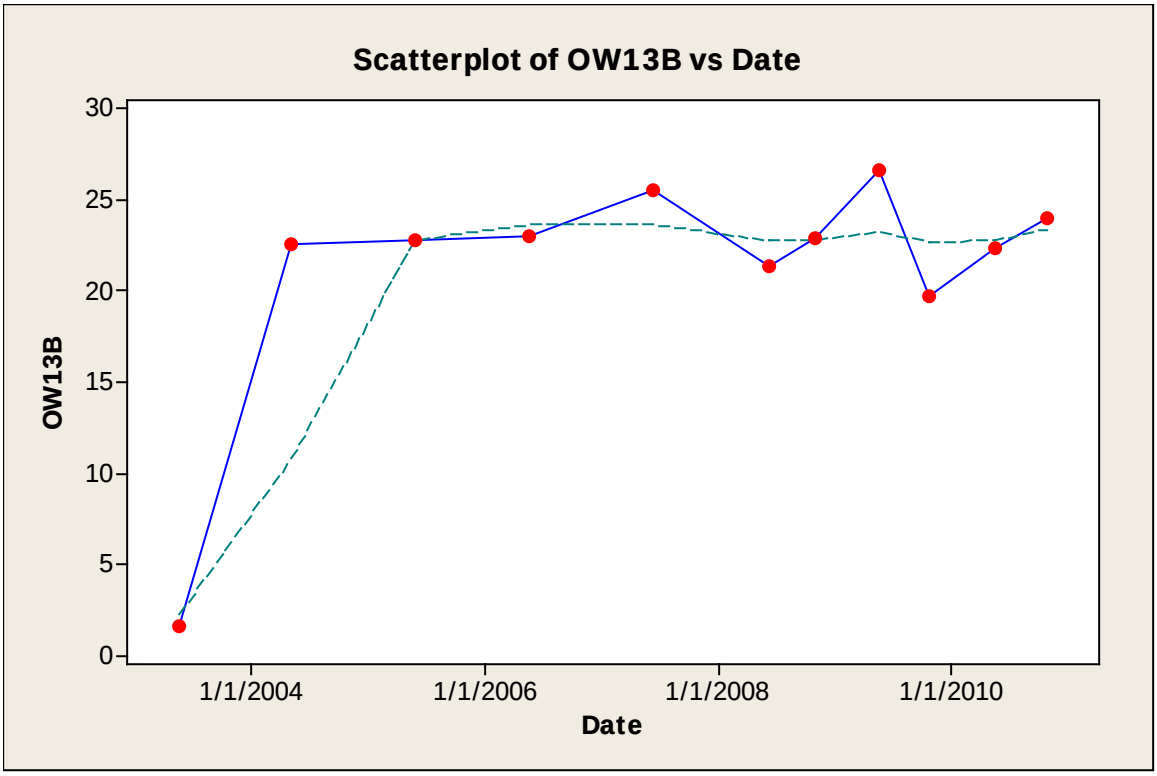

SCATTER PLOT
and LOWESS CURVE
OW06B
30
25
20
15
10
35000
36000
37000
38000
39000
40000
41000
Time

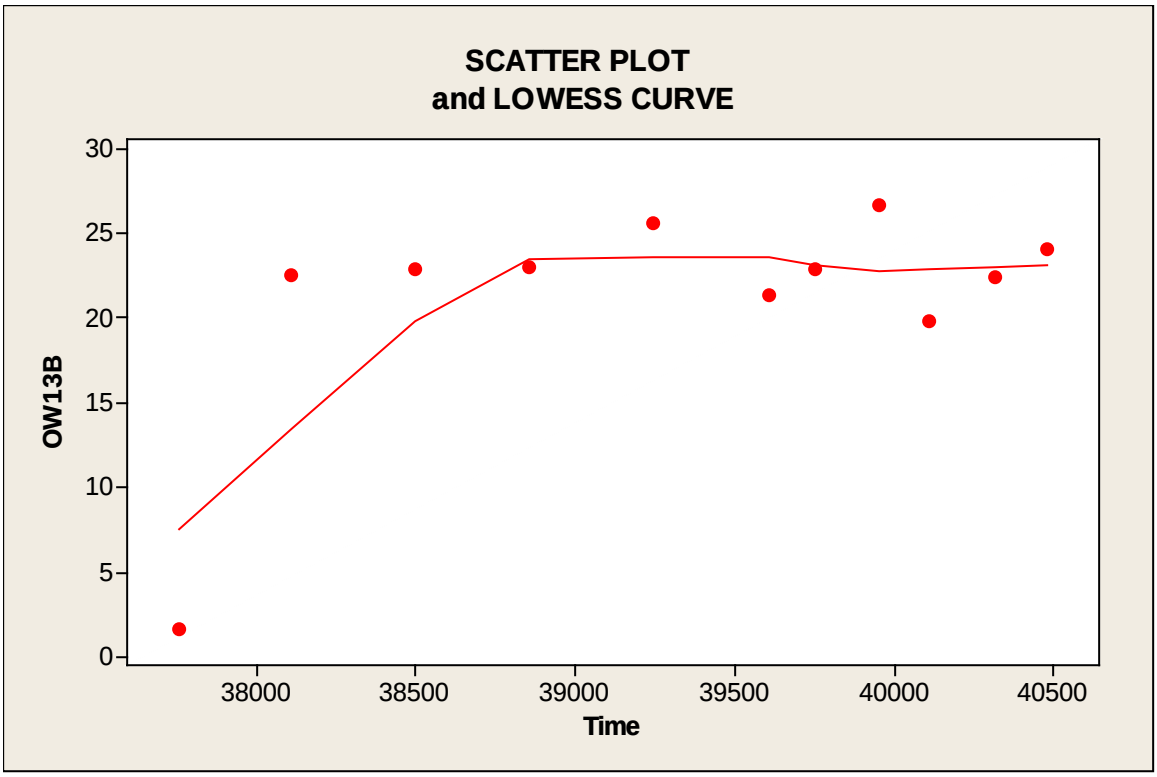
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.535735	0.0180726
SPEARMAN'S RHO	-0.561650	0.0123339
KENDALL'S TAU_A	-0.421053	0.0129371
KENDALL'S TAU_B	-0.422289	0.0129371


Scatterplot of OW07B vs Date
OW07B
45
40
35
30
25
20
15
10
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

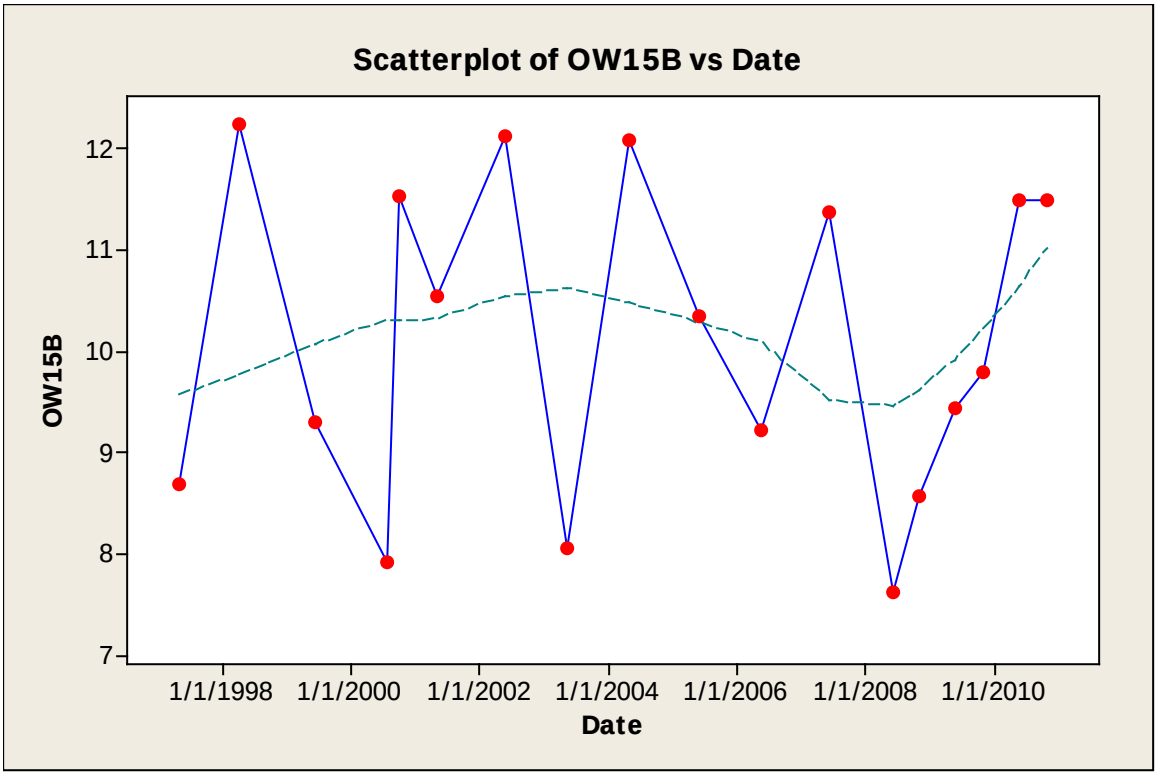

SCATTER PLOT
and LOWESS CURVE
OW07B
45
40
35
30
25
20
15
10
35000
36000
37000
38000
39000
40000
41000
Time

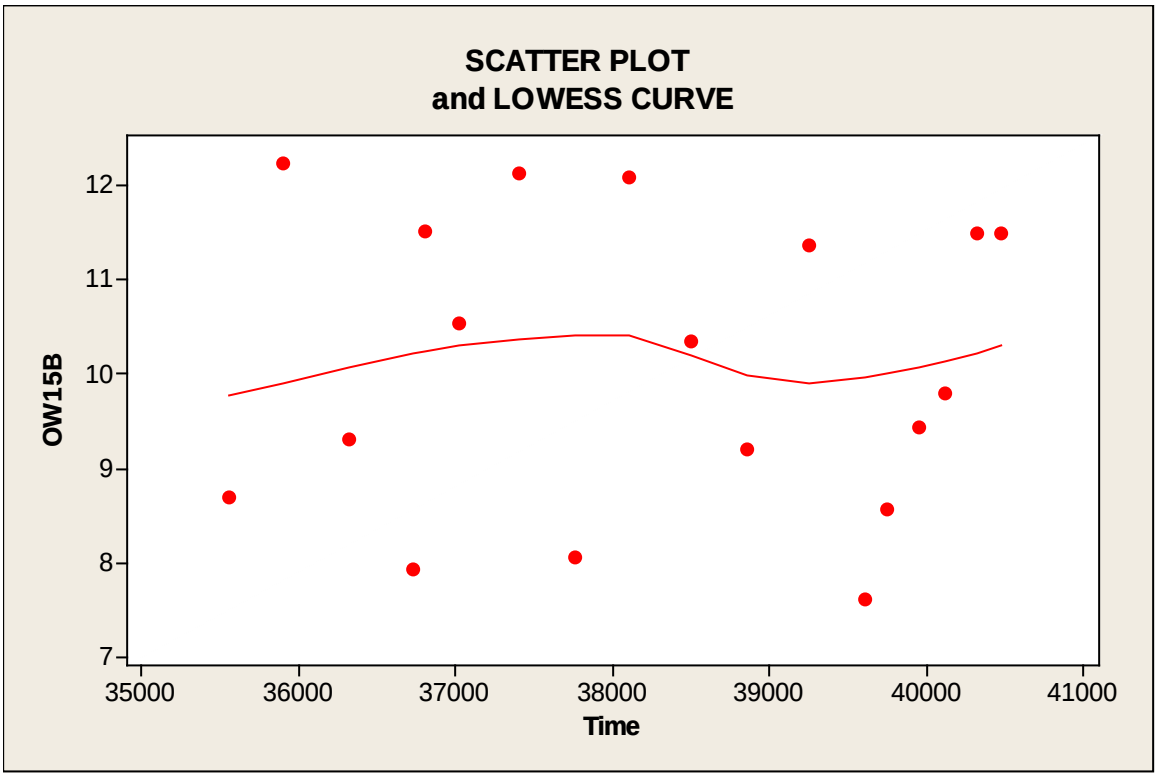
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.929084	0.002475
SPEARMAN'S RHO	0.678571	0.093750
KENDALL'S TAU_A	0.523810	0.133128
KENDALL'S TAU_B	0.523810	0.133128


Scatterplot of OW13B vs Date
OW13B
30
25
20
15
10
5
0
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

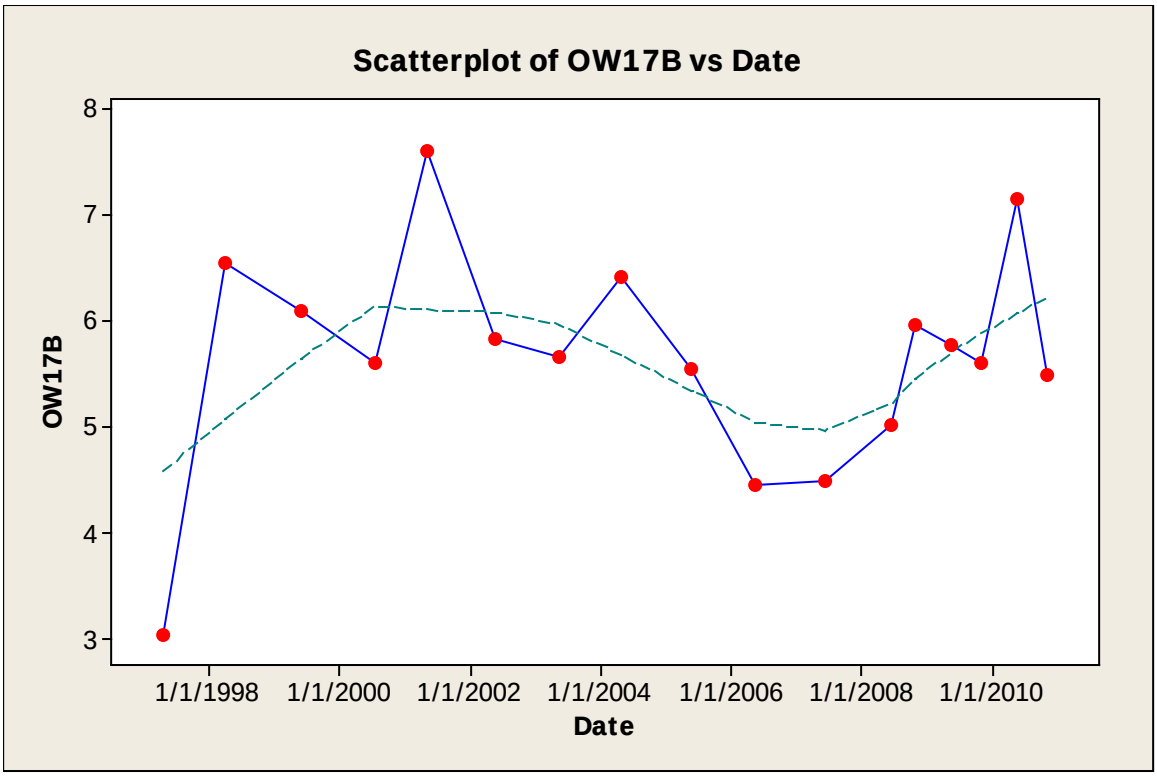

SCATTER PLOT
and LOWESS CURVE
OW13B
30
25
20
15
10
5
0
38000
38500
39000
39500
40000
40500
Time

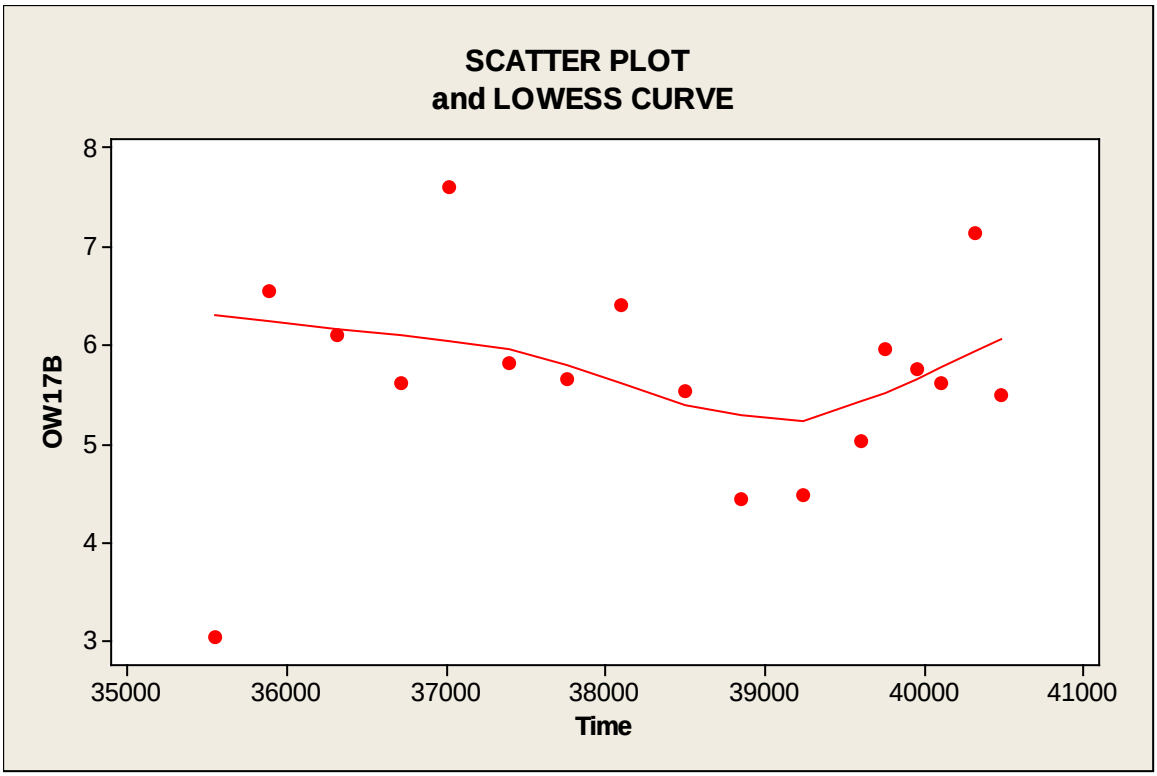
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.549288	0.080085
SPEARMAN'S RHO	0.245455	0.466922
KENDALL'S TAU_A	0.236364	0.350201
KENDALL'S TAU_B	0.236364	0.350201


Scatterplot of OW15B vs Date
OW15B
12
11
10
9
8
7
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

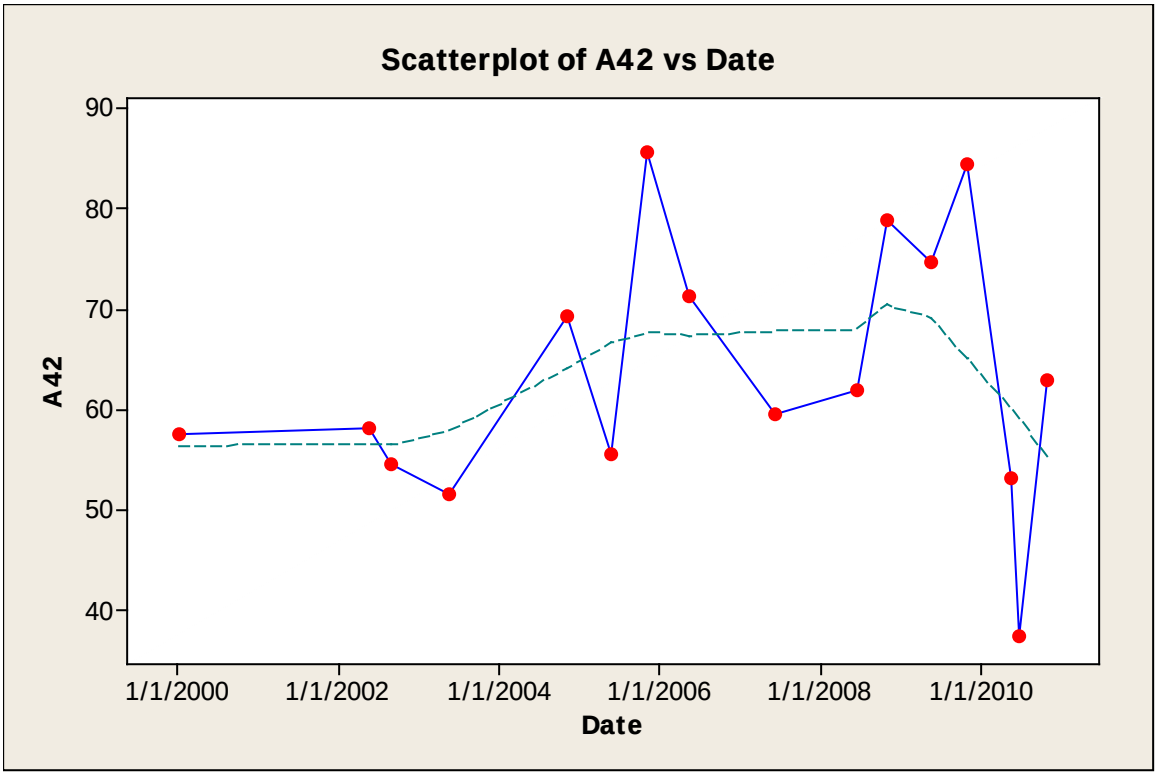

SCATTER PLOT
and LOWESS CURVE
OW15B
12
11
10
9
8
7
35000
36000
37000
38000
39000
40000
41000
Time

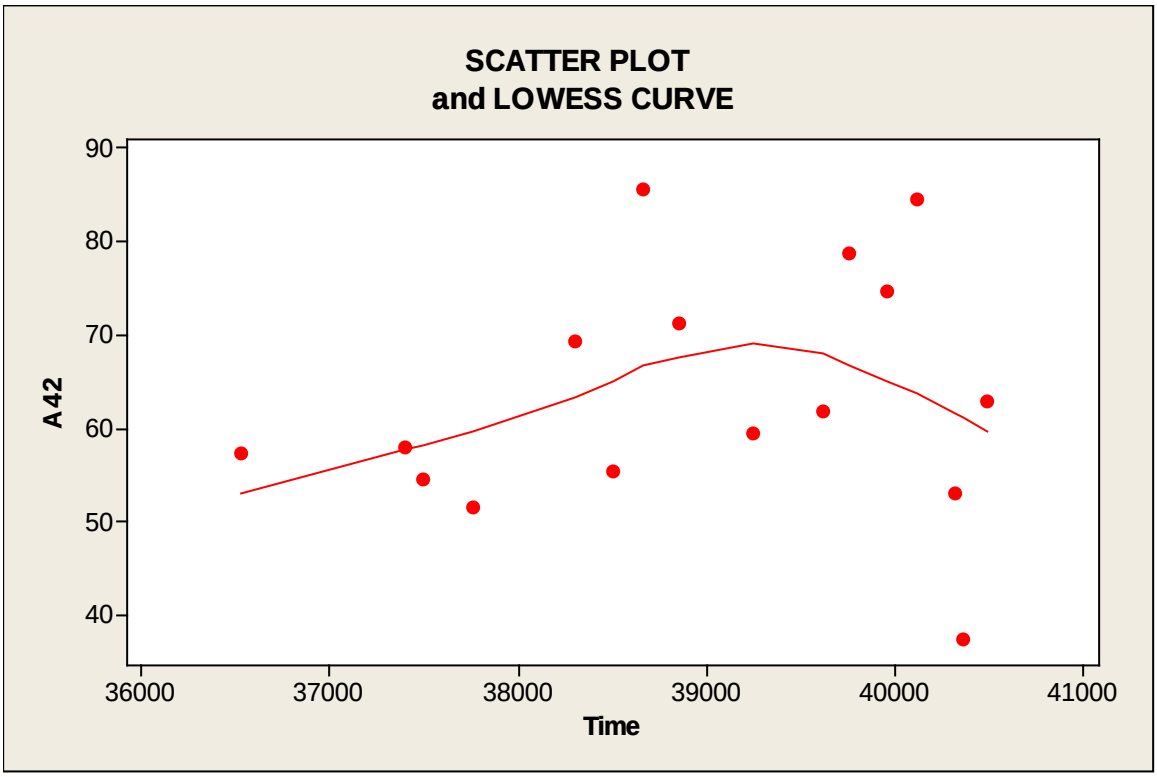
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.0138572	0.95648
SPEARMAN'S RHO	-0.0237358	0.92552
KENDALL'S TAU_A	-0.0065359	1.00000
KENDALL'S TAU_B	-0.0065359	1.00000


Scatterplot of OW17B vs Date
OW17B
8
7
6
5
4
3
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

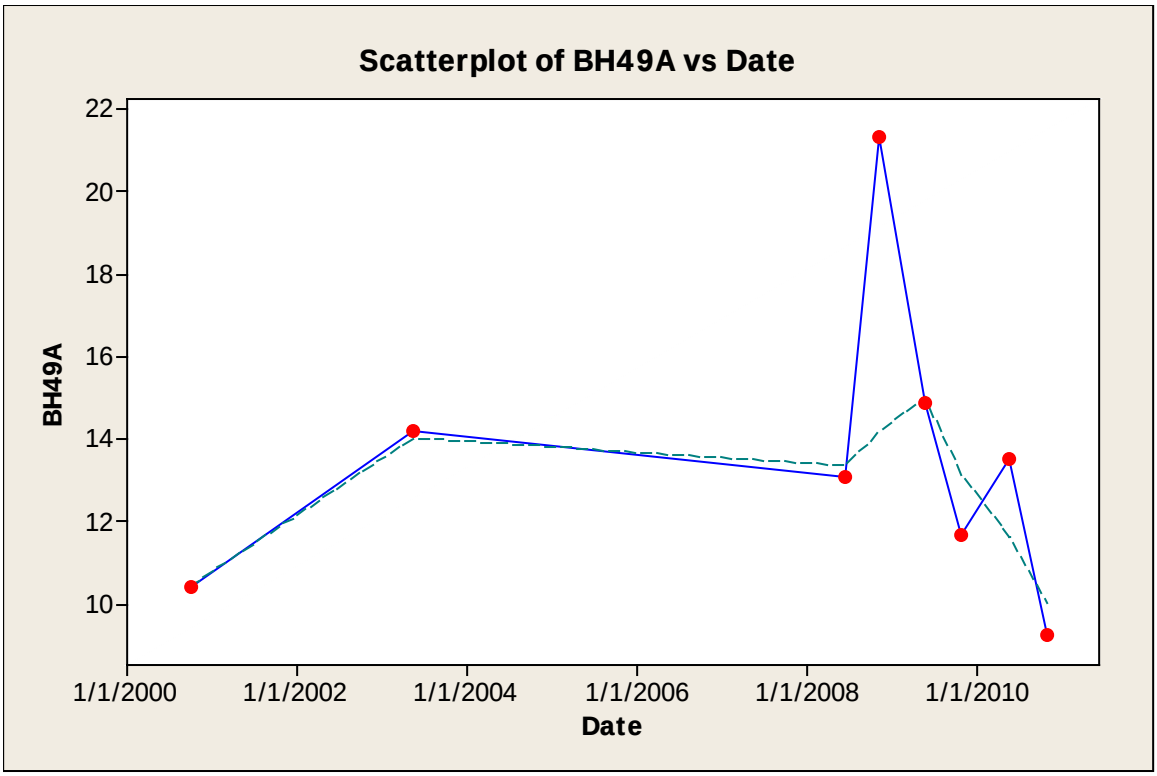


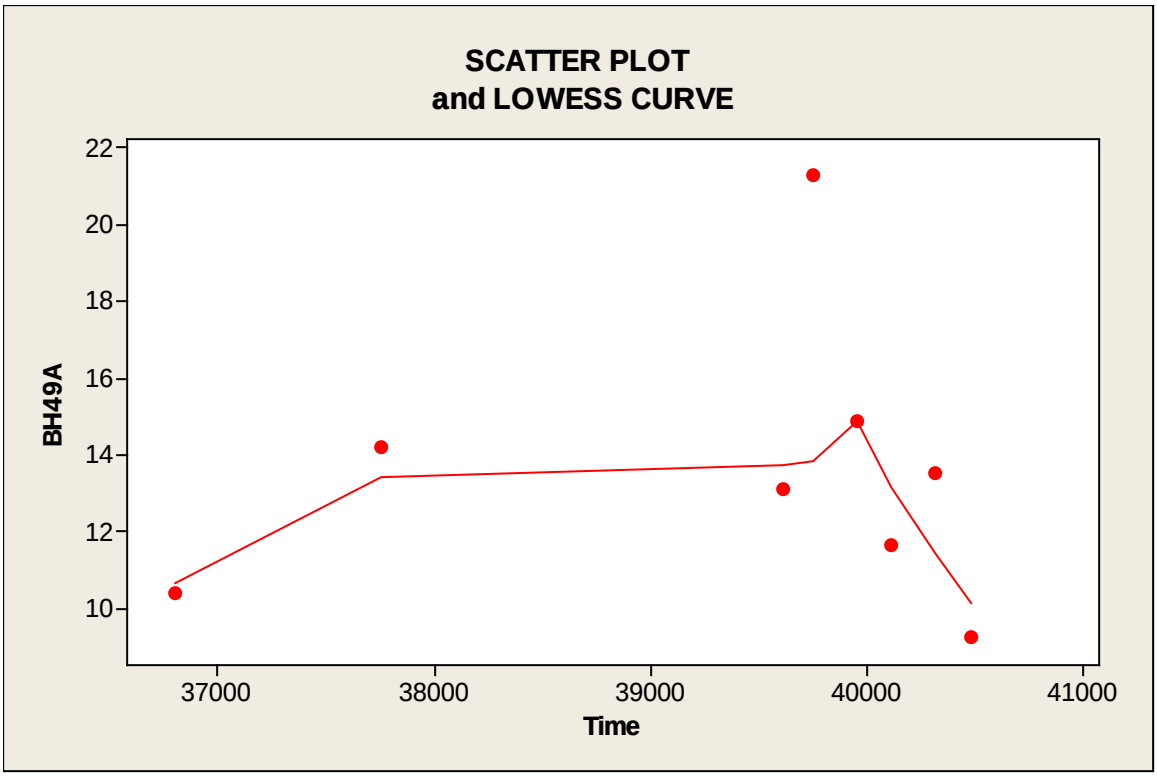
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.073984	0.777793
SPEARMAN'S RHO	-0.127451	0.625930
KENDALL'S TAU_A	-0.102941	0.592301
KENDALL'S TAU_B	-0.102941	0.592301


Scatterplot of A42 vs Date
A42
90
80
70
60
50
40
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

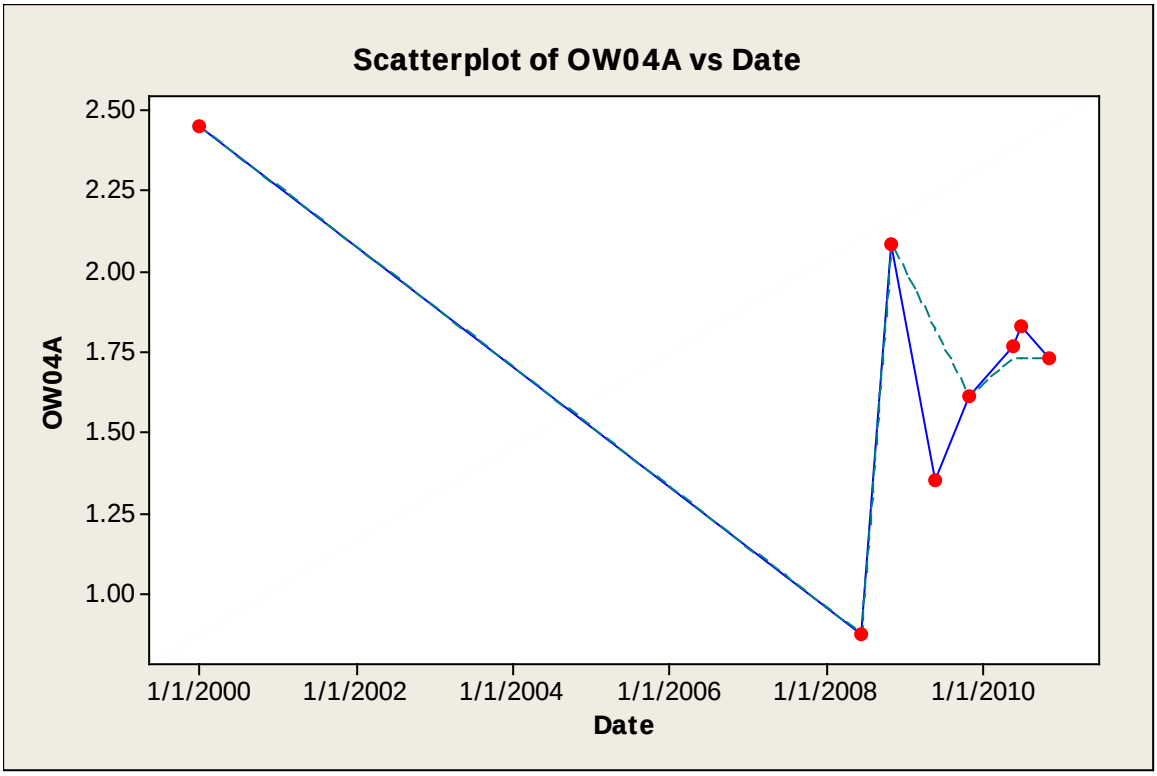

SCATTER PLOT
and LOWESS CURVE
A42
90
80
70
60
50
40
36000
37000
38000
39000
40000
41000
Time

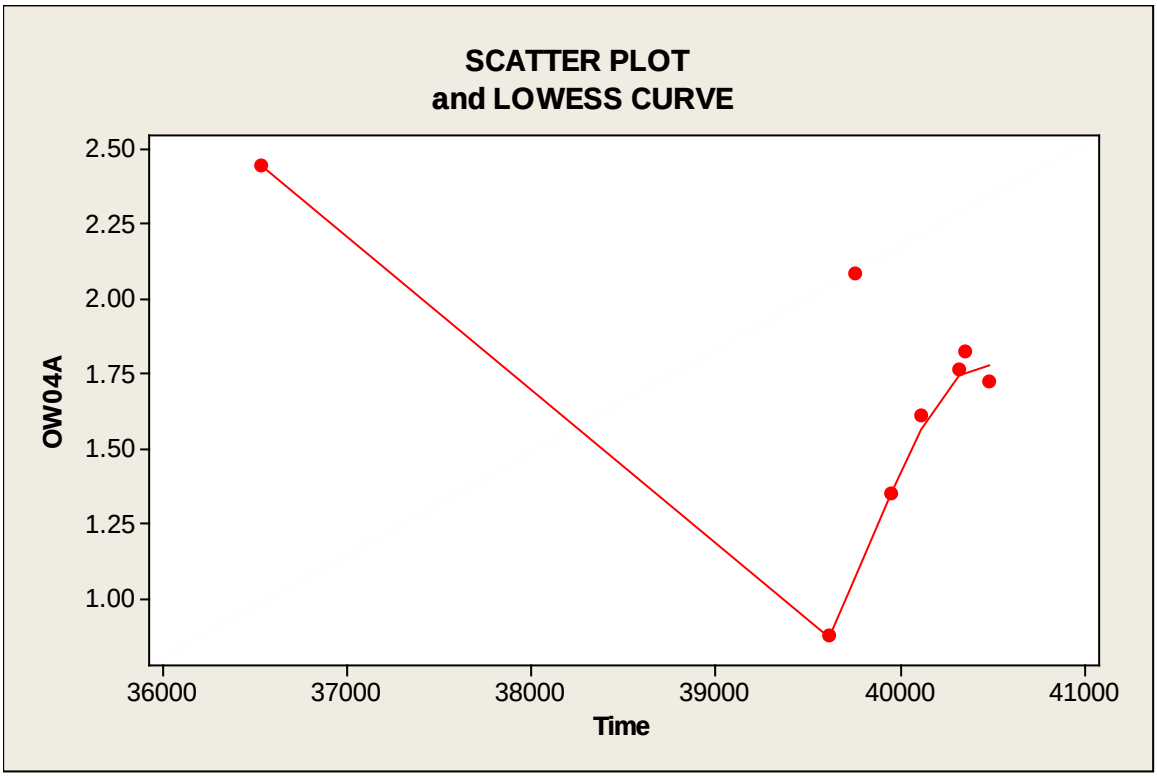
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.155268	0.565838
SPEARMAN'S RHO	0.179412	0.506140
KENDALL'S TAU_A	0.150000	0.444044
KENDALL'S TAU_B	0.150000	0.444044


Scatterplot of BH49A vs Date
BH49A
22
20
18
16
14
12
10
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

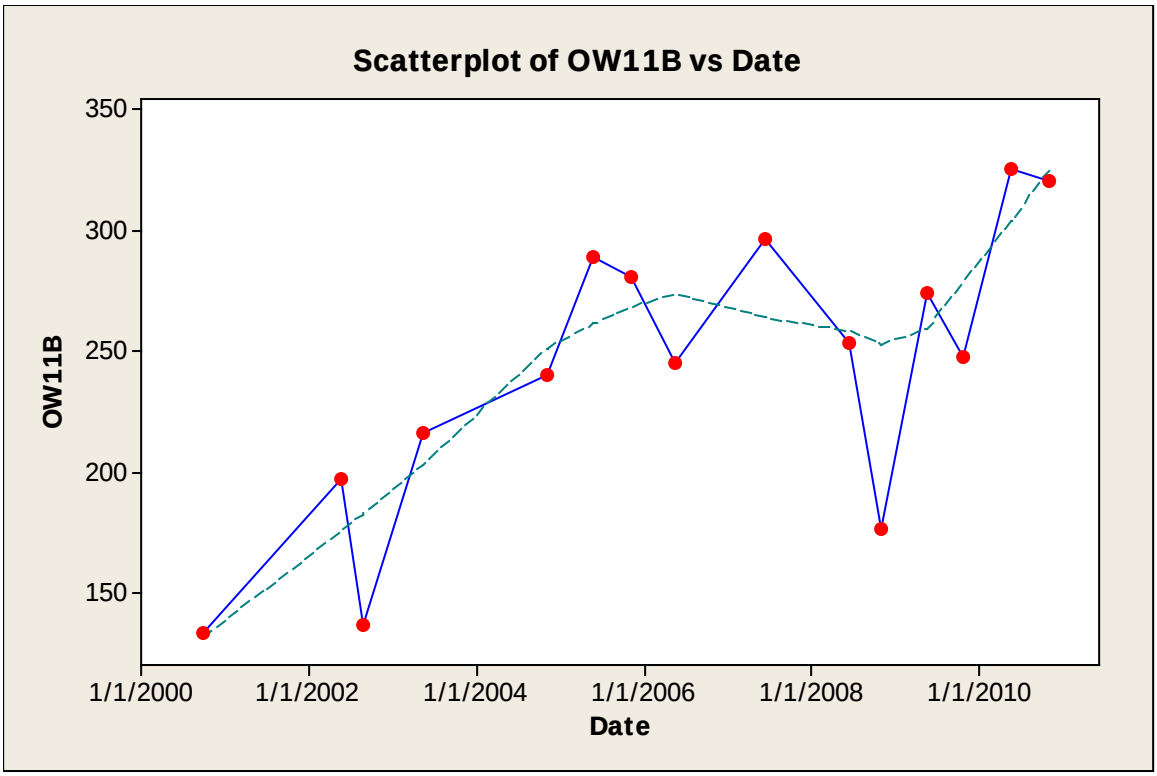


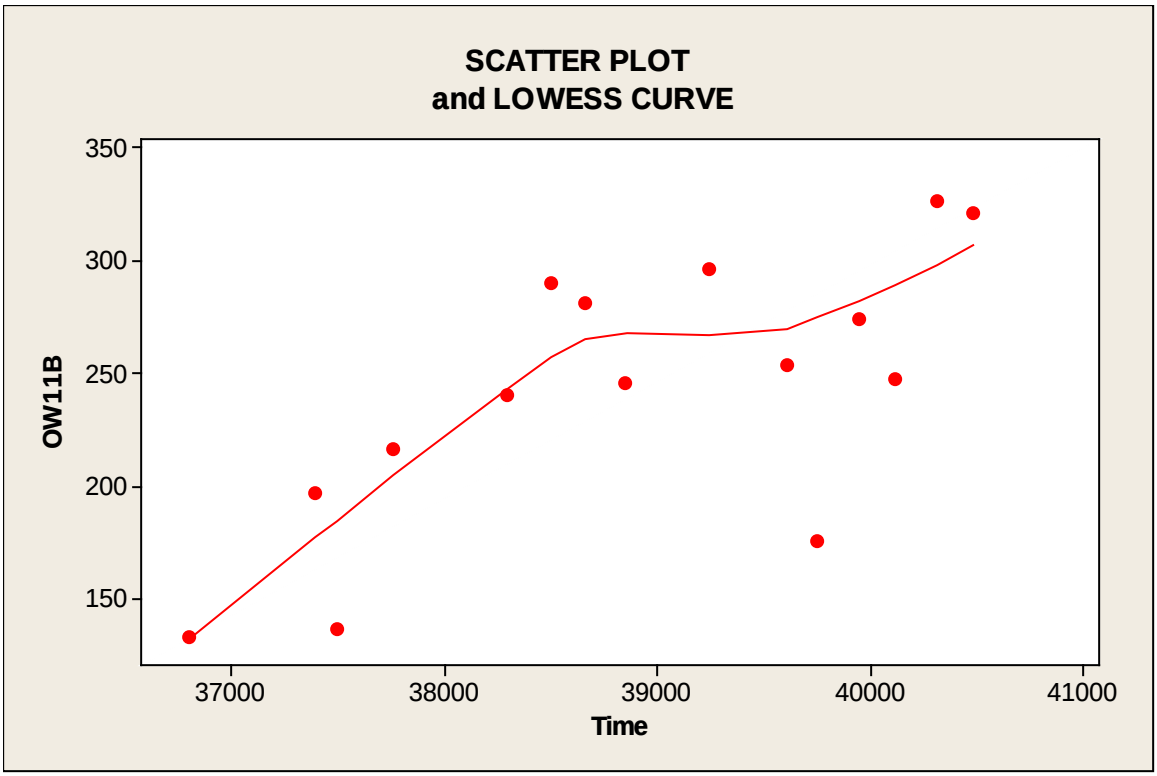
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.129213	0.760409
SPEARMAN'S RHO	-0.190476	0.651401
KENDALL'S TAU_A	-0.142857	0.710523
KENDALL'S TAU_B	-0.142857	0.710523


Scatterplot of OW04A vs Date
OW04A
2.50
2.25
2.00
1.75
1.50
1.25
1.00
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

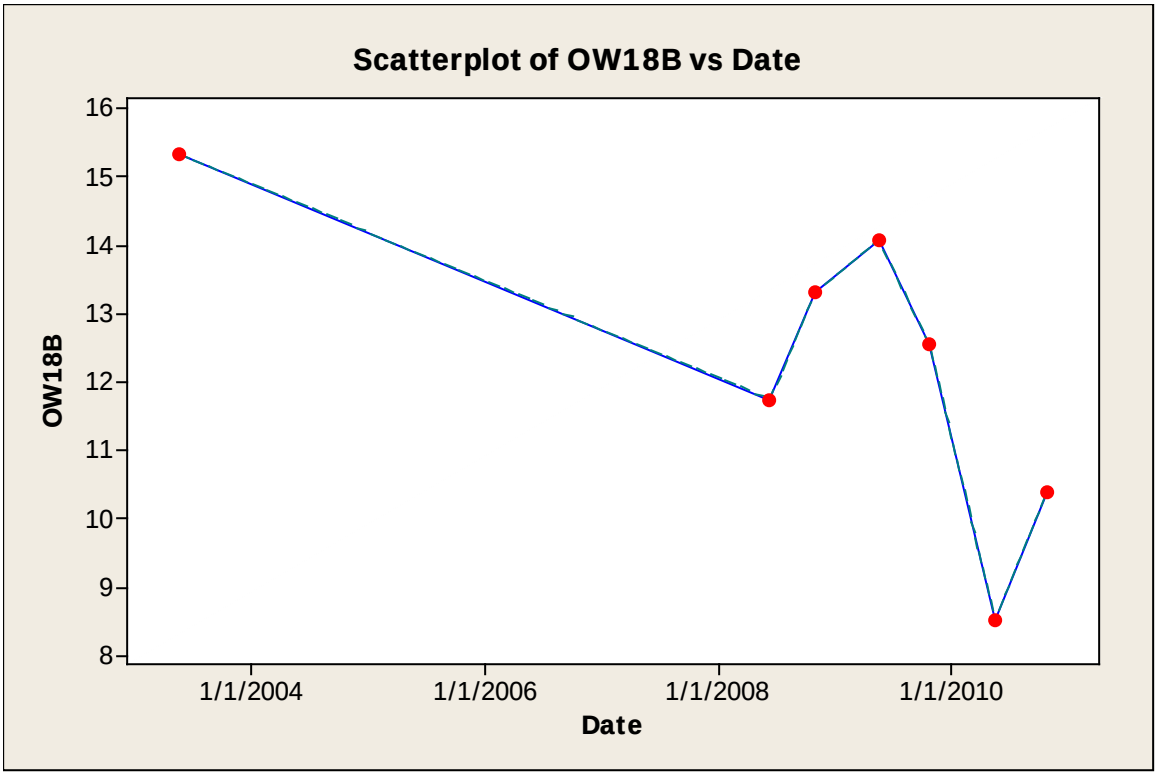

SCATTER PLOT
and LOWESS CURVE
OW04A
2.50
2.25
2.00
1.75
1.50
1.25
1.00
36000
37000
38000
39000
40000
41000
Time

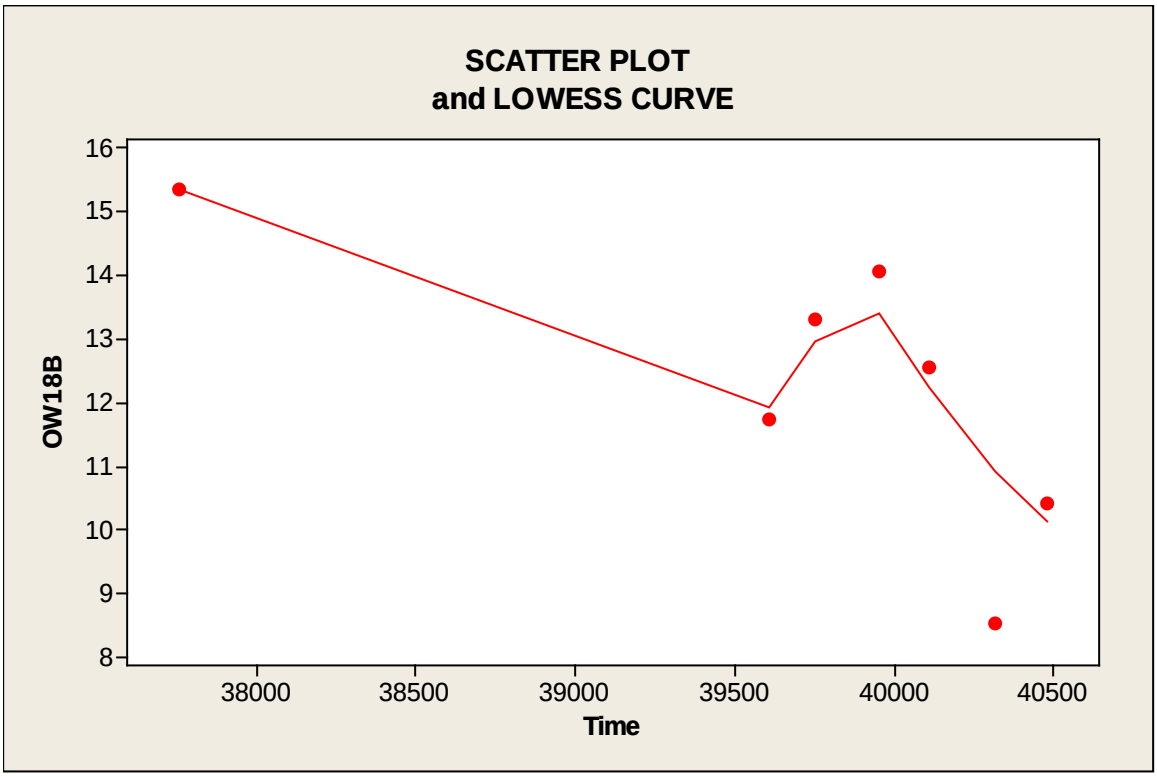
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.529994	0.17667
SPEARMAN'S RHO	-0.095238	0.82251
KENDALL'S TAU_A	0.000000	1.00000
KENDALL'S TAU_B	0.000000	1.00000


Scatterplot of OW11B vs Date
350
300
250
200
150
OW11B
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date



CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.711058	0.0029588
SPEARMAN'S RHO	0.692857	0.0041902
KENDALL'S TAU_A	0.542857	0.0055836
KENDALL'S TAU_B	0.542857	0.0055836


Scatterplot of OW18B vs Date
OW18B
16
15
14
13
12
11
10
9
8
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date


SCATTER PLOT
and LOWESS CURVE
OW18B
16
15
14
13
12
11
10
9
8
38000
38500
39000
39500
40000
40500
Time

CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.720634	0.067701
SPEARMAN'S RHO	-0.714286	0.071344
KENDALL'S TAU_A	-0.523810	0.133128
KENDALL'S TAU_B	-0.523810	0.133128

Ra-226 Trend Evaluations (Unfiltered Groundwater)

Remarks: The data sets were imported into Minitab (commercial statistical software) to do temporal trend analyses for a set of groundwater monitoring wells. Temporal trends were evaluated from **1997 – 2010**. All units are in pCi/L.

Descriptive Statistics

Variable	Total Count	N	Mean	StDev	Minimum	Median	Maximum
B02W20S	22	17	0.2131	0.1759	0.0300	0.1790	0.7650
A45	22	18	0.4223	0.3498	-0.0720	0.3590	1.1200
A50	22	18	0.2859	0.1787	0.000000000	0.3160	0.6330
OW04B	22	18	0.3133	0.3182	-0.0100	0.2525	1.2900
OW06B	22	18	0.2756	0.2730	-0.0400	0.1655	0.9710
OW07A	22	**1**	0.40000	*	0.40000	0.40000	0.40000
OW07B	22	6	0.433	0.492	0.0330	0.244	1.290
OW13B	22	11	0.430	0.354	0.0560	0.359	1.050
OW15B	22	18	0.2691	0.1741	0.0800	0.2190	0.7290
OW17B	22	16	0.2261	0.2600	-0.0850	0.1230	0.9810
A42	22	9	0.440	0.665	-0.866	0.341	1.610
BH49A	22	**3**	0.351	0.349	0.146	0.153	0.754
OW04A	22	**3**	0.0697	0.342	-0.325	0.253	0.281
OW11B	22	8	0.589	0.760	-0.160	0.348	2.250
OW6A	22	**2**	0.1395	0.0686	0.0910	0.1395	0.1880
OW15A	22	**2**	0.3025	0.0643	0.2570	0.3025	0.3480
OW14B	22	**1**	-0.037000	*	-0.037000	-0.037000	-0.037000

Samples sizes for the following wells were too small to do statistical trend evaluations:

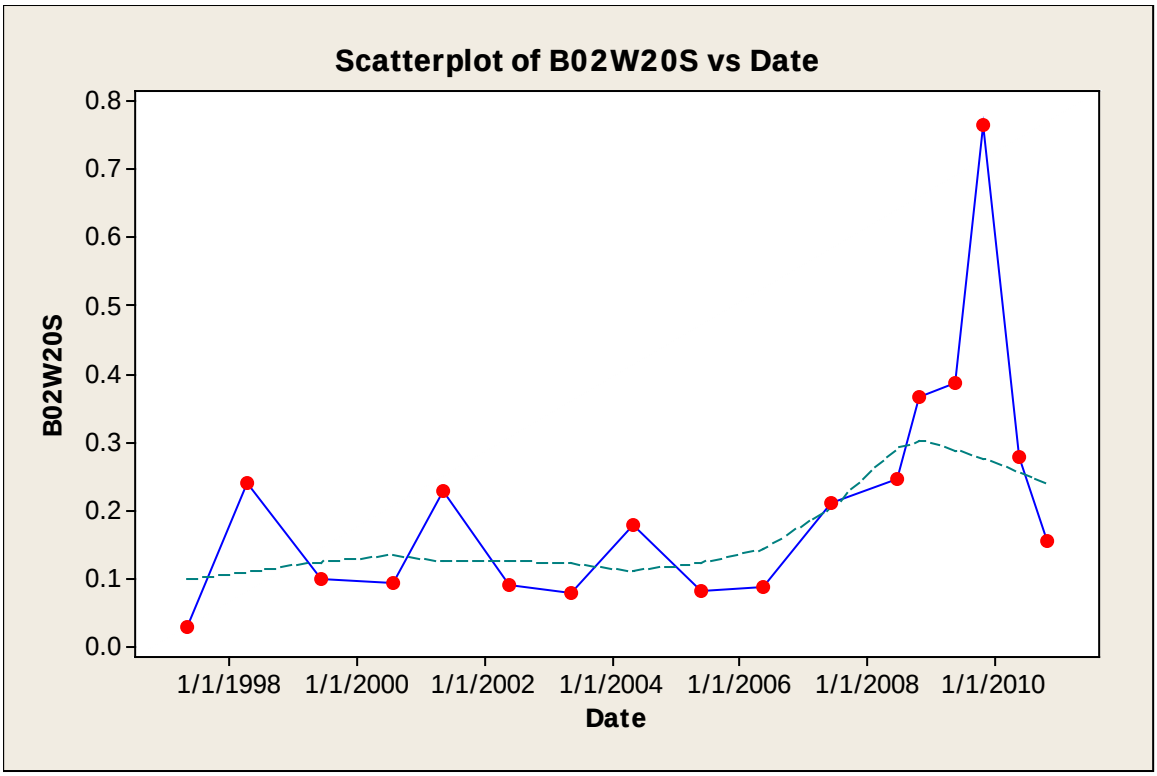
- OW07A
- BH49A
- OW04A
- OW6A
- OW15A
- OW14B

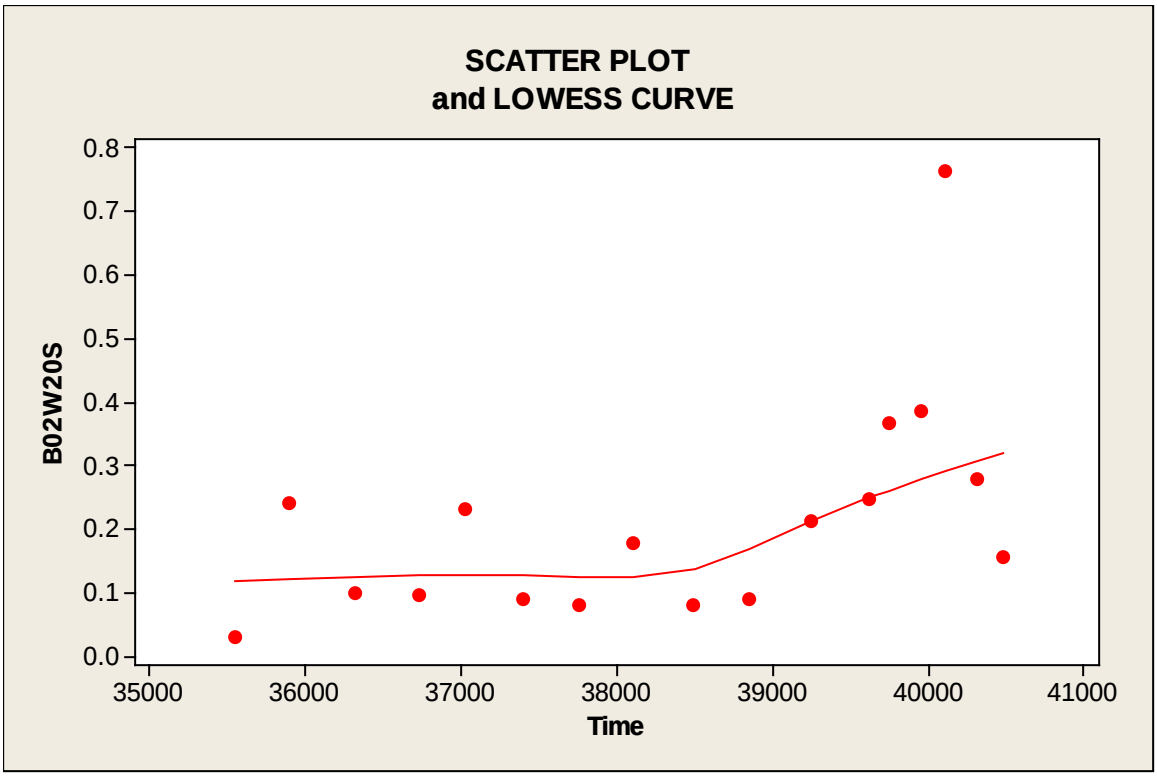
Summary of Ra-226 Trend Evaluations

Well	*n*	Kendall's τ	p-value	Remarks*
B02W20S	17	**0.40**	**0.029**	**Upward trend.**
A45	18	-0.039	0.85	No trend.
A50	18	0.24	0.17	No trend. (Possible upward trend.)
OW04B	18	0.18	0.52	No trend.
OW06B	18	0.26	0.13	No trend. (Possible upward trend.)
OW07B	6	-0.20	0.71	No trend.
OW13B	11	0.31	0.21	No trend.
OW15B	18	0.31	0.081	No trend. (Upward trend at 90% CL.)
OW17B	16	0.28	0.14	No trend. (Possible upward trend.)
A42	9	-0.28	0.35	No trend.
OW11B	8	0.14	0.71	No trend.

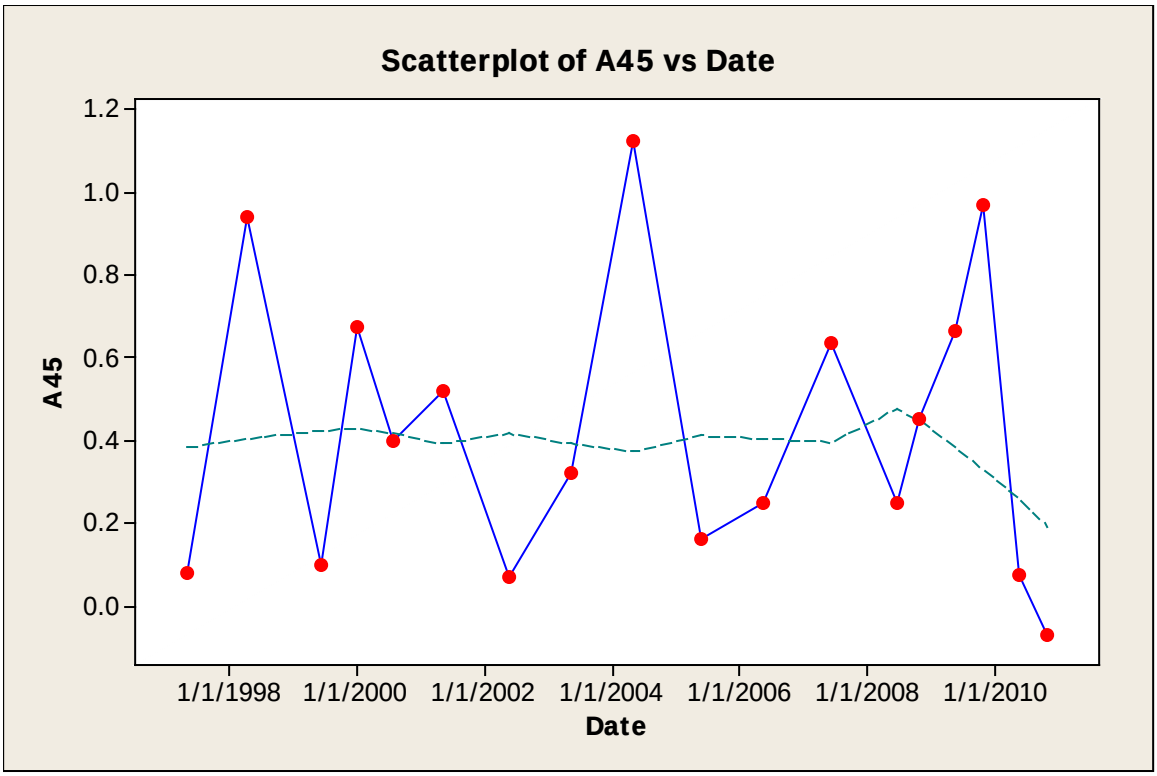
* 95% level of confidence used for all trend evaluations.

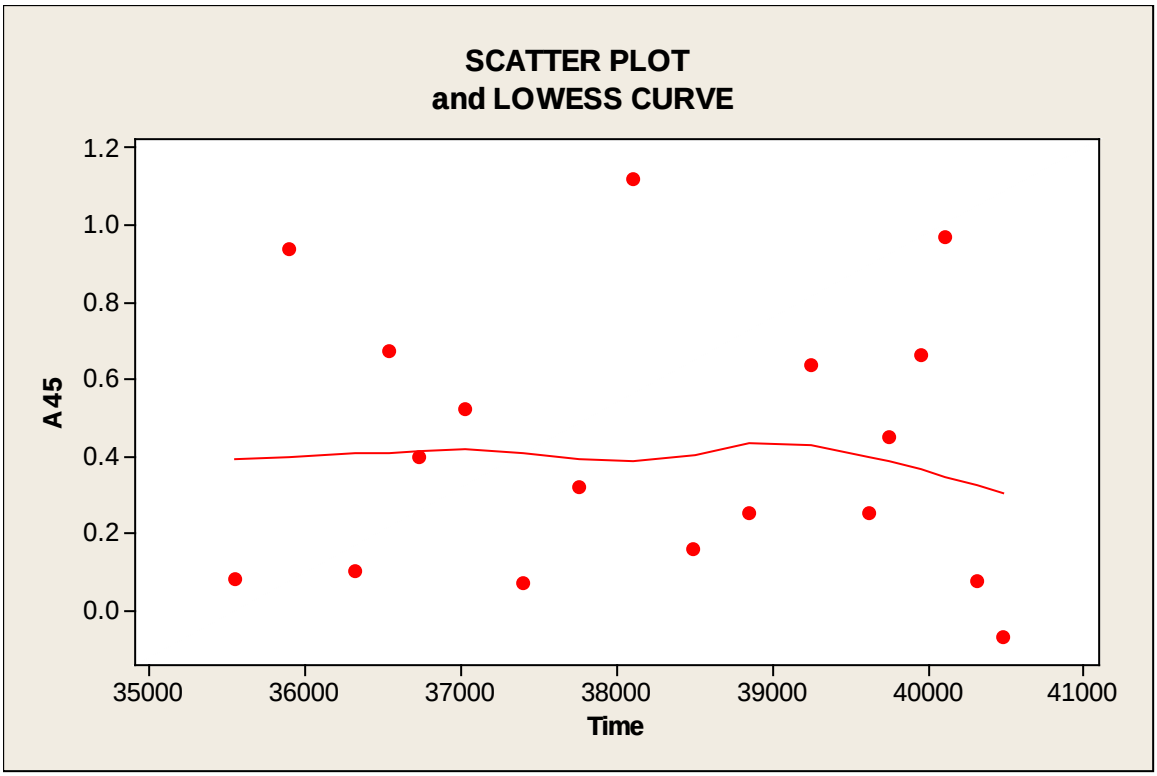
Times Series Plots and Results of Mann-Kendall Tests for Ra-226 by Well



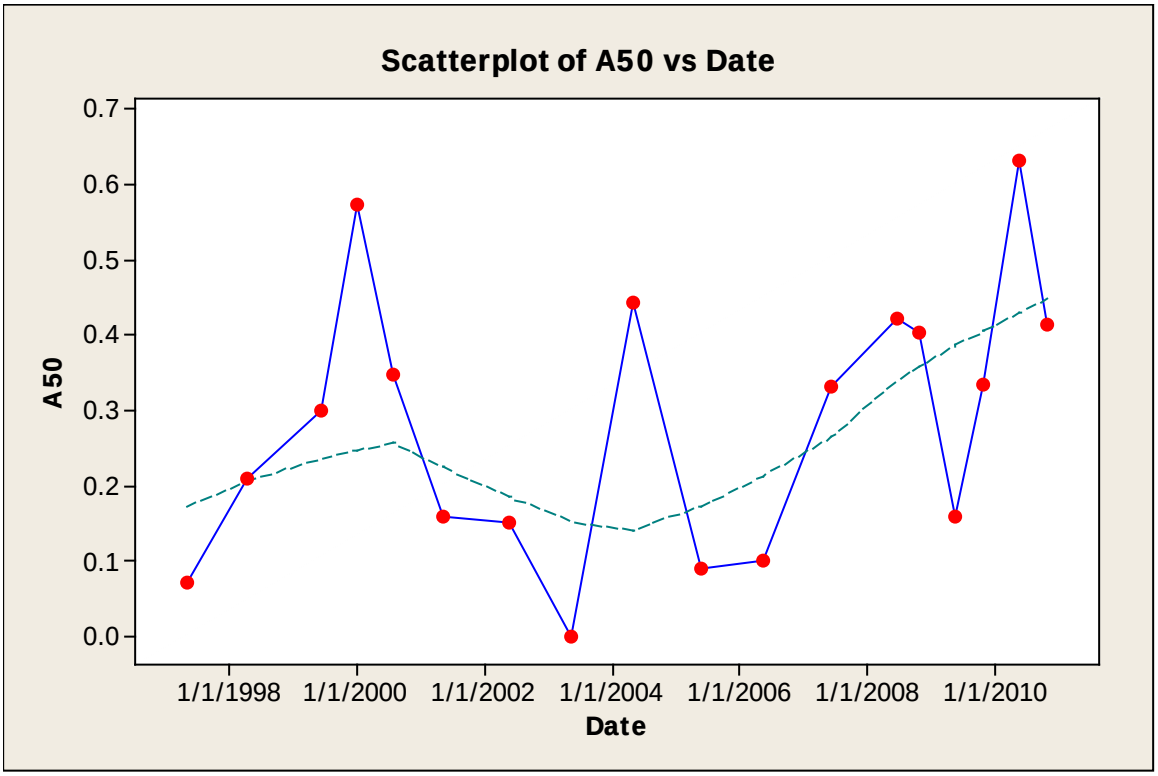


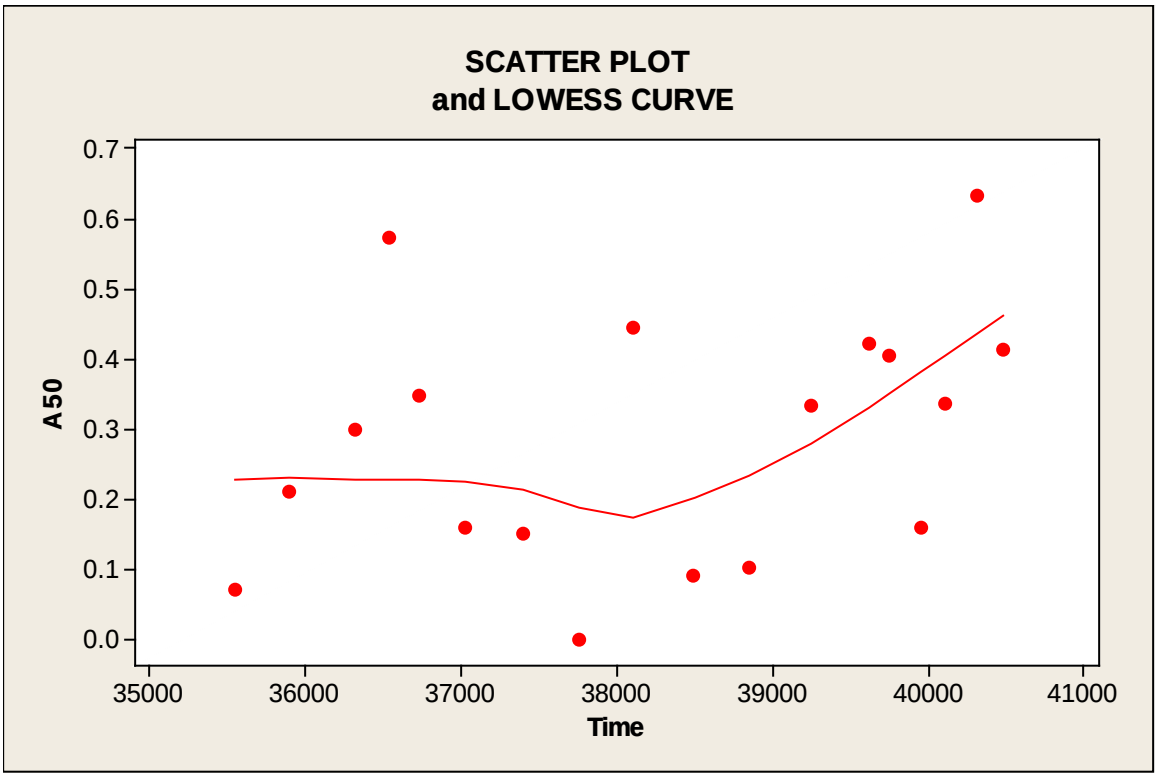
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.540892	0.0249621
SPEARMAN'S RHO	0.566176	0.0178228
KENDALL'S TAU_A	0.397059	0.0290204
KENDALL'S TAU_B	0.397059	0.0290204


Scatterplot of A45 vs Date
A45
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

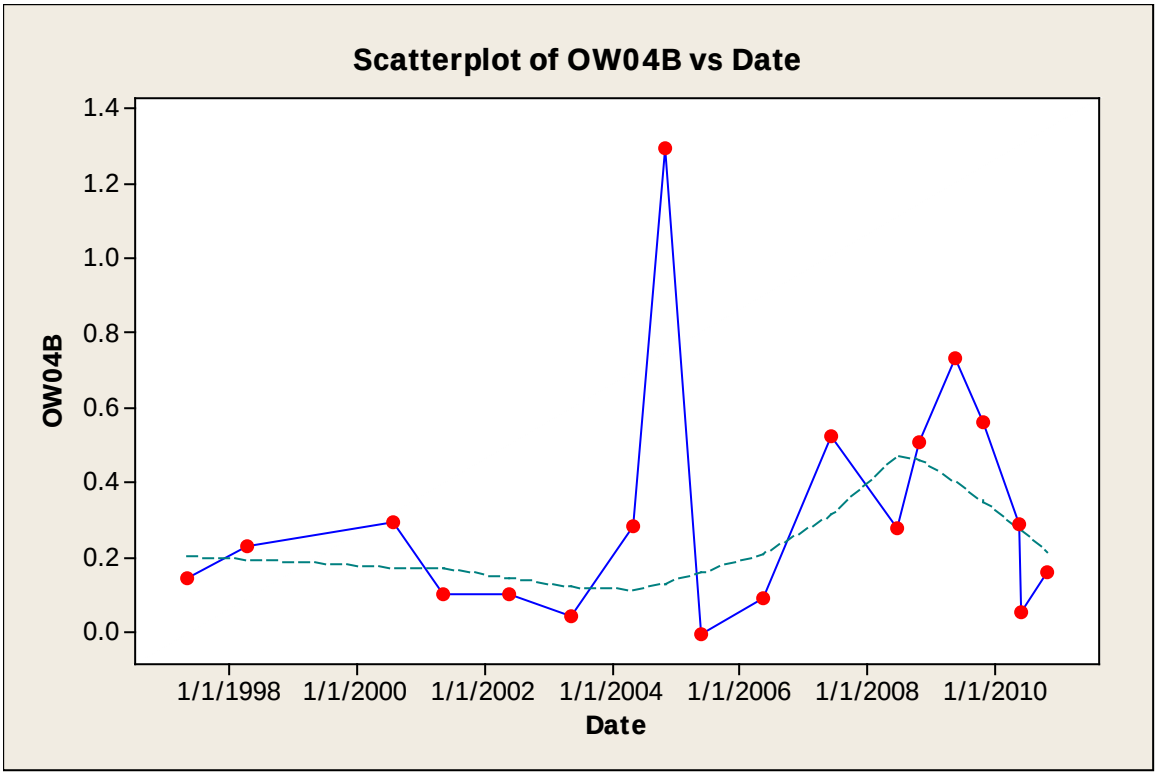


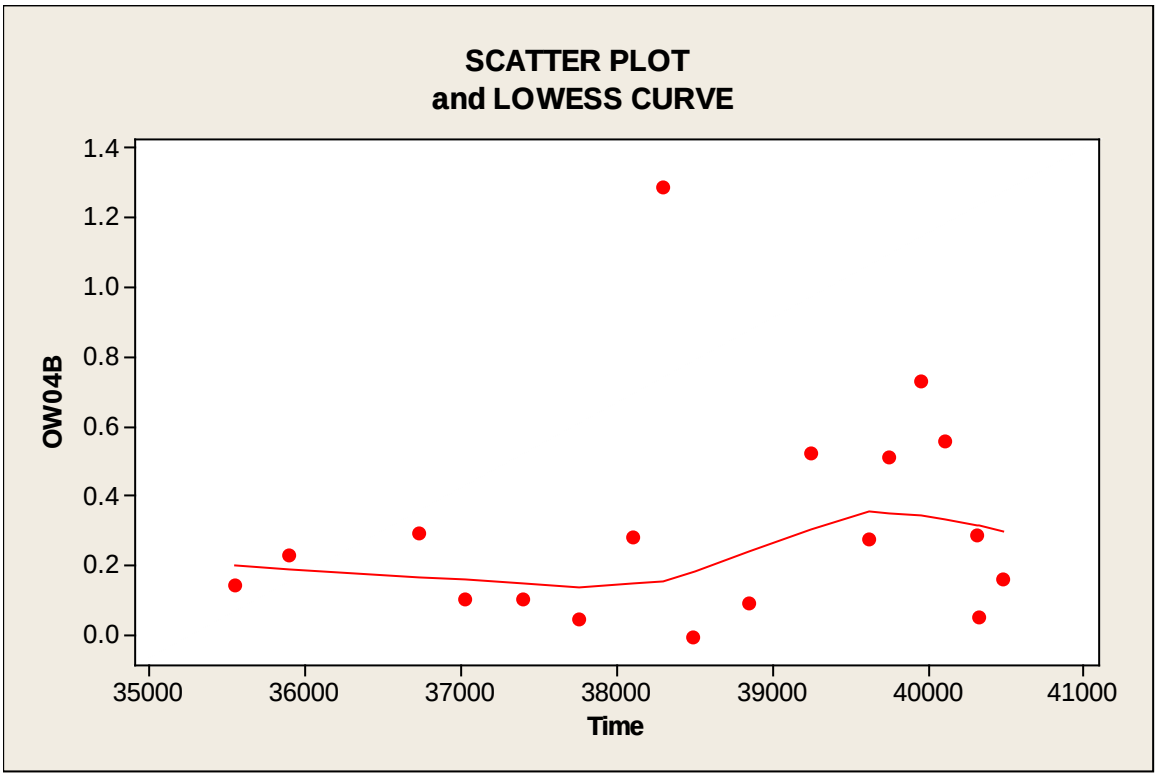
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.0486944	0.847841
SPEARMAN'S RHO	-0.0877646	0.729124
KENDALL'S TAU_A	-0.0392157	0.849682
KENDALL'S TAU_B	-0.0393445	0.849682


Scatterplot of A50 vs Date
A50
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

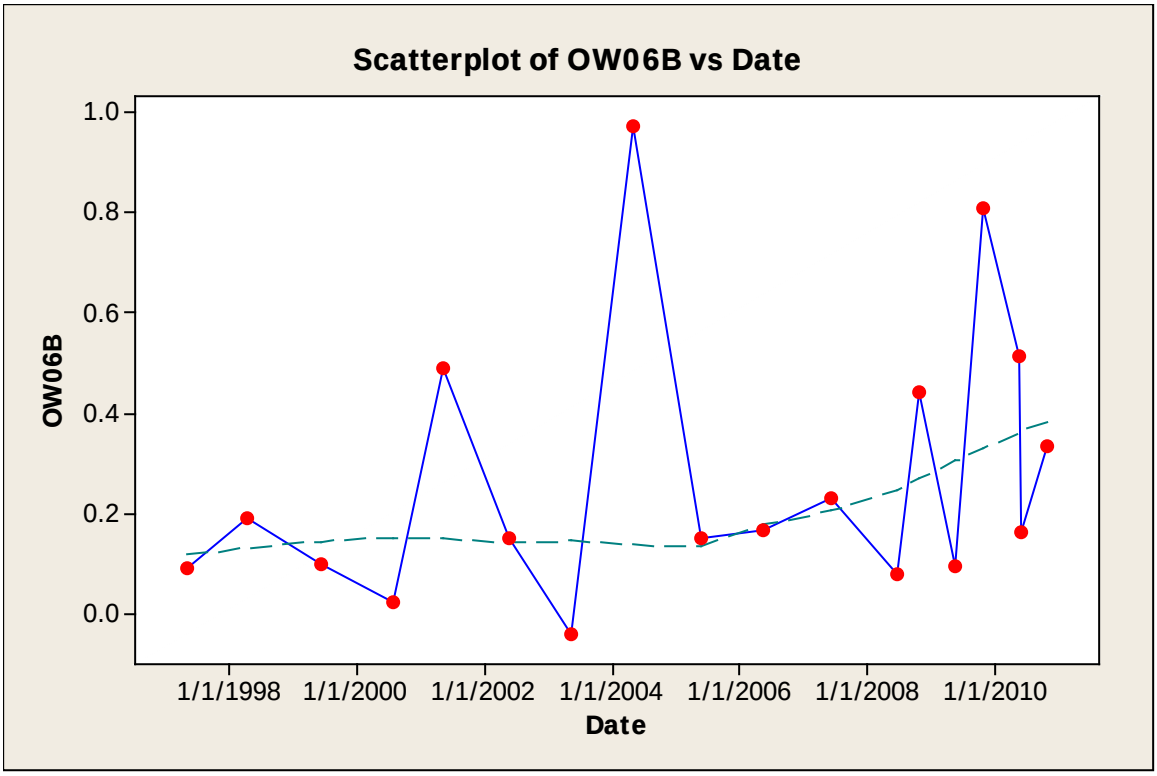

SCATTER PLOT
and LOWESS CURVE
A50
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
35000
36000
37000
38000
39000
40000
41000
Time

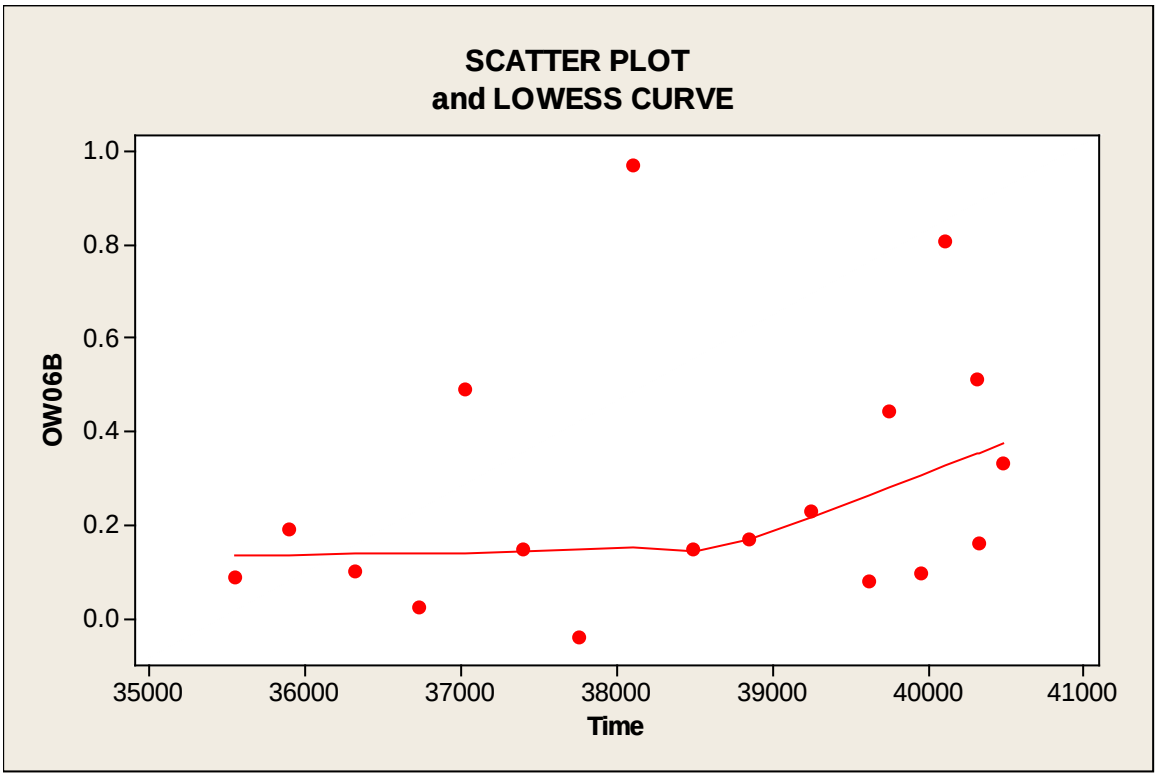
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.334673	0.174624
SPEARMAN'S RHO	0.356037	0.147026
KENDALL'S TAU_A	0.241830	0.172694
KENDALL'S TAU_B	0.241830	0.172694


Scatterplot of OW04B vs Date
OW04B
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

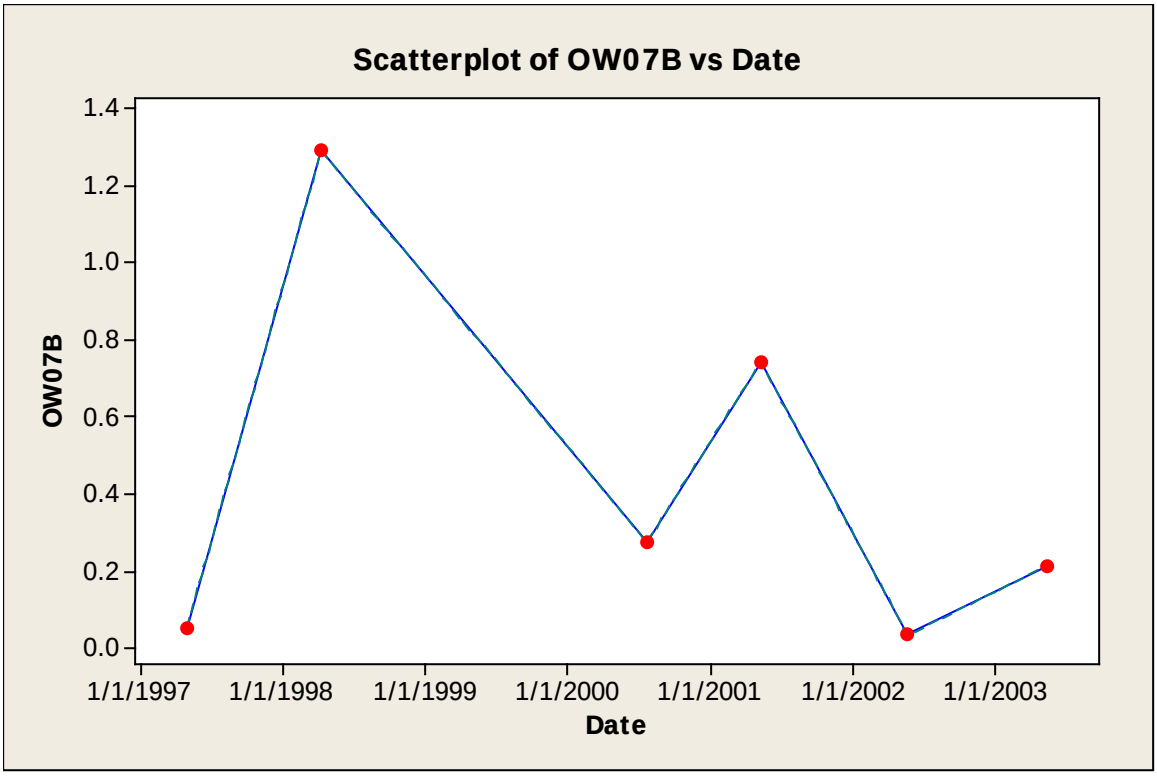

SCATTER PLOT
and LOWESS CURVE
OW04B
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
35000
36000
37000
38000
39000
40000
41000
Time

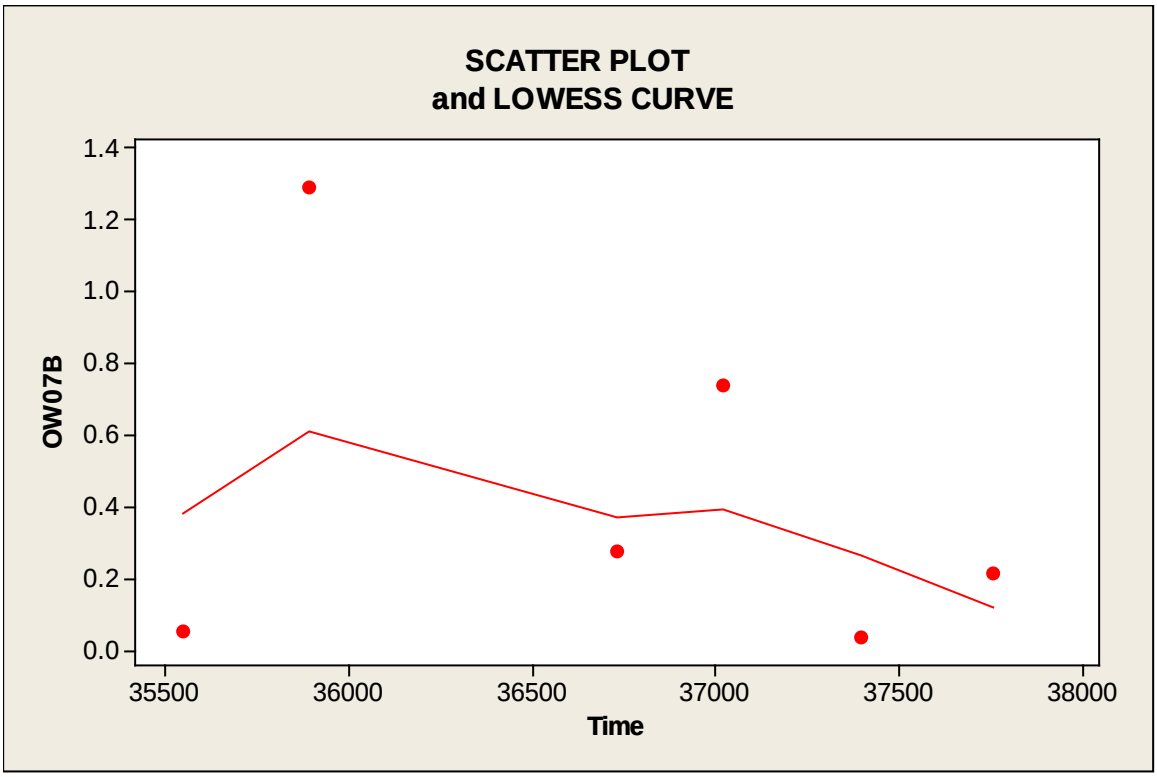
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.209808	0.403382
SPEARMAN'S RHO	0.212700	0.396781
KENDALL'S TAU_A	0.117647	0.519327
KENDALL'S TAU_B	0.118033	0.519327


Scatterplot of OW06B vs Date
OW06B
1.0
0.8
0.6
0.4
0.2
0.0
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

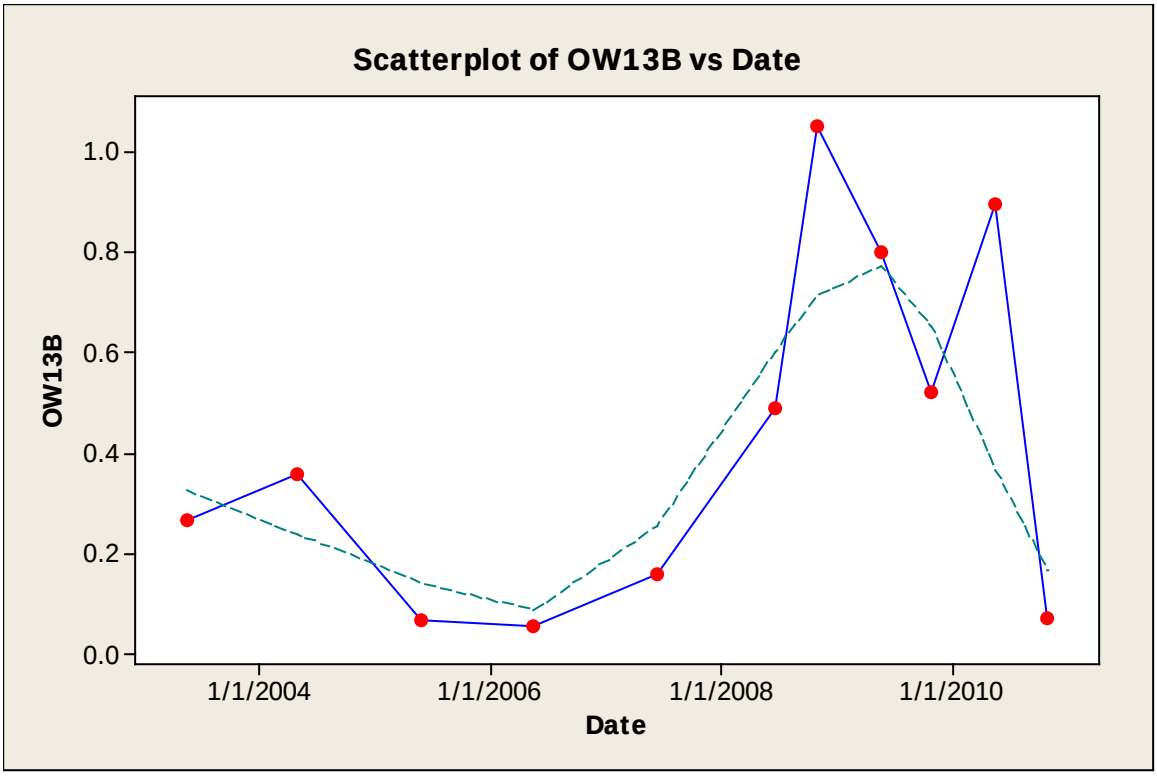

SCATTER PLOT
and LOWESS CURVE
OW06B
1.0
0.8
0.6
0.4
0.2
0.0
35000
36000
37000
38000
39000
40000
41000
Time

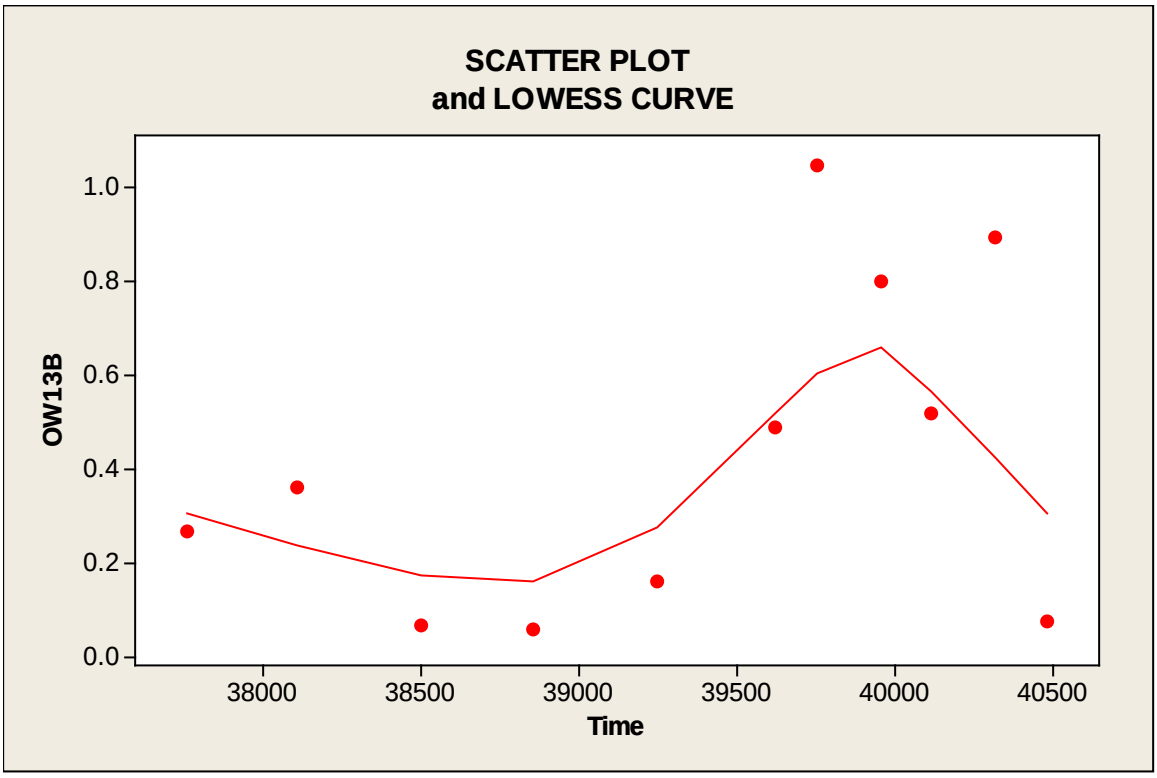
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.292467	0.238906
SPEARMAN'S RHO	0.379969	0.119864
KENDALL'S TAU_A	0.261438	0.139330
KENDALL'S TAU_B	0.262296	0.139330


Scatterplot of OW07B vs Date
OW07B
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
Date

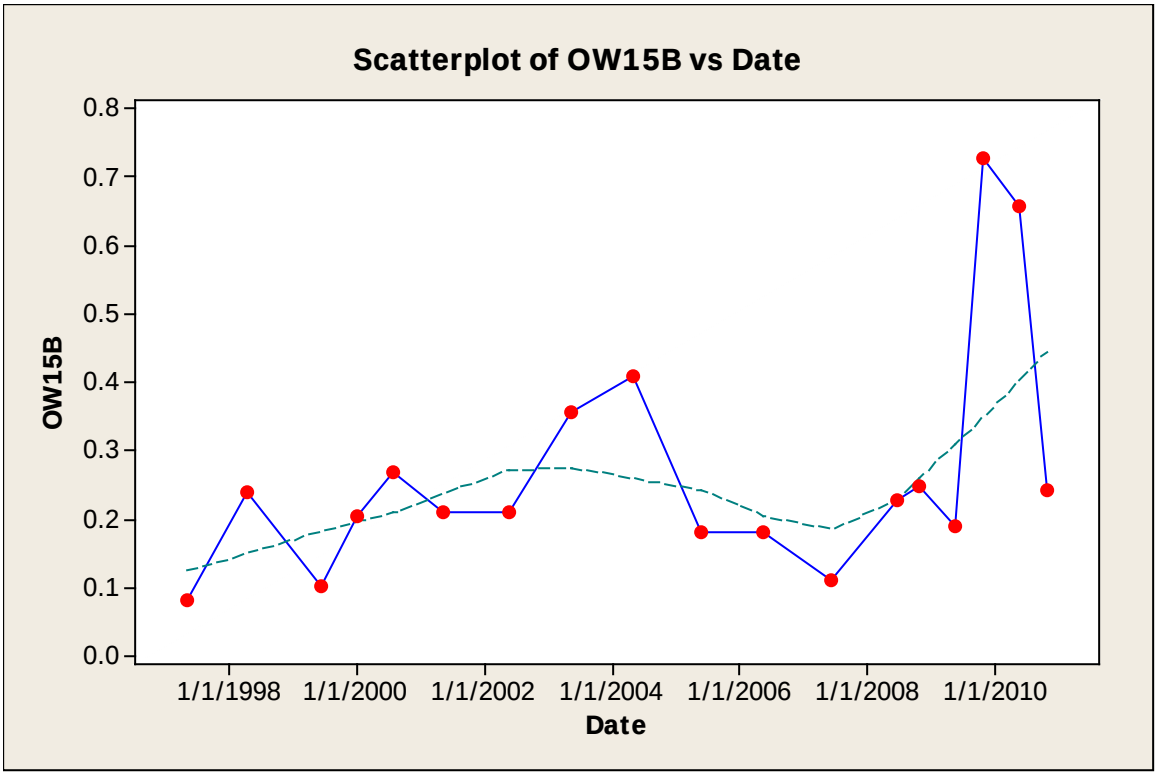

SCATTER PLOT
and LOWESS CURVE
OW07B
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
35500
36000
36500
37000
37500
38000
Time

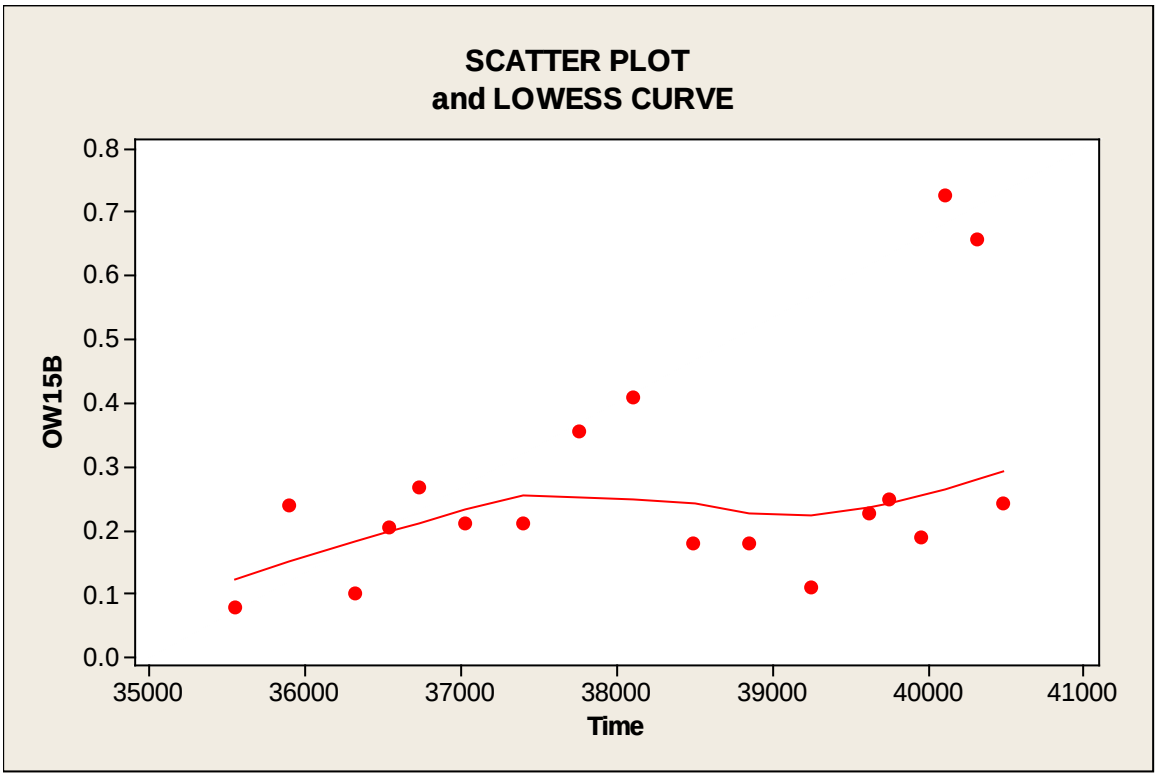
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.317048	0.540362
SPEARMAN'S RHO	-0.257143	0.622787
KENDALL'S TAU_A	-0.200000	0.707114
KENDALL'S TAU_B	-0.200000	0.707114


Scatterplot of OW13B vs Date
OW13B
1.0
0.8
0.6
0.4
0.2
0.0
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

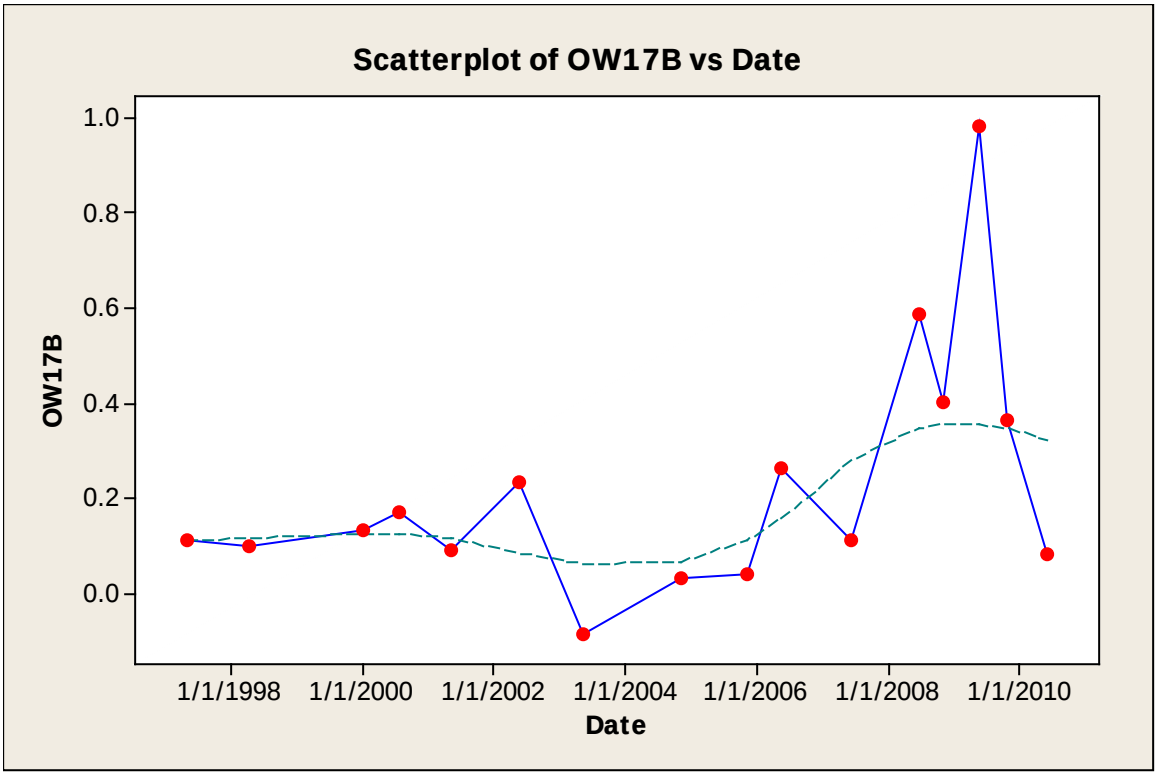

SCATTER PLOT
and LOWESS CURVE
OW13B
1.0
0.8
0.6
0.4
0.2
0.0
38000
38500
39000
39500
40000
40500
Time

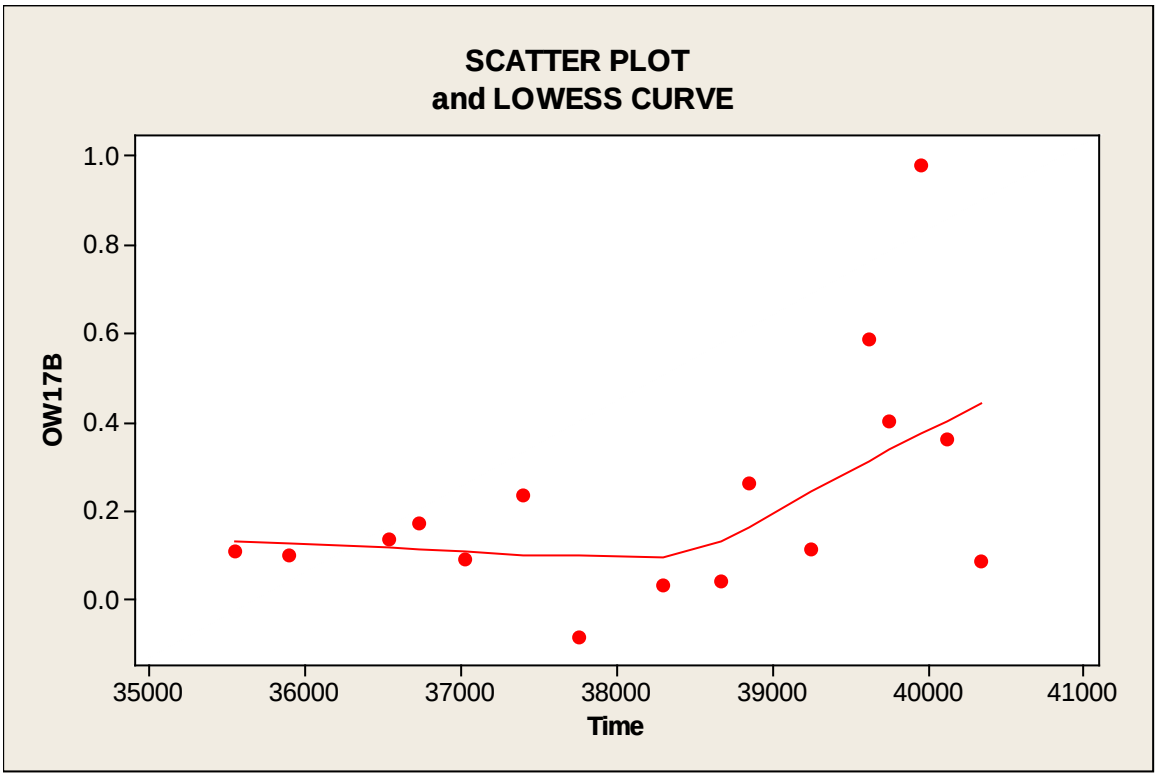
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.452119	0.162671
SPEARMAN'S RHO	0.427273	0.189944
KENDALL'S TAU_A	0.309091	0.212912
KENDALL'S TAU_B	0.309091	0.212912


Scatterplot of OW15B vs Date
OW15B
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

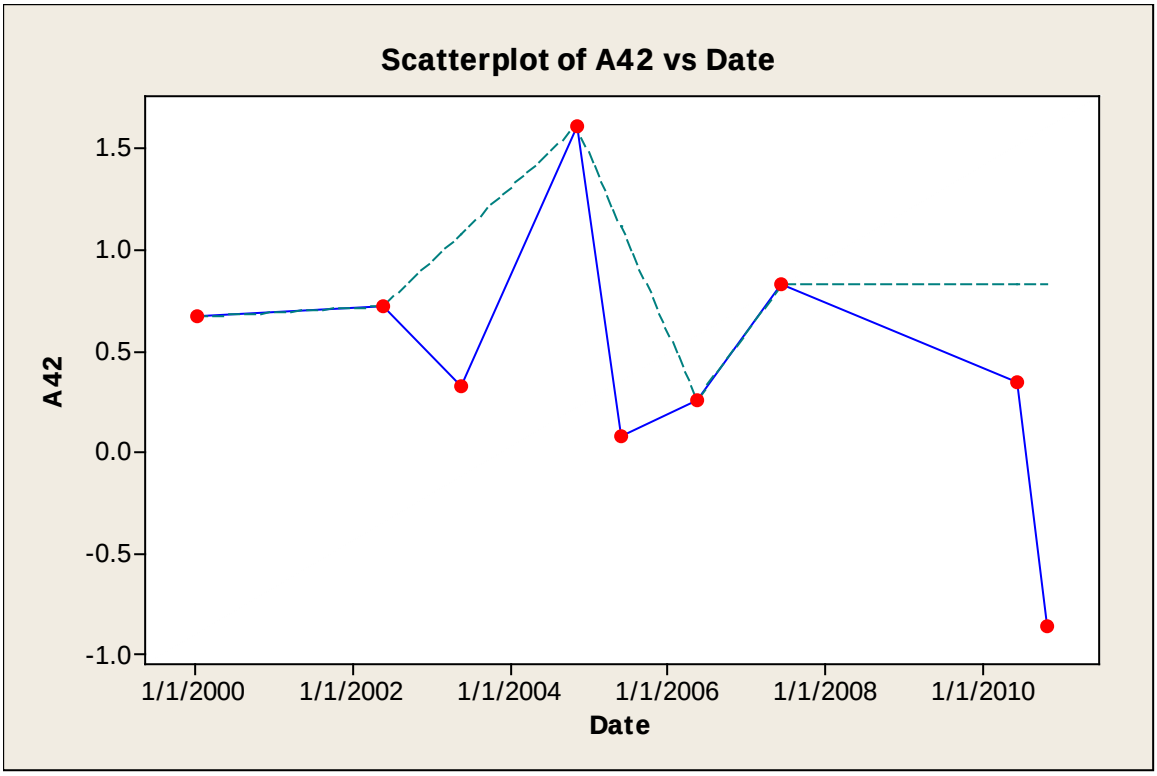

SCATTER PLOT
and LOWESS CURVE
OW15B
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
35000
36000
37000
38000
39000
40000
41000
Time

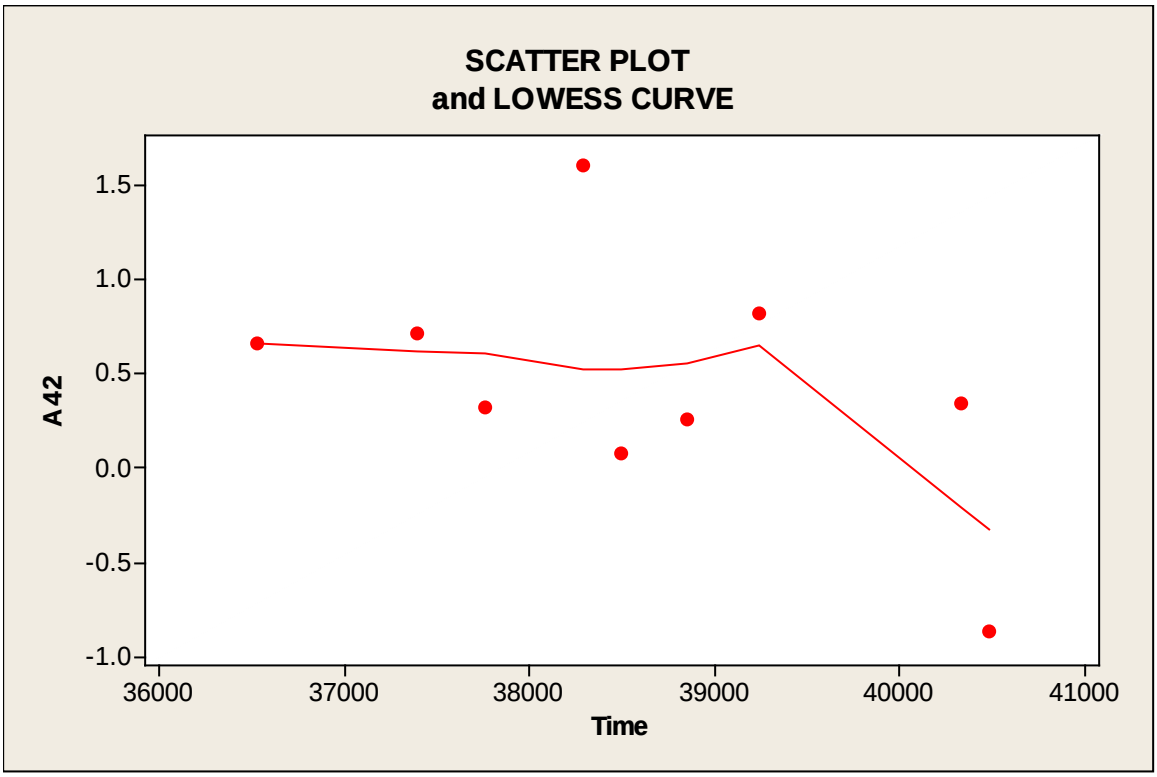
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.458179	0.0558514
SPEARMAN'S RHO	0.418389	0.0839992
KENDALL'S TAU_A	0.307190	0.0810059
KENDALL'S TAU_B	0.309217	0.0810059


Scatterplot of OW17B vs Date
OW17B
1.0
0.8
0.6
0.4
0.2
0.0
1/1/1998
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

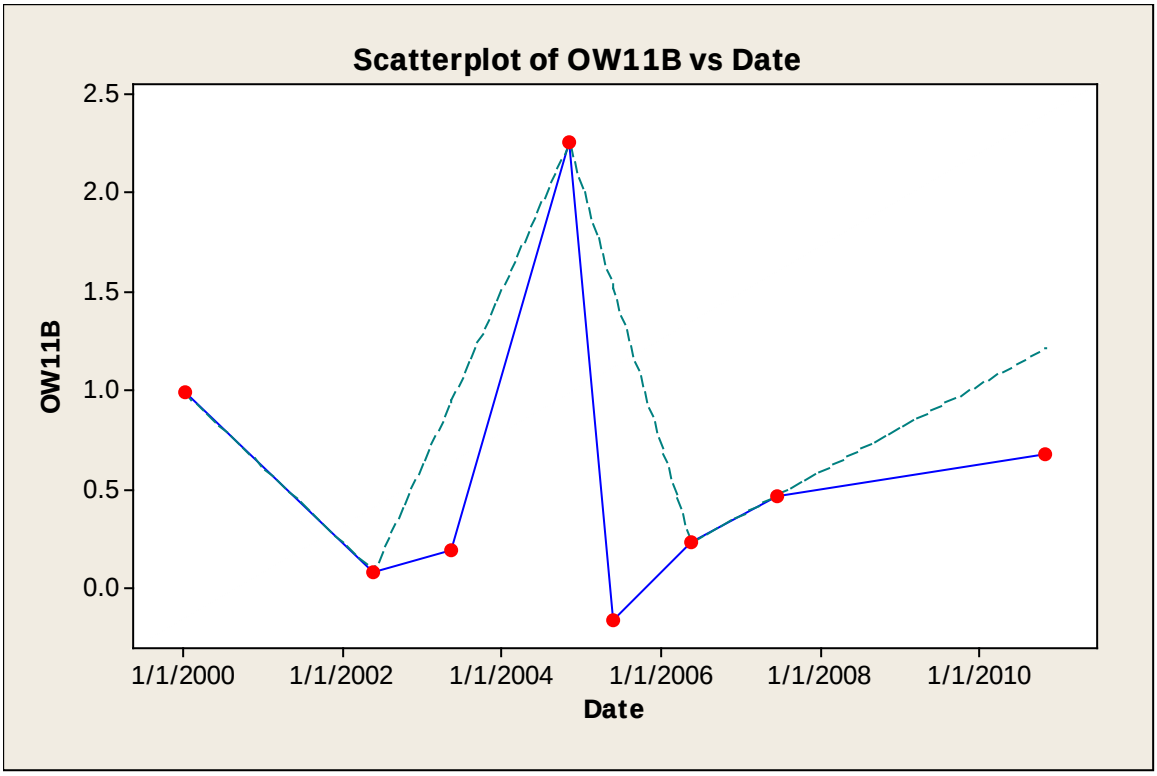

SCATTER PLOT
and LOWESS CURVE
OW17B
1.0
0.8
0.6
0.4
0.2
0.0
35000
36000
37000
38000
39000
40000
41000
Time

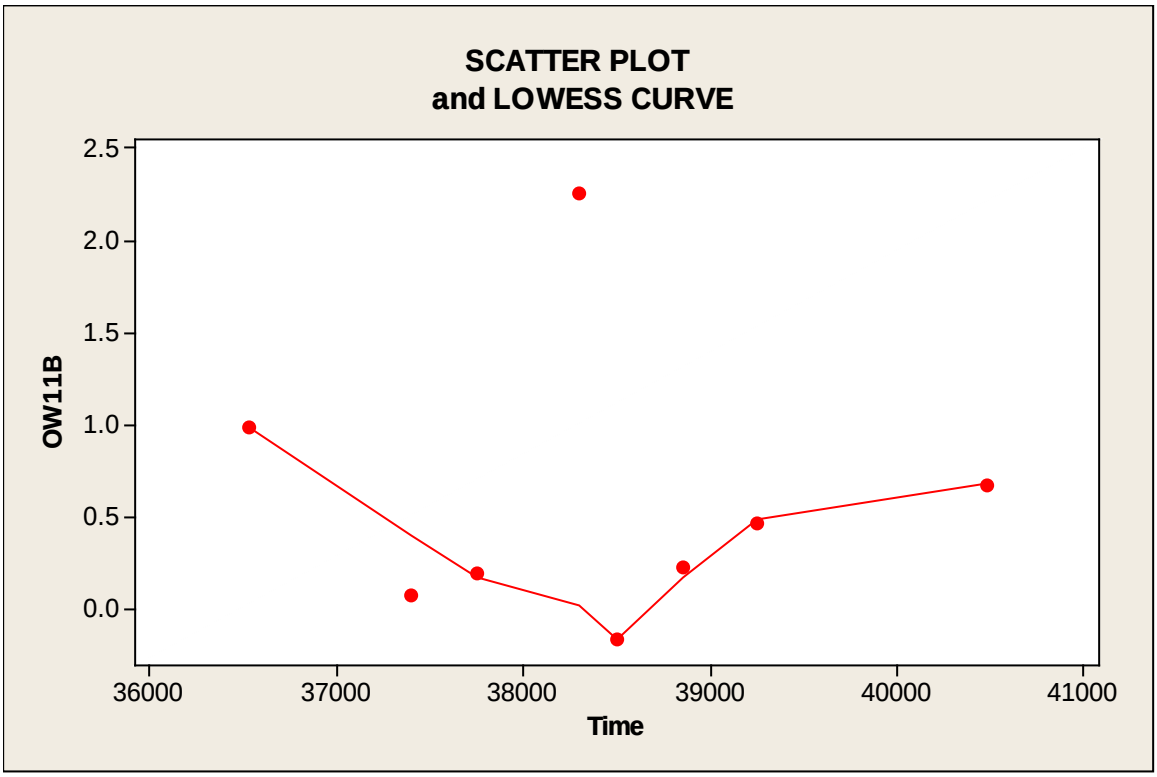
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.488908	0.054631
SPEARMAN'S RHO	0.364706	0.164868
KENDALL'S TAU_A	0.283333	0.137347
KENDALL'S TAU_B	0.283333	0.137347


Scatterplot of A42 vs Date
A42
1.5
1.0
0.5
0.0
-0.5
-1.0
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date


SCATTER PLOT
and LOWESS CURVE
A42
1.5
1.0
0.5
0.0
-0.5
-1.0
36000
37000
38000
39000
40000
41000
Time

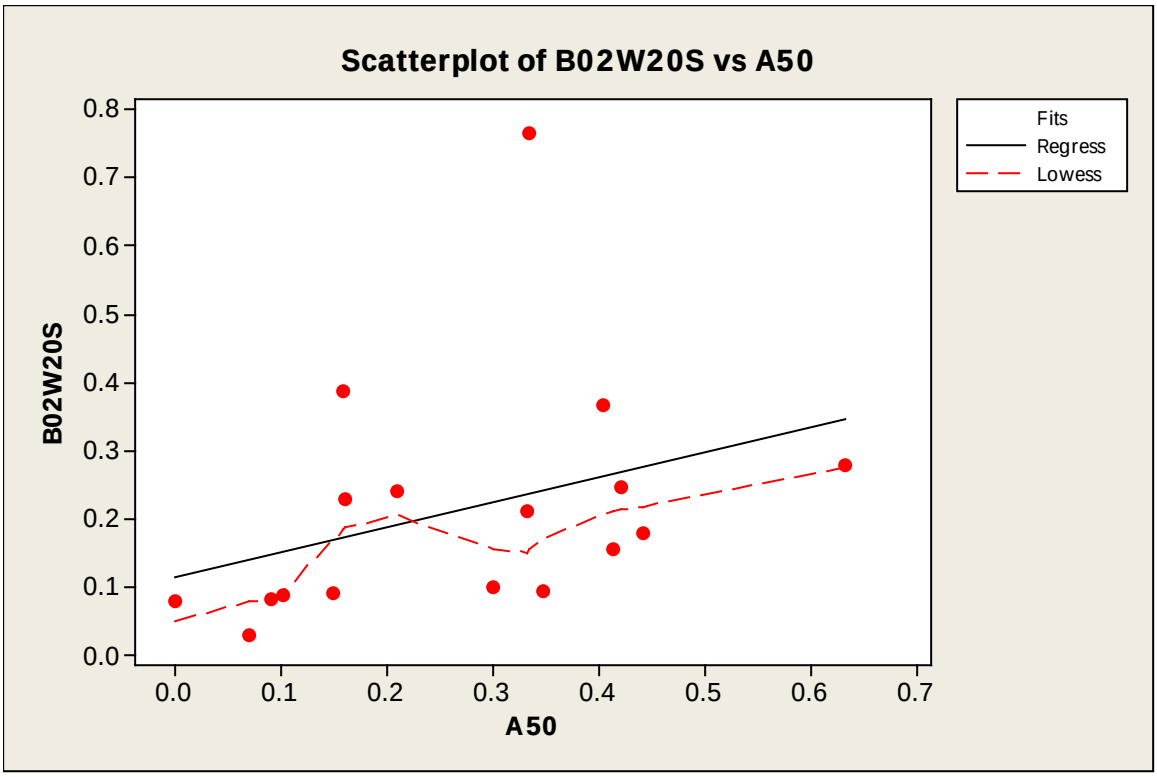
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.498685	0.171779
SPEARMAN'S RHO	-0.400000	0.286105
KENDALL'S TAU_A	-0.277778	0.348083
KENDALL'S TAU_B	-0.277778	0.348083


Scatterplot of OW11B vs Date
OW11B
2.5
2.0
1.5
1.0
0.5
0.0
1/1/2000
1/1/2002
1/1/2004
1/1/2006
1/1/2008
1/1/2010
Date

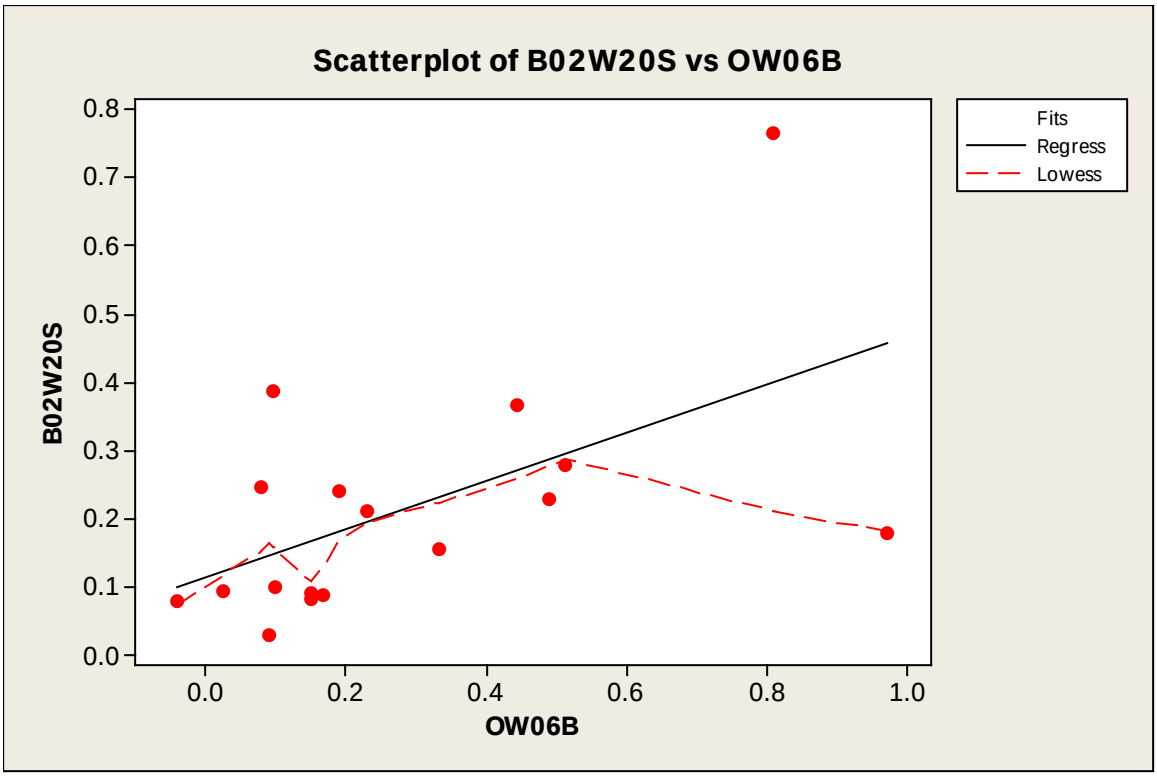

SCATTER PLOT
and LOWESS CURVE
OW11B
2.5
2.0
1.5
1.0
0.5
0.0
36000
37000
38000
39000
40000
41000
Time

CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	-0.048813	0.908622
SPEARMAN'S RHO	0.047619	0.910849
KENDALL'S TAU_A	0.142857	0.710523
KENDALL'S TAU_B	0.142857	0.710523

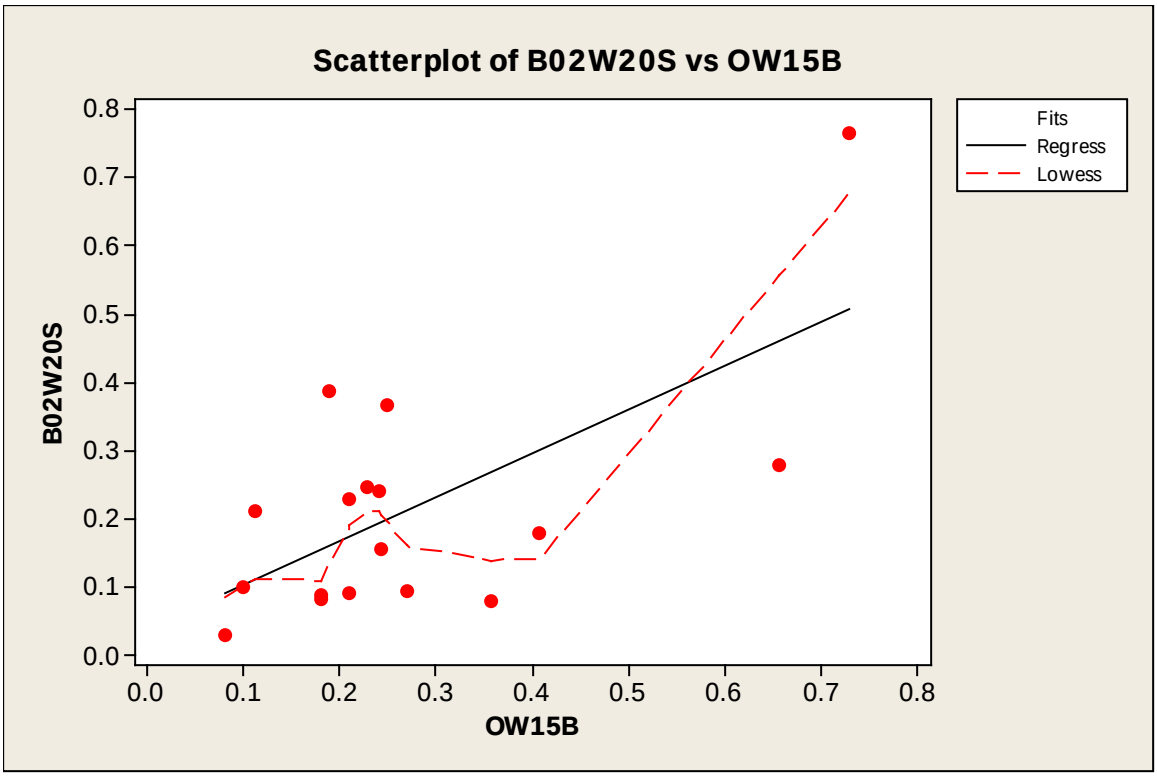
Supplementary Evaluation of Correlations Between Select Wells



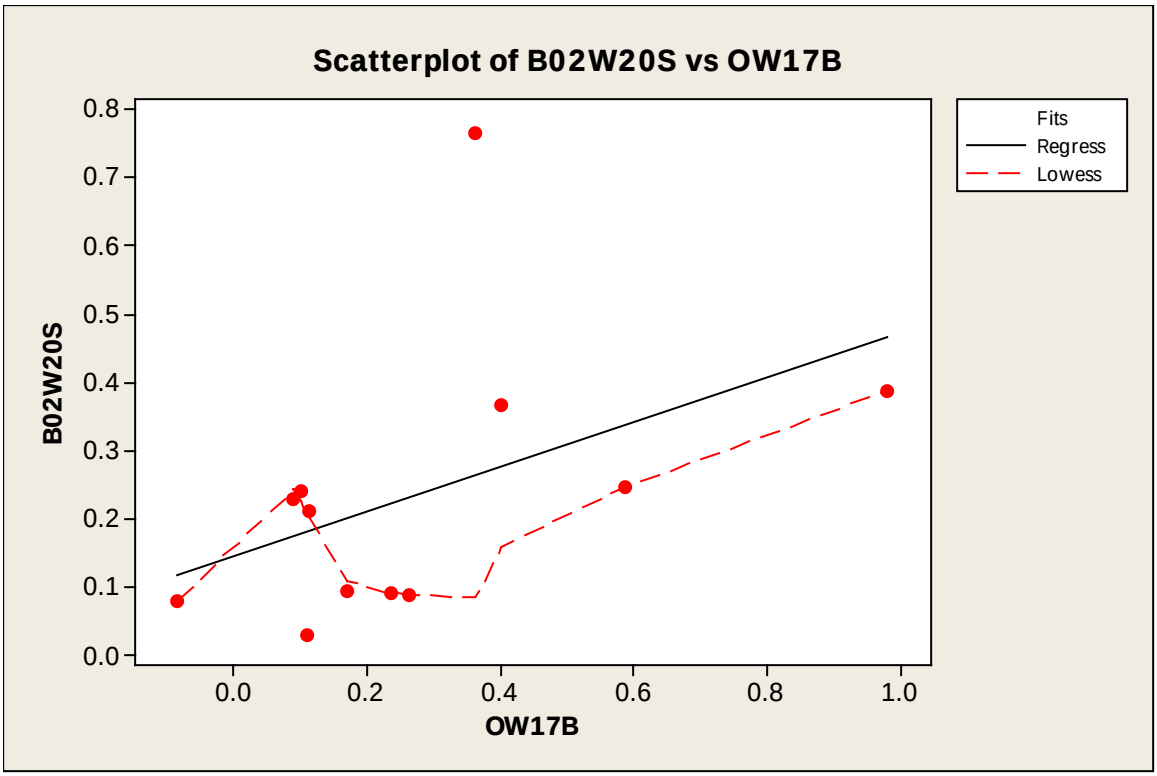
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.352773	0.164873
SPEARMAN'S RHO	0.617647	0.008242
KENDALL'S TAU_A	**0.470588**	**0.009455**
KENDALL'S TAU_B	0.470588	0.009455



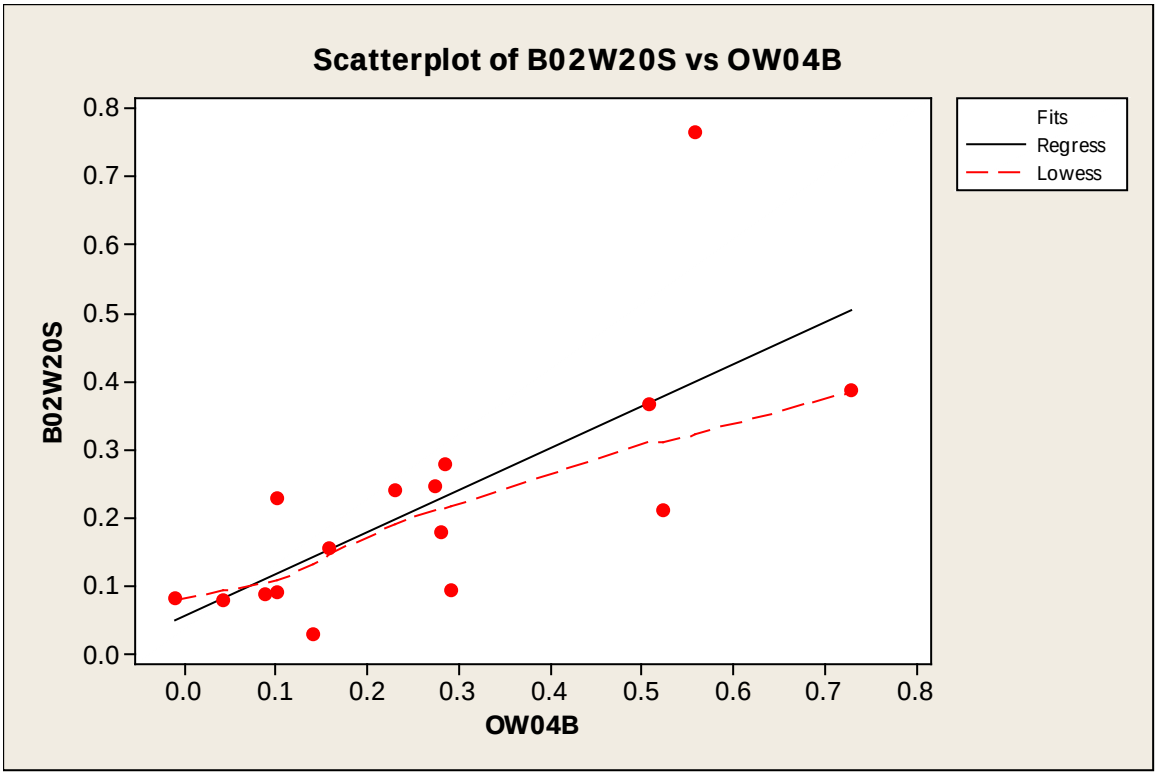
CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.562917	0.0186404
SPEARMAN'S RHO	0.510117	0.0364340
KENDALL'S TAU_A	**0.375000**	**0.0392667**
KENDALL'S TAU_B	0.376386	0.0392667



CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.651642	0.0045949
SPEARMAN'S RHO	0.428221	0.0863701
KENDALL'S TAU_A	**0.323529**	**0.0760142**
KENDALL'S TAU_B	0.325935	0.0760142



CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.460017	0.132390
SPEARMAN'S RHO	0.615385	0.033170
KENDALL'S TAU_A	0.363636	0.114757
KENDALL'S TAU_B	0.363636	0.114757



CORRTYPE	CORR_VAL	P_VALUE
PEARSON'S R	0.724395	0.0015050
SPEARMAN'S RHO	0.778514	0.0003814
KENDALL'S TAU_A	**0.625000**	**0.0008528**
KENDALL'S TAU_B	0.627621	0.0008528

	B02W20S	**A50**	**OW04B**	**OW06B**	OW13B	OW15B
A50	0.353					
	0.165					
OW04B	**0.724**	0.399				
	0.002	0.126				
OW06B	**0.563**	**0.522**	0.282			
	0.019	**0.032**	0.273			
OW13B	**0.539**	0.470	**0.625**	0.233		
	0.087	0.145	**0.040**	0.490		
OW15B	**0.652**	**0.410**	0.226	**0.642**	0.376	
	0.005	**0.091**	0.399	**0.005**	0.254	
OW17B	**0.460**	0.178	0.255	0.069	0.602	0.037
	0.132	0.562	0.379	0.823	0.152	0.904

Cell Contents: Pearson correlation
P-Value

Wells B02W20S, A50, OW06, OW15B, OW17B, OW04B, OW13B exhibit positive correlations with one another at the 90% level of confidence. It is noted that wells B02W20S, A50, OW06, OW15B, OW17B exhibit either increasing trends or possible increasing trends; wells OW04B and OW13B have positive correlation coefficients. This suggests that the concentration of Ra-226 is increasing with time overall.

APPENDIX 12-A

Knolls Atomic Power Laboratory (KAPL) Waste Research

KAPL Historical Assessment

KAPL Contact:
Jim Robillard
Knolls Atomic Power Laboratory
PO Box 1069
Schenectady, NY 12301-1069
(518) 395-6366
Robill@KAPL.gov

I. Chronology

A. 1952

i. Wastes from Knolls Atomic Power Lab (KAPL) (Schenectady, NY) comprising spent fuel rods, reactor waste, and combustible material was burned on-site. Animal carcasses from radiation safety tests conducted at the University of Rochester (Rochester, NY) were reburied on NFSS. By January 1952, six car loads of contaminated combustible waste had been unloaded from KAPL.

ii. Storage of radioactive fission products (Ce-137 and Plutonium) from Knolls Atomic Power Lab began on January 22, 1952 through September 9,1954 (7 shipments, estimated 700,000 lbs, 16 box cars, included 676 boxes and 394 slurry drums) [EAEST, 1998]. A large portion of the KAPL waste was associated with the Separations Process Research Unit (SPRU), an AEC pilot plant for developing methods for extracting fissionable material from irradiated uranium. In the SPRU plant, irradiated uranium from Hanford was dissolved and processed to extract plutonium and uranium. The resulting liquid waste was processed by evaporation to concentrate most of the radioactivity in slurry form. The radioactive slurry would contain fission product radioactivity as well as some residual plutonium not extracted by the SPRU process. This slurry would have accounted for most of the radioactivity in the KAPL waste. Of all the waste shipped from KAPL, only a small fraction of the containers had waste containing residual plutonium associated with the SPRU work, which was a small fraction of the total radioactivity.

1. initially stored near RR spur N of present NFSS land in bldg 30 ft north of M Street
2. also stored in Bldg 845, later Bldg 401 then Bldg 443-448

The following material was shipped from KAPL to LOSA on January 22, 1952:

2	1½ x 1½ x 2 ft. waste boxes
1	2 x 2 x 2 waste box
1	2 x 2 x 8 ft. waste box
1	4 x 6 x 12 waste box
202	4 x 4 x 4 waste boxes
31	30 gal. s/s drums
61	55 gal. s/s drums
99	70 gal. s/s drums
217	55 gal. c/s drums
9	275 gal. storage tanks

The following material was shipped from KAPL to LOSA on October 16, 1952:

26	4 x 4 x 4 boxes containing plastic tubing, contaminated clothing and rubbers, assorted pieces of steel, galvanized copper, and stainless steel pipe and contaminated concrete, dirt and paper ashes
9	boxes pipe
6	boxes ashes
5	boxes metal duct work
2	boxes machinery
84	boxes baled paper, scrap glass-fiber and CWS filters, scrap metal, glass dirt, ashes, rubbers and clothing
6	bales honeycomb
29	bales CWS filters
15	bales paper
7	bales scrap

The following material was shipped from KAPL to LOSA on August 27, 1953:

97	4 x 4 x 4 boxes misc. contaminated waste material
13	pallets of contaminated baled paper
2	boxes 42 x 26 x 26 contaminated waste material
1	box 89 x 26 x 48 misc. contaminated waste material
1	box 50 x 34 x 36 misc. contaminated waste material
1	box 66 x 30 x 46 misc. contaminated waste material
38	pallets, 4 ballels per pallet, of liquid contaminated waste material
26	pallets contaminated filters
21	boxes assorted sizes of misc. contaminated waste material
2	pallets (5 gal. cans) contaminated waste material
22	pallets (55 gal. drums) contaminated slurry
1	pallet (15 gal. drums) contaminated liquid waste material
96	drums liquid contaminated waste

The following material was shipped from KAPL to LOSA on April 16, 1954:

80	4 x 4 x 4 boxes misc. contaminated waste material
16	boxes 4 x 4 x 4 containing baled paper
42	boxes misc. contaminated waste

The following material was shipped from KAPL to LOSA on April 23, 1954:

38	boxes 4 x 4 x 4 misc. contaminated waste material

The following material was shipped from KAPL to LOSA on June 4, 1954:

36	4 x 4 x 4 misc. contaminated waste material
6	pallets, four 55 gal. drums each pallet, contaminated oil
12	boxes baled paper
3	boxes filters
7	4 x 4 x 4 misc. scrap

The following material was shipped from KAPL to LOSA on September 9, 1954:

14	pallets, 4 ballels per pallet, contaminated waste material
39	boxes 4 x 4 x 4 misc. contaminated waste material
2	boxes 4 x 2 misc. contaminated waste material
1	box 6 x 6 misc. contaminated waste material
17	boxes 4 x 2 CWS filters
1	box 6 x 6 x 8 containing desk and tools from RML
1	box 6 x 4 x 8 containing 1 bench, tools, and misc. items from RML

It is estimated that 408.08 Ci of mixed fission products and 0.63 Ci of Pu was shipped. This 1954 KAPL curie estimate is primarily based on the amount of slurry shipped and samples of the slurry material. The curie content of the boxes was based on an assumed average dose rate of 12 mrem/hr on the box. The curie content of the boxes is assumed to be entirely mixed fission products.

B. 1953

i. July 1953: AEC conducted a radiation survey of waste and scrap stored at LOSA. The purpose of the survey was to dispose of land excess to the requirements of the AEC and to reconfigure LOSA as a smaller facility. KAPL waste comprised stainless steel drums containing 70% solid and 30% liquid including plutonium and mixed fission product wastes from a separator pilot plant; general laboratory and laundry wastes; contaminated paper, piping, and other solid waste, and ash from the burning of paper wastes. There were also approximately 2,000 empty drums that had contained K-65 radium cake. Other waste was in piles and some buried including carcasses from the U of R. It was concluded that the KAPL waste located in the boiler house and blockhouse should also been moved to other locations within the new boundaries.

C. 1955-1958

i. August 1954: A shipment of KAPL waste to LOSA included 21 boxes of unburnable waste, five boxes of CWS filters, three boxes of glass wool filters, four bales of paper, nine 55-gallon drums containing plutonium, and four drums of slurry. The waste was originally stored next to a railrpad spur, 30 feet north of M street (just north of NFSS). As a result of the 1971 USAEC survey, cs-137 contamination was founding 3 spots. The waste was then moved to the Baker Smith area (where cs-137 was again detected).

ii. 1954-1958: Hooker undertook major cleanup of site. Cleanup included consolidation of material to the AEC site, repackaging of KAPL wastes, drumming of ashes from contaminated combustibles, and shipment of these wastes to burial grounds at the Oak Ridge National Laboratory. The KAPL waste consisted of approximately half a carload of drummed, contaminated evaporator bottoms to be shipped to Oak Ridge for burial. The combustible low-level KAPL waste was planned to be burned and the ashes sent to Oak Ridge for burial. The non-combustible contaminated waste was also planned to be sent to Oak Ridge for burial. No plutonium-bearing waste or unmarked waste was scheduled to be burned. The location of the burn site has not been identified, although was thought to be done on a cement pad or in the incinerator (Bldg 419, now on Modern, former VP N/N').

iii. In 1957, 38,500 ft^3 of Knolls Atomic Power Lab waste in Bldg 446 and 448 sent to Oak Ridge for disposal [The Aerospace Corporation, 1982]

iv. December 26, 1957: It becomes necessary to dispose of contaminated KAPL wastes stored at LOSA, which are of two major types. There are several hundred 4'x4'x4' wooden boxes containing combustible and non-combustible solids. Hooker Chemical was to burn the combustibles, thereby, reducing the waste volume sent to Oak Ridge for burial. There are also some 1000 drums of evaporator slurry, generated from KAPL's wastewater treatment plant. This waste is composed of concentrated residues from chemical processes at KAPL and should be highly viscous or in a solid state. All wastes were chemically neutralized prior to being sealed in 55 gallon drums. The level of radiation att he surface of the drums is 500 mrem/hr to

1500 mrem/hr. About 200 drums are mild steel and have been exposed to the elements for several years. As a result, these drums are in extremely poor condition and it is considered imperative that these are disposed of immediately. Arrangements made for Hooker Chemical to load and ship all drums to Oak Ridge on or about January 6, 1958. One of the 5 categories of waste shipped was "Pu waste" composing of all materials contaminated with plutonium. This type of waste was put in one gallon cans and then into drums that were specially marked. Only 5 of the 134 pallets and none of the bozes listed in this shipment were plutonium waste. A total of 6-8 shipments (11-14 railcars) of KAPL waste were sent to Oak Ridge. Ash from combustibles incinerated between 1952-1958 were repackaged in 70 or 55 gallon drums and shipped to Oak Ridge.

1. Miscellaneous scrap: air filter, glass, metal, wood, etc that was contaminated with low level fission products)
2. Baled Materials: Paper, rags, gloves, etc that was contaminated with low level fission products
3. Solid Waste: high level fission products (scrap and baled materials)
4. Pu waste: All waste contaminated with Pu. This type of waste is put in one gallon cans and then into carbon steel drums.
5. Slurry: Evaporator bottoms, neutralized, and contaminated with high level fission products.
6. Oils: Degreasing fluid, cutting soils, and ashes contaminated with low level fission products

v. January 31, 1958: Three railcars of KAPL waste were scheduled to be shipped from LOOW to Oak Ridge. Hooker planned to incinerate KAPL's combustible waste and package ashes and miscellaneous non-combustibles to send to Oak Ridge.

vi. February 14, 1958: burning of Schenectady waste material scheduled.

D. 1971

i. survey by USACE and later Battelle Memorial Institute of Columbus, OH showed three hotspots for CE-137 [EAEST, 1998]

1. crates and drums of KAPL waste moved to west boundary of USACE (near Baker Smith area)
2. found elevated levels of Ce-137 in and around WWTP and drainage ditches
3. most of the KAPL waste was eventually shipped to Oak Ridge, TN

E. <u>Knolls Atomic Power Lab Waste</u> [Aerospace Corporation, 1982]

i. Semisolid neutralized radioactive waste

ii. Jan 1952-Sep 1954: crates of combustible and non combustible Knolls Atomic Power Lab Waste received at LOOW

iii. First shipment stored in Bldg 845-1, later Bldg 401 then Bldg 443-448

iv. In 1957: 38,500 ft3 of waste in Bldg 446 and 448 sent to Oak Ridge

III. Impacted Areas			
Area	Location	Impact (Initial Year of Storage)	Comments
1	Building 401	Boron 10 residue (1953) Knolls wastes including plutonium and fission products (1948)	Originally a steam plant used for Boron 10 production
13	Buildings 443-445 (Northwest Pads)	L-30 (1945), KAPL (1952), K-65 (1949), Cesium-137	Small area between West Patrol and Lutts Road

References

The Aerospace Corporation. Background and Resurvey Recommendations for the Atomic Energy Commission Portion of the Lake Ontario Ordnance Works. Washington, D.C, November 1982.

EA Engineering, Science and Technology. Final History Search Report Lake Ontario Ordnance Works (LOOW) Niagara County, New York. Sparks, Maryland, August 1998.

AIRMAIL

. Hendrix, Director, Reactor Engineering
d Technical Services Division, Schenectady
perations
Herman M. Roth, Director, Research and Development
Division, Oak Ridge Operations

December 26, 1957

KAPL WASTES STORED AT LOOS

DEL: ORB:AS

It has become necessary to dispose of the contaminated wastes from KAPL which are presently stored at the Lake Ontario Ordnance Storage Site at Niagara Falls, N.Y. These wastes are of two major types and it is planned that each will be handled in a somewhat different manner.

First, there are several hundred 4' x 4' x 4' wooden boxes containing combustible and non-combustible solids. Arrangements have been made with our contractor at Niagara Falls, the Hooker Chemical Company, to burn the combustibles and thereby reduce the total volume of these wastes prior to the shipments to Oak Ridge for burial. The Health and Safety Laboratory, NYOO determined experimentally sometime ago that this could be accomplished without significant environmental contamination. HASL will provide the necessary health physics monitoring services during these burning operations. It occurred to us that KAPL might be interested in viewing and perhaps taking some environmental monitoring measurements during these burning operations in connection with the evaluation of their own waste handling problems. If there is any such interest, arrangements can be made through F. W. Malone, Chief, Niagara Falls Branch, Lewiston, N.Y.

There are also some 1000 drums of evaporator slurry which were generated in KAPL's waste treatment plant. Arrangements have been made for Hooker Chemical Company personnel to load and ship all of these drums to Oak Ridge commencing on or about January 6, 1958. Since Hooker Chemical Company does not normally handle or ship radioactive material they will require some competent guidance in the preparation of these shipments. KAPL routinely makes similar shipments to Oak Ridge and has therefore had considerable experience with such aspects as loading to achieve maximum shielding of the more highly radioactive drums, the extent to which stacking of the drums is possible, the pertinent ICC regulations, the method of applying for special permits from the Bureau of Explosives, etc. Hooker personnel will require technical assistance from some source in preparing these shipments and since KAPL's experience is so specifically pertinent, assistance from someone like Mr. D. A. Maniari would be more helpful than that available from

MATERIALS 10

other sources not experienced with this type of shipment. Proper guidance will greatly expedite the shipment of these KAPL wastes and thereby reduce the costs involved. It would therefore be greatly appreciated if you could arrange for KAPL to provide this assistance.

Any additional information regarding these shipments may be obtained from Arthur Schoen, Research and Development Division, ORO, or Frank Malone in Niagara Falls.

ORIGINAL SIGNED BY
HERMAN M. ROTH

Herman M. Roth

CC: F. W. Malone, Niagara Falls
J. W. Ruch, ORO

5431

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
ORB:JAL

Oak Ridge, Tennessee
December 20, 1957

Union Carbide Nuclear Company
Post Office Box P
Oak Ridge, Tennessee

Attention: Dr. J. A. Swartout, Deputy Director
Oak Ridge National Laboratory

Subject: WASTE BURIAL - NIAGARA FALLS DRUMS

Gentlemen:

Confirming an informal telephone conversation with Mr. A. F. Rupp of your organization, tentative plans are being made to send one thousand drums of waste from the Niagara Falls Site to ORNL for burial.

This waste is composed of concentrated residues from chemical processes at KAPL and should be in a highly viscous or solid state. All of the waste was chemically neutralized prior to its being sealed in 55 gallon drums. The level of radiation at the surface of the drums ranges from 500 mr/hr to 1500 mr/hr.

About 200 of the drums are mild steel and have been exposed to the elements for several years. As a result these drums are in an extremely poor condition and it is considered imperative that they be disposed of immediately. It is planned to place each of these drums inside of a 65 gallon steel drum capable of containing the waste.

The Niagara Falls Branch of the AEC has been advised to make preliminary arrangements for this burial with Mr. E. J. Witkowski of ORNL.

Costs incurred by ORNL in disposaing of the drums are to be accumulated and transferred through the current account to ORO with the identification, "For ORO Activity 2170".

MATERIALS

It will be appreciated if you can accommodate this waste shipment.

Very truly yours,

[redacted]
Herman M. Roth
Director
Research and Development Division

CC: C. E. Center, UCNC (2)
R. C. Armstrong, ORO
J. W. Ruch, ORO
L. D. MacKay, ORO
N. A. Shearon, ORO
F. W. Malone, Niagara Falls

NY.17

Anthony F. Kluk

NLCO-1145 (Speci

STUDY OF RADIOACTIVE WASTE STORAGE AREAS

AT

ERDA-NIAGARA FALLS SITE

NATIONAL LEAD COMPANY OF OHIO
P. O. Box 39158
Cincinnati, Ohio 45239

Contract No. EY-76-C-05-1156

April 25, 1977

UNITED STATES ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
OAK RIDGE OPERATIONS OFFICE

A2

NY.16

[redacted]

REPORT NO. KAPL-649
Waste Disposal 04-12 T

General Electric Company
KNOLLS ATOMIC POWER LABORATORY
Schenectady, New York

WASTE DISPOSAL

Progress Report
September, October, November 1951

Prepared by Members of KAPL Staff

Special Rereview
Final Determination
Unclassified

By: K. A. Walter
Date: 1980
P. F. Brown

Operated for the
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Date: 1980
P. F. Brown

[redacted]

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[redacted]

SUMMARY

Experimental work on the pilot incinerator for contaminated combustible solids was completed and a report issued. The unit was not operated during the last quarter, except briefly, because of maintenance problems, modifications, and lack of operating personnel. A preliminary flow sheet and the design specifications for a production-type incinerator were completed. However, the final decision on whether to build this unit has not yet been made. An incinerator for contaminated combustible liquids has been designed.

During the past three months, 1,062,000 gallons of low and medium-level activity liquid waste were evaporated down to 2,140 gallons and run into drums; 92,000 gallons of higher level wastes were concentrated to a volume of 2,300 gallons and sent to permanent storage in one of the underground tanks. Over-all decontamination factors of 10^5 have been obtained on the evaporator train when operating at boil-up rates of 140 to 250 lb/hr - sq ft, a reflux rate of 9 lb/hr - sq ft, 26-in. Hg vacuum, and with solids varying between 2% and 30% in the pot of the flash column. The separator column contributed factors of only 5 to 50 to the over-all decontamination factor. An attempt will be made to improve this by packing a portion of the separator column with a Fiberglas filter.

A study of high level waste storage costs and storage requirements at KAPL is being made.

Filtration tests on laundry waste water with a sump-type filter using a cotton-felt mixture as the filter medium indicated that this filter was unsatisfactory.

In the decontamination of nitric acid by distillation, a series of runs was made with fresh feed in each case in order to eliminate the effect of the past history of the ruthenium as a variable. Straight lines of negative slope were obtained when the log of the decontamination factor was plotted against increasing pressure and acid concentration, respectively. In another series of runs, various inorganic reducing agents were added without appreciable effect in an attempt to retard the conversion of the ruthenium to the volatile form. Runs with a non-volatile tracer indicated that, under the conditions of the experiments, a much larger portion of the activity in the distillate was due to the volatile ruthenium than to entrainment.

The KAPL Radioactive Waste Committee has considered in some detail the storage of the high-level wastes from the Radioactive Materials Laboratory and has recommended that these wastes be stored in sealed cans under water. Elimination of some unnecessary filters in the G-2 ventilation system was accomplished and has resulted in a saving of several thousand dollars. Considerable time was devoted to a study of the waste handling system now in effect, especially in regard to its unification. Progress was made on the problem of ultimate disposal; it now appears that there is a good possibility that the Lake Ontario Ordnance Site, which is under the jurisdiction

Special Searches
Declassification
Unclassified
By: K. A. Walter
Date: 1980

of the AEC, may be used by KAPL for disposal of all solids except highly radioactive combustible wastes. A hand-operated paper baler of 6 cubic feet capacity has given a volume reduction of six to one on approximately 580 cubic feet of combustible waste. Baling not only saves storage space and containers but is a much less expensive operation than incineration.

The preceding report in this series is KAPL-604.

Specimen Copy
Final Determination
Unclassified
By: K. A. Walter 1980
Date: P. F. Brown

WASTE DISPOSAL

Progress Report
September, October, November 1951

INCINERATION

Pilot Incinerator

During the last three months, the pilot incinerator has been shut down most of the time for the following reasons:

1. Enlargement and revision of oxygen feed lines

2. Installation of a hold-up tank, filters, and pumps for recirculation of scrub water

3. Replacement of grates and firebrick including the necessary decontamination work

4. Shortage of operating personnel

The explosion that occurred (in the furnace and ash barrel) on August 30 was attributed to the failure of the pilot torch. A torch tip of greater flame stability was installed, and the oxygen feed valves were relocated to a position of safer access. At the same time, the lines were enlarged to increase the capacity of the system.

During this same shutdown period, the drains of the settling chamber and Pease-Anthony scrubber were revised to permit recirculation of the scrub water. The contaminated water from the scrubbers is now pumped to a 55-gallon drum where it is cooled, filtered through a sump-type filter, and pumped back to the scrubbers. This has resulted in a saving of 20% in the cost of burning a pound of waste. The incinerator cone and several steam lines were lagged at this time also.

When operations were resumed, the burning rate was found to be considerably improved. During the week ending 9/30/51, a rate of 51 pounds per hour was maintained, and the total oxygen consumption for burning 1,072 pounds in 21 hours was 15,000 cubic feet. However, it was discovered that the cone was glowing cherry red under the lagging and was being deformed. This led to the removal of the lagging and its replacement by a piece of transite shielding to permit air circulation. Burning was resumed until it was discovered that the cone and ash barrel were at red heat. Inspection of the inside of the furnace after cooling revealed burned out grates. Work was begun immediately on the replacement of the grates. The job is difficult and will be time consuming.

Special ...
Final Determination
Unclassified
By: K. A. Walter
Date: 1950
P. F. Brown

[redacted]

The backlog of combustible waste as of November 27 stands at 44,000 pounds. Although the incinerator burned only 2,900 pounds this past quarter, the waste collection rate has been decreasing and at present amounts to 450 lbs/week. (See Figure KH-9A1629.)

The final report on the development and operation of a pilot incinerator for contaminated combustible solid wastes was issued as KAPL-610.* This report covers the operational characteristics of the pilot incinerator and includes the efficiency data that were obtained for the individual pieces of equipment.

Production-Type Incinerator

A preliminary flow sheet and the design specifications for a production-type incinerator were submitted to the Plant Engineering Sub Unit. These specifications are to serve as a basis for the cost estimate and the engineering design of a production unit.

The design bases for the production unit were as follows:

1. The capacity of the unit is to be 65 lb/hr of combustible solids.

2. Air is to be used to support the combustion, although facilities are to be provided for the use of oxygen.

3. All variables are to be recorded on a central control panel wherever practical.

4. The gas discharged to the atmosphere is to contain less than the allowable limits of radioactivity for continuous breathing. These limits are:

a. 1×10^{-7} μc/1/8-hour period for fission products.

b. 4×10^{-12} μc/cc/8-hour period for alpha (where source is unknown).

5. A minimum vacuum of 5-inch H_2O is to be maintained in the furnace during a normal incineration period.

6. The train of equipment in the incinerator is to be similar to that used on the pilot unit except that it is to be redesigned for use on a production basis. Labor saving devices are to be included wherever practical.

Combustible Liquid Wastes

A drum of slightly contaminated, used hexone which had been distilled was burned in the open at the KAPL dump. Burning was accomplished in shallow pans

*KAPL-610, "A Report on the Development and Operation of a Pilot Incinerator for Contaminated Combustible Solid Wastes" by F. N. Schell.

Specific review
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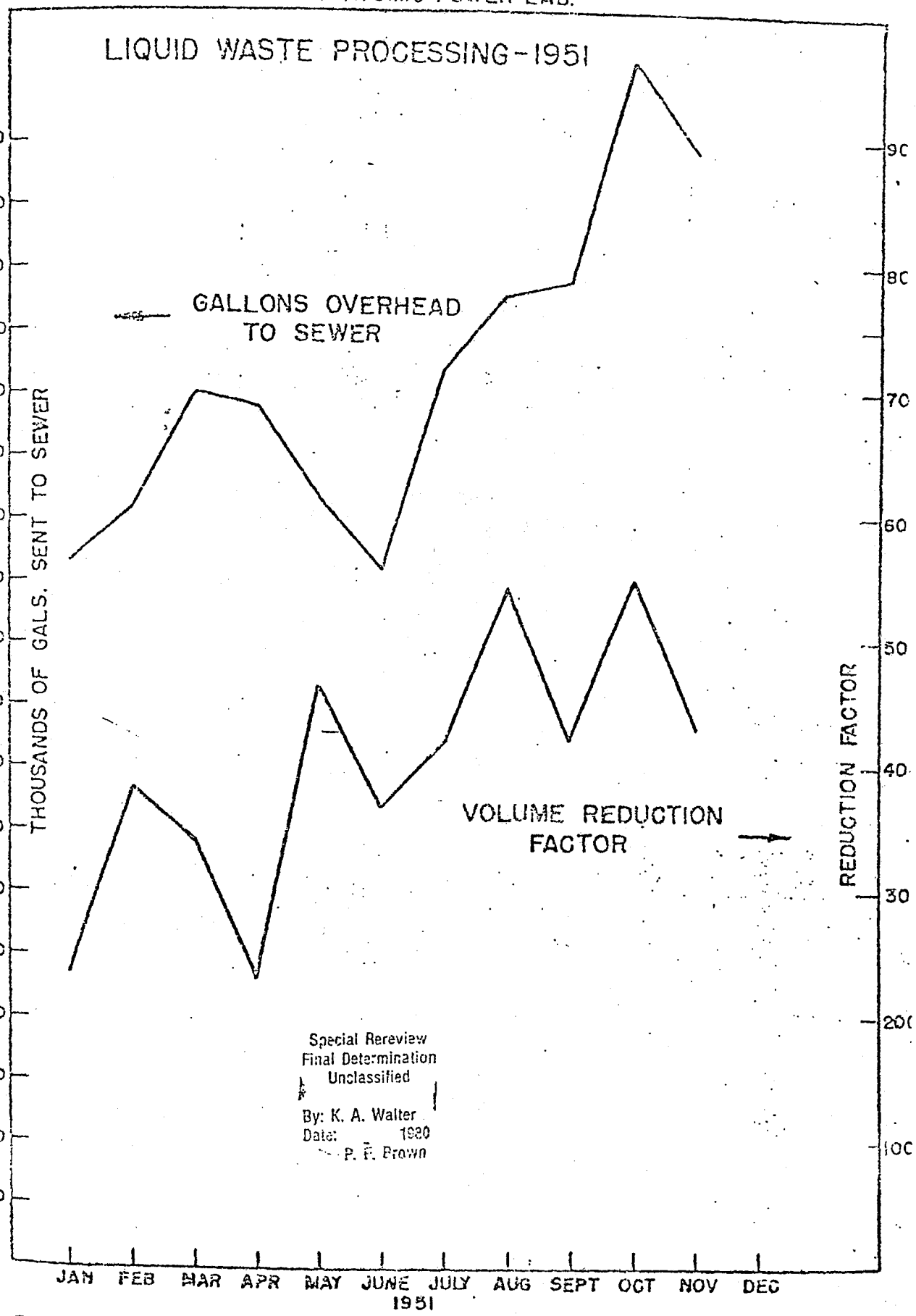
Unclassified
By: K. A. W...
Date: 1980
P. F. Brown

[redacted]

GENERAL ELECTRIC CO.
KNOLLS ATOMIC POWER LAB.



R. SIMON DECEMBER 11, 1951 KH-9A1629

[redacted]

at an approximate rate of 0.035 gal/min/ft^2. During this test, the atmosphere was sampled continuously 75 ft downwind from the point where the hexone was burned. No activity in the atmosphere was detected by the air sampler. Nearly 2000 gallons of similar hexone remain in storage on the lower level and it has been recommended that disposal be carried out in a like fashion.

In addition to the hexone mentioned above, there remain in storage at the lower level, 1500 to 1800 gallons of more highly contaminated liquid combustible wastes. This material consists of spindle oil, 30% TBP in Gulf-BT solvent, and a small volume of hexone. The activity of these wastes is such that incineration must be performed under controlled conditions. For this purpose, a combustible liquid waste incinerator has been designed and the necessary equipment has been purchased. The equipment train will consist of a Winkler L-3 domestic oil burner, a Kawanee type-1737 boiler, a CWS filter box accommodating two 600 CFM filters, and a blower manufactured by the American Blower Company.

It is planned to house the equipment in space made available by expanding the present "hot" incinerator building.

LIQUID WASTE DISPOSAL BY EVAPORATION

Operations

During this quarter, approximately 1,062,000 gallons of medium and low level waste were evaporated and reduced to a volume of 2,140 gallons. A reduction factor of 500 was realized. Approximately 92,000 gallons of higher level wastes were concentrated to a volume of 2,300 gallons and sent to permanent storage in one of the underground tanks.

The following is an inventory of medium and low level waste, processed in Building H:

Date	Condensate to Sewer gal	Solids Drummed gal	Average* Radiation Per Drum mr/hr
August 21 - September 20	281,200	600	1,800
September 21 - October 20	355,950	810	810
October 21 - November 20	423,250	730	960
	1,060,400	2,140	Av 1,190

*See Figure KH-9A1631.

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Date: 1.23
P. F. Brayer

The marked increase in volume of waste processed as shown in Figure KH-9A1630 is attributed to:

1. Steam and cooling water leaks in high radiation zones in the pipe tunnel. These leaks are now being repaired.

2. Seepage into the underground waste storage tank cells. About 30,000 gallons were evaporated during the month of November.

The accuracy of the analytical results of evaporator condensate has been improved by the introduction of waxed paper cartons for use as sampling bottles. These are disposed of after one usage, thus eliminating the possibility of activity contamination by the re-use of the glass containers.

Evaporation Equipment and Tests

Over-all decontamination factors of 10^5 have been obtained on the evaporator train when operating at boil-up rates of 4000 to 7000 lb/hr (140 to 250 lb/hr - sq ft), reflux rate of 0.5 gpm, 26-in. Hg vacuum, and with solids varying between 2.0 and 30.0% in the pot of the flash column. Decontamination factors calculated for the separator column operating under the above conditions were extremely low (in the range of 5 to 50).

The process currently relied on for decontamination in the separator column is that of water scrubbing the vapor effluent from the evaporator flash column to remove entrained radioactive particulate matter. Apparently, the entrained matter is in the sub-micron size-range since the efficiency of removal by means of water scrubbing is low. Because of the overload on the evaporators at the present time, it would be extremely desirable to improve the decontamination characteristics of the separator column. This would allow the equipment to be operated at higher boil-up rates.

Recent work at the Brookhaven National Laboratory indicates that high decontamination factors (up to 10^3) can be achieved on vapor effluent from evaporators using a Fiberglas filtration process. Design data for such filters are included in the recent report BNL-121 (T-24).* Fortunately, this process can be tested in the separator column with little change in the existing equipment. It is planned to pack two of the voids between bubble cap trays with Fiberglas. Each bed will be approximately 18 inches deep and packed to a density of 5 lb/ft³. According to the Brookhaven data, using the present evaporator operating techniques and conditions, decontamination factors of 300 to 500 should then be obtained for the separator column. Perforated sheet metal will be attached to the top and bottom of the bubble cap trays concerned to contain the Fiberglas and prevent plugging of the bubble caps with this material.

*Progress Report on Waste Concentration. V. Engineering Results on the BNL Semi-Works Vapor Filtration Vapor Compression Evaporator; by R. V. Harrigan, H. M. Fried; August 15, 1951.

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Date: 30
P. F

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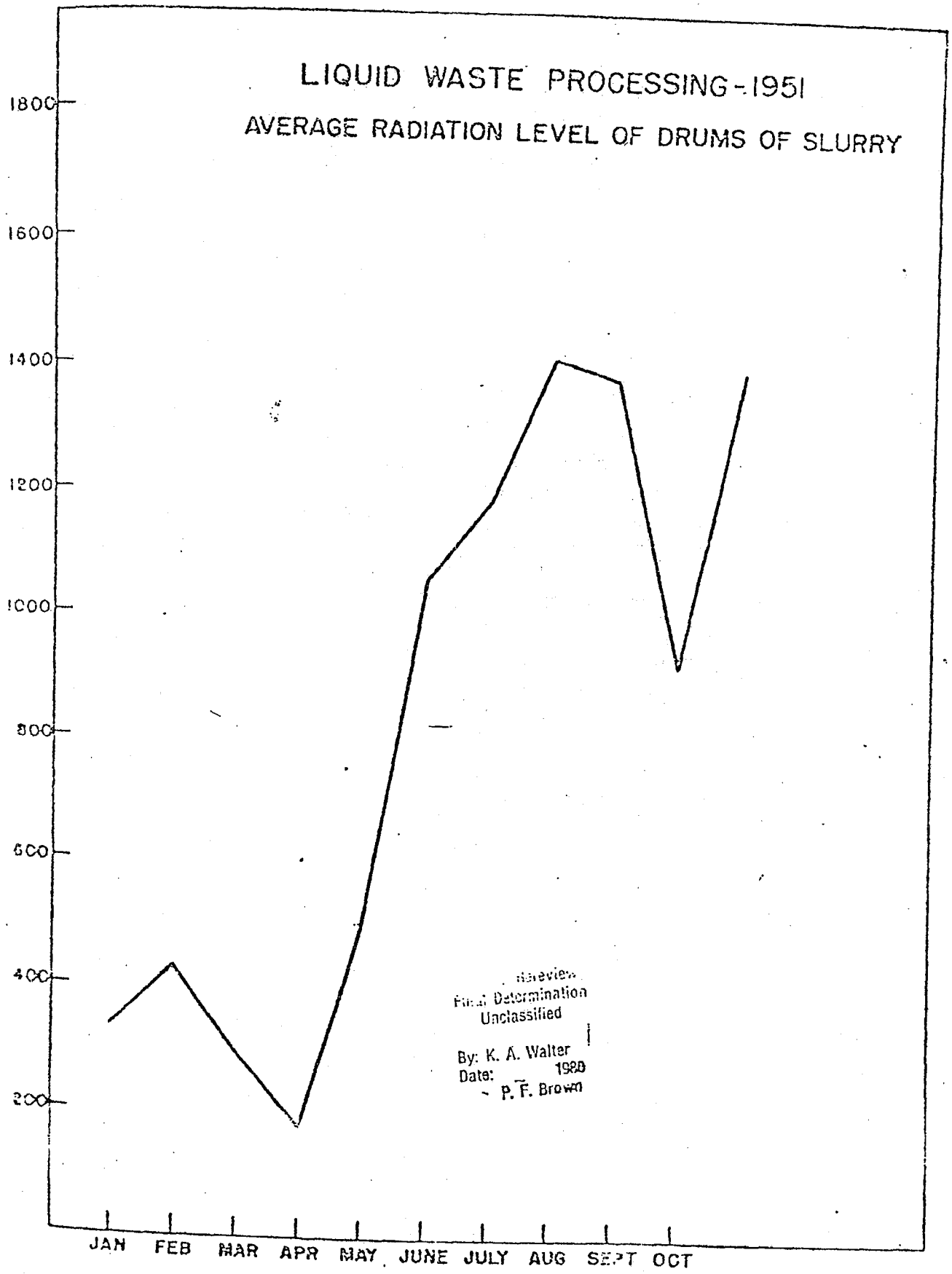

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Final Determination
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By: K. A. Walter
Date: 1980
P. F. Brown

R. SIMON

DECEMBER 11, 1951

KH-9 A1630

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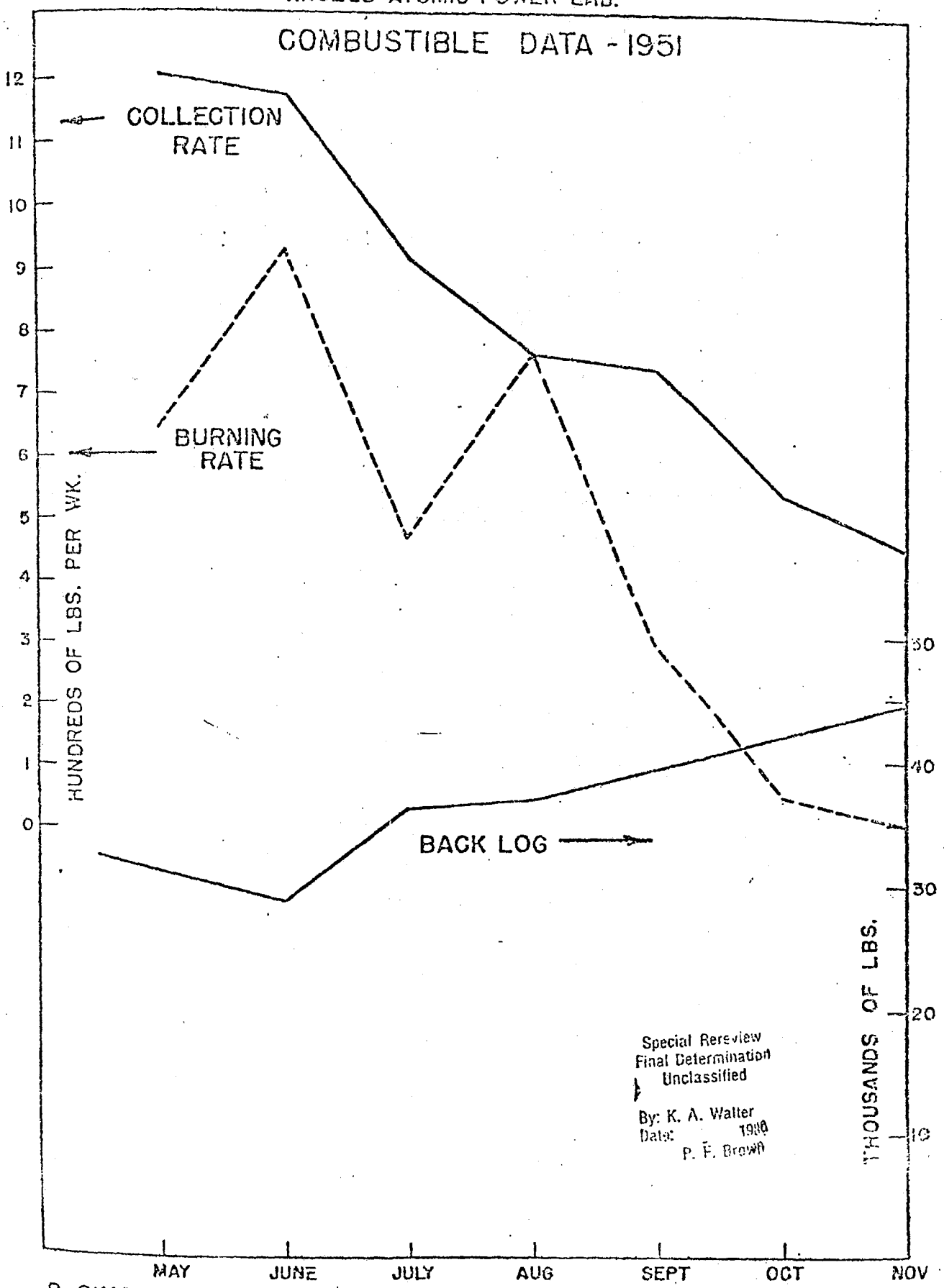
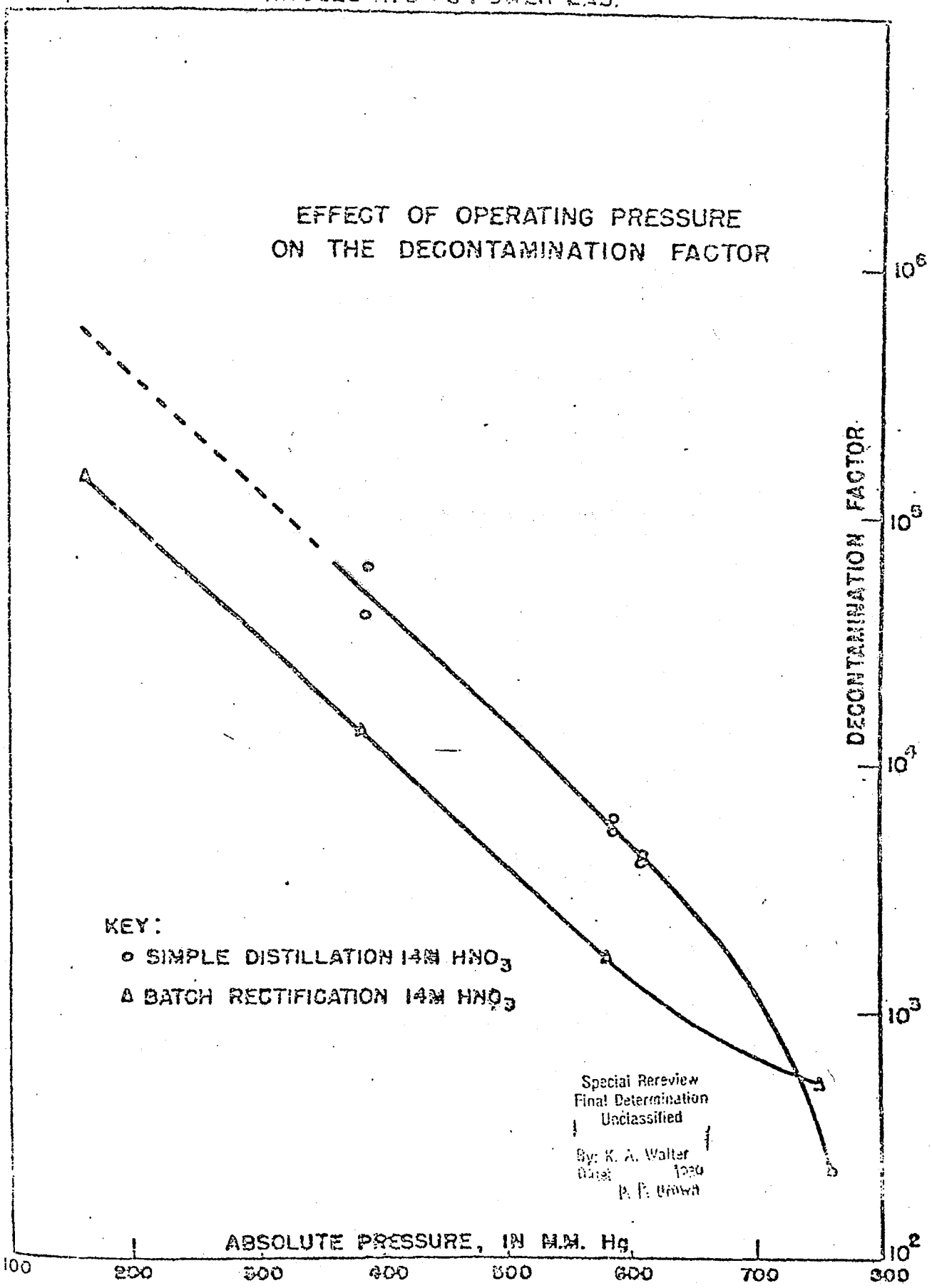


R. SIMON

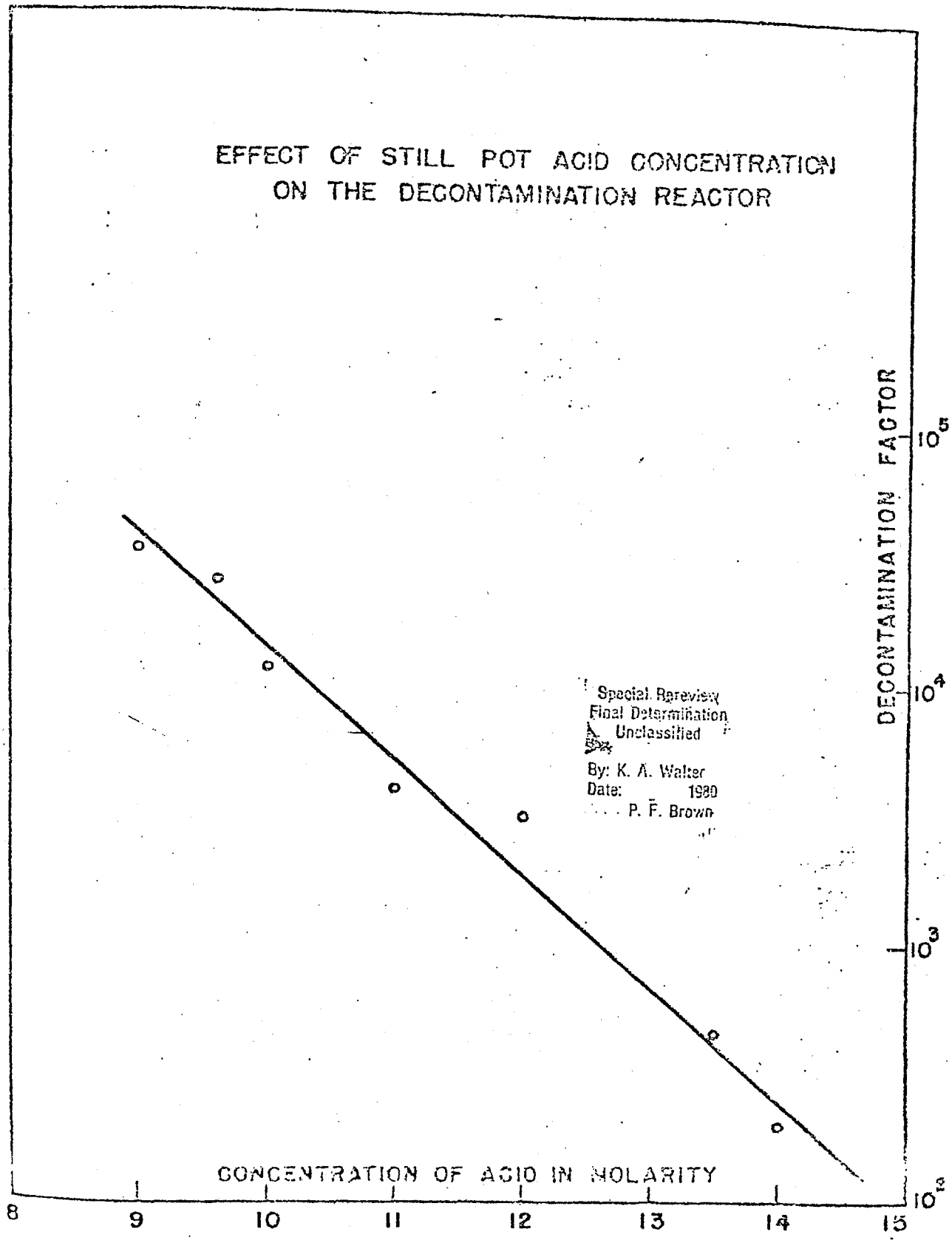
DECEMBER 11, 1951

KH-9A1631



E. MARVL NOVEMBER 30, 1951 KH-9A1590

GENERAL ELECTRIC CO.
KNOLLS ATOMIC POWER LAB.



E. MARYL NOVEMBER 30, 1951 KH-9A1591

HIGH LEVEL WASTE STORAGE

A study is being made of the high level waste storage requirements at KAPL to determine the future tankage that must be provided. The cost per gallon for the storage of these wastes at KAPL is being determined at the same time.

FILTRATION OF LAUNDRY WASTE WATER

Filtration tests of the laundry waste water were made using a Staynew SE-5 filter. The filter was found to be unsatisfactory because of the excessive load and the limited surface area of the filter. A representative sample of the laundry was found to contain 0.005% filterable particulate matter. Operation of the laundry under present conditions results in approximately ~~129~~ 120 lb/day of filterable material.

WASTE ACID RECOVERY

It was believed that the reason for the erratic results previously obtained in the decontamination of nitric acid by distillation was the fact that the ruthenium used to spike the nitric acid in these runs was constantly re-used. The repeated distillations may have had some effect on the chemical state of the ruthenium, or else the mixture may not have aged long enough to permit reaching an equilibrium between an easily oxidized form of ruthenium and some form more difficult to oxidize. The following set of runs shows the effect of aging the ruthenium in concentrated nitric acid before redistillation at one atmosphere pressure.

Run No.	Past History of Ru	Distillate Ru Concentration c/m/ml	d.f.
71	Fresh Ru feed prepared from ORNL $RuCl_3$	1875	3×10^2
64	Distilled Ru feed aged 2 hr	43	5.4×10^3
62	Distilled Ru feed aged 19 hr	182	1.3×10^3
63	Distilled Ru feed aged 22 hr	220	1×10^3
93	Distilled Ru feed aged 7 days	1540	4.55×10^2

The results showed that when the ruthenium was re-used immediately after acid distillation, the activity in the second distillate was abnormally low. If allowed to age, the ruthenium slowly reverted to

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Date: 1950
P. F. Brown

its original state and, after a period of one week had elapsed, gave results that were reproducible. A supply of ruthenium was obtained to provide enough feed for a complete series of runs using fresh ruthenium in each run; the still bottoms which were left were transferred into a common container and allowed to age for at least one week prior to re-use.

Fourteen molar nitric acid, spiked with 5.7×10^5 c/m/ml of ruthenium (fresh ruthenium in each run), was distilled in a simple still at reduced pressures as a check of results previously obtained. Acid of the same molarity was fed to the pot continually to replace that which had been distilled, in order to keep the volume and ruthenium concentration constant. The results of this series of runs and also of the previous set of batch rectification runs are shown in Figure KH-9A1590. The decontamination factors obtained are shown as a function of the pressure under which the acid was distilled. The two sets of data appear as two parallel straight lines when plotted on semi-log paper. This shows the decontamination factor as an exponential and decreasing function of the pressure over a rather wide range of values. The two curves have been calculated to have an identical slope of -0.0046 when the absolute pressure is defined in millimeters of mercury. The fact that the two curves do not coincide can be attributed to two things:

1. The source and past history of the ruthenium used in each case was different.

2. The concentration of ruthenium used in the two series of runs was different.

A study was made to determine the effect of the concentration of the acid upon the decontamination possible through a simple distillation using the fresh ruthenium. Nitric acid of various concentrations was distilled at one atmosphere pressure. Nitric acid which was calculated to be equal in molarity to that of the distillate being withdrawn was being constantly fed into the pot in order to keep the concentration of both the acid and the ruthenium in the still pot constant. The results are shown in Figure KH-9A15. The decontamination factors show a straight line relationship with the molarity of the still pot acid when plotted on semi-log paper thus defining the decontamination factor as an exponential and decreasing function of the hydrogen ion concentration. The slope of this curve was calculated to be -0.442 when the hydrogen ion in concentration of the spiked acid was defined in terms of molarity.

The temperature of the boiling acid varies with both the vapor pressure above the liquid and the ion concentration in the liquid and is implicitly defined by both these factors. However, not all the variation in ruthenium concentration of the distillate with varying acid concentration can be

Sandia Laboratory
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Unclassified
By: K. A. Walter
Date: 1980
P. F. Brown

[redacted]

accounted for by the rise in the liquid boiling point due to acid concentration. The data compiled thus far indicate that the decontamination factor is a function of both temperature and of hydrogen ion concentration. This leads to the conclusion that the problem of decontaminating the acid is one of retarding a reaction rate which results in the formation of a volatile form of ruthenium.

Substances which were thought to be possible holding reductants for ruthenium were added to the feed in an attempt to prevent the oxidation of ruthenium to the volatile form. The following table shows the results of these runs:

Run No.	Feed Composition	Ru Distillate Concentration c/m/ml	d.f.
71	Concentrated HNO_3	1870	3×10^2
72	Concentrated HNO_3 0.1 M in H_2O_2	1920	3×10^2
75	Concentrated HNO_3 0.1 M in Cr^{+++}	1050	5.1×10^2
76	Concentrated HNO_3 0.1 M in Mn^{++}	1530	3.7×10^2

There was no appreciable difference between the decontamination obtained during the runs which employed oxidation inhibitors and those which did not.

A few entrainment runs were made to determine whether the ruthenium was carried overhead by entrainment or oxidation. The acid was spiked with 2.2×10^5 c/m/ml of ruthenium and 1×10^6 c/m/ml of cesium; the latter was added as the non-volatile tracer. The acid was distilled at one atmosphere, with a boil-up rate of two milliliters per minute. The decontamination factor for the cesium was 3×10^4 while the ruthenium decontamination factor was 8.5×10^3. The concentration of the ruthenium in the overhead was about four times the amount that can be accounted for by the entrainment of the still pot contents. This definitely showed that it was not entrainment which was the cause of the greatest portion of ruthenium to be carried into the distillate under these conditions.

Special Nuclear Material Determination
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P. F. Brown

[redacted]

KAPL RADIOACTIVE WASTE COMMITTEE

Radioactive Materials Laboratory Wastes

The operations of the Radioactive Materials Laboratory are producing wastes of a higher level of radioactivity than existing storage facilities are designed to handle. The problem of safe and convenient storage for such wastes has, therefore, been considered in some detail, and it has been decided to package them in 4-in. diameter sealed metal cans and store these under water in a concrete pit. The pit will be designed with three compartments, one for loading and unloading, the second for accountable wastes or those which are being held for re-examination, and the third for dead storage of unaccountable wastes.

A pit for this purpose is now in the process of design, and the Radioactive Materials Laboratory is modifying its metal containers to make them water tight and heavy enough to sink.

G-2 Filters

An investigation of the need for CWS filters in the exhaust for the general ventilation system for Building G-2 (Separations Process Research) has disclosed that these perform no useful function in preventing the dissemination of radioactivity to the atmosphere. These filters (fifty-four in number) have, therefore, been removed with the concurrence of the Health Physics Unit and Process Operations Sub-Unit. The saving will amount to about $3,100 per year.

Waste Handling Organization

The present system for handling liquid and solid radioactive wastes at KAPL has suffered somewhat from a rather wide dispersion of responsibility and lack of sharply defined statements of function and duties. This problem has been studied intensively during October and November by the Radioactive Waste Committee and recommendations are about to be made on means of unifying the various functions involved in handling radioactive wastes.

Ultimate Disposal

Since ultimate disposal of radioactive wastes is not and will not be practiced at the KAPL Site, the problem of what to do with steadily accumulating quantities of such materials has become increasingly important. Contact has been maintained with the AEC during the past few months with a view toward providing for shipment of KAPL wastes to a remote site. More recent developments have indicated a good possibility that the Lake Ontario Ordnance Site may be used by KAPL for disposal of all but highly radioactive combustible wastes. The Committee is at present attempting to consummate arrangements.

Special Review
Final Determination
Unclassified
By: K. A. Walter
Date: 1980
P. F. Brown

Department of Energy
Schenectady Naval Reactors Office
Post Office Box 1069
Schenectady, New York 12301-1069

REC&SD:DAD05-27

AUG 1 0 2005

Mr. Stephen Gavitt
Assistant Bureau Director
Bureau of Environmental Radiation Protection
New York State Department of Health
547 River Street
Troy, New York 12180-2166

Dear Mr. Gavitt:

Subject: **KAPL RADIOACTIVE WASTE INFORMATION RELATED TO THE LAKE ONTARIO ORDNANCE WORKS**

In our telephone conversation of July 8, 2005, you requested information and available documents on Knolls Atomic Power Laboratory (KAPL) radioactive waste that was stored at the Lake Ontario Ordnance Works (LOOW) during the 1950s. In particular, you were interested in any records documenting that the KAPL waste was shipped from LOOW to Oak Ridge. I have attached the documents we have located that are responsive to your request.

For background, from 1952 to 1954, KAPL shipped radioactive waste to LOOW as directed by the Atomic Energy Commission (AEC) and later the Department of Energy. The limited records available from this period indicate that a large portion of the KAPL waste from this time period was associated with the Separations Process Research Unit (SPRU), an AEC pilot plant for developing methods for extracting fissionable material from irradiated uranium.

These documents provide information on the number and types of radioactive waste containers sent to LOOW. Several of these documents also provide information on the subsequent shipment of the KAPL waste at LOOW to Oak Ridge in 1958. The information in the documents indicates that the large majority of the radioactivity in the waste was fission product radioactivity. Of all the waste shipped from KAPL, only a small fraction of the containers had waste containing residual separated plutonium associated with SPRU work, which was a very small fraction of the total radioactivity.

In addition to the documents themselves, I have attached a brief summary sheet for each document commenting on the significance of that document to your request. If you have any questions on the attached information, please contact my office.

Sincerely,

ORIGINAL SIGNED BY

J. Hughes Robillard, Director
Radiological/Environmental Controls
and Safety Division

Attachments:

(1) USAEC Schenectady Operations Office Letter (Batza) to KAPL (Perleberg), dated October 13, 1954, "KAPL Radioactive Waste Presently Stored at LOSA"

(2) KAPL letter (Perleberg) to USAEC Schenectady Operations Office (Anderson), dated October 26, 1954, "KAPL Radioactive Waste at LOSA"

(3) KAPL letter (Manieri to Collins) dated December 2, 1954, "Estimated Curies Activity Shipped from LOAS from KAPL"

(4) KAPL letter (Manieri) to Oak Ridge National Laboratory (Witkowski), dated January 29, 1958, "Radioactive Waste Shipment from Model City, New York"

(5) Hooker Electrochemical Company letter (Seager) to KAPL (Manieri), dated February 14, 1958, "Radioactive Waste Shipment from Model City, New York"

(6) Hooker Electrochemical Company letter (Seager) to Oak Ridge National Laboratory (Witkowski), dated June 26, 1958, "Radioactive Waste Shipment from Model City, New York"

(7) KAPL letter (Manieri) to Virginia Military Institute (Morgan), dated August 18, 1961, "Data on KAPL's Radioactive Waste Disposal"

(8) Paper on LOOW Waste from KAPL files, date unknown

AUG 1 0 2005

bcc: Michelle Rhodes, USACE
W. N. Perry, DOE-Oak Ridge
S. B. Feinberg, DOE-SPRU

Attachment (1)

USAEC Schenectady Operations Office Letter (Batza) to KAPL (Perleberg), dated October 13, 1954, "KAPL Radioactive Waste Presently Stored at LOSA"

KAPL sent radioactive waste to LOOW (also known as Lake Ontario Storage Area or LOSA) from January 22, 1952 to September 9, 1954. This USAEC Schenectady Operations Office letter addressed to KAPL states that a memorandum was received by Oak Ridge stating that future storage of KAPL waste at LOOW would not be permitted. It also stated that it was necessary for Oak Ridge to take steps to reduce to a minimum the hazard potential of materials presently stored at the Niagara Falls site. KAPL was requested to provide information on the waste shipments made to LOOW. Attachment 2 is the response to this request.

ADDRESS REPLY TO:
THE MANAGER
U. S. ATOMIC ENERGY COMMISSION
P. O. BOX 1069
SCHENECTADY, NEW YORK
AND REFER TO:

TAD:AAB

UNITED STATES
ATOMIC ENERGY COMMISSION
SCHENECTADY, NEW YORK

RECEIVED
OCT 14 1954
C. N. PERLEBERG

October 13, 1954

General Electric Company
Knolls Atomic Power Laboratory
Schenectady, New York

Attention: Mr. C. N. Perleberg

Subject: KAPL RADIOACTIVE WASTE PRESENTLY STORED AT LOSA

Gentlemen:

A memorandum has been received from Oak Ridge advising this office that future storage of KAPL waste at LOSA would not be permitted. This memo indicated that it is necessary for Oak Ridge to take steps to reduce to a minimum the hazard potential of materials presently stored at the Niagara Falls site.

It was requested that specific information concerning the amounts and specifications of each of the waste shipments made to LOSA be furnished as soon as possible. It would be appreciated greatly if you would forward this data if it is available.

Very truly yours,

A. A. Batza, Chief
SF Accountability and
Special Materials Branch

RECEIVED
OCT 15 1954
UTILITIES UNIT

Attachment (2)

KAPL Letter (Perleberg) to USAEC Schenectady Operations Office (Anderson), dated October 26, 1954, "KAPL Radioactive Waste at LOSA"

This letter is the KAPL response to the AEC request in Attachment (1).

Seven shipments were made to LOOW between January 22, 1952 and September 9, 1954. It is stated in the letter that KAPL did not keep a log of the items listing the contents of each container in detail. However, the number and type of boxes or drums are listed.

October 26, 1954

Mr. J. D. Anderson, Manager
Schenectady Operations Office
U. S. Atomic Energy Commission
Knolls Atomic Power Laboratory
Schenectady, N. Y.

Attention: Mr. A. A. Batza

Subject: KAPL Radioactive Waste at LOSA.

Dear Sir:

Complying with your request of October 13 there is attached a list of the items which have been shipped to LOSA since January 1952 when the first shipment was made according to our records. We have not kept a log of the items showing the contents of each container in detail.

If an inventory is desired, it should be taken from the markings on the containers at LOSA. At the time of shipment, each container is so labeled, along with the radiation level. The latter will be lower now in cases of short half-life contamination.

Very truly yours,

C. H. Perleberg, Manager
MAINTENANCE & UTILITIES SUB-SECTION

CHP/RFW/mch
Attach.

bcc: ES Collins
RF Wyer

The following material was shipped to LOSA on January 22, 1952:

2	1½ x 1½ x 2 ft. waste boxes
1	2 x 2 x 2 waste box
1	2 x 2 x 8 ft. waste box
1	4 x 6 x 12 waste box
202	4 x 4 x 4 waste boxes
31	30 gal. s/s drums
61	55 gal. s/s drums
99	70 gal. s/s drums
217	55 gal. c/s drums
9	275 gal. storage tanks

The following material was shipped to LOSA on October 16, 1952:

26	4 x 4 x 4 boxes containing plastic tubing, contaminated clothing and rubbers, assorted pieces of steel, galvanized copper, and stainless steel pipe and contaminated concrete, dirt and paper ashes
9	boxes pipe
6	boxes ashes
5	boxes metal dust work
2	boxes machinery
84	boxes baled paper, scrap glass-fiber and CWS filters, scrap metal, glass dirt, ashes, rubbers and clothing
6	bales honeycomb
29	bales CWS filters
15	bales paper
7	bales scrap

The following contaminated waste material was shipped starting August 27, 1953:

97	4 x 4 x 4 boxes misc. contaminated waste material
13	pallets of contaminated baled paper
2	boxes 42 x 26 x 26 contaminated waste material
1	box 89 x 26 x 48 misc. contaminated waste material
1	box 50 x 34 x 36 misc. contaminated waste material
1	box 66 x 30 x 46 misc. contaminated waste material
38	pallets, 4 ballels per pallet, of liquid contaminated waste material
26	pallets contaminated filters
21	boxes assorted sizes of misc. contaminated waste material
2	pallets (5 gal. cans) contaminated waste material
22	pallets (55 gal. drums) contaminated slurry
1	pallet (15 gal. drums) contaminated liquid waste material
96	drums liquid contaminated waste

The following material was shipped to LOSA April 16, 1954:

80	4 x 4 x 4 boxes misc. contaminated waste material
16	boxes 4 x 4 x 4 containing baled paper
42	boxes misc. contaminated waste

The following material was shipped to LOSA April 23, 1954:

38 boxes 4 x 4 x 4 misc. contaminated waste material

The following material was shipped to LOSA June 4, 1954:

36 4 x 4 x 4 misc. contaminated waste material
6 pallets, four 55 gal. drums each pallet, contaminated oil
12 boxes baled paper
3 boxes filters
7 4 x 4 x 4 misc. scrap

The following material was shipped to LOSA September 9, 1954:

14 pallets, 4 ballels per pallet, contaminated waste material
39 boxes 4 x 4 x 4 misc. contaminated waste material
2 boxes 4 x 2 misc. contaminated waste material
1 box 6 x 6 misc. contaminated waste material
17 boxes 4 x 2 CWS filters
1 box 6 x 6 x 8 containing desk and tools from EML
1 box 6 x 4 x 8 containing 1 bench, tools, and misc. items from EML

Attachment (3)

KAPL Internal Letter (Manieri to Collins) dated December 2, 1954, "Estimated Curies Activity Shipped from LOAS from KAPL"

This internal letter provides the estimated curies of waste shipped to LOOW. (Note that the letter uses the acronym LOAS for LOSA.) It was estimated that 408.08 Ci of MFP and 0.63 Ci of Pu was shipped.

In the SPRU pilot plant, irradiated uranium from Hanford was dissolved and processed to extract plutonium and uranium. The resulting liquid waste was processed by evaporation to concentrate most of the radioactivity in a slurry form. This radioactive slurry would contain fission product radioactivity as well as some residual plutonium not extracted by the SPRU process. This slurry would have accounted for most of the radioactivity in the KAPL waste. Thus, this 1954 KAPL curie estimate was primarily based on the amount of slurry shipped and samples of the slurry material. The curie content of the boxes was based on an assumed average dose rate of 12 mr/hr on the box. The curie content of the boxes is assumed to be entirely mixed fission products.

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UTILITIES UNIT

December 2, 1954

R.S. Collins
E-1 Basement
KAPL

SUBJECT: ESTIMATED CURIES ACTIVITY SHIPPED LOAS FROM KAPL

Approximately 700,000 lbs. of contaminated waste in 16 box cars have been shipped to LOAS since September, 1952.

— Low estimate carbon not included

The above shipment included approximately 675 boxes and 394 slurry drums.

Sample analysis indicates an average of 3.4 curies (mixed fission product) per 150 gallons of slurry or .023 curies per gallon.

394 slurry drums X 50 gal/drum = 17,700 gal. of slurry.

.023 curies/gal. X 17,700 gal. slurry = 407.1 curies of mixed fission product.

Assume an average of 12 mr/hr. per box. 675 boxes x 12 mr/hr = 8100 mr/hr.

8.3 R/hr. = 1 curie activity
8.1 R/hr. = 0.98 curie activity
8.3 R/hr.

Assume -	407.10	in slurry drum
	0.98	in waste boxes
	408.08	curies (mixed fission product)

Estimated curies activity of Plutonium. Sample analysis indicates an average of 0.025 gram Plutonium per drum.

394 drums x .025 g/drums = 9.85 g/total pu.

1.4×10^{11} = d/m/g of pu.

$1.4 \times 10^{11} \times 9.85 = 1.38 \times 10^{12}$ d/m/394 drums

$$\frac{1.38 \times 10^{12}}{2.2 \times 10^{12}} = 0.63 \text{ curies pu/394 drums}$$

d/m/curies

407.10	in slurry drums
0.98	in waste boxes
408.08	curies (mixed fission products)
0.63	curies pu/394 drums

Total curies activity 408.71

The above report is based on assumption and also on sample analysis of the slurry.

D.A. Manieri, Foreman

UTILITIES OPERATIONS SUB-UNIT
KAPL

DAM:ajp

cc: RF Wyer
CH Parlsberg
WH Truran
File

Attachment (4)

KAPL Letter (Manieri) to Oak Ridge National Laboratory (Witkowski), dated January 29, 1958, "Radioactive Waste Shipment from Model City, New York"

This letter discusses a shipment of three railcars of KAPL radioactive waste from LOOW to Oak Ridge National Laboratory scheduled for January 31, 1958. This letter also states that Hooker Electrochemical Company personnel are planning to incinerate KAPL's combustible waste now in storage at Model City. The ashes and miscellaneous non-combustible materials were to be packaged to meet I.C.C. regulation and included in the next shipment to Oak Ridge. Attachments 5, 7, and 8 indicate this plan was followed.

A listing of the containers, contents, dose rates and weights in each box car is provided. Six different categories of contents are described in this listing. One of these categories is described as "Pu waste" composed of all materials contaminated with Pu. This type of waste was put into one gallon cans and then into drums. The remaining five waste categories included primarily fission product radioactivity. One of the three railcars on this list was ATMX 208. There was a note under the packing list for this railcar stating that 16 additional pallets would be loaded into this railcar. The packing list in the document forwarded to SNR by Mr. Gavitt also was for the ATMX 208 railcar. This second list included more material than in the list in the attached document and apparently includes the additional waste material indicated in the note.

It is noteworthy that only 5 of the 134 pallets and none of the boxes listed in this shipment were Pu waste. This is consistent with only a small fraction of the KAPL waste material being plutonium contaminated waste. Furthermore, the description of the plutonium contaminated waste indicates that it was double encapsulated, first in paint cans and then in drums. This material would have been less likely to leak during storage than the more highly radioactive, semi-liquid "slurry" waste which was not noted as being double encapsulated.

This letter, along with some of the subsequent letters, indicates that KAPL was aware of the shipment of KAPL waste from LOOW to Oak Ridge and played some role in assisting with arrangements for that transfer.

GENERAL ELECTRIC

Knolls Atomic Power Laboratory
Schenectady, New York

January 29, 1958

Mr. E.J. Witkowski
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Gentlemen:

Subject: Radioactive Waste Shipment from Model City, New York

Confirming our telephone conversation of January 29, 1958 attached is a list of items which Hooker Electrochemical Company is including in the three (3) carload shipments of radioactive waste material scheduled for shipment on January 31, 1958.

Mr. F.W. Malone, Chief AEC Niagara Falls Branch will advise you by phone exactly what day the shipment will leave Model City, New York. In addition, he will make arrangements to route the waste shipment to the Y-12 siding on the L & N railroad as per your request.

In the very near future (six to eight weeks) the Hooker Electrochemical Company personnel are planning to incinerate KAPL's combustible waste now in storage at Model City, New York. The ashes and the misc. non-combustible materials will be packaged to meet I.C.C. regulation and be included in the next waste shipment to Oak Ridge.

As in the past, a list of materials including dose rates, description and weights that will be put into each box car will be forwarded to you with our shipping documents. In addition, an itemized list of materials will be tacked inside of each box car shipped to assure for continued safe handling of our loadings and for your guidance at Oak Ridge burial grounds.

KAPL and the Hooker Electrochemical Co. appreciate your cooperation and trust that this shipment will run as smoothly as the past operations. If Oak Ridge has any questions regarding the plan or schedule, please do not hesitate to advise this section.

Very truly yours,

[redacted]

D.A. Manieri, Foreman
Radioactive Waste
OPERATION & MAINTENANCE

DAM/[illegible]
Attachment

Distribution
W.F. [illegible] - SCO
[illegible] - KAPL
[illegible] - AEC,D.C.
[illegible] - KAPL
B. Ball - SCO
[illegible] Schoen - Oak Ridge CO
[illegible] Cherubin - KAPL
[illegible] - Oak Ridge CO
F.W. Malone AEC Niagara [illegible]
J.D. Sweeney Hooker [illegible]
J. Hunter Hooker [illegible]

Radioactive Waste Material
In Box Cars for Disposal
AT
OAK RIDGE NATIONAL LABORATORY

Car #ATMX 207

Qty	Containers	Material	Max. Dose Rate	Max. Weight
9 Pallets	65 gal. s/s drum	Slurry	50 mr/hr.	2800#/pallet
2 "	55 " " "	"	50 "	2000 "
1 "	55 " " "	"	100 "	1000 "
1 "	55 " " "	"	80 "	1000 "
1 "	55 " " "	"	95 "	2000 "
1 "	55 " c/s "	PU	40 "	1000 "
3 "	65 " s/s "	Slurry	20 "	2800 "
6 "	55 " " "	"	40 "	2000 "
24 "	55 " " "	"	80 "	2000 "

Car #ATMX 209

9 Pallets	55 gal. c/s drum	Cont. oils	10 mr/hr.	2000#/pallet
8 "	55 " s/s "	Slurry	120 "	2000 "
6 "	65 " " "	"	90 "	2800 "
4 "	55 " c/s "	Solid Waste	200 "	1000 "
4 "	55 " " "	PU	10 "	1000 "
4 "	55 " " "	Oils	6 "	2000 "
2 "	55 " s/s "	Slurry	50 "	2000 "
2 "	65 " c/s "	Cont. ashes	6 "	2000 "
4 "	55 " s/s "	Slurry	180 "	2000 "
5 "	55 " c/s "	Solid Waste	150 "	1000 2

Car #ATMX 208

5 Pallets	65 gal s/s drum	Slurry	20 mr/hr.	2800#/pallet
4 "	55 " c/s "	Oils	10 "	2000 "
11 "	55 " s/s "	Slurry	500 "	2000 "
4 Boxes	4' x 3' x 2'	Misc. Scrap	6 "	300#/box
1 Pallet	55 gal. c/s drum	Solid Waste	3000 "	1000#/pallet
1 "	55 " s/s "	Slurry	800 "	2000 "
2 "	65 " c/s "	Misc. Waste	30 "	2000 "
4 "	30 " s/s "	Slurry	40 "	1500 "

Note: 16 additional pallets of drums will be loaded and monitored into this car by the Hooker Electrochemical Co. personnel.

Monitoring Results:
External radiation

Car ATMX 207 } 10 mr/hr. at 12 ft. from outer surface of box car - 10 mr/hr. at 5 ft.
Car ATMX 209 } at ends of box car.

Car ATMX 208 - Will be monitored by Hooker personnel when loading is completed

Identification

Since some of this material has been in storage since 1952, we have re-surveyed and color coded radiation readings on each container for your guidance.

Yellow - L - indicates maximum reading 50 mr/hr.

Blue - M - indicates maximum reading 200 mr/hr.

Red - H - indicates maximum reading 1000 mr/hr.

Readings greater than 1 R/hr. have been identified in Red by the actual radiation readings on container.

All containers are palletized and banded four to a pallet.

Materials:

Miscellaneous Scrap is composed of materials contaminated with low level fission products, such as air filter, glass, metals, wood and all materials that cannot be baled.

Baled Materials are complosed of dry waste, such as paper, rags, floor sweepings, gloves, lagging, etc., contaminated with low level fission products

Solid Waste is composed of high level fission products and includes both miscellaneous scrap and baled materials

PU Waste is composed of all materials contaminated with PU. This type of waste is put in one gallon cans and then into drums.

Slurry is composed of evaporator bottoms, neutralized and contaminated with high level fission products.

Oils are composed of degreasing fluid and cutting oils, contaminated with low level fission products.

DAM/amp

Attachment (5)

Hooker Electrochemical Company Letter (Seager) to KAPL (Manieri), dated February 14, 1958, "Radioactive Waste Shipment from Model City, New York"

This letter discusses the Bill of Materials for shipment for the 4th rail car. It also states that burning of the Schenectady waste material is scheduled to start February 19.

A listing of the containers, contents, dose rates and weights in the box car is provided. There was no "Pu waste" listed in this railcar shipment. The Hooker letter comments that the "results" from this railcar are quite a bit higher than previous readings. This apparently refers to the fact that both the average radiation level on individual pallets as well as the railcar are higher than those listed for the three railcars in the previous shipment. This is unsurprising as this railcar contained mostly pallets of the highly radioactive slurry.

It is believed that the "HESL personnel" mentioned in this letter are from the AEC Health and Safety Laboratory in New York City.

HOOKER ELECTROCHEMICAL COMPANY
NIAGARA FALLS
NEW YORK
Contract No. AT-(30-1)-1524

February 14, 1958

D. A. Manieri
Foreman, Radioactive Waste Material
Knolls Atomic Power Laboratory
Schenectady, New York

Subject: RADIOACTIVE WASTE SHIPMENT FROM MODEL CITY, NEW YORK

Dear Don:

The enclosed Bill of Material shows the results for our fourth car. This was quite a bit higher than we found on previous readings.

The burning of Schenectady waste material is scheduled to start February 19. HESL personnel are due here Tuesday the 18th to lay out the project. Everything should be ready Wednesday. Come up if you can.

Regards,

[redacted]

Paul Seager
Plant 31

PS:jc
Enclosure

D. Marieri

February 14, 1958

RADIOACTIVE WASTE MATERIAL IN BOX CAR-SAL 10063

ITEMS	DESCRIPTION	MATERIALS	MAX. DOSE RATE	MAX. WEIGHT
4-Pallets	65 gal-c/s Capsules	U. Residue	5 mr/hr	1000#/pallet
4-Pallets	55 gal-c/s Drums	Oils	10 mr/hr	2000#/pallet
2-Pallets	65 gal-s/s Drums	Slurry	10 mr/hr	2800#/pallet
3-Pallets	35 gal-s/s Drums	Slurry	10 mr/hr	1000#/pallet
1-Pallet	20 gal-s/s Drums	Slurry	10 mr/hr	500#/pallet
4-Pallets	55 gal-s/s Drums	Slurry	150 mr/hr	2000#/pallet
1-Pallet	55 gal-s/s Drums	Slurry	250 mr/hr	2000#/pallet
3-Pallets	55 gal-s/s Drums	Slurry	300 mr/hr	2000#/pallet
6-Pallets	55 gal-s/s Drums	Slurry	510 mr/hr	2000#/pallet
1-Pallet	65 gal-c/s Capsule 35 gal-s/s Inside	Slurry	10 mr/hr	1000#/pallet
1-Pallet	65 gal-c/s Capsule	KAPL Waste & Gaps Inside	200 mr/hr	2000#/pallet
2-Pallets	55 gal-c/s	KAPL Waste	450 mr/hr	2000#/pallet
1-Pallet	55 gal-c/s	KAPL Waste	1 R/hr	2000#/pallet
1-Pallet	55 gal-c/s	KAPL Waste	3 R/hr	2000#/pallet
1-Pallet	55 gal-c/s	KAPL Waste	7 R/hr	2000#/pallet
1-Pallet	55 gal-s/s & c/s	Slurry & Oil	200 mr/hr	2000#/pallet
5 Boxes	4' x 3' x 2'	Misc. Scrap	10 mr/hr	300#/Box
3 Boxes	4' x 3' x 2'	Filters	110 mr/hr	300#/Box

Identification:

All Drums have been re-surveyed and identified as follows:

Yellow "L" indicates Maximum reading of 50 mr/hr
Blue "M" " " " " 200 mr/hr
Red "H" " " " " 1000 mr/hr

Drums are Palletized and banded four to a Pallet.

Material:

Solid Waste - Composed of high level mixed fission product and includes miscellaneous scrap.

Slurry - Composed of high level mixed fission product from evaporator bottoms from KAPL Liquid Waste Process.

Pu - Composed of all materials contaminated with Plutonium or Thorium. This type of waste is packaged into 1 gallon paint cans, and placed into carbon steel drums.

Oils - Ashes - Contaminated with low level mixed fission products.

U Residue - Uranium residue, formerly packaged in 5 gal. can, packed in 65 gal. c/s capsules.

Filters - Spun glass air filters packed in wooden boxes.

Gaps - Cesium and strontium gaps capsuled in 65 gal. c/s drums.

Continued.....

Monitoring Results:

External Radiation

30 mr/hr at 12 ft. from outer surface of sides.

[illegible] mr/hr at 5 ft. from ends of box car.

[redacted]

Paul Seager

jc

Attachment (6)

Hooker Electrochemical Company Letter (Seager) to Oak Ridge National Laboratory (Witkowski) dated June 26, 1958, "Radioactive Waste Shipment from Model City, New York"

This letter discusses Bills of Materials for a two rail car shipment on or about June 26. The contents in each box car is provided. The box cars only contained wood boxes, and no "Pu waste" is listed.

RECEIVED
JUL 16 1958
D. A. MANIERI

Contract No. AT-(30-1)-1524

June 26, 1958

Mr. E. J. Witkowski
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Subject: Radioactive Waste Shipment From Model City, New York

Dear Sir:

Enclosed are the Bills of Materials for cars ATMX 208 & 209 which will be shipped on or about June 26. The radiation monitoring results are noted and the cars are placarded.

A copy of this Bill of Material is being sent to D. Manieri at KAPL for his records.

Very truly yours,

[redacted]

Paul Seager
Design Engineer
P-31

PS:km
cc: D.A. Manieri KAPL
F.W. Malone NF-AEC
J.D. Sweeney HEC
P. Seager HEC

Contract No. AT-(30-1)-1524

June 26, 1958

RADIOACTIVE WASTE MATERIAL
IN BOX CAR ATMX 209
DISPOSAL AT ORNL

ITEMS	DESCRIPTION	MATERIALS	MAX. WEIGHT
30 Boxes	Wood	Misc. Scrap	750 #/Box

Total 30 Boxes

Estimated weight of car load 22,500#

Monitoring Results:

Containers should not exceed 200 mr/hr

External Radiation

10 mr/hr at 12 ft. from outer surface of box car sides.

10 mr/hr at 5 ft. from ends of box car.

[redacted]

Paul Seager
Design Engineer
Plant - 31

km

Contract No. AT-(30-1)-1524

June 26, 1958

RADIOACTIVE WASTE MATERIAL
IN BOX CAR ATMX 208
DISPOSAL AT ORNL

ITEMS	DESCRIPTION	MATERIALS	MAX. WEIGHT
47 Boxes	Wood	Misc. Scrap	750 #/Box

Total 47 Boxes

Estimated weight of car load 35,250#

Monitoring Results:

Containers should not exceed 200 mr/hr

External Radiation

10 mr/hr at 12 ft. from outer surface of box car sides.

10 mr/hr at 5 ft. from ends of box car.

[redacted]

Paul Seager
Design Engineer
Plant - 31

km

Attachment (7)

KAPL Letter (Manieri) to Virginia Military Institute (Morgan) dated August 18, 1961, "Data on KAPL's Radioactive Waste Disposal"

From the first and last paragraphs of this letter, it appears that the addressee and a Mr. Costello were working on a technical paper and had requested information on all KAPL waste shipments up to the time of the letter. The KAPL reply indicated that the first shipment of KAPL waste to LOOW for storage started in 1952, and that the first shipment from KAPL to Oak Ridge was in 1955. The letter listed the dates, number of railcars, and volume of KAPL waste sent to Oak Ridge in FY 1958 both from KAPL and from LOOW. This list included six shipments and a total of 11 railcars for the waste sent from LOOW to Oak Ridge National Laboratory as follows:

Date	Freight Cars Shipped	Volume (cubic feet)
January 30, 1958	3	9,186
April 30, 1958	2	6,124
May 7, 1958	2	6,124
May 14, 1958	1	3,062
May 19, 1958	1	3,062
May 29, 1958	2	6,124

However, this list does not appear to include the shipment of one rail car in February 1958 shown in Attachment (5) and the shipment of two rail cars in June 1958 shown in Attachment (6). With these additional shipments, there would be a total of eight shipments and 14 rail cars.

This letter also notes that KAPL assisted in packaging and shipping of the waste from LOOW to Oak Ridge National Laboratory. To the author's (Manieri's) knowledge the Hooker Electrochemical Company under the direction of the AEC New York Operations Office, incinerated all of KAPL's combustible waste. The letter also states: "The ashes with the noncombustible materials were packaged and are included in the 1958 FY shipment to Oak Ridge National Laboratory for permanent burial."

This 1961 letter, coming three years after the 1958 shipments from LOOW to Oak Ridge, appears to reflect the understanding of the KAPL personnel involved that the shipment of KAPL waste from LOOW to Oak Ridge had in fact been completed.

August 18, 1961

Virginia Military Institute
Lexington, Virginia

Attention: Mr. J. M. Morgan, Jr.

Subject: Data on KAPL's Radioactive Waste Disposal

Gentlemen:

In reference to your letter dated August 10, 1961 requesting the gross volume of low and intermediate level solid waste packaged and shipped off site from the Knolls Atomic Power Laboratory since the late 1940's, our records reveal that the first shipment from KAPL to L.O.S.A. for temporary storage was made on October 16, 1952. The first shipment of KAPL Radioactive Waste to Oak Ridge National Laboratory for permanent burial was made on March 17, 1953.

During Fiscal Year 1958, the following waste shipments were made to Oak Ridge National Laboratory for permanent burial.

Date	Freight Cars Shipped	From	To	Volume Cu. Ft.
Nov. 1, 1957	3	KAPL	ORNL	10,534
May 5, 1958	3	KAPL	ORNL	8,040
Jan. 30, 1958	3	LOSA	ORNL	9,186
Apr. 30, 1958	2	LOSA	ORNL	6,124
May 7, 1958	2	LOSA	ORNL	6,124
May 14, 1958	1	LOSA	ORNL	3,062
May 19, 1958	1	LOSA	ORNL	3,062
May 29, 1958	2	LOSA	ORNL	6,124
			Total	52,256

In 1958, I had the opportunity to visit LOSA at Model City, New York to assist in packaging and shipping of KAPL's waste material. To my knowledge, The Hooker Electrochemical Company personnel, under the direction of the New York Operation Office, incinerated all of KAPL's combustible waste. The ashes with the noncombustible materials were packaged and are included in the 1958 FY shipments to Oak Ridge National Laboratory for permanent burial.

To complete waste shipment data for Fiscal Year 1961, the following waste material was shipped to Oak Ridge National Laboratory for permanent burial.

Date	Freight Cans Shipped	From	To	Volume Cu. Ft.
Sept. 1960	12	KAPL	ORNL	21,500
Apr. 1961	5	KAPL	ORNL	14,006
			Total	35,506

Attached is a sketch of our standardized palletized 4' x 4' x 8' ply wood boxes, for which Bureau of Explosive Permit No. 1180 has been obtained and which is utilized for packaging most combustible and noncombustible waste generated at the Laboratory.

The second sketch is a palletized 4' x 4' x 8' concrete container for which we are now in the process of obtaining an I.C.C. Bureau of Explosive permit. This container, when shielded with earth and capped with concrete, will be utilized to package and ship our intermediate and high level radioactive waste material that is generated at the Laboratory.

We hope that the above information will assist you and Mr. P. C. Costello in preparing your paper at Chalk River, Canada. If we can be of further assistance in this matter, please do not hesitate to notify this section.

Very truly yours,

S. A. Manieri, Foreman
Radioactive Wastes
OPERATION & MAINTENANCE

SAMing

cc: B. M. Ball
B. J. Feinberg
L. J. Thornblom
J. J. Costello - AEC - Washington

Attachment (8)

Paper on LOOW Waste from KAPL Files, date unknown

This undated and unsigned document was found in the files of an engineer who worked on radioactive waste from the 1950s through the 1980s. The date or reason it was created is not known. This document states that 8 shipments and 14 box cars of waste were shipped from LOOW to Oak Ridge. This total is consistent with the of shipments and railcars listed in Attachment (7) supplemented by the additional shipments documented in Attachments (5) and (6). It also provides additional indication that cognizant KAPL personnel understood that all of the KAPL waste stored at LOOW was shipped to Oak Ridge in 1958.

LOOW

CONTAINERS	7 Shipments (1952-54) SHIPPED TO LOOW FROM KAPL	8 Shipments - 14 Box Cars (1958) SHIPPED FROM LOOW TO OAK RIDGE
Bales - combustible	57	12 4' x 3' x 2' Wood Boxes
Pallets - combustible	91	346 Wood Boxes
Misc. wood boxes	184	Combustibles incinerated
Boxes - Wood $1\frac{1}{2}$' x $1\frac{1}{2}$' x 2'	2	during 1952-1958 - Ash
Boxes - Wood 2' x 2' x 2'	1	packaged in 70 or 55
Boxes - Wood 2' x 2' x 8'	1	gallon drums.
Boxes - Wood 4' x 6' x 12'	1	
Boxes - Wood 4' x 4' x 4'	541	
Boxes - Wood 42" x 26" x 26"	2	
Boxes - Wood - 89" x 26" x 48"	1	
Boxes - Wood - 50" x 34" x 36"	1	
Boxes - Wood - 66" x 30" x 46"	1	
Boxes - Wood - 4' x 2'	2	
Boxes - Wood - 6' x 6'	1	
Boxes - Wood - Filters	17	
Boxes - Wood - 6' x 6' x 8'	1	
Boxes - Wood - 6' x 4' x 8'	1	
Drums - 30 Gal.	31	32
Drums - 55 Gal.	486	580
Drums - 65/70 Gal.	99	345
Drums - 5 Gal.	2 Pallets	May have been repackaged
Drums - 15 Gal.	1 Pallet	May have been repackaged
275 Gal. Storage Tanks	9	May have been decontaminated and reused.

SEC Petition Evaluation Report
Petition SEC-00145

Report Rev #: 0 Report Submittal Date: July 1, 2009

Subject Expert(s):	Larry Page
Site Expert(s):	N/A

Petitioner Administrative Summary			
Petition Under Evaluation			
Petition #	Petition Type	Petition A Receipt Date	DOE/AWE Facility Name
SEC-00145	83.14	May 18, 2009	Lake Ontario Ordnance Works

NIOSH-Proposed Class Definition
All employees of DOE, its predecessor agencies, and their contractors and subcontractors who worked at Lake Ontario Ordnance Works in Niagara Falls, New York, from January 1, 1944 through December 31, 1953, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the SEC.

Related Petition Summary Information			
SEC Petition Tracking #(s)	Petition Type	DOE/AWE Facility Name	Petition Status
N/A	N/A	N/A	N/A

Related Evaluation Report Information	
Report Title	DOE/AWE Facility Name
N/A	N/A

ORAU Lead Technical Evaluator: Larry Page	**ORAU Review Completed By:** Michael Kubiak

Peer Review Completed By:	[Signature on file] *LaVon Rutherford*	07/02/2009 *Date*
SEC Petition Evaluation Reviewed By:	]Signature on file] *J. W. Neton*	07/02/2009 *Date*
SEC Evaluation Approved By:	]Signature on file] *Larry Elliott*	07/02/2009 *Date*

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Evaluation Report Summary: SEC-00145, Lake Ontario Ordnance Works

This evaluation report by the National Institute for Occupational Safety and Health (NIOSH) addresses a class of employees proposed for addition to the Special Exposure Cohort (SEC) per the *Energy Employees Occupational Illness Compensation Program Act of 2000*, as amended, 42 U.S.C. § 7384 *et seq.* (EEOICPA) and 42 C.F.R. pt. 83, *Procedures for Designating Classes of Employees as Members of the Special Exposure Cohort Under the Energy Employees Occupational Illness Compensation Program Act of 2000*.

NIOSH-Proposed Class Definition

All employees of DOE, its predecessor agencies, and their contractors and subcontractors who worked at Lake Ontario Ordnance Works (LOOW) in Niagara Falls, New York, from January 1, 1944 through December 31, 1953, for a number of work days aggregating at least 250 work days, occurring either solely under this employment or in combination with work days within the parameters established for one or more other classes of employees included in the SEC.

Feasibility of Dose Reconstruction Findings

NIOSH lacks sufficient information, which includes sufficient bioassay, air monitoring, and radiological shipment records, to allow it to estimate with sufficient accuracy the potential internal exposures to which the proposed class may have been subjected. Additionally, there are no external exposure records available for LOOW prior to March 1949, preventing the determination of external dose to the proposed class prior March 1, 1949.

- Principal sources of internal and external radiation for members of the proposed class included exposures to uranium, thorium, plutonium, radium, and fission products received during operations involving the receipt, storage, and shipment of radioactive wastes. Other radionuclides from unidentified transient shipments may also have been present at the LOOW site.

- Inbound shipments to LOOW, ending in 1953, included shipments that were transient in nature, and for which little characterization data can be found. Shipments included, but were not limited to processing wastes containing plutonium and fission products, and uranium and thorium billets which were received, stored, and later shipped offsite.

- NIOSH has obtained only limited bioassay results for the period prior to 1954, when shipments of radioactive material were still being received. Incoming shipments to LOOW ceased in 1953. NIOSH has sufficient job-specific personnel and workplace monitoring records to allow for sufficiently accurate internal dose reconstruction after 1953.

- External exposure records are not available for LOOW prior to 1949. NIOSH has sufficient information to assign external dose to monitored workers during the period 1949 through 1953. For the period from January 1, 1954 through the end of covered operations, sufficient external monitoring records exist for NIOSH to develop external co-worker dose distributions and adequately bound the external exposures at LOOW.

- NIOSH finds that it is feasible to reconstruct occupational medical dose for LOOW workers with sufficient accuracy.

- Pursuant to 42 C.F.R. § 83.13(c)(1), NIOSH determined that there is insufficient information to either: (1) estimate the maximum radiation dose, for every type of cancer for which radiation doses are reconstructed, that could have been incurred under plausible circumstances by any member of the class; or (2) estimate the radiation doses of members of the class more precisely than a maximum dose estimate.

- Although NIOSH found that it is not possible to completely reconstruct radiation doses for employees working at LOOW prior to 1954, NIOSH intends to use any internal and external monitoring data that may be available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Furthermore, NIOSH has determined that occupational medical dose for all workers can be reconstructed. Therefore, dose reconstructions may be performed using these data, as appropriate, for individuals with non-presumptive cancers or fewer than 250 days employment during the class period.

Health Endangerment Determination

The NIOSH evaluation did not identify any evidence supplied by the petitioners or from other resources that would establish that the class was exposed to radiation during a discrete incident likely to have involved exceptionally high-level exposures, such as nuclear criticality incidents or other events involving similarly high levels of exposures. However, the evidence reviewed in this evaluation indicates that some workers in the class may have accumulated chronic radiation exposures through intakes of uranium, thorium, radium, fission products, or other unidentified radionuclides. Therefore, 42 C.F.R. § 83.13(c)(3)(ii) requires NIOSH to specify that health may have been endangered for those workers covered by this evaluation who were employed for a number of work days aggregating at least 250 work days within the parameters established for this class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

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SEC Petition Evaluation Report for SEC-00145

ATTRIBUTION AND ANNOTATION: This is a single-author document. All conclusions drawn from the data presented in this evaluation were made by the ORAU Team Lead Technical Evaluator: Larry Page, MJW Corporation. These conclusions were peer-reviewed by the individuals listed on the cover page. The rationales for all conclusions in this document are explained in the associated text.

1.0 Purpose and Scope

This report evaluates the feasibility of reconstructing doses for employees who worked at Lake Ontario Ordnance Works (LOOW) during a specified time. It provides information and analysis germane to considering a petition for adding a class of employees to the Congressionally-created SEC.

This report does not make any determinations concerning the feasibility of dose reconstruction that necessarily apply to any individual energy employee who might require a dose reconstruction from NIOSH, with the exception of the employee whose dose reconstruction could not be completed, and whose claim consequently led to this petition evaluation. The finding in this report is not the final determination as to whether or not the proposed class will be added to the SEC. This report will be considered by the Advisory Board on Radiation and Worker Health (the Board) and by the Secretary of Health and Human Services (HHS). The Secretary of HHS will make final decisions concerning whether or not to add one or more classes to the SEC in response to the petition addressed by this report.

This evaluation, in which NIOSH provides its findings both on the feasibility of estimating radiation doses of members of this class with sufficient accuracy and on health endangerment, was conducted in accordance with the requirements of EEOICPA and 42 C.F.R. § 83.14.

2.0 Introduction

Both EEOICPA and 42 C.F.R. pt. 83 require NIOSH to evaluate qualified petitions requesting that the Department of Health and Human Services add a class of employees to the SEC. The evaluation is intended to provide a fair, science-based determination of whether it is feasible to estimate, with sufficient accuracy, the radiation doses of the proposed class of employees through NIOSH dose reconstructions.[1]

NIOSH is required to document its evaluation in a report, and to do so, relies upon both its own dose reconstruction expertise as well as technical support from its contractor, Oak Ridge Associated Universities (ORAU). Once completed, NIOSH provides the report to both the petitioners and the Advisory Board on Radiation and Worker Health. The Board will consider the NIOSH evaluation report, together with the petition, comments of the petitioner(s) and such other information as the Board considers appropriate, to make recommendations to the Secretary of HHS on whether or not to add one or more classes of employees to the SEC. Once NIOSH has received and considered the advice of the Board, the Director of NIOSH will propose a decision on behalf of HHS. The Secretary of HHS will make the final decision, taking into account the NIOSH evaluation, the advice of the

[1] NIOSH dose reconstructions under EEOICPA are performed using the methods promulgated under 42 C.F.R. pt. 82 and the detailed implementation guidelines available at http://www.cdc.gov/niosh/ocas.

Board, and the proposed decision issued by NIOSH. As part of this final decision process, the petitioner(s) may seek a review of certain types of final decisions issued by the Secretary of HHS.[2]

3.0 NIOSH-Proposed Class Definition and Petition Basis

The NIOSH-proposed class includes all employees of DOE, its predecessor agencies, and their contractors and subcontractors who worked at Lake Ontario Ordnance Works in Niagara Falls, New York, from January 1, 1944 through December 31, 1953, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the SEC. During this period, employees at this facility were involved with receiving and storing radioactive wastes from other Atomic Energy Commission (AEC) sites. The LOOW site also served as a transient point for shipments between sites.

The evaluation responds to Petition SEC-00145 which was submitted by an EEOICPA claimant whose dose reconstruction could not be completed by NIOSH due to a lack of sufficient dosimetry-related information. This claimant was employed as a security guard and foreman during the NIOSH-proposed class period. NIOSH's determination that it is unable to complete a dose reconstruction for an EEOICPA claimant is a qualified basis for submitting an SEC petition pursuant to 42 C.F.R. § 83.9(b).

4.0 Radiological Operations Relevant to the Proposed Class

The following subsections summarize the radiological operations at LOOW from January 1, 1944 through December 31, 1953, and the information available to NIOSH to characterize particular processes and radioactive source materials. Using available sources, NIOSH has attempted to gather process and source descriptions, information regarding the identity and quantities of radionuclides of concern, and information describing processes through which the radiation exposures of concern may have occurred and the physical environment in which they may have occurred. The information included within this evaluation report is meant only to be a summary of the available information.

4.1 Operations Description

Shipments from Linde Air Products Division of the Union Carbide Corporation

In 1944, the Manhattan Engineer District (MED) requested to use a small portion of the LOOW site to store solid uranium chemical residues originating from the refining of pitchblende ores, for uranium oxide recovery, performed at the Linde Air Products Division of the Union Carbide Corporation, in Tonawanda, New York. In 1946, the Tonawanda site was decommissioned and the contaminated portions of the site were disposed of at LOOW (NLC, 1979, p. 15).

The MED contracts stipulated that only uranium was being sold to MED; all other minerals were to remain under the control of the African Metals Company (AMC), which leased several buildings at

[2] See 42 C.F.R. pt. 83 for a full description of the procedures summarized here. Additional internal procedures are available at http://www.cdc.gov/niosh/ocas.

LOOW to store the residues. Those residues from Tonawanda were identified as F-32, L-30, and L-50, and were stored in these leased facilities (NLC, 1979, p. 15).

Additional residues from Linde, identified as R-10, were not covered under the agreement with AMC and were unpackaged and stored in an aboveground location, just north of the buildings in which the Belgian-owned residues were stored. In 1964, these residues were covered with dirt and seeded to provide a grass-covered sod layer. Smaller quantities of similar residues were handled in the same manner (NLC, 1979, p.17).

Shipments from Mallinckrodt Chemical Works

From 1946 through March 1949, the Mallinckrodt Chemical Works in St. Louis, Missouri, shipped pitchblende residues to Belgium. From April 1, 1949 though 1953, these residues were shipped to LOOW. These residues were identified as K-65, and were unpackaged and stored in a modified silo, with the empty drums shipped away from LOOW (NLC, 1979, p. 15).

Shipments from Various Facilities

In the late 1940s, contaminated materials from several different wartime facilities undergoing decommissioning were shipped to LOOW. Uranium reduction slag and discarded graphite crucibles from a uranium metal reduction and casting plant were also unpackaged and stored aboveground at LOOW. All of these materials were removed in the late 1950s and shipped to Y-12 (NLC, 1979, p. 17).

Shipments from Knolls Atomic Power Laboratory

From 1950 through 1952, LOOW was used as a staging point for uranium and thorium metal billets (Epp, 1951; Smith, March 1951; LOOW, November 1951; Smith, November 1951a; Smith, November 1952b; Blatz, 1951; LOOW, January 1952; Koenig, 1952a; Koenig, 1952b; Smith, 1958; LOOW, March 1952; LOOW, April 1952; LOOW, June 1952; Hershman, 1952. During the period from 1950 through 1953, wastes generated at the University of Rochester and Knolls Atomic Power Laboratory (KAPL) in Schenectady, New York, were transferred to LOOW.

The KAPL wastes were described as combustibles stored in wooden crates and processing wastes stored in 55-gallon drums. The processing wastes included plutonium and fission products in evaporator bottoms. There is no evidence that the plutonium-bearing wastes were ever opened while in storage. These wastes were accumulated in the Baker-Smith area (NLC, 1979, p. 17). Specifically, the liquid waste containing plutonium was stored in Building 444, which was demolished after the KAPL wastes were removed. In March 1958, it was determined that this building was in a deteriorated condition and that some of the markings on the drums and crates had weathered to the point of being illegible (Sweeney, 1958). By April 7, 1958, guidance had been established to ensure that plutonium-bearing materials were shipped to Oak Ridge (Hanner, 1958).

It appears that some of the KAPL combustible waste was stored in the boiler building, designated 401, which later became the Boron Metals Plant. In a letter dated April 18, 1958, the hope was expressed that the KAPL wastes would be disposed of prior to June 30th, when the New York Operations Office of the AEC would take administrative responsibility for the Boron Metals Plant (Sapirie, 1958). A portion of the combustible waste was incinerated as late as 1958. Based on the monitoring records, the radioactivity in this incinerated waste appears to have been fission products only (Vessels, 1958; Roth, 1958). The last outgoing shipment record found by NIOSH was dated January 30, 1959. After that date, there is no further discussion of the KAPL waste (Janca, 1959).

Shipments from University of Rochester
The University of Rochester wastes were described as animal residues and wastes and miscellaneous contaminated materials. The wastes were reportedly buried in a separate area from other residues (NLC, 1979, p. 15).

Cessation of Incoming Waste Shipments
No additional wastes were received at LOOW after 1953 (Bechtel, 1986, p. 14). After 1953, the radiologically-related operations at LOOW consisted of:

- removal of the KAPL waste, completed in 1959;
- seeding the open-air piles of material, completed in the 1964-1965 period;
- various corrective actions throughout the site history, usually involving radon reduction; and
- remediation of the site, beginning in 1982.

4.2 Radiation Exposure Potential from Operations

The potential for external radiation dose existed at all locations where radioactive materials were handled or stored. NIOSH has documentation describing receipt and storage of raffinates from different sites. There is no information regarding the handling of raffinates, though the quantities and storage locations are known. Based on the site operations outlined in Section 4.1, sources of external exposure included alpha, electron, and photon radiation emitted from radioactive shipments received at the site, whether for transient shipment/storage or permanent onsite storage.

The primary source of internal radiation exposure at the site was airborne radioactivity generated during handling of radioactive shipments. The data examined by NIOSH, as presented in Section 4.1, are representative of the types of shipments received at the site, including thorium, uranium, plutonium, and fission products. However, the data available to NIOSH for the period while incoming waste shipments were being received lack specific radiological information necessary to clearly define the radiation exposure potential.

4.3 Time Period Associated with Radiological Operations

Per the DOE Office of Health, Safety and Security, the time period associated with AEC operations at LOOW is from 1944 through 1997 (DOE, 2009). NIOSH has discovered no additional data to support more specific dates for the start and stop of AEC/DOE operations. Therefore, AEC/DOE work at LOOW is assumed to have started on January 1, 1944, and ended on December 31, 1997. As stated above, no additional wastes were received at LOOW after 1953. NIOSH has insufficient data to determine the specific date in 1953 when the last shipment was received, so waste receipt is assumed to have ceased on December 31, 1953. For the remainder of covered operations period at LOOW, from January 1, 1954 through December 31, 1997, the site entered a largely caretaker status.

4.4 Site Locations Associated with Radiological Operations

While some buildings and outside areas are specifically noted for the use or storage of radiological materials, documentation available to NIOSH does not indicate any definite boundaries between radiological and non-radiological areas. NIOSH has insufficient information to completely describe the diverse source term, operations processes, worker movements, or potential for contamination

spread at LOOW; therefore. NIOSH must assume that the potential for exposure to radioactive materials existed in all areas of LOOW during the period being evaluated.

4.5 Job Descriptions Affected by Radiological Operations

NIOSH has found no documentation associating job titles and/or job assignments with specific radiological operations or conditions. Without such information, NIOSH is unable to define potential radiation exposure conditions based on worker job descriptions.

5.0 Summary of Available Monitoring Data for the Proposed Class

The primary data used for determining internal exposures are derived from personal monitoring data, such as urinalyses, fecal samples, and whole-body counting results. If these are unavailable, the air monitoring data from breathing zone and general area monitoring are used to estimate the potential internal exposure. If personal monitoring and breathing zone area monitoring are unavailable, internal exposures can sometimes be estimated using more general area monitoring, process information, and information characterizing and quantifying the source term.

This same hierarchy is used for determining the external exposures to the cancer site. Personal monitoring data from film badges or thermoluminescent dosimeters (TLDs) are the primary data used to determine such external exposures. If there are no personal monitoring data, exposure rate surveys, process knowledge, and source term modeling can sometimes be used to reconstruct the potential exposure.

A more detailed discussion of the information required for dose reconstruction can be found in OCAS-IG-001, *External Dose Reconstruction Implementation Guideline*, and OCAS-IG-002, *Internal Dose Reconstruction Implementation Guideline*. These documents are available at: http://www.cdc.gov/niosh/ocas/ocasdose.html.

5.1 Data Capture Efforts and Sources Reviewed

In addition to examining its Site Research Database (SRDB) to locate documents supporting the evaluation of the proposed class, NIOSH identified and reviewed numerous data sources to locate information relevant to determining the feasibility of dose reconstruction for the class of employees proposed for this petition. This included determining the availability of information on personnel monitoring, workplace monitoring, and radiological source term data.

NIOSH data capture efforts for LOOW focused on:

- various site contractors (i.e., Bechtel National, National Lead of Ohio, Nuclear Materials and Equipment Corp., Babcock & Wilcox (Nuclear Materials and Equipment Corp. successor), Page Airways, Hooker Chemical, and OxyChem (Hooker successor);
- the U.S. Army Corp of Engineers (USACE);
- the New York State Department of Environmental Conservation;
- the Nuclear Regulatory Commission (including the Agency-wide Documents Access and Management System (ADAMS) electronic records repository);

- the DOE (including Office of Scientific and Technical Information (OSTI) and OpenNet repository); and
- the National Archives record centers.

Attachment One contains a summary of LOOW documents. The summary specifically identifies specific data capture details for each document retrieved.

5.2 Worker Interviews

In an effort to locate potentially useful data, NIOSH has contacted the following individuals:

- Representatives from Bechtel National, Babcock & Wilcox (NUMEC successor), Signature Flight Services (Page Airways successor), and New York State Department of Environmental Conservation;
- An attorney for OxyChem (Hooker Chemical successor); and
- The project manager at USACE LOOW.

Decontamination documentation indicates that former employees of Linde Air were interviewed to determine basic general knowledge of both Linde and LOOW. The interviews were conducted by ORAU in 1981 (Robie, 1981; Dupree, 1981; Beck 1981**).**

Additionally, NIOSH has reviewed the computer-assisted telephone interviews conducted for claims filed with NIOSH for energy employees who worked at the LOOW during the period from 1944 through 1953. These interviews provided no information to change NIOSH's feasibility determination.

5.3 Internal Personnel Monitoring Data

NIOSH has obtained only limited bioassay results for the period prior to 1954, when shipments of radioactive material were still being received. Available data for the period include some radon (breath) sampling results starting in 1951 (Radon Results, April 1949-September 1951; Radon Results, August 1949-March 1951), and urinalysis results for 1951 (mostly for radium, with some limited uranium analysis) (Urine Sample Results, September 1950-August 1951).

Requests for dosimetry-related information were made directly to DOE for all LOOW claims. DOE provided results for only one of seven active claims with employment prior to 1954. Both bioassay and external dosimetry results were provided for that claim, with the bioassay results consisting of a total of four radium measurements, one uranium measurement, and two breath radon measurements. No other internal dose information was available through DOE for the remaining claims with pre-1954 employment.

When the site entered a caretaker phase, after the cessation of inbound shipments in 1953, several characterization surveys were performed, with the most recent conducted in 1980 by Battelle Memorial Institute (Battelle, 1979-1980). Long-term radon monitoring has been performed (Radon Results, July 1980-October 1981; Radon Results, October 1977-March 1980; NLC, 1980; Radon Results, April 1949-September 1951; Radon Results, October 1952; Heatherton, 1950a; Unknown author, 1960). Concentrations of radioactive material onsite after 1953 are known from these survey data (Battelle, 1979-1980; Unknown author, 1960; Heatherton, 1950b**;** AEC, 1973; Landis, 1988;

Ausmus, 1980; Battelle, 1980**)**. Bioassay results are also available for the period during the incineration of the KAPL wastes (Vessels, 1958).

5.4 External Personnel Monitoring Data

Film badge results are available to NIOSH beginning in mid-1949 (Film Badge Results, June 1949-January 1951; Film Badge Results, January 1951-December 1954; Film Badge Results, 1952; Film Badge Results, 1953a; Film Badge Results, 1953b). No records have been found prior to these. DOE provided external dose results for three of seven active claims with employment prior to 1954. The results, beginning in mid-1949, are in the form of single-page weekly summaries. No other external dose information was available through DOE for the remaining claims with pre-1954 employment.

As stated in Section 5.3, when the site entered a caretaker phase, after the cessation of inbound shipments in 1953, several characterization surveys were performed, with the most comprehensive occurring in the 1970s and 1980s (Battelle, 1979-1980; Unknown author, 1960; Heatherton, 1950b**;** AEC, 1973; Landis, 1988; Ausmus, 1980; Battelle, 1980). Co-worker doses can be established using available dosimetry results for the period after 1953. For the period after 1953, external dosimetry results exist for workers involved with the KAPL shipments to Oak Ridge, Tennessee, and for those involved with the Boron Metals Plant, including electron, photon, and neutron data (Film Badge Results, 1952; Film Badge Results, 1953a; Film Badge Results, January-June 1953; Film Badge Results, January 1951-December 1954; Film Badge Results, August 1967; Film Badge Results, July 1955-January 1956; LOOW, 1949-1960). On-site radiation levels are known from the various survey data.

5.5 Workplace Monitoring Data

NIOSH has obtained limited dust sampling results for 1950, with total alpha air sample analyses conducted only in August, October, and November, and the remainder being performed for radium and radon (Heatherton, 1950a; Air Dust Sample Results, 1950).

Concentrations of radioactive material after 1953 are known from characterization survey data and radon monitoring, with the most comprehensive occurring in the 1970s and 1980s (Radon Results, July 1980-October 1981; Radon Results, October 1977-March 1980; Battelle, 1979-1980; NLC, 1980; Radon Results, April 1949-September 1951; Radon Results, October 1952; Heatherton, 1950a; Unknown author, 1960; Heatherton, 1950b; AEC, 1973). Incineration of the KAPL waste in the late 1950s was adequately monitored though the use of air sampling at various distances from the burn site (Harris, 1956).

5.6 Radiological Source Term Data

Source term data regarding residues shipped to, and permanently stored at LOOW can be determined by survey data (conducted after 1953) that are available to NIOSH. Source term data for shipments and site storage of a transient nature are not available (NLC, 1979, pp. 15-17; Epp, 1951; Smith, March 1951; LOOW, November 1951; Smith, November 1951a; Smith, November 1952b; Blatz, 1951; LOOW, January 1952; Koenig, 1952a; Koenig, 1952b; Smith, 1958; LOOW, March 1952; LOOW, April 1952; LOOW, June 1952; Hershman, 1952.

6.0 Feasibility of Dose Reconstruction for the Proposed Class

42 C.F.R. § 83.14(b) states that HHS will consider a NIOSH determination that there was insufficient information to complete a dose reconstruction, as indicated in this present case, to be sufficient, without further consideration, to conclude that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy.

In the case of a petition submitted to NIOSH under 42 C.F.R. § 83.9(b), NIOSH has already determined that a dose reconstruction cannot be completed for an employee at the DOE or AWE facility. This determination by NIOSH provides the basis for the petition by the affected claimant. Per § 83.14(a), the NIOSH-proposed class defines those employees who, based on completed research, are similarly affected and for whom, as a class, dose reconstruction is similarly not feasible.

In accordance with § 83.14(a), NIOSH may establish a second class of co-workers at the facility for whom NIOSH believes that dose reconstruction is similarly infeasible, but for whom additional research and analysis is required. If so identified, NIOSH would address this second class in a separate SEC evaluation rather than delay consideration of the claim currently under evaluation (see Section 10). This would allow NIOSH, the Board, and HHS to complete, without delay, their consideration of the class that includes a claimant for whom NIOSH has already determined a dose reconstruction cannot be completed, and whose only possible remedy under EEOICPA is the addition of a class of employees to the SEC.

This section of the report summarizes research findings by which NIOSH determined that it lacked sufficient information to complete the relevant dose reconstruction and on which basis it has defined the class of employees for which dose reconstruction is not feasible. NIOSH's determination relies on the same statutory and regulatory criteria that govern consideration of all SEC petitions.

6.1 Feasibility of Estimating Internal Exposures

NIOSH has evaluated the available personnel and workplace monitoring data and source term information and has determined that there are insufficient data for estimating internal exposures, as described below.

NIOSH has been unable to locate any internal monitoring data prior to 1951, and after that time there are only limited uranium monitoring data. The monitoring for internal radium, while more complete than that for uranium, are spotty in nature and do not address the major portion of the period prior to 1954.

Several shipments of thorium to the site have been identified, along with documentation that thorium material was briefly stored at the LOOW site. No internal monitoring for thorium has been found. Shipments containing fission products were received from KAPL during the period from 1950 through 1953 (NLC, 1979, p. 17); no internal monitoring data for fission products have been found, with the exception of air monitoring performed during the incineration of KAPL wastes, performed from 1956-1958.

NIOSH has insufficient data to determine that shipments to the site prior to 1954 did not potentially include other radionuclides.

During the period prior to 1954, the inventory of radioactive material at LOOW was in a constant state of flux. While NIOSH has identified many of the shipments received during the period 1944 through 1953, NIOSH has insufficient data to ensure that all possible shipments have been accounted for. Uranium and thorium billets were known to be shipped to LOOW and stored temporarily. Both the quantity stored and lengths of the storage periods are unknown. The possibility of additional shipments to and from LOOW, including those of unknown content, makes dose reconstruction infeasible for the period from 1944 through 1953.

After 1953, incoming shipments to LOOW ceased and the site entered a largely caretaker status. Sufficient records exist to allow dose reconstruction after that time. The materials remaining on site during the post-1953 static period have been adequately characterized, and workplace monitoring records exist for the incineration of the low-level KAPL wastes (Vessels, 1958; Roth 1958**)**. For monitored workers after 1953, NIOSH will assign fitted internal dose where the data are available. For unmonitored individuals after 1953, there is a potential for intakes of radioactive materials from uncovered storage piles. For these individuals, NIOSH will assign intakes based on soil activity distributions derived from available soil analysis results (Battelle, 1979-1980; Unknown author, 1960; Heatherton, 1950b; AEC, 1973; Landis, 1988; Ausmus, 1980; Battelle, 1980), and bounding breathing rate and suspension rate assumptions.

NIOSH does not have access to sufficient personnel monitoring, workplace monitoring, or source term data to estimate potential internal exposures to radionuclide(s) during the period from January 1, 1944 through December 31, 1953. Consequently, NIOSH finds that it is not feasible to estimate, with sufficient accuracy, internal exposures to radionuclide(s) and resulting doses for the class of employees covered by this evaluation.

Although NIOSH found that it is not possible to completely reconstruct internal radiation doses for the period from January 1, 1944 through December 31, 1953, NIOSH intends to use any available internal monitoring data that may become available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Dose reconstructions for individuals employed at LOOW during the period from January 1, 1944 through December 31, 1953, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

6.2 Feasibility of Estimating External Exposures

This evaluation responds to a petition based on NIOSH determining that internal radiation exposures to waste materials containing thorium, uranium, plutonium, and fission products could not be reconstructed for a dose reconstruction referred to NIOSH by the Department of Labor (DOL). As noted above, HHS will consider this determination to be sufficient without further consideration to determine that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy. Consequently, it is not necessary for NIOSH to fully evaluate the feasibility of reconstructing external radiation exposures for the class of workers covered by this report.

External dose records exist for the period from June 1949 through June 1958 (Film Badge Results, 1952; Film Badge Results, 1953a; Film Badge Results, June 1949-January 1951; Film Badge Results, January-June 1953; Film Badge Results, January 1951-December 1954; Film Badge Results, January 1955; Film Badge Results, 1954; Film Badge Results, January-June 1958; Film Badge Results, 1956-1957; Film Badge Results, 1956), and for December 1959 (Film Badge Results, December 1959). NIOSH has sufficient information to assign external dose to monitored workers during the period

1949 through 1953. For the period from January 1, 1954 through the end of covered operations, sufficient external monitoring records exist for NIOSH to develop external co-worker dose distributions and adequately bound the external exposures at LOOW.

Adequate reconstruction of medical dose for LOOW workers is feasible by using claimant-favorable assumptions in the complex-wide Technical Information Bulletin, *Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures* (ORAUT-OTIB-0006).

Although NIOSH found that it is not possible to completely reconstruct external radiation doses for the period from January 1, 1944 through December 31, 1953, NIOSH intends to use any available external monitoring data that may become available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Dose reconstructions for individuals employed at LOOW during the period from January 1, 1944 through December 31, 1953, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

6.3 Class Parameters Associated with Infeasibility

Shipments to LOOW were conducted from 1944 through 1953. After this period, all inbound shipments to the site ceased, and the site entered a largely caretaker status. NIOSH recommends that the class include the time period January 1, 1944, through December 31, 1953, the period while shipments were being received by LOOW.

While some buildings are specifically noted for the use of radiological materials, documentation available to NIOSH does not indicate any definite boundaries between radiological and non-radiological areas. NIOSH recommends that the class definition include ALL areas and buildings during the specified time period.

NIOSH has found no documentation associating job titles and/or job assignments with specific radiological operations or conditions. Without such information, NIOSH is unable to define the SEC class based on worker job descriptions. NIOSH recommends that the class definition include ALL workers during the specified time period.

7.0 Summary of Feasibility Findings for Petition SEC-00145

This report evaluates the feasibility for completing dose reconstructions for employees at LOOW from January 1, 1944 through December 31, 1953. NIOSH determined that members of this class may have received radiation exposures from internal and external radiation sources. NIOSH lacks sufficient information, which includes biological monitoring data, sufficient air monitoring information, or sufficient process and radiological source information that would allow it to estimate the potential internal and external radiation exposures to which the proposed class may have been exposed. NIOSH considers the adequate reconstruction of medical dose for LOOW workers to be feasible.

NIOSH has documented herein that it cannot complete the dose reconstructions related to this petition. The basis of this finding demonstrates that NIOSH does not have access to sufficient information to

estimate either the maximum radiation dose incurred by any member of the class or to estimate such radiation doses more precisely than a maximum dose estimate.

Although NIOSH found that it is not possible to completely reconstruct internal and external radiation doses for the period from January 1, 1944 through December 31, 1953, NIOSH intends to use any available monitoring data that may become available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Dose reconstructions for individuals employed at LOOW during the period from January 1, 1944 through December 31, 1953, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

8.0 Evaluation of Health Endangerment for Petition SEC-00145

The health endangerment determination for the class of employees covered by this evaluation report is governed by EEOICPA and 42 C.F.R. § 83.14(b) and § 83.13(c)(3). Pursuant to these requirements, if it is not feasible to estimate with sufficient accuracy radiation doses for members of the class, NIOSH must determine that there is a reasonable likelihood that such radiation doses may have endangered the health of members of the class. The regulations require NIOSH to assume that any duration of unprotected exposure may have endangered the health of members of a class when it has been established that the class may have been exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. If the occurrence of such an exceptionally high-level exposure has not been established, then NIOSH is required to specify that health was endangered for those workers who were employed for a number of work days aggregating at least 250 work days within the parameters established for the class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

NIOSH has determined that members of the class were not exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. However, the evidence reviewed in this evaluation indicates that some workers in the class may have accumulated chronic radiation exposures through intakes of radionuclides and from direct exposure to radioactive materials. Consequently, NIOSH is specifying that health was endangered for those workers covered by this evaluation who were employed for a number of work days aggregating at least 250 work days within the parameters established for this class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

9.0 NIOSH-Proposed Class for Petition SEC-00145

The evaluation defines a single class of employees for which NIOSH cannot estimate radiation doses with sufficient accuracy. This class includes all employees of DOE, its predecessor agencies, and their contractors and subcontractors who worked at Lake Ontario Ordnance Works in Niagara Falls, New York, from January 1, 1944 through December 31, 1953, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the SEC.

10.0 Evaluation of Second Similar Class

In accordance with § 83.14(a), NIOSH may establish a second class of co-workers at the facility, similar to the class defined in Section 9.0, for whom NIOSH believes that dose reconstruction may not be feasible, and for whom additional research and analyses is required. If a second class is identified, it would require additional research and analyses. Such a class would be addressed in a separate SEC evaluation rather than delay consideration of the current claim. At this time, NIOSH has not identified a second similar class of employees at LOOW for whom dose reconstruction may not be feasible.

11.0 References

42 C.F.R. pt. 81, *Guidelines for Determining the Probability of Causation Under the Energy Employees Occupational Illness Compensation Program Act of 2000;* Final Rule, Federal Register/Vol. 67, No. 85/Thursday, p 22,296; May 2, 2002; SRDB Ref ID: 19391

42 C.F.R. pt. 82, *Methods for Radiation Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule; May 2, 2002; SRDB Ref ID: 19392

42 C.F.R. pt. 83, *Procedures for Designating Classes of Employees as Members of the Special Exposure Cohort Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule; May 28, 2004; SRDB Ref ID: 22001

42 U.S.C. §§ 7384-7385 [EEOICPA], *Energy Employees Occupational Illness Compensation Program Act of 2000*; as amended; OCAS website

ORAUT-OTIB-0006, *Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures*, Rev. 03 PC-1; Oak Ridge Associated Universities (ORAU); Oak Ridge, Tennessee; December 21, 2005; SRDB Ref ID: 20220

AEC, 1973, *Radiation Survey and Decontamination Report on the Lake Ontario Ordnance Works Site*; Atomic Energy Commission (AEC) Oak Ridge Operations; January 18, 1973; SRDB Ref ID: 9295, pp. 45-78

Air Dust Sample Results, 1950, *Lake Ontario Ordnance Works Air Dust Sample Results*; samples taken August 30, 1950 through November 9, 1950; SRDB Ref ID: 9094

Ausmus, 1980, *Interim Summary Report on the Comprehensive Radiological Survey of the DOE-Niagara Falls Storage Site to the U.S. Department of Energy Remedial Action Program*; B. S. Ausmus, J. F. Dettorre, and T. L. Anderson; August 1980; SRDB Ref ID: 17407

Battelle, 1979-1980, *A Comprehensive Radiological Survey of the DOE-Niagara Falls Storage Site*, includes quality control practices, survey information, and progress reports for this survey; Battelle; 1979-1980; SRDB Ref ID: 3698

Battelle, 1980, *Interim Summary Report on the Comprehensive Radiological Survey of the DOE-Niagara Falls Storage Site to the U.S. Department of Energy Remedial Action Program*; Battelle; July 1980; SRDB Ref ID: 30874

Bechtel, 1986, *Post-Remedial Action Report for the Niagara Falls Storage Site Vicinity Properties-1983 and 1984*, DOE/OR/20722-84; Bechtel National, Inc.; December 1986; SRDB Ref ID: 37548

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Blatz, 1951, *Trip to Lake Ontario Storage Area-December 10, 1951*, correspondence to Rothenberg; Hanson Blatz; December 14, 1951; SRDB Ref ID: 17490

DOE, 2009, *DOE Office of Health, Safety and Security EEOICPA Web Page*; last accessed June 3, 2009; htp://www.hss.energy.gov/healthsafety/fwsp/advocacy/faclist/findfacility.cfm

Dupree, 1981, *Interview with [Name Redacted3], A Former Linder Employee*, correspondence with attachments; E. A. Dupree; April 10, 1981; SRDB Ref ID: 3745, pp. 29-35

Epp, 1951, *Storage of U Rods at LOOW*, correspondence to V. L. Parsegian; F. J. Epp; March 15, 1951; SRDB Ref ID: 61102

Film Badge Results, June 1949-January 1951, *Lake Ontario Ordnance Works Film Badge Results*; results reported June 20, 1949 through January 5, 1951; SRDB Ref ID: 9111

Film Badge Results, January 1951-December 1954, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*, results reported January 1, 1951 through December 30, 1954; SRDB Ref ID: 12418

Film Badge Results, 1952, *Lake Ontario Ordnance Works Film Badge Results*; results reported for all months in 1952; SRDB Ref ID: 9107

Film Badge Results, 1953a, *Lake Ontario Ordnance Works Film Badge Results*; results reported for all months in 1953; SRDB Ref ID: 9108

Film Badge Results, 1953b, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*, results reported for all months in 1953; SRDB Ref ID: 17340

Film Badge Results, January-June 1953, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*; results reported from January 5, 1953 through June 22, 1953; SRDB Ref ID: 9756

Film Badge Results, 1954, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*; results reported for all months in 1954; SRDB Ref ID: 17341

Film Badge Results, January 1955, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*; results reported from January 3, 1955 through January 10, 1955; SRDB Ref ID: 17339

Film Badge Results, July 1955-January 1956, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*; results reported from July 18, 1955 through January 30, 1956; SRDB Ref ID: 17335

Film Badge Results, 1956, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*, results reported for all months in 1956; SRDB Ref ID: 53932

Film Badge Results, 1956-1957, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*, results reported from November 5, 1956 through November 18, 1957; SRDB Ref ID: 53930

Film Badge Results, January-June 1958, *Lake Ontario Storage Area/Lake Ontario Ordnance Works Film Badge Results*, results reported from January 6, 1958 through June 23, 1958; SRDB Ref ID: 53929

Film Badge Results, December 1959, *Lake Ontario Ordnance Works Film Badge Results*, results reported during December 1959; SRDB Ref ID: 53931

Film Badge Results, August 1967, *Lake Ontario Ordnance Works Film Badge Results*, results reported for August 1, 1967; SRDB Ref ID: 16404

Hanner, 1958, *Disposal of KAPL Wastes*, conference notes; J. L. Hanner; April 7, 1958; SRDB Ref ID: 61223, pp. 34-35

Harris, 1956, *Open Field Burning of Low Level Radioactive Contaminated Combustible Wastes*; Willaim B. Harris and Martin S. Weinstein; 1956; SRDB Ref ID: 4413

Heatherton, 1950a, *Lake Ontario Ordnance Works Air Radon and Dust Survey August-September 1950*; R. C. Heatherton; November 6, 1950; SRDB Ref ID: 9078

Heatherton, 1950b, Lake *Ontario Ordnance Works Radiation, Radon, and Dust Survey of Operations Essential to the Storage of K-65 in the Tower*; Richard C. Heatherton; November 27, 1950; SRDB Ref ID: 9295, pp. 1-15

Hershman, 1952; *Monthly Progress Report for October 1952*; H. J. Hershman; October 21, 1952; SRDB Ref ID: 10751

Janca, 1959, *Report of KAPL Waste Shipment and Storage at Lake Ontario Ordnance Works*; B. Janca; August 1959; SRDB Ref ID: 60902

Koenig, 1952a, *Shipment of Long Billets from Bendix*, correspondence to J. P. Morgan; 1952; SRDB Ref ID: 63874

Koenig, 1952b, *Shipment of Long Billets to Lake Ontario Storage Area*, correspondence to Geraldine Hughes; James Koenig; February 11, 1952; SRDB Ref ID: 61958, p. 2

Landis, 1988, *Radiological Survey of the Niagara Falls Storage Site*, RSAP/DOE/39; M. R. Landis, Radiological Site Assessment Program at Oak Ridge Associated Universities; December 1988; SRDB Ref ID: 17370

LOOW, 1949-1960, *Miscellaneous Dose Reports for K-65 Operations*; results from March 23, 1949 through February 16, 1960; Lake Ontario Ordnance Works (LOOW); SRDB Ref ID: 17337

LOOW, November 1951, *Tonawanda Progress Report for November 1951*; Lake Ontario Ordnance Works (LOOW); November 1951; SRDB Ref ID: 66863

LOOW, January 1952, *Tonawanda Area Progress Report for January 1952*; Lake Ontario Ordnance Works (LOOW); January 1952; SRDB Ref ID: 66860

LOOW, March 1952, *Tonawanda Area Progress Report for March 1952*; Lake Ontario Ordnance Works (LOOW); March 1952; SRDB Ref ID: 66862

LOOW, April 1952, *Tonawanda Area Progress Report; Lake Ontario Ordnance Works (LOOW)*; April 1952; SRDB Ref ID: 61961, pp. 8-13

LOOW, June 1952; *Physical Inventory for LOOW-May 31, 1952*; Lake Ontario Ordnance Works (LOOW); June 26, 1952; SRDB Ref ID: 61183

NLC, 1979, *Informational Report on the U.S. Department of Energy-Niagara Falls Site*, NLCO-003EV; National Lead Company (NLC) of Ohio; July 1979; SRDB Ref ID: 4243

NLC, 1980, *Review of Radon Monitoring at the DOE-Niagara Falls Storage Site*, NLCO-0004EV; National Lead Company (NLC) of Ohio; March 31, 1980; SRDB Ref ID: 4597

Radon Results, April 1949-September 1951, *LOOW Radon Breath Sample and Radon Area Sample Results*; samples taken April 7, 1949 through September 24, 1951; SRDB Ref ID: 8949

Radon Results, August 1949-March 1951, *LOOW Radon Air Sample Results*; samples taken August 17, 1949 through March 7, 1951; SRDB Ref ID: 8952

Radon Results, October 1952, *LOOW Radon Results*; samples taken October 14, 1952; SRDB Ref ID: 9074

Radon Results, October 1977-March 1980, *LOOW Radon Results, Reports, and Correspondence*; documents and samples dated from October 6, 1977 through March 10, 1980; SRDB Ref ID: 3605

Radon Results, July 1980-October 1981, *LOOW Radon Results and Reports*; documents dated from July 1, 1980 through October 14, 1981; SRDB Ref ID: 3597

Robie, 1981, *Conversation with [Name Redacted2] (NLO) Concerning Linde Air Products, Tonawanda, New York*, correspondence with attachments; D. M. Robie; April 10, 1981; SRDB Ref ID: 3745, pp. 20-28

Roth, 1958, *Request for Analysis of Urine Samples*, correspondence; Herman M. Roth; May 5, 1958; SRDB Ref ID: 4458, p. 5

Sapirie, 1958, *Telephone Conversation About Burning KAPL Wastes*, correspondence to Walter Beanblossom; S. R. Sapirie; April 18, 1958; SRDB Ref ID: 61223, pp. 40-41

Smith, March 1951, *Progress Report for Week of March 15, 1951*; R. Smith; March 19, 1951; SRDB Ref ID: 61103, p. 2

Smith, November 1951a, *Weekly Production Report for November 15, 1951*; R. J. Smith; November 21, 1951; SRDB Ref ID: 61144, p. 3

Smith, November 1951b, *Weekly Production Report for November 22, 1951*; R. J. Smith; November 25, 1951; SRDB Ref ID: 61144, p. 2

Smith, 1958, *Weekly Progress Report for February 7, 1958*; R. J. Smith; February 11, 1958; SRDB Ref ID: 61958, p. 3

Sweeney, 1958, *KAPL Wastes*, correspondence to F. W. Malone; J. D. Sweeney; March 25, 1958; SRDB Ref ID: 61223, p. 27

Unknown author, 1960, *Radiation and Radon Survey of Operations of K-65 Tower*; author's name is illegible; November 1960; SRDB Ref ID: 9093

Urine Sample Results, September 1950-August 1951, *Lake Ontario Ordnance Works Urine Sample Results*; samples received September 7, 1950 through August 30, 1951; SRDB Ref ID: 9100

Vessels, 1958, *Bioassay Results, Hooker Electrochemical Company, AEC Contract No. AT (30-1)-1524*, memorandum; R. D. Vessels; July 29, 1958; SRDB Ref ID: 4458, p. 3

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Attachment 1: Data Capture Synopsis

Table A1-1: Data Capture Synopsis for Lake Ontario Ordnance Works			
Data Capture Information	**Data Capture Description**	**Completed**	**Uploaded into SRDB**
Primary Site/Company Name: Lake Ontario Ordnance Works (LOOW); 1944-1997 Other company names: Niagara Falls Storage Site (NFSS), an AKA for LOOW; Bechtel National, 1981-1997: Last attempt to contact Scherry Snow, Bechtel representative, was 11/03/2008. She has been unresponsive. National Lead of Ohio, 1971-1981: NLO is defunct. Their documents were captured from DOE Legacy Management. See below for details. NUMEC, 1964-1971: Terry Chalker, A Babcock & Wilcox (NUMEC successor) attorney confirmed on 01/08/2008 that B&W holds no LOOW records. Page Airways, 1958-1964: Priscilla Kehoe, paralegal for Signature Flight Services (Page successor) confirmed on 05/14/2008 that Signature holds no LOOW records. Hooker Chemical, 1953-1958: Marc Kennedy, Attorney for OxyChem (Hooker successor) provided 3 relevant documents that were captured on 05/16/2008.	Documents from Occidental Chemical: shotgun source – best management practice, appraisal of controls and facilities for the protection of property in outside storage areas, and moving scrap material from eastern portion of site.	05/16/2008	3
State Contacted: NY Department of Environmental Conservation: Barbara Youngberg *(retired)* and John Frisone (518) 402-8579	Aerial radiological survey, compilation of air and water sampling results and radiation survey results, NFSS environmental monitoring reports, soil samples for the Modern Landfill Inc., radon concentration measurements, and remedial measures for L-50 residue storage structures.	03/05/2007	64
Cincinnati/Hamilton, OH Public Library	Formerly utilized Manhattan Engineering District/Atomic Energy Commission (MED/AEC) Sites remedial action program radiological survey of the Hooker Chemical Company Niagara Falls, New York.	01/19/2004	1
Comprehensive Epidemiologic Data Resource (CEDR)	No relevant documents identified.	03/31/2008	0
DOE Environmental Management	Environmental reports, radioactivity at LOOW, summary environmental report on radiological doses and releases, the bomb that fell on Niagara, uncertainty and variability in historical time-weighted average exposure data, and utilizing isotopic uranium ratios in groundwater.	10/28/2007	6
DOE Germantown	Personnel monitoring reports, LOOW dirt and plant samples, site	02/24/2004	12

Table A1-1: Data Capture Synopsis for Lake Ontario Ordnance Works			
Data Capture Information	**Data Capture Description**	**Completed**	**Uploaded into SRDB**
	description and history, radiation, radon and dust surveys, trip reports, and sample results.		
DOE Hanford Declassified Document Retrieval System (DDRS)	Uranium rolling at Simonds Saw and Steel Company.	03/31/2008	1
DOE Legacy Management Considered Sites	Post remedial action survey property of modern landfill, results of the mobile gamma scanning activities, radiological surveys, post-remedial action report, monthly progress report, aerial radiological survey, Niagara Falls vicinity fact sheet, long-term surveillance, and a maintenance needs assessment.	11/12/2007	14
DOE Legacy Management - Grand Junction Office	Shipment of thorium metal for storage request number D-1-198 and Tonawanda progress reports.	07/11/2008	186
DOE Legacy Management - MoundView (Fernald Holdings, includes Fernald Legal Database)	Residues and by-products, scrap shipment to Vitro Manufacturing, health physics activities, and medical hazards with regard to storage of radium-containing sludge from processing 3% pitchblende ores at Linde, radiological surveys, symposium on occupational health experience and practices in the uranium industry, environmental monitoring reports, DOE Office of Legacy Management Niagara Falls vicinity properties fact sheet, and a long range plan for Fernald.	06/21/2008	165
DOE OpenNet	Monthly status and progress reports.	03/31/2008	9
DOE OSTI Energy Citations	Site remedial action project information, aerial radiological survey, annual site environmental report, assessment of alternatives for long term management of uranium ore residues and contaminated soils.	05/19/2008	9
DOE OSTI Information Bridge	Performance monitoring report for the Niagara Falls Storage Site waste containment structure.	06/17/2008	1
DOL/Paragon	Accountability of radium and valuable metals, aerial radiological survey, boron metal plant review, cesium-137 contamination, changing land uses, comparison of predicted doses to the general public, doses from other radiation sources, data on the K-65 tower, disposal and storage of radioactive material, recovery, and scrap metal, Eberline radiological survey of modern landfill site, environmental assessment plan for the decontamination of 156.25 acres of the AEC-Niagara Falls Site, evaluation of potential hazards, final environmental impact statement, health and safety plan for the NFFS, licensing of uranium residues stored at LOOW, monthly report of field activities, NFSS annual environmental report, NFSS record of decision, operational reports, radiation exposures, radiological surveys including air and dust sample results, radon monitoring data, site history, inventory, operations and shipping information, vitrification of the	01/13/2009	772

Table A1-1: Data Capture Synopsis for Lake Ontario Ordnance Works			
Data Capture Information	**Data Capture Description**	**Completed**	**Uploaded into SRDB**
	residues at NFSS, waste shipment and storage at LOOW, weekly monitoring report for off-site locations, and weekly progress reports.		
Environmental Measurements Laboratory (EML) / Health and Safety Laboratory (HASL)	Site visits, annual report, thorium sampling, and storage information.	03/08/2005	1
Environmental Protection Agency (EPA)	EPA superfund site information on Niagara Falls Storage Site actions.	10/27/2007	5
Google	Report for the formerly utilized Manhattan Engineer District/Atomic Energy Commission Sites, radiological surveys, history of the Tonawanda, NY FUSRAP Site, and K-65 residues.	07/16/2008	62
Lewiston, NY Public Library	Field sampling plan and remedial investigation.	03/31/2009	1
Missouri Department of Natural Resources	Oldest atomic waste found in the St. Louis area.	09/30/2008	2
NARA - Atlanta	Annual health protection status report, breath radon measurements, comments on residues and by-products stored within the Tonawanda area, disposition of Knolls Atomic Power Laboratory (KAPL) wastes and bioassay results, aerial photograph, neutron source - BMP, radiation monitoring progress reports, shipment of iron cakes to LOOW, storage of tailings in barrels at LOOW, unloading K-65 from railroad car at model town, and a health physics report.	06/20/2008	30
NARA - Kansas City	NYSHD sampling at Niagara Falls Site, open field burning of low level radioactive waste, progress reports, radiation hazards at LOOW, Bechtel radon data, bioassay sample results, description of residues and stored waste, film badge data, radiological incident investigations, water and sediment radiological data, environmental monitoring data, radiation work permits, radiochemical analyses of urine samples, radiological survey of off site property, and TLD area monitor reports.	10/14/2008	229
National Academies Press (NAP)	No relevant documents identified.	04/01/2008	0
National Nuclear Security Administration (NNSA) - Nevada Site Office	No relevant documents identified.	03/31/2008	0
NRC Agencywide Document Access and Management (ADAMS)	No relevant documents identified.	03/31/2008	0
Oak Ridge Operations (ORO) Vault	Soil and water uranium and radium survey progress reports, dosimetry and hazardous area information, Linde progress reports, Mallinckrodt Chemical Works study classifications of radium, radon and thorium exposures, miscellaneous Linde correspondence, storage of K-65, film badge data, and radiation and dust exposures.	10/28/2005	17
Office of Scientific & Technical Information (OSTI)	NFSS environmental surveillance reports, evaluation of alternatives for the disposition of Niagara Falls Storage Site's residues and wastes, report on the performance monitoring system for the interim waste containment, and	11/03/2008	14

Table A1-1: Data Capture Synopsis for Lake Ontario Ordnance Works			
Data Capture Information	**Data Capture Description**	**Completed**	**Uploaded into SRDB**
	a radiological survey of LOOW and vicinity.		
ORAU Team	Site profile, dose document summary, documented communication, Data Completeness Verification for Lake Ontario Ordnance Works, description of work with U-235, and processes at LOOW.	04/18/2008	13
Southern Illinois University	Disposal of radioactive wastes in the metropolitan St. Louis area and the environmental and health legacy of the Mallinckrodt Chemical Works Co.	10/08/2008	1
University of Rochester	Former University of Rochester burial area investigation.	08/18/2008	1
Unknown	Background and history reports on LOOW, beta sample results, environmental surveillance plan, evaluation of exposure potential, exploration of contaminated residue areas at LOOW, film badge monitoring reports, gamma doses from K-65 operations, health group monthly reports, health hazards in New York Operations Office (NYOO) facilities producing and processing uranium, health physics progress reports, health physics requirements for work, investigations regarding thorium location of contaminated areas, monthly reports, radon, dust, urine and film badge reports, remedial investigation report for the Tonawanda Site, smear results, uranium inventory, and trip reports.	03/30/2007	98
US Army Corps of Engineers	Identification of known past and present waste areas and solid waste management units, excavation of drums, remedial action performed at the Niagara Falls Storage Site, report on treatment, storage and disposal facilities for hazardous, toxic and radioactive waste, final engineering evaluation/cost analysis for removal actions in operable units 1and 2, remedial investigation report, and a FUSRAP NFSS environmental surveillance technical memorandum.	12/01/2008	41
Washington State University (U.S. Transuranium and Uranium Registries)	No relevant documents identified.	03/31/2008	0
Total			**1758**

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
DOE CEDR http://cedr.lbl.gov/ COMPLETED 03/31/2008	"Lake Ontario Ordnance Works" in Title "Niagara Falls Storage Site" in any Title	0	0
DOE Hanford DDRS http://www2.hanford.gov/declass/ COMPLETED 03/31/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	1	1
DOE OpenNet http://www.osti.gov/opennet/advancedsearch.jsp COMPLETED 03/31/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	9	9
DOE OSTI Energy Citations http://www.osti.gov/energycitations/ COMPLETED 05/19/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	70	9
DOE OSTI Information Bridge http://www.osti.gov/bridge/advancedsearch.jsp COMPLETED 06/17/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	41	1
National Academies Press http://www.nap.edu/ COMPLETED 04/01/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	244	0
NNSA - Nevada Site Office www.nv.doe.gov/main/search.htm COMPLETED 03/31/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	0	0
NRC ADAMS Reading Room http://www.nrc.gov/reading-rm/adams/web-based.html COMPLETED 03/31/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	17	0
U.S. Transuranium & Uranium Registries http://www.ustur.wsu.edu/ COMPLETED 03/31/2008	"Lake Ontario Ordnance Works" in any field "Niagara Falls Storage Site" in any field	0	0
Google http://www.google.com COMPLETED 07/16/2008	"Lake Ontario Ordnance Works" oralloy "Lake Ontario Ordnance Works" postum "Lake Ontario Ordnance Works" tuballoy "Lake Ontario Ordnance Works" "uranyl nitrate hexahydrate" OR UNH "Lake Ontario Ordnance Works" "K-65" "Lake Ontario Ordnance Works" "sump cake"	18,489	62

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" "uranium dioxide" "Lake Ontario Ordnance Works" "uranium tetrafluoride" "Lake Ontario Ordnance Works" "uranium trioxide" "Lake Ontario Ordnance Works" "uranium hexafluoride" "Lake Ontario Ordnance Works" accident "Lake Ontario Ordnance Works" "air count" "Lake Ontario Ordnance Works" "air dust" "Lake Ontario Ordnance Works" "air filter" "Lake Ontario Ordnance Works" "airborne test" "Lake Ontario Ordnance Works" alpha "Lake Ontario Ordnance Works" "belgian congo ore" "Lake Ontario Ordnance Works" beta "Lake Ontario Ordnance Works" bioassay OR "Lake Ontario Ordnance Works" bio-assay "Lake Ontario Ordnance Works" breath OR "Lake Ontario Ordnance Works" "breathing zone" OR "Lake Ontario Ordnance Works" BZ "Lake Ontario Ordnance Works" "body burden" "Lake Ontario Ordnance Works" calibration "Lake Ontario Ordnance Works" "chest count" "Lake Ontario Ordnance Works" columnation "Lake Ontario Ordnance Works" contamination "Lake Ontario Ordnance Works" curie "Lake Ontario Ordnance Works" "denitration" OR "Lake Ontario Ordnance Works" "denitration pot" "Lake Ontario Ordnance Works" derby OR "Lake Ontario Ordnance Works" regulus "Lake Ontario Ordnance Works" "derived air concentration" OR "Lake Ontario Ordnance Works" DAC "Lake Ontario Ordnance Works" dose "Lake Ontario Ordnance Works" dosimeter "Lake Ontario Ordnance Works" dosimetric "Lake Ontario Ordnance Works" dosimetry "Lake Ontario Ordnance Works" electron "Lake Ontario Ordnance Works" environment		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" "Ether-Water Project" "Lake Ontario Ordnance Works" exposure OR "Lake Ontario Ordnance Works" "exposure investigation" OR "Lake Ontario Ordnance Works" "radiation exposure" "Lake Ontario Ordnance Works" external "Lake Ontario Ordnance Works" "F machine" "Lake Ontario Ordnance Works" fecal "Lake Ontario Ordnance Works" "feed material" "Lake Ontario Ordnance Works" femptocurie "Lake Ontario Ordnance Works" film "Lake Ontario Ordnance Works" fission "Lake Ontario Ordnance Works" fluoroscopy "Lake Ontario Ordnance Works" "Formerly Utilized Sites Remedial Action Program" OR "Lake Ontario Ordnance Works" FUSRAP "Lake Ontario Ordnance Works" gamma-ray OR "Lake Ontario Ordnance Works" "gamma ray" "Lake Ontario Ordnance Works" "gas proportional" "Lake Ontario Ordnance Works" "gaseous diffusion" "Lake Ontario Ordnance Works" health OR "Lake Ontario Ordnance Works" "health instrument" OR "Lake Ontario Ordnance Works" "health physics" OR "Lake Ontario Ordnance Works" H.I. OR "Lake Ontario Ordnance Works" HI OR "Lake Ontario Ordnance Works" HP "Lake Ontario Ordnance Works" highly enriched uranium" OR "Lake Ontario Ordnance Works" HEU "Lake Ontario Ordnance Works" hydrofluorination "Lake Ontario Ordnance Works" "in vitro" "Lake Ontario Ordnance Works" "in vivo" "Lake Ontario Ordnance Works" incident "Lake Ontario Ordnance Works" ingestion "Lake Ontario Ordnance Works" inhalation "Lake Ontario Ordnance Works" internal "Lake Ontario Ordnance Works" investigation "Lake Ontario Ordnance Works" isotope "Lake Ontario Ordnance Works" isotopic		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" "isotopic enrichment" "Lake Ontario Ordnance Works" "JS Project" "Lake Ontario Ordnance Works" Landauer "Lake Ontario Ordnance Works" "liquid scintillation" "Lake Ontario Ordnance Works" log OR "Lake Ontario Ordnance Works" "log sheet" OR "Lake Ontario Ordnance Works" "log book" "Lake Ontario Ordnance Works" "low enriched uranium" OR "Lake Ontario Ordnance Works" LEU "Lake Ontario Ordnance Works" "lung count" "Lake Ontario Ordnance Works" "maximum permissible concentration" OR "Lake Ontario Ordnance Works" MPC "Lake Ontario Ordnance Works" metallurgy "Lake Ontario Ordnance Works" microcurie "Lake Ontario Ordnance Works" millicurie "Lake Ontario Ordnance Works" "mixed fission product" OR "Lake Ontario Ordnance Works" MFP "Lake Ontario Ordnance Works" monitor OR "Lake Ontario Ordnance Works" "air monitoring" "Lake Ontario Ordnance Works" nanocurie "Lake Ontario Ordnance Works" "nasal wipe" "Lake Ontario Ordnance Works" neutron "Lake Ontario Ordnance Works" "nose wipe" "Lake Ontario Ordnance Works" nuclear OR "Lake Ontario Ordnance Works" "Chicago-Nuclear" OR "Lake Ontario Ordnance Works" "nuclear fuels" "Lake Ontario Ordnance Works" "nuclear track emulsion" OR "Lake Ontario Ordnance Works" "type A" OR "Lake Ontario Ordnance Works" NTA "Lake Ontario Ordnance Works" "occupational radiation exposure" "Lake Ontario Ordnance Works" occurrence "Lake Ontario Ordnance Works" "ore concentrate" "Lake Ontario Ordnance Works" "PC Project"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" permit OR "Lake Ontario Ordnance Works" "radiation work permit" OR "Lake Ontario Ordnance Works" "safe work permit" OR "Lake Ontario Ordnance Works" "special work permit" OR "Lake Ontario Ordnance Works" RWP OR "Lake Ontario Ordnance Works" SWP "Lake Ontario Ordnance Works" "phosphate research" "Lake Ontario Ordnance Works" photon "Lake Ontario Ordnance Works" picocurie "Lake Ontario Ordnance Works" pitchblende "Lake Ontario Ordnance Works" "pocket ion chamber" OR "Lake Ontario Ordnance Works" PIC "Lake Ontario Ordnance Works" problem "Lake Ontario Ordnance Works" procedure "Lake Ontario Ordnance Works" radeco "Lake Ontario Ordnance Works" radiation "Lake Ontario Ordnance Works" radioactive "Lake Ontario Ordnance Works" radioactivity "Lake Ontario Ordnance Works" radiograph "Lake Ontario Ordnance Works" radiological "Lake Ontario Ordnance Works" "Radiological Survey Data Sheet" OR "Lake Ontario Ordnance Works" RSDS "Lake Ontario Ordnance Works" radionuclide "Lake Ontario Ordnance Works" raffinate "Lake Ontario Ordnance Works" reactor "Lake Ontario Ordnance Works" respiratory "Lake Ontario Ordnance Works" "retention schedules" "Lake Ontario Ordnance Works" roentgen "Lake Ontario Ordnance Works" sample OR "Lake Ontario Ordnance Works" "air sample" OR "Lake Ontario Ordnance Works" "dust sample" OR "Lake Ontario Ordnance Works" "general area air sample" "Lake Ontario Ordnance Works" sampling OR "Lake Ontario Ordnance Works" "air sampling" OR "Lake Ontario Ordnance Works" "dust sampling" OR "Lake Ontario Ordnance Works" "general area air sampling"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" "solvent extraction" "Lake Ontario Ordnance Works" source OR "Lake Ontario Ordnance Works" "sealed source" "Lake Ontario Ordnance Works" spectra "Lake Ontario Ordnance Works" spectrograph "Lake Ontario Ordnance Works" spectroscopy "Lake Ontario Ordnance Works" spectrum "Lake Ontario Ordnance Works" standard OR "Lake Ontario Ordnance Works" "operating standard" OR "Lake Ontario Ordnance Works" "processing standard" "Lake Ontario Ordnance Works" survey "building survey" OR "Lake Ontario Ordnance Works" "routine survey" OR "Lake Ontario Ordnance Works" "special survey" "Lake Ontario Ordnance Works" "technical basis" "Lake Ontario Ordnance Works" "thermal diffusion" "Lake Ontario Ordnance Works" "thermoluminescent dosimeter" OR "Lake Ontario Ordnance Works" TLD "Lake Ontario Ordnance Works" "Tiger Team" "Lake Ontario Ordnance Works" "tolerance dose" "Lake Ontario Ordnance Works" "Uranium aluminum alloy" OR "Lake Ontario Ordnance Works" Ualx OR "Lake Ontario Ordnance Works" "Uranium aluminide" "Lake Ontario Ordnance Works" urinalysis "Lake Ontario Ordnance Works" urine "Lake Ontario Ordnance Works" "whole body count" OR "Lake Ontario Ordnance Works" WBC "Lake Ontario Ordnance Works" "working level" OR "Lake Ontario Ordnance Works" WL "Lake Ontario Ordnance Works" "X-ray" OR "Lake Ontario Ordnance Works" "X ray" OR "Lake Ontario Ordnance Works" Xray "Lake Ontario Ordnance Works" americium OR Am241 OR Am-241 OR "AM 241" OR 241Am OR 241-Am OR "241 Am" "Lake Ontario Ordnance Works" ionium OR Th230 OR Th-230 OR "Th 230" OR 230Th OR 230-Th OR "230 Th"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" neptunium OR Np237 OR Np-237 OR "Np 237" OR 237Np OR 237-Np OR "237 Np" "Lake Ontario Ordnance Works" polonium OR Po210 OR Po-210 OR "Po 210" OR 210Po OR 210-Po OR "210 Po" "Lake Ontario Ordnance Works" thorium OR Th232 OR Th-232 OR "Th 232" OR 232Th OR 232-Th OR "232 Th" OR "Z metal" OR myrnalloy OR "chemical 10-66" OR "chemical 10-12" OR ionium OR UX1 OR UX2 "Lake Ontario Ordnance Works" Th-230 OR Th230 OR "Th 230" OR 230-Th OR "230 Th" OR 230Th OR Th-234 OR Th234 OR "Th 234" OR 234-Th OR 234Th OR "234 Th" "Lake Ontario Ordnance Works" neptunium OR Np237 OR Np-237 OR "Np 237" OR 237Np OR 237-Np OR "237 Np" "Lake Ontario Ordnance Works" uranium OR U233 OR U-233 OR "U 233" OR 233U OR 233-U OR "233 U" OR U234 OR "U 234" OR U-234 OR 234U OR 234-U OR "234 U" OR U235 OR "U 235" OR U-235 OR 235-U "Lake Ontario Ordnance Works" 235U OR "235 U" OR U238 OR "U 238" OR U-238 OR 238-U OR 238U OR "238 U" OR U308 OR "U 308" OR U-308 OR 308-U OR 308U OR 308 U OR "uranium extraction" "Lake Ontario Ordnance Works" "black oxide" OR "brown oxide" OR "green salt" OR "orange oxide" OR "yellow cake" OR UO2 OR UO3 OR UF4 OR UF6 OR C-216 OR C-616 OR C-65 OR C-211 OR U3O8 "Lake Ontario Ordnance Works" plutonium OR Pu-238 OR Pu238 OR Pu 238 OR 238Pu OR 238-Pu OR "238 Pu" OR Pu-239 OR Pu239 OR "Pu 239" OR 239Pu OR 239-Pu OR "239 Pu" "Lake Ontario Ordnance Works" Pu-240 OR Pu240 OR "Pu 240" OR 240Pu OR 240-Pu OR "240 Pu" OR Pu-241 OR Pu241 OR "Pu 241" OR 241Pu OR 241-Pu OR "241 Pu" "Lake Ontario Ordnance Works" radium OR Ra-226 OR Ra226 OR Ra 226 OR 226-Ra OR 226Ra OR 226-Ra OR Ra-228 OR Ra228 OR Ra 228 OR 228Ra OR 228-Ra OR 228 Ra "Lake Ontario Ordnance Works" radon OR Rn-222 OR Rn222 OR Rn 222 OR 222Rn OR 222-Rn OR 222 Rn		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Lake Ontario Ordnance Works" thoron OR Rn-220 OR Rn220 OR "Rn 220" OR 220Rn OR 220-Rn OR "220 Rn" "Lake Ontario Ordnance Works" protactinium OR Pa-234m OR Pa234m OR "Pa 234m" OR 234mPa OR 234m-Pa OR "234m Pa" "Lake Ontario Ordnance Works" strontium OR Sr-90 OR Sr90 OR "Sr 90" OR 90-Sr OR 90Sr OR "90 Sr" "Niagara Fall Storage Site" -NIOSH "Niagara Falls Storage Site" oralloy "Niagara Falls Storage Site" postum "Niagara Falls Storage Site" tuballoy "Niagara Falls Storage Site" "uranyl nitrate hexahydrate" OR UNH "Niagara Falls Storage Site" "K-65" "Niagara Falls Storage Site" "sump cake" "Niagara Falls Storage Site" "uranium dioxide" "Niagara Falls Storage Site" "uranium tetrafluoride" "Niagara Falls Storage Site" "uranium trioxide" "Niagara Falls Storage Site" "uranium hexafluoride" "Niagara Falls Storage Site" accident "Niagara Falls Storage Site" "air count" "Niagara Falls Storage Site" "air dust" "Niagara Falls Storage Site" "air filter" "Niagara Falls Storage Site" "airborne test" "Niagara Falls Storage Site" alpha "Niagara Falls Storage Site" "belgian congo ore" "Niagara Falls Storage Site" bioassay OR "Niagara Falls Storage Site" bio-assay "Niagara Falls Storage Site" breath OR "Niagara Falls Storage Site" "breathing zone" OR "Niagara Falls Storage Site" BZ "Niagara Falls Storage Site" calibration "Niagara Falls Storage Site" columnation "Niagara Falls Storage Site" contamination "Niagara Falls Storage Site" curie "Niagara Falls Storage Site" "denitration" OR "Niagara Falls Storage Site" "denitration pot"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Niagara Falls Storage Site" derby OR "Niagara Falls Storage Site" regulus "Niagara Falls Storage Site" dose "Niagara Falls Storage Site" dosimeter "Niagara Falls Storage Site" dosimetric "Niagara Falls Storage Site" dosimetry "Niagara Falls Storage Site" electron "Niagara Falls Storage Site" environment "Niagara Falls Storage Site" "Ether-Water Project" "Niagara Falls Storage Site" exposure OR "Niagara Falls Storage Site" "exposure investigation" OR "Niagara Falls Storage Site" "radiation exposure" "Niagara Falls Storage Site" external "Niagara Falls Storage Site" "F machine" "Niagara Falls Storage Site" fecal "Niagara Falls Storage Site" "feed material" "Niagara Falls Storage Site" femptocurie "Niagara Falls Storage Site" film "Niagara Falls Storage Site" fission "Niagara Falls Storage Site" fluoroscopy "Niagara Falls Storage Site" "Formerly Utilized Sites Remedial Action Program" OR "Niagara Falls Storage Site" FUSRAP "Niagara Falls Storage Site" gamma-ray "Niagara Falls Storage Site" "gas proportional" "Niagara Falls Storage Site" "gaseous diffusion" "Niagara Falls Storage Site" health OR "Niagara Falls Storage Site" "health instrument" OR "Niagara Falls Storage Site" "health physics" OR "Niagara Falls Storage Site" H.I. OR "Niagara Falls Storage Site" HI OR "Niagara Falls Storage Site" HP "Niagara Falls Storage Site" "highly enriched uranium" OR "Niagara Falls Storage Site" HEU "Niagara Falls Storage Site" hydrofluorination "Niagara Falls Storage Site" "in vitro" "Niagara Falls Storage Site" "in vivo"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Niagara Falls Storage Site" incident "Niagara Falls Storage Site" ingestion "Niagara Falls Storage Site" inhalation "Niagara Falls Storage Site" internal "Niagara Falls Storage Site" investigation "Niagara Falls Storage Site" isotope "Niagara Falls Storage Site" isotopic "Niagara Falls Storage Site" "isotopic enrichment" "Niagara Falls Storage Site" "JS Project" "Niagara Falls Storage Site" Landauer "Niagara Falls Storage Site" "liquid scintillation" "Niagara Falls Storage Site" log OR "Niagara Falls Storage Site" "log sheet" OR "Niagara Falls Storage Site" "log book" "Niagara Falls Storage Site" "low enriched uranium" OR "Niagara Falls Storage Site" LEU "Niagara Falls Storage Site" "maximum permissible concentration" OR "Niagara Falls Storage Site" MPC "Niagara Falls Storage Site" metallurgy "Niagara Falls Storage Site" microcurie "Niagara Falls Storage Site" millicurie "Niagara Falls Storage Site" "mixed fission product" OR "Niagara Falls Storage Site" MFP "Niagara Falls Storage Site" monitor OR "Niagara Falls Storage Site" "air monitoring" "Niagara Falls Storage Site" nanocurie "Niagara Falls Storage Site" "nasal wipe" "Niagara Falls Storage Site" neutron "Niagara Falls Storage Site" "nose wipe" "Niagara Falls Storage Site" nuclear OR "Niagara Falls Storage Site" "Chicago-Nuclear" OR "Niagara Falls Storage Site" "nuclear fuels" "Niagara Falls Storage Site" "nuclear track emulsion" OR "Niagara Falls Storage Site" "type A" OR "Niagara Falls Storage Site" NTA "Niagara Falls Storage Site" "occupational radiation exposure" "Niagara Falls Storage Site" occurrence		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Niagara Falls Storage Site" "ore concentrate" "Niagara Falls Storage Site" "PC Project" "Niagara Falls Storage Site" permit OR "Niagara Falls Storage Site" "radiation work permit" OR "Niagara Falls Storage Site" "safe work permit" OR "Niagara Falls Storage Site" "special work permit" OR "Niagara Falls Storage Site" RWP OR "Niagara Falls Storage Site" SWP "Niagara Falls Storage Site" "phosphate research" "Niagara Falls Storage Site" photon "Niagara Falls Storage Site" picocurie "Niagara Falls Storage Site" pitchblende "Niagara Falls Storage Site" "pocket ion chamber" OR "Niagara Falls Storage Site" PIC "Niagara Falls Storage Site" problem "Niagara Falls Storage Site" procedure "Niagara Falls Storage Site" radeco "Niagara Falls Storage Site" radiation "Niagara Falls Storage Site" radioactive "Niagara Falls Storage Site" radioactivity "Niagara Falls Storage Site" radiograph "Niagara Falls Storage Site" radiological "Niagara Falls Storage Site" "Radiological Survey Data Sheet" OR "Niagara Falls Storage Site" RSDS "Niagara Falls Storage Site" radionuclide "Niagara Falls Storage Site" raffinate "Niagara Falls Storage Site" reactor "Niagara Falls Storage Site" respiratory "Niagara Falls Storage Site" "retention schedules" "Niagara Falls Storage Site" roentgen "Niagara Falls Storage Site" sample OR "Niagara Falls Storage Site" "air sample" OR "Niagara Falls Storage Site" "dust sample" OR "Niagara Falls Storage Site" "general area air sample"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Niagara Falls Storage Site" sampling OR "Niagara Falls Storage Site" "air sampling" OR "Niagara Falls Storage Site" "dust sampling" OR "Niagara Falls Storage Site" "general area air sampling" "Niagara Falls Storage Site" "solvent extraction" "Niagara Falls Storage Site" source OR "Niagara Falls Storage Site" "sealed source" "Niagara Falls Storage Site" spectra "Niagara Falls Storage Site" spectrograph "Niagara Falls Storage Site" spectroscopy "Niagara Falls Storage Site" spectrum "Niagara Falls Storage Site" standard OR "Niagara Falls Storage Site" "operating standard" OR "Niagara Falls Storage Site" "processing standard" "Niagara Falls Storage Site" survey "building survey" OR "Niagara Falls Storage Site" "routine survey" OR "Niagara Falls Storage Site" "special survey" "Niagara Falls Storage Site" "technical basis" "Niagara Falls Storage Site" "thermal diffusion" "Niagara Falls Storage Site" "thermoluminescent dosimeter" OR "Niagara Falls Storage Site" TLD "Niagara Falls Storage Site" "Tiger Team" "Niagara Falls Storage Site" "tolerance dose" "Niagara Falls Storage Site" urinalysis "Niagara Falls Storage Site" urine "Niagara Falls Storage Site" "whole body count" OR "Niagara Falls Storage Site" WBC "Niagara Falls Storage Site" "working level" OR "Niagara Falls Storage Site" WL "Niagara Falls Storage Site" "X-ray" OR "Niagara Falls Storage Site" "X ray" OR "Niagara Falls Storage Site" Xray "Niagara Falls Storage Site" americium OR Am241 OR Am-241 OR "AM 241" OR 241Am OR 241-Am OR "241 Am" "Niagara Falls Storage Site" ionium OR Th230 OR Th-230 OR "Th 230" OR 230Th OR 230-Th OR "230 Th"		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Niagara Falls Storage Site" neptunium OR Np237 OR Np-237 OR "Np 237" OR 237Np OR 237-Np OR "237 Np" "Niagara Falls Storage Site" polonium OR Po210 OR Po-210 OR "Po 210" OR 210Po OR 210-Po OR "210 Po" "Niagara Falls Storage Site" thorium OR Th232 OR Th-232 OR "Th 232" OR 232Th OR 232-Th OR "232 Th" OR "Z metal" OR myrnalloy OR "chemical 10-66" OR "chemical 10-12" OR ionium OR UX1 OR UX2 "Niagara Falls Storage Site" Th-230 OR Th230 OR "Th 230" OR 230-Th OR "230 Th" OR 230Th OR Th-234 OR Th234 OR "Th 234" OR 234-Th OR 234Th OR "234 Th" "Niagara Falls Storage Site" neptunium OR Np237 OR Np-237 OR "Np 237" OR 237Np OR 237-Np OR "237 Np" "Niagara Falls Storage Site" uranium OR U233 OR U-233 OR "U 233" OR 233U OR 233-U OR "233 U" OR U234 OR "U 234" OR U-234 OR 234U OR 234-U OR "234 U" OR U235 OR "U 235" OR U-235 OR 235-U "Niagara Falls Storage Site" 235U OR "235 U" OR U238 OR "U 238" OR U-238 OR 238-U OR 238U OR "238 U" OR U308 OR "U 308" OR U-308 OR 308-U OR 308U OR 308 U OR "uranium extraction" "Niagara Falls Storage Site" "black oxide" OR "brown oxide" OR "green salt" OR "orange oxide" OR "yellow cake" OR UO2 OR UO3 OR UF4 OR UF6 OR C-216 OR C-616 OR C-65 OR C-211 OR U3O8 "Niagara Falls Storage Site" plutonium OR Pu-238 OR Pu238 OR Pu 238 OR 238Pu OR 238-Pu OR "238 Pu" OR Pu-239 OR Pu239 OR "Pu 239" OR 239Pu OR 239-Pu OR "239 Pu" "Niagara Falls Storage Site" Pu-240 OR Pu240 OR "Pu 240" OR 240Pu OR 240-Pu OR "240 Pu" OR Pu-241 OR Pu241 OR "Pu 241" OR 241Pu OR 241-Pu OR "241 Pu" "Niagara Falls Storage Site" radium OR Ra-226 OR Ra226 OR Ra 226 OR 226-Ra OR 226Ra OR 226-Ra OR Ra-228 OR Ra228 OR Ra 228 OR 228Ra OR 228-Ra OR 228 Ra "Niagara Falls Storage Site" radon OR Rn-222 OR Rn222 OR Rn 222 OR 222Rn OR 222-Rn OR 222 Rn		

Table A1-2: Database Searches for Lake Ontario Ordnance Works			
Database/Source	**Keywords**	**Hits**	**Uploaded into SRDB**
	"Niagara Falls Storage Site" thoron OR Rn-220 OR Rn220 OR "Rn 220" OR 220Rn OR 220-Rn OR "220 Rn" "Niagara Falls Storage Site" protactinium OR Pa-234m OR Pa234m OR "Pa 234m" OR 234mPa OR 234m-Pa OR "234m Pa" "Niagara Falls Storage Site" strontium OR Sr-90 OR Sr90 OR "Sr 90" OR 90-Sr OR 90Sr OR "90 Sr" "Hooker Electrochemical" "Lake Ontario Ordnance" "Hooker Electrochemical" "Niagara Falls Storage Site" "Page Airways" "Lake Ontario Ordnance" "Page Airways" "Niagara Falls Storage Site" "Nuclear Materials and Equipment Company" "Lake Ontario Ordnance" "Nuclear Materials and Equipment Company" "Niagara Falls Storage Site" "National Lead Company of Ohio" "Lake Ontario Ordnance" "National Lead Company of Ohio" "Niagara Falls Storage Site" "Bechtel National" "Lake Ontario Ordnance" "Bechtel National" "Niagara Falls Storage Site" NFSS -"Niagara Falls Storage Site" radiation LOOW - "Lake Ontario Ordnance Works" radiation		

Table A1-3: OSTI Documents Ordered for Lake Ontario Ordnance Works			
Document Number	**Document Title**	**Requested Data**	**Date Received**
EGG-1183-1554 OSTI ID: 4567879 SRDB: 53189	Radiological Survey of the Lake Ontario Ordnance Works and Vicinity in June 1972. Technical Report No. L-1076.	11/09/2007	11/03/2008
DOE/OR/20722-86 OSTI ID: 6999727 SRDB: 51179	Environmental monitoring plan for the Niagara Falls Storage Site and the Interim Waste Containment Facility	11/09/2007	08/28/2008
DOE/OR/21949-289 OSTI ID: 5295809 SRDB: 51177	Niagara Falls storage site annual environmental report for calendar year 1990, Lewiston, New York	11/09/2007	08/28/2008
DOE/OR/21949-343 OSTI ID: 6936959 SRDB: 43593	Niagara Falls Storage Site annual environmental report for calendar year 1991, Lewiston, New York	11/09/2007	08/28/2008
DOE/OR/20722-21 OSTI ID: 5778790 SRDB: 51178	Design Report for the Interim Waste Containment Facility at the Niagara Falls Storage Site	11/09/2007	08/28/2008
DOE/OR/20722-197 OSTI ID: 5208766 SRDB: 43591	Niagara Falls Storage Site, Lewiston, New York: Annual site environmental report, Calendar year 1987: Formerly Utilized Sites Remedial Action Program (FUSRAP)	11/09/2007	07/09/2008
DOE/OR/20722-71 OSTI ID: 5153095 SRDB: 51175	Report on the performance monitoring system for the interim waste containment at the Niagara Falls Storage Site, Lewiston, New York	11/09/2007	07/09/2008
DOE/OR/20722-1 OSTI ID: 5451204 SRDB: 45392	Engineering evaluation of alternatives for the disposition of Niagara Falls Storage Site, its residues and wastes	11/09/2007	06/23/2008
DOE/OR/20722-8 OSTI ID: 6716374 SRDB: 43583	Niagara Falls Storage Site, Lewiston, New York: geologic report	11/09/2007	06/23/2008
DOE/OR/20722-208 OSTI ID: 6121400 SRDB: 45264	Performance monitoring report for the Niagara Falls Storage Site Waste Containment Structure, Lewiston, New York: Calendar year 1987 and January--June of 1988	11/09/2007	06/17/2008
DOE/OR/20722-219 OSTI ID: 6302162 SRDB: 44864	Niagara falls storage site: Annual site environmental report, Lewiston, New York, Calendar Year 1988: Surplus Facilities Management Program (SFMP)	11/09/2007	05/27/2008
DOE/OR/20722-150 OSTI ID: 6774453 SRDB: 44861	Niagara Falls Storage Site, Annual site environmental report, Lewiston, New York, Calendar year 1986: Surplus Facilities Management Program (SFMP)	11/09/2007	05/27/2008
DOE/OR/20722-18 OSTI ID: 6750496	Niagara Falls Storage Site environmental monitoring report. Calendar year 1983	11/09/2007	05/23/2008

Table A1-3: OSTI Documents Ordered for Lake Ontario Ordnance Works			
Document Number	**Document Title**	**Requested Data**	**Date Received**
SRDB: 43445			
ARMS-72.6.1 OSTI ID: 4458532 SRDB: 44434	Aerial radiological measuring survey of the Lake Ontario Ordnance Works and vicinity in June 1972	11/09/2007	05/19/2008
CONF-841187-28 OSTI ID: 6259907 SRDB: 44442	Assessment of alternatives for long-term management of uranium ore residues and contaminated soils located at DOE`s Niagara Falls Storage Site	11/09/2007	05/19/2008
ANL/EES-TM-377 OSTI ID: 5729472 SRDB: 44435	Determination of ecologically vital groundwater at selected sites in the Formerly Utilized Sites Remedial Action Program	11/09/2007	05/19/2008
CONF-9006270-1 OSTI ID: 6625771 SRDB: 44444	Environmental impact assessment for a radioactive waste facility: A case study	11/09/2007	05/19/2008
CONF-850242-2 OSTI ID: 6136026 SRDB: 44440	Ocean disposal option for bulk wastes containing naturally occurring radionuclides: an assessment case history	11/09/2007	05/19/2008
ORNL-6083 OSTI ID: 6417453	Geochemical information for sites contaminated with low-level radioactive wastes: I. Niagara Falls Storage Site	11/09/2007	01/16/2008 - Not Selected
CONF-891053-5 OSTI ID: 5384815	Effectiveness of interim remedial actions at a radioactive waste facility	11/09/2007	N/A - OSTI does not have this