INSTALLATION OF TEST BORING

PLS-07-01

WESTERN SYSTEM

PALL Life Sciences

March 2007

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INTRODUCTION

Pall Life Sciences (PLS) recently installed a test boring in the Western System. This test boring has been identified as PLS-07-01. The location of this test boring, and other relevant features, are shown on Attachment 1.

PLS-07-01 was drilled for the purpose of further defining the extent of 1,4-dioxane in the Western System. The location of PLS-07-01 and the methods of investigation were mutually agreed upon by PLS and the Michigan Department of Environmental Quality (MDEQ), prior to the drilling of the test boring.

DRILLING METHODS

PLS-07-01 was drilled to a depth of approximately 183 feet below the ground surface (bgs) using the hollow-stem auger drilling method. Soil samples were collected in approximately 10-foot increments with split-spoon and/or Simulprobe samplers, beginning at a depth of approximately 10 feet bgs and continuing to the total depth of the soil boring. The recovered soil cores were characterized by the onsite geologist.

In water-bearing units, groundwater samples were collected with the Simulprobe sampler at a frequency of 10 feet. The groundwater samples were transported to the PLS laboratory for 1,4-dioxane analysis. The analytical results are provided in the comments section of the PLS-07-01 soil boring log provided as Attachment 2.

FINDINGS

HYDROSTRATIGRAPHY

There were three distinct hydrostratigraphic units encountered at PLS-07-01: an upper sand-and-gravel unconfined aquifer, a diamicton/clay aquitard, and a lower sand-and-gravel aquifer. The upper aquifer was encountered from the ground surface to a depth of approximately 33 feet bgs; the diamicton/clay aquitard was encountered ranging from a depth of approximately 33 to 139

feet bgs; and the lower sand-and-gravel aquifer was encountered from approximately 139 to 181 feet bgs. Bedrock, consisting of weathered shale, was encountered at a depth of 181 feet bgs. There were some thinner interbedded deposits noted within these three hydrostratigraphic units.

Two cross sections depicting the Western System geological setting have been prepared and are provided as Attachments 3 and 4. These cross-sections depict the geological conditions along and transverse to the migration pathway of 1,4-dioxane in the Western System.

1,4-Dioxane in the Western System is associated with the Upper Regional Aquifer (URA). Data from this investigation suggests the base of the aquifer is higher and the aquifer is thinner than previously interpreted in the area of PLS-07-01. A map of the bottom of the URA in the Western System area has been prepared and is provided as Attachment 5. An isopach map of the URA in the Western System has also been prepared and is provided as Attachment 6. The thickness of the aquifer mimics the trend in the bottom elevation. The thickest portion of the URA in the Western System area is in the vicinity of the MW-53 cluster.

It appears the base of the aquifer is lowest, and the aquifer is thickest along what has historically been interpreted as the longitudinal axis of the Western System plume. The geometry of the aquifer, especially the narrowing of the aquifer near the Park Road/Honey Creek Tributary intersection, may help explain the artesian conditions prevalent in that area.

WATER QUALITY

Seven Simulprobe water samples were collected during the boring installation. Two samples were collected from the URA, and five samples were collected from the lower aquifer. 1,4-Dioxane was detected only in the URA in an amount of 4 micrograms per liter [µg/L] at a depth of 19 to 20.5 feet bgs and 5 µg/L at a depth of 29 to 30.5 feet bgs.

DISCUSSION OF FINDINGS

As PLS has routinely stated, there is only one well in the entire Western System that is detecting a concentration of 1,4-dioxane over 85 µg/L (the Ann Arbor Cleaning Supply Well). PLS has

interpreted that there is a small area around this well where the concentration exceeds 85 µg/L (see PLS isoconcentration maps prepared for other submittals). Data from PLS-07-01 continue to support PLS's interpretations regarding the extent of 1,4-dioxane in the Western System.

The low concentrations of 1,4-dioxane detected at PLS-07-01 are consistent with groundwater flow and the aquifer geometry, i.e., the downgradient pathway from the area of the Ann Arbor Cleaning Supply Well area is north of PLS-07-01. 1,4-Dioxane concentrations along this pathway continue to remain below 85 µg/L, with no trend in any observed wells that would suggest they will exceed 85 µg/L in any areas other than in the immediate vicinity of the Ann Arbor Cleaning Supply Well.

1,4-Dioxane concentrations in groundwater sampled from the Ann Arbor Cleaning Supply Well continue to decline. A plot of these data are provided as Attachment 7. At the current trend, it is expected that 1,4-dioxane levels in groundwater sampled from the Ann Arbor Cleaning Supply Well will be below 85 µg/L by the fall of 2008.

RECOMMENDATIONS

PLS proposes no additional investigations in the Western System, other than routine monitoring in accordance with established frequencies.

PLS will continue periodic batch purging from the Ann Arbor Cleaning Supply Well. However, PLS proposes a reduction in the frequency of the batch purging from monthly to bi-monthly. Should trend data suggest this frequency will change the timeframe in which the 85 µg/L cleanup goal will be reached, PLS will consider resuming monthly batch purging.

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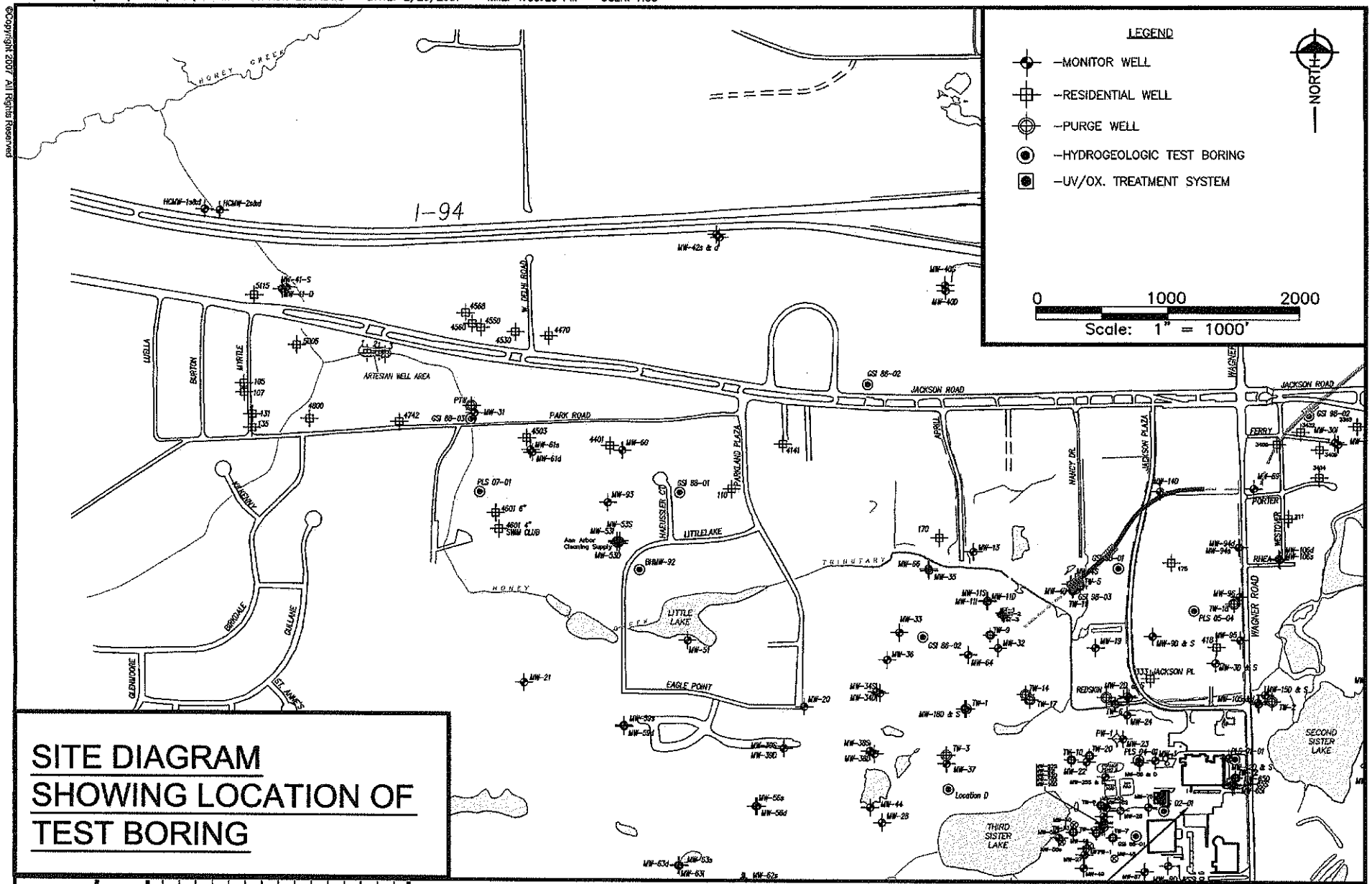

SITE DIAGRAM SHOWING LOCATION OF TEST BORING

ATTACHMENT 1

PROJECT NO. F96502C

Pall Life Sciences

Scio Twp., Washtenaw County, Michigan

Report on Installation of Test Boring PLS 07-01
Western System

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

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BOREHOLE LOG

BORING/WELL ID: **PLS-07-01**

TOTAL DEPTH (ft.): **182.5'**

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502C
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G./Brad Peuler

START DATE: 1-15-07
END DATE: 1-18-07
TOC ELEV.: NA
GROUND ELEV.: App. 886' amsl
STATIC WATER LVL.: app. 9' bgs

DRILLING CO.: Stearns Drilling
DRILLER: Jerry/Brian, Dick
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES:
Field GPS Coordinates (N42.28320, W083.82071), Acc. 19'. Soil Boring MW-109

▼ Static Water Level

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Revovery	Sample ID	Blow Counts	COMMENTS
SAND: Sand, medium to coarse grained. Dark brown, well sorted, dry			0					Soil Boring MW-109. No well installed at this location. Boring plugged with bentonite grout. Groundwater samples analyzed for 1,4-dioxane.
As above, brown			2					
			4					
			6					
Sand, coarse to medium grained with some fine grains. Orangish brown, moderately sorted, medium dense, wet			8	▼				
			10		1.2'		4,6,6,7	
			12					
			14					
			16					
			18					
SAND AND GRAVEL: Sand, coarse to medium grained with some fine grains; Gravel, fine to coarse (20%). Grayish brown, moderately sorted, wet			20		1.5'	MW-109 (19-20.5')	10,21,36	Simulprobe sample 19-20.5' (4 ug/L)
			22					
			24					
			26					
Sand, coarse to medium grained; Gravel, fine to coarse (20%). Grayish brown, moderately sorted, wet			28					
			30		1.5'	MW-109 (29-30.5')	27,43,55	Simulprobe sample 29-30.5' (5 ug/L)
			32					
DIAMICTON: Silt; Clay; trace Sand, fine grained; trace Gravel, fine. Gray, hard, dry			34					
			36					
			38					
			40		0.8'		11,30,60, 37	
			42					
			44					
			46					
			48					
As above, dark gray			50		1.3'		6,16,25,31	
			52					
			54					
			56					
			58					
Silt; Sand, fine grained (30%); Gravel, fine (10%); trace Clay. Grayish brown, moderately sorted, hard, dry			60		2.0'		8,19,34,37	Added approximately 20 gallons of water to augers

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▼ Static Water Level

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Revovery	Sample ID	Blow Counts	COMMENTS
Silt; Sand, fine grained (30%); Gravel, fine (10%). Grayish brown, moderately sorted, hard, dry			62 64 66 68 70		1.7'		7,14,19,25	Added approximately 20 gallons of water to augers
Silt; Sand, fine grained (20%); trace Gravel, fine. Grayish brown, well sorted, hard, dry			72 74 76 78 80		2.0'		7,24,62,61	Added approximately 20 gallons of water to augers
SAND: Sand, medium to fine grained; trace coarse grains; Gravel, fine (10%). Brown, moderately sorted, medium dense, wet			82 84 86 88 90		2.0'		4,4,7,8	Added approximately 20 gallons of water to augers
DIAMICTON: Silt; Sand, fine grained (20%); Gravel, fine. Grayish brown, well sorted, hard, dry			92 94 96 98 100		2.0'		8,33, 75 (5")	Added approximately 20 gallons of water to augers
As above			102 104 106 108 110		1.9'		3,28,43,37	Added approximately 20 gallons of water to augers
Silt; Clay; Sand, fine grained (20%); trace Gravel, fine (5%). Grayish brown, moderately sorted, hard, dry			112 114 116 118 120 122		1.3'		4,14,55, 50 (3")	Added approximately 20 gallons of water to augers

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▼ Static Water Level

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Revovery	Sample ID	Blow Counts	COMMENTS
Silt; Clay; Sand, fine grained (30%); trace Gravel, fine (5%). Grayish brown, moderately sorted, hard, dry			124 126 128 130		1.8'		7,40,51 (4")	Added approximately 20 gallons of water to augers
SAND AND GRAVEL: Sand, coarse to medium grained; Gravel, fine (20%); trace Silt. Grayish brown, moderately sorted, very dense, wet			132 134 136 138 140		0.9'	MW-109 (139-140.5')	28,58,41, 37	Simulprobe sample 139-140.5' (<1 ug/L)
Sand, coarse to medium grained; Gravel, fine (20%); Silt (20%). Grayish brown, moderately sorted, very dense, wet			142 144 146 148 150		0.5'	MW-109 (149-150.5')	200	Added approximately 20 gallons of water to augers Simulprobe sample 149-150.5' (<1 ug/L)
Sand; Gravel; Cobbles (based on sand bailer)			152 154 156 158 160		0'	MW-109 (159-160.5')	31,41,49	Added approximately 20 gallons of water to augers Simulprobe sample 159-160.5' (<1 ug/L)
As above			162 164 166 168 170		0'	MW-109 (169-170.5')	200	Added approximately 20 gallons of water to augers Simulprobe sample 169-170.5' (<1 ug/L)
DIAMICTON: Driller notes till			172 174 176 178					
SAND AND GRAVEL: Sand, medium to coarse grained; Gravel, fine (25%); Silt. Brownish gray, moderately sorted, very dense, wet			180		0.5'	MW-109 (179-180.5')	41,100 (5")	Added approximately 20 gallons of water to augers Simulprobe sample 179-180.5' (<1 ug/L)
SHALE: Shale, laminated, platy. Bluish gray, hard, dry			182		0.5'		150	

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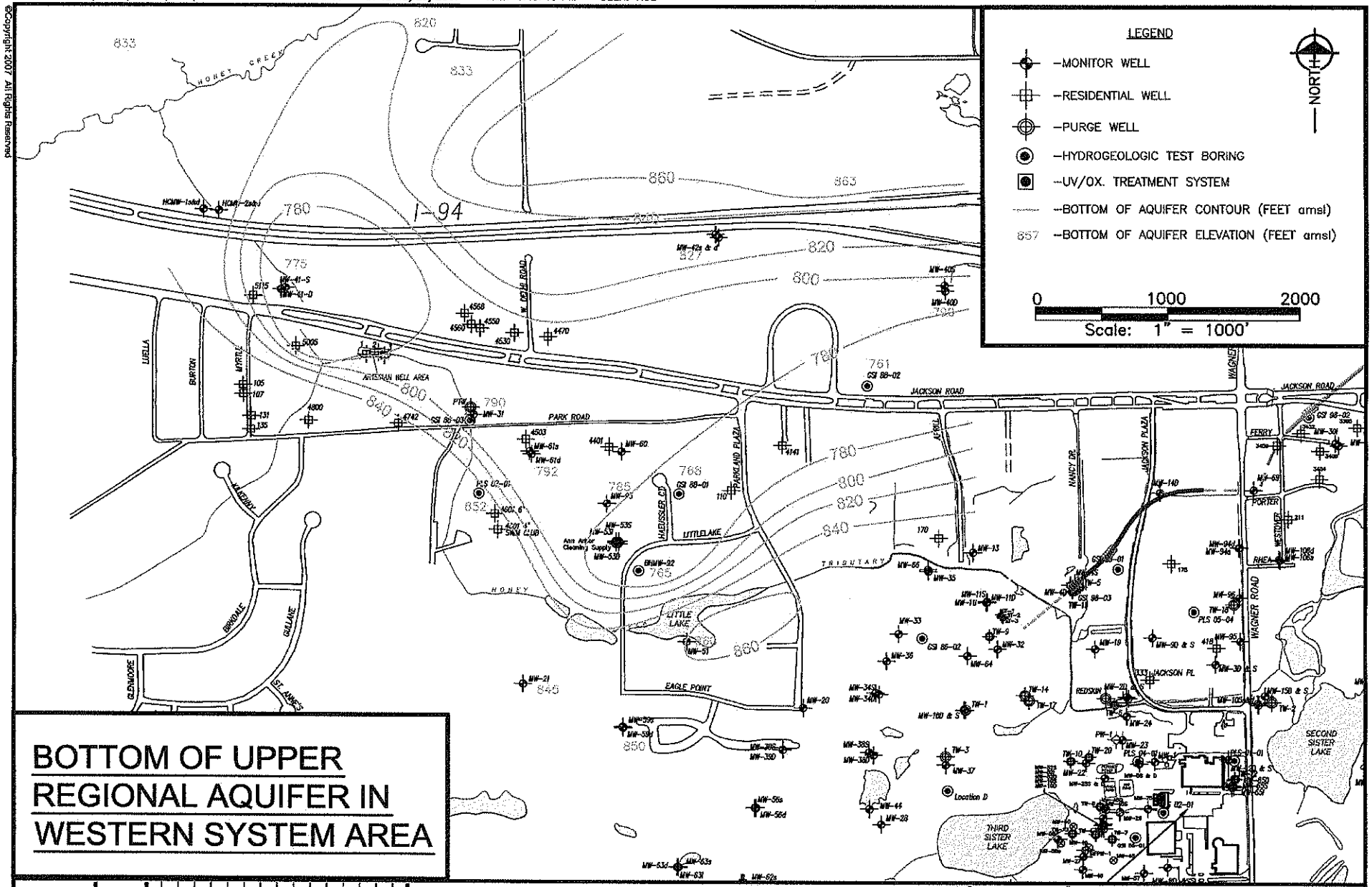

BOTTOM OF UPPER REGIONAL AQUIFER IN WESTERN SYSTEM AREA

ATTACHMENT 5

PROJECT NO. F96502C

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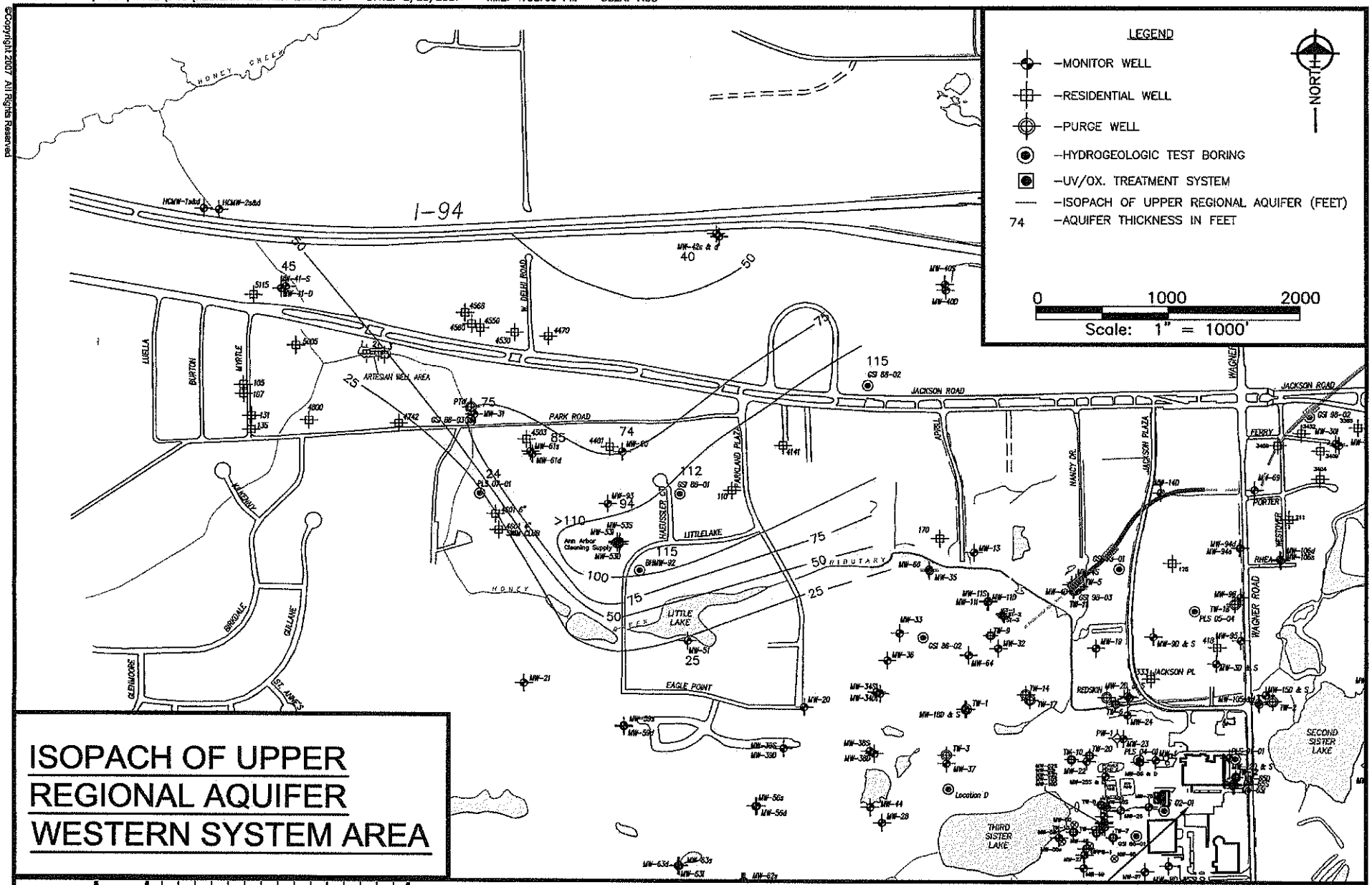

ISOPACH OF UPPER REGIONAL AQUIFER WESTERN SYSTEM AREA

6 ATTACHMENT

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Report on Installation of Test Boring PLS 07-01 Western System

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Trend Analysis